Exploring the expectations, needs and concerns of people with rheumatoid arthritis commencing Methotrexate

Submitted for Doctor of Philosophy Degree
October 2024
Keele University

Sarah Jane Logan

Abstract

Background

Methotrexate is recommended as initial disease modifying anti-rheumatic drug (DMARD) therapy to treat Rheumatoid Arthritis (RA). Rheumatology nurses provide information in DMARD counselling consultations to support people to take treatment safely. Despite receiving information, many people do not start or continue to take Methotrexate, resulting in worse outcomes and disability. It is unclear what information people require when starting Methotrexate, and how this should be provided. Understanding of this could inform service provision and practice.

Methods

A mixed methods systematic review (MMSR) was undertaken to identify the information needs of people with IA taking Methotrexate. The findings of the MMSR informed a semi-structured qualitative interview study to explore whether current methods of DMARD counselling met the expectations, experiences, needs and concerns of adults with RA when starting Methotrexate. Nineteen participants took part in interviews before and after DMARD counselling (n=8) or single interviews after DMARD counselling (n=11). Data was analysed using Reflexive Thematic Analysis and findings reviewed by stakeholders.

Results

The combined findings from the MMSR and qualitative study identified that people with RA have individual, multifaceted information needs and concerns about Methotrexate. The opportunity to speak to a nurse was valued, but many people experienced one-size-fits-all DMARD counselling. Despite receiving large amounts of information, unmet needs were frequently reported, with important practical and safety information being difficult to recall. In-person DMARD counselling was preferred by most, telephone consultations were acceptable, sometimes preferred due to personal circumstances. Stakeholders including a rheumatology clinical-academic rheumatologist, clinical and research nurses and a service manager reviewed study findings. Recommendations were made for person-centred DMARD counselling and development of accessible information strategies.

Conclusions

Current methods of DMARD counselling often do not meet the information needs of people commencing Methotrexate. A stratified, person-centred approach to DMARD counselling that offers people a choice regarding the timing and mode of consultation together with provision of needs-based information in a variety of accessible formats is recommended. Such an approach could resolve concerns whilst supporting information recall, thereby improving access and adherence to treatment, improving outcomes.

Outputs from thesis

Data from the thesis has been presented at the European League against Rheumatism conference (EULAR) 2023 conference; British Society of Rheumatology (BSR) 2023 conference and the Scandinavian College of Rheumatology 2023 conference. The systematic review has been accepted for peer review publication in *Rheumatology* January 2024, and an abstract accepted for the BSR 2024 conference as detailed below. A poem written to increase the reach of research won People's Choice first prize, and Judge's Choice second prize at Keele University Research Conference 2022.

Published Papers

Manuscript ID RHE-23-1966: The information required by people with Inflammatory Arthritis to take Methotrexate: A mixed methods systematic review. Accepted for publication Rheumatology 2.1.24. doi: 10.1093/rheumatology/keae055

Abstracts

It's a long time to wait: Exploring the support needs of people with Rheumatoid Arthritis starting Methotrexate. Awarded winner of the British Society of Rheumatology 2024 annual Nurse and Allied Health Professional Abstract Award and poster for BSR conference 2024.

Logan, S., Hider, S., Green, J. and Ryan, S., 2023. OP0275-HPR 'It's a lot to take in: A systematic review of the information needs of people with Inflammatory Arthritis starting Methotrexate. ard.bmj.com 181

Logan, S.J., Hider, S., Green, J. and Ryan, S.J., 2023. E047 I felt like I'd been given a new lease of life: Exploring the information needs and experiences of people with rheumatoid arthritis receiving bridging glucocorticoids when starting Methotrexate. Rheumatology, 62(Supplement_2), pp.kead104-296

Logan, S.J., Hider, S., Green, J. and Ryan, S., 2023. E008 I feel a bit happier about going on it now: exploring the information needs of people starting Methotrexate. Rheumatology, 62(Supplement_2), pp.kead104-257

Logan, S.J., Hider, S., Green, J., Ryan, S., August 2023. I feel a bit happier about going on it now: Exploring the information needs of people starting Methotrexate. Scandinavian Conference of Rheumatology August 2023, Taylor and Francis, pp. 52:sup131,60-116.

The Author

The author is a Registered nurse and non-medical prescriber with wide experience working as a clinical nurse specialist caring for people with immune-mediated conditions including RA. The researcher has been awarded a NIHR West Midlands CRN Health and Scholar Award 2023 to undertake further research, specifically regarding the information needs of underserved populations with IA.

The impact of COVID-19 pandemic on the thesis

The author was awarded the Ted Hothersall PhD funded by the Haywood Foundation for Arthritis Research, a Staffordshire charity in January 2020. The PhD proposal aimed to explore the expectations, experiences, needs and concerns of people with IA when starting a Disease Modifying Anti-Rheumatic Drug (DMARD) and receiving information from a nurse in a one-to-one or group drug counselling consultation. The PhD was subsequently deferred until September 2020 due to the impact of the COVID-19 pandemic in the United Kingdom, and requirements for social distancing affecting University and National Health Service (NHS) service provision.

Ongoing requirements for social distancing in line with national Government guidance at the time of commencement affected the PhD in several ways. Firstly, the author as a post-graduate University student was required to work remotely, this included accessing training, meeting supervisors, and precluded opportunities for peer support and training. Secondly, several changes to the original research proposal were necessary as at the time only urgent Rheumatology out-patient care was being provided in-person by the NHS, with care being provided remotely where possible. Group DMARD drug counselling was suspended, therefore exploring this method of service provision had to be abandoned. Furthermore, one-to-one drug counselling was mainly delivered by telephone consultation rather than in-person; therefore, a decision was made to explore expectations and experiences of in-person, and remote telephone DMARD drug counselling consultations. Recruitment to form a remote patient advisory group via Keele University patient and public involvement team generated only two volunteers. It is possible that existing members were unfamiliar and uncertain about participating using remote, virtual meetings using MS-telephone meetings. Many people with immune mediated conditions taking DMARDs were required to shield. It is possible that the associated effects of isolation, and concerns about the risk to their health should they develop COVID-19 resulted in fewer people agreeing to take part.

Recruitment to the qualitative study was affected in several ways. Social distancing requirements and periods of lockdown resulted in less people being seen, diagnosed and referred for Methotrexate DMARD counselling. Therefore, fewer people were eligible to participate. Researchers including the author were not allowed into clinical areas to promote recruitment, therefore study packs were distributed by post or email. Postal and email recruitment may have created a barrier for those with low literacy or limited health literacy, if they were unable to read, understand or respond in written form. Additionally, those who may have had concerns or were uncertain about taking part in research did not have the opportunity to speak to someone face-to-face to allay concerns. Furthermore, delays in receiving expression of interest and signed consent forms were also experienced due to impacts upon the external postal system. Consequently, several participants were unable to participate in pre-DMARD counselling interviews resulting in a smaller sample size for this part of the study.

Acknowledgements

The work of this thesis would not have been possible without the support of the Haywood Foundation, patients, clinicians, my supervisory team, friends and family. I would like to acknowledge and thank the Haywood Foundation for the funding allowing me to undertake a three-year secondment from my substantive NHS role to complete the PhD. The support of Keele University Research User Group and Patient Public Involvement and Engagement (PPIE) team, clinical and academic staff was fundamental to the development and completion of the study and is very much appreciated, particularly given the challenges of the COVID-19 pandemic and associated impact upon individual's workloads.

Throughout my PhD journey I have been fortunate to have Professors' Sarah Ryan, Sam Hider and Julie Green as my supervisory team. I have learnt so much from each of them, and am grateful for their time, patience, sense of humour and understanding throughout this time, not least in supporting me to achieve a NIHR Health and Scholar Award to continue my research.

I could not have completed this work without the support of Heidi, Michael, Fitz, Helen and Paula who have travelled this journey with me. I acknowledge all the people I have had the privilege to care for, have inspired me to undertake this research, and who I continue to learn so much from.

I dedicate this thesis to my late Father, Pat Logan, who sadly died during the course of this thesis. A man of few words who quietly believed in me.

Overview of Thesis

This thesis investigates the information needs of people with RA starting Methotrexate and is comprised of six chapters.

Chapter One: The context of the study is presented with an overview of RA and its management, and the role of Methotrexate and treatment guidelines. The research question, aims and objectives of the thesis are presented.

Chapter Two: The methods and results of a mixed-methods systematic review on the information people require to take Methotrexate are presented.

Chapter Three: qualitative methods and patient and professional stakeholder involvement are described.

Chapter Four: This chapter describes the results of the semi-structured convergent interviews are used to explore the views of people with RA regarding information needs when starting Methotrexate and the role of Disease Modifying Anti-Rheumatic Drug (DMARD) counselling.

Chapter Five: Stakeholder perceptions of the results are presented.

Chapter Six: Key findings from the overall programme of research are summarised, demonstrating achievement of the thesis aims, core strengths and limitations are identified. Clinical and research implications from the study are discussed together with suggestions for further research.

Abbreviations

ACR: American College of Rheumatology

bDMARD: Biologic Disease Modifying Anti-Rheumatic Drug

BMQ: Beliefs about medicines questionnaire

BSR: British Society of Rheumatology

cDMARD: Conventional Disease Modifying Anti-Rheumatic Drug

CHERRIES: Checklist for reporting results of internet E-Surveys

COPD: Chronic obstructive pulmonary disease

COREQ: Consolidated criteria for reporting of qualitative research guidelines

CQR: Compliance questionnaire for rheumatology

CROSS: Consensus based checklist for reporting of survey studies

CRP: C Reactive protein

DAS 28: Disease Activity Score (28 joint)

DCA: Drug counselling appointment

DESMOND: Diabetes education and self-management for ongoing and newly diagnosed

DMARD: Disease Modifying Anti-Rheumatic Drug

DNA: Deoxyribonucleic acid

EOI: Expression of interest

EULAR: European League Against Rheumatism

GDPR: General Data Protection Regulation

HARP: Heightening your Awareness of Research Philosophy tool

HCP(s): Healthcare professional(s)

HLA: Human Leukocyte Antigen

IA: Inflammatory arthritis

IPA: Interpretive Phenomenological Analysis

JBI: Formerly known as Joanna Briggs Institute

JBI MMSR: JBI Mixed methods convergent integrated systematic review

MHRA: Medicines & Healthcare products Regulatory Agency

MMSR: Mixed methods systematic review

MSc: Master of Science degree

MTX: Methotrexate

NEIAA: National Early Inflammatory Arthritis Audit

NHS: National Health Service

NIHR: National Institute for Health Research

NMC: Nursing and Midwifery Council

NPSA: National Patient Safety Agency (now MHRA)

NRAS: National Rheumatoid Arthritis Society

NICE: National Institute for Health and Care Excellence

ONS: Office for National Statistics

PhD: Doctor of Philosophy

PAG: Patient advisory group

PCC: Person-centred care

PCP: Person-centred practice

PIC: Participant identification centre

PPIE: Patient and public involvement and engagement

PRISMA: Preferred Reporting Items for Systematic Reviews and Meta-analysis

PRS: Primary research site

RA: Rheumatoid Arthritis

RCN: Royal College of Nursing

RCT: Randomised controlled trial

RNA: Ribonucleic acid

ROS: Reactive oxygen species

SAE: Stamped addressed envelope

SDM: Shared decision making

SIMS: Satisfaction with information about medicines survey

T2T: Treat to target treatment strategy

tsDMARDs: Targeted synthetic Disease Modifying Anti-Rheumatic Drug

TDF: Theoretical domains framework theory

Table of Contents

Table of Figures

Table of Tables

Table of Appendices

Chapter 1

1 Introduction

This chapter provides an overview of RA focusing on the use of Methotrexate as a recommended Disease Modifying Anti-Rheumatic Drug treatment (DMARD). The rationale and requirements for information when starting Methotrexate, and the role of rheumatology nurses providing information in DMARD counselling consultations are discussed.

Inflammatory Arthritis is the term used for a group of conditions including RA, Axial Spondyloarthritis and Psoriatic Arthritis, characterised by inflammation of tissues around joints (NICE, 2021). The immune system produces an auto-immune, inflammatory reaction targeting joints and other systems including the heart, lungs, and eyes. Inflammation in joints results in pain, stiffness, swelling, reduced range of movement (Ledingham et al., 2017a) and often fatigue (Dures et al., 2020, Ledingham et al., 2017a). More than 762,000 people in the UK were estimated to have IA in 2021 (VersusArthritis) creating a huge burden at both individual and societal levels.

RA is the most common form of IA in the UK. It is a long-term, incurable, auto-immune condition affecting around 1% of the adult population (Wasserman et al., 2018; NICE 2018), with around 430,000 people living with RA in the UK (Versus Arthritis, 2019). Recent UK NHS primary care data identified that among 17,683,500 adults, 19,085 adults over 18 were diagnosed with RA between 1st April 2019 and 31st March 2022 in the UK, with a mean age of 60 years, and 64.9% being female. Available ethnicity data for 15,850 of this cohort identified 87.2% were White (Russell et al., 2022). The National Early Inflammatory Arthritis Audit (NEIAA) dataset identified 35,807 adults were reviewed in rheumatology services for the first time between May 2018 and March 2020. The sample was representative of the UK population in that 14% were from black, Asian and ethnic minority populations. However disparities existed regarding age and gender with adults of minority ethnicity being younger (48 years) and more likely to be female (73%), whereas the average age was 56 years, and 64% female for white adults (NEIAA, 2022).

Globally around 17.6 million people were estimated to have RA worldwide in 2020 with higher prevalence rates reported in higher income countries (GBD, 2023). Estimating incidence, prevalence and access to rheumatology services in middle- and low-income countries is acknowledged to be confounded by lack of awareness of RA symptoms, reduced access to healthcare, and limited data sources (GBD, 2023).

Risk factors for RA include a genetic predisposition associated with human leukocyte antigen (HLA) DR1 and DR4 (Silman and Pearson, 2002), environmental factors such as smoking (Klareskog et al., 2006), obesity and periodontal inflammation (Deane et al., 2017). RA can affect all ages, with a peak age of onset around 50 years, with increasing numbers being diagnosed between age 70-80 years (NICE, 2018; Abishek et al., 2017). Females are two to four times more likely to develop RA than males (NICE, 2018).

RA causes symmetrical inflammation classically affecting the small joints of the hands and feet, early morning stiffness in the joints lasting for more than thirty minutes, with joint swelling, pain and fatigue (Machold et al., 2012). Some people also experience systemic symptom such as weight loss, sweats, fever or feel generally unwell. Erosive damage to joints occurs early, without adequate treatment, resulting in reduced joint function, deformity, and disability (Machold et al., 2012). Diagnosis is based on the

American College of Rheumatology (ACR) and European League Against Rheumatism (EULAR) diagnostic criteria (Kay and Upchurch, 2012, Aletaha et al., 2010) and includes the duration of symptoms, number of joints affected, the presence of autoantibodies and serum acute phase reactant markers of inflammation (Abishek et al., 2017).

Lung involvement is the most common extra-articular manifestation of RA (Kadura and Raghu, 2021) with increased risk of co-morbidities, including cardiovascular disease (Sen et al., 2014) driven by chronic inflammation (Wilsdon and Hill, 2017) and hypertension (Kłodziński et al., 2018). Other comorbidities include osteoporosis (Kłodziński et al 2018., Staa et al., 2006), anxiety and depression (Matcham et al., 2013) and increased risk of infection (Mehta et al., 2019) together with an overall reduced life expectancy compared to the general population (Dadoun et al., 2013).

Inflammation in the joints often limits the range of movement resulting in difficulties with daily activities such as washing and dressing, mobility, and restricting the ability to participate in family, work, and social activities (Flurey et al., 2014). The impact on work is significant (Papakonstantinou, 2021), with around one in three people being unable to work within two years of onset (NICE, 2018).

1.1 Early diagnosis and treatment

Early diagnosis and treatment of RA offers the opportunity to bring RA under control, improve quality of life and long-term outcomes (NICE, 2018). National strategies aim to increase awareness of symptoms of RA in the general population (VersusArthritis, 2021) using national television and media advertising to encourage people to seek early help from their family doctor, if experiencing signs or symptoms of RA. Following diagnosis, international guidelines (Smolen et al., 2020; NICE 2018; Singh et al., 2015) recommend prompt treatment with conventional Disease Modifying Anti-Rheumatic Drugs (cDMARDs), with Methotrexate recommended as initial cDMARD therapy (NICE, 2020, Smolen et al., 2020). The aim of treatment being to bring RA under control, aiming to achieve disease remission or low level of disease activity (NICE, 2020).

Recent UK data identified that 54% of referrals from primary care to rheumatology between 1st April 2021 to 31st March 2022 achieved national targets being made within three days of presentation, and 42% of people were seen within three weeks of referral. Access to early treatment remains sub-optimal with around two thirds (65%) of people starting cDMARDs within the target six weeks of referral and around one third (34%) achieving disease remission within three months of diagnosis. Furthermore, health inequalities amongst different populations in the UK have been demonstrated to affect access to Methotrexate as first line DMARD treatment for RA (Adas et al., 2022). Recent data from the National Early Inflammatory Arthritis Audit identified no significant differences in time to referral, diagnosis of RA, and start of DMARD treatment across ethnicities in the UK. However, fewer non-White people were commenced on Methotrexate, and were less likely to achieve remission at three months (Adas et al., 2022). These factors highlight the need for a person-centred approach to care for people with RA (NICE, 2020).

1.2 Person-centred care

Person-centred care is defined as, ‘care approaches and practices that see the person as a whole with many levels of needs and goals, with these coming from their own personal social determinants of health,’ (WHO, 2015). A person-centred approach to care for people with RA is advocated that incorporates holistic individual needs and perspectives, and provides education (Zangi et al., 2015) and support to enable involvement in decisions about care and treatment (Smolen et al., 2020; NICE 2020; Green and Jester, 2019; Zangi et al., 2015; WHO, 2015). This ‘whole person’ approach to care, goes beyond drug treatment and aims to equip people with the skills to manage the daily practical, physical and psychological impact of RA, reduce joint damage, prevent disability and improve outcomes (Nikiphorou et al., 2021; Martinez-Calderon, 2020).

A multifaceted, biopsychosocial approach is required to elicit, acknowledge, and consider discreet biological, psychological and social factors, unique to each individual, so that care can be tailored as far as possible to meet a person’s needs and preferences (NMC, 2015). It is crucial that factors recognised to increase the risk of communication difficulties or to affect individual information and support needs should be considered to reduce the risk of health inequalities (Davies et al., 2021). Such factors include whether a person can communicate in, and speak English, ethnicity, culture, level of literacy, digital literacy and access and health literacy.

1.2.1 Health literacy

is defined as, ‘the personal characteristics and social resources needed for individuals and communities to access, understand, appraise and use information and services to make decisions about health, and being able to communicate and act on these decisions,’ (WHO, 2014). Around 1 in 4 people in the UK have difficulty understanding health information due to poor literacy skills, 1 in 6 can’t understand health information because they struggle with numeracy (Rowlands et al., 2015). Health literacy can be affected by different situations, people may be less able to process information and make decisions about health at the time of receiving a new diagnosis (McKenna et al., 2017). Those with low health literacy are at increased risk of health inequalities and poor health outcomes (Rowlands et al,. 2015). A recent survey conducted in the North West Midlands identified low levels of health and digital literacy together with limited access to, and use of the internet particularly in older people with RA (Hider et al., 2022). Being unable to use, or unable to afford digital technology to access the internet can make it difficult to navigate the health system or find and use health information (Mistry and Jabbal, 2023). In real terms people who are unable to engage with health services effectively are less likely to take up health promotion and screening opportunities and are more likely to have difficulty coping with long-term conditions, have a disability and die earlier (Health Literacy Toolkit, 2023).

The NHS Long-Term plan identifies that healthcare professionals should be aware of, and able to assess and identify those at risk of health inequalities (Alderwick and Dixon, 2019), be aware of local resources and services that may help to mitigate and reduce risks of health inequalities. UK health policy has identified the need for person-centred care (PCC) for around twenty years to improve health and wellbeing. This policy remains largely aspirational rather than widely implemented across service provision (Alderwick and Nixon, 2019, Department of Health, 2006).

1.2.1 Person-centred practice framework

It is recognised that whilst individual healthcare professionals (HCPs) may strive to provide PCC, organisation-wide commitment to PCC, including ensuring the workforce have pre-requisite skills and supportive organisational systems are in place to achieve consistent, effective, PCC (McCormack and McCance, 2017). Essential pre-requisites for PCC have been defined by McCormack and McCance's (2017) person-centred practice framework (PCP) around the domains of healthcare providers (HCPs); the care environment; person-centred processes; and person-centred outcomes.

The PCP framework recognizes that for PCC to be delivered across an organisation HCPs must demonstrate professional competence, commitment to their role, effective interpersonal skills, be self-aware and display knowledge of beliefs and values relating to PCC. Supportive organisational structures and processes that demonstrate sharing of power, embrace innovation and appropriate risk taking, ensure appropriate physical environments, appropriate skill-mix together with effective staff-relationships and systems are necessary to provide an effective care environment to support PCP. Care delivery requires HCPs to engage compassionately with patients to identify and respect their beliefs and values, thereby facilitating and supporting shared decision-making, and holistic care. The benefits for individuals being cared for in a therapeutic environment, receiving PCC include increased involvement with, and satisfaction with care, and improved perceptions of wellbeing (Balgis-Ali et al., 2022; McCormack and McCance, 2017, McCormack, 2003).

1.3 Pharmacological treatment and the Treat to Target treatment strategy

Pharmacological therapy is the cornerstone of treating early RA, underpinned by 'Treat to Target' guidelines (T2T) (Smolen et al., 2020, NICE 2018). Early treatment aims to gain control of RA, reduce the risk of joint damage, prevent disease progression, and improve outcomes (NICE, 2018, Smolen et al., 2020, Singh et al., 2015). Most people require ongoing treatment with a combination of medications including DMARDS. Methotrexate, a slow acting DMARD is recommended as initial cDMARD treatment for people with RA unless contraindicated (NICE, 2020, Smolen et al., 2020). As Methotrexate often takes several months to reach peak benefit, short courses of glucocorticoid treatment may be used to provide rapid relief of symptoms (NICE, 2020; Smolen et al., 2020), together with analgesia and non-steroidal anti-inflammatory drugs. Drug treatment poses a significant treatment burden that some people find difficult to cope with (Treharne et al., 2007) highlighting the need for a person-centred approach to care.

T2T involves regular assessment of RA disease activity, and an increase in the dose of Methotrexate, adding in or switching to other cDMARDs to achieve optimum disease control (NICE, 2020). Disease activity is measured using an algorithm to provide a validated disease activity score of twenty-eight joints (DAS-28) (Van Riel and Renskers, 2014). This assessment includes clinician evaluation of joint swelling (28 joints) and patient reported tenderness of 28 commonly affected joints of the hands, wrists, elbows, shoulders, and knees, together with a patient reported global health assessment and a serum acute phase response C-reactive protein (CRP) (Van Riel and Renskers, 2014). The combined scores provide the disease activity score DAS28-CRP. Treatment aims to achieve remission with a DAS-28 score of less than 2.6 or lower the disease activity for those who do not respond or tolerate treatment. This strategy offers the potential to halt disease activity and prevent joint damage and disability, and to improve quality of life and long-term outcomes (NICE, 2020; Smolen et al., 2020). People with persistent moderate (DAS-28 3.2-5.1) and high levels of disease activity (DAS-28>5.1) despite maximum treatment with conventional DMARDs (cDMARDs) may be eligible for biological DMARDs (bDMARDs), or targeted synthetic DMARDs (tsDMARDs). These drugs are genetically engineered to target protein molecules which inhibit production of inflammation and are often used in combination with Methotrexate. Access to bDMARDs and tsDMARDs are restricted to people with persistent moderate levels of RA disease activity and in the UK are governed by NICE guidelines (NICE, 2022) and NHS England, as many are high-cost drugs. Methotrexate however remains the cornerstone of treatment (Vena et al., 2018) as a highly effective, low-cost, treatment widely available under specialist rheumatology guidance. Since the focus of this thesis is Methotrexate only this drug will be discussed in detail.

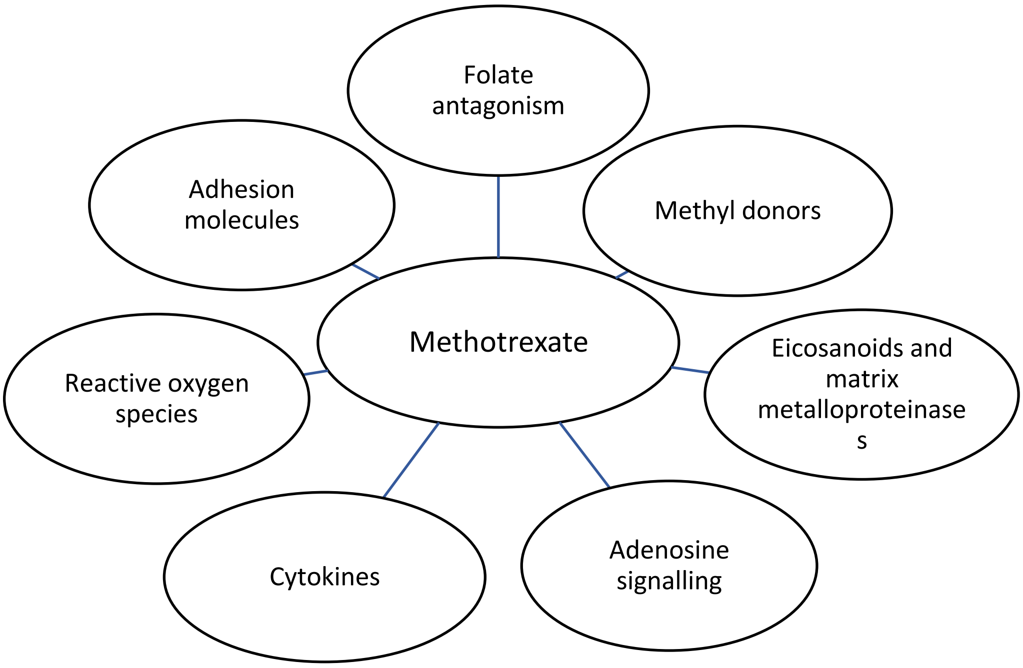
1.3.1 Methotrexate treatment for RA

The evolution of Methotrexate as a treatment for RA began more than 50 years ago, shortly after it was developed as a treatment for childhood leukaemia as a folate antagonist (Gubner et al., 1951). Several trials showed benefit in the treatment of RA and Psoriatic Arthritis (Black et al., 1964), with return of symptoms when Methotrexate was stopped. However, concerns about using a cancer drug to treat a condition that at the time was thought to be non-threatening disease delayed its widespread use (Hoffmeister et al., 1983). Whilst the introduction of highly effective, prompt acting corticosteroids around the same time appeared a more convincing solution to treating IA (Weinblatt et al., 1983). However, subsequent clinical trials of methotrexate studies in the 1970's demonstrated high response rates, with sustained improvements of up to 10 years in observational studies (Willkens and Watson, 1982). Further pivotal randomised control studies (Williams et al., 1985, Andersen et al., 1985, Weinblatt et al., 1985, Thompson et al., 1984) demonstrated prompt significant response to Methotrexate initiated at 7.5mg once weekly and increased to 15mg after six weeks. Since this time, Methotrexate has been the standard drug treatment in adult RA. This is supported by the findings of a 2014 systematic review which included 7 clinical trials with a total population of 732 participants, with disease duration of 1-14 years (Lopez-Olivio et al., 2014). All participants had failed, either by lack of response or intolerance of other available DMARDs at the time including Gold (Auranofin), D-Penicillamine, Azathioprine and anti-malarials. Participants receiving Methotrexate demonstrated significant outcomes with improved physical function, reduction of symptoms and joint damage at doses ranging from 10mg to 25mg once weekly as a single DMARD. Response rates of 40% were reported using Methotrexate as a single DMARD (Hazelwood et al., 2016) or when combined with other DMARDs (Lopez-Olivio et al., 2014).

1.3.2 Mechanism of action of Methotrexate

The mechanism of action of Methotrexate for RA is poorly understood, knowledge continues to evolve; it is known to work on many different pathways as illustrated in Figure 1.1 (Friedman and Cronstein, 2019, Brown et al., 2016).

Figure 1.1 Mechanism of action of Methotrexate



(adapted from Brown et al., 2016 with permission)

The main mechanism of action of methotrexate was considered to be as a folic acid antagonist, preventing synthesis of deoxyribonucleic acid (DNA), Ribonucleic acid (RNA) and proteins thus reducing disease activity, (Lopez-Olivio et al., 2014), Some of the side effects of methotrexate such as mouth ulcers are mediated via actions on the folate pathway and are partially ameliorated with the use of weekly folic acid (Wang et al., 2018). However, further studies have also demonstrated Methotrexate acting on cytokine profiles, adhesion molecules, production of reactive oxygen species (ROS), and interference with adenosine signalling (Friedman and Cronstein, 2019, Brown et al., 2016). The effects upon adenosine are currently accepted as the significant mechanism of action; Methotrexate has been shown to increase adenosine levels, which on contact with extracellular receptors and result in an intracellular cascade producing an anti-inflammatory response (Friedman and Cronstein, 2019).

1.3.3 Prescribing Methotrexate

Methotrexate is recommended in once weekly doses ranging between 7.5mg and 25mg, aiming to achieve a dose of at least 15mg within four to six weeks (Fraenkel et al., 2021). Further dose increases are guided by disease activity and tolerability (Fraenkel et al., 2021). Once weekly dosing aims to reduce toxicity due to the interindividual differences in the bioavailability, intracellular storage and excretion of Methotrexate (Grim et al., 2003; Genestier et al., 1998). Oral dosing is complex consisting of several 2.5mg tablets required to make up the correct dosage to a maximum of 25mg once weekly (MHRA, 2020). Both 2.5mg and 10mg tablets are available in a similar colour and shape which can cause confusion, and sometimes fatal accidental overdoses (MHRA 2020, NPSA 2006, 2004), linked to accidental daily usage or confusion due to the use of 10mg tablets. As a result, national guidance recommends that only 2.5mg size tablets should be prescribed and issued for the treatment of RA. In the UK the MHRA (2020) recommend that people taking Methotrexate should receive education regarding safe use of Methotrexate and that healthcare professionals should record the day of the week that Methotrexate is to be taken on to reduce the risk of daily administration to reduce the risk of harm from accidental overdose (MHRA, 2020). Methotrexate is also available in an injectable format.

Injectable Methotrexate administered subcutaneously is available in doses ranging 7.5mg to 25mg weekly; this route can be better tolerated and lead to an improved response to treatment due to increased bioavailability (RCN, 2021, Vena et al., 2018, Branco et al., 2016). Subcutaneous Methotrexate is now widely self-injected (RCN, 2021, Vena et al., 2018) and is available in pre-prepared syringes and auto-injector pen devices that are now ergonomically designed to be safe and easy-to-use for people with RA and associated poor hand function. Subcutaneous pen injector devices are widely used in the UK having been ergonomically designed to enable delivery of Methotrexate with a single hand, do not require a button to be pressed to deliver the Methotrexate dose and have no visible needle. These design improvements have significantly increased ease of use for people with reduced hand function, needle-phobia or concerns about self-injection, and improved access to sub-cutaneous Methotrexate (Hatteshohl, Tribanek and Gescher, 2018). However, some people do not have the manual dexterity or desire to self-inject and may avoid this route of administration or require help and support from family, friends or carers to administer the injections. The packaging of oral preparations of Methotrexate and Folic Acid tablets and injectable Methotrexate can create a barrier to treatment for some people with RA with poor manual dexterity (Voshaar et al., 2016). Pen devices can overcome many barriers including fear of needles, or self-injection, and can enable informal carers such as family members to overcome their anxieties about injections and support or deliver the injection for a person with RA (Hattesohl, Tribanek and Gescher, 2018).

Supplementation with Folic Acid 5mg, usually taken once a week at least 24 hours after taking Methotrexate, is recommended to reduce the risk of certain side-effects such as mouth ulcers and nausea (Fraenkel et al., 2021). Folic acid can be taken every day except the day of Methotrexate to mitigate side-effects (Wilsdon and Hill, 2017). Folic acid supplementation can improve, and sometimes resolve, side-effects and reduce the risk of liver function abnormalities (Shea et al., 2013). Notably confusion around dosing can also arise with Folic Acid as it is similar in appearance to Methotrexate.

1.3.4 Methotrexate related side-effects

Troublesome side-effects affecting up to three in four people are commonly reported during the first year of treatment Methotrexate and can impact adherence and the likelihood of persisting with treatment (Sherbini et al., 2022, Hope et al., 2019, Lopez-Olivio et al., 2014). Side-effects are often attributed to the anti-folate actions of Methotrexate (Friedman and Cronstein, 2019). The impact of side-effects can result in discontinuation of treatment and has been estimated at around 16% in previous systematic reviews (Hope et al., 2016, Lopez-Olivio et al., 2014).

Methotrexate related nausea and vomiting

Gastrointestinal side-effects are commonly reported, estimated to affect 42%, with nausea being the most prevalent, affecting around a third of people (Sherbini et al., 2022, Vena et al., 2018, Robinson et al., 2016, 2012); these side-effects often result in non-adherence or the cessation of treatment (Hope et al., 2019, Robinson et al., 2016). Some people are prepared to tolerate varying degrees of nausea-related discomfort as a trade-off for the benefit derived from Methotrexate (Robinson et al., 2016, 2012). A recent nationwide UK study identified females had more concerns about taking Methotrexate and were more likely to report gastrointestinal side-effects (Sherbini et al., 2022).

Nausea can often be mitigated with increased dosage of Folic Acid 5mg to a maximum of six days per week avoiding the day of Methotrexate. Anti-emetic medication also offers an effective drug treatment but taking additional tablets can add to the burden of treatment (Treharne et al., 2007). Some people wishing to avoid further drug burden prefer to try non-drug treatment such as altering the timing of Methotrexate. Injectable Methotrexate offers an effective treatment strategy to overcome gastro-intestinal side-effects for some (Vena et al., 2018), however, anticipatory nausea, whereby people experience nausea at the sight of the tablet or injection, which is not always resolved by any interventional strategies has also been reported (Robinson et al., 2016, 2012). Intermittent intentional breaks from Methotrexate are sometimes taken to gain short-term relief from gastro-intestinal side-effects, that can result in poor disease control (Hope et al., 2019, Robinson et al., 2016).

Troublesome side-effects

Other troublesome side-effects are commonly reported in relation to treatment with Methotrexate including headaches and mouth ulcers, affecting females more commonly than males (Sherbini et al., 2022, Curtis et al., 2016). Less than one in ten people taking Methotrexate experience hair loss, which is more common in those also consuming alcohol (Sherbini et al., 2022). Whilst impacts upon breathing (pulmonary side-effects) such as cough are frequently reported, the incidence of pneumonitis, a rare but serious adverse effect remains rare. Whereas subjective reports of symptoms such as cough affect less than two in ten people being more likely to occur in those with a history of smoking (Sherbini et al., 2022). Fatigue is commonly experienced in those taking MTX (Nowell et al., 2022) as well as being a troublesome manifestation of RA.

1.3.5 Requirements for safety blood monitoring for Methotrexate

Regular blood monitoring is required to look for cytopenias, affecting blood cell production, and any impact on liver and kidney function (Ledingham et al., 2017b). The potential for treatment burden associated with attending for blood monitoring may influence the patient’s decision whether to start or continue Methotrexate (Leonardo et al., 2020). Additionally, those with mobility difficulties may experience difficulties related to travelling and accessing monitoring services (Ryan et al., 2023).

1.4 The requirement for patient education to support safe use of Methotrexate

Patient education is defined as, ‘any set of planned educational activities designed to improve patients’ health behaviours and/or health status’, with the purpose to, ‘maintain or improve health, or, in some cases, to slow deterioration,’ (Lorig, 1992). Information and education about the potential benefits, risks and harms of Methotrexate is recommended to support people with RA to engage in shared decision making, understand the risks and benefits, promote adherence and safe use (NICE 2020; NRAS 2020; Smolen et al., 2020; MHRA, 2020; Ham et al., 2018, Ledingham et al., 2017). Education should enable people to understand the likelihood of benefit from Methotrexate, elicit and address individual anxieties about potential side-effects and harms to support shared decision-making (Smolen et al., 2020), and self-management

(Nikiphorou et al., 2021). Support and education from hcps should equip people with the self-management skills to safely manage the complex weekly dosing regime, adhere to safety monitoring requirements, adopt recommended lifestyle changes, recognise and report potentially significant adverse signs and symptoms (Nikiphorou et al., 2021, MHRA 2020; Robinson et al., 2018). In the context of RA patient education is recognised as an acceptable, low cost and effective adjunct to drug treatments without the risk of side-effects to support people to develop self-management skills, including taking medication safely (Wu et al., 2022, Zangi et al., 2015).

Provision of patient education tailored to individual needs has been suggested to support medication adherence (Bech et al., 2020). Short-term benefits in improving adherence to medications have been demonstrated, with little evidence for sustained long-term improvements in a previous systematic review possibly due to the heterogeneity of included studies and education programmes (Riemsma et al., 2004). A recent systematic review and meta-analysis has identified that patient education has the potential to improve psychological status and clinical outcomes but did not explore medication adherence as an outcome (Wu et al., 2022).

1.4.1 Concerns about Methotrexate

Many people with RA report concerns about taking Methotrexate that are recognised to affect whether a person decides to start, and continue to take Methotrexate (Hope et al., 2019, Horne et al., 2013). The Necessity-concerns Framework identifies that people who have higher concerns about potential risks or harms from Methotrexate than beliefs that treatment will improve their RA are less likely to start or continue to take treatment (Horne et al., 2013). Education about Methotrexate should address concerns about so people with RA can make informed decisions about whether they wish to start and continue to take treatment (Smolen et al., 2020).

Concerns about the necessity for treatment may be generated from widely available digital and written information including the VersusArthritis Methotrexate leaflet that is often handed out in consultations by rheumatologists when recommending treatment with Methotrexate. The leaflet outlines the use of Methotrexate for a wide range of rheumatology conditions including IA and RA. However, much of the detail in the leaflet describes the complexities of possible risks including requirements for safety-monitoring, recommendations for lifestyle behaviours to reduce risk of harms, such as uptake of vaccines to reduce infection, whilst also needing to avoid live vaccines, requirements to adhere to national guidelines for alcohol intake, and the potential for serious drug interactions. Furthermore, the leaflet identifies that Methotrexate is also used as a chemotherapy agent to treat cancer, a fact that provokes concerns for many people (Hayden et al., 2015).

It is therefore imperative that people with high concerns about Methotrexate, or are unwilling to start treatment have the opportunity for a two-way discussion with a healthcare professional who has the skills to identify and address their concerns in a manner the person with RA can understand. Appropriate alternative DMARD treatment options should be identified to support shared decision-making (NICE NG 197, 2021), initiation and continuation of DMARD treatment to promote optimum outcomes (Morrison et al., 2022).

1.4.2 Shared Decision-Making

Best practice guidelines recommend that people with RA are involved in decisions about their care and treatment (Smolen et al., 2020, NICE, 2020). Shared decision-making is defined as, ‘a collaborative process that involves a person and their healthcare professional working together to reach a joint decision about care,’ (NICE NG197, 2021), in this case whether the person with RA wishes to start Methotrexate. A recent scoping review of shared decision making in rheumatology, where most included studies involved people with RA (43 studies n=68%) demonstrated that shared decision making in rheumatology improves patient satisfaction and adherence to treatment (Morrison et al., 2022).

It is unclear how widely shared decision-making is implemented in the UK. The NEIAA (BSR, 2022) does not report whether clinicians and patients engage in shared decision-making. In practice clinicians may believe they have participated in shared decision-making in a consultation by recommending treatment with Methotrexate and the person with RA apparently agreeing or accepting the recommendation. It is not clear whether in routine clinical practice in the UK people with RA want or believe they have had the opportunity to take part in shared decision-making about treatment with Methotrexate.

Shared decision-making has been described as a process where people with RA may engage with other healthcare professionals and sources of information to support their decision-making (Salt and Peden, 2010). Essential information required for shared decision-making includes the person with RA understanding the balance between the likelihood of side-effects and experiencing benefit from treatment, and how to organise and take treatment (Morrison et al., 2022).

Personal characteristics including age, gender, ethnicity, proficiency to speak English, health literacy and socioeconomic status are recognised to impact shared decision communication (Morrison et al., 2022, Hope et al., 2019). People may require provision of, or signposting to appropriate sources of information considering their level of literacy, health literacy, digital literacy and whether they can access the internet to support decision-making (Mistry and Jabbal, 2023). Psychological factors such as low mood (Hope et al., 2019), and personal characteristics such as coping skills and self-efficacy can influence whether a person with RA wishes to, or decides to participate in shared decision-making and self-management of their health condition (Green and Jester, 2019).

Self-efficacy has been defined as an individual's belief and confidence that they can successfully undertake a task (Martinez-Calderon, 2020, Bandura, 1994) including whether they subsequently initiate and adhere to Methotrexate (Hope et al., 2019). Personal characteristics such as coping skills, and self-efficacy are recognised to influence how people respond and react, and therefore influence a wish to be in decisions about their healthcare (Martinez-Calderon, 2020). It is crucial that people are supported to participate in shared decision-making. Where effective engagement does not occur, people, especially those with ongoing concerns or low self-efficacy are at increased risk of not starting or continuing to take Methotrexate and experiencing worse outcomes (Morrison et al., 2022, Hope et al., 2019).

1.5 The role of the nurse in providing information and education about Methotrexate in the UK

In the UK rheumatology nurses often play a pivotal role in providing person-centred care, and patient education supporting people with early RA to start and continue taking drug treatments within early arthritis T2T clinics (Sweeney et al., 2021) and in established disease when adding or switching to Methotrexate. European recommendations for the management of RA (Smolen et al., 2020), highlight the role of the nurse (Bech et al., 2020), in providing person-centred education (Zangi et al., 2015) and support for people when starting, changing, or adjusting doses of DMARDs such as Methotrexate. Rheumatology nurses in the UK commonly provide information in what are known as DMARD counselling consultations (Robinson et al., 2018, Homer et al., 2009). The aim of DMARD counselling is to support people to make informed decisions about commencing DMARDs such as Methotrexate and to understand the safety and monitoring requirements (Homer et al., 2009). These consultations also provide opportunities to discuss the benefits of treatment as well as addressing concerns about the risks and likelihood of potential side-effects and harms (Smolen et al., 2020), and equip people with the skills to recognise and appropriately report significant adverse signs and symptoms (MHRA, 2020, Robinson et al., 2018).

1.6 Models of DMARD counselling

1.6.1 Nurse-led DMARD counselling

DMARD counselling is often provided as an integral part of nurse-led care, allowing disease related information needs and psychosocial issues to be elicited and addressed on an individual basis (Homer et al., 2009). Some units provide DMARD counselling via a specific consultation, often following a structured, checklist type approach to providing information (Robinson et al., 2018) which may not support a person-centred approach to care. Alternative group DMARD counselling sessions have been implemented (Homer et al., 2009) but there is little formal evaluation of satisfaction or outcomes. Group interventions may not offer opportunities for personal concerns to be voiced such as issues around contraception, however benefits such as learning from other peoples' questions within sessions have been reported (Homer et al., 2009). Group sessions have perceived benefits of efficiency in delivering information to small groups in a similar time to that used to educate one person (Homer et al., 2009). However, the preparation required in checking relevant investigation results and organising several prescriptions may outweigh this perceived time-saving benefit.

Following DMARD counselling, initial prescriptions are often issued and arrangements for safety monitoring blood tests confirmed, together with follow-up appointments and provision of contact information such as telephone helpline details in case of any concerns before the next appointment (Homer et al., 2009).

1.6.2 Pharmacist led DMARD counselling

Pharmacists are increasingly involved in supporting people with education around medication for RA (Wood, 2021). A survey and qualitative interviews of pharmacists in the UK (Wood, 2021) identified a similar lack of training and knowledge as nurses, particularly regarding RA and disease specific information requirements. Little is known about the perspective of people with RA regarding pharmacist care when starting or taking Methotrexate. A recent survey of 301 people with RA conducted through the National Rheumatoid Arthritis Society (NRAS) identified that one in five people with RA had received information from a community pharmacist regarding how and when to take drug treatment for RA (Wood, 2021).

1.7 Content and acceptability of DMARD counselling

Rheumatology nurse-led follow up care is effective, acceptable (Sweeney et al., 2023, Bala et al 2012, Ndosi et al., 2011), and is not inferior to rheumatologist care (Ndosi et al., 2014). A systematic review identified that rheumatology nurses used a person-centred, holistic approach that improved knowledge, supported shared decision-making and, in turn, self-management (Lempp et al., 2020). However, to date no studies have directly explored the intervention of DMARD counselling to support people commencing Methotrexate and other cDMARDs. Furthermore, there is no nationally agreed model, or consensus as to the content and delivery of DMARD counselling. The Royal College of Nursing Rheumatology Forum (2021) updated guidelines for sub-cutaneous Methotrexate which covers many of the recognised core facets of safety information. However, these guidelines are difficult to keep up to date because of changing guidelines reflected in nationally available written information from VersusArthritis.org such as the need to avoid live BCG vaccines to prevent Tuberculosis (TB) when taking Methotrexate (Chapter 32 updated 2023, in House, 2017; Salisbury et al., 2006). This reflects changes in UK guidance regarding immunisation of adults at higher risk of TB due to the increasing incidence of TB in the UK (NG33, NICE, 2019, 2016). Similarly, widely used nationally available electronic information about Methotrexate produced by VersusArthritis is regularly updated but hard copies used in clinical settings may be older versions with inaccurate information. This is of concern as many nurses use written guidance to support their consultations (Robinson et al., 2018).

1.8 A lack of training and education for nurses delivering Methotrexate DMARD counselling

A national survey identified a lack of accredited training to support nurses to provide Methotrexate DMARD counselling (Robinson et al., 2017). To date there is no nationally agreed level of competence to be achieved before practising independently (Robinson et al., 2017). Many nurses reported relying on learning from observing nursing colleagues practice, and some had undertaken self-directed learning, therefore resulting in variable skills and knowledge (Robinson et al., 2017). The recently developed rheumatology nursing competency framework provides useful generic guidance about the dimensions of knowledge and skills required for rheumatology practice (RCN, 2020). However, several barriers exist due to limited training opportunities for rheumatology nurses including the availability of designated time and funding (Lempp et al., 2020, Robinson et al., 2017)

1.9 Summary of introduction and thesis rationale

Methotrexate is the most widely used, efficacious, safe, cost effective, well tolerated disease modifying treatment for both early and established RA globally. A person-centred approach to care is recommended (1.2). Information should be provided to people with RA when starting Methotrexate to support shared decision making, safe administration and adherence (1.5). In the United Kingdom nurse-led DMARD counselling is used to support safe use of the drug, however many people do not start or continue Methotrexate due to concerns about the potential for treatment related harms (1.4.3). To date little is known about patient needs and concerns when starting and taking Methotrexate and how these can be effectively addressed.

1.10 Research question, aims and objectives

This research aims to answer the question: Do current methods of providing information in dedicated rheumatology nurse-led Methotrexate DMARD counselling consultations provided before starting treatment, meet the expectations, experiences, needs and concerns of adults with RA?

Research Aim:

This research aims to explore the experiences of people with RA receiving information about Methotrexate in DMARD counselling consultations and identify whether existing methods are acceptable and meet the information needs and concerns of people with RA.

Objectives:

1: To undertake a systematic literature review to explore and identify the information required to support people with IA to take Methotrexate.

2: To identify the expectations, needs and concerns of people with RA when commencing Methotrexate using individual semi-structured interviews before DMARD counselling consultations.

3: To identify the experiences of people with RA of existing models of DMARD counselling across two rheumatology units and explore whether their experience matched their needs using individual semi-structured interviews after DMARD counselling consultations.

4: To identify how MTX counselling can be optimised and develop recommendations for a model of DMARD counselling

1.11 Theoretical frameworks

The Necessity-concerns Framework (Horne et al., 2013) (1.4.1), and Person-centred Practice Framework (McCormack and McCance, 2017) will be used as theoretical frameworks throughout the thesis (1.2.1) to inform the research design, data collection, analysis and development of recommendations.

Chapter 2

2 Mixed methods systematic review

In order to identify the information required to support people with IA to take Methotrexate, a mixed methods systematic review was undertaken. First, the methodology is described followed by thematic presentation of results, and a conceptual model of person-centred information about Methotrexate is offered. Finally, recommendations for further research to inform the qualitative study described in chapters Four and Five are presented.

In order to achieve a comprehensive review and to identify the relevant guidelines and papers, the review was undertaken in the wider context of IA since RA is the most common form of IA. Best practice guidelines recommend that people with IA have access to tailored information when starting DMARDs (Zangi et al., 2015), however, existing information about Methotrexate varies in quality and content and is available from both formal and informal sources. Formal sources include the National Health Service (NHS) in England, pharmaceutical companies, National Patient Safety Agency, local and national rheumatology patient associations and organisations such as Versus Arthritis and National Rheumatoid Arthritis Society (NRAS). Informal sources of peer information include in-person and digital interactions including social media chat pages, and the internet. Little is known from the perspective of people with IA about the information they require to start and continue to take Methotrexate.

This review identifies the content of information that people with IA require to start and continue to take Methotrexate, including the formats that this information should be accessible in, where how and when the information should be available and who should provide this information. This is relevant because many people with IA fail to start or continue to take Methotrexate, often due to concerns about the risk-benefit profile of the drug (Pasma et al., 2015), resulting in inadequately controlled disease, poor clinical outcomes, increased risk of disability and reduced quality of life (Lavielle et al., 2018).

This review is particularly timely due to the significant pressures on NHS staff and finite financial resources, whilst endeavouring to provide high quality care for people with IA, supporting uptake of Methotrexate, in line with national good practice guidelines (BSR-NEIAA, 2022). The results of the review offer an insight as to whether current methods and materials used in providing information about Methotrexate for people with IA meet their expectation and needs, identify any gaps in the literature, and provide an opportunity to inform evaluation of existing Methotrexate information materials and services.

In light of the paucity of evidence and to address the research aim, a mixed methods convergent integrated systematic review following the Joanna Briggs Institute guidelines (Aromataris and Munn., 2020) was chosen as the most appropriate method to identify, appraise and synthesize existing evidence (Aromataris & Pearson, 2014) about the characteristics, content and format of information about Methotrexate that people with IA require to start and continue to take Methotrexate.

2.1 Methods

2.1.1 Mixed Methods Convergent Integrated Systematic Review

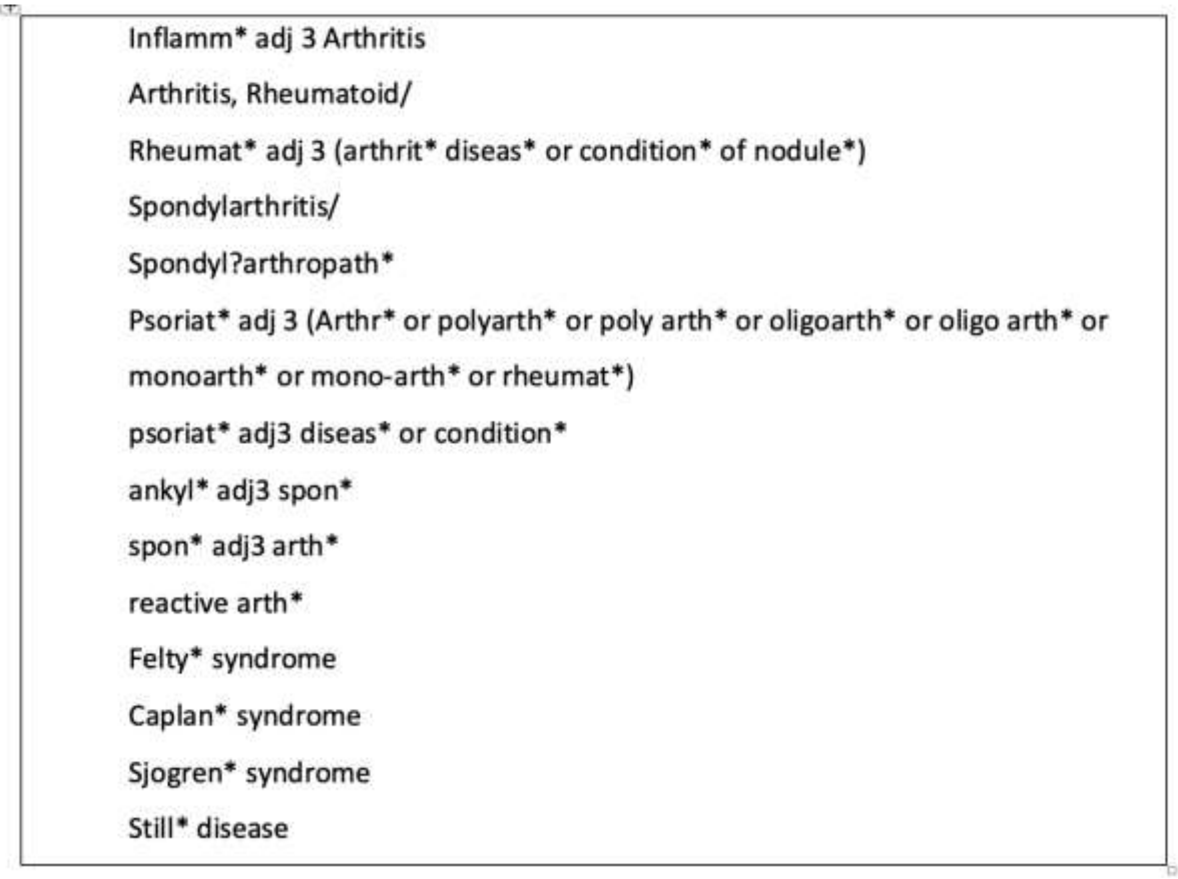
A mixed methods convergent integrated systematic review (MMSR) was chosen in order to review both quantitative and qualitative evidence enabling a rich understanding about the information needs of people with IA starting Methotrexate (Hong et al., 2017). A convergent integrated method allows both quantitative and qualitative evidence to be combined to produce a unique qualitative dataset that is analysed as a whole and synthesised at the same time (Hong et al., 2017). This involves transformation of data such as percentages into textual descriptions or narrative interpretation of the quantitative results (Stern et al., 2020, Bazeley et al., 2012) in a way that answers the review questions, i.e., 75% transformed into, three out of four participants (preferred to receive information about Methotrexate from…). This approach was appropriate, firstly because there is limited evidence on the topic with a lack of randomised control trials (RCTs) (Hong et al., 2017) and, secondly, information needs are individual and multifaceted (Pasma et al., 2015). Using both quantitative and qualitative evidence provides the most comprehensive review to support development of meaningful recommendations for practice (Stern et al., 2020, Hong et al., 2017).

A protocol for the systematic review was developed a priori following the methodological guidance of Joanna Briggs Institute for Mixed Methods Convergent Integrated Systematic Reviews (JBI-MMSR) (Aromataris and Munn., 2020) and registered with the international prospective register of systematic reviews [PROSPERO] (CRD42022325249, Logan 2022). The protocol includes the background to the review, objectives, study inclusion and exclusion criteria, OVID Medline search strategy and details of the methods used (Appendix 1).

2.1.2 Systematic Review literature search strategy

A comprehensive text word search was used to search title, abstract, keyword and database subject headings combining terms for Inflammatory Arthritis, information needs, Methotrexate and Disease Modifying Anti-Rheumatic Drugs (DMARDs). Figure 2.1 illustrates the search terms used for the Inflammatory Arthritis domain of the search with the full search strategy being presented in Appendix 2.

Figure 2.1 Inflammatory Arthritis search concept strategy

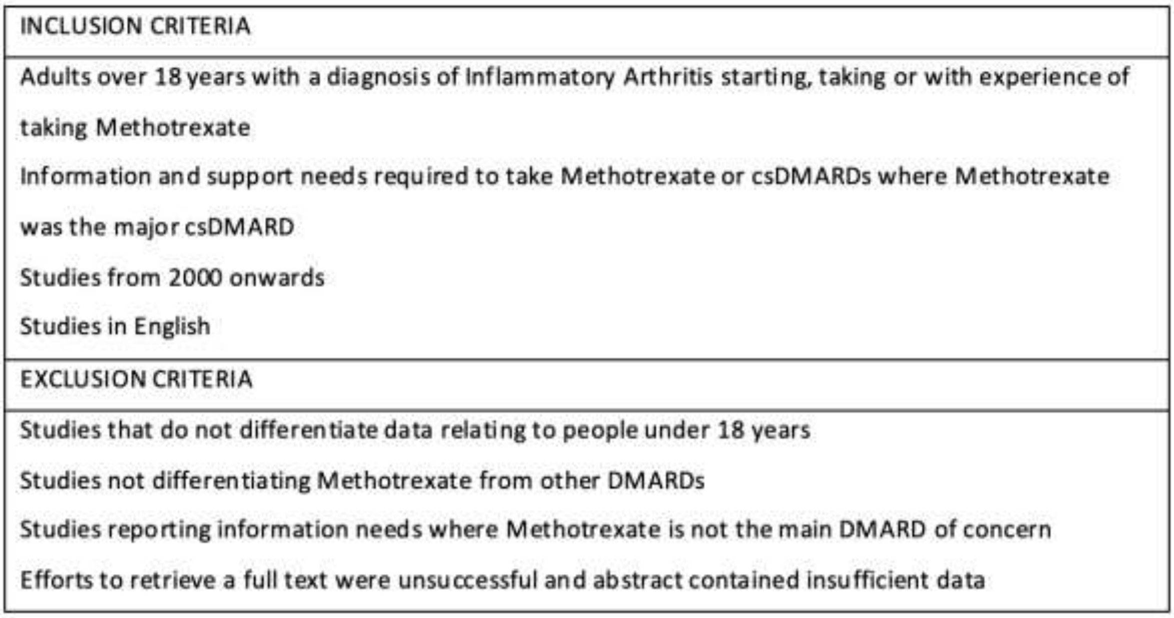


Inflamm* adj 3 Arthritis
Arthritis, Rheumatoid/
Rheumat* adj 3 (arthrit* diseas* or condition* of nodule*)
Spondylarthritis/
Spondyl?arthropath*
Psoriat* adj 3 (Arthr* or polyarth* or poly arth* or oligoarth* or oligo arth* or monoarth* or mono-arth* or rheumat*)
psoriat* adj3 diseas* or condition*
ankyl* adj3 spon*
spon* adj3 arth*
reactive arth*
Felty* syndrome
Caplan* syndrome
Sjogren* syndrome
Still* disease

The search strategy included qualitative, quantitative and mixed-methods literature. The search strategy was reviewed by an information specialist at Keele University. A published, pre-formulated qualitative filter comprising a comprehensive range of terms was adjusted and used to optimise identification of qualitative literature (DeJean et al., 2016). The full search was intentionally broad to retrieve all relevant studies (Appendix 2). Individual systematic searches were conducted using Medline, Embase, Cinahl, Psych Info, Grey EU, Web of Science, Open Dissertation bibliographic databases and, finally, Google search engine using an appropriately amended search strategy. Several bibliographic databases were searched due to the variance in scope and content of indexing and coverage (Rathbone et al., 2016), whilst Google Scholar can identify additional 'grey literature' that may not be found using traditional bibliographic databases (Haddaway et al., 2015). Grey literature is unpublished research or not indexed on major databases (Olson, 2013) such as theses, policy statements and conference proceedings. This strategy aimed to retrieve both published peer-reviewed research and grey literature to ensure the review was comprehensive. Theses and dissertations can provide rich detail beyond that in published research. Publishing bias may preclude or delay negative study findings being published (Scherer and Saldanha, 2019). Searching for and assessing eligibility of conference abstracts aimed to reduce publication bias (Scherer and Saldanha, 2019). For the purposes of this review information about Methotrexate included a) written information b) audio-visual information and c) verbal information recalled and reported by people with IA. Following completion of database searches, duplicate articles were removed using RefWorks reference manager (Kwon et al., 2015). Unique citations were imported and managed in an Excel spreadsheet document. The reference lists of relevant papers were hand searched, and citations tracked to identify any related studies not identified by initial searches.

Reference lists of title and abstracts were screened by author SL using pre-specified inclusion criteria for the review. Figure 2.2 summarises the inclusion and exclusion criteria Articles including adults over 18 years, with IA reporting information needs where Methotrexate was identified as the major conventional synthetic DMARD (cDMARD) were included. Methotrexate has been the first line cDMARD of choice for RA since 2000 (Aletaha et al., 2002), therefore articles published since 2000 were included. The literature search systematic review commenced in August 2022 and was completed in December 2022. Studies that met the inclusion criteria were retrieved in full-text and assessed against inclusion criteria. Abstracts where full-text details could not be retrieved following contacting authors and lacking enough detail were excluded. Full text studies not meeting the inclusion criteria were excluded and reasons for exclusion recorded following the Preferred Reporting Items of Systematic Review and meta-analysis (PRISMA) statement (Page et al., 2020).

Figure 2.2 Inclusion and Exclusion Criteria

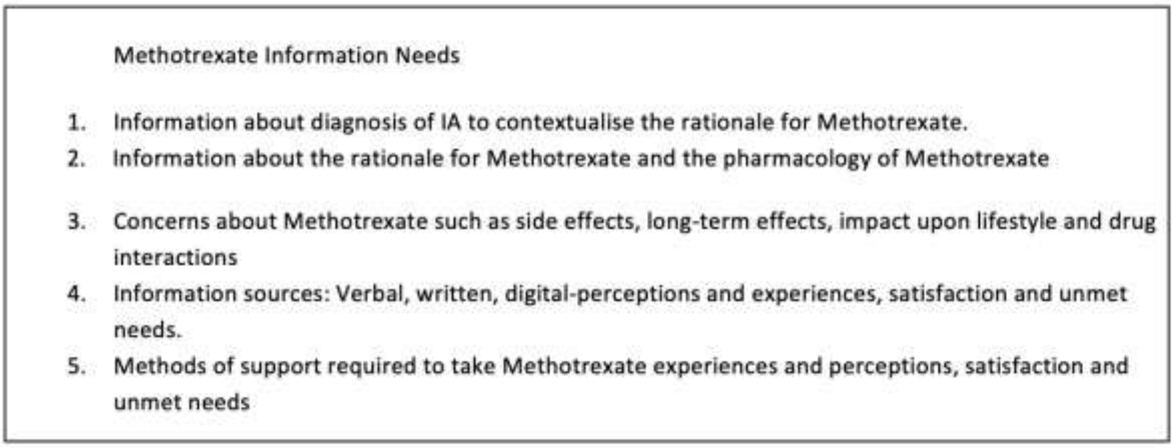


INCLUSION CRITERIA
Adults over 18 years with a diagnosis of Inflammatory Arthritis starting, taking or with experience of taking Methotrexate Information and support needs required to take Methotrexate or csDMARDs where Methotrexate was the major csDMARD Studies from 2000 onwards Studies in English
EXCLUSION CRITERIA
Studies that do not differentiate data relating to people under 18 years Studies not differentiating Methotrexate from other DMARDs Studies reporting information needs where Methotrexate is not the main DMARD of concern Efforts to retrieve a full text were unsuccessful and abstract contained insufficient data

2.1.3 Data Extraction

The JBI-MMSR data extraction tool (Lizarondo et al., 2020) was adapted and piloted for data extraction (Appendix 3). Data extraction was undertaken by SL, all included studies (n=13) were reviewed by a member of the research team (SR). Relevant data was extracted from included studies using an adapted JBI Mixed-methods data extraction tool (Lizarondo et al., 2020). Data extraction included in the JBI tool included country of origin, study design, methodology, sample characteristics, relevant statistics, relevant themes, sub-themes and illustrative qualitative data where available. The tool was adapted to capture specific information needs about Methotrexate such as concerns about the necessity for Methotrexate, possible side-effects and guidelines regarding alcohol intake as detailed in Figure 2.3.

Figure 2.3 Information and support needs extracted from included studies



Methotrexate Information Needs

1. Information about diagnosis of IA to contextualise the rationale for Methotrexate.
2. Information about the rationale for Methotrexate and the pharmacology of Methotrexate
3. Concerns about Methotrexate such as side effects, long-term effects, impact upon lifestyle and drug interactions
4. Information sources: Verbal, written, digital-perceptions and experiences, satisfaction and unmet needs.
5. Methods of support required to take Methotrexate experiences and perceptions, satisfaction and unmet needs

Study quality appraisal followed the JBI-MMSR methodological guidance for critical appraisal of included studies (Aromataris and Munn., 2020). Each study that met review inclusion criteria was appraised using the relevant JBI critical appraisal tool for cross-sectional studies (Moola et al., 2020) or qualitative studies (Lockwood et al., 2015) as appropriate regardless of quality. Table 2.1 outlines the appraisal criteria (full critical appraisal tools and guidelines are available in Appendix 4 and Appendix 5).

Table 2.1 Critical appraisal criteria

JBI Cross-sectional studies critical appraisal criteria (Moola et al., 2020)	JBI Qualitative studies critical appraisal criteria (Lockwood et al., 2015)
1: Were inclusion criteria clearly stated 2: Were study subjects and setting described in detail 3: Exposure measure reliable and valid 4: Objective standard criteria used for measurement of condition 5: Confounding factors identified 6: Strategies to deal with confounding factors identified 7: Outcomes measured in reliable and valid way 8: Was appropriate statistical analysis used	1: Is there congruity between stated philosophical perspective and research methodology 2: Is there congruity between research methodology and the research question or objectives 3: Is there congruity between the research methodology and the methods used to collect data 4: Is there congruity between research methodology and the representation and analysis of data 5: Is there congruity between the research methodology and the interpretation of results 6: Is there a statement locating the researcher culturally or theoretically 7: Is the influence of the researcher on the research, and vice-versa, addressed 8: Are participants, and their voices, adequately represented 9: Is the research ethical according to current criteria or, for recent studies, and is there evidence of ethical approval by an appropriate body 10: Do the conclusions drawn in the research report flow from the analysis, or interpretation, of the data

The JBI-MMSR critical appraisal tools (Moola et al., 2020, Lockwood et al., 2015) are evidence based, peer reviewed, and standardised for use in MMSR following JBI methodology. Therefore, using these tools ensured consistency with appraising the research studies identified. All included studies were critically appraised by SL and as agreed a priori 20% of studies were reviewed to ensure consistency of data extraction by SR.

2.1.4 Analysis

Analysis of the data followed the recommended JBI-MMSR Convergent Integrated approach (Stern et al., 2020). Relevant results of cross-sectional surveys including descriptive statistics and narrative data from open-ended questions were qualitised as described in 2.1.1. The data set was then coded, synthesized and analysed using reflexive thematic analysis (RTA) as outlined in Figure 2.4 (Braun and Clarke, 2022).

Figure 2.4 Six phase process of reflexive thematic analysis

Six Phases of Reflexive Thematic Analysis

1: Familiarisation with the data
Reading and re-reading dataset, making brief notes re analytic thoughts related to each data item and dataset as whole

2: Coding
Systematic labelling of data relevant to research question – capturing individual meanings or concepts. Semantic – surface and explicit meaning in data. Latent – conceptual or implicit meaning

3: Generating initial themes
Identifying patterns and meanings across the dataset – interpreted by researcher. Broad meanings – ie preferences for the content of information about MTX – group all coded data relevant to each proposed theme

4: Developing and reviewing themes
Assess if themes fit coded data – reflect the coded data and dataset. Themes should tell persuasive story about the collective patterns in the dataset and reflect the most significant patterns within the dataset to answer the research question. Define the idea and scope of each theme.

5: Refining, defining and renaming themes
Review and refine analysis, themes and scope of themes.

6: Writing up
Writing up a narrative including illustrative data abstracts to represent the participant voice and justify the analysis presented that answers the research question.

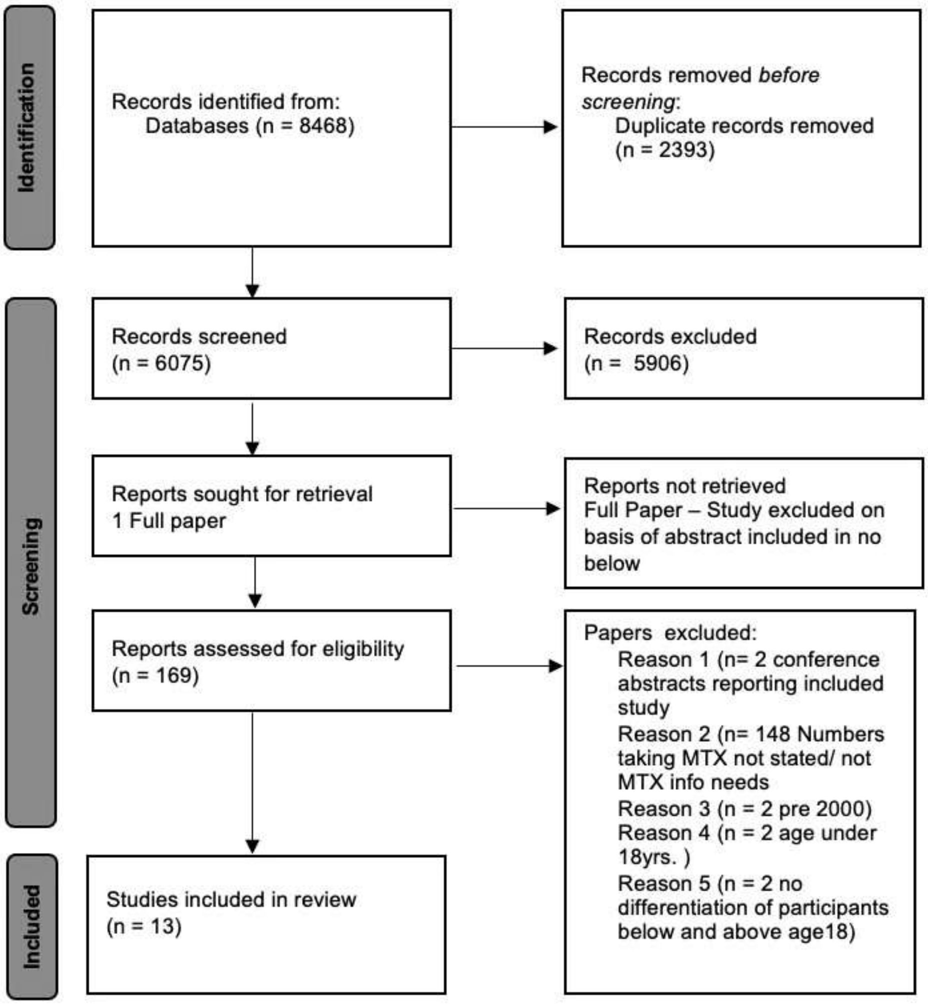
Thematic analysis is a recognised method to synthesize and analyse data within MMSR (Purssell and Gould, 2021). The combined dataset was coded, code labels were developed i.e., information sources about Methotrexate. An iterative process involved re-reading, refining and re-organising coded data and code labels to represent the story told within the data. Themes were developed, the scope and content of data relevant to each theme defined and refined. Table 2.5 defines the breadth and scope of the themes. Some concepts were identified that inter-related and overlapped themes i.e., information that caused concerns about Methotrexate and information that resolved concerns about Methotrexate. Guidelines for ensuring quality in RTA clarifying use of a reflexive approach to data analysis, theme development, use of topic summaries for specific information needs and concerns, ensuring that the findings answered the research question (Braun and Clarke, 2021, 2022). This approach provided methodological guidance for SL as a novice researcher and allowed reflexivity in the management of the integrated data (Braun and Clarke, 2022) . Analysis of the combined dataset with RTA allowed the generation of themes (Braun and Clarke, 2019) as qualitative findings that are closely linked to the studies included in the review (Purssell and Gould, 2021) and development of new theory as outcomes of the systematic review (Sandelowski et al., 2006). This was an important consideration, so that the MMSR would provide practical data to influence education, practice and policy as to the information that people with IA want to support them to take Methotrexate. In contrast, a narrative analysis would have been an alternative approach to ‘tell the story’ of the data using text and words to summarise and explain the findings of the synthesis (Popay et al., 2006), this approach would not have allowed the dataset to be combined and analysed as a whole.

2.2 Results

2.2.1 Screening

The systematic screening process is shown in the PRISMA flow diagram in Figure 2.5. A total of n= 8468 records were identified from the systematic literature search, following removal of duplicate records (n= 2393), n= 6075 records were screened and n= 5906 were excluded. One paper was unsuccessfully sought for retrieval and the record subsequently excluded on the basis of the abstract not meeting the inclusion criteria. Assessment of eligibility of n = 169 records resulted in 156 records being excluded. The main reason for exclusion included: a) studies not differentiating which DMARDs the study referred to, and b) whether Methotrexate was the main DMARD considered in the study. Thirteen studies were identified for inclusion, n=7 cross-sectional survey studies, n=2 mixed methods studies, and n=4 qualitative studies.

Figure 2.5 Study PRISMA Flow Diagram



(Adapted from Page, 2020)

2.2.2 Critical Appraisal of included studies

All identified studies were included and critically appraised irrespective of quality in line with the JBI MMSR guidelines, using the recommended, validated (Noyes et al, 2019), JBI Critical Appraisal Tools (Moola et al., 2020, Lockwood et al., 2015). This enabled interpretation of study results to be balanced against both the characteristics of the study population, and any limitations in the study design impacting the reported results (Porritt et al., 2014). Critical appraisal of studies are reported in Table 2.2, Table 2.3 and Table 2.4.

None of the studies reported measures taken to widen inclusivity such as study patient information leaflets or study invitations to participate being written in appropriate terms for those with low literacy or additional languages. Studies from Canada (Rai et al., 2018) and Australia (Leonardo et al., 2020, Nash and Nicholls, 2013) did not identify specifically whether any of the participants were from underserved indigenous populations.

Only two studies used validated tools as part of outcome measures; Hegeman et al., (2021), Dutch mixed methods study used an amended version of the validated Dutch ‘Satisfaction with Information with Medicines’ questionnaire (SIMS) (Horne et al., 2001). The original English validated SIMS questionnaire is a 17-item questionnaire to assess patients’ satisfaction with information provided about medications. The details of the items in the adapted questionnaire were not published making it difficult to assess validity. One cross-sectional study (Leonardo et al., 2020) used the validated ‘Beliefs About Medications questionnaire’ (Horne et al., 1999) adapted to elicit opinions specifically about Methotrexate, based upon the Necessity-Concerns Framework (Horne et al., 2013). The majority of cross-sectional survey tools used were not reported to be validated in n=6 studies therefore making an accurate assessment of validity and reliability difficult (Oton et al., 2022b, Packham et al., 2017, Anderson et al., 2015, Nash and Nicholls., 2013, Funahashi and Matsubara, 2012, Lim et al., 2007).

Two mixed methods studies, both Dutch, reported following guidelines for reporting studies. Hegeman's (2021) mixed methods study followed the 'Checklist for Reporting Results of Internet E-Surveys' (CHERRIES) checklist (Eyesenbach, 2004) for reporting internet or email surveys however, the study details sending out a questionnaire and requesting people return it by post. Voshaar's 2016 mixed methods study reported incorporating a focus group and followed the 'Consolidated Criteria for Reporting of Qualitative Research' (COREQ) guidelines (Tong et al., 2007) for reporting qualitative studies. One online cross-sectional study (Oton et al., 2022b) followed the 'Consensus-Based Checklist for Reporting of Survey Studies' (CROSS) guidelines (Sharma et al., 2021) for reporting survey studies.

One online survey cross-sectional study conducted in Spain (Oton et al., 2022b), included responses from n=283 participants for analysis from a rheumatology unit via Twitter and subsequent snowballing, reporting that 80% of participants lived in Spain. A potential confounding factor is a lack of clarity about how or whether a diagnosis of IA was confirmed for participants recruited via snowballing.

Table 2.2, Table 2.3 and Table 2.4 below summarise the critical appraisal of the included studies. The observational study of Hegeman's 2021 mixed method study is not included in the critical appraisal as it did contain any data relevant to the MMSR.

Table 2.2 Critical appraisal of cross-sectional studies

Study Author	Were criteria for inclusion in the sample clearly defined	Were the study subjects and setting described in detail	Was the exposure measured in valid and reliable way	Were objective standard criteria used for measurement of condition	Were confounding factors identified	Were strategies to deal with confounding factors stated	Were the outcomes measured in a valid and reliable way	Was appropriate statistical analysis used
Anderson, 2015	U	Y	U	U	N	NA	U	Y
Funahashi, 2012	Y	Y	Y	Y	N	NA	U	Y
Leonardo, 2020	Y	Y	Y	Y	N	NA	Y BMQ*	Y
Lim, 2007	Y	Y	Y	Y	N	NA	U	Y
Nash, 2013	Y	Y	Y	Y	N	NA	Survey piloted	Y
Oton, 2022b	Y	Y	Y	U	Y	U	U	Y
Packham, 2017	Y	Y	Y	Y	NA	NA	U	Y

Key:

Y = Yes
N = No
U = Unclear
NA = Not applicable

Table 2.3 Critical Appraisal of qualitative studies

Study Author	Congruity between stated philosophical perspective and research methodology	Congruity between research methodology and research question or objectives	Congruity between research methodology and methods used to collect data	Congruity between research methodology and representation and analysis of data	Congruity between research methodology and interpretation of results	Statement locating researcher culturally or theoretically	Is influence of researcher on research and vice-versa addressed	Are participants and their voices adequately represented	Is the research ethical according to current criteria, or for recent studies. Evidence of ethical approval?	Do conclusions drawn in research report flow from analysis or interpretation of data
Hayden, 2015	Y	Y	Y	Y	y	N	N	Y	Not reported	Y
Mathijssen, 2018	Y	Y	Y	Y	y	N	N	Y	Y Not required per Dutch law	Y
Oton,2022a	Y	Y	Y	Y	y	U	N	Y	Y	Y
Rai, 2018	Y	Y	Y	Y	y	N	N	Y	Y	Y

Key:

Y = Yes
N = No
U = Unclear
NA = Not applicable

Table 2.4 Critical appraisal of mixed methods studies

Author/Year Country	Methodology appraisal										
	Qualitative study appraisal criteria	Is there congruity between the stated philosophical perspective and the research methodology	Is there congruity between the research methodology and the research question or objectives	Is there congruity between the research methodology and the methods used to collect data	Is there congruity between the research methodology and the representation and analysis of data	Is there congruity between the research methodology and the interpretation of results	Is there a statement locating the researcher culturally or theoretically	Is the influence of the researcher on the research, and vice-versa, addressed	Is the research ethical according to current criteria/ evidence of ethical approval by appropriate body	Are participants, and their voices, adequately represented	Do the conclusions drawn in the research report flow from the analysis, or interpretation of the data
Voshaar 2016 Netherlands		Y	Y	Y	Y	Y	Y	U	N/A	Y	Y
	Cross-sectional study appraisal criteria	Were the criteria for inclusion in the sample clearly defined	Were the study subjects and the setting described in detail	Was the exposure measured in a valid and reliable way	Were objective, standard criteria used for measurement of condition	Were confounding factors identified	Were strategies to deal with confounding factors stated	Were the outcomes measured in a valid and reliable way	Was appropriate statistical analysis used		
Voshaar 2016 Netherlands		Y	Y	Y	Y	U	U	U	Y	Key: Y=Yes, N=No, U=Unclear, NA=Not applicable Hegeman 2021 Observation study data not included so not critically appraised	
Hegeman 2021 Netherlands		Y	Y	Y	Y	U	U	U-Adapted SIMS	Y		

2.2.3 Summary of included studies

Thirteen studies were included in the systematic review, the majority, seven studies were cross-sectional studies (Anderson et al., 2015, Funahashi and Matsubara, 2012, Leonardo et al., 2020, Lim et al 2007., Nash and Nicholls, 2013, Oton et al., 2022b, Packham et al., 2017). Four were qualitative, including one semi-structured interview study (Hayden et al., 2015), and three focus group studies (Oton et al., 2022a, Rai et al. 2018, Mathijssen et al., 2018). Two studies were mixed methods (Hegeman et al., 2021, Voshaar et al., 2016). A total of 3425 adults over the age of 18 years were included, the majority were female n=2434 (71%). The ages ranged from 20-84 years. Sample sizes ranged from 12 (Oton et al., 2022a) to 1313 participants (Nash and Nicholls, 2013) reflective of the mixed methods included in the review. Five studies (Anderson et al., 2015, Hayden et al., 2015, Nash and Nicholls, 2013, Oton et al., 2020a, Rai et al., 2018,) included participants who had been diagnosed with IA for less than two years. Most studies (n=8) reported the majority of participants had IA disease duration of more than ten years (Funahashi and Matsubara, 2012, Hegeman et al., 2021, Leonardo et al., 2020, Mathijssen et al., 2018, Nash and Nicholls, 2013, Oton et al., 2022a, Packham et al., 2017, Rai et al., 2018).

Twelve of the articles were full text articles (Funahashi and Matsubara, 2012, Hayden et al., 2015, Hegeman et al., 2021, Leonardo et al., 2020, Lim et al 2007., Mathijssen et al., 2018, Nash and Nicholls, 2013, Oton et al., 2022a, Oton et al 2022b, Packham et al., 2017, Rai et al., 2018, Voshaar et al., 2016) and one conference abstract (Anderson et al., 2015). Six countries were represented with four countries included in more than one study: UK (n=4), Netherlands (n=3), Spain (n=2), Australia (n=2), Canada (n=1) and Japan (n=1). All studies were reported in English. Two studies were conducted by the same author (Oton et al., 2022 a and b), one being a cross-sectional study and one being a qualitative study to explore findings from the cross-sectional study in more detail. Two studies, one qualitative (Mathijssen et al., 2018) and one mixed-methods study (Voshaar et al., 2016) were conducted at the same unit in the Netherlands.

Six studies (Oton et al., 2022b, Hegeman et al., 2021, Packham et al., 2017, Anderson et al., 2015, Funahashi and Matsubara., 2012, Lim et al, 2007) explored aspects of information needs about DMARDs, two studies (Leonardo et al., 2020, Hayden et al.2015,) explored beliefs about Methotrexate information, one study (Nash and Nicholls, 2013) explored beliefs about Methotrexate and patient reported use of Methotrexate, two studies (Oton et al., 2022a, Voshaar et al., 2016) explored factors affecting adherence to Methotrexate and two studies (Mathijssen et al., 2018, Rai et al., 2018) explored strategies to support people to take Methotrexate.

The characteristics of the thirteen studies included in the final analysis are summarised in three tables. Firstly, Table 2.5 details the seven cross-sectional studies and includes relevant survey data from clinic (n=3) postal (n=2) and internet surveys (n=2). One cross-sectional study (Leonardo et al., 2020) used the Beliefs about Medications questionnaire (Horne et al., 1999) amended to be specific to Methotrexate. Nash and Nicholls (2013) developed and pre-tested their questionnaire on a population of people with RA from a clinic setting. Relevant data is detailed in the key findings column.

Table 2.5 Summary of characteristics of cross-sectional studies

First Author/ Year/Country	Sample size. female: male	Age	Diagnosis/% taking Methotrexate/Duration of Methotrexate	Research Design	Key findings/Outcomes
Anderson, 2015 UK (single site)	43 34:9	Median 58yrs Range 29-84 yrs.	43 people IA, Methotrexate median treatment duration 48 months (3–240 months)	Clinic survey exploring knowledge of side-effects, monitoring and access to help	People with IA taking Methotrexate had poor recall of the side-effects of Methotrexate. Few people sought additional information from hcp, although the reasons for this were unclear. Access to specialist advice and support was seen as important to avoid harm.
Funahashi, 2012 Japan (single site)	165 139:16	Most aged 70+ (n59,36%)	165 RA /76% taking Methotrexate 110 taking only DMARD - 80 taking Methotrexate 55 taking bDMARD - 42 also taking Methotrexate	Clinic survey exploring information needs when starting new treatment/ expectations new DMARD	Before starting new Methotrexate/DMARD treatment: most people wanted to know about the types and frequency of side effects, likelihood of responding to treatment , safety profile, cost, frequency of use.
Leonardo 2020 Australia (national RA database survey)	742 564:178	Average age 59 yrs.	742 RA and experience of taking Methotrexate 494 taking Methotrexate	National RA database online survey via SurveyMonkey - perception and selection of information about Methotrexate	Most people with RA reported receiving helpful information from Rheumatologists. Other information sources used included: family doctors (55%), internet search engines (39%), educational websites (38%), pharmacists (37%). People with RA used several sources of information to try and resolve concerns about Methotrexate. Positive information obtained from rheumatologists and educational websites supported people's information needs to take Methotrexate.

First Author/ Year/Country	Sample size. female: male	Age	Diagnosis/% taking Methotrexate/Duration of Methotrexate	Research Design	Key findings/Outcomes
Lim 2007 UK (Single unit)	319 206:113	No data	319 participants 252 (79%) IA of these 210 RA, 221 taking Methotrexate Median disease duration 9 (IQR 4-17 yrs.)	Clinic postal survey of satisfaction with service/information and shared decision making re DMARDs	Conflicting information may result in higher concerns and lead to non-use of Methotrexate and other DMARDs.
Nash 2013 Australia (National)	1313 944:325: 44 no answer	Mean age 58.4 yrs.	RA 1313 1034 currently taking Methotrexate	Clinic survey Use and perceptions of Methotrexate	Concerns or experiences of adverse events (AE) resulted in some people not starting or stopping Methotrexate. Perceptions and concerns about use, tolerance and efficacy of Methotrexate should be addressed regularly with people taking Methotrexate.
Oton 2022b Spain	294 241:53	75% aged 31-60 yrs. No further data	People with immune mediated rheumatic disease taking Methotrexate 42% Psoriatic Arthritis 16% RA 6% Ankylosing Spondylitis.	Internet 51 item survey in Spanish via Twitter/ snowballing Information, care needs and satisfaction	Most people wanted more information about Methotrexate and living with IA, than currently provided and value written information, that includes a thorough explanation, written in understandable language, with diagrams to aid understanding. Most people value patient centred care. Development of accessible methods of reliable, patient-centred information remains an unmet need.
Packham 2017 UK	264 174:90	Median Age 65 yrs. (55-71yrs)	264 RA Methotrexate n=75	Postal survey Attitudes and experience of information received during drug counselling for DMARDs	Education provided by rheumatology nurses is valued by most people with RA. Ensuring people have a nominated named hcp and a direct point of access may improve satisfaction and provide access to further information, as required, to support people taking Methotrexate and other DMARDs.

All qualitative studies used specifically designed topic guides to generate discussion about relevant topics and included data from semi-structured interviews and focus groups. One study (Packham et al., 2017) developed the topic guide from the research team's previous qualitative study investigating information needs of people starting biologic DMARDs. The Necessity-Concerns Framework (Horne et al., 2013) was the theoretical underpinning of one qualitative study (Hayden et al., 2015). A descriptive exploratory approach was used in one qualitative study (Mathijssen et al., 2018) and so they did not report using a theoretical framework. A focus group used a structured activity as a guide in one qualitative study (Rai et al., 2018). A theoretical domains theory (TDF) was the theoretical framework for one qualitative study (Voshaar et al., 2016). Two studies (Mathijssen et al., 2018, Rai et al., 2018) reported involving patient research partners in the study process, one (Rai et al., 2018) included a research partner as a co-investigator on the study team. Table 2.6 details the summary characteristics of the qualitative studies.

Table 2.6 Summary characteristics of qualitative studies

First Author Year/Date	Sample size female: male	**Age**	Diagnosis/No:/% taking Methotrexate/duration of Methotrexate	Research design	Themes/ Research findings
Hayden 2015 UK	15 11:4	Age range 20-79 yrs.	People diagnosed with IA <2years taking Methotrexate	Semi-structured interviews	Acceptance of the need for treatment of IA with Methotrexate was complex, particularly around balancing concerns about the need for Methotrexate against concerns about the risk of side-effects and harms from Methotrexate. Providing tailored information to address individual concerns about taking Methotrexate especially side-effects may be helpful. Improved communication about the meaning of and monitoring results may support information needs.
Mathijssen, 2018 Netherlands	28 19:9	Median age 67.5 yrs.	Adults over 18 with RA with experience of taking at least one DMARD54% taking Methotrexate	Focus groups	3 overarching themes related to support needs for Methotrexate and other DMARD use identifying the importance of informational support from healthcare professionals. Emotional and practical support from both rheumatology clinicians, friends and relatives were valued and could support people to take MTX.
Oton 2022a Spain	12 7:5	Adults over 18 years	People with rheumatic diseases taking Methotrexate for at least four weeks	Focus groups	Four themes identified; 1: Drug related aspects, 2: Patient-physician relationship, 3: Social environment,4: Medication and medical care. Identifying the importance of a positive doctor-patient relationship, the difficulty in understanding technical language used in consultations, and the attitude of the doctor affecting satisfaction with consultations and the level of shared decision making. Highlighting the need for support to meet information needs regarding IA symptoms, managing MTX and the importance of support from friends and family. A requirement for consistent easy to understand, accessible information to support self-management of IA and MTX was identified.
Rai 2018 Canada	27 17:10	Age range 20-79	Individuals with rheumatologist diagnosis of IA	Focus group with activity to develop tool or strategy to support medication use	Themes related to Methotrexate and other DMARDs. Identifying the Complexities and dynamic nature of taking medications (impact of living with IA and taking Methotrexate and other DMARDs for IA. The requirement for information to support self-management around taking MTD/DMARD use, obtaining information to meet individual needs regarding MTX/DMARDs. Receiving support from rheumatology healthcare professionals, friends and family to support taking MTX/DMARDs.

Two studies were mixed methods, one (Voshaar et al., 2016) used a cross-sectional survey as phase 1 of the study, with the findings being used to inform the topic guide of the focus group used in phase 2. Hegeman's (2021) study included structured consultation observations as phase 1 of the study, and a postal survey using an amended version of the Dutch Satisfaction with Information about Medications validated tool (Horne et al., 2001). Table 2.7 details the summary characteristics of the mixed-methods studies and is followed by details of the reflexive thematic analysis of the MMSR.

Table 2.7 Summary of characteristics of mixed-methods studies

Author	Sample female: male	Age	Diagnosis	Research Design	Key findings/Study outcomes
Voshaar 2016 Netherlands	Phase 1: Cross sectional: n=120 72:48 Phase 2: Focus group n=21 17:4	Mean age: 59.6 years	IA Phase 1: 88/120 (74%) RA Phase 2: 18/21 (88%) RA	Qualitative theory based mixed methods Phase 1: Cross sectional 18 item postal survey Phase 2: Focus group (sub-group of Phase 1 participants) To assess and exploring barriers and facilitators to take DMARDs.	People with IA had individual information needs to support them to take Methotrexate/DMARDs. Authors recommend that interventions to support use of DMARDs including Methotrexate using the domains of capability, opportunity and motivation should be developed to provide tailored support for people with IA.
Hegeman 2021 Netherlands	Phase 1: n=12. 9:3 Phase 2: n=61 44:17	Phase 1: Average age 62.5 years Phase 2: Average age 67 yrs.	RA Methotrexate 5 (42%) Methotrexate 28 (47%)	Phase 1: 12 people with RA structured consultation observation (no relevant data to MMSR therefore not included). Phase 2: Postal survey	People with RA are generally very satisfied with information about Methotrexate and other DMARDs. Unmet information needs included information about possible side effects, influence on sex life, alcohol intake, drug interactions, drowsiness, managing side effects and missed doses and risks from Methotrexate. Using Satisfaction with Information about Medication questionnaire in clinical practice may help identify concerns and unmet information needs. Where people are unwilling to take Methotrexate information about other appropriate DMARD options should be made available. Failure to do so may preclude shared decision-making and may result in people not taking any DMARD treatment, becoming lost to follow-up and at risk of worse outcomes.

2.2.4 Reflexive Thematic Analysis of integrated study findings

The findings of the reflexive thematic analysis are presented based on the synthesis of the integrated studies. Illustrative quotes are presented from the included qualitative studies in the MMSR. An overarching theme arising from the analysis of the qualitative studies was ‘A need for person-centred care,’ that is comprised of three main themes and two sub-themes. Table 2.8 outlines the definition and scope of the theme.

Theme One: Accepting the need to take Methotrexate.

Theme Two: Concerns about taking Methotrexate.

Theme Three: A need for tailored information about Methotrexate with two sub-themes. Sub-theme a): Practical and emotional support provided by HCPs; b) Practical, emotional, and informational support from family and friends.

Table 2.8 The definition and scope of themes

Theme	Scope of theme
Overarching Theme: A need for person-centred care for people with IA taking Methotrexate *'To know what you're dealing with'* (Rai, 2018)	People with IA have individual, far-reaching information and support needs that go beyond information about Methotrexate. The degree of impact of IA and disruption on normal life and daily activities influences the information that people need to take Methotrexate.
Theme 1: Accepting the need to take Methotrexate.	The requirement for person-centred information to support understanding of a diagnosis of IA. Support and information to enable a) acceptance of the need for treatment of IA with Methotrexate, b) the likelihood of potential benefits from Methotrexate, c) development of self-management skills to learn about IA, d) to be able to start and continue to take Methotrexate safely.
Theme 2: Concerns about taking Methotrexate.	The requirement for person-centred information to support understanding of the likelihood and nature of Methotrexate side-effects, adverse events, managing side-effects, drug interactions, impacts upon lifestyle. Concerns about self-injection/injection by carers, of sub-cutaneous (s/c) Methotrexate, managing side-effects of s/c injections.
Theme 3: A need for tailored information to support people with IA to start and continue to take Methotrexate.	A need for accessible information that is tailored to people's individual needs and situation, and support for people with IA to start and continue to take Methotrexate. Sub-themes: The importance and value of a) practical and emotional support provided by hcp; role of a therapeutic relationship with HCPs, b) informational, practical and emotional support from family and friends to take Methotrexate.

Theme 1: Accepting the need to take Methotrexate

Most people newly diagnosed with IA report wanting to receive information that helps them to put the use of Methotrexate in context to their diagnosis of IA. This includes information about their diagnosis, drug treatments (Oton et al 2022a, Rai et al., 2018), and how IA is likely to affect them in the future (Oton et al. 2022a). Each person with IA is unique and has individual needs for the timing (Packham et al., 2017, Hayden et al., 2015), content and format of information about IA and Methotrexate (Oton et al 2022ab, Leonardo et al., 2020, Rai et al., 2018, Hayden et al., 2015).

'This is something arthritis, but can you spend 15-20 minutes explaining to me a disease that is going to affect me for the rest of my life.' Rai, 2018

Some people reported being overwhelmed with receiving a diagnosis of IA (Rai et al., 2018, Hayden et al., 2015) and found it difficult to take lots of information on board. This can be particularly burdensome for people who receive a diagnosis of IA and information about Methotrexate on the same day (Hayden et al., 2015); leading to people feeling overloaded and unable to process the information provided, limiting the opportunity for shared decision making and accepting the recommendation to start Methotrexate by the rheumatologist (Oton et al., 2022a, Hayden et al., 2015). These findings present a challenge to clinicians aiming to provide person-centred care but also striving to achieve national guidelines whereby a marker of good care is seen as initiating Methotrexate and other DMARDs as early as possible or even on the same day as diagnosis (BSR-NEIAA, 2022).

Conversely, others did not recall receiving any information in the consultation (Oton et al., 2022b) and some highlighted the importance of receiving information at the time of diagnosis to support development of self-management skills and acceptance of the need for treatment (Rai et al., 2018). Additionally, many people were unable to recall the information (Hegeman et al., 2021, Hayden et al., 2015, Anderson et al., 2015) they received about their diagnosis and Methotrexate.

'I listened to the important bits and the rest of it was all just a blur really. [...] when he was explaining it to me I was just like, just clouded over and I was just not really listening' Hayden, 2015

Adjusting to, and accepting a diagnosis of IA (Hayden et al., 2015) was described as a process, with people losing their previous identity and learning to live with a new normal, often taking many years (Rai et al., 2018). Some people identified difficulties in coming to terms with living with a long-term condition (Rai et al., 2018).

'..[]..I finally gripped that I've got this for life and that I'm going to have bad days and good days. So that was the real turning point for me where I finally started to be more accepting of it' Rai, 2018

Other people readily accepted treatment with Methotrexate, their decision was informed by their own experience of living with IA. The impact upon their daily life left them feeling that they had no choice but to accept treatment with Methotrexate to relieve pain, enable them to return to their social and work roles, to improve their quality of life (Hayden et al, 2015).

'I'd got to do something because as I say the pains in my hands, arms and everywhere, I just couldn't wait to get something to get rid of that pain.' Hayden, 2015)

For others, witnessing the impact of IA causing pain and disability in others (Rai et al., 2018, Hayden et al., 2015) and hearing of people's positive experiences of benefit from Methotrexate (Oton et al., 2020b, Rai et al., 2018, Hayden et al., 2015) influenced the need to accept treatment with Methotrexate (Voshaar et al., 2016, Hayden et al., 2015)

'The thought that I could end up in a wheelchair, or my perception of it was 'gnarled up', [...] [name] was on sticks and she'd only just got this rheumatoid arthritis and [...] she was really in a terrible state.' Hayden, 2015

Conversely, some people who experienced fewer symptoms and less impact from IA found it difficult to accept the need for treatment with Methotrexate, which they perceived to be a strong, toxic drug treatment (Hayden et al., 2015). Some people recognised the support from healthcare professionals to help them understand the rationale for treatment with Methotrexate (Hayden et al., 2015).

'It sort of contradicted that I'd got a few joint pains in my hands—because that's all it was at that point—to, well I'm starting on a chemotherapy drug!' Hayden, 2015

People with IA wanted information about why they should take Methotrexate (Oton et al 2022a,b, Leonardo et al., 2020, Rai et al., 2018, Mathijssen et al., 2016, Hayden et al., 2015), how likely they were to respond to Methotrexate (Rai et al., 2018, Funahashi and Matsubara, 2012), and how long it would be until they saw a benefit from Methotrexate (Voshaar et al., 2016). Information provision varied across and within the countries of the studies included in the review. Some people reported only receiving the written information leaflet that was included with Methotrexate supplies (Oton et al., 2022a), which was difficult to understand. Some people wanted to know how Methotrexate works (Rai et al., 2018, Voshaar et al., 2016), how to tell if Methotrexate is working (Hayden et al., 2015), information about other treatment options (Oton et al., 2022b, Rai et al., 2018), and possible impacts upon their lifestyle including alcohol intake (Oton et al., 2022b, Hegeman et al., 2021, Rai et al., 2018).

'…you do not know how these medications exactly act in your body. Yes, they tend to decrease the disease activity, but you need to know how the medication works. It maybe goes beyond my knowledge, but surely it must be achievable to translate this information in a simple way. I think that would help to accept that you can take or inject this medication..' Voshaar 2016

Many people recalled receiving information about Methotrexate (Packham et al., 2017, Anderson et al., 2012, Lim at al., 2007) from healthcare professionals and were satisfied with the quality of the information that they received (Packham et al., 2017, Lim at al., 2007, Oton et al., 2022b), and felt it was positive information that supported them to take Methotrexate (Leonardo et al., 2020). However, some people did not recall receiving any information during the consultation (Oton et al., 2022b, Lim et al., 2007).

Theme 2: Concerns about taking Methotrexate

Most people were reticent about taking Methotrexate, because of concerns about Methotrexate not being helpful in treating IA (Voshaar et al., 2016), and wanted information about possible risks and long-term harms from taking Methotrexate (Oton et al., 2022b, Hegeman et al., 2021, Leonardo et al., 2020, Mathijssen et al, 2018, Voshaar et al., 2016, Hayden et al., 2015, Funahashi and Matsubara, 2012, Nash and Nicholls et al., 2012, Lim et al., 2007) that were highlighted in the verbal and written information that they received (Hayden et al., 2015). For some people receiving "official" information around the time of diagnosis, such as the UK National Patient Safety information leaflet detailing information about the need for care with dosage and frequency of Methotrexate, monitoring blood tests and possible side-effects led to more concerns (Hayden et al., 2015)

'I just had a quick look at the leaflet. [...] I saw that somehow it is very dangerous to take this medicine, like there are more side-effects than the good [effects].' Hayden, 2015

'The first time I read it, it seemed huge to me. I think it is a considerable fold out. I understand that its purpose is to warn, but I don't know if the leaflet says that I can die five times; I wonder...should I take it or not?' Oton et al., 2022b

Others reported finding a balance between these concerns with optimism that they would not experience side-effects (Hayden et al., 2015).

'I was scared, definitely scared. But you always hope that you're one of the ones who don't get the symptoms.' Hayden, 2015

Variation existed as to whether people were satisfied with information about side-effects (Hegeman et al., 2021, Leonardo et al., 2020, Lim et al., 2007). Many people wanted reassurance (Funahashi and Matsubara, 2012) as well as more information about side-effects (Hegeman et al., 2021, Mathijssen et al., 2016, Leonardo et al., 2020, Lim et al., 2007) particularly about the risk of experiencing side-effects (Oton et al., 2022b, Hegeman et al., 2021, Funahashi and Matsubara, 2012) to support their decision whether to start taking Methotrexate (Oton et al., 2022b).

'From a patient's perspective, yes, and one can choose if... because I also read the effects of each drug, and you decide, no, well... I can risk these side effects but not those. And also the patient has the right to make his choice,' Oton 2022b

Some people decided to start Methotrexate despite feeling concerned about side effects.

'[I] felt assured But I was very scared at the side-effects.' Hayden, 2015

Whilst concerns about Methotrexate often led people to seek further information (Hegeman et al., 2021, Leonardo et al., 2021), those with more concerns were likely to use multiple sources of information about Methotrexate (Leonardo et al., 2021, Voshaar et al, 2016). Using multiple sources of information could lead to conflicting information which created further concerns rather than reassuring people (Mathijssen et al., 2018, Lim et al., 2007) and may have prevented use of Methotrexate for some.

'You always have to ask everything here (in the hospital).' That's what I do, but sometimes you also search for information yourself. Then you do sometimes see that there's a difference in side effects, the way you have to administer it … So, it's different to the information leaflets or what you read in the brochures.' Mathijssen, 2018

Other people used information avoidance as a method of managing concerns about side-effects and chose not to read written information (Hayden et al., 2015), and some people rationalised that all drugs have side-effects (Hayden et al., 2015).

'I think sometimes you can worry yourself reading things [...] if you read the leaflets in the tablets—any tablet— you wouldn't take them, would you? Because they've all got side effects, haven't they?' Hayden, 2015

For those who believed that the risk of side-effects outweighed the potential benefits of Methotrexate, information about other treatment options was important (Oton et al 2022a). However, information about alternative treatment options remained an unmet need as many people did not report receiving this information. (Oton et al., 2022a).

Many people identified concerns about possible adverse effects and impacts upon their lifestyle (Oton et al., 2022b, Hegeman et al., 2021, Rai et al., 2018). Specific concerns included the impact of Methotrexate on people's sex life, which some people did not feel was adequately addressed (Hegeman et al., 2021). The risk of or actually feeling nauseous whilst taking Methotrexate was unpleasant for people and raised concerns about the potential of long-term harm from taking Methotrexate (Rai et al., 2018).

'I worry about long-term effects, being nauseous pretty well all the time. It feels sometimes like I just have a belly full of poison and I should purge it. That's what it feels like.' Rai, 2018

Some people identified concerns about the risk of developing side-effects when taking multiple medications (Rai et al., 2018) and some were concerned whether taking Methotrexate was the cause of hair loss (Oton et al., 2022b). Fears about whether Methotrexate would result in people feeling drowsy were not always adequately addressed (Hegeman et al., 2021). Anxieties about varying guidelines for alcohol intake when taking Methotrexate were prominent for many people (Oton et al., 2022b, Hegeman et al., 2021, Rai et al., 2018) and appeared to increase concerns about the toxicity of Methotrexate, some people felt guidelines were patronizing (Voshaar et al., 2018), as well as the impact upon people's lifestyle beyond the physical impact of IA, creating a burden of treatment.

'I mean because, well, absolutely no alcohol—I understand—() Is this truly compatible.' Oton, 2022a

Many people also wanted information about drug interactions with Methotrexate (Oton et al 2022b, Hegeman et al., 2021, Mathijssen et al 2018, Rai et al 2018) and details of any dietary restrictions or interactions between food and Methotrexate (Oton et al., 2022b). Written information such as the patient information leaflet (PIL) within Methotrexate packaging was seen to be written in technical language and difficult to understand, and did not always resolve concerns (Oton et al., 2022b, Rai et al., 2018).

'I don't know if I can take either ibuprofen or paracetamol, as according to the leaflet... this can't be compatible with everything. I mean because, well, absolutely no alcohol—I understand—but I know that sometimes my head hurts a lot and if I take ibuprofen, I wonder if I am going to die? Is this truly compatible.' Oton, 2022a

Several practical aspects of taking Methotrexate resulted in concerns and difficulties for many people including; deciding which day of the week to take Methotrexate, organising Methotrexate supplies, problems opening Methotrexate packaging, managing sub-cutaneous Methotrexate injection devices and side-effects such as local injection site reactions and managing associated clinical waste (Oton et al., 2022b, Rai et al., 2018, Mathijssen et al., 2018, Voshaar et al., 2016, Hayden et al., 2015). Some people were unsure as to how the efficacy of MTX was assessed, being unsure as to whether blood safety monitoring may do so and expressed frustration at not receiving education about the purpose of, or feedback about safety monitoring blood test results (Hayden et al., 2015).

Theme Three: A need for tailored information to support people with IA to start and continue to take Methotrexate

This theme interlinked with Themes 1 and 2, identifying the wide variation that exists in the type and amount of information that people with IA would like to receive when taking Methotrexate to IA. 'Tailored information refers to the provision of information that is customized according to the specific characteristics of the individual to whom the information is being provided. Tailored approaches are created on the basis of each individual's particular needs, concerns, motivators, and behavioural challenges, and may take into account particular stressors and life situations that pertain to the individual,' (Oncology Nursing Society, 2024).

The results provided compelling evidence that information should be tailored to individual needs and preferences (Hawkins et al., 2008) rather than the reports of routine provision of information, the content of which was often dependent upon individual clinicians. Personalising information requires clinicians to tailor elicit and address concerns about the need for, and potential risks or harms from Methotrexate (Horne et al., 2013), and with respect to age, gender, lifestyle, co-morbidities, potential interactions with pre-existing prescribed medications. Factors such as health beliefs, literacy, health literacy, and preferences should also be considered when tailoring both the content and methods of providing accessible, useful information to support

Methotrexate use. In practice this would mean that only people who consume alcohol would receive information recommending limiting alcohol intake to the UK guidelines of 14 units of alcohol per week whilst taking Methotrexate (Humphreys et al., 2017).

Many people reported receiving information from rheumatologists (Oton et al., 20022b, Hegeman et al., 2021, Leonardo et al., 2020, Mathijssen et al., 2018, Packham et al., 2017, Nash and Nicholls, 2013, Anderson et al., 2012, Lim et al., 2007) which was valued (Hayden et al., 2015) and could support people to take Methotrexate (Leonardo al., 2020, Hayden et al., 2015). However, some people reported receiving little, or no information in the consultation (Oton et al., 2022b, Lim et al., 2007).

Opinions of the amount and timing of the information varied (Oton et al.,2022a, Hegeman et al., 2021, Leonardo et al., 2020, Packham et al., 2017) with some people being overall satisfied with the information they received (Leonardo et al., 2020, Packham et al., 2017) about the action and use of Methotrexate (Hegeman et al., 2021). Others felt overloaded (Hayden et al., 2015) with information whilst many reported unmet information needs (Oton et al., 2022a, Hegeman et al., 2021, Leonardo et al., 2020, Mathijssen et al., 2018, Rai et al., 2018, Voshaar et al., 2016, Hayden et al., 2015, Nash and Nicholls et al., 2013, Anderson et al., 2012, Lim et al., 2007) about Methotrexate as outlined in section 3.4. (p.32). Some people did not pursue information from other sources as they were satisfied with the information that they received from the rheumatologist (Leonardo et al., 2020). Rheumatologists were often felt to concentrate on addressing disease specific issues and side-effects (Oton et al., 2022a) whereas some people wanted to receive information about the rationale for taking Methotrexate together with information about the possible risks and harms to enable them to be involved in decisions about their care.

'I'd like the doctor to tell me the pros and cons, and I can decide, too, because after all... it's my body, and it's my life.' Oton, 2022a

Fewer people reported experience of receiving information from rheumatology nurses (Hegeman et al., 2021, Rai et al., 2018, Packham et al., 2017). Those receiving information from rheumatology nurses valued both the information (Packham et al., 2017, Rai et al., 2018) and support provided (Rai et al., 2018) and found it easy to ask the nurses if they wanted more information (Packham et al., 2017). Hospital pharmacists were another valued source of information (Rai et al., 2018, Packham et al., 2017).

'I can ask them anything. They will answer me.' Rai, 2018

Family doctors and practice nurses were seen as reliable, accessible sources of information for some people when starting Methotrexate (Leonardo et al., 2020, Mathijssen et al., 2018, Packham et al., 2017, Lim et al., 2007). However other people received conflicting information from non- rheumatology HCPs, which created confusion and increased concerns rather than reassuring people (Mathijssen et al., 2018).

Whilst verbal information about Methotrexate from healthcare professionals was valued by many (Oton et al., 2022b, Packham et al., 2017, Hayden et al., 2015), the information recalled often didn't focus on the potential benefits of taking

Methotrexate. Some people report discussions about IA and the rationale for taking Methotrexate did not meet their needs (Lim et al., 2007). Many people wanted more information than was provided (Oton et al 2022b, Mathijssen et al.2016, Lim et al., 2007) although they felt they had plenty of time to ask questions and were mainly satisfied with the answers (Lim et al., 2007) and felt the healthcare professional had listened to their perspective (Mathijssen et al., 2016, Lim et al., 2007).

'That's what's good about my rheumatologist. He says: 'Get in touch ... what are we going to do ...' [...] And having that discussion is great. That you just get confirmation.' Mathijssen, 2018

Many people wanted to be involved to varying degrees in decisions about their treatment (Oton et al., 2022a,b, Mathijssen et al., 2018, Hayden et al., 2015, Lim et al.,2007), some did not feel as involved as they would have liked (Oton et al., 2022a, Lim et al., 2007), whilst others relied upon the recommendation of the rheumatologist, particularly around the time of diagnosis (Hayden et al., 2015). Some people acknowledged that pressures on healthcare provision impacted upon the time that the HCP had to spend with each patient (Oton et al., 2022a).

'What happens is that I think that because of the way the system is set up, well... what I see in my doctor is that he doesn't have enough time and so... he takes what he can and helps me the best he can...' Oton, 2022a.

A preference for verbal, tailored information, provided by a healthcare professional (Oton et al., 2022, Leonardo et al., 2020, Mathijssen et al., 2018) was identified by many people.

'That they (healthcare providers) really give you the information they know. And that they also give you tips on what you have to watch out for' Mathijssen, 2018

Many people with IA recalled receiving written information leaflets when starting Methotrexate (Oton et al., 2022b, Packham et al., 2017, Hayden et al., 2015, Anderson et al., 2015) provided by HCPs and reported satisfaction with the information (Packham et al., 2017), which helped to reinforce verbal information provided by the HCP (Oton et al., 2022b, Rai et al.,2018).

'helpful to have handouts…not just in their head information because my head gets overloaded.' Rai, 2018

Others felt Methotrexate leaflets mostly contained safety information about possible risks and side effects. A lack of positive information about how Methotrexate worked, or what improvements could be expected did little to resolve concerns or encourage some people to take Methotrexate (Hayden et al., 2015).

'It just says that it reduces inflammation, it's not a pain- killer, it reduces inflammation. How it does that? I'm not very sure about really. [...] If I stopped taking it, would it still be raging on or would it be, would it be enough, you know, to stop it?' Hayden, 2015

Patient Information leaflets (PIL) found within Methotrexate packaging were used by many people (Oton et al., 2022b), and found to be useful by most who read them (Oton et al., 2022b). Some people reported it was the only written form of information that they received about Methotrexate (Oton et al., 2022b). The use of technical language in PIL could be off-putting (Voshaar et al., 2016) and the contents often left people wanting more information (Oton et al., 2022b). Use of technical language did not support people to take Methotrexate (Voshaar et al., 2016). However, clear, easy to understand, thorough written information (Oton et al., 2022b, Voshaar et al., 2016) was suggested to support Methotrexate use (Voshaar et al., 2016). Diagrams and visual aids were reported to support understanding of both written and verbal information (Oton et al., 2022b, Rai et al., 2018),

'I don't get his vocabulary, so I think the graphics... help me understand him better... ' Oton, 2022a

For some people PIL leaflets added to concerns because of lack of clarity and repeated mentions of the risk of interactions with other drugs including death, which led people to consider whether it is safe to start taking Methotrexate.

'The first time I read it, it seemed huge to me. I think it is a considerable fold-out. I understand that its purpose is to warn, but I don't know if the leaflet says that I can die five times; I wonder... should I take it or not?' Oton, 2022a

Digital sources of information were used by many, such as social media, internet search engines and websites, to support verbal and written information about Methotrexate received from HCPs (Oton et al., 2022, Leonardo et al., 2020, Rai et al., 2018, Mathijssen et al., 2018, Packham et al., 2017, Lim et al., 2007). Concerns existed about the reliability of information obtained from the internet (Oton et al., 2022a, Mathijssen et al., 2018). People varied in their opinions about the usefulness of internet information, some people finding the information to be positive (Leonardo et al., 2020). Information from educational websites (Leonardo et al., 2020) supported some people to take Methotrexate. Others related that they found information ‘scary’ (Hayden et al., 2015) and avoided using the internet for information about side-effects, as it could increase rather than resolve concerns. Some people, including those who were older (Mathijssen et al., 2018) expressed concerns about having the skills to use digital information and were concerned about data security when using the internet (Mathijssen et al., 2018).

‘I thought ‘I’m not going to look on the internet’ because I made a decision year ago not to do that because it just scares the living daylights out of you.’ Hayden, 2015

Many people searched for information independently (Oton et al., 2022ab, Rai et al., 2018, Mathijssen et al., 2018).

‘I use my rheumatologist and then we go through pros and cons. Then I go away, and I always do research on the internet.’ Rai, 2018

Some people expressed preferences to be signposted to reliable websites and sources of digital information (Oton et al., 2022a) to reinforce information provided by HCPs and learn more about self-management including the use of complementary therapies (Oton et al., 2022a).

‘..directing you to a reliable page is very important because later on you get doubts again, you want to go over things you thought you understood the explanation…’ Oton, 2022a

People who had more concerns about taking Methotrexate sometimes used more information sources, particularly those who had a higher level of formal education (Leonardo et al., 2020) and younger people (Leonardo et al., 2020, Packham et al., 2017) who often found information on websites and internet search engines more useful (Packham et al., 2017). Magazines (Lim et al., 2007), television and newspapers (Packham et al., 2017) tended to be used less than verbal and written information from HCPs and the internet. Those with limited access to information about Methotrexate mainly relied upon television and media for information (Funahashi and Matsubara, 2012).

Sub-theme: The value of informational, practical, and emotional support provided by healthcare professionals.

People with IA often report that provision of routine, standardised information provided by HCPs does not meet their individual information needs about taking Methotrexate (Oton et al., 2022a,b, Rai et al., 2018, Mathijssen et al., 2018, Voshaar et al., 2016). Many people were reported to have unmet information needs after receiving information about Methotrexate (Oton et al., 2022a,b, Leonardo et al., 2020, Lim et al., 2007) including how to manage Methotrexate during intercurrent illness, including infection, periods of active IA or when experiencing side-effects (Oton et al., 2022, Mathijssen et al., 2018). Reminders of important safety information was important for some people (Anderson et al., 2015) due to poor recall. Most people wanted to know how to contact rheumatology services in-between appointments (Oton et al., 2022b) to obtain further information. Direct access to information from rheumatology HCPs and provision of telephone or digital helplines were valued (Mathijssen et al., 2018). Access to information and support enabled people to develop self-management skills to cope with IA and take Methotrexate (Voshaar et al., 2016). Many people wanted but had not received information about how to access these services or did not live in areas where such services existed (Oton et al., 2022a, Funahashi and Matsubara, 2012). Some people felt that access to a rheumatologist when required was essential for people taking Methotrexate (Voshaar et al., 2016). Commonly reported unmet needs are highlighted in Figure 2.6.

Figure 2.6 Common unmet needs of people with IA taking Methotrexate

The need for MTX
Why should I take MTX?
How MTX works?
How likely is MTX to help me?
How do you know MTX is working?
How soon will it work?
Other treatment options?

Concerns about MTX
Will I get side-effects?
What do I do about MTX if I am unwell?
What do I do if I think I am experiencing a side-effect?
Is it a side-effect or IA symptom?
Drug interactions?

Self-Management
How can I manage a flare of IA?
How can I get help from the rheumatology team?
How do I find out more about IA and MTX?
Can I use complementary therapies when taking MTX?
Will MTX help fatigue?

about IA, the need for treatment with Methotrexate, likely improvements resulting from taking Methotrexate and the possible consequences of disease progression if people chose not to take Methotrexate (Hayden et al., 2015).

'The nurse said to me, 'Oh, this is quite a strong drug that you're on. [...] I thought, 'Good!' It's doing some good!' Hayden, 2015

This promoted a trusting therapeutic relationship based on mutual respect (Voshaar et al., 2016) encouraging people with IA to be active partners in their care, identifying their own information needs and concerns about taking Methotrexate, and wider issues of living well with IA (Oton et al., 2022, Mathijssen et al., 2018, Voshaar et al., 2016). Such approaches were valued, seen as providing both informational and emotional support (Mathijssen et al., 2018) to help people to take Methotrexate (Voshaar et al., 2018). However, many people reported that they did not experience person-centred care, and were left feeling unheard, with their concerns dismissed, resulting in frustration and unmet information and support needs. This did not support people to take Methotrexate.

'They act as if I'm stupid. When I say it (the medication) doesn't work, they say: 'That's not true.' […] You're called a liar!' Mathijssen, 2018

Rheumatology HCPs were sometimes seen as gatekeepers of information, holding the information that was pertinent to the person with IA, and had control of when and how people received this information. This could impact upon people's ability to be involved with shared decision making (Oton et al., 2022). Some people wanted information in writing, ahead of their appointment, to help them prepare for their consultations and decisions about treatment for IA (Oton et al., 2022).

Sub-theme: The importance of informal, emotional and practical support for people with IA to take Methotrexate

Many people valued support from friends, family, carers and other people with IA, helping them come to terms with a diagnosis of IA (Oton et al., 2022a, Rai et al., 2018, Hayden et al., 2015), living with IA, accepting treatment with Methotrexate and successfully taking Methotrexate (Oton et al., 2022b, Rai et al., 2018, Voshaar et al., 2016, Hayden et al., 2015). A clear need for adequate, reliable information for family and friends was identified (Rai et al., 2018) to help them understand the impact of IA, and the need and complexities of treatment with Methotrexate.

'….[] I think the education of your spouse or caregiver to know that having the medications needed to be done pretty well at the same time is going to make it easier for you…[]..' Rai, 2018

Fewer people with IA sought information from family and friends (Leonardo et al., 2020, Packham et al., 2017, Lim et al., 2007) finding information from these sources less helpful (Leonardo et al., 2020) than that from HCPs. However, the emotional and practical support that family and friends who were well informed provided was seen to support people with IA to cope with the impact of IA and to take Methotrexate (Oton et al., 2022a, Rai et al., 2018, Mathijssen et al., 2018, Voshaar et al., 2016).

'Sometimes, when I am feeling good, I think, 'I just skip my medication.' but my husband always pushes me: 'You have to take your medication just as usual.' But, still, I find it difficult (to take my medication always)…' Voshaar, 2016

Some people with IA described practical support to enable them to take Methotrexate (Voshaar et al., 2016). Physical difficulties related to poor grip strength and fine motor movements made it difficult to manage tablet packaging, access and hold drinks needed to swallow Methotrexate tablets.

‘Those packages … I just don’t understand it. They’re developed for patients with arthritis. And they’re shut so tightly, we just can’t get them open. Really great. […] It’s just a way of keeping us busy.’ Voshaar, 2016

Others experienced difficulties and needed help in opening, preparing, and administering sub-cutaneous Methotrexate injections (Oton et al., 2022a, Rai et al., 2018, Mathijssen et al., 2018, Voshaar et al., 2016) and disposing of the waste safely. Receiving such support encouraged use of Methotrexate (Voshaar et al., 2016) but could also lead to perceptions of lost independence (Oton et al., 2022a) and autonomy. Whilst those who did not have access to such help and support may not have been able to take Methotrexate (Oton et al., 2022a).

‘I've done well, the hard part is that the syringes... I can't get them out! When you read the instructions for the injections, a separate container... I can't uncover them. I'd have to put that on myself, but I can't uncover it because it's so hard.’ Oton, 2022a

Patient associations were seen as a valuable source of information and support (Oton et al., 2022b, Rai et al., 2018). Peer support from other people with IA was helpful for some people (Oton et al., 2022b, Rai et al., 2018), particularly when unable to obtain the information they wanted from HCPs and other formal sources to resolve concerns. Learning of other people’s positive experiences of living with IA and taking Methotrexate could be helpful and support people with IA to start and persevere with Methotrexate (Rai et al., 2018, Hayden et al., 2015).

A few of my friends—even they are on this medicine. So I was discussing it then on the phone. They says to me you know, slowly you will settle down you know. Just take them, []....' Hayden, 2015

Conversely, hearing similar concerns or poor experiences of others taking Methotrexate, often reinforced concerns, making it difficult for people to accept the need for Methotrexate, and did not support people to take Methotrexate (Hayden et al., 2015).

'[My friend] had some really nasty side-effects with it and the one he takes is the one [the doctor] told me [...] to take.' Hayden, 2015

2.3 A model of person-centred information about Methotrexate

A conceptual model representing the multi-faceted nature of the information and support requirements of people with IA has been developed based upon the synthesis of the findings and presented in Figure 2.7.

Figure 2.7 A model of person-centred information about Methotrexate

2.4 Strength of evidence

In line with JBI methodological guidance for MMSR an assessment of the strength of the evidence has not been made due to the complexities of integrating quantitative and qualitative data and data transformation (Lizarondo et al., 2020)

2.5 Summary of findings

This is the first mixed-methods convergent integrated systematic review to explore and synthesize the characteristics, content and methods of information and support that people with IA need to start and continue to take Methotrexate. Whilst guidelines recommend that people with IA receive tailored information when starting Methotrexate (Zangi et al., 2015), to date there are no agreed co-produced recommendations about the content and format of such information. The findings provide the opportunity to directly influence clinical practice in delivering person-centred care and implementing shared decision making, to improve care for people with IA (Barton and Decary, 2020). The results indicate that person-centred information is needed that addresses the concerns and information needs of the individual opposed to a routine one size fits all approach to delivery of information about Methotrexate reported in the studies. This is in line with findings from previous studies including a systematic review (Horne et al., 2013) identifying the relationship between people's beliefs and concerns about taking medication influences whether they will start and continue to take Methotrexate (Horne et al., 2013).

Most people reported preferring to receive information in person, verbally from rheumatologists and healthcare professionals, with written information to support this. Some people wish to have written information in advance of consultations. Written and verbal information should be consistent, avoiding technical jargon and using easy to understand language supported by graphics as visual aids. People value reliable information sources. Whilst many people use the internet and digital information, many express concerns about the reliability of internet based and social media information. A need for additional information, education and support to enable people to develop self-management skills to manage both IA and Methotrexate is identified. Support from trusted healthcare professionals who utilise a person-centred approach and demonstrate active listening and empathy is valued. A person-centred approach to care supports people to be involved in decisions about Methotrexate.

2.6 Discussion

Adopting a convergent integrated approach to the mixed methods systematic review enabled a comprehensive search, analysis, and synthesis of both quantitative and qualitative evidence (Hong et al., 2017). The search strategy was intentionally broad, aiming to consider all available evidence on this subject. The literature search included grey literature and conference abstracts. Papers were excluded where they did not report the individual DMARD precluding any judgement as to whether the data referred to information needs or experiences of taking Methotrexate. All available evidence that met the inclusion criteria was included in the review, irrespective of the quality of the methodological study.

Despite a lack of robust empirical studies the combined synthesis has addressed the research aim in developing a better understanding of the available evidence from a patient perspective. These findings will be reviewed with patient and public representatives within stakeholder groups to develop recommendations for person-centred information about Methotrexate reported in Chapter 6. Additionally, the findings may contribute to clinical policy decisions (Stern et al., 2020) and the education of rheumatology healthcare professionals in line with the competency framework developed by the Royal College of Nursing Rheumatology Forum (RCN, 2020).

2.7 Conclusion

This mixed methods systematic review found that people with IA have individual, multi-faceted information requirements to enable them to take Methotrexate. Provision of person-centred, tailored information based on the individual's specific information and support needs is required instead of often reported one-size -fits-all standardised information. Further empirical research is needed to establish whether the characteristics, content and methods of current service provision match the expectations and needs of people with IA when starting Methotrexate. The results of this MMSR together with research findings evaluating current service delivery should be used with patient and public stakeholders to inform best practice service delivery, policy and education.

Chapter 3

3 Qualitative Research Methods

3.1 Introduction

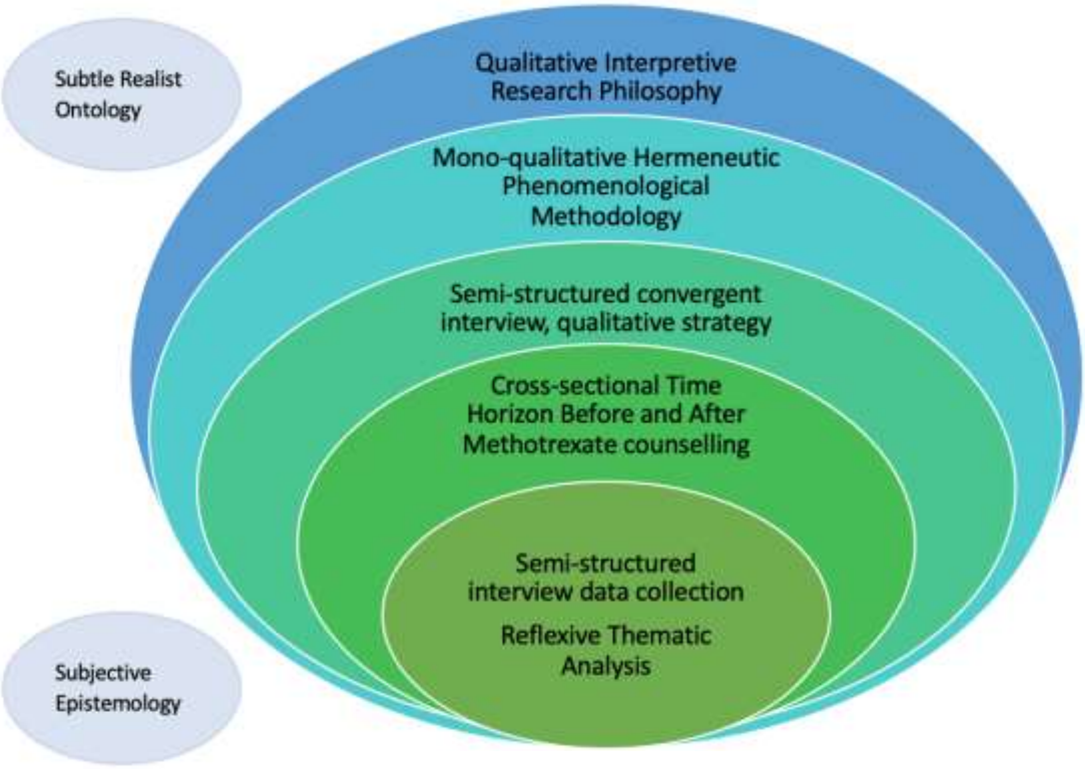
The systematic review identified a lack of understanding of the information needs and concerns of people with RA commencing Methotrexate. To date insights into these information needs are drawn from quantitative and qualitative literature exploring reasons for non-adherence, barriers and facilitators to taking Methotrexate and experiences of receiving information about Methotrexate using national safety agency written information (Hayden et al., 2015). As such, they do not provide insight into the perspective of people at the point of commencing Methotrexate, including perceptions of DMARD counselling. Current insights into the intervention of nurse led DMARD counselling are limited to the observation and perspective of nurses providing Methotrexate counselling (Robinson et al., 2018). Therefore, there is a requirement for further exploratory research to understand the perceptions and experiences of people receiving information in a Methotrexate DMARD counselling consultation. This chapter describes the methodology and methods undertaken to investigate the patient perspective of the information needs when starting Methotrexate.

3.1.1 The 'Research Onion'

The research onion model frames the chapter to define the research philosophy, the approach to theory development, methodological choice, and the methods used to answer the research question (Saunders et al., 2009) using a subtle realist approach (Pope and Mays, 2020, Hammersley, 1989). The contribution of patient and public involvement through a patient advisory group (PAG) is described, and the chapter concludes with an assessment of the research rigour. The research strategy is presented using an adaptation of the research onion model in Figure 4.1.

3.2 Research philosophy

Figure 3.1 Model of the research strategy



(adapted from Saunders (2016) The Research Onion)

In order to answer the research question, 'what are the expectations, experiences, needs and concerns of people with RA receiving information about Methotrexate?' there was a need for the researcher to explore their personal philosophical perspective (Creswell and Poth, 2018). According to the Cambridge Advanced Learners Dictionary (McIntosh, 2013), philosophy is defined as, 'the use of reason in understanding such things as the nature of the real world and existence, the use and limits of knowledge, and principles of moral judgement." It was important to both acknowledge underlying assumptions of how to address the research question and to inform the choices made in developing an effective research strategy (Creswell and Poth, 2018; Crotty, 1998). Thereafter, an iterative, non-sequential process of inquiry (Gelling, 2015) of the ‘maze’ (Crotty, 1998) of methods, methodologies and research philosophies (Creswell and Poth, 2018; Saunders and Bristow, 2014; Crotty, 1998) followed. A philosophical perspective of Interpretivism described in the section below was confirmed using the HARP (Heightening your Awareness of Research Philosophy (HARP)© tool (2014, Saunders and Bristow). Secondly, ‘the research onion’ (©Saunders et al., 2016) model (Figure 4.1) was used as a framework to guide and illustrate the steps and decisions taken to design an appropriate and logical research strategy. This involved the researcher questioning their personal understanding of what it means to be human, what comprises human experience and how people make meaning from their interactions with the social world. The researcher wanted not only to describe *how* people behaved when starting Methotrexate and seeking and receiving information about Methotrexate, but to move beyond this to understand *why* they behave in particular ways. This would then inform work with stakeholders to review how current DMARD counselling services are provided and how best to support people’s information needs when starting Methotrexate.

3.2.1 Ontology

The researcher determined an ontology or understanding of the nature of ‘being’ (Crotty 1998, Scotland, 2012), sometimes described as the ‘social world’ (Pope and Mays, 2020), and the ‘phenomena’ or things that do or can exist, how they exist and how they are related (Blaikie, 2007) is one of subtle realism (Hammersley, 1989).

That is, there is a social world, an external independent reality, and RA is a phenomena or ‘social presentation’ (Pope and Mays, 2020). However, RA can only be understood through individual interpretations of RA, and how interpretations of RA are affected by experiences and culture (Hammersley, 1989), such as whether we are a person with RA, a partner or relative of someone with RA, a clinician, or a researcher. People’s views about the ‘nature of ‘being’ (Crotty, 1998) and how we experience the social world differ, therefore ontology can be described as a continuum (Pope and Mays, 2020, Blaikie, 2007) ranging from realism to idealism.

Realism proposes there is a real social world existing outside the person trying to understand it, whereas idealism proposes our understanding of reality is derived from the individual’s subjective perspective and understanding. Many other standpoints along the continuum of ontology are reported (Pope and Mays, 2020, Blaikie, 2007). Research with a focus on exploring people’s experiences of a phenomenon would be more likely to have an idealist position taking into account the context of the experience (Pope and Mays, 2020). Whereas a realist position takes an outsider perspective of the research topic and therefore is more likely to be relevant to exploring fixed objects and populations (Pope and Mays, 2020). Subtle realism acknowledges that the researcher is part of the research and will bring prior assumptions and beliefs to the research that need to be acknowledged and managed, to avoid biasing the research (Hammersley, 1989).

3.2.2 Epistemology

Epistemology is concerned with ‘what it means to know,’ (Scotland, 2012), and what is the association between the person who wants to know, and what can be learned (Guba and Lincoln, 1994). A subtle realism epistemology is subjectivist, therefore the researcher being unable to separate themselves from their knowledge, cultural beliefs and understanding of the world. How we perceive the world is part of us as a person and this in turn affects how we understand others and the world (Cohen and Crabtree, 2006). Therefore, the researcher's knowledge and understanding of RA both from the perspective of a specialist nurse and a researcher are different to those of a person with RA, and will affect how the researcher's' perceptions of the experience of a person with RA. As such there are many versions of the experience of RA and information needs when starting Methotrexate that are valid, i.e., people will understand and experience RA and view starting Methotrexate differently (Madill and Gough, 2008). In order to understand the meaning that people with RA make of starting Methotrexate and their information needs, the researcher needed to explore several factors. These included the meaning of learning about the use of Methotrexate to treat RA, together with the requirement for safety monitoring, and how people make sense of this experience. The findings from the background literature review in Chapter 1, and Systematic Review in Chapter 2 provided deductive reasoning to inform the inductive enquiry to understand the experience of people receiving DMARD counselling when starting Methotrexate (Pope and Mays, 2020).

3.2.3 Justification of an Interpretivist research paradigm

The underpinning evidence that supports the use of Methotrexate to treat RA (NG100, NICE 2020) is largely derived from positivist deductive randomised controlled trials. Similarly, the Necessity Concerns Framework (Horne et al., 2013) and literature around the need for, and concerns about treatment (Horne et al., 2013) of RA with

Methotrexate are mainly deductive. However, a positivist deductive approach to the research question would not have enabled me to explore the *perceptions* of people with RA starting Methotrexate because positivism has an objectivist epistemology. Such an approach seeks to establish measurable facts about the social world and aims to keep research value free (Saunders et al., 2016 p128). A positivist deductive approach is therefore more appropriate to answer a quantitative research question (Clark, 1998) looking at whether DMARD counselling is an efficient intervention, and how many people go on to start Methotrexate after receiving information in a DMARD counselling appointment. The researcher therefore takes an outsider or etic perspective to the research (Olive, 2014).

An interpretive research paradigm (Kuhn 2012, Guba and Lincoln, 1994) was appropriate as interpretivism accepts that research should aim to appreciate the perspective of people living in the world as they see it (Pope and Mays, 2020). The research should represent the perspective of the participants, whilst acknowledging the researcher is part of the research and therefore research is not value free (Cohen and Crabtree, 2006). Reflexivity in research is vital, researchers are encouraged to be consider how they may influence the research, to be transparent, acknowledge and reflect on their potential biases and subjective beliefs (Pope and Mays, 2020, Dowling, 2006). A qualitative design was appropriate to explore how people with RA experience care (Greenhalgh et al., 2016), when receiving information to start Methotrexate, to reveal thoughts, concepts, and understandings of the lived experience of the person with RA (Pope and Mays, 2020, McConnell-Henry et al., 2009, Charmaz 2006).

3.2.4 Justification of a hermeneutic phenomenological qualitative methodology

Consideration was given to the different qualitative methodologies widely used in healthcare including ethnography and phenomenology (Pope and Mays, 2020). The study was designed and undertaken during the COVID-19 pandemic, so the requirement for social distancing influenced the study design and methods. Ethnography, the study of 'the people' (Pope and Mays, 2020) requires the researcher to spend extended periods of time observing participants in their setting to understand and derive meaning from people's experiences often involving observations and participant interviews (Pope and Mays, 2020; Savage, 2000). Ethnography has been used to explore the communication between rheumatologists and patients about starting biologic disease modifying drugs (Kottak et al, 2018), a different class of drug treatment for RA to Methotrexate, that also requires provision of safety information before starting treatment. However, the social distancing requirements of the pandemic resulted in Methotrexate DMARD counselling largely being delivered virtually by telephone, with many nurses working remotely. This precluded the researcher being in the field and so ethnography was not a viable option.

Interpretative Phenomenological Analysis was considered (Smith and Osborn, 2015, Pietkiewicz and Smith, 2014), however, as a sample size of 4-10 is recommended in doctoral studies (Smith, 2004), this would have limited my ability to develop both depth and breadth of understanding about the phenomena. Whilst a sample of people with RA offered homogeneity, in keeping with IPA, a level of heterogeneity was required to answer the research question. In order to provide both breadth and depth of the phenomena it was necessary to explore the beliefs and experiences of a range of people representative of the population with RA. In light of these considerations IPA was not used for this study.

3.2.5 Interpretive phenomenology

Hermeneutic interpretive phenomenology was therefore considered as a suitable methodology for the study. Phenomenology, 'to study phenomena' (McConnell-Henry, 2009; Ray, 1994), a phenomena being 'anything that presents itself' (Moustakas, 1994), and therefore a method suitable to explore the subjective lived experience. Hermeneutics was developed as a method to study theological scriptures, and subsequently different approaches and applications have evolved. Dreyfus (1988) describes Husserl's requirement for researchers to 'bracket' or put aside pre-determined beliefs and focus upon the individual's description of a lived experience. Whereas Heidegger refined hermeneutics to be 'a way of studying all human activities.' (Dreyfuss, 1991). In other words, to explore the lived experience of people as told by people, and interpreted from what they say (McConnell-Henry, 2009). Heidegger refuted bracketing and believed that 'fore-structure' or subjective beliefs and experience provided added value and depth to interpretation: 'Understanding is never without presuppositions. We do not and cannot understand anything from a purely objective position. We always understand from within the context of our disposition and involvement in the word (Johnson, 2000). Additionally, the concept of going backward and forward through the text, re-examining interpretations, known as the 'hermeneutic circle' supports the potential for further understanding of the research as a whole (Koch, 1995). This allows for the researcher to develop further interpretation and understanding by ‘reading between the lines’, taking into account the context of factors such as time, that may affect the lived experience (McConnell-Henry, 2009).

Within the topic area, for example, whether a participant is newly diagnosed with RA and coming to terms with living with the impact of RA and uncertainty about the future or has established RA may impact upon their perceptions and experience. Such an approach therefore allows the researcher to present both an empathetic emic, insider interpretation of the participants lived experience, whilst also allowing for an etic outside perspective. An etic perspective may lead to interpretation of implicit meaning developed from critical thinking based upon the researcher’s prior experience and understanding (Smith, Flowers and Larkin, 2009). However, arguably the researcher’s prior experiences may result in unconscious bias, whereas someone without any relevant experience may be less at risk of introducing such bias. The development of rich, nuanced explanations of how people experience healthcare has been shown to inform holistic, person-centred, empathic practice (Cassidy et al., 2011). Such an approach is in keeping with the interpretivist research paradigm (Ryan, 2018), the researcher’s personal professional stance and the aim of the research. Therefore, it was decided to undertake a qualitative, interpretive hermeneutic phenomenological study. The methods and design of the qualitative study now follow.

3.3 Qualitative Research Methods

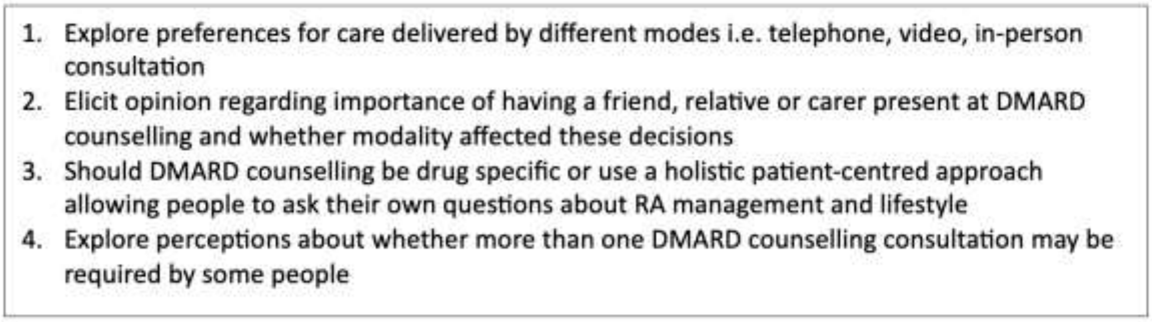
This section presents the considerations and decisions made in designing a hermeneutic phenomenological qualitative study. The aim of the study was to explore the expectations, experiences, needs and concerns of people with RA receiving DMARD counselling when starting Methotrexate. Patient and public involvement contributed to the development of the research strategy employing convergent semi-structured interviews (Dick, 2016) before and after nurse led DMARD counselling. The rationale for the population, sample, recruitment, consent, data collection, capture and storage, analysis are given, together with details of ethical considerations and approval.

3.4 Patient and Public Involvement

A patient advisory group (PAG) was formed consisting of two members of Keele University Research User group, who have lived experience of RA. The impact of the COVID-19 pandemic affected recruitment to the group. Five people were invited, two participated in the review, one by virtual video meeting with a member of Keele Patient and Public Involvement and Engagement (PPIE) User Support Team, and one in a separate telephone meeting, at the request of the participant. Given the requirement for social distancing, and difficulties in arranging the PPIE meeting, in agreement with the PPIE facilitator the meeting proceeded rather than risk not having any participants if the meeting was reconvened. Remuneration was made via Keele PPIE Team with funding from the Research Fund for the study in line with INVOLVE recommendations (Tarpey, 2019).

The purpose of the study and study design were reviewed and agreed as being important in informing patient centred care and service provision. The content of the interview topic guides (Appendix 6 and Appendix 7) were reviewed, acknowledging that people's information needs differ at different time points in the RA journey. Aspects of the topic guide amended as a result of the PPI meeting are listed in Figure 3.2.

Figure 3.2 Aspects of interview topic guides modified with PPIE involvement



1. Explore preferences for care delivered by different modes i.e. telephone, video, in-person consultation
2. Elicit opinion regarding importance of having a friend, relative or carer present at DMARD counselling and whether modality affected these decisions
3. Should DMARD counselling be drug specific or use a holistic patient-centred approach allowing people to ask their own questions about RA management and lifestyle
4. Explore perceptions about whether more than one DMARD counselling consultation may be required by some people

Additionally, the PAG felt that the researcher should inform research participants that as well as being a researcher they are also an experienced rheumatology nurse but was not in involved in their care. They felt that this would help to put people at their ease, by knowing that the researcher had some understanding as to what RA is, how it affected people, and what the treatments were, and so may enable people to feel confident in 'telling their story and giving honest opinions.' Further support and collaboration with the PAG focused on details of the population and sample, data analysis, development of the themes and dissemination messages.

3.5 Study population

The study aimed to explore the meaning of receiving information when starting Methotrexate in adults over 18 years of age with RA. Interviews would be conducted in English, due to the time and financial constraints of the study it would not be possible to offer the facilities of a translator. In line with the ethical considerations of beneficence and non-maleficence people with severe, active mental health conditions and those lacking mental capacity would be excluded from the study (Health Research Authority, 2017).

3.6 Sampling strategy and size

In designing the qualitative phenomenological study the concept of information power (Malterud et al., 2016) was used to inform sample size. That is the greater the 'information power' i.e., the relevant data to answer the research question the sample contains, the smaller the sample size needs to be (Malterud et al., 2016). Five inter-related factors are seen to affect information power: the study aim, sample specificity, established theory, quality of dialogue, and analysis strategy (Malterud et al., 2016). With regards to the study aim a homogenous sample of adults with RA starting Methotrexate experiencing the same phenomena was required (Robinson et al., 2015). Whilst purposive sampling (Marshall, 1996) informed the specificity of the population, by including people with a broad range of age, gender, disease duration and previous DMARD exposure to enable both a breadth and depth of understanding of the phenomena (Sandelowski, 1995). The Necessity-concerns Framework theory (Horne et al., 2013) and reflexive thematic analysis (Braun and Clarke, 2019) informed the design of the study. The use of theoretical perspectives to support planning, analysis and developing conclusions derived from existing and new knowledge from studies are seen to strengthen information power (Malterud et al., 2016) and often resulted in a smaller sample size being required. The quality of the dialogue refers to the communication between the researcher and participants. For example, rich interviews are the product of effective communication between the researcher and the participant. The researcher's background knowledge and interviewing skills, together with the communication skills and fluency of the participants led to meaningful conversations (Malterud et al., 2016). Finally, in order to answer the research question cross-case analysis (Malterud et al., 2016) was required to develop an adequate understanding of the phenomenon.

The concept of 'information saturation,' which occurs when no new information is generated (Braun and Clarke, 2019) was previously accepted as the criteria to be achieved when defining sample size in qualitative studies (Morse, 1995). However, the concept of data saturation remains ill-defined and increasingly questioned (Braun and Clarke, 2019), because as Lowe (2019) and Braun and Clarke (2019) argue further analysis of existing data, or additional data collection may reveal further perceptions of phenomenon. This suggests that data saturation cannot be accurately determined.

A definitive sample size was not set a priori (Sim et al., 2018), however for the purposes of planning (Braun and Clarke, 2019) and obtaining ethical approval it was estimated that 16-20 participants, an average qualitative research sample size (Bartholomew et al., 2021) would enable meaningful results whilst being a manageable sample given the time constraints of the study. This sample size also took into account the skills and knowledge of the researcher, and time constraints, allowing the researcher to concentrate on the quality of the research rather than having a larger sample (Bartholomew et al., 2021) to adequately answer the research question (Braun and Clarke, 2021). Decisions regarding the sample size would also be taken throughout the study, guided by the diversity, including ethnicity and gender of the sample, and availability of participants.

Recruitment from two NHS Trust rheumatology sites in the West Midlands aimed to reflect differences in both demographics and experiences of the phenomena. A pragmatic decision was taken to collaborate with another rheumatology unit with established reciprocal research working in view of the time constraints of the study, and the impact the pandemic had on delivering research activities. The local population of the primary research site (PRS) being mainly Caucasian, with English as a first language (ONS Census data, 2021) and the Participant Identification Centre (PIC) site being an NHS Trust with a more ethnically diverse population (ONS Census data, 2021) was selected aiming to recruit an inclusive sample of the local population. Table 3.1 summarises the sampling strategy.

Table 3.1 Four Point Sample Strategy (adapted from Robinson 2014)

Sample population	Homogeneity: Adults over 18 with RA, referred for Methotrexate counselling, able to communicate in English
Sample size	Idiographic (Small sample size to allow in-depth interviews to understand perspectives of individuals) Reflexive approach within time constraints of study
Sample strategy	Purposive sampling Aim to recruit people with a broad range of age, gender and ethnicity
Sample recruitment	Recruit participants from two NHS rheumatology units in England

3.7 Data collection methods

3.7.1 Consideration of data collection methods

Having decided to conduct a hermeneutic phenomenological, qualitative study, various methods of gathering data were considered including convergent interviews (Dick, 2016), semi-structured interviews, unstructured interviews and focus groups (Silverman, 2022). Interviews are data collection methods whereby an interviewer asks questions to a research participant (interviewee) to explore the meanings of life experiences for the participants either face to face or at a distance (Brinkmann, 2008, DiCicco-Bloom and Crabtree 2006, Saarijarvi and Bratt, 2021). Face to face interviews are synchronous in time and place, physical meetings are seen to offer a supportive environment where non-verbal communication such as body language and facial expressions of both interviewee and interviewer are visible and seen as the gold standard (Saarijarvi and Bratt, 2021). The disadvantages of a face-to-face approach are that they require travel with cost and environmental impacts and may pose safety risks where the interviewer may be exposed to lone working and can be time-consuming in organising the physical space and travelling time (Saarijarvi and Bratt, 2021). Remote or virtual interviews offered a safe alternative when social distancing is a safety requirement such as during the pandemic. Video interviews have been used successfully used in healthcare research as an alternative to face-to-face interviews (Krouwel et al., 2019), however they require the participant to have access to, and be comfortable with using digital technology. This can exclude those who are do not have digital access or skills from taking part in research and result in under-representation of some groups in the study (Krouwel et al., 2019).

Telephone interviews offer an accessible alternative to face-to-face interviews, being less dependent upon technology than video interviews. However, communication difficulties can be encountered (Saarijarvi and Bratt, 2021) due to poor quality telephone connections, as well as potential interviewees having speech or hearing limitations. Those with speech difficulties and regional accents can make understanding people's speech more difficult, which together with background noise can impact upon recording and make subsequent transcription difficult. A lack of visual interaction precludes non-verbal communication (Saarijarvi and Bratt, 2021) that may limit interaction and responses from the participants, however cues can be picked up through the intonation and speech (Burke and Miller, 2001).

Email and online chat interviews offer alternative methods of data collection (Neville et al., 2016) and have been used in exploring sensitive topics and considered equivalent to telephone interviews (Saarijarvi and Bratt, 2021, Hershberger and Kavanaugh, 2017). However, as they require skills and adequate hand function to type, or skills to manage voice dictation they were unlikely to be suitable for the topic area in question.

Synchronous communication can be developed in online chat interviews and e-emoji's seen as an alternative method of displaying emotion within the virtual communication (Opdenakker, 2006), however these symbols have different meanings in different cultural contexts and strategies to agree on the meanings of e-emojis are recommended to avoid confusion and miscommunication (Saarijarvi and Bratt, 2021).

A recent qualitative nursing study exploring the experiences of young adults with congenital heart disease taking part in a programme to support their transition from child-centred to adult healthcare reported upon the effective use of email interviews (Saarijarvi and Bratt, 2021). Benefits of email interviews were seen to include the opportunity for asynchronous communication allowing the participant to reflect upon the questions before responding (Saarijarvi and Bratt, 2021). In this study the interviewer was required to reply in a timely, pre-agreed timeframe and take time to reflect upon the responses and generate further lines of enquiry into topics raised in responses. Text was transcribed synchronously saving time in transcription. As an emerging researcher with no prior experience of email interviews, working remotely during the pandemic the researcher did not feel they had the skills to confidently undertake email interviews or online chat interviews to generate rich insights required to answer the research question. The researcher also had concerns about the ability to develop a meaningful, empathetic line of communication with participants using these methods and potential issues around maintaining confidentiality and ensuring secure management of online chat data whilst working remotely. Furthermore, being limited to the use of digital methods of interviewing would lead to exclusion of people who were not familiar, confident or did not have access to digital technology, thus affecting the representativeness of the sample.

Focus groups were also considered as a method of data collection, being an established qualitative research method used in healthcare research (Pope and Mays 2020; Morgan 2019; Carr et al., 2003; Giacomini and Cook 2000) and deemed suitable for exploring the patient perspective of healthcare issues including RA (Coenan et al., 2011). Focus groups provide a method of researcher-led group interviewing where dialogue generates qualitative data (Morgan, 2018) and are usually undertaken in-person. Again, this was not a viable option due to the requirement for social distancing during the study period. Minimal evidence exists around conducting virtual focus groups during the COVID-19 pandemic (Almujlli et al., 2022). Having had previous experience of organising and facilitating face-to-face focus groups as part of service evaluation and development projects, the author was aware of the benefits and limitations of face-to-face focus groups. Benefits of focus groups included the opportunities to generate rich discussion enabling participants to consider and discuss a wide range of topics sometimes beyond their original thoughts. Whilst potential limitations included issues with social dynamics within focus groups whereby particularly vocal participants could dominate the group without skilful management by the facilitator.

Face-to-face focus groups could have provided a valuable method to answer the research question (Kreuger and Casey, 2015). However, in light of the necessity for remote working, this method was discounted due to researcher experiences of reticence amongst participants' using virtual methods of focus groups when engaging with patients to gather patient and public perspectives on the design and content of the study. Of note, and significantly the primary research site has identified high rates of digital exclusion, especially in those of older age, therefore a digitally based study may have excluded participants (Hider et al., 2022).

Remote telephone and video interviewing therefore offered a safe, pragmatic method, in keeping with the national guidance for social distancing at the time of the study, to use an exploratory approach to generate and collect rich data to gain insights into the information needs of patients starting Methotrexate. Having chosen a safe and suitable approach to interviewing, consideration was given to the type of interview that would generate the most appropriate data.

Unstructured interviews offer the opportunity for participants to talk openly about a phenomena and may be more suited to informal, conversational interviews as used in long-term fieldwork in ethnography (Corbin and Morse, 2003). Participants may deviate from the topic the researcher is investigating and lead to large amounts of redundant data with insufficient data to answer the research question. Semi-structured interviews use a topic guide as a framework for the interview (DiCicco-Bloom and Crabtree, 2006) whilst the interviewer encourages the participant to talk freely and explore issues that they raise in more detail. Open and closed questions are used to explore areas the participant raises, adding depth and breadth to the topic explored. Semi-structured interviews have been used to explore the information needs of parents about the treatment of their chronically ill child (Hummelink and Pollock, 2006), problems with new medications in people with chronic illness (Barber et al., 2004) and health information seeking behaviour in people with arthritis (Ellis et al., 2012).

3.7.2 Convergent semi-structured interviews

Convergent semi-structured interviews (Dick, 2016), originated in market research and subsequently adopted in health and social care research and offer a more flexible means of data collection. An initial interview topic guide is developed by the interviewer, and refined throughout the research study, allowing convergence of topics generated within each interview, and the overall data (Dick, 2016). This allows topics raised by a participant to be explored both within their interview and in future participant interviews. At the end of each interview, participants are invited to briefly confirm their thoughts (Dick, 2016) about the topic, in this case, starting Methotrexate and the DMARD counselling appointment. This approach aims to focus the research on the participants' voices and reduce the risk of researcher bias influencing the topics explored (Dick, 2016). This reflective, cyclical approach of interviews and data analysis informing each other throughout the study seemed in keeping with the chosen hermeneutic phenomenological methodology whereby the researcher takes both an emic and etic approach to interpretation of the data. Convergent interviewing has been used in healthcare exploring the lived experience of people with chronic obstructive pulmonary disease (COPD) (Moloney et al., 2023), service delivery in occupational therapy (Van Biljon et al., 2017), and perceptions of treatment planning (Logan et al., 2013). Therefore, convergent semi-structured interviews were chosen as a suitable data collection method, to generate rich data, and promote the patient voice in answering the research question.

3.8 Interview timing

Participants would be invited to take part in two interviews, one interview before the DMARD counselling appointment (pre counselling interview) would explore people's perceptions of starting Methotrexate, identify information and support needs and their expectations of the content and method of the DMARD counselling. There would then be a second interview (post counselling interview) to explore people's perceptions and experiences of DMARD counselling, and elicit whether their expectations, information and support needs had been met. Bearing in mind the impact of the COVID-19 pandemic on National Health Service (NHS) provision and national infrastructure including the postal service, a pragmatic approach was taken that participants could be recruited to take part in both pre and post interviews, or where DMARD counselling had already taken place, they would take part in a single post DMARD counselling interview.

3.9 Interview topic guides

Initial topic guides were developed to support the convergent semi-structured interviews, informed by the existing evidence base around patient experience of starting DMARDs (Pasma et al., 2015, Townsend et al., 2013, Salt and Peden, 2011), experience of written national safety agency information about Methotrexate (Hayden et al., 2015), preferences for DMARDs (Kelly et al., 2018), and beliefs about medicines (Horne et al., 2013). The Methotrexate information leaflet produced by VersusArthritis (accessed Oct 2022) was also used in developing the topic guide. This leaflet is publicly available and used by many rheumatology units in the UK to support Methotrexate related information needs of people with inflammatory rheumatology conditions.

A patient advisory group (PAG) comprised of n=2 members of Keele Research User Group who had a diagnosis of RA, reviewed and contributed to the content of the topic guides. The topic guides were also reviewed by a clinical academic rheumatologist and clinical academic professors of nursing and rheumatology nursing, also being members of the researcher’s supervisory team. To ensure a convergent (Dick, 2016) and reflexive approach to data collection, after each interview the topic guides would be revised and evolve to reflect areas of interest or concern raised by the previous participant(s). Topic guides would be amended in light of issues raised by participants to allow the researcher to elicit future participants perceptions about issues raised. The topic guides are detailed in Appendix 6 and Appendix 7.

3.10 Data capture and storage

Telephone and video interviews would be digitally recorded using Microsoft TEAMS together with a back-up digital recording device aiming to overcome issues of poor telephone line quality or loss of digital access. Digital recording provided a means to access data as it was collected, complete with voice intonation, verbal cues and non-verbal cues on video interviews and facilitate use of verbatim quotes to support analysis of the data and rigour in the research process (Back, 2010). This would allow the researcher to concentrate on developing a rapport with the participant, focus on listening, exploring and encouraging participants to talk more about issues raised (Edwards and Holland, 2013).

The researcher was aware recording an interview could be off-putting for the participant and distracting for the interviewer, in checking the recording device is working (Edwards and Holland, 2013), concentrating less on the interview and relying on production of the interview transcription (Back, 2010).

In addition to digital recording, notes would be made by the researcher during the interview as an aide-memoire to probe around specific issues raised, and prompt to ask further questions to build depth and breadth in the interviews. These notes would supplement the research transcriptions. Interview notes would be annotated with the participant number, initials and securely stored. Digital recording would provide a secure method of data management in line with GDPR (2018).

3.11 Data storage

Data would be collected, stored and processed in line with the core principles of the Data Protection Act 1988 and GDPR (2018) and using password protected NHS and Keele university secure digital data storage. All research data would be pseudonymised. The Chief Investigator (SR) is the custodian of the data. Electronic data will be stored for 10 years in accordance with Keele University Policy.

3.12 Data Transcription and Analysis

Qualitative data analysis would be carried out alongside data collection in keeping with convergent interviewing (Dick, 2016). Interviews would be pseudonymised and transcribed promptly after the interview by the researcher. This would provide the opportunity to listen to, hear, reflect and start to analyse the interactions, spoken word and context of each interview and make comparisons with other interviews. This would enable convergence of new topics with subsequent participants (Dick, 2016) to identify whether consensus existed amongst participants with issues raised.

3.13 Data analysis strategy

In designing a data analysis strategy several methods were considered. IPA was discounted because of issues around the heterogeneity, larger sample size and analysis concentrating on the participants view rather than taking account of the researcher role in the research process. Content analysis was considered but this would have concentrated on how the language was used by participants to communicate their experiences (Bryman, 2016), whereas beliefs and perceptions of the phenomena were required to answer the research question.

3.13.1 Reflexive thematic analysis

The aim of the research was to explore and understand patient perspectives of receiving information when starting Methotrexate to treat RA, to inform healthcare education, policy and practice for optimum patient-centred care for people with RA. Therefore, Reflexive Thematic Analysis (RTA) (Braun and Clarke, 2006, 2019, 2021) offered a reflexive inductively focused method to 'explore experiential patterns and meaning' (Braun and Clarke, 2019) within the data. The 'tools' of RTA support qualitative data analysis, embraced the researcher's subjectivity and the flexibility to utilise relevant theory, such as the Necessity Concerns Framework (Horne et al., 2013). RTA also offered reflexivity during the iterative analysis process, to 'give voice' to the lived experiences of people with RA starting Methotrexate (Braun and Clarke, 2020).

RTA aligned with the reflexive, subjective, qualitative phenomenological methodology of the study and my stance as a researcher and clinical nurse specialist. The six stages of RTA have been presented in Chapter 2.

These steps would provide a reflexive framework for the listening and reading of transcripts and notes, coding of data and initial themes, reflecting and revising thoughts about the data and code development in the analysis as a non-linear, iterative process (Holloway and Galvin, 2017). An immersive approach would be used when analysing the data, with repeated reading of both the typed transcripts and interview notes. Colour coding would be used to highlight relevant text such as referring to information needs, and expectations or experiences of the DMARD counselling appointment. Excerpts of data would be copied onto Excel spreadsheets initially grouping data together that would both answer the research question and be relevant to the wider issues of being diagnosed with and living with RA. It was anticipated that some data would relate to more than one code. As both data collection and analysis progressed, codes would be refined and re-organised on word documents and mind maps. Provisional themes would be generated and refined to allow a comparison of individual cases, and across the dataset using, 'theoretical sampling' (Charmaz and Thornberg, 2021) including confirming and confounding experiences and beliefs within themes and the dataset.

3.14 Ethical considerations and approval

The study protocol was reviewed by Keele University Research and Development department prior to approval by the being granted in September 2021 (Appendix 11 IRAS No 295081). Local access was granted from research and development departments at two NHS Trusts in the North and West Midlands of the UK.

3.14.1 Ethical considerations and participant welfare

The study involved minimal risk to participants.   The researcher would adhere to the ethical principles of UK health and social care research and the NMC code of conduct (Health Research Authority, 2017; NMC, 2018). This would enable the researcher to remain in 'researcher role' and attend to their 'duty of care' as a registered nurse to safeguard the participant should ethical issues arise during the

interview (NMC, 2018; Backhouse and Daly, 2022; Guillemin and Gillman, 2004).
At the beginning of each interview the researcher would re-confirm consent verbally, answer any questions about the research study and reiterate that the interview was confidential, participants would not be identified, interviews would be anonymised and taking part in the interview would not affect their clinical care in any way (HRA, 2017).

The study involved minimal risk to participants. There was a risk that participants could become distressed discussing sensitive issues (Holloway and Galvin, 2017) around their lived experience of RA, being advised they needed treatment with Methotrexate, concerns about whether they needed to take Methotrexate, and possible risks and harms or because of the experience of the DMARD counselling. Each participant would be advised that they could terminate the interview at any stage. If a participant became emotional discussing their experiences, the researcher would respond empathetically, offer reassurance, and allow time for to explore their emotions further and/or compose themselves as appropriate. The telephone number of appropriate mental health helplines would be available to signpost participants to psychological support if required. The participant would be offered the telephone number of the appropriate mental health helpline. Should a participant divulge they have active suicidal ideation or intention to harm others, the researcher would turn off the recording equipment. The researcher would explain that in view of the participant being deemed at risk the researcher has a duty of care report their concerns. The participant would be asked to agree to give their details to allow for local appropriate emergency help to be sought. The researcher would follow local safe-guarding procedures and contact appropriate local services and agencies depending upon the severity of the situation. Should a person be deemed in immediate danger the relevant local emergency services, mental health crisis team and family practitioner would be contacted and actions documented in line with safeguarding policy and procedures.

The researcher would explain the purpose of the research was to learn about people's experiences of a DMARD counselling appointment, there were no right or wrong answers, and that by learning of people's experiences would enable improvements to be made in care provided and would not affect their clinical care in any way (Holloway and Galvin, 2017). In line with the recommendations of the PAG the researcher would inform participants that they were an experienced rheumatology nurse and confirm they were not involved in their direct care. Where participants described unmet information or support needs with an expectation that the researcher would address these issues, the researcher would negotiate that these could be addressed at the end of the interview to avoid impacting the data collection. In such cases at the end of the interview general straightforward issues would be resolved by the researcher. Issues requiring person-specific information or support would be signposted to their local rheumatology adviceline or services. Requests for general RA information and self-management would be signposted to patient associations NRAS and VersusArthritis.

3.15 Recruitment strategy

Clinicians at both NHS Trusts, and rheumatology research nurses at the PIC site would be asked to identify people who were to receive Methotrexate DMARD counselling. Study packs would be posted or emailed out to all potential participants meeting the inclusion criteria including a study invitation letter (Appendix 8) participant information leaflet (Appendix 9) and an expression of interest form (EOI) (Appendix 10) with a pre-paid envelope to return the EOI, indicating interest in taking part in the study. The EOI form would allow people to report interest in participating together with age, gender and ethnicity to inform purposive sampling. Reminder packs would be sent after two weeks to non-responders. Those not responding after two weeks would be assumed to be non-consenters and excluded.

3.16 Consent

Participants who agreed to take part in the study would be posted or emailed, dependent on the patients' preference, a consent form. Potential participants would be asked to sign and return the consent form in a stamped addressed envelope (SAE) provided or email the consent form and include in the email a statement with their full name confirming that they had read the consent form and were willing to take part in the study. The researcher would reaffirm verbal consent and answer any questions the participant may have before commencing the interview.

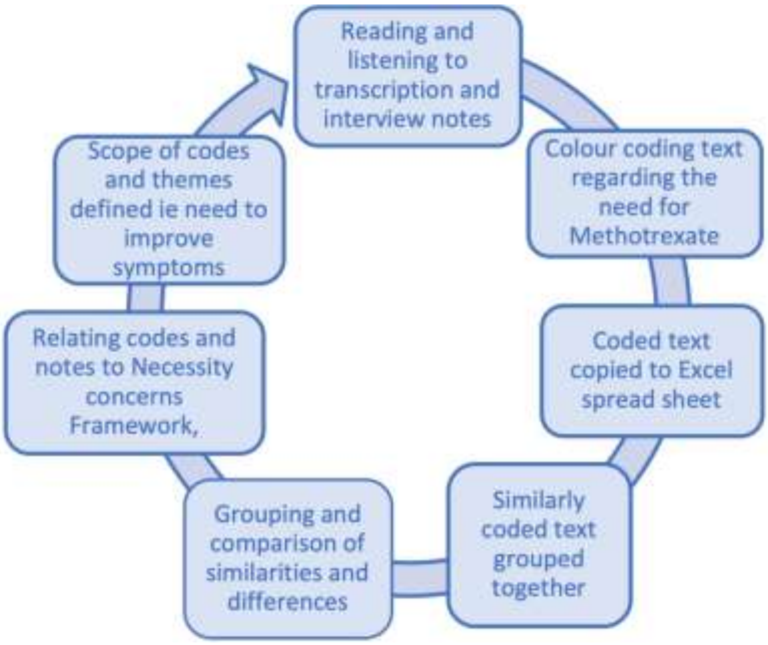
3.17 Use of theory and theoretical frameworks in the analysis process

Some of the data related to concerns about the need for Methotrexate to treat RA, and the time taken for Methotrexate to reach effect as it is a slow acting drug.

Concerns existed about potential risks or harms related to taking Methotrexate and issues regarding safety monitoring requirements, practical aspects relating to the organisation of monitoring blood tests and obtaining further supplies of Methotrexate. The impact of the personal characteristics of HCPs and the importance of trusting the HCPs was evident, and impacted on how participants accepted the information provided. These issues aligned to the Necessity-Concerns Framework (©Horne, 2013) that had informed the development of the study. An inductive and deductive approach to analysis was used working across emerging data, developing theories and existing theory and evidence from the literature review. A recursive process was used to data coding and thematic development around the individual needs of people with RA and the impact of HCPs attributes.

Similarly, analysis of data around both the participants' and rheumatology nurses' knowledge and experience of RA and Methotrexate led to engagement with theories including the Person-Centred Framework for Nursing (McCormack and McCance, 2006) and Person-Centred Practice Framework (McCormack and McCance, 2017). These theories enable healthcare teams to understand the relationship between the attributes of healthcare workers in establishing a suitable care environment that embodies a 'healthful organisational culture' (McCormack and McCance, 2017). The organisational culture in turn influences the delivery of effective person-centred care to achieve person-centred outcomes, by involving the people in their care and promoting a feeling of well-being (McCormack and McCance, 2017). Where the organisational culture is not supportive of person-centred care, individual hcps may struggle to effectively deliver the care they strive to achieve, or lack the opportunities to develop the skills, knowledge and training to implement the change required to move from client-centred to person-centred care. An example being where a one-size-fits-all or checklist type approach was reported, that did not support or facilitate opportunities for two-way discussion to identify information needs or concerns about the need to take Methotrexate. Figure 3.3 details the process of theme development regarding the necessity for treatment with Methotrexate.

Figure 3.3 The process of theme development regarding the necessity for treatment with Methotrexate



3.18 Review of the thematic analysis

A Doctoral supervisor (SR) reviewed 10 transcripts, and the interview data, coding, and mind maps used in theme development were explored and discussed at supervision meetings. Development of themes including using pseudonymised participant quotations were used in meetings to review study findings with both clinicians and members of the PAG. A report of the study findings (Appendix 12) developed in line with National Institute for Health Research guidance (2019) was disseminated to all the study participants who had requested this information. A study findings meeting was organised for both PAG members and study participants, together with an invitation to submit feedback by email or post using pre-paid envelopes. Unfortunately, no engagement or feedback was received from the study participants although many had indicated interest in such a meeting at the time of interviews. On reflection it is possible this related to the time lag between the interviews and dissemination of the study findings. Another consideration is the lack of public awareness of both the opportunity and importance of public participation in all aspects of research design, delivery, evaluation and dissemination.

3.19 Impact of the researcher on the research

The researcher's clinical experience and skills as a specialist nurse caring for people with RA, providing person-centred care including delivering information about Methotrexate influenced the approach to analysis. Reflexive journaling supported data analysis in several ways, firstly allowed reflection as to how to manage the complexities of telephone interviews, such as not being able to see the participants, which precluded physical aspects of non-verbal communication such as using an open-posture and nodding to demonstrate active listening. It was difficult sometimes to allow time and silence for participants to respond. Reflection on these issues encouraged practising using silence, thereby allowing participants time to respond. Interestingly a few participants were also concerned by silences in the absence of being able to see the researcher at the end of the phone, checking that the researcher was still there. Secondly, reflecting on patient reported experiences of DMARD counselling after interviews enabled 'voice' to be given to the participants. Thirdly, writing or ‘thinking out’ frustrations after hearing of participants unmet information and support needs when they were struggling physically and emotionally with the impact of RA was helpful. Several participants were signposted to contact their clinical services and national patient associations for further information and advice after interviews had ended. This enabled the researcher to remain in ‘researcher role’ during interviews whilst attending to their ‘duty of care’ as a registered nurse.

These approaches both supported the analysis and allowed demonstration of rigour in both interviewing and subsequent analysis. As reflexive analysis progressed, using both an inductive and deductive approach semantic themes were developed derived from widely recurring data describing concerns about the need for, and about taking Methotrexate together with the importance and influence of information about Methotrexate. Mind maps were used to develop the interlinked themes (Appendix 13) together with generation of an over-arching latent theme (Braun and Clarke, 2019) regarding the desire for person-centred care. This was derived from both implicit meaning within the accounts, for example, descriptions of a standardised, one-size-fits-all approach that did not meet expectations, needs or concerns, together with explicit statements describing that interactions were not seen to be focused with the participant themselves.

3.20 Ensuring quality of the work

Lincoln and Guba (1986) identified criteria for the trustworthiness of qualitative research; credibility, dependability, confirmability, and transferability which have been widely adopted (Forero et al., 2018). Ongoing developments in approaches to qualitative research methods such as Reflexive Thematic Analysis (Braun and Clarke,

2020) have led to specific recommendations for assessing good practice (Braun and Clarke, 2022), recognising that not all components will be relevant to every study. Relevant aspects including researcher reflexivity have been reviewed in line with Braun and Clarke (2022) recommendations and are reflected in the design and reporting of the methodology and methods of the study in this chapter. Table 3.2 below identifies the steps taken for this study adapted from Lincoln and Guba’s (1986) framework, and Forero et al., (2018).

Table 3.2 Steps taken to ensure quality of the work

Criteria	Rigour Criteria and Purpose	Strategies
Credibility	Establishes confidence that the results are believable from participant perspective	Patient and Public Involvement, literature review and theory informed study design and interview topic guides. Participant interview data informed the study processes. Researcher perceptions from the participant data have been checked with participants for context and accuracy within interviews. Verbatim quotes have been used to demonstrate themes. A reflexive, iterative approach is used including a systematic review of the literature, existing research and theoretical frameworks to inform study development, analytical processes and debate. A consistent approach to ontology and epistemology has been demonstrated.
Dependability	Demonstrates transparency of procedures followed.	Transparent study protocol designed. The reflexivity of the researcher's decision making is demonstrated from methodology, data collection and analysis. Transparency is demonstrated throughout the decision-making process and analytical approach with evidence of pseudonymised raw data, coding, and thematic development.
Confirmability	Promotes confidence that other researchers would confirm results	Single researcher analysis in line with RTA, with research supervisor reviewing 10 transcripts. Regular review of data coding and theme development with supervisory team, linking to literature, research and theory. Researcher reflexive journaling.
Transferability	Affirms level of generalisability or transferability to other contexts/settings	Clear definition of the research setting in context to the wider population, purposive sampling technique and the sample. a) Identification and discussion of limitations of the research findings, b) critique of research findings in relation to research and theory within discussion/conclusion chapter.

3.21 Conclusion

This chapter has described the processes and decisions taken in designing the research strategy utilised to answer the research question, including the research philosophy, methodology, method, and processes. The procedure for ethical approval procedure has been outlined together with how the trustworthiness of the research will be assured.

Chapter 4

4 Results from the Qualitative study

This chapter provides the results from the qualitative study exploring the expectations, experiences and information requirements of people with RA commencing Methotrexate attending two NHS Rheumatology departments in the West Midlands. Participants received DMARD counselling either in-person or via telephone DMARD counselling. Telephone DMARD counselling was rapidly implemented during the pandemic due to requirements for social distancing and staff did not receive specific training to support them to adapt to delivering care in this way. Specific details of the rheumatology nurses delivering DMARD counselling were not elicited as part of the study. The researcher was aware that those delivering DMARD counselling included those working at staff nurse, senior staff nurse and clinical nurse specialist level (Band 5, 6 and 7), with varying levels of rheumatology experience across the grades. This reflected the differing ways of service organisation and delivery across the included units; such as whether DMARD counselling was devolved down to a standalone consultation, or provided as an integral part of ongoing early arthritis and IA nurse-led care services.

In keeping with the qualitative, interpretive phenomenological methodology of the study, results are presented as themes generated using reflexive thematic analysis (Braun and Clarke, 2019; 2006) and evidenced with verbatim quotes from the participants. The participants own words are pseudonymised and presented as spoken, in italics for clarity to give voice to their lived experience (Eldh et al., 2020; Corden and Sainsbury, 2006). Firstly, the demographics of the sample are described, to give context and demonstrate the heterogeneity of the sample. Results of thematic data analysis are then presented with a summary of the themes. Finally, a summary of the key findings of the study are included together with a discussion of the strengths and limitations of the work.

4.1 Research Sample

Twenty-one respondents of white British ethnicity indicated interest in the study. Twenty participants were recruited, one female participant was subsequently excluded following confirmation by the research site staff that the participant did not have a confirmed diagnosis of RA. Eleven male (M) and eight female (F) aged between 45 and 75 years participated in the qualitative study. The study aimed to recruit a diverse population, everyone who was eligible to participate was sent a study pack. An extended three-month recruitment period aimed to recruit females and males of non-White British ethnicity however this did not increase the diversity of the study population. The failure to recruit anyone from of minority ethnicity is however in line with the concerning findings from the NEIAA (2022) demonstrating that fewer people of non-White ethnicity commenced Methotrexate following a diagnosis of IA in England and Wales.

The final male respondent was not recruited due to information power of male participants. It is notable that this qualitative study recruited more men (n=11) with RA than women (n=8). This was an unexpected demographic given that RA affects two to four times more women than men (NICE, 2018), and a recent integrative qualitative review exploring the lived experience of people with RA reported more female than male participants (Poh et al., 2015). Demographic characteristics of the sample are summarised in Tables 4.1 and 4.2.

Table 4.1 Demographic characteristics of included participants

Sex	Number (%)	Research Site A	Research Site B
Male (m)	11 (58%)	6	5
Female (f)	8 (42%)	7	1
Ethnicity	19 (100%) White British		
Age range	45-75 years		
DMARD counselling interviews	Pre and post post	3m 2f 3m and 5f	2m 1f 3m

Table 4.2 Individual participant characteristics

Participant	Male	Age	Disease duration	Pre/Post
1	m	69	<1yr	Pre/post
2	f	73	>1yr	Post
3	m	62	<1yr	Post
4	m	45	>1yr	Pre/post
5	f	66	<1yr	Post
6	f	53	>1yr	Post
7	m	75	<1yr	Pre/Post
8	f	70	>1yr	Post
9	m	74	<1yr	Post
10	m	69	<1yr	Post
11	m	72	<1yr	Post
12	m	59	>1yr	Pre/Post
13	f	68	>1yr	Pre/Post
14	m	60	<1yr	Pre/Post
15	f	64	<1yr	Pre/Post
16	f	74	<1yr	Post
17	f	53	<1yr	**Excluded***
18	f	56	<1yr	Pre/Post
19	m	74	>1yr	Post
20	m	74	<1yr	Post

* Participant excluded – subsequent confirmation they did not have RA and therefore not meet inclusion criteria

Pseudonymised participant data is presented in Italics in the narrative analysis as follows:
pn = participant number
m= male, f= female (identified at first included data excerpt)
pre-interview conducted before DMARD counselling appointment (DCA)
post-interview conducted after DCA
[] = narrative shortened without altering context
… = pauses in narrative
______ = denotes participant pre and post interview quotations

4.2 Thematic Analysis

A latent overarching theme; ‘Everyone’s different; A desire for person-centred care when receiving information about Methotrexate,’ was developed, recognising that people with RA have individual needs when starting Methotrexate. Three inter-related themes were developed:

1) ‘Missing the person; Identifying the often-unmet information needs and the utility of varying information sources.’

2) ‘To regain a quality of life; The impact of RA influencing the need to accept treatment with Methotrexate.’

3) ‘Metho…It’s a strong, scary drug; Identifying concerns related to potential risks and side-effects when taking Methotrexate.’

The following narrative uses sub-sections to present detailed topic summaries within the themes (Sandelowski, 1998, Braun and Clarke, 2019).Individual information needs

An overarching theme was developed that identified the unique and individual information needs of people with RA when starting Methotrexate. Implicit and explicit examples of experiences of largely routine, one-size-fits-all service provision are demonstrated contrasted with a desire, and preference for person-centred care, to effectively meet information needs. This is presented throughout the following three inter-related themes.

4.3 Theme 1: Missing the person; Identifying the often-unmet information needs and the utility of varying information sources

4.3.1 The impact of the COVID-19 pandemic on care

National guidelines recommend early referral, diagnosis and initiation of treatment with Methotrexate as initial DMARD treatment, ideally within three months of onset of symptoms (NICE, 2020; BSR-NEIAA, 2022). Pressures on NHS services and the requirement for social distancing during the pandemic resulted in significant delays in accessing care and treatment. Some participants struggling with symptoms accessed private healthcare to access treatment with steroids and Hydroxychloroquine, a DMARD without requirements for safety monitoring. One participant benefitted from continuity of care following transfer to NHS services. Frustration was reported by some waiting for NHS care to start Methotrexate, whereas when social distancing requirements eased waiting times were sometimes reduced. However, the speed of the referral process left one feeling rushed through NHS care.

'I've been through various things (investigations) since July 2019 and obviously COVID got in the way and everything else….so I've been waiting probably the best part of 18 months …to see a consultant, 'I've literally just been waiting ..[]. I've just had to chase it up a fair bit but it got to the point where I was really struggling to be honest around Christmas this year []…which is when I kind of pushed [] for an appointment …(the DCA),' p4 m pre.

‘It’s coming up 12 months and I.. I’ve not started any treatment yet.I suppose it’s like everything at the moment..it’s just.. everything’s behind (due to COVID-19).. and there’s only so many people to catch it up…(NHS services).’ p12 m pre

‘I rang the gp and they were still under COVID protocol…(I) was really incapacitated, I could hardly walk…couldn’t do anything… the swelling and the pain… and he said I can put you on the waiting list referral to see a rheumatologist at the hospital .. he said it’s gonna take between 8 to 12 months due to COVID-19 and I said I can’t, I can’t be incapacitated and in this much pain, and it’s just months to wait for a consultation. I can’t do that. I can’t live like that. I asked, Can I go private?’…… I went (private)..[] He started me on Hydroxychloroquine, ’ p6 f post.

‘The Consultant who I saw [] privately because of concerns about delays getting an appointment (due to COVID) and now under his charge under the NHS … has put me back on steroids at a lesser dose because the pain is coming back, after I finished my initial course of steroids, so he's put me on those.. []..until I go on the new medication (Methotrexate)...’ p9 m post.

‘I went to the Drs, you go to the hospital quite quick, you think, [] it kind of felt like a whirlwind…you speak to a consultant, sends you off for blood tests, sends you off for x-rays… [] given a steroid injection…[] you go home and think what’s that all about?’ p15 f pre.

4.3.2 Experiences of decision-making to start Methotrexate and expectations of DMARD counselling.

Involvement in decision-making around starting Methotrexate was not widely recalled or reported. A few people with established RA recalled initiating conversations about a change in treatment and relied on the expertise of rheumatologists to guide decision-making.

'I had to ring him the other week to say, you know, I need to go on something different.' p13 f pre.

'I had a telephone appointment, and asked to see him (consultant), so we did have a face-to-face appointment, [] 'We can try this whatsitcalled Methot..whatever it's called'. I said, 'Yeah, I'm up for it.' They're supposedly the experts .. [] he did say at one point when I started on Sulfasalazine [] there are a number of drugs we can try if this one doesn't work..[]' p19 m post

Wide variation existed in the type and amount of information individuals recalled receiving or sought when starting Methotrexate. Some wished to start treatment and were willing to take recommended treatments, whilst others accepted the necessity to take Methotrexate following initial explanation in the medical consultation. One participant recalled being told they were being started on treatment, whilst others felt overloaded with difficult to recall information, sometimes laden with technical terms that were difficult to understand. Another participant recently diagnosed with RA had undertaken their own independent research, and wanted to start Methotrexate promptly but experienced a delayed start waiting for DMARD counselling.

‘He said it was Rheumatoid Arthritis .. [] (had) to have more x-rays, and then it just got delayed after that (DCA). I have read it’s the most proven one and it’s been the one that’s most successful in helping people ….. I’m quite happy .. quite happy to go along with it …’ p7 m pre

‘I was willing to take anything .. I always have been if … people are taking the time to try and get me feeling better, then you know, I should go ahead … hoping it would suit me and you know I’d have a bit of improvement.’ p5 f post.

‘I’ve got to take something …. she said this is the best one for it (RA)..[].basically if it’s the thing that’s gonna help me … I’ve got no problem with it…’ p1 m pre.

‘We’re gonna put you on this one…. [] and you take what you’re given don’t yer .. but err..’ p12 m pre.

‘I don’t think he explained about how they work….[] I just want something to help me…He just said something about going on Methotrexate… he said I’d got the arthritis, so it was a lot to take in,’ p18 f pre.

4.3.3 Perceptions of the purpose of a DMARD counselling appointment

Perceptions of how a DCA could support people to take Methotrexate were mixed. Those with little experience of ill-health or taking medications were sometimes uncertain but wanted to start treatment. Most wanted to learn more, whilst those who had experienced delayed starts to treatment whilst waiting for investigation results described uncertainty and frustration.

'I just don't know what to expect,' p13 f pre.

'I'm still a little bit.. green with it to be honest…let's hope I get a lot of things sorted…' p12 m pre.

'I don't know a great deal at the moment…[] but I hope I'll get a lot more information on Friday..' p4 m pre.

'I had to have another scan and blood tests [] it kind of feels a little bit up in the air []You get to the point when you think. I just want something to help.. hopefully when I speak to x we'll start some sort of treatment,' p4 m pre.

4.3.4 The diversity of information needs

A wide range of information needs were described by the participants. However, most participants reported wanting to understand the necessity for, and rationale for using Methotrexate, at a level individual to themselves. Reassurance was sought by those with concerns about side-effects, those seeking relief of pain, and those with concerns about whether Methotrexate was safe or would aggravate symptoms or pre-existing conditions. Uncertainty was also described by some waiting for results of outstanding investigations before being able to commence Methotrexate.

'What I want is a better understanding of what Methotrexate does, how it does it, and why that specific drug.. because I understand there are alternatives as well….[] and how

that can help me short, medium and long term… if again it is a long-term option..' p4 m pre.

'…probably ask them about side-effects rather than read it on the internet..[] it's the side-effects that worry me..yeah.' p13 pre.

'.. I'll be trying to find out what I can do or what can be done … to take away the pain' p1 m pre.

'cos as I say, me breathin's bad enough as it is…and I don't want to… that to be exasperated (exacerbated)… by it. [] They may say because of my lungs and how bad they are….I can't take it at the moment anyway.. [] I'm basically in the dark as to if it will work and if it will work for me,' p1 m pre.

'It's being in limbo until I know if I know me chest x-ray …..(is okay),' 18 f pre.

4.3.5 Perceptions about the timing of DMARD counselling appointments

Opinions differed about when information about Methotrexate should be provided, whilst reported waiting times for DMARD counselling ranged from under a week to a few months. None of the participants received nurse-led Methotrexate counselling on the same day as diagnosis and some described being overwhelmed on receiving a diagnosis of RA.

'It might have been too soon on the same day cos I .. I know I've been worrying about it, but that would have been too soon .. if they say right you're gonna start on

Methotrexate, you're gonna see the nurse and she's gonna prescribe it. I think, too soon, that would have been for me ..' f p13 post.

Whereas other participants felt Methotrexate counselling was unnecessary after the rheumatology consultation and would have preferred to speak to someone after starting Methotrexate. None of the participants reported being involved in decision making about the timing of DMARD counselling or whether counselling was required.

'I came away thinking .. I had no issues … in starting (Methotrexate) straight away and I had enough information…I would always want something .. maybe after a week.. make sure you've taken your first dose properly, have you taken the right amount …[] I think that would be helpful …' p4 m post.

'I actually felt I didn't need it because I hadn't started Methotrexate …[]...it's a bit of a waste of space talking about it when I haven't even started it … I would have thought a follow up after a couple of weeks of me taking it would have been a better situation to see if everything .. how I felt, you know if I had any side effects … err that sort of thing would have been far better than talking about it before I'd even started it …' p19 m post.

4.3.6 Perceptions of written Methotrexate information

The majority of participants recalled receiving a copy of the nationally available Methotrexate information booklet produced by VersusArthritis. Some recalled receiving this before or at DMARD counselling, and others received it as part of a package of information when collecting initial Methotrexate prescriptions after DMARD counselling. Some of the participants had chosen not to read the booklet, whilst others had used it on several occasions. Perceptions varied widely as to the timing of provision, and whether written information resolved or created concerns and information needs.

'So if it was in some form of leaflet or something as well as, yer know it'd be .. the main points could be gone over in, in the interview face ter face and then you would have reinforcement of the, of the leaflet to go to later to tell yer which is the best way,' p14 m pre.

'I'd have just got on with it, but that's me ….[]. the booklets if you read them through ..tell you virtually everything' p9 f post.

'I was more concerned with the Methotrexate booklet than the Hydroxychloroquine one ..I can't say half the words ..' p5 f post.

'Obviously I've had the leaflet through … I've not had a lot information but I hope I'll get a lot more information on Friday when I have this call or whatever it is with …with the nurses..' p4 m pre T.

'I'd already read that horror-graphic that they'd sent out. It's a lot better being able to talk to somebody and get the answers.. straight away…I mean..it's ..let's hope I get a lot of things sorted on..on that day,' p12 m pre T.

'Methotrexate booklet …frightening ….have you read it? Good God.. the side effects..' p19 m post T

'would have been helpful to have had the booklet beforehand and gone through it with her, yeah..' p13 f post T.

'I put it on one-side actually, [] then last week [] read it through. And that's put me back a little bit again..' p16 f post T.

'Once I come home and read it [], in the booklet I understood it more,' p20 m post T.

'It just refreshes your memory .. []. in layman's terms its very plain speak, so yeah it's fine for me to understand.' p18 f post T.

4.3.7 Using multiple information sources

Several information sources were used by some participants before and after DMARD counselling and many used multiple information sources that were sometimes helpful but could also generate concerns. Speaking to others with positive experiences of taking Methotrexate for RA was sometimes helpful but at the same time could generate more concerns where information conflicted with other sources,

'this woman said they're good tablets, the Methotrexate []but you do get a lot of side-effects. [] there's only a few (side-effects) in the booklet,' p18 f post.

The internet was sometimes helpful to resolve concerns about treatment with Methotrexate, including time to effect, possible side-effects, monitoring and other treatment options. Some chose to use formal internet sites such as VersusArthritis or NHS websites, whilst others reported 'Googling', for information. However several were disconcerted by information they found on the internet, and others avoided using the internet because of poor prior experiences of accessing health related information. Not all participants had access to the internet, some had family members who accessed the internet for them.

'I read quite a few things on it... I wanted to see because it also said it can cause a few problems…..very interesting…' p9 m post.

'I waited until I got the information (DMARD counselling) and I've had questions since ..and err .. there's plenty of information out there …you've just got to look for it (on the internet..' p10 m post F2F

'When I went on the internet there were loads (side-effects). I stopped looking at it, cos I thought it's gonna freak me out,' p18 f pre.

'I use the internet…so long as you don't believe everything you read..' p9 m post.

'I don't think I'd really trust going onto the internet to look up symptoms or anything, because there's so much rubbish out there, you don't know what to believe,' p1 m pre.

'..and I told my x not to either, cos she's someone who will google anything, I says please, do not look it up,' p13 f pre T

'I don't go on Google, it frightens the life out o' me, I haven't got a smartphone.' p11 m post

'It's very easy to put stuff on social media and in some instances it can be irrelevant or completely untrue…' p4 m pre

4.3.8 Perceptions and experiences of telephone or face-to-face drug counselling appointments.

Prior to the COVID-19 pandemic face-to-face DMARD counselling consultations were standard practice in both units. However, requirements for social distancing during the pandemic resulted in most DMARD counselling being delivered by telephone with little opportunity for staff training to develop teleconsultation skills. Most participants stated a preference for, and increased confidence in face-to-face appointments, however, social distancing requirements meant that most DMARD counselling was provided remotely. Many participants accepted the necessity for changes, despite finding it hard to conceptualise how information needs could be met by telephone. Remote communication was seen as difficult and less effective, with several commenting on the impact of missing nonverbal cues and reassurance. However, teleconsultations were seen to offer a convenient solution for some, with practical and fiscal benefits, sometimes reducing reliance on others, which in turn reduced the burden of treatment for some. Another noted that remote teleconsultations could still require taking time off work.

It was apparent the consultation style used was often a standardised, one-size-fits-all and not person-centred, often using the VersusArthritis Methotrexate information leaflet to structure the consultation. This was not perceived to facilitate a tailored approach to care or successfully meet many information needs. The consultation was often described as being speedy, involving delivery of large volumes of information that did not always meet specific individual information needs and was difficult to remember. Most participants valued the opportunity to speak to a rheumatology nurse and concluded that despite a routine approach, DMARD counselling had helped them get a better understanding of Methotrexate. However, worringly, unresolved concerns left one participant too scared to start Methotrexate. Illustrative quotations are presented in Tables 4.3 and 4.4.

Table 4.3 Perceptions and experiences of face-to-face DMARD counselling

Perceptions of face-to-face DMARD counselling from participants interviewed after receiving telephone DMARD counselling	‘I prefer face to face which I feel more comfortable with. On phone you don’t get time to sit and think and make an adequate response.’ p9 m post T ‘I prefer to sit down and talk to people… you can get a better idea of whether, whether the question you’ve asked, is you know relevant. I prefer to talk to somebody. And I’m old, that, that’s the way you were, you know brought up, isn’t it, to talk to people.’ p11 m post T
Expectations and experiences of participants interviewed before and after receiving face-to-face DMARD counselling	‘I shall just wait and see how it goes on the day to be honest, [] like I’ve read the information about possibilities, all the sorts of things it can cause and I know that it’s got a lot of [] benefits (on internet), and it’s you know ..it’s just I’m a sort of person as I say, if its I’ve got to put anything in I just won’t. The.. things I can’t find I shall like if I ..just ask .. and see what .. you know and just see what it, you know what they say like. Sometimes it can be overwhelming… unless you’ve got someone makin’ notes on what’s been said’ p14 m pre ‘It was .. she was reading it off the pamphlet .. the same as I could have read it like ….[] I haven’t started them … because I am frightened to start them …’ p14 m post ____ ‘When you’re seen face-to-face you get more information you do... I think you get more information, it’s different on the phone.’ p1 m pre

	'She was sound…quite good yeah…you know she wanted to know if I wanted to know anything, and she was trying to help me out ..and tell me whatever yeah…yes. She said, 'Have you got any questions?' … I says, 'Yeah,.. I've wrote 'em down here,' like so (we) went through all them lot ….to start with. You can talk to … you know they can explain things …… you've got paperwork there you can flip through it and err talk to her about this, that and the other … she wrote it down for me …specific things… You know if this happens you do this …you know so it's there …I've got it in writing now, so what I've got ter do ..basically they told me what I need to know… what I need to do if something goes wrong …. If I get any side effects' p1 m post
Experiences of DMARD counselling from participants interviewed after face-to-face DMARD counselling Experiences of participants interviewed after face-to-face DMARD counselling	'This was really.. really very speedy, very matter of fact, ermm, and I.. I just couldn't take it all in to be honest. All she kept saying to me was 'so that's simple'…… and I thought, 'No, it isn't – it isn't simple, it's all very complicated.'… It's a bit overwhelming to be honest and yes… I did sort of express concern over somethings some side effects .. but she just gave me a book – it was almost like reading it from a sheet…. but it was so quickly done I didn't think there were any ……particularly good interaction…..that with me as a person….It were all ticking boxes. [] It's too much to remember, luckily me friend was with me…so she took it in more….than I did…. So I really came away more scared than comforted.. because ...it seemed so overwhelming' p2 f post 'It's more personal (face-to-face) and more…it's you as a person…it's not well.. that's another one done.. that's another one done (on the phone). I tried to make notes but it went through that quickly that I can't remember a lot of the things… If I'd been able to [] I do think having a second person with you …they take in certain bits that you might have missed they can remind you… the other one can be taking the notes as you're going through ..instead of you trying to take the notes and sort of not having long silences while you do it. It's like you've got to try and remember everything and you can't. Different people remember different things that they went through..' p3 m post It's the friendly approach ..it's the human approach, she greeted me .. asked me if she could call me (name), she was very kind, very helpful … she said don't worry about MTX .. it's a helpful drug to relieve the symptoms of …RA .. and she went through little things about it .. so she was good ….she was very kind, very helpful.

	She ran through the information (in the MTX booklet). I had a couple of questions, no problem, …she was very reassuring. [] Well it is a lot of information to take on board.' p10 m post

Table 4.4 Perceptions, Expectations and Experiences of telephone DMARD counselling

Perceptions before telephone DMARD counselling	'I don't know what to expect.. I'm sure she may even tell me some of the side-effects of the treatment and so on and so forth. And I'll deal with that as she tells me …' p7 m pre 'I'm comfortable with it to be fair…it helps me, because obviously I work full time….I'm not coming out of work to come back up to the hospital again…' p4 m pre
Expectations and experiences of participants interviewed before and after telephone DMARD counselling	'(It was)..reasonably thorough although it was a lot of information to take in. The explanation of what was going on was good and like it was more of a conversation to be honest rather than someone just talking to me … I probably don't recall bucket loads from the conversation…I kind of know what I'm doing now.' p4 m post 'It's a telephone … well.. what.. what can that do …I've got to talk to somebody on the phone. []I .. suppose everybody if they're able would like to actually talk to somebody face to face. I don't mind the telephone ..I would prefer to see somebody face to face.... it's nice just to be able to sort of .. read somebody's face …when they're talking to yer, you think yeah, that's okay …rather than, 'Yeah..yeah..' on the phone ..You don't know what they're doing do yer? But no, I think certainly a visual thing anyway I was taken back a little bit .. when ermm.. when the appt come through. What good's a telephone appt? Well….what can that do.. (I) can't really get my head around that,' p12 m pre 'It wasn't sort of .. oh it's gonna do this, it's gonna stop you doing that .., its gonna affect this .. it's gonna affect that ….err so I'm still a little bit .. green with it

Expectations and experiences of participants interviewed before and after telephone DMARD counselling	to be honest. It was a bit like Jackanory with err, with the pamphlet. She just basically read the pamphlet to me …explained things as she went along …I've retained sort of the serious bits.. you know.. (feel) just the same. It's not made a lot of difference. I think.. I think there's a lot of things to be aware of ..' p12 m post T ____ 'I'll write the questions down. And hope then that whoever you speaks to is going to give you the opportunity to .. you know.. discuss things. I'd rather speak to someone in person, see what they've got to say..' p15 pre T 'hard to take it in over the phone, being remote and in the moment, would have preferred one-to-one (in-person), (so you could say, 'Hang on, can I just have this clear.. I take me tablet now.. what's the dose I've got ..(and) cos like where it says have…have your blood tests every two weeks ..p15 f post T ____ 'You're just a number on the phone aren't yeh, yeah…err I can't explain it really, 'cos you don't always take it in on the phone [] and you can pick up on non-verbal communication in a face-to-face appointment. I'd feel more confident if I was speaking to them face-to-face than I would listening to them on the phone …' p13 f pre T 'Fairly confident in what she was telling me but as I said that would be far better to see her. 'Cos she says you seem quite concerned about side effects and what have you. So yeah I am.. having worked with people that have had side effects ..but yeah, that reassured me really.. I'm gonna .. I'm giving it a go,' p13 f post T
Experiences of participants interviewed after telephone	'It was a phone consultation, cos they call it a counselling appt don't they? I was quite surprised that they didn't offer you the choice because counselling to me is, you know, face-to-face, but err .. it was fine. I think it's harder on the phone err .. because you tend to pick up things faster when you talk to people (in person…). It

DMARD counselling	felt [] as I was going through the book, she was as well, [] it wasn't explained fully,' p11 m post 'I prefer face to face which I feel more comfortable with. (On phone) You don't get time to sit and think and make an adequate response, the lady who I spoke to was very thorough, obviously very experienced. Because you're on a telephone conversation it all comes over so quickly to you, you don't really have time, you don't really have time to absorb everything that's being said. And you can't, well in my particular case, maybe it's me as an individual, err I, I suppose I really struggled for a response (from the nurse) to anything that did concern me. I did make the point I was concerned how quickly the arthritis had come on me and I did show a concern about the side effects..' p9 m post 'I had a counselling session over the phone…you know ..with a jolly nice nurse. I think we discussed everything that I wanted to discuss. I come off the phone with her …I thought, right, okay , excellent ,….this is what we do going forwards.' p6 f post 'I suppose really one on one, a meeting is better .. can't always be helped can it, so it didn't make any difference to me ....I mean it isn't like you need to see a doctor,' p5 f post 'Reading the book and that nurse explaining things, you know, I know the gist of it..(except for the blood tests).' p20 m post T
Perceptions of practical and fiscal implications of telephone DMARD counselling	'…for some people …where they can't talk to someone on the phone at 11 o'clock .. you can only talk to them when they're on their breaks or have to have the day off….' p12 m post 'It was fine over the phone; it saved my taxi fare….'p16 f post 'The only way I can get there is if my x takes me but x would have to get time off work so.. I'd rather do it as a telephone ..' p18 f post

4.4 Theme 2: 'To regain a quality of life;' The impact of RA influencing the need to accept treatment with Methotrexate

Participants with recently diagnosed, or with poorly controlled RA reported significant pain, stiffness, swelling of joints and fatigue that impacted on daily activities, affecting societal and family roles. These issues impacted upon accepting the need for treatment with Methotrexate.

'The biggest issue has been …. I've had flare ups of it and.. and …literally not been able to move in my ankles or my knees or whatever it might be…' p4 m pre.

'My hands were swollen, and the pain was so intense..' p9 m post.

'I was living on my own, it was, it got where I could barely move out of bed, because I hadn't go the strength in my wrist or arm to push down to push me up.' p14 m pre.

Several participants mentioned the impact of RA affecting their work and expressed concerns about being able to continue with their paid work or the support they provided to family members. The impact on mobility and physical function affected the ability to continue in social roles for some.

'I'm worried in case the whole thing ..sort of affects me work … I've lost quite a bit of work this year already .. that bothers me …but other than that you know .. .. that's life isn't it .. if I can go to work .. everything else sorts itself out but if I can't .. I dunno..,' p12 m pre.

'driving was a nightmare … I just couldn't do it (take x to school bus)..my wife, you know had to drive them to and fro' around. You just feel useless, you know,' p11 m post.

'my biggest issue is …being physically active…. once I'm physically active I'm absolutely fine…..err I coach my youngest son's football team ….. it might just take me half an hour to do that something…,' p4 m post..

Most participants reported having to make adjustments to daily life, and some required physical and emotional support from partners and family members. Anxieties also existed around the loss of independence or needing help from partners or friends.

'but I've got family around me and everything ..so I've got some help from my wife and everything..' p4 m pre.

'I can't think of anything else that you would want … you know …other than to just be able to get on with yer … everyday sort of routines and stuff without … me wife's only about 5 ft I certainly wouldn't want her sort of struggling about with me ..(or when I'm out with me mates) cos that's just blokes like, and I don't want them helping me up the steps,' p12 m pre.

Another participant described putting up with symptoms for some time before seeking medical advice, believing they may be age-related,

'It started in my right ankle … so I put up with it for a while …and I'm nearly 76, so I don't worry about things …so I just cope with a lot of things, and I put a lot of things down to age …so it just kept going and after a few months I thought its getting a bit too much

now and sometimes it would swell up .. there was visible swollen when I woke up ..in the morning and ermm and that's when I rang the Dr …' p7 m pre.

Some participants also described the impact of RA affecting psychological wellbeing,

'I couldn't do anything, you know it took me, you know the wife said I got very, very ratty err but I found it difficult to open doors even…you know to pull the, I had to use two hands to pull the handle down err, and things like going to the err you know toilet was, was agony 'I think I could get, or anybody could get quite, quite depressed you know,' p11 m post.

'… it does make you worry doesn't it ..what else is going to be coming along ..if you can put it like that .. at my age particularly, yeah .. I wish I hadn't got it, because, because it's physically ..is debilitating .. you know if you get a flare up or pain as I've experienced before …well., speaks for itself doesn't it … in your hands.. it restricts you doing so much .. err yeah. I wasn't happy to be diagnosed with it, I was a bit (down),' p9 m post

The impact of RA influenced participants decisions to accept treatment, including seeking relief of symptoms which would result in a better quality of life, reduction of pain, maintain mobility and independence. Many felt they had no choice but to take Methotrexate, even though many didn't want to take regular medications.

'Having been through the last couple of years feeling the way that I have…anything is better than nothing ..[] I can't necessarily carry on lying in bed thinking I can't bloody move..[] so I'm at that point where ..somethings better than nothing …' p4 m pre.

'I can't move or function ….that's the alternative to not taking drugs….. and I ….I don't think that's living … really' p6 f post.

'My thoughts were………'that's good.. that's gonna help me….[], the hospital are ….you know giving you the right drugs ..to help you live your life.' p6 f post.

'you know I think I've got to take these otherwise I wouldn't be able to get about, I don't want to take them … but waiting with the pain … one or the other in't it,' p16 f post.

'Well I feel I've got to try and do something different…to try and ease the pain [].. give me a quality of life ….so I can get about a bit better …[] that's it really…' p13 f pre.

'going through that amount of pain.. then you're going to take it aren't you..in the, the vain hope that it will work,' p11 m post.

'Sommat's got to be better than this cos, if this like, if there's something out there that will stop, basically, it's just the pain and the discomfort that you struggle with..' p15 f pre.

'If Methotrexate can work in the same sort of way that the steroid did.[]..then I would be quite happy,' p7 m post.

'…if it's the thing that's gonna help me… I need to take something..' p1 m pre.

'.. I don't like taking tablets, but you know if they are necessary I will, will take them….' p11 m post.

'if it stops me.. sort of ...you know .. leading me life like an old man ...' p12 m pre.

Another participant would only accept Methotrexate as a last resort,

'I'll take it if it gets to the point where it's getting that bad for me to not be able to function to do anything ...' p14m pre.

Several participants reported feeling under-informed about treatment options.

'Nobody's ever mentioned any option. They just said this is what you've got to start on and this is it.[] if I could know of other medication could be taken instead of .. then you can look up and see what you think about it...the medication...' p14 m post.

'...is there an alternative to it that you know...can be taken...' p1 m pre.

Information needs regarding other treatment options sometimes related to concerns about the risk of Methotrexate and are addressed further in section 5.6.

4.5 Theme 3: Metho....It's a strong, scary drug; Concerns about taking Methotrexate

Receiving a diagnosis of RA and accepting the need to take Methotrexate was often daunting. Every participant expressed concerns about taking Methotrexate, sometimes informed by reading, research on the internet, or having friends or family with experience of taking Methotrexate for RA, or as part of treatment for cancer.

‘It was as frightening as getting a cancer diagnosis…cos it’s a serious diagnosis to get …[] that’s the level of …seriousness …of a disease like that, so I suppose, if you’ve got a serious disease you’ve got to take serious drugs to counteract it,’ p6 f post.

‘my reluctance to be honest…to take…this medication ….cos it sounded..quite scary ..[]...it all sounds so daunting…’ p2 f pre.

‘I know it’s a powerful, it’s not a drug to, you know, be thought of lightly, p14 m pre.

‘Metho….It’s a strong, scary drug…’ p6 f post

Several participants reported that information provided at initial rheumatology consultations led to anxieties, whilst written information laden with negative information about side-effects promoted concerns. Another person with comorbidities rationalised the risk of side-effects acknowledging that all prescription medications have potential side-effects. Others reported significant worries about the risk of adverse effects from Methotrexate impacting upon existing co-morbidities and effects upon organ function.

‘having taken other drugs and I’m a Diabetic on Insulin, among other things err they’ve all got a side effect in some way .. ’ p10 m post.

‘a little sceptical because of all the possible side-effects he (the rheumatologist) went through and, also in the booklet he gave me..’ p3 m post.

‘I was concerned when I was given information, written, you know.. a leaflet all about it..all of the potential side-effects,’ p9 m post.

'I might be fine [ ] but because of me physical ailments I do get a bit scared… how the side effects could affect me kidney ..scared it'll affect me liver er, ooh I'm dubious,' p2 f post.

Diverse concerns about possible side-effects and adverse events and practical issues related to taking Methotrexate were reported by participants. Supportive discussions with family, friends and others with experience of RA and taking Methotrexate helped some to put the risk of side-effects into context. Several voiced concerns about what would happen if they experienced intolerable side-effects, apparently not having opportunity to discuss such issues. Overall, many resolved to accept uncertainty around the risks of taking Methotrexate. For ease of reference the scope of reported concerns are identified Table 4.5 in addition to the following textual presentation using illustrative topic summaries within the theme (Braun and Clarke, 2022).

Table 4.5 Concerns about taking Methotrexate

Concerns about side-effects	'I was concerned when I was given information, written.., you know.. a leaflet about it ….of all the potential side effects,' p9 m post 'I really don't want to go on Methotrexate because there's the patients' that I've looked after that have had side effects,' p13 f pre 'Reading from the leaflet some of 'em, some of the side effects are not particularly pleasant,' p9 m post 'So if your side effects are really bad…..do you still continue with that dose?' p2 f post 'once I've got over any side effects. If I get 'em, which I more than likely will…' p18 f post

	‘in case it affects me ..I thought I’d tek them on a Friday in case there’s side-effects, I mean I know there’s side-effects…’ p16 f post ‘It err does something to modify .. the condition and act against that ..[] from experience with x, had to have breaks from Methotrexate..[] because of the side-effects,’ p4 m pre ‘Is there something out there with less side-effects. I’ve got to take another tablet (Folic Acid) to counteract (Methotrexate)..’ p12 m post ‘You read all the side effects and goodness knows what ….and X (partner) said, ‘well some people get some and some people get no side effects obviously,’ p6 f post ‘..just trial and error with everybody really, with different people. If I get side-effects and they say I’ve got to carry on with them, that’s me only dread. If they don’t suit me then I’ve had it….’ p16 f post ‘there are possible side effects but you might get ‘em, you might not get ‘em. But if I take the medication and it’s helping with the pain and the stiffness, there’s a trade-off somewhere down the line. So if those side-effects outweigh the benefits on the arthritis. Then to me that’s when you start to question it.’ p15 f pre
Mouth ulcers	‘The fact that I might get mouth ulcers isn’t very pleasant..’ p9 m post ‘I keep reading it and I keep reading all the side effects ..[] and I certainly don’t want mouth ulcers ..’ p12 m pre
Feeling sick and diarrhoea	‘Reading from the leaflet some of ‘em, some of the side effects are not particularly pleasant err the diarrhoea and possible diarrhoea, feeling sick ..well.. I can probably live with that ..it’s not very pleasant but err’ p9 m post ‘sickness and diarrhoea are two of the main ones…I mean feeling sick, I don’t like feeling sick …….’ p18 f pre
Hair loss	‘the way it says here..hair loss..’ p15 f pre ‘I wouldn’t want my hair to fall out’ p9 m post

	‘The first thing (concern) was, am I going to lose my hair again,’p2 f post ‘I asked him if I’d lose my hair….he said, ‘possibly, [] ‘I don’t want a wig,’ p16 f post ‘I don’t want to go no thinner…I’m gonna tek a tablet and it’s gonna drop out. Is that a common cause? ’ p12 m pre ‘It’s concerning that you’re tekking a tablet that can cause that (hair loss), but if it stops me..sort of [] leading me life like an old man..yeah.. bring it on. I go on about me hair [] but it’s irrelevant really..as long as the bits inside are okay.. p12 m post
Skin reactions	‘..well a bit apprehensive. I thought, oh crimes, there’s such a lot in’t there ..rashes and itching, burning and everything ‘ p5 f post

Information provided by HCPs was reported to both increase and reduce concerns about both the likelihood of experiencing side effects such as nausea and mouth ulcers, and some recalled strategies to mitigate possible side-effects. Most participants did not recall discussions about the likelihood of developing these side-effects, or possible management strategies. Interestingly no-one recalled receiving advice about the likelihood of, or strategies to manage hair thinning. In the absence of tailored information to address specific issues some drew their own conclusions and described a risk versus benefit approach to side-effects.

‘*Err (the nurse didn’t discuss side-effects) not really cos the book tells you. She just said, ‘Have you got the book?’ and I said, ‘Yes, the Dr gave it to me []’ p16 f post*

'…she told me to take it towards bedtime….so that it lessens.. it lessens any side effects that you might get…like the nausea. Obviously if you're asleep you don't get as nauseous…so that was useful information…' p2 f post.

'She was saying (the nurse) you'll have a sore mouth.. [] that's a side-effect…' p2 f post.

'She told me if I do get sores in the mouth I've got to ring up (the adviceline), and if I get one use Bonjela on it.' p1 m post.

4.5.1 Concerns about infection

The effect of Methotrexate in modifying the immune system was concerning both before and after receiving information about Methotrexate. Other participants expressed concerns about information about the requirement to pause Methotrexate in the case of infection. Guidance about whether to continue Methotrexate if people developed COVID-19 was not generally recalled and was identified as an unmet need. One participant had specific concerns relating to the risk of developing chicken pox (Varicella Zoster).

'I've read in there I'm more likely to get infections' p1 pre.

'the nurse said the Methotrexate reduces your immune system so you're more likely to pick things up.. coughs and colds etc…and that was a concern..' p3 m post.

'and they were constantly having water infections… and they were constantly on antibiotics, I don't want water infections all the time,' p13 f pre.

'if you catch COVID, should you continue taking Methotrexate?.. so maybe that's something that needs adding in,' p3 m post.

'if I get …an infection I've got to stop the Methotrexate if I'm on antibiotics or if I get COVID-19,' p1 post

'I knew what I wanted to talk about …the risk of chicken pox/shingles… me x, a teacher and they'd got chicken pox going around the school..' p3 m post.

4.5.2 Concerns about impacts upon pre-existing health conditions and related medications.

Whilst the majority of participants accepted the necessity for treatment with Methotrexate considerable apprehension existed about whether Methotrexate would affect existing health conditions. Participants frequently gathered concerns to address in DMARD counselling sometimes generated by written Methotrexate information. Specific concerns related to whether Methotrexate was a suitable treatment for those with pre-existing respiratory conditions. Those who experienced recurrent infections requiring frequent antibiotics expressed concerns about potential drug interactions, and the requirement for Methotrexate treatment to be paused during infection. Concerns expressed about the possibility of treatment with Methotrexate resulting in worsening respiratory symptoms, or increasing the risk of infection led some to question whether Methotrexate was the most suitable treatment option. These concerns often persisted following DMARD counselling as a result of unresolved information needs. Safety advice regarding action to be taken in the case of infection was seen as complex, often rushed and difficult to remember.

‘So I’ve got shortage of breath, Bronchiectasis. ‘I’m taking things.. different things….see now I’ve had a look at it…[].it says about the Asthma ..some asthma medicines containing theo….phy….lyn.. (theophylline)..[]..will it affect…me breathing more than it is at the moment Err I’m more susceptible to infections. I’ve read in there I’m more likely to get infections if you’re taking it. Is it going to make me worse?’ p1 m pre

‘I’m scared, I have to have antibiotics quite often cos of my chest []. If you took certain antibiotics you’d have to stop (Methotrexate). [] So that was a bit …..scary…I would need to be more cautious was when I was taking antibiotics, that was made very clear. That was good. I knew certain antibiotics I would have to stop the medication. I wrote some things down but []….it was done so quickly []. Its complex…and it’s important that you go away fully understanding what you’re supposed to do. To be quite honest now I couldn’t remember it all… it’s too much to remember,’ p2 f post’

4.5.3 Concerns about drug interactions

Multifaceted concerns about the potential for Methotrexate to interact with other prescribed, over the counter and complementary and alternative medications were reported by several participants. Written information was reported to generate concerns about the use of gastroprotection and DMARD counselling was not reported to resolve everyone’s concerns. Some participants recalled nurses exploring current medication usage to offer appropriate guidance as to whether gastroprotection was required. Whereas some participants who used little or no routine medication recalled delivery of standardised, often irrelevant information about potential drug interactions with prescription, over the counter, complementary and alternative medications. One participant identified unmet information needs after receiving both written information and DMARD counselling, remaining unclear as to whether he could safely continue specific complementary and alternative medications safely.

'There's two tablets on that list …certain medications you shouldn't have [] Omeprazole ..I'm on Lansoprazole..so I er questioned that. Well, it wasn't explained fully..'If the Dr wants to change them they'll get in touch with you.' p11m post

'One of me main concerns was what to do with the Omeprazole .. I knew that was one of the things I wanted to talk (to the nurse) about ….cos obviously I'm on the Napro(xen),' p3 m post

'One thing I'm not clear about is if I've got to take the Omeprazole, [] I'm taking them for the steroids. But err, in the book it says don't take them, but I was a bit confused..' p16 f post

'It says taking other medicines (with Methotrexate)….PPI…[] Omeprazole…which I'm on, so you know, it looks like…it's going to be affecting a lot of things,' p1 m pre

'Don't worry about it, keep taking it… it's if yer just start it (Omeprazole),' p1 m post

'I needed to be extra careful [] there's lots of things (medications) that won't work with Methotrexate or vice versa [].. could make me ill …she advised me to stay away from herbal remedies..'' p12 m pre

'It said, certain antibiotics have an adverse effect on, on this tablet (Trimethoprim, [] these particular tablets can't be taken with. That's the first one they always go with []. I just need to remember to say, 'Look I just can't have that.' Well, it wasn't explained fully, [] why it does have an adverse effect..[] it would have been helpful.' p11 m post

'There was a bit about taking vitamins and err other herbal stuff so .. I don't think they work anyway ..not for me anyway' p10 m post

' .. it's like, once you're on this medication you can't take ermm supplements, I do err ..multivitamins, I do take Omega 3 you know..fish oils and, other things like that. I didn't know that you shouldn't take anything..supplements. It would have been good if that was in the leaflet to tell you what supplements you can't take…. ' p14 m post

'When I were talking to Dr, and I said I'd try the Methotrexate .. I said what I had been taking and he said that's fine to carry on taking those.' p18 f pre

4.5.4 Using medication to treat pain when taking Methotrexate

Uncertainties about taking medications for pain relief with Methotrexate arose from written information leading participants to discuss this with the nurse. There appeared to be a lack of person-centred assessment, care and education to support evidence based symptom management of RA (NICE, 2020) when starting Methotrexate.

'I read [] you can't take Ibuprofen but you can take Paracetamol' p5 f pre.

'I said to her, (nurse in DMARD counselling), I'd been on between 6 and 8 Ibuprofen a day ….for months to try and stem the swelling and ease the pain…cos I'd read in the literature that it's not really advised when you're on Methotrexate… [] so I'm gonna stop

taking that [] possibly 5 days before I start Methotrexate …so that it's out of my system to lessen [] complications or whatever. And she says, no, it's not really (advised), that's smashing if you can manage without it … ' p6, f post.

'I was taking one Ibuprofen and one Paracetamol, I'm just taking the Paracetamol now with having the steroid and they do make it easier,' p18 f pre.

4.5.5 Advice about smoking and Methotrexate

Participants generally had difficulty recollecting information about the benefits of Methotrexate and important safety information. However, recall of lifestyle issues such as smoking was commonly recalled. Inconsistencies were reported as to whether and how smoking was addressed. Information was often routinely delivered, one participant could not countenance directives to stop smoking, and did not recall the opportunity for a two-way discussion to explore the subject further. No-one recalled the opportunity to discuss individual concerns or smoking cessation.

'Yes. She did mention smoking..[].'Do you smoke?' …I do use a vape.. 'Well, that's better than smoking.. but it's not ideal..' she said,' p12 m post.

'She did say to me, 'with this you can't smoke,'…and that is one of the things that has put me off because I can't stop smoking. I've smoked since I've being 16 years of age, and I can't stop..' p14 m post.

'I do smoke unfortunately …[..].. in terms of my overall health it doesn't particularly help, and it doesn't' help my immune system either .. so[].. the next one is try cutting back on that again … again I don't smoke a great deal ..' p4 m post.

‘and did I smoke, which I don’t…[]..we had a bit of a discussion about that,’ p13 post.

‘I don’t smoke and I can’t remember if she mentioned it...’ p18 f post.

4.5.6 Advice around alcohol intake and Methotrexate

UK Methotrexate guidelines echo national recommendations to limit weekly alcohol intake to 14 units or under a week, to reduce the risk of impact on liver function as both are potentially hepatotoxic (Ledingham et al., 2017b). Concerns about needing to limit alcohol intake, together with recall of written and verbal information varied widely. Many did not recall receiving explanations about why alcohol intake should be restricted. Few did, and some recalled that alcohol was not always addressed in DMARD counselling. Whilst other participants recalled enquiries in terms of units of alcohol consumed, which some did not understand.

‘I was told that I was not to exceed government guidelines, on alcohol, which is common sense anyway really….[] I don’t know what would happen if I did exceed the level of alcohol. And whether that would affect the medication…I really should have asked that question..’ p9 m post.

‘We encourage you not to drink because of the liver problems you could get,’ p13 f post.

‘We had a conversation about [] trying to minimise alcohol intake .. although it wasn’t necessarily a factor in it .. to minimise alcohol consumption ..’ p4 m post.

‘From the first booklet they gave out, that was highlighted in that. So no one asked me about how much I drink a month, a week or anything like that…[] I rarely drink so it didn’t come into the equation’ p15 f post.

‘No, that wasn’t addressed, that’s included in the pamphlet,’ p11 m post.

‘I think it was brought up ….asking how many units you have etc…but I don’t think it’s a concern for myself,’ p3 m post.

‘I don’t know what 14 units are…’ p18 f post.

Those who enjoyed regular alcohol intake alluded to restrictive guidance, rather than a person-centred approach involving two-way discussion to address concerns and support safe alcohol use whilst taking Methotrexate. One participant reported a decision to ignore the guidance around alcohol intake, whilst another would not contemplate taking Methotrexate if advised to stop drinking alcohol.

‘and can you drink alcohol? ..[]..I been a drinker for many, many years…[] it’s a part of me life…[]..I’d just think well…well I shall have a drink and go.(die).’ p14 m pre.

‘I don’t like the alcohol bit …its ….I have all me units on a Friday..’ p12 m post.

‘I.. I’m gonna keep on having alcohol intake .. I’m not stopping ..I’m x years of age. I had a right argument with the nurse,’ p19 m post.

4.5.7 Information about vaccinations

Information about vaccinations is routinely provided during DMARD counselling. The guidance is complex because inactivated vaccines to reduce the risk of potentially serious infections such as Influenza, and Pneumococcal pneumonia. COVID-19 vaccinations introduced during the study period are now also recommended vaccines. Conversely live vaccines to reduce the risk of infections such as Yellow Fever, TB (Tuberculosis) and at the time of the study live Shingles vaccines add further complexity to important vaccine guidance. Many recalled receiving information about the benefit of accepting routine Influenza and Pneumococcal pneumonia and COVID-19 vaccines together with the requirement to avoid live vaccines whilst taking Methotrexate. Written Methotrexate information prompted some to find out more about measures to prevent infections. Several recalled nurses enquiring about vaccination status and receiving advice to accept vaccinations without explanation as to why this was important. However, poor recall and misunderstanding of the information participants received was frequently reported and potentially hazardous. Table 4.6 presents illustrative quotes.

Table 4.6 Concerns and unmet information needs about vaccine guidance

Written information	‘I’ve noticed in the book they say something about vaccinations. You can’t have..no..live [] I’ll be asking them about that’ p1 m pre
Influenza, Pneumonia and COVID-19 vaccines	‘She did say do you have the flu and have you had your pneumonia one,’ p13 f post ‘If you’re offered the flu jab and the booster (COVID-19).. go and get ‘em’ p10 m post ‘She did say [] have you had your pneumonia one,’ p13 f post ‘She did talk about that ….I’ve had me pneumonia jab,’ p2 f post ‘I was told that they were perfectly okay ..I’ve actually had all four COVID-19 vaccines so, [] they said the flu vaccine was okay to go ahead with’ p9 m post
Live vaccines	‘..you’ve got to be careful if you have live vaccinations..,’ p3 m post ‘She told me about vaccines… err. See I can’t even remember now …..I was told I can’ t have a live vaccine..,’ p6 f post ‘any vaccines I had, would be like not live,’ p15 f post ‘I know I can’t have live vaccines … so I shall have to make sure that they’re not live vaccines .. ’ p19 m
Lack of tailored information	‘She did say [].. I can’t have any, [] live vaccines. I said what exactly are live vaccines. She did tell me ..which is Shingles..’ p18 f post. (Participant was not eligible for a shingles vaccine in line with guidance at the time)

(person centred care)	‘he says have you had Shingles vaccine…not at the moment cos I can’t be bothered with any more … jabs……. Oh, yellow fever she did mention as well….I couldn’t get me yellow fever jab…which is a shame really.’ p2 f post
Onus on participant to inform HCP about the requirement to avoid live vaccines	‘If it’s a vaccination if it's a live [] you’ve got to .. stop taking the Methotrexate and give them a call,’ p3 m post. ‘Any vaccines that I need, that are live vaccines ….then I need to have a conversation and ideally stay away from….’p4 m post. ‘she says, well ask them if it’s a live err Shingles… ask for a non-live or if not contact the advice line if they says they haven’t got a non-live one… ter see if they tell me ter have it or not…’ p1 m post

4.5.8 Information about contraception and Methotrexate

The lack of a tailored approach to providing information was revealed when female participants, not of childbearing age, recalled receiving information around childbearing and breastfeeding when taking Methotrexate. Two male participants recalled conversations around the impact of Methotrexate on pregnancy planning that did not explore whether the Information was relevant to them or consider their partners childbearing potential, and therefore requirements for effective contraception. Lack of recall on behalf of the other male participants could suggest that nurses assumed that older males would not have female partners of childbearing age, and that information about contraception, pregnancy and family planning was redundant. One male recalled inaccurate advice that Methotrexate affected male fertility (Flint et al., 2016).

‘There’s no chance of that because I went through me menopause 49 to 51, long gone ..’ p18 f post.

‘..there’s no chance that I’d ever get pregnant so … that’s not an issue for me … I said, ‘Look this doesn’t apply to me,’ p6 f post.

‘there was mention of it ..sort of mekkin’ or affecting your sperm count..’ p12 m post.

‘that was a bit..un..unexpected.[] We’re well past worrying about that sort of thing. Ahemm,’ p4 m post.

4.5.9 Methotrexate and Cancer

Concerns about the use of Methotrexate as a treatment for cancer, usually generated from verbal, written or digital information were reported by many participants. Some worried about a risk of cancer related to a diagnosis of RA, combined with the cancer risk related to taking Methotrexate. Information from healthcare professionals did not always resolve concerns, leading some to use the internet to resolve issues. Only one participant recalled recommendations to reduce the risk of sun damage that increases the risk of developing skin cancer. Another was concerned they may have lung cancer after a referral for a Computerised Tomography scan of the chest. These overwhelming concerns prevented them from exploring cancer related concerns during DMARD counselling, resulting in several remaining unmet needs following DMARD counselling. Another participant felt their concerns about the relationship between Methotrexate and cancer to be insurmountable contributing to their decision not to start treatment.

‘me partner [] explained it’s a chemotherapy drug. And I’d read the literature..[] it was a little bit scary..’ p6 f post.

‘going on my prior experience (working in healthcare)…I’m just a bit worried cos it’s a carcinogenic drug as well.. that bothers me..’ p13 f pre.

‘‘I was worried because it’s a cancer drug..[] something you take when you’re having treatment for cancer ….. You know if you take the Methotrexate plus the condition can cause different types of cancer. I didn’t grasp all that that meant. I’m all right with it now ….. I looked on the NHS website. I understand that it’s a low dose and err people with cancer have a stronger dose,’ p10 m post.

‘she asked, ‘have you got any holidays abroad, you’ve got to be aware of the sun .. [] it can make you more sensitive …and [] you should make sure you .. you’re well protected that way,’ ..p12 m post.

‘no I don’t think we actually spoke about that …. I think I was too worried about the scan.’ p13 f post.

‘‘she (consultant) didn’t tell me why they use it for cancer and why they used it..(for RA) .. just said they use it but in very low (doses). I don’t think anything would put me mind at rest ..to be honest.. that it’s used for chemotherapy is a major thing to me,’ p14 pre m.

4.5.10 Practical issues about taking Methotrexate safely

The once weekly dosage of Methotrexate to treat RA together with adjuvant use of Folic Acid 5mg at least 24 hours after Methotrexate reduces the risk of adverse events. This is an unusual way to take tablets and frequently led to unmet information needs. Few participants recalled the rationale as to why 2.5mg strength tablets are used to achieve the correct dosage, or the reason for variation in Methotrexate and Folic Acid doses. Some participants recalled nurses emphasizing the importance of understanding how to take the correct dosage, whilst few recalled satisfaction with the information provided. Several described standardised prescriptive advice regarding which day of the week to take Methotrexate on, highlighting a lack of person-centred care, where individual information needs and circumstances were not considered. Some participants had difficulty in remembering specific safety information, and for some guidance regarding the timing of Methotrexate wasn't addressed. Illustrative quotes regarding the concerns about the practical aspects of taking Methotrexate are presented in Table 4.7

Table 1.7 Concerns about the practical issues of taking Methotrexate safely

Weekly dosage	'It's a bit strange to be honest …I've never, I don't think I've taken a drug that you just take once a week before. [] I don't think there's much information in the booklet we receive about why we only take it once a week, instead of each day, [] I've not had much information about that. She kept stressing to me … week 1 you take 4 tablets, week 2 you take 4 tablets but week 3 and onwards you just take 6 tablets … I was writing it down,' p6 f post.

	'I have to take 6 tablets in one day (Methotrexate).., and that I have to take a Folic Acid tablet for every day, each day after, you know err [] I don't know why it can't be spread across the week, why I have to take 6 in one day,' p9 m post. 'her says (nurse), so that's 6 tablets cos they're two and a half milligram each…Well, I read sommat on it that it's to stop people overdosing, or something,' p1 m post 'some only have 7.5, mine's gonna be … 15 – six, two and a half (tablets).. yeah and some, sometimes have a bit more, but yeah, I don't know why would that be?' p13 f post 'for it to work properly do you have to take the top dose …?' p2 f post
Folic Acid	'That did surprise me .. I have to take a Folic Acid tablet for every day each day after, you know err.. to help with the possible side effects, but err I've come to terms with it.' p9 m post. 'I dunno what it's for.. the Folic Acid..I would have thought you'd take it the same day but….I don't know why they do it for two days ….there must be a good reason for it' p1 m post 'you take the Folic Acid the day after, () depending upon what the bloods say, you may have to take Folic Acid for more than one day a week.' p13 f post 'I understand it [] Folic Acid does the same job as Omeprazole, helps the lining of your stomach …' p10 m post

4.5.11 Concerns about the time to take effect and managing active RA symptoms

Apprehension and unmet information needs regarding the prospect of taking Methotrexate for many weeks before experiencing benefit were described both before and after DMARD counselling by most participants. Few participants recalled being aware of treatment plans to manage active RA symptoms whilst waiting for Methotrexate to take effect, suggesting that DMARD counselling did not always resolve these concerns. This appeared more problematic for those receiving telephone counselling, possibly because participants' difficulties with mobility and physical signs of RA were not visible to the nurse providing DMARD counselling. Most participants had received intramuscular or oral bridging corticosteroids that had provided short-term relief of RA symptoms. Experiencing relief of symptoms was reported to provide hope for benefit from treatment with Methotrexate by some. However, several experienced significant delays in accessing DMARD counselling meaning that the initial benefit of bridging corticosteroids had worn off, resulting in return of troublesome RA symptoms, and many were uncertain as to whether they could receive further corticosteroids. Illustrative quotes are presented in Table 4.8.

Table 4.8 Time to effect and bridging steroids

Concerns about time for Methotrexate to take effect from participants interviewed before and after DMARD counselling	'A big problem….is why's it tek 12 weeks to get an effect. I will be asking them about… you know…cos as I said if this takes 12 weeks to kick in .. what will you be doing for me in them 12 weeks.……. to alleviate the pain and that?' p1 m pre F2F 'I know its gonna tek a while before it does do anything. …Supposedly… it might kick in in a month ..and err ..it might even take longer. I don't know, but I'm hoping it does kick in sooner rather than later you know,' p1 post F2F 'It's 12 weeks then to go before it starts to have any sort of any effect and.. and I'm on .. I'm on no medication ..' p12 m pre 'You won't feel the full benefit of it until 12 weeks I just ..I'm wondering if I'll have any benefit from it… leading up to that period. She said, 'We can give you one a month (steroid injection) leading up to this treatment kicking in,' At least I know I'm not gonna be crippled up sort of waiting for it to start up,' p12 m post.
Perceptions regarding time to effect reported by participants interviewed after DMARD counselling	'I'm on the third dose now [] I haven't noticed too much with it at the moment …..so whether that's been expected or not I don't know,' p3 m post 'The Dr said it could be a few months err so, I don't mind. It takes time to you know get into your system,' p6 f post 'I assume the pain will go and the swelling []..she said, 'Carry on with them for now.. (painkillers and NSAIDs)..[]. it can take up to 12 weeks to work or somethin'..yeah.. which seems a hell of a long time to me ..[] didn't receive an explanation as to why,' p11 m post

	‘Three months …it’s. exactly the same as when I started (Sulfasalazine)….Like any medicine it takes a bit of time to get into the body, with time I improved and could walk.’ p19 m post ‘Cos the Dr said it could tek up to ..it could tek three to four month …you know. It were a bit off-putting.. cos I can’t go without something, so I thought if it’s gonna take that long it’s gonna take that long.’ p20 m post
Bridging Steroids	‘(When it’s worn off) massively frustrating…you feel pretty much the same again (as before had steroid injection),’ p4 m pre ‘I couldn’t do anything…. my sister-in-law has the same thing (RA), and she’d got a yer know steroid by injection which makes her all right for 3-6 months. So, so I asked about it (Dr)…., I had one, after two or three days, it worked for two days and then, then stopped.’ p11 m post ‘It’s a shame it takes so long but if you’re getting a steroid injection … er.. that’s a help …… so I’ve got to wait and see haven’t I… Six weeks to twelve weeks whatever .. it seems a long time but … as long as I keep getting the steroid injection as well its worth waiting for,’ p10 post ‘She said it could take up to 3 months, I don’t mind, but as long as I can still be pain-free and have a steroid injection till, till I get sorted ..’ p18 f post ‘They take ..(Methotrexate) is it 12 weeks to act .. a long time.. apparently that’s how long it takes to get in your system.. that’s what the book says anyway ..so you know. I’m just hoping after having steroids at the same time it’ll be okay.’ p16 f post ‘All I’ve been told is that it takes about 12 weeks’ worth to get into my body err and that’s as much as I know …err.. I suppose if there is a gap there between coming off my steroids and for the new medication to take effect I may be in pain. So that’s it, that’s a grey area with me ..’ p9 m post ‘Whether I could have another one of them (steroid injection) ..I don’t know,’ p1 m post

4.5.12 Practical difficulties when starting Methotrexate

Inconsistent processes led to some participants experiencing further frustrating delays in starting Methotrexate irrespective of the mode of DMARD counselling. Those receiving teleconsultations sometimes had to make additional journeys to collect Methotrexate supplies, whereas others had supplies issued on the day of the consultation when treatment was recommended. Furthermore, many faced complications obtaining initial and continuing supplies of Methotrexate, with many being uncertain as to how ongoing supplies would be organised. A lack of clarity was evident for several participants about whether family doctors would agree to prescribe Methotrexate, sometimes leading to confusion, resulting in a few running out of Methotrexate and delayed or missed doses. Such organisational challenges resulted in barriers for participants to take Methotrexate. Additionally, DMARD counselling did not appear to address the financial costs of prescription charges associated with taking regular medications for those not eligible for free prescriptions.

'they did the prescription there [] I collected it from the pharmacy [] .. I'm not …to take it until after I get back after me holiday ..cos I need a blood test [] within so many days before taking it ..[] she's going to ring me when she's got the results [] to tell me whether I can tek it or not…' p1 m post.

'come to collect your prescription ..(after telephone DMARD counselling),' p6 f post.

'some Drs will not prescribe the Methotrexate. So I don't actually know if my Drs will prescribe the Methotrexate yet,' p18 f post.

'I actually have got me tablets, me first supply ..yeah.. but thereafter I don't know how I'm gonna get them. I'll have to sort that out. It may well be in the correspondence that's coming to me..' p9 m post.

'they're supposed to send a letter to the Dr, for her to sign, for her to supply it to me.. so I just have to wait,' p16 f post.

'they told me that [].. I'd got to go x every month for me prescription, [] so, when I went it wasn't ready, it wasn't there. I'd got to have another blood test before they'd give them to me, [] so I had to change me day of taking them.[].. They do complicate things I'm telling yer,' p8 f post.

4.5.13 Safety blood test monitoring

The requirement for safety monitoring blood tests was widely accepted. However, perceptions of the purpose of blood tests varied ranging from providing an indication of whether Methotrexate was improving RA, to monitoring liver function. One participant saw blood tests as having added value, in being able to detect otherwise unseen issues. Confusion around the timing and organisation of blood tests was also frequently reported.

'I have no problems with blood tests,' p4 m post.

‘from what I can understand they’re going to be checking on how I’m getting on, on the Methotrexate…’ p18 f post.

‘from what I can understand from that, it’s mainly liver function isn’t it,’ p9 m post.

‘If me liver function goes up to a hundred she says …then they’ll stop it and do something,’ p1 m post.

‘because they can pick up so much more than they’re looking for,’ p19 m post.

‘it’s two..twice weekly for up to 6 weeks and then it says here monthly for.. although it says you go to 3 months,’ p15 f post.

‘I can go to X for the fortnightly ones (blood tests), but [] have to book the monthly ones meself ….[] I didn’t ask and I realised after, cos I’ll need a paper to get booked for a blood test []…(don’t know) how I get hold of the form,’ p1 m post.

‘she said about blood tests, but me mind’s gone blank on that .. so I don’t know how often I’ve got to go.. I’ll have to follow up on that,’ p16 f post.

‘I have my blood test.. is it during the 2nd week or after the 2nd ,’ p11 m post.

4.6 Coming to terms with Methotrexate

Many participants had concerns about taking Methotrexate that were not fully resolved within DMARD counselling. However, it became apparent that many were also moving along a continuum of adjusting to life with RA, as well as coming to terms with the need for treatment with Methotrexate. Whilst others described moving from fear about potential side-effects to developing strategies to mitigate and manage side-effects.

'I think I'm still in denial [], 'I'm resigned to.. to the fact I've got to tek six tablets on a Friday teatime,' p12 m post.' p12 m post.

'I'm gonna have to do it, [] I was a bit reticent with starting it,' p13 f post.

'And I just thought, you know what, I'm just gonna take me tablets and be positive minded …. If I get side effects, I get side effects .. I'll deal with them, if I get heartburn I'll drink some milk, if I get diarrhoea then I have diarrhoea,' p6 f post.

4.7 Summary of findings

The insights offered by participants revealed the decision to take Methotrexate was influenced by the need to relieve symptoms of pain, joint swelling, stiffness and fatigue, to maximise independence in daily activities, and restore a more acceptable quality of life. Participants wanted tailored, contextual information to explain why Methotrexate was recommended, an understanding of how Methotrexate works, when benefits were likely to be experienced, how symptoms could be managed in the meantime, and what benefits were likely to be. Many people reported individual, significant concerns about taking Methotrexate, including the likelihood of side-effects, adverse effects and drug-interactions. Information needs included the likelihood of side-effects being experienced, how long they would persist for, strategies for managing side-effects and adverse effects, and whether other treatment options existed if

Methotrexate was not tolerated. Concerns were often generated by information received from written and verbal explanations provided by hcp. Other information sources included friends, family and others with experience of taking RA, the internet and patient associations. Perceptions about the utility and reliability of information sources varied.

Information provided in DMARD counselling was often perceived to be rushed, standardised and delivered using a checklist approach. Unmet individual needs and unresolved concerns were frequently reported. Tailored, person-centred care was valued and preferred but rarely reported, whereas conflicting information from different sources was confusing and increased concerns. Overall, in-person consultations were preferred, while telephone consultations offered a convenient option for those with mobility difficulties or work commitments. However, many people simply wanted to get started on treatment that would relieve troublesome symptoms and improve quality of life. At the time of the study limited opportunities existed to offer a choice about the mode of consultation due to the requirements for social distancing. Preferences about the timing of DMARD counselling varied but service provision appeared standardised and inflexible. For some a follow-up telephone consultation would offer the opportunity to review and resolve outstanding information needs and concerns about Methotrexate. Telephone helplines offered a reliable, direct route to rheumatology advice and were valued. Moreover, the pathway to starting Methotrexate was clearly not straightforward and different methods were used within the two NHS Trusts. Overall, most participants reported taking a pragmatic approach about their concerns relating to taking

Methotrexate, acknowledging that any prescribed or over-the-counter medication has both benefits and potential risks.

The following chapter details the review of study findings by relevant stakeholders and is then followed by further interpretation of both the qualitative study data and review findings in relation to existing theory and evidence in Chapter 6.

Chapter 5

5 Stakeholder review

5.1 Introduction

This chapter presents the methods and findings of the stakeholder review of study findings. This process was used to meet the fourth objective of the study, to explore how Methotrexate DMARD counselling can be optimised. Details of the stakeholder participants, the strategies used to gather perspectives and synthesise the results to develop recommendations for a stratified approach to DMARD counselling are described. Recommendations and a stratified model of person-centred DMARD counselling are presented.

5.2 Stakeholder review

The initial study plan was to hold a stakeholder meeting comprising a range of rheumatology service providers, clinicians, service users and public representatives as is recommended (O'Cathain et al., 2019) to review the study findings and develop recommendations for an optimum model of DMARD counselling. An early evening online meeting was arranged with several weeks' notice in keeping with local practice. A wide range of stakeholders including a service manager, clinicians, a range of rheumatology nurses, research nursing staff who also deliver DMARD counselling, clinical academic staff, a rheumatology pharmacist with dual role as a regional BSR pharmacy representative, a patient and public representative employed from the research site, and a representative from NRAS were invited to participate. The meeting was scheduled during the summer when NHS services were in the post-pandemic recovery period, many people were on leave. On the evening of the meeting some were unexpectedly unable to attend due to unforeseen circumstances resulting in three people attending. Given the time constraints of the researcher's PhD secondment and funding together with pressures on NHS rheumatology services and associated staff shortages a pragmatic approach was taken to proceed with the meeting.

In a bid to engage with a broad range of rheumatology nurses who were currently or had experience of delivering DMARD counselling the researcher visited the research site and PIC site and met with nurses individually and in small groups to present study findings and gather perspectives regarding an optimum model of DMARD counselling. This approach was taken as the researcher was aware that nurses working in clinical roles are often not involved, or able to participate in research meetings because of clinical commitments; that job plans may not allow flexibility to attend evening meetings unless doing so in their own time; and pertinently that nurses may not feel confident to speak out in a larger or multi-disciplinary online meetings. Therefore the opportunity to engage at a more personal level aimed to gain trust and enable the nurses to feel confident to disclose individual perceptions about the organisation and delivery of DMARD counselling.

Study findings were reviewed by the PAG in individual meetings in line with their preferences. Every included research participant received a copy of the study findings as they had requested and were invited to send feedback, disappointingly no feedback was received. Table 5.1 details the study findings review meetings.

Table 5.1 Details of the study findings review meetings

Patient Advisory Group (PAG)	Video meeting – 1 PAG member, 1 PPIE Facilitator Telephone meeting – 1 PAG member
Rheumatology Nurses	Research site Meeting 1: 1 band 5 rheumatology nurse 1:1 Meeting 2: 1 band 6, 1 band 5 rheumatology nurse PIC site Meeting: 1 band 7 lead rheumatology research nurse, 2 band 6 rheumatology research nurses (currently provide information about DMARD counselling/prior roles as rheumatology nurses)
Multi-disciplinary stakeholder study findings review	1 Consultant Rheumatologist/Honorary Professor of Rheumatology (Research Site) 1 Lead Rheumatology Nurse (other Midland NHS Trust) 1 Rheumatology Service Manager (Research Site)

In each meeting to review the study findings the researcher introduced the meeting outlining the aims of the meeting was to review the study findings and gather feedback to develop recommendations for an optimum model of DMARD counselling. It was acknowledged that each participants contribution to the discussion would be respected and have equal value. The context of the study was described by the researcher supported by a PowerPoint presentation that summarised the thesis findings, together with a copy of the study findings report (Appendix 12). Open discussion was encouraged about topics including; whether everyone needed DMARD counselling before starting Methotrexate; the potential for a stratified approach to the timing, method and content of DMARD counselling from an organisational planning and service delivery perspective; opportunities for, and experiences of implementing a person-centred approach to DMARD counselling.

A person-centred approach to DMARD counselling was defined as using a biopsychosocial approach to the consultation, enabling a holistic approach that considers individual information needs and concerns. Information is then provided that is tailored to take into account factors such as gender, age, lifestyle factors such as alcohol intake and individual factors i.e. only women of childbearing age and potential would receive critical, safety related reproductive health information about the need to avoid pregnancy because of the teratogenic effects of Methotrexate. Information sources would be tailored to meet individual literacy, health literacy, communication requirements and preferences i.e. audio-recorded information for people with low vision.

During the meetings the researcher made detailed notes regarding the stakeholder's thoughts and perceptions, using numbers of participants to identify where consensus or disagreement existed. Details of these thoughts and perceptions were logged on an Excel spreadsheet immediately after the meetings, collated, and organised and analysed following the principles of coding and thematic analysis (Braun and Clarke, 2022). Recommendations were developed from this analysis regarding optimising DMARD counselling together with a stratified model of DMARD counselling. This pragmatic reflexive approach was adopted in response to the decision to undertake several separate meetings to elicit a wide range of healthcare provider and user perspectives especially given the low attendance at what had been planned to be the main stakeholder meeting. The decision to use the principles of thematic analysis (Braun and Clarke, 2022) was in keeping with the analysis of the MMSR and qualitative study. Nominal group technique (Delbecq and Van de Ven, 1971) was not used because a) the aim was to make recommendations for an optimum model of DMARD counselling and not to define the content of DMARD counselling and b) the formal approach may have limited interaction and feedback from some participants particularly where nurses may have been aware of differing perspectives if in a group with health service delivery managers (Lennon, Gasper and Carpenter, 2012). Nominal group technique could offer a useful tool for future work beyond the scope of the thesis to determine the core content of DMARD counselling.

Topics discussed included acknowledgement that current methods of providing DMARD counselling do not always meet individual needs, and that waiting times for DMARD counselling can result in unacceptable delays to starting treatment. Therefore, ways to improve access to treatment including issues around the timing and methods of counselling, as well as addressing practical issues around safety monitoring, supply of drugs and rheumatology care were considered. The implications for training and continuing professional education of rheumatology nurses or HCPs was also considered. These issues will be discussed in this chapter and a summary table is provided.

5.3 A person-centred approach to care

It was agreed that several opportunities existed to promote a more person-centred approach to DMARD counselling care as defined in 5.2 (McCance and McCormack, 2006), that would support shared decision-making and self-management (Jones et al., 2022; Nikiphorou et al., 2021; NICE NG100, 2020). As evidenced in the MMSR (Chapter 2) and qualitative study (Chapter 4) provision of standardised information using clinician-centred consultations, and didactic communication did not resolve concerns, encourage shared decision-making or support people to start Methotrexate. Helpful aspects of DMARD counselling consultations were described where nurses employed a holistic approach, used open communication, actively listened, demonstrated empathy, and involved the person in the consultation (Howick et al., 2018, Dures et al., 2016). Engaging people in two-way discussion enabled questions to be raised, concerns about troublesome symptoms of RA and treatment to be addressed (Dures et al., 2016). Demonstrations of providing empathic, accurate, information and emotional support provided reassurance that people were not on their own in learning to live with RA (Howick et al., 2018). Using positive messages that Methotrexate could improve symptoms of RA and undesirable side-effects were not inevitable fostered trust and confidence in HCPs and treatment (Howick et al., 2018).

5.4 Collaborative communication

Person-centred DMARD counselling requires nurses to have specialist knowledge of RA and DMARDS such as Methotrexate together with effective communication skills to facilitate a collaborative biopsychosocial consultation (Barrett, 2018). A collaborative approach to communication involving two-way discussion with people with RA in consultations, acknowledging ‘people are experts of themselves’ and sharing responsibility for health supports person-centredness (Stewart et al., 2014). Open communication using open-ended questions encourages the person with RA to participate in the consultation. Supportive non-verbal and verbal communication displaying empathy and including active listening, reflecting back what a person has said displays concern for the ‘whole’ person . Demonstrating understanding and respect for a person’s perspective engenders trust and confidence enabling a therapeutic relationship and effective collaborative communication (Pinto et al., 2012). Therapeutic relationships enable sensitive topics to be discussed. Motivational interviewing, a ‘person-centred directive method for enhancing intrinsic motivation to change by exploring and resolving ambivalence,’ (Rollnick and Miller, 1995). Integrating the use of motivational interviewing into routine rheumatology care can support shared decision-making, medication adherence and self-management, improve satisfaction and outcomes (Georgeopolous et al., 2016).

5.5 Opportunities for a responsive, reflexive approach to provision of DMARD counselling

Overall agreement existed that current methods of providing DMARD counselling are not always able to meet individual needs and preferences regarding timing, method and content. Currently some people are offered DMARD counselling on the day of diagnosis or rheumatology review. Clinical nursing staff recognised that this sometimes created information overload, whereas other people want the opportunity for a prompt start to treatment and RA NICE guidelines (NICE 2020 (NG100)), and the National Early Inflammatory Arthritis Audit (BSR, 2022) also highlight early treatment start as good practice. The opportunity to develop a stratified person-centred approach to the delivery of DMARD counselling could improve access to DMARD counselling and therefore treatment. Alternative approaches could include providing those who wished to and were deemed appropriate to start Methotrexate without formal DMARD counselling a telephone or in-person consultation within a short timeframe of starting treatment to answer queries and address any concerns. There was agreement that reviewing different ways of working within the current rheumatology nursing capacity may allow changes to service delivery to support more individualised care.

5.5.1 Offering a choice regarding mode of DMARD counselling

The study reviewed expectations and experiences of in-person and telephone DMARD counselling. At the point of the meetings one unit were recommencing group DMARD counselling. Acknowledgement was made of the necessity to consider both people's preference and suitability for telephone or group DMARD counselling. Factors such as communication difficulties memory impairment, learning disabilities, and those with certain co-morbidities may mean that individual one-to-one appointments are required, ideally with appropriate communication supports. Issues regarding literacy and health literacy were discussed, acknowledging that these issues are not easily or frequently addressed in clinical situations and offer opportunities for service improvement.

Telephone consultations were seen to provide flexibility for some, offering benefits of timesaving especially for those who are working, as well as offering improved access, cost-saving for those with mobility or transport difficulties and environmental sustainability. However, this mode limits opportunities for nurses to review physical, and sometimes emotional and psychological factors. Currently video consultations are not regularly employed in either of the NHS services but offer a possible solution. Video consultations are recognised as having limitations in rheumatology practice in the UK (Nune et al., 2021). However, the author has prior experience of these being successfully embedded in some areas such as chronic kidney disease, and home haemodialysis settings at a large UK NHS Trust (Haroon et al., 2022; Young et al., 2021).

Group DMARD counselling may offer benefits for some from peer support, however current service delivery suggests that stratification into disease groups is needed to allow specific disease relevant aspects to be addressed. Group consultations require preparation in terms of checking blood and x-ray results and prescriptions have been written. This can result in wasted time when people do not attend. A comparison of the time spent preparing for and delivering group compared with a 1:1 session would be recommended, together with evaluation of patient and clinician satisfaction. Individual factors such as age and gender of group participants will affect the content required in the sessions, for example regarding contraception, family planning, and lifestyle issues. Where groups are stratified, they may offer solutions to improving access to DMARD counselling, and timely start to Methotrexate. Overall, it was agreed that different models for stratifying DMARD counselling exist and warrant further evaluation.

5.5.2 Content of standardised DMARD counselling versus person-centred care

Agreement existed amongst rheumatology nurses that current methods of DMARD counselling often follow a standardised approach, using the Versus Arthritis Methotrexate information leaflet, and sometimes a departmental checklist. The leaflet contains little positive information about Methotrexate, with most of the information pertaining to possible risks or harms, the requirement for safety monitoring, the potential for drug interactions and lifestyle implications. Nurses were aware that patients are frequently ‘bamboozled’ by the volume of information and faced a dichotomy of ‘doing a thorough good job’ with that of information overload. Attempts to highlight and promote recall of significant information were described, such as marking or writing on the leaflet or during telephone consultations asking people to make a note of important information regarding weekly dosing and timing of blood tests. In light of poor recall of important safety information and practical issues consensus existed that further work to identify the core information required in DMARD counselling, could support stratification and reduce the potential for information overload and improve recall.

5.5.3 Training and continuing professional development requirements

Nurses delivering or with experience of delivering DMARD counselling acknowledged a lack of training opportunities both when learning to deliver consultations and for continuing professional development. This was particularly relevant to remain up to date with changing guidance around strategies to reduce the risk of infection, and implications for family planning or breast feeding. Similar issues were identified regarding strategies to educate people regarding issues such as what comprises a unit of alcohol, and the role of Folic Acid replacement. Recommendations were made to develop strategies to support continuing professional development.

5.6 Is DMARD counselling required by everyone starting Methotrexate?

The question of whether DMARD counselling was required by everyone resulted in differing opinions. Two rheumatology nurses currently involved in delivering counselling felt that it was imperative for everyone before starting Methotrexate, whilst the clinical academic rheumatologist and most rheumatology nurses agreed that some people were able to start Methotrexate without formal DMARD counselling. In such instances people should receive clear verbal and written information and be able to recall important safety advice and instructions provided on Methotrexate and Folic Acid tablets which are routinely reiterated by dispensing pharmacy staff. Arrangements for a follow-up telephone call or in-person review with a rheumatology nurse would be arranged within a short timeframe, agreed with the person starting Methotrexate. Comparisons were made with those starting Insulin or oral hypoglycaemics for Diabetes and anti-coagulation that have similar significant safety implications if not administered safely. Many are commenced on treatment immediately after diagnosis due to the risk of harm if left untreated, and then receive education at a later time-point, or over a series of consultations such as within the DESMOND self-management programme for those newly diagnosed with Type 2 Diabetes (Davies et al., 2008).

5.7 Strategies to improve clarity around timing, and organisation of blood tests

Nurses involved in delivering DMARD counselling and supporting rheumatology helplines demonstrated awareness of a need for robust, evidence-based strategies currently to support information needs and recall regarding timing of blood tests. Strategies to support those who can read and write in English could include developing printed information specific to local phlebotomy arrangements, and advice for those accessing phlebotomy out-of-area. Difficulties encountered where results are not transferred across regions may be overcome by promoting uptake of patient digital access to blood test results via primary and secondary care systems. This would be limited to those with digital access but would enable people to access and transfer results for review if primary care services are unable to facilitate this. Moreover many local areas do not yet provide such access, therefore possible solutions could include developing, testing and evaluating digital solutions.

5.8 Strategies to improve ongoing access to Methotrexate and Folic Acid

Issues regarding ongoing supplies of Methotrexate result in anxiety and create a barrier resulting in some people not continuing treatment. Awareness that lack of clarity around which primary care services will prescribe and monitor Methotrexate remains a national problem, possibly worsened by the impact of the COVID-19 pandemic. A national shared care agreement for Methotrexate prescribing (NHS England, 2022) exists but requires time to disseminate to primary care services, be returned, recorded and implemented. Difficulties are also encountered when arrangements aren't always clearly communicated or recalled by people with RA. Similarly, a lack of clarity existed around who would prescribe ongoing supplies of Folic Acid despite this being a drug with no monitoring requirements. Variation existed across and within units as to how these issues, together with follow-up reviews, are organised. Both participants and patients had reported difficulties in sometimes getting timely responses and solutions due to pressure upon helplines. For the purposes of this review practical, easy to implement and evaluate solutions included developing an infographic that would be personalised. Wider work includes reviewing local commissioning agreements and engagement with primary care services, as well as reviewing whether review times should be in line with when the next prescription of Methotrexate is required.

5.9 Strategies to improve clarity around arrangements for ongoing rheumatology care

Differences existed across and within units as to whether people with RA received copies of rheumatology clinical letters or letters written to themselves and copied to family doctors. Delays in receiving clinical letters could lead to uncertainty about follow-up arrangements, as did partial booking systems where future appointments were not sent out immediately after consultations. Possible solutions included development, testing and evaluation of a template summary or infographic that would be personalised addressing individual information needs, details of dosage, and practical information regarding obtaining further supplies of Methotrexate, Folic Acid and follow-up arrangements.

5.10 Improving recall of information regarding safety issues

Solutions that were considered that aimed to improve recall of information about safety issues incorporated into an infographic as outlined in 6.7 to include issues around safety blood test monitoring, accessing advice through rheumatology helplines, arrangements regarding prescribing and dispensing of Methotrexate. Such information used to be provided in recommended shared care monitoring booklets that may not currently be widely used, but also create barriers for those with limited literacy, limited health literacy or are unable to communicate in English. Additionally, units with patient access to rheumatology web site or digital applications could provide audio-visual or spoken information that people could access on an as required basis (Deshpande et al., 2023).

5.11 Methods of communication to resolve needs and concerns regarding Methotrexate

Achieving consensus within departments regarding the general content of current information about Methotrexate in accordance with national guidance was seen to offer solutions to minimise inconsistency. This in turn would enable the rheumatology team to be confident they are using a consistent approach, helping to reduce uncertainty for people with RA, and enable needs-based, person-centred care to be provided. The following examples were considered:

a. Achieving departmental consensus regarding guidance around alcohol intake for those with normal liver function.
b. The opportunity to consider a whole team approach, promoting positive framing in verbal communication when introducing Methotrexate and other DMARDs. This may enable a consistent message to be imparted promoting Methotrexate as a drug treatment to improve outcomes rather than imparting uncertainty about the risk of side-effects, requirement for safety monitoring.
c. Provision of staff training to support working towards shared decision making, inviting, and encouraging people with RA to take part in two-way discussion, and to bring and raise issues they wish to discuss in person- centred consultations.
d. Opportunities exist for joined up working with hospital pharmacists to ensure a consistent approach to provision of information about Methotrexate. Collaboration with pharmacists could enable services to understand roles,

provide opportunities for joint training, and consider ways to reduce duplication, promote best use of resources and promote person-centred care.

5.12 Summary of recommendations

Following review of study findings consensus was achieved to consider a stratified approach to providing person-centred DMARD counselling, together with infographic and digital solutions to support personalised information needs and recall. This would also align to a recently published study evaluating a prognostic model using information including age, alcohol intake, smoking history, concomitant medication and kidney function to predict the likelihood of long-term Methotrexate treatment toxicity (Nakafero et al., 2023). Whilst this model was developed to inform a stratified approach to the frequency of Methotrexate safety monitoring, this algorithm also arguably offers an opportunity to develop an evidence-based personalised approach to providing information about potential risks of side-effects and harms for those starting Methotrexate. Additionally the requirement for strategies to support initial and continuing professional education of healthcare professionals to support evidence based, current information and advice in DMARD counselling was recognised. Furthermore, opportunities exist to work towards gaining consensus across and within rheumatology departments regarding information about the benefits, potential risks and practical aspects of taking Methotrexate. Gaining such consensus in turn has the potential to reduce the incidence of conflicting information being provided and reducing duplication of information, which in turn could improve the patient journey and efficiency of services. Further work is required to develop and establish the feasibility of proposed strategies. Table 5.2 summarises the recommendations.

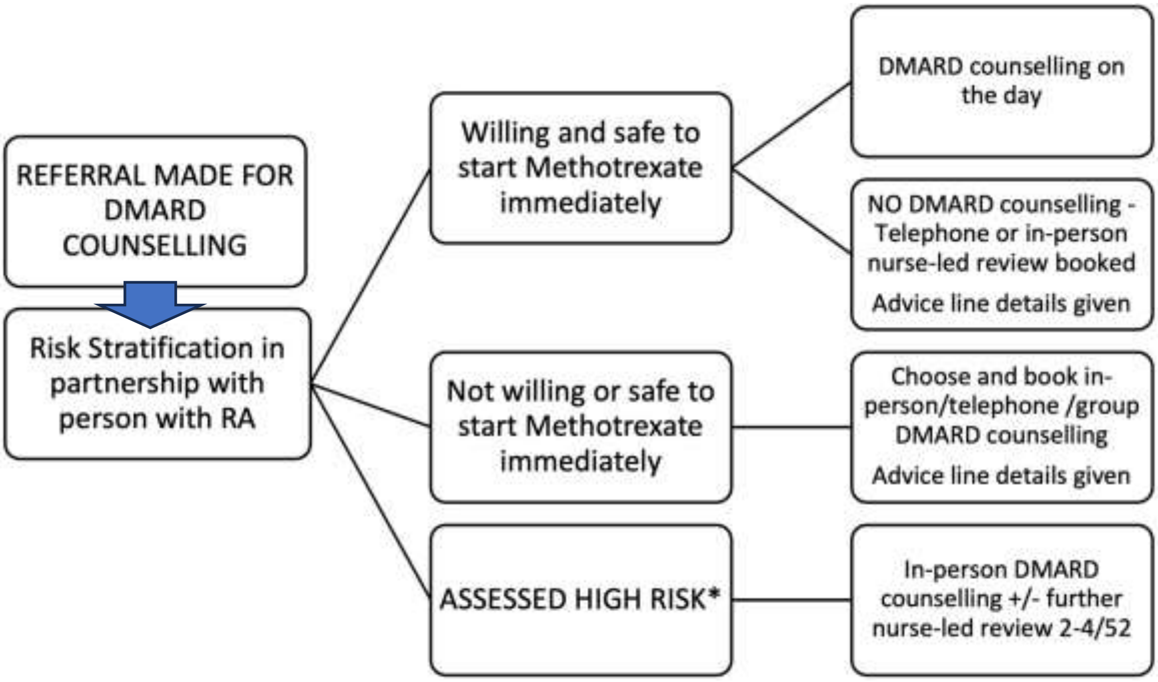
Table 5.2 Recommendations to optimise DMARD counselling

Recommendation 1	Develop a model of stratified person-centred DMARD counselling
Recommendation 2	Develop an infographic to support recall of personalised information
Recommendation 3	Develop accessible digital methods of communication to support diverse information needs including those with limited literacy or who do not speak or understand English
Recommendation 4	Develop digital training strategies to support initial and continuing professional development of healthcare professionals to include a) communication and consultation styles b) shared decision making c) up-to-date information about Methotrexate

5.13 A stratified model of person-centred DMARD counselling

A proposed stratified model of person-centred DMARD counselling was developed by the researcher based on the study findings. The model incorporates risk stratification, and individual preferences of people with RA for the timing and method of DMARD counselling and is presented in Figure 5.1. Further work with a range of stakeholders would be required to co-produce, establish feasibility and evaluate such a model.

Figure 5.1 Proposed risk stratified person-centred model of DMARD counselling



*High risk e.g. those with low literacy, learning disability, unable to communicate in English

5.14 Researchers view of high quality DMARD counselling

A DMARD counselling consultation is often the first opportunity for people with RA to speak to a rheumatology nurse following initial diagnosis of RA (BSR, 2022). People often have far-reaching biopsychosocial information, education and support needs that go beyond starting Methotrexate, and require an empathetic, holistic approach to care (Hayden et al., 2015). A person-centred consultation incorporating collaborative communication, supports development of a positive rapport to enable working in partnership (Roter and Hall, 2006). The consultation is then centred around the person attending for DMARD counselling (Robinson et al., 2023). Biopsychosocial concerns are explored and addressed, with relevant referral and signposting to the multi-disciplinary team, NHS and third sector services. Information and education should be tailored to the person's agenda, addressing individual needs and preferences and be relevant to age, gender and lifestyle specific to support shared decision-making and self-management (Robinson et al., 2023; NICE NG 100, 2020; Zangi et al., 2015). Where an acceptable treatment plan is agreed, initial prescriptions and Methotrexate information card are issued (MHRA, 2020) and details of arrangements for safety monitoring confirmed. Recall and understanding of important safety and practical information is confirmed and point of contact details provided (Robinson et al., 2023, Roter and Hall, 2006). When a person is not willing or ready to start Methotrexate the person should be supported, other DMARD options should be considered and plans for further review arranged. A personalised letter outlining the consultation written in easy-to-understand language should be sent and copied to the family doctor.

The consultation offers a valuable opportunity to address holistic needs about RA and treatment with Methotrexate. This may include providing emotional care and support for someone who is struggling to cope with a recent diagnosis or impact of very active disease. Framing the use of Methotrexate positively and explaining the benefit of treatment even though it may take several weeks before people see a benefit can support people to accept treatment (Hayden et al., 2015). Joint working to develop a management plan to effectively manage RA symptoms in the meantime can reassure people, and gain confidence to take Methotrexate, and believe their situation will improve. Information should be tailored to the person's agenda, core safety information must be provided at the initial consultation, wider education can be deferred (Robinson et al., 2023). This allows prioritisation of individual needs and supports recall of essential information (Robinson et al., 2023). Barriers to communication such as hearing or visual impairment and proficiency in communicating in English should be assessed and appropriate interpreting services used to support people to participate actively in their care where needed (Robinson et al., 2023). Methods of providing information should be tailored according to the person's level of literacy, health literacy, digital literacy and access, cultural considerations and preferences for format, and to support recall of information (Robinson et al., 2023). Easy to understand language should be used, avoiding technical terms, diagrams and visual information can support understanding and should be personalised (Oton et al., 2022a,b, Voshaar et al., 2016). Providing small amounts of information and use of Teach-back, where a person is asked to recall in their own words their understanding of what the hcp has explained supports shared decision-making, adherence and self-management (Robinson et al., 2023, Ha Dinh et al., 2016). Verbal affirmation that main concerns and information needs have been satisfactorily addressed should be sought.

Practical and financial barriers to accessing and adhering to Methotrexate should be addressed, including lack of transport or financial difficulties preventing people travelling to attend monitoring appointments (Mallorie, 2024). Separate prescription charges for Methotrexate and Folic Acid often initially supplied monthly, incur separate prescription charges. Cumulative charges for individual prescriptions items to manage RA can create a barrier to adherence and self-management (Mallorie, 2024). Providing information about NHS Pre-payment certificates and exemption certificates due to low-income can enable people to access and adhere to treatment and promote self-management. Taking time to deliver effective person-centred DMARD counselling to 'get it right first time,' supporting more people with RA to start and adhere to Methotrexate offers opportunity to improve adherence, improve individual outcomes and promote sustainable rheumatology care (Kay and Lanyon, 2021).

5.15 Barriers to high quality DMARD counselling

Several barriers to provision of high quality person-centred DMARD counselling exist. To date there is no nationally agreed training programme and few opportunities for continuing professional development (5.53) for rheumatology nurses' educating people about Methotrexate in the UK or internationally despite a call for training from the professional group (Robinson et al., 2023, 2019, Marques et al., 2023, Beauvais et al., 2016, Vlieland et al., 2016). The Royal College of Nursing Rheumatology Forum has produced and evaluated competency frameworks but does not provide training resources to support achieving the competencies (RCN 2021, 2019). Undergraduate nurse training does not include conducting consultations (NMC, 2018). There is a paucity of funding and training opportunities for HCPs to develop advanced communication skills and interventions such as motivational interviewing to support shared decision-making and self-management (Dures et al., 2014). Many rheumatology nurses ‘learn on the job’ that may result in paternalistic, nurse-centred consultations framed on written information (Robinson et al., 2023, 2017). Fears of litigation may result in nurses insisting upon telling a person about every possible consequence that may arise from taking Methotrexate rather than identifying individual needs (Rinaldi et al., 2022). Lack of awareness about local services such as mental health provision, family planning services, NHS prescription pre-payment certificates and exemption criteria may result in persistent barriers to people accepting Methotrexate. Organisational and team cultures that do not support person-centred care may create barriers to individual nurses adopting a reflexive, responsive approach, attempting to provide person-centred care (McCormack and McCance, 2017). Time constraints relating to workload and workforce pressures may impact upon nurses practice, resulting in them ‘blocking’ people from asking questions and sticking to the narrative guided by written one-size-fits-all information (Robinson et al., 2018).

Opportunities exist to develop nationally agreed best-practice consultation and communication skills training and the content of DMARD counselling. Regular clinical supervision and training updates could support continual development of skills and facilitate embedding training into clinical practice (Dures et al., 2014). Future research should evaluate the feasibility and acceptability of person-centred DMARD counselling and impact upon adherence.

5.16 Conclusion

This chapter has presented the stakeholder review of study findings, developed recommendations to optimise DMARD counselling for people with RA when commencing Methotrexate and proposed a stratified model of person-centred DMARD counselling. Opportunities to develop a stratified, person-centred approach rather than the routine one-size-fits-all delivery of information about Methotrexate have been identified. The provision of accessible training to support healthcare professionals develop consultation and communication skills and share current guidance to support person-centred care and shared decision making have been highlighted. Possible solutions to support personalised information needs and recall include infographics and accessible digital audio-visual methods of communication. A proposed risk stratified person-centred model of DMARD counselling has been presented. The researchers view of high quality person-centred DMARD counselling and associated barriers to provision have been presented. Further research is required to co-produce, develop, and evaluate the feasibility of the proposed recommendations. The findings of this chapter are considered further in the following discussion chapter.

Chapter 6

6 Discussion

This thesis explored and identified the information needs of people with RA when starting Methotrexate using a systematic review and a qualitative interview study. This explored whether current methods of providing information about Methotrexate within nurse led DMARD counselling appointments met the expectations, needs and concerns of people with RA when starting Methotrexate. Nurse-led DMARD counselling consultations provide information and education about Methotrexate (Robinson et al., 2018), including, purpose, safe administration, side effects and the requirement for monitoring blood tests (Robinson et al., 2018). The thesis was conducted during periods of lockdown and social distancing during the COVID-19 pandemic commencing in September 2020. The qualitative interview study was conducted in 2022 through continued and changing social distancing requirements with most DMARD counselling being provided remotely. A review of the study findings by patients, public and clinicians explored opportunities to develop new or alternative models of DMARD counselling.

This chapter provides a summary of the thesis findings, followed by consideration of the findings in relation to existing literature. Perceptions of stakeholders including participants, patient, public and healthcare professionals regarding alternative and new models of Methotrexate counselling are discussed. Thereafter, the strengths and limitations of the study are considered, together with a discussion of the implications of the findings for clinical practice, including education, training, and further research. Finally, a reflection is provided on the impact of my clinical background on the research and clinical practice.

6.1 Summary of thesis findings

6.1.1 Systematic review study findings

The mixed-methods systematic review explored the information that people with IA require to take Methotrexate. The systematic review highlighted the desire for person-centred information about Methotrexate, that addressed individual concerns such as why treatment with Methotrexate is required, how Methotrexate works, the likelihood of Methotrexate working, and practical information about how to take Methotrexate (Martin, 2020). Concerns about Methotrexate included the risk of side-effects, long-term harms, use in treating cancer, potential drug interactions and the impact upon lifestyle. Issues affecting lifestyle included guidelines on restricting alcohol intake, recommendations for vaccinations, implications for reproductive health and the requirement for safety blood-test monitoring. Several factors were identified that contributed to difficulties encountered by people with RA in finding suitable information: the impact of clinicians' communication skills and communication styles, the use of technical terms and jargon, and inconsistent and conflicting information across written verbal and digital sources.

Notably, most of the included studies included participants with established RA, most were female, not all of whom were still taking Methotrexate. None of the studies reported experiences of people receiving information in nurse led DMARD counselling. Limitations identified in the literature included the information needs of people with RA commencing Methotrexate, together with exploring whether nurse led DMARD counselling provides an effective way of meeting these information needs. These limitations informed the design of the qualitative study.

6.1.2 Qualitative study findings

The qualitative study identified that people with RA expected a person-centred approach to care that enabled individual, multifaceted concerns to be addressed. Diverse concerns relating to the necessity for the use of, and potential risks and harms related to taking Methotrexate in the context of treating RA were identified. Several factors influenced information needs and concerns including the duration and severity of RA, the impact upon daily activities and quality of life, the provision of inconsistent information, and technical language found in written and digital sources.

Participants reported valuing the opportunity to speak to a nurse. However, many experienced nurse-centred consultations, that, whilst being informative, provided standardised information that was difficult to remember. Person-centred information needs were often not perceived to be adequately addressed; significant unmet needs were reported regarding concerns about the necessity for, and potential risks and harms related to taking Methotrexate. Recall of important safety information following the consultation, was often poor.

Having DMARD counselling via the telephone, instigated due to the social distancing requirements of the COVID-19 pandemic, was initially perceived negatively. However, once participants had experienced this mode of receiving information many reported it to be acceptable. For some, teleconsultations were convenient and accessible and offered fiscal benefits reducing time lost from work and travel costs. Overall preferences were for in-person consultations, most perceiving that they offered a ‘more personal interaction’, and person-centred approach, although aspects of person-centred care were reported by some in both modes of consultation. Key factors influenced perceptions of the acceptability of both modes of consultations. These factors the approach of the nurse including their communication skills, such as being perceived to be friendly and approachable; displaying empathy, and whether they were knowledgeable about Methotrexate. These factors appeared to influence whether people felt cared for, listened to, heard, and had their concerns and information needs addressed. A person-centred approach was recalled by some and was highly valued and provided reassurance. Many had unresolved issues but felt more confident after DMARD counselling and decided to start Methotrexate to improve symptoms and quality of life. In the absence of a person-centred approach some people felt less confident about starting Methotrexate and decided not to start Methotrexate due to ongoing uncertainty.

People with RA reported they would value having a choice about the timing and format of DMARD counselling, some did not feel a need for a formal Methotrexate counselling appointment, preferring the opportunity for a nurse-led consultation after starting treatment. DMARD counselling at the at the same time as diagnosis was acceptable for some, but not all. Several expressed preferences for an optional follow-up telephone call with a rheumatology nurse to review any ongoing concerns, or issues arising after starting Methotrexate.

The qualitative study findings highlight that a nurse-centred rather than person-centred approach was often experienced, together with multifaceted information needs and poor recall of information. Rheumatology nurses providing information on Methotrexate may require additional training to support underpinning knowledge of Methotrexate treatment, consultation styles and communication skills.

6.1.3 Review of study findings and recommendations for a model of DMARD counselling

Patient advisory group members of the public, patients and rheumatology healthcare professionals and a service manager were convened to review study findings and elicit opinions regarding developing a new person-centred model of DMARD counselling. Consensus existed that a stratified approach to DMARD counselling would offer benefits people choice as to timing and mode of DMARD counselling. Moving to provide responsive, reflexive service provision was seen to present both challenges and benefits for health professionals and people with RA.

6.2 Person-centred care

Person-centred care was clearly identified as being of paramount importance to people with RA to support them to take Methotrexate in both the systematic review and qualitative study. Participants in the qualitative study identified that, ‘Everyone is different’ and the information they required may not be relevant to others. Tailored information and support was needed to enable people to accept and understand the necessity for and resolve concerns about taking Methotrexate to treat RA. Support from clinicians, family, friends, and others with RA could also help meet specific, individual needs.

Person-centred care (Pun et al., 2023; Sweeney et al., 2021), in this context, was seen as where the consultation focused on the ‘whole’ person, acknowledging their individual preferences, needs and concerns related to their biopsychosocial circumstances (adapted from Dwamena et al., 2012). These findings are concordant with current professional practice principles, policy, and practice guidelines (NICE 2020, Smolen et al, 2020, Jones et al., 2022, NMC, 2015). Provision of person-centred care is a core principle of the Nursing and Midwifery Council (2015) code of conduct and is underpinned by nursing theory (McCormack and McCance, 2006). National and European rheumatology guidelines for the care and treatment of people with RA also advocate person-centred care (Marques et al., 2023; NICE, 2020). These guidelines recommend that healthcare practice should focus on the needs of individuals, tailoring information about diagnosis, drug treatments, and symptom management to enable development of self-management skills to cope with the impact of RA throughout the disease course (Bech et al., 2020).

6.2.1 Rheumatology nurses' perspectives of person-centred care in RA

The desire for a person-centred consultation identified by this thesis has also been identified in Robinson et al., (2018) qualitative study exploring the experiences of rheumatology nurses providing information about Methotrexate in DMARD counselling for people with IA. The study concurred that people with IA have different information needs, acknowledging that a person-centred approach was required but often not provided. Some nurses reported using a person-centred approach to consultations whilst others focused on the provision of standardized information. Consultations were also usually structured using written Methotrexate leaflets with little opportunity for two-way discussion or for patients to ask questions. Some rheumatology nurses described eliciting and addressing individual concerns whilst others felt time-pressured and effectively blocked questions. Many recalled that people with IA were often overloaded with information, and that some required more time or additional consultations to consider whether they would take Methotrexate. These findings concur with the results of the qualitative study that DMARD counselling was primarily focused on nurses giving information.

6.2.2 Patients’ perspective of nurse-led care in early RA

The value of person-centred care for people with early RA has also highlighted in a recent qualitative systematic review demonstrating the importance of a holistic and empathic approach from nurses who considered the person’s individual circumstances (Sweeney et al., 2021).

A recent qualitative study of nurse-led clinics providing person-centred care for people with RA with taking DMARDs, illustrated high levels of satisfaction with care (Pun et al., 2023). This study demonstrated the patient-perceived value of holistic person-centred care in supporting people to learn and understand more about RA, and managing drug treatments although data was not reported separately for Methotrexate. The study differed from the thesis in that it did not explicitly describe person-centred practice in DMARD counselling or identify specific examples regarding Methotrexate information needs using only general references to ‘medication.’

6.2.3 Gender differences in RA and information needs

The qualitative study recruited more male (n=11) than females (n=8), which is unusual as RA affects two to four times more females than males (Aletaha et al., 2017). This is relevant because men and women may react to, and cope with illness differently (McCaughan and McKenna, 2007). For the purpose of this discussion sex and gender refers to the participants self-selected identity. Little research has explored the impact of men living with chronic conditions that predominantly affect women and affect daily life (Flurey et al., 2018). Therefore important, relevant evidence related to gender differences regarding treatment related side-effects and adverse events may not be considered in treatment guidelines or translated into daily clinical practice when providing people with information about DMARDS and making decisions about treatment (Maranini et al., 2022).

A qualitative focus group study of 22 men aged between 44 -75 years with RA explored the experience and coping styles of men living with RA (Flurey et al., 2016). Findings were in line with those of the thesis similarly describing seeking information about treatments from multiple sources, wanted to be well informed about treatments, and valuing regular monitoring. Frustration regarding guidelines to restrict alcohol intake due to treatment with Methotrexate were also reported. Issues regarding low mood that is recognised to affect whether people take Methotrexate (Hope et al., 2019) were disclosed in the research focus groups. Variation existed as to whether healthcare professionals specifically addressed psychological and emotional impacts of RA in consultations. Flurey's (2016) study differs from the thesis qualitative study in several aspects, firstly some male participants who were already established on Methotrexate disclosed missing doses or exceeding alcohol guidelines because of the lifestyle limitations due to alcohol restrictions. Secondly males identified preferences for structured information sessions rather than group discussions whereas the thesis qualitative study did not explore preferences for or experiences of group DMARD counselling due to the requirements for social distancing during the COVID-19 pandemic.

6.3 Information needs when starting Methotrexate

Many factors influenced the information needs of people with RA when starting Methotrexate in the thesis. The level of disease activity alone did not reflect the need for information which was also influenced by individual needs to learn more about RA, understand the rationale for and address concerns about the safety of treatment with Methotrexate. These findings are concordant with published literature including a scoping review of perceived information needs related to IA care (Connelly et al., 2019). Most articles in this scoping review related to RA, similarly, identifying high information needs. There was a desire for individual and practical information about IA, treatments and self-management using a holistic (biopsychosocial) approach and the need to develop accessible, adaptable methods of providing information. However differences existed in that the scoping review reported that women and younger people generally reported more needs, whereas the thesis qualitative study highlighted high levels of information needs in both men and women and did not include people under the age of 45. The studies included in the scoping review primarily referred to information provided by rheumatologists, not rheumatology nurses and did not differentiate information about specific DMARDs or DMARD counselling. Whereas the thesis qualitative study explored the experiences of people with RA receiving information from rheumatology nurses in DMARD counselling. In line with the thesis qualitative study unmet information needs were described due to delays in accessing timely information.

A qualitative synthesis of exploring patients' attitudes and experiences of DMARDs in RA and Spondyloarthritis also confirmed diverse information and support needs (Kelly et al., 2018) in line with the thesis findings. Alignment existed regarding information needs about the requirement for drug treatments, concerns about whether treatments would work, risk of harms from treatment, and confusion arising from conflicting information. The scoping review similarly identified the importance of people with IA feeling that they could trust healthcare providers, that supportive healthcare environments enabled peoples' concerns to be addressed and that hearing of other people's positive experiences taking DMARDs was beneficial for some. The scoping review differed from the thesis qualitative study as it largely considered care and information provided by physicians rather than rheumatology nurses or a multi-disciplinary team. This reflected differing rheumatology healthcare provision across European countries.

6.3.1 Concerns about the necessity for, and risk of treatment with Methotrexate

The thesis findings align to the underpinning Necessity-Concerns Framework (Horne et al., 2013) theory that those people who require more information when starting medications may be generated by the existence of diverse beliefs about the necessity for, and concerns about taking prescription medications, thereby influencing whether people start and adhere to prescribed medications such as Methotrexate (Hope et al. 2019; Pasma et al., 2017; Pasma et al., 2015). Participants in the qualitative study identified concerns about the need for, and risks of treatment such as side-effects and long-term harms related to taking Methotrexate. Most accepted the risk of side-effects in order to gain relief from troublesome symptoms of pain, joint stiffness and swelling that impeded daily activities, work, social and relational roles, reducing quality of life. Specifically one participant described unresolved concerns about the use of Methotrexate to treat cancer, risk of aggravating gastrointestinal symptoms, together with perceived advice requiring life-style changes including the necessity to stop smoking and eliminating alcohol intake. When balanced against what were described as at the time remitting and tolerable RA symptoms, their decision was not to start Methotrexate.

6.3.2 Information needs of people with RA

A large online survey in Austria indicated that people with RA may have increased information needs about treatment compared with those with Fibromyalgia and Ankylosing Spondylitis (Hirsch et al., 2020). The authors posited that this difference may relate to the impact of RA on quality of life affected by disease activity and symptoms of pain compared to those with Fibromyalgia. Conversely, the impact of Fibromyalgia, a condition that is not treated with DMARDs has been reported to be greater than RA (Tander et al., 2008).

6.3.3 Information needs of people with other long-term conditions

Several studies have explored information needs of people with other long-term conditions. A recent scoping review to establish the information needs of people with atrial fibrillation (Woo et al., 2021), a long-term condition that also requires long-term drug treatment with monitoring, identified several key factors that align with the findings of both the thesis SR and qualitative study. The scoping review similarly identified that patients reported requiring simple information to enable them to understand their diagnosis, the trajectory of the disease, risk of complications, information about the rationale for treatment, other treatment options, drug monitoring and efficacy. Education around managing symptoms and knowing how to seek appropriate help in emergency situations was also similarly seen as a priority. The review correspondingly identified that many people started treatment whilst lacking understanding of their diagnosis and emphasized the key role of nurses in providing education about disease and treatment.

The scoping review similarly recommends a person-centred approach to care that provides information appropriately tailored to individual literacy, cultural, and health literacy needs (Pelzang, 2010). Whilst also acknowledging the necessity for clinicians to be cognisant of the evidence base regarding the information needs of the people they care for. The results from the review also recognise the need to develop a range of information sources using different media to enable a stratified but personalised approach to delivering information about drug treatments.

6.4 Qualitative review of personal health information-seeking

An earlier qualitative review identified three dimensions of personal health information in accordance with Metoyer-Duran's (1993) model being concept usage, data usage and affect (Stavri, 2001). Concept usage relates to the cognitive aspects such as the methods used to present personal health information and the communication style of the healthcare professional. This includes the terminology and technical language often used in patient information that can render this unfathomable to lay people and acknowledges that the communication style of healthcare professionals impacts patients' decisions about care and treatment. Data usage relates to the use of healthcare systems and technology for information. This acknowledges individual differences in perceptions of and the need for information, and the level of trust that individuals place upon healthcare professionals and the medical advice and information that they provide. Factors affecting data usage include age, gender, sexuality, literacy, health literacy, ethnicity and cultural background. Affect relates to individual factors such as demographics, stage of illness and treatment that affect personal health information seeking. People who have recently been diagnosed and facing decisions about treatment were found to be more likely to phone information helplines for more information to help with their decision making.

These concepts align to the thesis findings in several ways, firstly in defining the difficulties encountered in accessing information written in clear, easy-to- understand language. Secondly, the impact of the clinician's communication style, and assumption that people have adequate literacy skills to read written information. The close alignment of information needs across different health conditions suggest opportunities exist to share best practice to develop core requirements of strategies to deliver accessible, tailored information.

6.5 Potential alternative models of DMARD counselling

6.5.1 Written information about Methotrexate

Several male participants suggested that they would have been happy to start Methotrexate on the basis of receiving written information and avoid the delay of waiting for a DMARD counselling consultation. Most participants also reported unmet information needs and concerns following DMARD counselling. A randomised controlled trial (RCT) of (n=119) people with RA in Thailand who were identified as non-adherent, demonstrated significant improvement in adherence after receiving either an information leaflet alone or a leaflet and a 30 minute counselling session with a nurse (Taibanguay et al., 2019) versus not receiving any information. This study differed from the thesis qualitative study as it recruited mainly females (84%), with longer mean disease duration of more than 7 years, and being established on DMARDS, most (79%) were taking Methotrexate. However the findings do suggest that provision of an information leaflet alone may be adequate to support some people to take Methotrexate.

Whilst this study differed from the thesis qualitative study in aiming to improve adherence, the findings suggest a multi-faceted approach to providing information and education to support people to take drug treatments is required. This is in accordance with the thesis findings that a person-centred approach to care is required, that allows people to be involved in decisions about the type and amount of information that they require to support them to take drug treatments.

6.5.2 Group motivational interviewing

A randomised controlled trial of (n=123) patients with RA in the Netherlands explored whether pharmacist-led motivational interviewing group session improved adherence to DMARDs (Zwikker et al., 2014). Participants were predominantly female (69%, mean age 60 years, and differed from the thesis qualitative study as had longer disease duration with mean disease duration of 14 years. The motivational interviewing intervention did not demonstrate any change in medication beliefs or improvement in adherence over time. This study differs from the thesis qualitative study with the intervention being pharmacist led and delivered to a group with established RA and aiming to improve adherence. However, the findings do align in that the intervention did not resolve concerns about the need for, or concerns about taking DMARD, similar to reports of participants reporting that DMARD counselling did not address or resolve concerns about Methotrexate.

6.6 Implications for practice

Several implications for practice arise from this thesis including a requirement for education and training of rheumatology nurses, the need for strategies to support recall of practical and safety information and opportunities to develop a stratified person-centred model of DMARD counselling. Each aspect will be discussed in turn in the following sections.

6.7 An evolving evidence base around providing education about Methotrexate

Since undertaking this thesis further evidence has been published regarding the requirement for education about Methotrexate provided by nurses (Marques et al., 2023a,b; Matos et al., 2023). This confirms that the topic is relevant to current delivery of rheumatology service delivery. Firstly a scoping review exploring the evidence regarding nurse-led education (Marques et al., 2023a), secondly a European survey of clinicians, patients and carers perspectives and experiences of education and support received about Methotrexate (Matos et al., 2023), thirdly the development of Points to Consider for clinicians when providing information about Methotrexate (Marques et al., 2023b). These will be discussed in turn in relation to the findings of the thesis.

6.7.1 Scoping review of nurse-led education for people starting Methotrexate

A scoping review aimed to establish the existing evidence base regarding nurse-led education for people with rheumatic and musculoskeletal conditions starting Methotrexate and similarly identified little relevant research (Marques et al., 2023). The review demonstrated that there is currently no consensus for providing education about Methotrexate. Varying methods of delivering education have been shown to improve satisfaction, adherence and in one study improved Methotrexate related knowledge (Fayet et al., 2021). Further appropriately powered randomised controlled trials were recommended. The study differed from the thesis study in not specifically exploring the information needs of people starting Methotrexate and did not explore expectations and experiences of DMARD counselling.

6.7.2 European perceptions regarding education about Methotrexate

Whilst guidelines recommend that nurses provide education for people when starting Methotrexate (Jones et al., 2022, Zangi et al., 2015) wide disparity exists across Europe in the provision and access to information and education about Methotrexate (Matos et al., 2023). A large cross-sectional survey developed by rheumatology researchers, clinicians, a pharmacist and patient representatives regarding aspects of treatment with Methotrexate, available in English and 12 additional languages was undertaken in 2022. Responses were received from 2185 participants, mainly patients (n=1536), most of whom had RA (52%) and carers (n=154), with fewer (n=335) nurses and physicians (n=299) across 24 European countries. More nurses from Northern Europe responded, whereas in Southern Europe more patients and physicians responded, likely reflecting differences in care provision across Europe. The findings demonstrate differing access to nurse led DMARD counselling with only 28% of patients reporting receiving counselling when starting oral Methotrexate, with more receiving education when starting injectable (subcutaneous) Methotrexate. Those living in Northern and Western Europe were more likely to receive DMARD counselling.

The survey differed from the thesis qualitative study in that no participants were starting injectable Methotrexate. However alignment existed with the studies in that not all patients felt they had the opportunity to ask questions to resolve concerns before starting Methotrexate. Patients recall of receiving information about Methotrexate similarly differed, as did the timing and duration of DMARD counselling. Variation also existed as to whether patients were able to access further nurse-led support following initial appointments. Patient participants prioritised information about side-effects and their management, the rationale for taking Methotrexate, when not to take Methotrexate, the need for monitoring blood tests, how to take and when not to take Methotrexate, and information about Folic Acid which is concordant with the findings from thesis systematic review and qualitative study.

Information about family planning, pregnancy and breastfeeding was identified by one in five in the European survey likely reflecting the inclusion of young adults, whereas none of the participants in the qualitative study wanted such information reflecting the older age of the participants. Physicians and nurses similarly rated information needs about side-effects as the main priority for information, however discrepancies existed in priorities for other topics. More nurses gave higher priority to educating people how to take Methotrexate, likely reflecting the administration of injectable Methotrexate. These findings confirm the importance of providing tailored, person-centred information and demonstrate the recurring topic of information required to support people to take Methotrexate.

A recently published European consensus initiative to develop ‘points to consider’ regarding the information to be considered by rheumatology nurses when counselling adults, children and families about Methotrexate treatment for inflammatory rheumatic disorders (Marques et al., 2023a) strongly aligns with the findings of the thesis study. The points to consider include three overarching principles and six points to consider. These were informed by the findings of a scoping review exploring the education needs of people starting Methotrexate (Marques et al., 2023b), and a European survey (Matos et al., 2023) of rheumatology clinicians and patients regarding the education and support required when starting Methotrexate (Matos et al., 2023). The points to consider differed from the thesis being developed using nominal group technique and following European Standard Operating Procedures for the development of Recommendations/Points (Van der Heijde et al., 2015). Some of the items lack robust evidence and therefore the strength of recommendation is low or absent. However the recommendations align to the findings of the thesis study in several ways. Firstly, identifying the requirement for tailored, needs based information for everyone prescribed Methotrexate. Secondly. recognising that information needs change during the course of RA and duration of Methotrexate treatment. Thirdly, highlighting the importance of nurses eliciting and addressing factors that may support or present a barrier to taking Methotrexate which in turn can promote adherence. Fourthly, acknowledging that education should improve understanding, and support self-management to promote safety and independence in care management, in turn improving satisfaction with care and quality of life. Finally in acknowledging that education about Methotrexate can be provided through a variety of methods including face-to-face and telephone consultations.

The points to consider differ from the thesis findings firstly in considering education of carers, likely reflecting the inclusion of children and young adults in the European survey (Matos et al., 2023). Whilst carers were not interviewed in the qualitative study, several participants alluded to receiving support from partners in reminding them to take Methotrexate and organise prescriptions. Secondly, online consultations were ranked above telephone consultations in the points to consider, however, the authors did not provide any commentary regarding this issue. In the thesis studies online DMARD counselling was not reported as a favoured method with several participants reporting low digital literacy and some were digitally excluded.

Of note, an overarching principle was the importance of initial training for nurses providing education about Methotrexate together with the importance of continuing professional development to maintain competence.

6.8 Requirements for training and education for rheumatology nurses

The findings from the thesis identify the multifaceted information needs that people with RA have when starting and taking Methotrexate and that existing nurse training may not fully address this. Participants in the qualitative study sometimes recognised that questions, such as those around potential drug interactions were deferred rather than addressed. Several examples of misinformation were also reported, for example with regard to eligibility for immunisation to protect against

Herpes Zoster (Shingles). Many reported a one-size-fits-all approach to providing information, some participants recalled dismissive attitudes, and many recalled nurse-centred rather than person-centred consultations. These findings support the need for training for rheumatology nurses to develop the necessary skills to provide person-centred care that meets the needs of people with RA starting Methotrexate.

6.8.1 European recommendations for rheumatology nurse training

The need for training to support rheumatology nurses to provide education about Methotrexate was highlighted in the recent European scoping review (Marques et al., 2023a), European survey of patients and healthcare professionals regarding nurse education about Methotrexate (Matos et al., 2023) and the Points to Consider for nurses educating people about Methotrexate initiatives (Marques et al., 2023b). The European initiatives also highlight the value of training in improving confidence for nurses providing DMARD counselling based on Robinson et al., (2017) UK research. The difficulties faced by nurses due to the paucity of specific training and accessing time and funding are acknowledged (Matos et al., 2023, Marques et al., 2023a,b). However, recommendations are not available as to the type or content of training required, and do not highlight the need for training to be accessible in both language and format (Vliet Vieland et al., 2016). Issues regarding the cost of training, and provision of funding for training are also not addressed. Moreover no recommendations consider whether nurses should achieve a required competence before delivering Methotrexate education. Consideration of the need for and provision of training for rheumatology nurses in the UK is warranted as DMARD counselling is more commonly provided than in many other countries.

6.8.2 Rheumatology nurse training and education in the UK

The requirement for adequate training to support rheumatology nurses practice have been highlighted in earlier studies (Lillie et al., 2012; Vliet Vieland 2016; Beauvais et al., 2016). These have not specifically elicited the training required to support nurses to provide education about Methotrexate through DMARD counselling consultations. A national electronic survey of 104 rheumatology nurses who counsel people starting Methotrexate identified wide variation in training. Some had received no training (14%), most reported some training (70%) and some reported receiving a lot of training (14%) including higher (MSc) level courses. Training largely comprised of observing other nurses practice and self-directed learning (67%), observing rheumatologist clinics (11%), a few (5.5%) had undertaken a rheumatology course and only one (1.4%) reported having completed a non-medical prescribing course. Most found training helpful and would have liked more training (61%). Priorities for training were Methotrexate related knowledge (88%), communication skills training (73%), consultation skills training (55%), and (43%) gaining experience in providing DMARD counselling. Clinical scenarios were used to assess knowledge and competence, which was overall rated as good. Confidence in delivering DMARD counselling correlated with training ($p=0.03$), knowledge ($p=0.05$) and experience relating to time in role ($p=0.00001$). Most reported confidence took around a year to develop, and of concern four (3.85%) reported not feeling confident in counselling people when starting Methotrexate. The survey confirmed a lack of accredited training for rheumatology nurses providing Methotrexate counselling in the UK.

Several findings align with the thesis findings; specific knowledge gaps were highlighted regarding guidance about Herpes Zoster (Shingles), alcohol intake and guidance around Methotrexate and pregnancy. Written information was used by all survey respondents to support DMARD counselling using the same nationally available leaflet produced by Versus Arthritis (a national patient charity). Development of a training package to support nurses' communication and consultation skills and knowledge of Methotrexate was recommended.

6.8.3 Communication and consultation skills training

The Nursing and Midwifery Council (NMC) currently requires registered nurses to have proficient communication and relationship management skills to provide person-centred care that supports shared decision making (NMC, 2018, 2015). Whilst acknowledging that specific skills are required dependent upon the area of practice no specific references are made regarding competence within nurse-led consultations (NMC, 2018). Robinson et al., (2017) who surveyed rheumatology nurses training needs reported that many nurses develop consultation skills whilst in role and with little training. Post-graduate courses to support advance practice vary in content and assessment (NMC, 2018). The requirement for advanced skills, including communication skills to support person-centred care and decision making is acknowledged by the NMC (2018). However barriers exist to accessing appropriate training as many rheumatology nurses report difficulty in accessing time and funding to attend relevant training (Robinson et al., 2017, Vliet Vieland et al., 2016, Beauvais et al., 2016, Haywood et al., 2013).

6.8.4 Video analysis of Methotrexate counselling consultations

As part of a qualitative PhD study Robinson (2021) undertook video analysis of ten rheumatology nurses delivering counselling for people starting Methotrexate. The results demonstrated that rheumatology nurses were aware of overloading people with information. The results are similar to those reported by the thesis qualitative study whereby consultations where nurse-centred, structured using a written Methotrexate information leaflet, and mainly consisted of a nurse talking to, rather than engaging in shared decision making. Similarly few nurses elicited whether the patients understood the information.

6.8.5 Training requirements for telephone DMARD counselling

Prior to the COVID-19 pandemic DMARD counselling was largely provided in-person. Rheumatology nurses were faced with rapidly moving to remote provision of care that did not allow time for training to adapt or develop the required skills. This lack of training may have reflected some of the findings of the thesis qualitative review regarding nurse-centred telephone consultations. However some examples of nurses eliciting reticence and concerns about Methotrexate were reported. Difficulties arose when conducting a telephone consultation where the nurse could not see the person or elicit physical non-verbal cues (Vaona et al., 2017). It is beyond the scope of this thesis to evaluate the impact of telephone consultations.

A systematic review of training interventions to support clinicians conducting telephone consultations published prior to the COVID-19 pandemic identified that telephone consultations have been used since 1974 (Vaona et al., 2017). Yet there remains a dearth of evidence regarding training and provision, and outcomes of telephone consultations. A recommendation for urgent research into effective training was made by the systematic review authors. Rheumatology nurse-led telephone clinics using a pro-forma for routine follow-up consultations have previously demonstrated high levels of satisfaction and were an effective tool to reduce clinic waiting lists (Hennell et al., 2006). A teaching programme on telephone advice in general practice resulted in improved quality of advice, and increased confidence amongst nurses (Marklund, 1989). Post pandemic telephone consultations remain an important part of rheumatology DMARD counselling in some services that are a valuable means of accessing care for some people. This then highlights the importance of developing appropriate training to support provision of person-centred telephone DMARD counselling, together with evaluation to inform and underpin future practice.

6.8.6 Achieving and demonstrating competency in rheumatology nursing practice

To date there remains no specific training course to equip nurses with the skills to deliver person-centred information and education about Methotrexate and no pre-requisite to achieve a level of competence (Robinson et al., 2017). The Royal College of Nursing Rheumatology Forum has produced guidelines for the administration of sub-cutaneous Methotrexate providing comprehensive detail of many relevant topics that could be amended and transferred to support education around oral administration (RCN, 2021).

The RCN Rheumatology Forum have produced a competency framework and assessment guidelines to support rheumatology nurses in the development of knowledge, skills and experience required for effective, evidence-based person-centred practice across a range of rheumatology nursing roles (RCN, 2020). This framework does not identify the components required to gain the skills and knowledge to deliver person-centred Methotrexate DMARD counselling. In a recent evaluation of the framework rheumatology nurses highlighted the need for validated, accessible training to support educational needs (RCN, 2022, Finney et al., 2022).

6.8.7 Challenges in maintaining competency

Rheumatology nurses face additional challenges in remaining up to date in light of frequently changing guidance regarding issues such as infection prevention and immunization, sexual and reproductive health (House, 2017; Salisbury et al., 2006; RCN 2021; Ledingham et al., 2017b; Russell et al., 2023; Flint et al., 2016). Additionally, nurses are challenged by the current workforce and workload issues reported in the British Society for Rheumatology (2021) workforce strategy report, that likely limit opportunities for nurses to undertake self-directed training and learning to maintain rheumatology specific competencies.

6.9 Issues around recall of information received in DMARD counselling

Many of the participants in the thesis qualitative study acknowledged receiving large volumes of information that were difficult to remember, often resulting in poor recall of important safety information. Accordingly rheumatology nurses in Robinson et al., 2018 and 2021 studies acknowledged ‘overloading’ people with information and not eliciting that they understood the information provided. Ley’s 1988 model of effective communication identifies several factors other than memory which affect poor recall of information provided in clinical consultations, these include understanding the information, and satisfaction with treatment also affect retention of information (Kessel, 2003). Between 40-80 % of medical information is not recalled following consultation, the more information that is provided the less is accurately it is recalled (Shersher et al., 2021, Maguire, 1996). A recent systematic review (Shersher et al., 2021) has identified improved information recall when healthcare professionals receive training and utilize a teach-back method of delivering health information. Teach-back involves the person receiving information being asked to repeat back or re-state information provided by the healthcare provider, such as the dose of Methotrexate and details of reporting potentially serious side-effects. Healthcare professional and patient perceptions were both barriers and facilitators to the effective implementation of teach-back strategies. However when teach-back was successfully implemented patient knowledge and satisfaction was improved. Therefore increasing awareness of, and access to training for rheumatology healthcare professionals for teach-back strategies potentially offers an easily implementable, low cost, solution to improving accurate retention of Methotrexate related information and thereby improving safety. Such strategies may also reduce the burden on rheumatology advicelines that are accessed by people with RA, as demonstrated in the thesis qualitative study to confirm information following DMARD counselling.

6.10 Challenges of inconsistent information sources

Similar challenges exist for both nurses and people with RA, due to the variation of information and guidance that exists across and within different written and digital information sources. Guidelines and recommendations can be interpreted and implemented differently both at departmental level, and in oral translation in consultations at service delivery level. As evidenced in the publicly available guidance regarding contraception with the use of Methotrexate in males and females, and timing of pausing Methotrexate prior to conception in females (Versus Arthritis, 2023). Differing information exists within RCN rheumatology nurses' guidelines for the administration of sub-cutaneous Methotrexate (2021), British Society for Rheumatology guidelines for prescribing drugs in pregnancy (Russell et al., 2023), and information on current VersusArthritis Methotrexate leaflets (VersusArthritis, 2023).

6.11 Reflection on the utility of DMARD counselling appointments

The lack of recall of information and high levels of unmet needs reported by participants calls into question the utility of separate DMARD counselling appointments, since these may lead to treatment delays for patients and may not be the most effective use of scarce staff resources (BSR, 2021). Services that deliver DMARD counselling as an integral part of nurse-led clinics may provide more holistic care, thus supporting people with self-management skills, and addressing co-morbidities that offer the potential to improve adherence and outcomes (Pun et al., 2023; Hope et al., 2019).

6.12 Is one session of DMARD counselling adequate?

Several participants in the thesis qualitative study suggested that the opportunity to speak to a nurse after starting Methotrexate may be helpful to address unresolved concerns, information needs, and any issues arising such as side-effects. There is no evidence for people taking Methotrexate, however a recent multicentre French randomized controlled trial of (n=127) people with IA, 61% with RA, 62% also taking Methotrexate investigated the efficacy of nurse-led patient education when starting biologic DMARDs (bDMARDs). Nurses providing education received specific training. Those participants receiving the intervention received bDMARD education when starting treatment and again three months later. The control group received standard care consisting of information when decisions were made to start bDMARD from a rheumatologist (Beauvais et al., 2022). The results demonstrated improved awareness of preventing, and recognising infections, with improved uptake of vaccinations and adherence in those who received education on two occasions from a nurse.

6.13 Consideration of alternative models of DMARD counselling

Alternative models of DMARD counselling such as group sessions exist. However, due to the impact of COVID-19 group DMARD counselling was paused, and therefore not formally evaluated in the thesis. A prior pilot randomised control trial reported this to be an appropriate method of DMARD counselling (Homer et al., 2009), and this approach has been successfully used to provide education about biologic DMARDs (Nadesalingham and Short, 2020). In clinical practice some people report benefitting from peer support in group sessions, whilst others report not feeling confident to speak out, and may not feel able to ask personal questions in front of others. Pharmacist-led counselling has been developed and shown to be effective in providing DMARD counselling for people with IA starting biologic DMARDs (Sahni et al., 2018).

Alternative methods of counselling such as online videos have been evaluated for people commencing Methotrexate for the treatment of inflammatory rheumatic conditions in the Republic of Ireland (Martin 2020, 2017). Similar digital resources are produced by pharmaceutical companies to support patient education regarding bDMARDs. Such methods offer potential for those who are digitally literate and have access to the internet, although raise some challenges around being person centred and may leave non-English speakers excluded. Such strategies may offer accessible tools for clinicians in rheumatology care settings and for people with RA and carers to use at home.

6.14 A stratified model of person-centred DMARD counselling

To assess how the research findings from the thesis could be effectively used Chapter 5 describes the findings from stakeholder meetings which gathered perspectives about developing a new model of DMARD counselling. There was agreement that opportunities exist to develop a stratified model of person-centred DMARD counselling (Reddy et al., 2017) which would involve people with RA making choices with rheumatology nurses about the most appropriate timing, content, and method of receiving information about Methotrexate. Factors including individual care, literacy, communication, mobility needs and preferences together with the potential burden of treatment (Ryan et al., 2023) should be considered .

Offering in-person individual, group, video, or telephone DMARD counselling would provide choice to people with RA, together with opportunities to utilize limited staff and estate resources effectively and efficiently. A range of strategies to support recall of individual information needs should be explored. These should be accessible and personalized to meet the needs of people with differing communication, and cultural needs. Information should be included that addresses individual concerns about side-effects, important safety information and practical aspects regarding blood monitoring, obtaining supplies of Methotrexate and follow-up arrangements. Possible approaches include personalized infographs, consultation summaries, and audiovisual information. Some people may require, and benefit from a follow-up consultation (by telephone call or in-person) with a rheumatology nurse following initial DMARD counselling. Initiatives would require agreement with stakeholders including service users, service providers, managers, together with staff training and appropriate leadership (West et al., 2015).

6.15 Strengths and limitations of the Study

Strengths of this work include the mixed-methods systematic review being the first to explore and identify the information needs that people with IA who are required to take Methotrexate and that the systematic review findings informing the design of the qualitative study. The qualitative study contributes to understanding the delivery and information that people with RA would like prior to commencing Methotrexate. Furthermore, the studies offer insight as to both expectations and experiences of nurse-led DMARD counselling by interviewing people before and after nurse-led DMARD drug counselling. Moreover, the unique timepoint of the qualitative study being conducted during a period of social distancing due to the impact of the COVID-19 pandemic, facilitated evaluation of rapidly implemented, nurse-led teleconsultations about taking Methotrexate.

Limitations of the study include the impact of the requirement for social distancing due to the COVID-19 pandemic, which had several impacts. Firstly, recruitment was by post precluding the opportunity to recruit people in-person when attending rheumatology clinic appointments. Recruitment in-person may have supported recruitment of a more diverse population, specifically people of diverse ethnicity, those with low literacy, younger people, or those whose first language was not English. Recent data from the NEIAA identified unacceptable health inequalities exist in that fewer people of non-White ethnicity start Methotrexate following diagnosis of RA (BSR, 2022), reflective of the population in the qualitative study. Whilst the study did not recruit anyone below the age of 45, over the age of 75, the peak age of onset is 30-50 years peak incidence is the 70s for both men and women in the UK so this may not be surprising (NICE, 2020). Secondly, the constraints of social distancing limited research delivery in that interviews had to be conducted remotely which may have affected both recruitment and the content of interviews. Thirdly, limited in-person healthcare provision resulted in group DMARD counselling being paused and so prevented evaluation of perceptions of people receiving group DMARD counselling (Nadesalingam and Short, 2020). These limitations should be considered when interpreting the study findings.

6.16 Opportunities for further research

Further research, to develop and identify the feasibility of using digital information that is accessible and supports those with low literacy and health literacy is recommended. A mixed-methods study combining a randomised controlled trial and qualitative study could test new and existing models of providing information about DMARDs assessing their efficacy and acceptability to support policy, education, training, and clinical practice. Further research could also develop, test, and evaluate training resources for nurses.

6.17 Reflection of researcher's clinical background on study findings

The researcher's clinical background as a rheumatology specialist nurse, with significant experience of providing person-centred care within Methotrexate DMARD counselling consultations and an in-depth knowledge of the content and materials commonly used to support DMARD counselling, clearly influenced understanding of the phenomena explored.

During the remote interviews the researcher used non-verbal and verbal communication to help the participant to feel at ease and secure to recount their beliefs and perceptions of the care they expected and received. It was important to provide reassurance that participating in the research would not affect clinical care, and that their accounts would help healthcare professionals to provide the best care for people with RA when starting Methotrexate.

During the course of the interviews it became apparent that important safety information was not being recalled by some participants. Rather than introduce bias by using closed, direct questions, the researcher attempted to elicit detail of the consultation using probes developed from the topic guide. Using a convergent interviewing approach (Dick, 2016) enabled elicitation of perceptions of topics raised by other participants. Some of the participants wanted answers to unresolved questions and concerns and appeared to have participated in the research to try and find out more about Methotrexate, suggesting that the researcher would know the answers to their questions. Where appropriate, participants were signposted to rheumatology telephone advicelines and relevant patient associations for help and support. Safety-netting advice was given where relevant regarding contacting rheumatology teams, for example the participant who had not commenced Methotrexate due to overwhelming unresolved concerns and regarding queries about timing of monitoring blood tests (Edwards et al., 2019). This approach ensured that professional responsibilities were met, and both allowed the interviews to concentrate on the topic areas and reduced the risk of bias from responses being influenced by any information provided by the researcher.

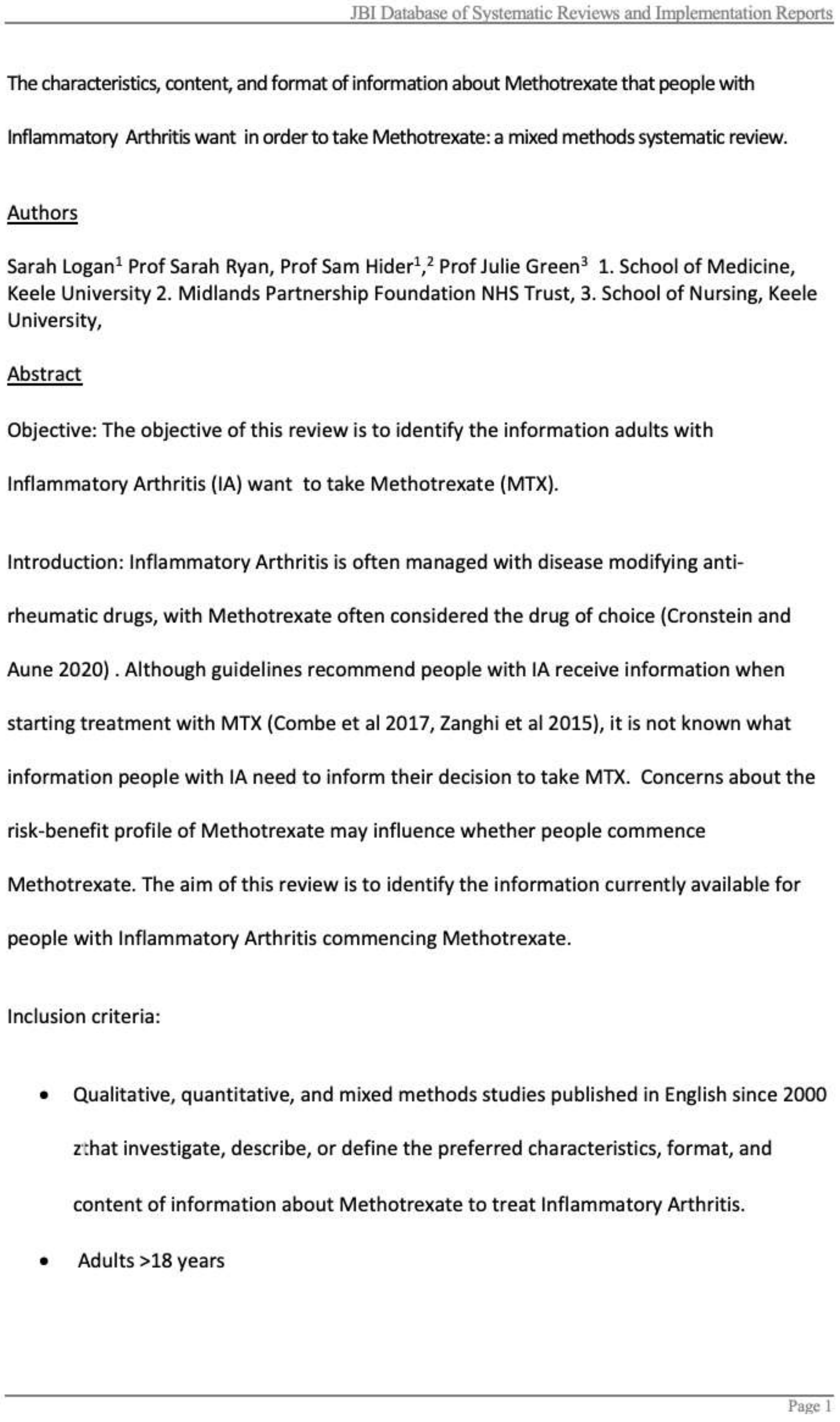
6.18 Conclusion

This chapter has presented a discussion of the study findings and potential implications for practice and future research. The expectations for person-centred care when receiving information about Methotrexate to address concerns about the need for, and possible risks and harms of treatment has been identified, together with the requirement for accessible, consistent, and easy to understand information sources. Participant perceptions of the impact of the role of the nurse delivering DMARD counselling, and factors affecting nurses' knowledge, experience, personal characteristics, communication, and consultation skills have been explored. Study findings have been discussed in relation to the systematic review and compared with current literature exploring the decision-making process, barriers, and facilitators to taking DMARDs in early IA and the underpinning Necessity-Concerns Framework theory (Horne et al., 2013) and Person-Centred Practice framework (McCormack and McCance, 2017).

In conclusion, this study has identified that current models of nurse-led Methotrexate counselling offer a valued opportunity for people with RA to speak to a nurse. However, whilst a person-centred approach to individual information needs was both desired and expected, many people report a mismatch between expectations and the delivery of large volumes of standardised information resulting in unmet information needs. Opportunities exist to develop stratified person-centred, reflexive, responsive services that offer people with RA a choice as to the timing of, content and modes of accessing information about Methotrexate. Furthermore, the study findings and recent research support the need for the development of rheumatology training resources for nurses. This would facilitate delivery of current, person-centred information, which elicits, addresses, and resolves information needs and concerns, to support people with RA to start and continue to take Methotrexate and improve outcomes (Hope et al., 2020).

Appendices

Appendix 1 Systematic review protocol



The characteristics, content, and format of information about Methotrexate that people with Inflammatory Arthritis want in order to take Methotrexate: a mixed methods systematic review.

Authors

Sarah Logan[1] Prof Sarah Ryan, Prof Sam Hider[1],[2] Prof Julie Green[3] 1. School of Medicine, Keele University 2. Midlands Partnership Foundation NHS Trust, 3. School of Nursing, Keele University,

Abstract

Objective: The objective of this review is to identify the information adults with Inflammatory Arthritis (IA) want to take Methotrexate (MTX).

Introduction: Inflammatory Arthritis is often managed with disease modifying anti-rheumatic drugs, with Methotrexate often considered the drug of choice (Cronstein and Aune 2020) . Although guidelines recommend people with IA receive information when starting treatment with MTX (Combe et al 2017, Zanghi et al 2015), it is not known what information people with IA need to inform their decision to take MTX. Concerns about the risk-benefit profile of Methotrexate may influence whether people commence Methotrexate. The aim of this review is to identify the information currently available for people with Inflammatory Arthritis commencing Methotrexate.

Inclusion criteria:

- Qualitative, quantitative, and mixed methods studies published in English since 2000 zthat investigate, describe, or define the preferred characteristics, format, and content of information about Methotrexate to treat Inflammatory Arthritis.
- Adults >18 years

Exclusion criteria

- Studies involving paediatric populations under the age of 18 years or where not differentiating data relating to adults >18 years
- Studies not differentiating data relating to Inflammatory Arthritis
- When Methotrexate is not the main DMARD of concern.

Methods: This convergent integrated review will follow JBI Mixed Methods Systematic Review methodology. A search of bibliographic databases, MEDLINE (OVID), CINAHL (EBSCOhost), PsycINFO (EBSCOhost), Science Citation Index; Social Science Citation Index and respective conference abstracts (Web of Science) , EMBASE (Ovid) and grey literature will be undertaken from 2000-2021. Citations and full text will be screened independently by the lead author and second reviewer. The author will undertake data extraction and quality appraisal validated by a second author using JBI SUMARI tools. Quantitative data will be assimilated with qualitative data and an integrated synthesis produced. A summary of findings will inform recommendations for practice.

Introduction

The aim of this review is to identify and synthesize the information that people with Inflammatory Arthritis require to support them to take Methotrexate.

Inflammatory Arthritis (IA) is characterised by joint pain and swelling and includes several diseases, Rheumatoid Arthritis (RA), Psoriatic Arthritis (PsA), Reactive Arthritis, Ankylosing Spondylitis (SpA), of which Rheumatoid Arthritis is the most common (Scott et al 2015). Rheumatoid Arthritis (RA) is a chronic, systemic, autoimmune disease affecting around 1%

of the UK population (Abishek et al 2017) causing pain, fatigue, stiffness and swelling of joints often resulting in functional disability. Living with a long-term condition such as Inflammatory Arthritis has far reaching effects on physical, psychological, and emotional wellbeing (Dures et al 2017). Early diagnosis of RA and intensive treatment with Disease Modifying Anti-Rheumatic Drugs (DMARDs) is recommended (NICE 2020, Singh et al 2015), which aim to achieve remission or reduce disease activity (Smolen et al 2020, Combe et al 2017) and to prevent the risk of permanent joint damage and disability.
Methotrexate is recommended as a first line conventional DMARD treatment either as monotherapy or as part of combination therapy, with other conventional, biologic, or targeted synthetic DMARDs such as JAK inhibitors (Smolen et al 2020, Singh et al 2015). European guidelines (Smolen et al 2020) recommend that people with IA receive information about Methotrexate including reasons for taking the medication, how to take it, side effects and monitoring requirements (Smolen et al 2020). However, despite the promotion of this first line treatment, many people with IA do not start or continue to take Methotrexate, often due to concerns about the risk-benefit profile of the drug (Pasma et al 2015).

The perceived health information needs of people with IA have been systematically reviewed by Connelly et al (2019). People with IA report high information needs, wanting practical individualised information about drug treatment including the rationale for drug treatment, possible side effects and alternative options. Women report wanting information about pregnancy. Most people preferred to receive information from a rheumatologist with written information seen as a useful aide memoir following provision of in-person information. The expectations and satisfaction of people with Inflammatory Arthritis when taking conventional and biologic DMARDs have been explored in a qualitative synthesis by

Kelly et al (2018) identifying that DMARDs are seen by people with IA as strong drugs with scary side effects and that taking DMARDs reinforces the fact that people are living with a significant disease. Having confidence and trust in healthcare services together with understanding that DMARDs can help people to continue to live a full life can encourage people to take DMARDs. Provision of a supportive environment where people feel confident to share concerns may increase satisfaction with treatment, adherence, and outcomes. Learning from shared experiences of other people's positive experiences of taking DMARDs can encourage people to take DMARDs.

Another SR by Curtis et al (2016) found high levels of variation with adherence and persistence with Methotrexate in RA, supporting the need for further work in this area as understanding the barriers and facilitators to deciding to take (and continue with) MTX will improve adherence.

To date the content, format, and methods of providing information about Methotrexate for people with IA have not been systematically explored. This includes detail of what information people want to receive about Methotrexate, such as risk benefit ratio, required safety monitoring, information about side effects, and when, where and by whom they wish to receive this information. This is important because current research identifies that people have complex multi-faceted information needs when starting DMARDs (Pasma et al 2015, Townsend et al 2013, Horne et al 2013, Salt et al 2011) and that information needs may change during the course of treatment with DMARDs (Zangi et al 2020) including MTX. The Necessity Concerns Framework (Horne et al 2013) identifies the relationship between a person's belief in the necessity of drug treatments for RA and their concerns about taking the drug. The stronger the belief that a person needs to take a drug treatment such as MTX the more likely the person is to take the drug. Conversely, if a person's concern about taking MTX outweighs their belief in the need for the drug, the more likely they are not to take MTX leading to persistent disease activity and worse outcomes.

Healthcare professionals need to combine knowledge about MTX that people require for safe administration with information that people with IA want in order to take MTX. Tailored information should enable people with IA to understand the benefits of taking Methotrexate to establish effective control of IA and also allay concerns about taking Methotrexate.

For the purposes of this review information about Methotrexate includes:

a) written information available from national and local patient associations, internet websites, drug package inserts, and information leaflets provided by individual rheumatology units

b) audio-visual information available from internet sites such as YouTube and NHS websites

c) Verbal information provided by healthcare professionals, in primary and secondary rheumatology healthcare settings in person, by telephone or video-consultation on an individual or group basis.

A preliminary search of PROSPERO, OVID MEDLINE, the Cochrane Database of Systematic Reviews and the *JBI Evidence Synthesis* has been conducted and no registered systematic reviews on this topic have been identified.

Review questions

The question/s of this review are:

- What information is required by people with Inflammatory Arthritis to take Methotrexate?
- What are the preferences of people with Inflammatory Arthritis for a) the content and format of information about Methotrexate and b) do current information sources about Methotrexate match these preferences ?
- What factors may affect the information needs of people with Inflammatory Arthritis to take Methotrexate?
- When, where, and by whom do people with Inflammatory Arthritis wish to receive/acquire information about Methotrexate?

Keywords

Systematic Review; Inflammatory Arthritis; Rheumatoid Arthritis; Methotrexate; Information Needs; Patient Experience.

Inclusion criteria:

- Qualitative, quantitative, and mixed methods studies published in English since 2000 that investigate, describe, or define the preferred characteristics, format, and content of information about Methotrexate to treat Inflammatory Arthritis.
- Adults >18 years,

Exclusion criteria:

- Studies involving paediatric populations under the age of 18 years or where not differentiating data relating to adults >18 years
- Studies not differentiating data relating to Inflammatory Arthritis
- When Methotrexate is not the main DMARD of concern.
- Non-English Language articles

Participants

The review will include adults aged 18 or over with Inflammatory Arthritis starting, taking or with experience of taking Methotrexate .

Studies will be excluded if only involving children and young people under 18 or where data about people over 18 is not differentiated. Studies involving only participants who do not have Inflammatory Arthritis will be excluded. Studies involving participants who have no experience of taking Methotrexate or who have decided not to take Methotrexate will not be included. Studies involving participants taking other biologic, targeted synthetic or conventional DMARDs will not be included unless data specific to Methotrexate can be extracted.

Phenomena of Interest

This review will consider studies that investigate, describe, or define the information required by people with Inflammatory Arthritis to take Methotrexate. This will include studies that define or describe a) the preferred characteristics and content of information about Methotrexate; b) the sources of information; and the factors that may affect the information needs of people with IA to take Methotrexate.

Context

Provision of rheumatology healthcare service and delivery methods vary widely across and within countries, studies from countries with different methods of healthcare provision and delivery will be included where the information needs of people with IA about Methotrexate are described and are included if they are published in English. The clinical context for this review is out-patient, primary care, and community settings.

Types of studies

Studies of quantitative, qualitative and mixed-methods design will be considered for inclusion in the mixed methods systematic review. For the quantitative component, cross-sectional survey research is likely to be the most common eligible study design. However, any quantitative study that addresses the review question will be included. Qualitative studies of all designs will be considered for inclusion. The qualitative component of this review will consider studies that investigate the experience, meaning and acceptability of receiving information about Methotrexate in different methods and formats. Mixed methods studies will be included in cases where quantitative and/or qualitative data can be clearly extracted. Research in the form of postgraduate theses and dissertations will also be considered for inclusion based on relevance to the review questions. Other grey literature such as text and opinion will be considered for inclusion in the current review, based on existence of extractable data relevant to the review questions.

Methods

The proposed systematic review will be conducted in accordance with the JBI methodology for mixed methods systematic review (MMSR) using a convergent integrated approach (Lizarondo et al 2020).

Search strategy

The search strategy will aim to locate both published and unpublished studies. An initial limited search of MEDLINE (OVID) and CINAHL (EBSCO) was undertaken to identify articles on the topic. The text words contained in the titles and abstracts of relevant articles, and the index terms used to describe the articles have been used to develop a full search strategy for Ovid MEDLINE (see Appendix 1). The search strategy has been reviewed by an Information Specialist at Keele University . The search strategy, including all identified keywords and index terms will be adapted for each information source. Studies published in English will be included. Studies published from 2000 to the present date will be included in line with guidelines establishing the use of Methotrexate as first line choice of DMARD, initially for Rheumatoid Arthritis (NICE 2020) and for other forms of Inflammatory Arthritis and the advent of Treat 2 Target strategies (NICE 2020, Smolen et al 2019, Singh et al 2016). The databases to be searched include Medline (OVID), EMBASE (OVID), CINAHL (EBSCO), PsycInfo (EBSCO), Web of Science (Science citation index expanded (SCI-Expanded), Conference Proceedings Citation Index- Science (CPCI-S), Science citation index (SSCI), Conference Proceedings Citation Index- Social Science (CPCI-SSH). Abstracts of UK (BSR), European (EULAR) and International (ACR) Rheumatology Conference proceedings, Arthritis Patient Associations, ASSIA (ProQuest), Cochrane Library, EBSCO Open Dissertations and the Networked Digital Library of Theses and Dissertations. The reference lists of all included sources of evidence and citations will be screened for additional studies. The searches we will be re-run prior to the final analysis and any additional studies will be included in the review.

Following the search, all identified citations will be loaded into EndNote 20 and duplicates removed. The primary reviewer will screen the titles and abstracts for assessment against the inclusion criteria for the review and a sample of 10% will be screened by a secondary reviewer aiming for 90% or higher consistency in inclusion screening. Any disagreements that arise between the reviewers will be resolved through discussion or with a third reviewer. Full-text screening will follow the same format. The results of the search will be reported in full in the final review and presented in a Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA) flow diagram (Page et al 2020).

Assessment of methodological quality

All studies selected that meet eligibility criteria will be assessed for methodological quality by the primary researcher. Irrespective of quality, all studies meeting eligibility criteria will undergo data extraction and synthesis for comprehensiveness. The results of quality assessments will be presented narratively and in table format (Armoataris and Munn 2020). Quantitative papers (and any quantitative component of mixed methods papers) selected for retrieval will be assessed by the primary reviewer for methodological validity using relevant standardised critical appraisal instruments from JBI SUMARI such as the Analytical

Cross Sectional Studies Critical Appraisal Tool (Moola et al 2017 https://reviewersmanual.joannabriggs.org/) at the same time as evaluating quality. Critical appraisal will evaluate inclusion/exclusion criteria, study subjects and study setting, validity and reliability of measurements of exposure used and criteria of measurements used. Qualitative studies (and any qualitative component of mixed methods studies) selected for retrieval will be assessed using the standardised critical appraisal instrument from JBI SUMARI, JBI Critical Appraisal Checklist for Qualitative Research (Lockwood et al 2017 https://reviewersmanual.joannabriggs.org/).

Table 1: Elements of qualitative research critical appraisal

Is there evidence of ethical approval from an appropriate body for the research to be conducted?
Is there congruity between the stated philosophical perspective and the research methodology?
Is there congruity between the research methodology and the research question or objectives?
Is there congruity between the research methodology and the methods used to collect data?
Is there congruity between the research methodology and the representation and analysis of data?
Is there congruity between the research methodology and the interpretation of results.
Do the researchers identify their cultural or theoretical position?
Has the possibility of researcher influence on the research been considered?

Has the possibility of the research influencing the researcher been considered?
For qualitative findings: Is there evidence of participant voice(s) to illustrate findings – source data quotes to substantiate themes?
Is there evidence of analysis of the relationship between the interpretation of data, analysis, and conclusions from the study?

Any text and opinion articles will be appraised using JBI Summari Critical Appraisal of Text and Opinion Tool (McArthur et al 2020 https://reviewersmanual.joannabriggs.org/) to include identification of the source of the opinion, identification of authorship, whether the author is a current rheumatology healthcare professional, or has expertise as a person with IA with experience of taking Methotrexate and whether the information needs of people with IA are central to the opinion. Articles will be assessed for clarity and logic in presentation of the key lines of argument, conclusions and/or recommendations, evidence of reference to the existing evidence base and whether any incongruences are soundly defended.

Data extraction

Quantitative and qualitative data will be extracted from studies included in the review by the primary researcher using an amended version of the standardised JBI data extraction tool for MMSR (Lizarondo et al (2020), see Appendix 2). The data extraction tool will be piloted on 10% of different types of included studies to ensure the tool includes all relevant data to be extracted and amended and re-tested as necessary. A secondary reviewer will undertake data extraction on a sample of 10%, aiming for 90% or higher consistency. Any disagreements that arise between the reviewers will be resolved through discussion or with a third reviewer. Any disagreements that arise between the reviewers will be resolved through discussion or with a third reviewer. A single EXCEL file will be used to collate the extracted data which will include specific details about the populations, context, culture, geographical location, study methods, phenomena of interest, and outcomes of relevance to the review objectives.

Quantitative studies are likely to include cross-sectional studies, where extracted data may comprise an average or percentage that profiles the sample members or preferences for content of information about Methotrexate. Analytic studies may provide information about magnitude and statistical significance. Significant and non-significant results will be included in the review. Data extraction from qualitative studies will include themes or sub-themes with corresponding source quotes that define or describe the experience of receiving information about Methotrexate, relevant characteristics, preferences for the content, format, or methods of providing the information that people with IA require to take Methotrexate. Findings, and their illustrations will be extracted verbatim and allocated a level of credibility. Data will only be extracted if specific to people taking Methotrexate.

Data transformation, synthesis, and integration

Data transformation

The quantitative data will then be converted into “qualitized data.” This will involve transformation of data such as percentages into textual descriptions or narrative interpretation of the quantitative results in a way that answers the review questions, e.g., 75% transformed into, three out of four participants (preferred to receive information about Methotrexate from…).

Data synthesis and integration

Data synthesis will follow a convergent integrated approach according to the JBI methodology for MMSR (Lizarondo et al 2020). The qualitized data will be assimilated together with the qualitative data. The assembled data will be categorised and pooled together based on similarity in meaning to develop descriptive themes using thematic synthesis (Hong et al 2017, Thomas and Harden 2008). The descriptive themes may lead to a theoretical framework of information needs and preferences for content and format of information about Methotrexate for people with Inflammatory Arthritis. A summary of integrated findings will be presented in the form of lines of action statements to inform recommendations for practice.

Acknowledgements

Dr N Corp, Information Specialist, Keele University contributed to the development of the search strategy. This MMSR will contribute to the award of Doctor of Philosophy for SL.

Funding

The Haywood Foundation has provided funding for the Ted Hothersall PhD which includes provision for undertaking this MMSR by the PhD student Sarah Logan. Prof Sarah Ryan is a member of the Haywood Foundation and a member of the MMSR team.

Author contributions

Sarah Logan, Sarah Ryan, Samantha Hider and Julie Green made substantial contribution to conception and design; been involved in drafting the manuscript, revising it critically; given final approval of the version to be published and agreed to be accountable for all aspects of the work related to accuracy and integrity of the work.

Conflicts of interest

There is no conflict of interest in this project.

References

Abhishek, A., Doherty, M., Kuo, C.F., Mallen, C.D., Zhang, W. and Grainge, M.J., 2017. Rheumatoid arthritis is getting less frequent—results of a nationwide population-based cohort study. *Rheumatology*, *56*(5), pp.736-744.

Aromataris E, Munn Z. Chapter 1: JBI Systematic Reviews. In: Aromataris E, Munn Z (Editors). *JBI Manual for Evidence Synthesis.* JBI, 2020. Available from https://synthesismanual.jbi.global.. https://doi.org/10.46658/JBIMES-20-02

Combe B., Landewe R., Daien, CI., Hua, C., Aletaha, D., Alvaro-Garcia, J., Bakkers, M., Brodin, N., Burmester, G.R., Cordreanu, C., Conway, R., Dougados, M., Emery, P., Ferraccioli, G., Fonseca, J., Raza, K., Silva-Fernandez, L., Smolen, J.S., Skingle, D., Szekanecz, Z., Kvien, T.K., Van Der Helm-Van, Annette and Van Vollenhoven, R., 2017. 2016 update of the EULAR recommendations for the management of early arthritis. *Annals of the Rheumatic Diseases,* **76**(6), pp. 948.

Connelly, K. et al. (2019) Patients' perceived health information needs in inflammatory arthritis: A systematic review. *Seminars in arthritis and rheumatism.* [Online] 48 (5), 900–910.

Cronstein, B.N. and Aune, T.M., 2020. Methotrexate and its mechanisms of action in inflammatory arthritis. *Nature Reviews.Rheumatology,* **16**(3), pp. 145-154.

Curtis, J. R. et al. (2016) Adherence and Persistence with Methotrexate in Rheumatoid Arthritis: A Systematic Review. *Journal of rheumatology.* [Online] 43 (11), 1997–2009.

Dures, Emma et al. Patients' Perspectives on the Psychological Impact of Inflammatory Arthritis and Meeting the Associated Support Needs: Open-Ended Responses in a Multi-Centre Survey. Musculoskeletal care 15.3 (2017): 175–185. Web.

Hong, Q. N., Pluye, P., Bujold, M., & Wassef, M. (2017). Convergent and sequential synthesis designs: implications for conducting and reporting systematic reviews of qualitative and quantitative evidence. *Systematic Reviews,* 6(1), 61.

Horne, R. et al. (2013) Understanding Patients' Adherence-Related Beliefs about Medicines Prescribed for Long-Term Conditions: A Meta-Analytic Review of the Necessity-Concerns Framework. PloS one. [Online] 8 (12), e80633–e80633.

Kelly, A. et al. (2018) Patients' Attitudes and Experiences of Disease-Modifying Antirheumatic Drugs in Rheumatoid Arthritis and Spondyloarthritis: A Qualitative Synthesis. *Arthritis care & research (2010).* [Online] 70 (4), 525–532.

Lizarondo L, Stern C, Carrier J, Godfrey C, Rieger K, Salmond S, Apostolo J, Kirkpatrick P, Loveday H. (2020) Chapter 8: Mixed methods systematic reviews. In: Aromataris E, Munn Z (Editors). *JBI Manual for Evidence Synthesis.* JBI, https://synthesismanual.jbi.global. https://doi.org/10.46658/JBIMES-20-09

Lockwood C, Munn Z, Porritt K. Qualitative research synthesis: methodological guidance for systematic reviewers utilizing meta-aggregation. Int J Evid Based Healthc. 2015;13(3):179–187.

McArthur A, Klugarova J, Yan H, Florescu S. Chapter 4: Systematic reviews of text and opinion. In: Aromataris E, Munn Z (Editors). *JBI Manual for Evidence Synthesis.* JBI, 2020. Available from https://synthesismanual.jbi.global. https://doi.org/10.46658/JBIMES-20-05

Moher, D., Shamseer, L., Clarke, M., Ghersi, D., Liberati, A., Petticrew, M., Shekelle, P. and Stewart, L.A., 2015. Preferred reporting items for systematic review and meta-analysis protocols (PRISMA-P) 2015 statement. *Systematic reviews*, *4*(1), pp.1-9.
NICE (2020) https://www.nice.org.uk/guidance/ng100

Moola S, Munn Z, Tufanaru C, Aromataris E, Sears K, Sfetcu R, Currie M, Lisy K, Qureshi R, Mattis P, Mu P. Chapter 7: Systematic reviews of etiology and risk. In: Aromataris E, Munn Z (Editors). *JBI Manual for Evidence Synthesis.* JBI, 2020. Available from https://synthesismanual.jbi.global. https://doi.org/10.46658/JBIMES-20-08

National Institute for Health and Care Excellence (2018) Rheumatoid Arthritis in adults: management CG100 https://www.nice.org.uk/guidance/ng100 (updated 2020)

Page, M.J., McKenzie, J.E., Bossuyt, P.M., Boutron, I., Hoffmann, T.C., Mulrow, C.D., Shamseer, L., Tetzlaff, J.M., Akl, E.A., Brennan, S.E. and Chou, R., 2021. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. *Bmj*, *372*.

Pasma, A. et al. (2015) Facilitators and Barriers to Adherence in the Initiation Phase of Disease-modifying Antirheumatic Drug (DMARD) Use in Patients with Arthritis Who Recently Started Their First DMARD Treatment. Journal of rheumatology. [Online] 42 (3), 379–385.

Salt, E. & Peden, A. (2011) The Complexity of the Treatment: The Decision-Making Process Among Women with Rheumatoid Arthritis. Qualitative health research. [Online] 21 (2), 214–222.

Scott, I. C. et al. (2015) Inflammatory arthritis in clinical practice. Second edition. London: Springer.

Singh, J.A., Saag, K.G., Bridges Jr, S.L., Akl, E.A., Bannuru, R.R., Sullivan, M.C., Vaysbrot, E., McNaughton, C., Osani, M., Shmerling, R.H. and Curtis, J.R., (2016). 2015 American College of Rheumatology guideline for the treatment of rheumatoid arthritis. *Arthritis & rheumatology*, *68*(1), pp.1-26.

Smolen, Josef S et al. EULAR Recommendations for the Management of Rheumatoid Arthritis with Synthetic and Biological Disease-Modifying Antirheumatic Drugs: 2019 Update. Annals of the rheumatic diseases 79.6 (2020): 685–699. Web.

Thomas, J., & Harden, A. (2008). Methods for the thematic synthesis of qualitative research in systematic reviews. *BMC Medical Research Methodology, 8*, 45.

Townsend, A. et al. (2013) A qualitative interview study: patient accounts of medication use in early rheumatoid arthritis from symptom onset to early postdiagnosis. BMJ open. [Online] 3 (2), .

Zangi HA, Ndosi M, Adams J*, et al (2015)* EULAR recommendations for patient education for people with inflammatory arthritis, *Annals of the Rheumatic Diseases* **74:**954-962

Appendix 2 Medline systematic search strategy

Search conducted on 29th November 2021: Ovid MEDLINE(R) ALL <1946 to November 17, 2021>

(rheumat* adj3 (arthrit* or diseas* or condition* or nodule*)).ti,ab,kf.
exp Arthritis, Rheumatoid/
exp spondylarthritis/
(Inflamm* adj3 Arthritis).ti,ab,kf.
(Psoriat* adj3 (arthr* or polyarthr* or poly arthr* or oligoarthr* or oligo arthr* or monoarthr* or mono arthr* or rheumat*)).ti,ab,kf.
(psoriat* adj3 (arthrit* or diseas* or condition*)).ti,ab,kf.
Spondyl?arthropath*.ti,ab,kf.
(ankyl* adj3 spon*).ti,ab,kf.
(spon* adj3 arthr*).ti,ab,kf.
reactive arthr*.ti,ab,kf.
Felty* Syndrome.ti,ab,kf.
caplan* syndrome.ti,ab,kf.
Sjogren*.ti,ab,kf.
Sicca* syndrome.ti,ab,kf.
Still* disease*.ti,ab,kf.
1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15
Methotrexate/
Methotrexate.ti,ab,kf.
Methotrexate.ti,ab,kf.
DMARD*.ti,ab,kf.
csDMARD*.ti,ab,kf.
tDMARD*.ti,ab,kf.
sDMARD*.ti,ab,kf.
disease modifying anti*.ti,ab,kf.
antirheumatic agents/
((Antirheumatic* or anti rheumatic*) adj3 (drug* or medic* or agent*)).ti,ab,kf.

17 or 18 or 19 or 20 or 21 or 22 or 23 or 24 or 25 or 26
exp Patient Education as Topic/
patient education.ti,ab,kf.
Health Education/
counsel*.ti,ab,kf.
exp teaching materials/
(teaching adj3 material*).ti,ab,kf.
exp Consumer Health Information/
(Information adj3 seeking).ti,ab,kf.
Health Knowledge, Attitudes, Practice/
self-management/
self manag*.ti,ab,kf.
Health Communication/
(health* adj3 communication).ti,ab,kf.
(information* adj3 need*).ti,ab,kf.

information literacy.ti,ab,kf.
health* literacy.ti,ab,kf.
(education* adj3 needs).ti,ab,kf.
(education* adj3 preference).ti,ab,kf.
(health* adj3 information).ti,ab,kf.
(health* adj3 knowledge).ti,ab,kf.
(patient* adj3 understand*).ti,ab,kf.
(understand* adj3 diagnos*).ti,ab,kf.
(knowledge* adj3 gap*).ti,ab,kf.
(knowledge* adj3 barrier*).ti,ab,kf.
(information* adj3 gap*).ti,ab,kf.
(information* adj3 barrier*).ti,ab,kf.
((Methotrexate or Methotrexate) adj3 (informat* or advi* or guid*or educat* or knowledge)).ti,ab,kf.
((Drug* or medicin* or medication*) adj3 (informat* or advi* or guid* or educat* or knowledge*)).ti,ab,kf.
28 or 29 or 30 or 31 or 32 or 33 or 34 or 35 or 36 or 37 or 38 or 39 or 40 or 41 or 42 or 43 or 44 or 45 or 46 or 47 or 48 or 49 or 50 or 51 or 52 or 53 or 54 or 55
interview/
Qualitative Research/
(theme* or thematic).mp.
qualitative.af.
nursing methodology research/
questionnaire*.mp.
ethnological research.mp.
ethnograph*.mp.
ethnonursing.af.
phenomenol*.af.
(grounded adj (theor* or study or studies or research or analys?s)).af.
(life stor* or women* stor* or men* stor*).mp.
(emic or etic or hermeneutic* or heuristic* or semiotic*).af.
((data adj1 saturat*) or participant observ*).tw.
(social constuct$ or postmodern* or post modern* or poststructural* or post structural* or feminis* or interpret*).mp.
(action research or cooperative inquir* or co operative inquir*).mp.
(humanistic or existential or experiential or paradigm*).mp.
(field adj (study or studies or research)).tw.
biographical method.tw.
theoretical sampl*.af.
observational method*.af.
content analysis.af.
(constant adj (comparative or comparision)).af.
((discourse* or discurs*) adj3 analys?s).tw.
narrative analys?s.af.
merleau ponty.tw.
((purpos* adj4 sampl*) or (focus adj group*)).af.

(account or accounts or unstructured or open ended or text* or narrative*).mp.

(mix* adj2 (method* or design*)).af.

57 or 58 or 59 or 60 or 61 or 62 or 63 or 64 or 65 or 66 or 67 or 68 or 69 or 70 or 71 or 72 or 73 or 74 or 75 or 76 or 77 or 78 or 79 or 80 or 81 or 82 or 83 or 84 or 85 2573478

16 and 27 and 56 and 86

Appendix 3 Modified JBI convergent integrated mixed methods SR data extraction tool

Reviewer:
Date:
Author(s) of the publication:
Year
Journal Record Number
Type of study •
Quantitative study •
Qualitative study •
Mixed methods study Methodology: (e.g., randomized controlled trial, phenomenology)
Number of participants:
Characteristics of participants
Phenomena of interest
Setting and other context-related information (e.g., cultural, geographical)
Outcomes or findings of significance to the review objectives
For a quantitative study, for example Results: i.e., % of respondents responding to survey ·
For a qualitative study, for example: Themes or Subtheme Illustration (a direct quotation from a participant, an observation, or other supporting data from the paper)
Methotrexate Specific Info Needs:
Benefit Info including time to benefit: Y/N
Risk Info including side effects/adverse event, long-term harm:
Fertility Y/N
Contraception Y/N
Pregnancy Y/N
Breastfeeding Y/N
Alcohol: Y/N Detail given:
Smoking: Y/N
Practical info re taking Methotrexate:
Practical info re managing side effects/monitoring:
Immunisation:
Drug/Drug interaction:
Other safety information:
Accessing prescriptions: Y/N
Alternative DMARD options/Treatment trajectory:
Point of contact if concerns: Y/N
Mode of information: Circle appropriate

In-person verbal Telephone Video/remote consultation Group remote consultation
Audio-visual hcp produced info
Source of written Methotrexate information:
Drug Insert Information Versus Arthritis Rheumatology Unit Specific
Sources of Information:
Healthcare professional: (inc role)
Patient Association Website i.e., NRAS/Versus Arthritis
NHS Website – NHS Choices, patient info, social media – Health unlocked
Friends/family – with/without RA
Number of sources used:
Important characteristics of information/information provider:
Readability/Accessibility of information about Methotrexate:
Route of Methotrexate (if differentiated):
Reviewer’s Comments:

Appendix 4 JBI Critical appraisal checklist for cross sectional studies

JBI CRITICAL APPRAISAL CHECKLIST FOR ANALYTICAL CROSS SECTIONAL STUDIES

Reviewer____

Date___________________________________

Author____Year__________ Record Number__________

	Yes	No	Unclear	Not applicable
1. Were the criteria for inclusion in the sample clearly defined?	☐	☐	☐	☐
2. Were the study subjects and the setting described in detail?	☐	☐	☐	☐
3. Was the exposure measured in a valid and reliable way?	☐	☐	☐	☐
4. Were objective, standard criteria used for measurement of the condition?	☐	☐	☐	☐
5. Were confounding factors identified?	☐	☐	☐	☐
6. Were strategies to deal with confounding factors stated?	☐	☐	☐	☐
7. Were the outcomes measured in a valid and reliable way?	☐	☐	☐	☐
8. Was appropriate statistical analysis used?	☐	☐	☐	☐

Overall appraisal: Include ☐ Exclude ☐ Seek further info ☐

Comments (Including reason for exclusion)

____
____
____
____

EXPLANATION OF ANALYTICAL CROSS SECTIONAL STUDIES CRITICAL APPRAISAL

How to cite: Moola S, Munn Z, Tufanaru C, Aromataris E, Sears K, Sfetcu R, Currie M, Qureshi R, Mattis P, Lisy K, Mu P-F. Chapter 7: Systematic reviews of etiology and risk . In: Aromataris E, Munn Z (Editors). *JBI Manual for Evidence Synthesis.* JBI, 2020. Available from https://synthesismanual.jbi.global

Analytical cross sectional studies Critical Appraisal Tool

Answers: Yes, No, Unclear or Not/Applicable

1. Were the criteria for inclusion in the sample clearly defined?

The authors should provide clear inclusion and exclusion criteria that they developed prior to recruitment of the study participants. The inclusion/exclusion criteria should be specified (e.g., risk, stage of disease progression) with sufficient detail and all the necessary information critical to the study.

2. Were the study subjects and the setting described in detail?

The study sample should be described in sufficient detail so that other researchers can determine if it is comparable to the population of interest to them. The authors should provide a clear description of the population from which the study participants were selected or recruited, including demographics, location, and time period.

3. Was the exposure measured in a valid and reliable way?

The study should clearly describe the method of measurement of exposure. Assessing validity requires that a 'gold standard' is available to which the measure can be compared. The validity of exposure measurement usually relates to whether a current measure is appropriate or whether a measure of past exposure is needed.

Reliability refers to the processes included in an epidemiological study to check repeatability of measurements of the exposures. These usually include intra-observer reliability and inter-observer reliability.

4. Were objective, standard criteria used for measurement of the condition?

It is useful to determine if patients were included in the study based on either a specified diagnosis or definition. This is more likely to decrease the risk of bias. Characteristics are another useful approach to matching groups, and studies that did not use specified diagnostic methods or definitions should provide evidence on matching by key characteristics

5. Were confounding factors identified?

Confounding has occurred where the estimated intervention exposure effect is biased by the presence of some difference between the comparison groups (apart from the exposure investigated/of interest). Typical confounders include baseline characteristics, prognostic factors, or concomitant exposures (e.g. smoking). A confounder is a difference between the comparison groups and it influences the direction of the study results. A high quality study at the level of cohort design will identify the potential confounders and measure them (where possible). This is difficult for studies where behavioral, attitudinal or lifestyle factors may impact on the results.

6. Were strategies to deal with confounding factors stated?

Strategies to deal with effects of confounding factors may be dealt within the study design or in data analysis. By matching or stratifying sampling of participants, effects of confounding factors can be adjusted for. When dealing with adjustment in data analysis, assess the statistics used in the study. Most will be some form of multivariate regression analysis to account for the confounding factors measured.

7. Were the outcomes measured in a valid and reliable way?

Read the methods section of the paper. If for e.g. lung cancer is assessed based on existing definitions or diagnostic criteria, then the answer to this question is likely to be yes. If lung cancer is assessed using observer reported, or self-reported scales, the risk of over- or under-reporting is increased, and objectivity is compromised. Importantly, determine if the measurement tools used were validated instruments as this has a significant impact on outcome assessment validity.

Having established the objectivity of the outcome measurement (e.g. lung cancer) instrument, it's important to establish how the measurement was conducted. Were those involved in collecting data trained or educated in the use of the instrument/s? (e.g. radiographers). If there was more than one data collector, were they similar in terms of level of education, clinical or research experience, or level of responsibility in the piece of research being appraised?

8. Was appropriate statistical analysis used?

As with any consideration of statistical analysis, consideration should be given to whether there was a more appropriate alternate statistical method that could have been used. The methods section should be detailed enough for reviewers to identify which analytical techniques were used (in particular, regression or stratification) and how specific confounders were measured.

For studies utilizing regression analysis, it is useful to identify if the study identified which variables were included and how they related to the outcome. If stratification was the analytical approach used, were the strata of analysis defined by the specified variables? Additionally, it is also important to assess the appropriateness of the analytical strategy in terms of the assumptions associated with the approach as differing methods of analysis are based on differing assumptions about the data and how it will respond.

Appendix 5 JBI Critical appraisal checklist for qualitative research

JBI CRITICAL APPRAISAL CHECKLIST FOR QUALITATIVE RESEARCH

Reviewer____
Date__________________________________

Author____Year__________ Record Number__________

	Yes	No	Unclear	Not applicable
1. Is there congruity between the stated philosophical perspective and the research methodology?	☐	☐	☐	☐
2. Is there congruity between the research methodology and the research question or objectives?	☐	☐	☐	☐
3. Is there congruity between the research methodology and the methods used to collect data?	☐	☐	☐	☐
4. Is there congruity between the research methodology and the representation and analysis of data?	☐	☐	☐	☐
5. Is there congruity between the research methodology and the interpretation of results?	☐	☐	☐	☐
6. Is there a statement locating the researcher culturally or theoretically?	☐	☐	☐	☐
7. Is the influence of the researcher on the research, and vice- versa, addressed?	☐	☐	☐	☐
8. Are participants, and their voices, adequately represented?	☐	☐	☐	☐
9. Is the research ethical according to current criteria or, for recent studies, and is there evidence of ethical approval by an appropriate body?	☐	☐	☐	☐
10. Do the conclusions drawn in the research report flow from the analysis, or interpretation, of the data?	☐	☐	☐	☐

Overall appraisal: Include ☐ Exclude ☐ Seek further info ☐

Comments (Including reason for exclusion)

____

____

____

DISCUSSION OF CRITICAL APPRAISAL CRITERIA

How to cite: Lockwood C, Munn Z, Porritt K. Qualitative research synthesis: methodological guidance for systematic reviewers utilizing meta-aggregation. Int J Evid Based Healthc. 2015;13(3):179–187.

1. **Congruity between the stated philosophical perspective and the research methodology**

   Does the report clearly state the philosophical or theoretical premises on which the study is based? Does the report clearly state the methodological approach adopted on which the study is based? Is there congruence between the two? For example:

   A report may state that the study adopted a critical perspective and participatory action research methodology was followed. Here there is congruence between a critical view (focusing on knowledge arising out of critique, action and reflection) and action research (an approach that focuses on firstly working with groups to reflect on issues or practices, then considering how they could be different; then acting to create a change; and finally identifying new knowledge arising out of the action taken). However, a report may state that the study adopted an interpretive perspective and used survey methodology. Here there is incongruence between an interpretive view (focusing on knowledge arising out of studying what phenomena mean to individuals or groups) and surveys (an approach that focuses on asking standard questions to a defined study population); a report may state that the study was qualitative or used qualitative methodology (such statements do not demonstrate rigour in design) or make no statement on philosophical orientation or methodology.

2. **Congruity between the research methodology and the research question or objectives**

   Is the study methodology appropriate for addressing the research question? For example:
   A report may state that the research question was to seek understandings of the

meaning of pain in a group of people with RA and that a phenomenological approach was taken. Here, there is congruity between this question and the methodology. A report may state that the research question was to establish the effects of counselling on the severity of pain experience and that an ethnographic approach was pursued. A question that tries to establish cause-and effect cannot be addressed by using an ethnographic approach (as ethnography sets out to develop understandings of cultural practices) and thus, this would be incongruent.

3. **Congruity between the research methodology and the methods used to collect data**

   Are the data collection methods appropriate to the methodology? For example:

   A report may state that the study pursued a phenomenological approach and data was collected through phenomenological interviews. There is congruence between the methodology and data collection; a report may state that the study pursued a phenomenological approach and data was collected through a postal questionnaire. There is incongruence between the methodology and data collection here as phenomenology seeks to elicit rich descriptions of the experience of a phenomena that cannot be achieved through seeking written responses to standardized questions.

4. **Congruity between the research methodology and the representation and analysis of data**

   Are the data analyzed and represented in ways that are congruent with the stated methodological position? For example:

   A report may state that the study pursued a phenomenological approach to explore people's experience of grief by asking participants to describe their experiences of grief. If the text generated from asking these questions is searched to establish the meaning of grief to participants, and the meanings of all participants are included in the report findings, then this represents congruity; the same report may, however, focus only on those meanings that were common to all participants and discard single reported meanings. This would not be appropriate in phenomenological work.

5. **There is congruence between the research methodology and the interpretation of results**

   Are the results interpreted in ways that are appropriate to the methodology? For example:

   A report may state that the study pursued a phenomenological approach to explore people's experience of facial disfigurement and the results are used to inform practitioners about accommodating individual differences in care. There is congruence between the methodology and this approach to interpretation; a report may state that the study pursued a phenomenological approach to explore people's experience of facial disfigurement and the results are used to generate practice checklists for assessment. There is incongruence between the methodology and this approach to interpretation as phenomenology seeks to understand the meaning of a phenomenon for the study participants and cannot be interpreted to suggest that this can be generalized to total populations to a degree where standardized assessments will have relevance across a population.

6. **Locating the researcher culturally or theoretically**

   Are the beliefs and values, and their potential influence on the study declared? For example:

   The researcher plays a substantial role in the qualitative research process and it is important, in appraising evidence that is generated in this way, to know the researcher's cultural and theoretical orientation. A high quality report will include a statement that clarifies this.

7. **Influence of the researcher on the research, and vice-versa, is addressed**

   Is the potential for the researcher to influence the study and for the potential of the research process itself to influence the researcher and her/his interpretations acknowledged and addressed? For example:

   Is the relationship between the researcher and the study participants addressed? Does the researcher critically examine her/his own role and potential influence during data collection? Is it reported how the researcher responded to events that arose during the study?

8. **Representation of participants and their voices**

   Generally, reports should provide illustrations from the data to show the basis of their conclusions and to ensure that participants are represented in the report.

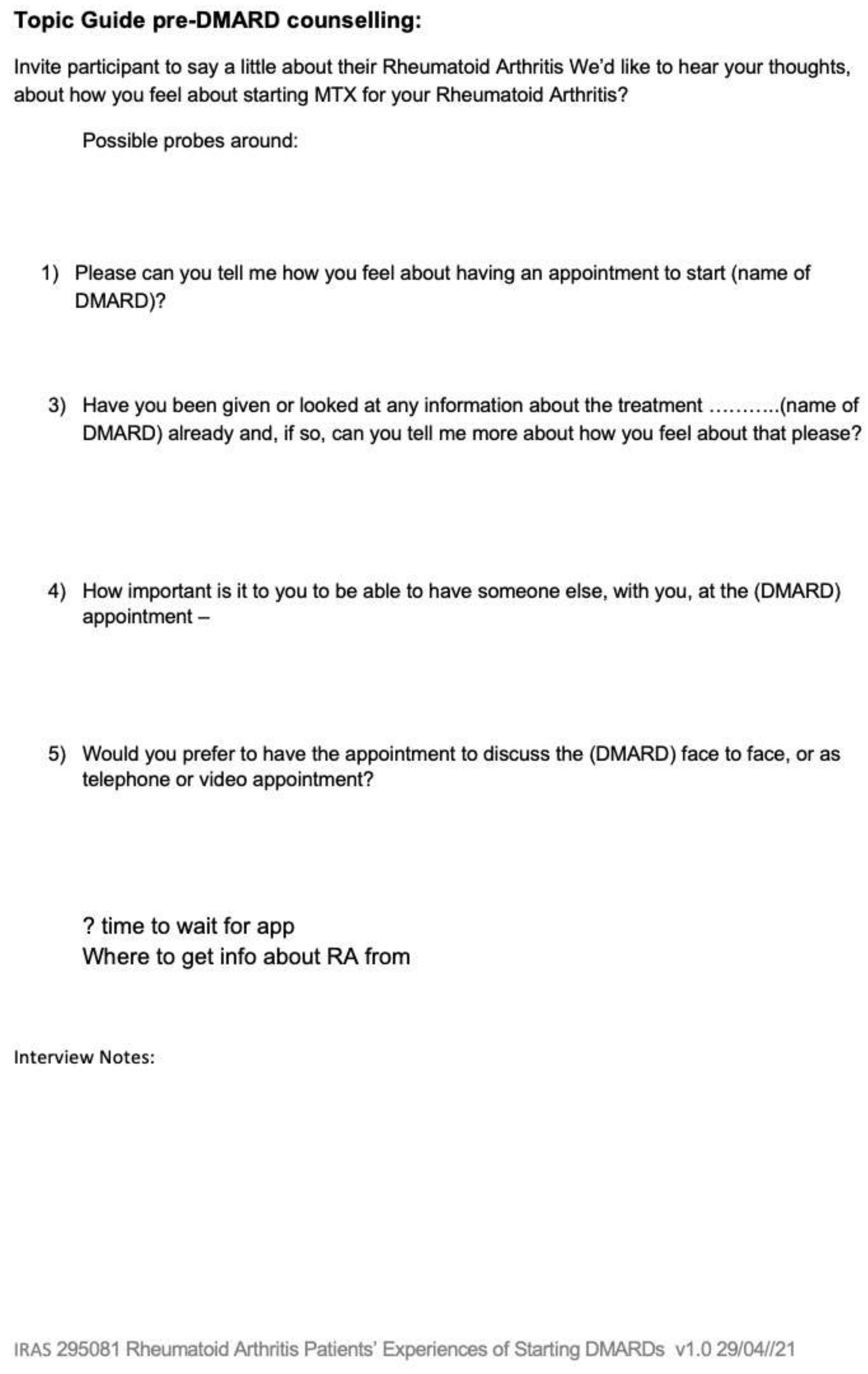
9. **Ethical approval by an appropriate body**

   A statement on the ethical approval process followed should be in the report.

10. **Relationship of conclusions to analysis, or interpretation of the data**

    This criterion concerns the relationship between the findings reported and the views or words of study participants. In appraising a paper, appraisers seek to satisfy themselves that the conclusions drawn by the research are based on the data collected; data being the text generated through observation, interviews or other processes.

Appendix 6 Topic guide pre-Methotrexate DMARD counselling



Topic Guide pre-DMARD counselling:

Invite participant to say a little about their Rheumatoid Arthritis We'd like to hear your thoughts, about how you feel about starting MTX for your Rheumatoid Arthritis?

Possible probes around:

1) Please can you tell me how you feel about having an appointment to start (name of DMARD)?

3) Have you been given or looked at any information about the treatment ………..(name of DMARD) already and, if so, can you tell me more about how you feel about that please?

4) How important is it to you to be able to have someone else, with you, at the (DMARD) appointment –

5) Would you prefer to have the appointment to discuss the (DMARD) face to face, or as telephone or video appointment?

? time to wait for app
Where to get info about RA from

Interview Notes:

IRAS 295081 Rheumatoid Arthritis Patients' Experiences of Starting DMARDs v1.0 29/04//21

Appendix 7 Convergent post-interview topic

Rheumatoid Arthritis patients' experiences of starting DMARDs

Topic Guide 2 - Post-Methotrexate DMARD drug counselling appointment:

Introduction:

Setting scene – why doing the research, we're interested in the person's point of view – there are no right or wrong answers. We want to learn from people's experiences, thoughts, and opinions so we can check if how we currently give people information meets their needs.

a) for those who have not participated in pre-Disease Modifying Anti-Rheumatic Drug Methotrexate drug counselling interview, asking participant to say a little about their RA – how long had Arthritis, have they used any other DMARDs previously.

We'd like to hear your thoughts, about how you feel about starting Methotrexate for your Rheumatoid Arthritis?

For those who have participated in pre Methotrexate drug counselling interview – review their feelings about starting DMARD before the drug counselling appointment (use researcher interview notes as aide memoir if needed) and now after the appointment.

1) Can you tell me what is important to you when starting this treatment?

Possible prompts : Knowing how drug works, how to take it, how and when it will help, other options

Are you able to tell me what is important to you when starting Methotrexate – and advised that you would have an appointment to receive information about Methotrexate?

2) Thinking about your Methotrexate information appointment, how were you given the information? Was it on the same day -- face to face appointment?
How long did you have to wait for the appointment?

Prompts:

a. Did you feel able to ask questions about the things that felt important to you?

b. Ways of remembering the information/what you want to know about the (DMARD

c. Can you tell me about anything you received to help you decide about Methotrexate and remember what you talked about, such as: a drug information leaflet, clinic letter, shared care booklet, DVD, signposting – have you used this – if so, how useful is it?

d. If you received any information about (DMARD) before your appointment, how helpful was this? Methotrexate booklet ? areas of information more useful. Less useful –

Can you tell me how you felt about the information
about time to effect – your thoughts and feelings about this
symptom management

side effects
effects of other medications and Methotrexate
vaccines
any other concerns?

How important is it to have another person (friend, relative) with you to help remember the information/offer support?

3) Since having your appointment have you looked for information anywhere else - i.e., internet, local RA group, friends – if so, has this been helpful? How, what, why etc.

4) Is there anything that would have been helpful, or would you have preferred the appointment to be different and if so, please can you tell me your thoughts about this?

Prompts – information, time, person to contact

Appendix 8 Study invitation letter

Keele
UNIVERSITY

NHS
Midlands Partnership
NHS Foundation Trust
A Keele University Teaching Trust

Date as Postmark

Our ref: IRAS 295081 SL/SR

Dear Patient

We are a team of doctors and nurses from the rheumatology department at the Haywood Hospital and Keele University. We are contacting you as a person with rheumatoid arthritis under the care of the Rheumatology Department at the Haywood Hospital, as we are keen to explore your thoughts about starting a new treatment for arthritis.

If you are willing to be involved in this research, you will be invited to take part in two face to face, telephone or video interviews to explore your thoughts about starting a new tablet to treat your arthritis. This will help us to better understand the information and support patients need when starting a new arthritis treatment.

Enclosed is an information leaflet which explains the interviews in more detail. The interviews are likely to last 30-45 minutes. Your participation is voluntary, and it is up to you whether you take part or not. If you would like to take part, please complete the enclosed expression of interest form and return it in the prepaid envelope provided (no stamp required) or by email to Sarah.Ryan2@mpft.nhs.uk. The study team will then contact you to arrange a mutually convenient time for the interview.

If you have any questions about the study please contact Sarah Ryan, Professor of Rheumatology Nursing on 01782 673754 or Sarah.Ryan2@mpft.nhs.uk

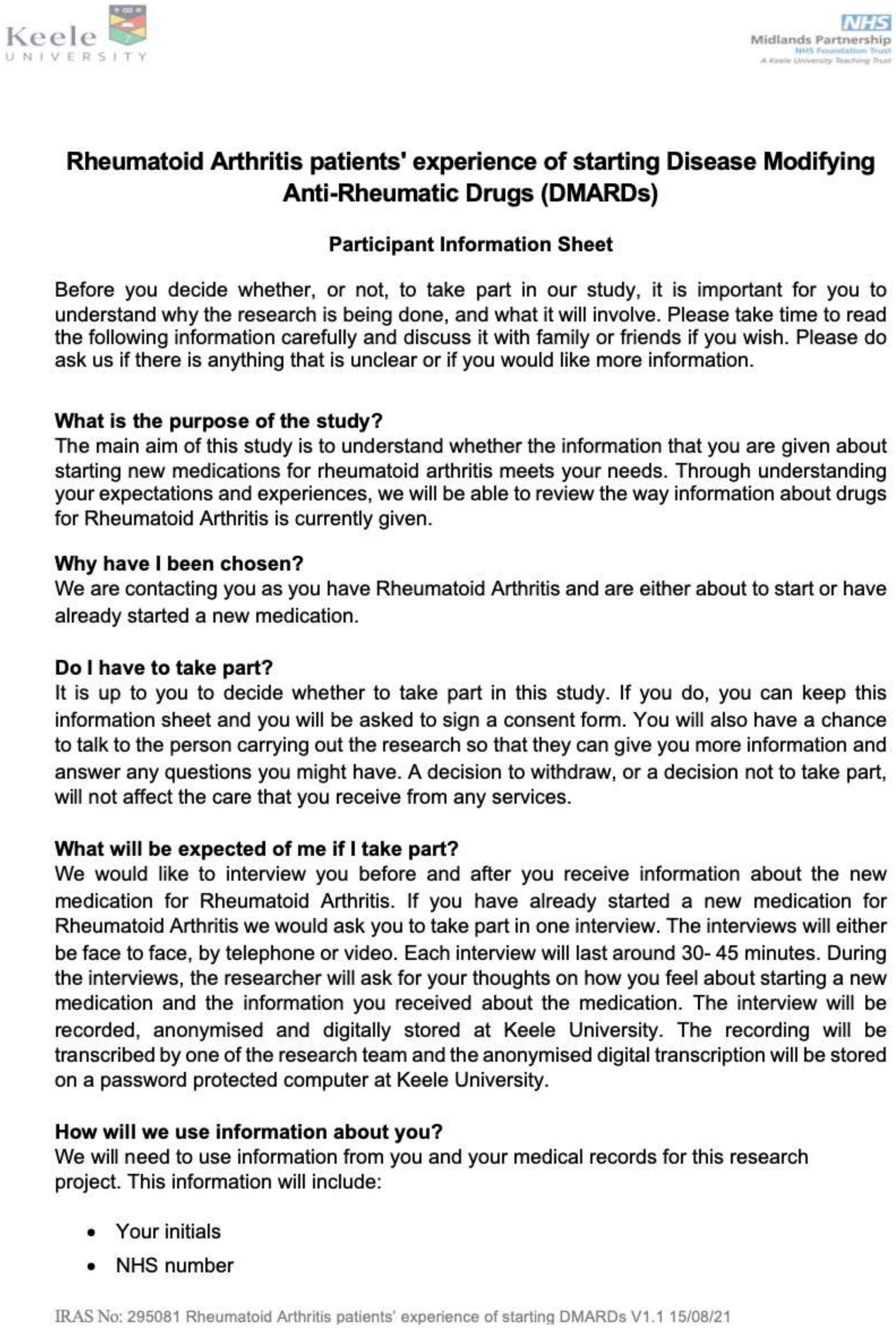
Thank you for reading this letter and for considering being part of this study

Sarah Ryan
Prof of Rheumatology Nursing

Enc. Patient PIS, patient reply form and pre-paid envelope

IRAS 295081 Rheumatoid Arthritis Patients' experience of starting DMARDs v1.0 14/04/21

Appendix 9 Participant information sheet



Keele University

NHS
Midlands Partnership
NHS Foundation Trust
A Keele University Teaching Trust

Rheumatoid Arthritis patients' experience of starting Disease Modifying Anti-Rheumatic Drugs (DMARDs)

Participant Information Sheet

Before you decide whether, or not, to take part in our study, it is important for you to understand why the research is being done, and what it will involve. Please take time to read the following information carefully and discuss it with family or friends if you wish. Please do ask us if there is anything that is unclear or if you would like more information.

What is the purpose of the study?

The main aim of this study is to understand whether the information that you are given about starting new medications for rheumatoid arthritis meets your needs. Through understanding your expectations and experiences, we will be able to review the way information about drugs for Rheumatoid Arthritis is currently given.

Why have I been chosen?

We are contacting you as you have Rheumatoid Arthritis and are either about to start or have already started a new medication.

Do I have to take part?

It is up to you to decide whether to take part in this study. If you do, you can keep this information sheet and you will be asked to sign a consent form. You will also have a chance to talk to the person carrying out the research so that they can give you more information and answer any questions you might have. A decision to withdraw, or a decision not to take part, will not affect the care that you receive from any services.

What will be expected of me if I take part?

We would like to interview you before and after you receive information about the new medication for Rheumatoid Arthritis. If you have already started a new medication for Rheumatoid Arthritis we would ask you to take part in one interview. The interviews will either be face to face, by telephone or video. Each interview will last around 30- 45 minutes. During the interviews, the researcher will ask for your thoughts on how you feel about starting a new medication and the information you received about the medication. The interview will be recorded, anonymised and digitally stored at Keele University. The recording will be transcribed by one of the research team and the anonymised digital transcription will be stored on a password protected computer at Keele University.

How will we use information about you?

We will need to use information from you and your medical records for this research project. This information will include:

- Your initials
- NHS number

IRAS No: 295081 Rheumatoid Arthritis patients' experience of starting DMARDs V1.1 15/08/21

- Name
- Contact details

Members of the research team will use this information to do the research or to check your records to make sure that the research is being done properly. Members of the research team who do not need to know who you are will not be able to see your name or contact details. Your data will have a code number instead.

We will keep all information about you safe and secure. Once we have finished the study, we will keep some of the data so we can check the results. We will write our reports in a way that no-one can work out that you took part in the study.

What are your choices about how your information is used?

- You can stop being part of the study at any time, without giving a reason, but we will keep information about you that we already have.
- We need to manage your records in specific ways for the research to be reliable. This means that we won't be able to change the data we hold about you.

If you agree to take part in this study, you will have the option to take part in future research using your anonymised interview transcript saved from this study.

Keele University is the sponsor for the research study. The digital anonymised recordings and typed interview transcripts will be kept in secure files at Keele University for a minimum of 10 years after the study is completed.

Where can you find out more about how your information is used?

You can find out more about how we use your information

- at www.hra.nhs.uk/information-about-patients/
- our leaflet available from https://www.keele.ac.uk/privacynotices/privacynotice-researchparticipants/
- by asking one of the research team and we can send information by post or email
- You can contact Keele University's Data Protection Officer about any concerns you have with how we deal with your personal data by emailing dpo@keele.ac.uk
- By ringing us on Telephone 01782 673754 or email sarah.ryan2@mpft.nhs.uk

What are the possible disadvantages and risks of taking part?

It is not expected that there will be any disadvantages or risks to you in taking part in the interview. There may be some topics that you do not want to share your thoughts on and that is fine. If you feel uncomfortable at any stage of the interview you would be able to pause the interview, and then be given a choice to continue or to withdraw from the study.

What are the benefits of taking part?

By taking part and sharing your thoughts and experiences about starting a new medication for RA you can help us to check if people with RA are getting the information that they want, in ways that are helpful. We can then work together with people with RA and rheumatology teams to review the best ways of providing helpful information for people with RA when starting new medications.

We can send you a copy of the study findings if you wish.

What will be done with the results of the research study?

The findings will be presented at conferences and published in journal articles. Anonymised quotes from the digital recordings may be included in future reports or publications. All measures are taken to minimise your identification, we will use a code, such as Participant 1, Female

Who has reviewed the study?

The study proposal has been internally reviewed by the study team. The study has been reviewed by: North West - Greater Manchester West Research Ethics Committee

We would like to thank you for reading the participant information sheet and for considering taking part in this research study.

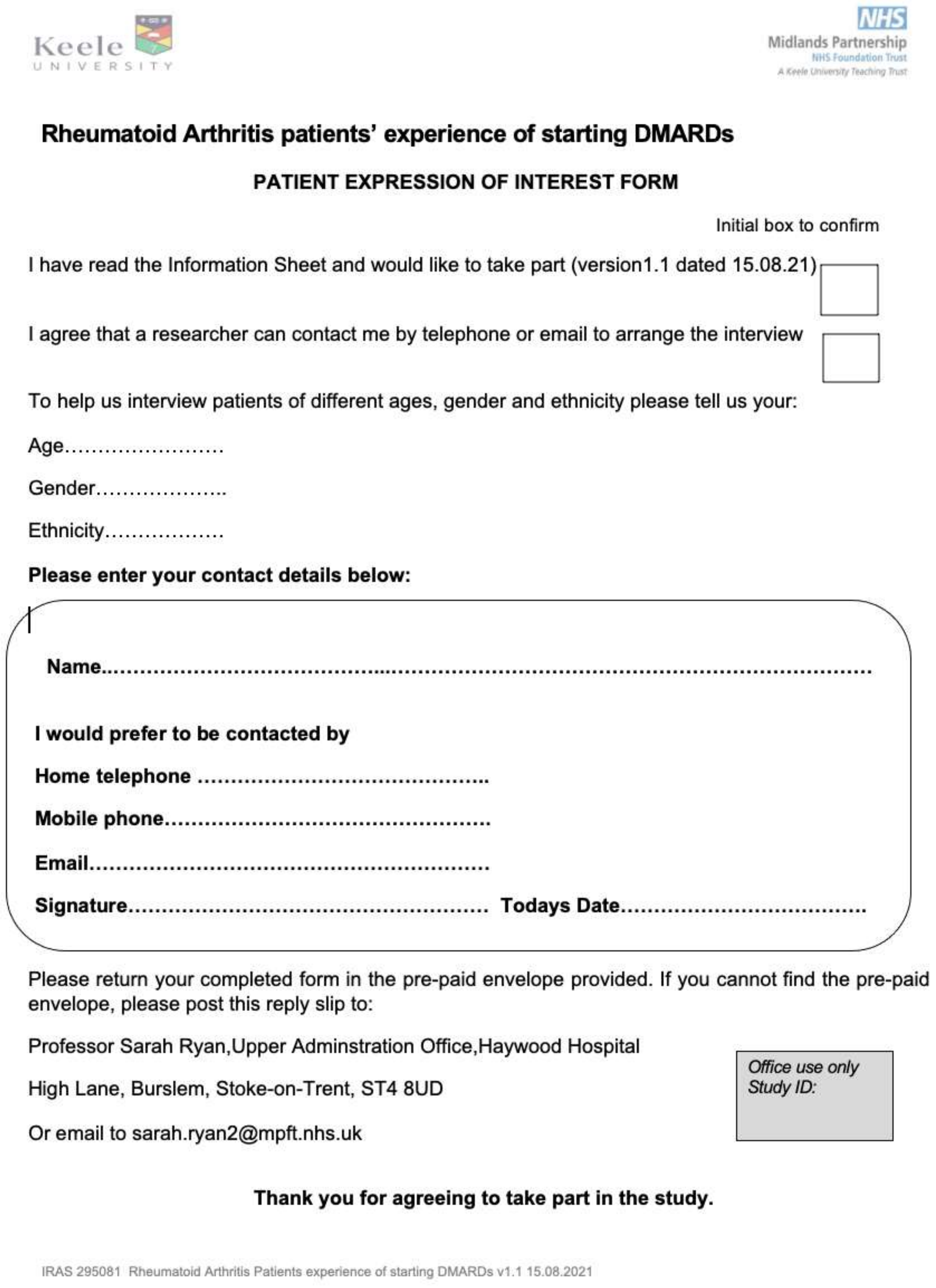
Contact for further Information:

If you have any questions or would like to discuss the research study in more detail, please contact Sarah Ryan, Professor Rheumatology Nursing, Midlands Partnership NHS Foundation Trust, Haywood Hospital, High Lane, Burslem, Stoke-on-Trent, ST6 7AG. Telephone 01782 673754. Email sarah.ryan2@mpft.nhs.uk

If you have any concerns about any aspect of this study, you can contact Tracy Nevatte, Head of Project Assurance. Directorate of Research, Innovation and Engagement, Keele University, ST5 5NH. Telephone**:** Email research.governance@keele.ac.uk.

If you have any concerns about the study you can also contact the Patient Advice and Liaison Service at Midlands Partnership NHS Foundation Trust, Freephone 0800 783 2865 or email palsandexperience@mpft.nhs.uk

Appendix 10 Patient expression of interest form



Keele UNIVERSITY

NHS
Midlands Partnership
NHS Foundation Trust
A Keele University Teaching Trust

Rheumatoid Arthritis patients' experience of starting DMARDs

PATIENT EXPRESSION OF INTEREST FORM

Initial box to confirm

I have read the Information Sheet and would like to take part (version1.1 dated 15.08.21) ☐

I agree that a researcher can contact me by telephone or email to arrange the interview ☐

To help us interview patients of different ages, gender and ethnicity please tell us your:

Age……………………

Gender………………..

Ethnicity………………

Please enter your contact details below:

Name...

I would prefer to be contacted by

Home telephone ……………………………………..

Mobile phone…………………………………………..

Email……………………………………………………..

Signature………………………………………………. Todays Date……………………………….

Please return your completed form in the pre-paid envelope provided. If you cannot find the pre-paid envelope, please post this reply slip to:

Professor Sarah Ryan,Upper Adminstration Office,Haywood Hospital
High Lane, Burslem, Stoke-on-Trent, ST4 8UD
Or email to sarah.ryan2@mpft.nhs.uk

Office use only
Study ID:

Thank you for agreeing to take part in the study.

IRAS 295081 Rheumatoid Arthritis Patients experience of starting DMARDs v1.1 15.08.2021

Appendix 11 Letter of Approval

Ymchwil Iechyd
a Gofal Cymru
Health and Care
Research Wales

NHS
Health Research
Authority

Prof Sarah J Ryan
Rheumatology Dept
Haywood Hospital
High Lane
ST6 7AGN/A

Email: approvals@hra.nhs.uk

08 September 2021

Dear Prof Ryan

HRA and Health and Care

Study title: **Exploring the expectations, experiences, needs and concerns of people with Rheumatoid Arthritis starting a disease modifying anti-rheumatic drug (DMARD)**
IRAS project ID: **295081**
REC reference: **21/NW/0227**
Sponsor **Keele University**

I am pleased to confirm that **HRA and Health and Care Research Wales (HCRW) Approval** has been given for the above referenced study, on the basis described in the application form, protocol, supporting documentation and any clarifications received. You should not expect to receive anything further relating to this application.

Please now work with participating NHS organisations to confirm capacity and capability, in line with the instructions provided in the "Information to support study set up" section towards the end of this letter.

How should I work with participating NHS/HSC organisations in Northern Ireland and Scotland?
HRA and HCRW Approval does not apply to NHS/HSC organisations within Northern Ireland and Scotland.

If you indicated in your IRAS form that you do have participating organisations in either of these devolved administrations, the final document set and the study wide governance report (including this letter) have been sent to the coordinating centre of each participating nation. The relevant national coordinating function/s will contact you as appropriate.

Please see IRAS Help for information on working with NHS/HSC organisations in Northern Ireland and Scotland.

How should I work with participating non-NHS organisations?

HRA and HCRW Approval does not apply to non-NHS organisations. You should work with your non-NHS organisations to obtain local agreement in accordance with their procedures.

What are my notification responsibilities during the study?

The standard conditions document "*After Ethical Review – guidance for sponsors and investigators*", issued with your REC favourable opinion, gives detailed guidance on reporting expectations for studies, including:

- Registration of research
- Notifying amendments
- Notifying the end of the study

The HRA website also provides guidance on these topics, and is updated in the light of changes in reporting expectations or procedures.

Who should I contact for further information?

Please do not hesitate to contact me for assistance with this application. My contact details are below.

Your IRAS project ID is **295081**. Please quote this on all correspondence.

Yours sincerely,

Mark Sidaway
Approvals Specialist
Email: approvals@hra.nhs.uk

Copy to: *Dr T Nevatte* **List of Documents**

The final document set assessed and approved by HRA and HCRW Approval is listed below.

Document	*Version*	*Date*
Evidence of Sponsor insurance or indemnity (non NHS Sponsors only) [RaSD Sponsor insurance]	v1.0	26 June 2021
Interview schedules or topic guides for participants [Post DMARD counselling topic guide]	v1.0	29 April 2021
Interview schedules or topic guides for participants [Pre DMARD counselling topic guide]	v1.0	29 April 2021
IRAS Application Form [IRAS_Form_06072021]		06 July 2021
Letter from sponsor [RAsD Letter from sponsor]	v1.0	29 June 2021
Letters of invitation to participant [RAsD Invitation letter]	v1.0	29 April 2021
Organisation Information Document [RAsD Organisation Information Document]	v1.0	29 April 2021
Other [Reference List 295081]	v1.0	29 April 2021
Other [Delegation of Sponsorship Form 295081]	v1.0	29 April 2021
Other [RAsD EOI]	v1.1	15 August 2021
Other [IRAS response letter]	v1.0	31 August 2021
Participant consent form [RAsD email consent form]	v1.1	15 August 2021
Participant information sheet (PIS) [RAsD PIS]	v1.1	15 August 2021
Research protocol or project proposal [RAsD Study Protocol]	v1.1	15 August 2021
Schedule of Events or SoECAT [RAsD Schedule of Events]	v1.0	29 April 2021
Summary CV for Chief Investigator (CI) [S Ryan CV]		03 June 2020
Summary CV for student [S Logan CV]		29 April 2021
Summary CV for supervisor (student research) [CV Sam Hider]	April 2021	29 April 2021
Summary CV for supervisor (student research) [CV J Green]	CV IRAS	29 April 2021
Summary, synopsis or diagram (flowchart) of protocol in non technical language [RAsD Flowchart of Events]	v1.0	29 April 2021

IRAS project ID	**295081**

Information to support study set up

The below provides all parties with information to support the arranging and confirming of capacity and capability with participating NHS organisations in England and Wales. This is intended to be an accurate reflection of the study at the time of issue of this letter.

Types of participating NHS organisation	Expectations related to confirmation of capacity and capability	Agreement to be used	Funding arrangements	Oversight expectations	HR Good Practice Resource Pack expectations
There is only one participating Research NHS organisation therefore there is only one site type. There is also a PIC site. PIC activities should not commence until a PIC Agreement is in place. HRA and HCRW recommend use of the standard Participating NHS Organisation to PIC agreement,	Research activities should not commence at participating NHS organisations in England or Wales prior to their formal confirmation of capacity and capability to deliver the study. PIC activities should not commence until a PIC Agreement is in place. HRA and HCRW recommend use of the standard Participating NHS Organisation to PIC agreement, availablehere.	An Organisation Information Document has been submitted and the sponsor is not requesting and does not expect any other site agreement to be used.	No study funding will be provided to sites as per the Organisational Information Document	The Chief Investigator will be responsible for all research activities performed at study sites	No Honorary Research Contracts, Letters of Access or pre-engagement checks are expected for local staff employed by the participating NHS organisations. Where arrangements are not already in place, network staff (or similar) undertaking any of the research activities listed in the IRAS form (except for administration of questionnaires or surveys), would be expected to obtain an honorary research contract from one NHS organisation (if university employed), followed by Letters of Access for subsequent organisations. This would be on the basis of a Research Passport (if university employed) or an NHS to NHS confirmation of pre-engagement

Available here.					checks letter (if NHS employed). These should confirm enhanced DBS checks, including appropriate barred list checks, and occupational health clearance. For research team members only administering questionnaires or surveys, a Letter of Access based on standard DBS checks and occupational health clearance would be appropriate.

Other information to aid study set-up and delivery

This details any other information that may be helpful to sponsors and participating NHS organisations in England and Wales in study set-up.
The applicant has indicated that they do not intend to apply for inclusion on the NIHR CRN Portfolio

Appendix 12 Methotrexate study feedback

Study title: Exploring the expectations and experiences of people with Rheumatoid Arthritis starting Methotrexate. (Rheumatoid Arthritis patients experiences of starting Methotrexate – RAsD)

Thank you for taking part in our study. We wanted to know if talking to a rheumatology nurse about Methotrexate is useful. This is what we found.

We asked: What would be helpful when talking to a nurse about Methotrexate

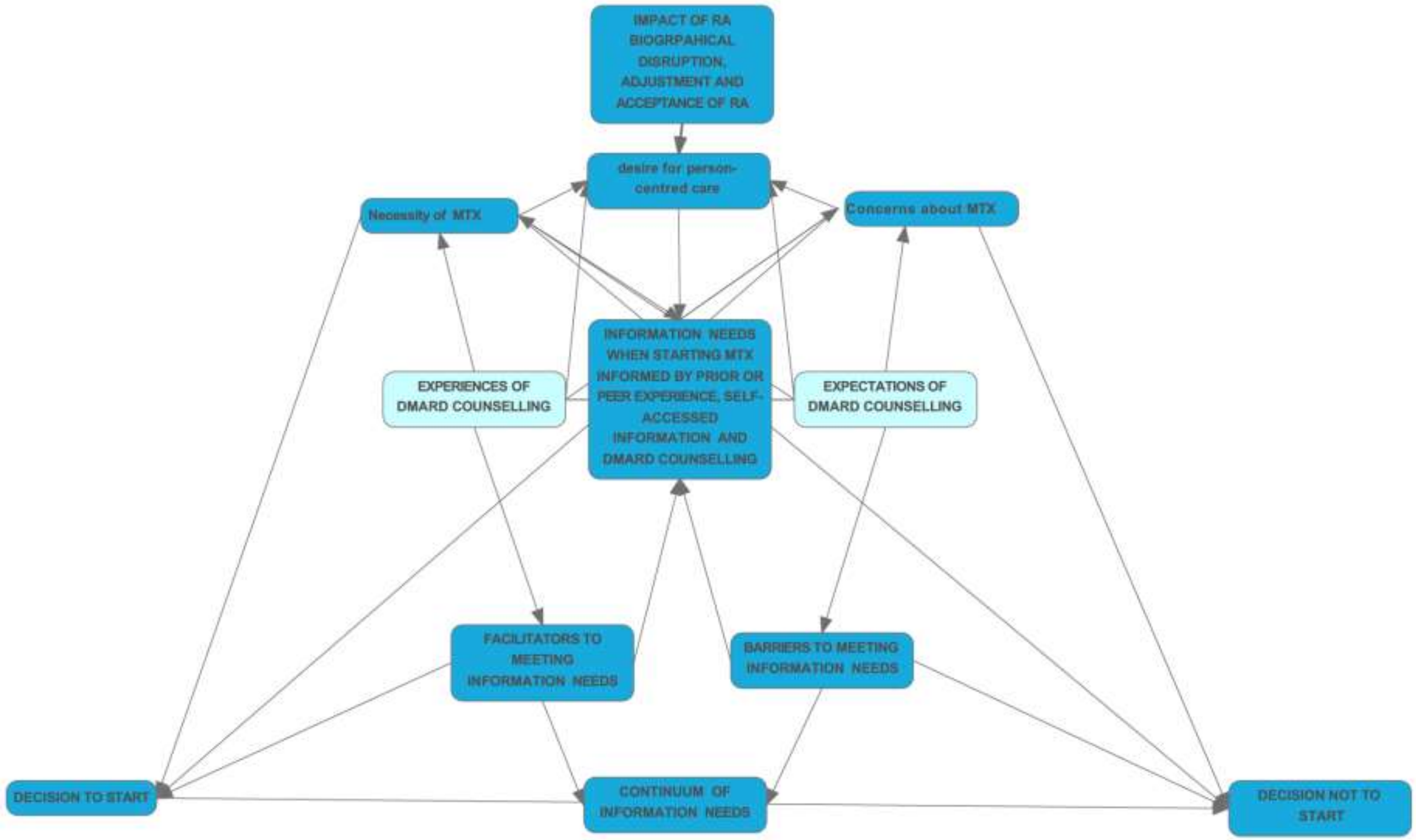
You told us:
A **choice** of face-to-face or telephone appointment
Ask what I want to know about Methotrexate
Use **easy to understand** language
Help coping with pain and feeling tired

We asked: What do you want to know about Methotrexate?

You told us: **Everyone is different …**

Some things people wanted to know
Why should I take Methotrexate?
How do I take it?
When do I take it?
What about side-effects?
Can I take Methotrexate with my other tablets?
Where do I get Methotrexate from?

Appendix 13 Thematic development



References

Abhishek, A., Doherty, M., Kuo, C.-F., Mallen, C.D., et al. (2017) Rheumatoid arthritis is getting less frequent-results of a nationwide population-based cohort study. *Rheumatology (Oxford, England)*. [Online] 56 (5), 736–744. Available at: doi:10.1093/rheumatology/kew468.

Adas, M.A., Norton, S., Balachandran, S., Alveyn, E., et al. (2022) Worse outcomes linked to ethnicity for early inflammatory arthritis in England and Wales: a national cohort study. *Rheumatology (Oxford, England)*. [Online] 62 (1), 169–180. Available at: doi:10.1093/rheumatology/keac266.

Alderwick, H. and Dixon, J. (2019) The NHS long term plan. *BMJ (Clinical research ed.)*. [Online] 364l84. Available at: doi:10.1136/bmj.l84.

Aletaha, D., Neogi, T., Silman, A.J., Funovits, J., et al. (2010) 2010 Rheumatoid arthritis classification criteria: an American College of Rheumatology/European League Against Rheumatism collaborative initiative. *Arthritis and Rheumatism*. [Online] 62 (9), 2569–2581. Available at: doi:10.1002/art.27584.

Aletaha, D. and Smolen, J.S. (2002) Effectiveness profiles and dose dependent retention of traditional disease modifying antirheumatic drugs for rheumatoid arthritis. An observational study. *The Journal of Rheumatology*. 29 (8), 1631–1638.

Almujlli, G., Alrabah, R., Al-Ghosen, A. and Munshi, F. (2022) Conducting Virtual Focus Groups During the COVID-19 Epidemic Utilizing Videoconferencing Technology: A Feasibility Study. *Cureus*. [Online] Available at: doi:10.7759/cureus.23540 (Accessed: 6 January 2024).

Andersen, P.A. (1985) Weekly Pulse Methotrexate in Rheumatoid Arthritis: Clinical and Immunologic Effects in a Randomized, Double-Blind Study. *Annals of Internal Medicine*. [Online] 103 (4), 489. Available at: doi:10.7326/0003-4819-103-4-489 (Accessed: 7 January 2024).

Anderson, R., Gribbin, C., Griffin, K., Hamilton, C., et al. (n.d.) *Methtorexate safety and healthcare provider input in rheumatology patients. Scott Med J 2015;60:E19-20.*

Aromataris, E. and Munn, Zachary (2020) Chapter 1: JBI Systematic Reviews. In: *JBI Manual for Evidence Synthesis*. [Online]. JBI. p. Available at: doi:10.46658/JBIMES-20-02 (Accessed: 12 December 2023).

Aromataris, E. and Pearson, A. (2014) The systematic review: an overview. *The American Journal of Nursing*. [Online] 114 (3), 53–58. Available at: doi:10.1097/01.NAJ.0000444496.24228.2c.

Ataoğlu, S., Ankaralı, H., Ankaralı, S., Ataoğlu, B.B., et al. (2018) Quality of life in fibromyalgia, osteoarthritis and rheumatoid arthritis patients: Comparison of different scales. *The Egyptian Rheumatologist*. [Online] 40 (3), 203–208. Available at: doi:10.1016/j.ejr.2017.09.007 (Accessed: 2 January 2024).

Back, L. (2010) *Broken Devices and New Opportunities Re-imagining the tools of Qualitative Research* p.23,23.

Bala, S., Samuelson, K., Hagell, P., Svensson, B., et al. (2012) The Experience of Care at Nurse-Led Rheumatology Clinics. *Musculoskeletal Care*. [Online] 10 (4), 202–211. Available at: doi:10.1002/msc.1021 (Accessed: 7 January 2024).

Balqis-Ali, N.Z., Saw, P.S., Anis-Syakira, J., Fun, W.H., et al. (2022) Healthcare provider person-centred practice: relationships between prerequisites, care environment and care processes using structural equation modelling. *BMC Health Services Research*. [Online] 22 (1), 576. Available at: doi:10.1186/s12913-022-07917-3 (Accessed: 7 July 2024).

Bandura, A. (1994) Self-efficacy. In: *Encyclopedia of human behavior.* Reprinted in H Friedman [Ed]. New York, Academic Press. pp. 71–81.

Barber, N., Parsons, J., Clifford, S., Darracott, R., et al. (2004) Patients’ problems with new medication for chronic conditions. *Quality & Safety in Health Care*. [Online] 13 (3), 172–175. Available at: doi:10.1136/qhc.13.3.172.

Barratt, J. (2018) Collaborative communication: learning from advanced clinical practice patient consultations. *Nursing Standard (Royal College of Nursing (Great Britain): 1987)*. [Online] 33 (1), 37–44. Available at: doi:10.7748/ns.2018.e11094.

Bartholomew, T.T., Joy, E.E., Kang, E. and Brown, J. (2021) A choir or cacophony? Sample sizes and quality of conveying participants’ voices in phenomenological research. *Methodological Innovations*. [Online] 14 (2), 205979912110400. Available at: doi:10.1177/20597991211040063 (Accessed: 6 January 2024).

Barton, J. (2009) Patient preferences and satisfaction in the treatment of rheumatoid arthritis with biologic therapy. *Patient Preference and Adherence*. [Online] 335. Available at: doi:10.2147/PPA.S5835 (Accessed: 6 January 2024).

Barton, J.L. and Décary, S. (2020) New galaxies in the universe of shared decision-making and rheumatoid arthritis. *Current Opinion in Rheumatology*. [Online] 32 (3), 273–278. Available at: doi:10.1097/BOR.0000000000000699.

Bazeley, P. (2012) Integrative Analysis Strategies for Mixed Data Sources. *American Behavioral Scientist*. [Online] 56 (6), 814–828. Available at: doi:10.1177/0002764211426330 (Accessed: 6 December 2023).

Beauvais, C., Fayet, F., Rousseau, A., Sordet, C., et al. (2022) Efficacy of a nurse-led patient education intervention in promoting safety skills of patients with inflammatory arthritis treated with biologics: a multicentre randomised clinical trial. *RMD Open*.

[Online] 8 (1), e001828. Available at: doi:10.1136/rmdopen-2021-001828 (Accessed: 2 January 2024).

Beauvais, C., Pouplin, S., Mulliez, A., Fayet, F., et al. (2016) SAT0627-HPR Educational Needs of French Rheumatology Nurses Are Not Limited To Inflammatory Arthritis Management. Results of The Multicentric “Caire” Survey: *Annals of the Rheumatic Diseases*. [Online] 75 (Suppl 2), 1290.2-1290. Available at: doi:10.1136/annrheumdis-2016-eular.4901 (Accessed: 2 January 2024).

Bech, B., Primdahl, J., van Tubergen, A., Voshaar, M., et al. (2020) 2018 update of the EULAR recommendations for the role of the nurse in the management of chronic inflammatory arthritis. *Annals of the Rheumatic Diseases*. [Online] 79 (1), 61–68. Available at: doi:10.1136/annrheumdis-2019-215458.

Black, R.L., O’brien, W.M., Vanscott, E.J., Auerbach, R., et al. (1964) METHOTREXATE THERAPY IN PSORIATIC ARTHRITIS; DOUBLE-BLIND STUDY ON 21 PATIENTS. *JAMA*. 189743–747.

Blaikie, N. (2007) *Approaches to social enquiry: advancing knowledge*. 2nd edition. Cambridge, Polity.

Branco, J.C., Barcelos, A., De Araújo, F.P., Sequeira, G., et al. (2016) Utilization of Subcutaneous Methotrexate in Rheumatoid Arthritis Patients After Failure or Intolerance to Oral Methotrexate: A Multicenter Cohort Study. *Advances in Therapy*. [Online] 33 (1), 46–57. Available at: doi:10.1007/s12325-015-0276-3 (Accessed: 6 January 2024).

Braun, V. and Clarke, V. (2021) One size fits all? What counts as quality practice in (reflexive) thematic analysis? *Qualitative Research in Psychology*. [Online] 18 (3), 328–352. Available at: doi:10.1080/14780887.2020.1769238 (Accessed: 3 January 2024).

Braun, V. and Clarke, V. (2019) Reflecting on reflexive thematic analysis. *Qualitative Research in Sport, Exercise and Health*. [Online] 11 (4), 589–597. Available at: doi:10.1080/2159676X.2019.1628806 (Accessed: 3 January 2024).

Braun, V. and Clarke, V. (2022) *Thematic analysis: a practical guide*. Los Angeles London New Delhi Singapore Washington DC Melbourne, SAGE.

Braun, V. and Clarke, V. (2006) Using thematic analysis in psychology. *Qualitative Research in Psychology*. [Online] 3 (2), 77–101. Available at: doi:10.1191/1478088706qp063oa (Accessed: 3 January 2024).

Brinkmann, S. (2008) Interviewing. In: *The SAGE encyclopedia of qualitative research*. Sage Publications. pp. 470–472.

British Society of Rheumatology (2022) *National Early Inflammatory Arthritis Audit (NEIAA) Year 4 Annual Report* [Online]. Available at: https://www.rheumatology.org.uk/improving-care/audits/neiaa.

Brown, P.M., Pratt, A.G. and Isaacs, J.D. (2016) Mechanism of action of methotrexate in rheumatoid arthritis, and the search for biomarkers. *Nature Reviews. Rheumatology*. [Online] 12 (12), 731–742. Available at: doi:10.1038/nrrheum.2016.175.

Bryman, A. (2016) *Social research methods*. Fifth edition. Oxford, Oxford University Press.

BSR (2021) *Rheumatology workforce: a crisis in numbers. Workforce Policy Report.* [Online]. Available at: https://www.rheumatology.org.uk/Portals/0/Documents/Policy/Reports/BSR-workforce-report-crisis-numbers.pdf?ver=2021-06-16-165001-470 (Accessed: 11 November 2023).

Burke, L.A. and Miller, M.K. (2001) Phone Interviewing as a Means of Data Collection: Lessons Learned and Practical Recommendations. *Forum Qualitative Sozialforschung / Forum: Qualitative Social Research*. [Online] Vol 2No 2 (2001): Special Issue: FQS Reviews I. Available at: doi:10.17169/FQS-2.2.959 (Accessed: 8 January 2024).

Carr, A., Hewlett, S., Hughes, R., Mitchell, H., et al. (2003) Rheumatology outcomes: the patient's perspective. *The Journal of Rheumatology*. 30 (4), 880–883.

Cassidy, E., Reynolds, F., Naylor, S. and De Souza, L. (2011) Using interpretative phenomenological analysis to inform physiotherapy practice: an introduction with reference to the lived experience of cerebellar ataxia. *Physiotherapy Theory and Practice*. [Online] 27 (4), 263–277. Available at: doi:10.3109/09593985.2010.488278.

Charmaz, K. (2006) *Constructing grounded theory: a practical guide through qualitative analysis*. London, Sage Publications.

Charmaz, K. and Thornberg, R. (2021) The pursuit of quality in grounded theory. *Qualitative Research in Psychology*. [Online] 18 (3), 305–327. Available at: doi:10.1080/14780887.2020.1780357 (Accessed: 6 January 2024).

Clark, A.M. (1998) The qualitative-quantitative debate: moving from positivism and confrontation to post-positivism and reconciliation. *Journal of Advanced Nursing*. [Online] 27 (6), 1242–1249. Available at: doi:10.1046/j.1365-2648.1998.00651.x (Accessed: 4 January 2024).

Coenen, M., Stamm, T.A., Stucki, G. and Cieza, A. (2012) Individual interviews and focus groups in patients with rheumatoid arthritis: a comparison of two qualitative methods. *Quality of Life Research*. [Online] 21 (2), 359–370. Available at: doi:10.1007/s11136-011-9943-2 (Accessed: 6 January 2024).

Cohen, D. and Crabtree, B. (2006) *Qualitative Research Guidelines Project.* [Online]. Available at: http://www.qualres.org/HomeCrit-3517.html (Accessed: 1 April 2021).

Connelly, K., Segan, J., Lu, A., Saini, M., et al. (2019) Patients' perceived health information needs in inflammatory arthritis: A systematic review. *Seminars in Arthritis* *and Rheumatism*. [Online] 48 (5), 900–910. Available at: doi:10.1016/j.semarthrit.2018.07.014 (Accessed: 2 January 2024).

Corbin, J. and Morse, J.M. (2003) The Unstructured Interactive Interview: Issues of Reciprocity and Risks when Dealing with Sensitive Topics. *Qualitative Inquiry*. [Online] 9 (3), 335–354. Available at: doi:10.1177/1077800403009003001 (Accessed: 6 January 2024).

Corden, A. and Sainsbury, R. (2006) Exploring 'Quality': Research Participants' Perspectives on Verbatim Quotations. *International Journal of Social Research Methodology*. [Online] 9 (2), 97–110. Available at: doi:10.1080/13645570600595264 (Accessed: 3 January 2024).

Coulter, A. (2006) *Engaging patients in their healthcare.* pp.6–4.

Creswell, J.W. and Poth, C.N. (2018) *Qualitative inquiry & research design: choosing among five approaches*. Fourth edition. Los Angeles, SAGE.

Crotty, M. (2020) *The foundations of social research: Meaning and perspective in the research process*. 1st edition. [Online]. Routledge. Available at: doi:10.4324/9781003115700 (Accessed: 4 January 2024).

Curtis, J.R., Bykerk, V.P., Aassi, M. and Schiff, M. (2016) Adherence and Persistence with Methotrexate in Rheumatoid Arthritis: A Systematic Review. *The Journal of Rheumatology*. [Online] 43 (11), 1997–2009. Available at: doi:10.3899/jrheum.151212 (Accessed: 6 January 2024).

Dadoun, S., Zeboulon-Ktorza, N., Combescure, C., Elhai, M., et al. (2013) Mortality in rheumatoid arthritis over the last fifty years: Systematic review and meta-analysis. *Joint Bone Spine*. [Online] 80 (1), 29–33. Available at: doi:10.1016/j.jbspin.2012.02.005 (Accessed: 7 January 2024).

Data Protection Act 1998 *c*. [Online]. 12. Available at: https://www.legislation.gov.uk/ukpga/2018/12/contents.

Data Protection Act 2018 *c*. [Online]. 12. Available at: https://www.legislation.gov.uk/ukpga/2018/12/enacted.

Davies, A.R., Honeyman, M. and Gann, B. (2021) Addressing the Digital Inverse Care Law in the Time of COVID-19: Potential for Digital Technology to Exacerbate or Mitigate Health Inequalities. *Journal of Medical Internet Research*. [Online] 23 (4), e21726. Available at: doi:10.2196/21726.

Deane, K.D., Demoruelle, M.K., Kelmenson, L.B., Kuhn, K.A., et al. (2017) Genetic and environmental risk factors for rheumatoid arthritis. *Best Practice & Research Clinical Rheumatology*. [Online] 31 (1), 3–18. Available at: doi:10.1016/j.berh.2017.08.003 (Accessed: 6 January 2024).

DeJean, D., Giacomini, M., Simeonov, D. and Smith, A. (2016) Finding Qualitative Research Evidence for Health Technology Assessment. *Qualitative Health Research*. [Online] 26 (10), 1307–1317. Available at: doi:10.1177/1049732316644429 (Accessed: 3 January 2024).

Department of Health (2006) *Our health, our care, our say: A new direction for community services. The Stationery Office.* The Stationery Office.

DiCicco-Bloom, B. and Crabtree, B.F. (2006) The qualitative research interview. *Medical Education*. [Online] 40 (4), 314–321. Available at: doi:10.1111/j.1365-2929.2006.02418.x (Accessed: 4 January 2024).

Dick, B. (2016) *Dick, B., Convergent interviewing essentials. Chapel Hill: Interchange.* [Online]. Available at: http://www.aral.com.au/resources/coin.pdf.

Dowling, M. (2006) Approaches to reflexivity in qualitative research. *Nurse Researcher*. [Online] 13 (3), 7–21. Available at: doi:10.7748/nr2006.04.13.3.7.c5975 (Accessed: 4 January 2024).

Dreyfus, H. (1988) Heidegger, Husserl and modern existentialism. In: *The Great Philosophers: An introduction to Western Philosophy*. New York. Oxford, Uniiversity Press. pp. 245–277.

Dreyfus, H.L. (1991) *Being-in-the-world: a commentary on Heidegger's Being and time, division I*. Cambridge, Mass, MIT Press.

Dures, E., Cramp, F., Hackett, K. and Primdahl, J. (2020) Fatigue in inflammatory arthritis. *Best Practice & Research Clinical Rheumatology*. [Online] 34 (2), 101526. Available at: doi:10.1016/j.berh.2020.101526 (Accessed: 6 January 2024).

Dures, E., Hewlett, S., Ambler, N., Jenkins, R., et al. (2016) A qualitative study of patients' perspectives on collaboration to support self-management in routine rheumatology consultations. *BMC Musculoskeletal Disorders*. [Online] 17 (1), 129. Available at: doi:10.1186/s12891-016-0984-0 (Accessed: 7 July 2024).

Dures, E., Hewlett, S., Ambler, N., Jenkins, R., et al. (2014) Rheumatology clinicians' experiences of brief training and implementation of skills to support patient self-management. *BMC Musculoskeletal Disorders*. [Online] 15 (1), 108. Available at: doi:10.1186/1471-2474-15-108 (Accessed: 7 July 2024).

Dwamena, F., Holmes-Rovner, M., Gaulden, C.M., Jorgenson, S., et al. (2012) Interventions for providers to promote a patient-centred approach in clinical consultations Cochrane Consumers and Communication Group (ed.). *Cochrane Database of Systematic Reviews*. [Online] 2013 (12). Available at: doi:10.1002/14651858.CD003267.pub2 (Accessed: 8 January 2024).

Edwards, R. and Holland, J. (2013) *What is Qualitative Interviewing?* [Online]. Bloomsbury Academic. Available at: doi:10.5040/9781472545244 (Accessed: 3 January 2024).

Eldh, A.C., Årestedt, L. and Berterö, C. (2020) Quotations in Qualitative Studies: Reflections on Constituents, Custom, and Purpose. *International Journal of Qualitative Methods*. [Online] 19160940692096926. Available at: doi:10.1177/1609406920969268 (Accessed: 3 January 2024).

Ellis, J., Mullan, J., Worsley, A. and Pai, N. (2012) The Role of Health Literacy and Social Networks in Arthritis Patients' Health Information-Seeking Behavior: A Qualitative Study. *International Journal of Family Medicine*. [Online] 20121–6. Available at: doi:10.1155/2012/397039 (Accessed: 3 January 2024).

Eysenbach, G. (2004) Improving the Quality of Web Surveys: The Checklist for Reporting Results of Internet E-Surveys (CHERRIES). *Journal of Medical Internet Research*. [Online] 6 (3), e34. Available at: doi:10.2196/jmir.6.3.e34 (Accessed: 3 January 2024).

Fayet, F., Pereira, B., Fan, A., Rodere, M., et al. (2021) Therapeutic education improves rheumatoid arthritis patients' knowledge about methotrexate: a single center retrospective study. *Rheumatology International*. [Online] 41 (11), 2025–2030. Available at: doi:10.1007/s00296-021-04893-5 (Accessed: 2 January 2024).

Finney, D.M., Begum, J., Cornell, T., Howie, L., et al. (2022) P087 RCN Rheumatology Nurse Competency Framework a reliable tool to improve quality care and set standards for education of nurses. *Rheumatology*. [Online] 61 (Supplement_1), keac133.086. Available at: doi:10.1093/rheumatology/keac133.086 (Accessed: 7 January 2024).

Flint, J., Panchal, S., Hurrell, A., Van De Venne, M., et al. (2016) BSR and BHPR guideline on prescribing drugs in pregnancy and breastfeeding—Part I: standard and biologic disease modifying anti-rheumatic drugs and corticosteroids: Table 1. *Rheumatology*. [Online] 55 (9), 1693–1697. Available at: doi:10.1093/rheumatology/kev404 (Accessed: 2 January 2024).

Flurey, C.A., Hewlett, S., Rodham, K., White, A., et al. (2016) Men, rheumatoid arthritis, psychosocial impact and self-management: A narrative review. *Journal of Health Psychology*. [Online] 21 (10), 2168–2182. Available at: doi:10.1177/1359105315572452 (Accessed: 2 January 2024).

Flurey, C.A., Morris, M., Richards, P., Hughes, R., et al. (2014) It's like a juggling act: rheumatoid arthritis patient perspectives on daily life and flare while on current treatment regimes. *Rheumatology*. [Online] 53 (4), 696–703. Available at: doi:10.1093/rheumatology/ket416 (Accessed: 7 January 2024).

Forero, R., Nahidi, S., De Costa, J., Mohsin, M., et al. (2018) Application of four-dimension criteria to assess rigour of qualitative research in emergency medicine. *BMC Health Services Research*. [Online] 18 (1), 120. Available at: doi:10.1186/s12913-018-2915-2 (Accessed: 3 January 2024).

Fraenkel, L., Bathon, J.M., England, B.R., St.Clair, E.W., et al. (2021) 2021 American College of Rheumatology Guideline for the Treatment of Rheumatoid Arthritis.

Arthritis & Rheumatology. [Online] 73 (7), 1108–1123. Available at: doi:10.1002/art.41752 (Accessed: 6 January 2024).

Friedman, B. and Cronstein, B. (2019) Methotrexate mechanism in treatment of rheumatoid arthritis. *Joint Bone Spine*. [Online] 86 (3), 301–307. Available at: doi:10.1016/j.jbspin.2018.07.004 (Accessed: 6 January 2024).

Funahashi, K. and Matsubara, T. (2012) What RA patients expect of their treatment—discussion over the result of our survey. *Clinical Rheumatology*. [Online] 31 (11), 1559–1566. Available at: doi:10.1007/s10067-012-2048-7 (Accessed: 6 December 2023).

Guillemin, M. and Gillam, L. (2004) Ethics, Reflexivity, and “Ethically Important Moments” in Research. *Qualitative Inquiry*. [Online] 10 (2), 261–280. Available at: doi:10.1177/1077800403262360.

GBD 2021 Rheumatoid Arthritis Collaborators (2023) Global, regional, and national burden of rheumatoid arthritis, 1990-2020, and projections to 2050: a systematic analysis of the Global Burden of Disease Study 2021. *The Lancet. Rheumatology*. [Online] 5 (10), e594–e610. Available at: doi:10.1016/S2665-9913(23)00211-4.

Georgopoulou, S., Prothero, L., Lempp, H., Galloway, J., et al. (2016) Motivational interviewing: relevance in the treatment of rheumatoid arthritis? *Rheumatology*. [Online] 55 (8), 1348–1356. Available at: doi:10.1093/rheumatology/kev379 (Accessed: 18 July 2024).

Gelling, L. (2015) Stages in the research process. *Nursing Standard*. [Online] 29 (27), 44–49. Available at: doi:10.7748/ns.29.27.44.e8745 (Accessed: 8 January 2024).

Genestier, L., Paillot, R., Fournel, S., Ferraro, C., et al. (1998) Immunosuppressive properties of methotrexate: apoptosis and clonal deletion of activated peripheral T cells. *Journal of Clinical Investigation*. [Online] 102 (2), 322–328. Available at: doi:10.1172/JCI2676 (Accessed: 7 January 2024).

Giacomini, M.K., Cook, D.J., and For The Evidence-Based Medicine Working Group (2000) Users’ Guides to the Medical Literature: XXIII. Qualitative Research in Health Care A. Are the Results of the Study Valid? *JAMA*. [Online] 284 (3), 357. Available at: doi:10.1001/jama.284.3.357 (Accessed: 5 January 2024).

Gibofsky, A., Galloway, J., Kekow, J., et al. (2018) Comparison of patient and physician perspectives in the management of rheumatoid arthritis: results from global physician- and patient-based surveys. *Health and Quality of Life Outcomes*. [Online] 16 (1), 211. Available at: doi:10.1186/s12955-018-1035-3 (Accessed: 7 July 2024).

Given, L.M. ed. (2008) *The Sage encyclopedia of qualitative research methods*. Los Angeles, Calif, Sage Publications.

Green, J. and Jester, R. (2019) Challenges to concordance: theories that explain variations in patient responses. *British Journal of Community Nursing*. [Online] 24 (10), 466–473. Available at: doi:10.12968/bjcn.2019.24.10.466 (Accessed: 8 February 2024).

Greenhalgh, T., Annandale, E., Ashcroft, R., Barlow, J., et al. (2016) An open letter to *The BMJ* editors on qualitative research. *BMJ*. [Online] i563. Available at: doi:10.1136/bmj.i563 (Accessed: 4 January 2024).

Grim, J., Chl??dek, J. and Mart??nkov??, J. (2003) Pharmacokinetics and Pharmacodynamics of Methotrexate in Non-Neoplastic Diseases: *Clinical Pharmacokinetics*. [Online] 42 (2), 139–151. Available at: doi:10.2165/00003088-200342020-00003 (Accessed: 6 January 2024).

Guba, E.G. and Lincoln, Y. (1994) *Competing paradigms in qualitative research. In N. K. Denzin & Y. S. Lincoln (Eds.), Handbook of qualitative research*. Sage Publications Inc.

Gubner, R. (1951) EFFECT OF 'AMINOPTERIN' ON EPITHELIAL TISSUES. *Archives of Dermatology*. [Online] 64 (6), 688. Available at: doi:10.1001/archderm.1951.01570120023004 (Accessed: 7 January 2024).

Ha Dinh, T.T., Bonner, A., Clark, R., Ramsbotham, J., et al. (2016) The effectiveness of the teach-back method on adherence and self-management in health education for people with chronic disease: a systematic review. *JBI database of systematic reviews and implementation reports*. [Online] 14 (1), 210–247. Available at: doi:10.11124/jbisrir-2016-2296.

Haddaway, N.R., Collins, A.M., Coughlin, D. and Kirk, S. (2015) The Role of Google Scholar in Evidence Reviews and Its Applicability to Grey Literature Searching K. Brad Wray (ed.). *PLOS ONE*. [Online] 10 (9), e0138237. Available at: doi:10.1371/journal.pone.0138237 (Accessed: 3 January 2024).

Ham, Charles, A. and Wellings, D. (2018) *Shared responsibility for health: the cultural change we need.* [Online]. Available at: https://www.kingsfund.org.uk/publications/shared-responsibility-health (Accessed: 1 September 2023).

Hammersley, M. (2018) *Routledge Revivals: What's Wrong With Ethnography? (1992): Methodological Explorations*. First edition. London, Taylor and Francis.

Haroon, S., Voo, T.C., Chua, H., Tan, G.L., et al. (2022) Telemedicine and Haemodialysis Care during the COVID-19 Pandemic: An Integrative Review of Patient Safety, Healthcare Quality, Ethics and the Legal Considerations in Singapore Practice. *International Journal of Environmental Research and Public Health*. [Online] 19 (9), 5445. Available at: doi:10.3390/ijerph19095445.

Hattesohl, M., Tribanek, M. and Gescher, K. (2018) AB0494 Usability of a pre-filled pen for self-administration of subcutaneous Methotrexate. *Annals of the Rheumatic Diseases*. [Online] 77 (1407). Available at: https://ard.bmj.com/content/77/Suppl_2/1407.2.

Hawkins, R.P., Kreuter, M., Resnicow, K., Fishbein, M., et al. (2008) Understanding tailoring in communicating about health. *Health Education Research*. [Online] 23 (3), 454–466. Available at: doi:10.1093/her/cyn004 (Accessed: 13 July 2024).

Hayden, C., Neame, R. and Tarrant, C. (2015) Patients' adherence-related beliefs about methotrexate: a qualitative study of the role of written patient information. *BMJ Open*. [Online] 5 (5), e006918–e006918. Available at: doi:10.1136/bmjopen-2014-006918 (Accessed: 6 December 2023).

Haywood, H., Pain, H., Ryan, S. and Adams, J. (2013) Continuing Professional Development: Issues Raised by Nurses and Allied Health Professionals Working in Musculoskeletal Settings. *Musculoskeletal Care*. [Online] 11 (3), 136–144. Available at: doi:10.1002/msc.1033 (Accessed: 6 January 2024).

Hazlewood, G.S., Barnabe, C., Tomlinson, G., Marshall, D., et al. (2016) Methotrexate monotherapy and methotrexate combination therapy with traditional and biologic disease modifying anti-rheumatic drugs for rheumatoid arthritis: A network meta-analysis Cochrane Musculoskeletal Group (ed.). *Cochrane Database of Systematic Reviews*. [Online] 2016 (8). Available at: doi:10.1002/14651858.CD010227.pub2 (Accessed: 7 January 2024).

Health Research Authority (2017) *UK Policy Framework for Health and Social Care Research: Health Research Authority*

Hegeman, M.C., Schoemaker-Delsing, J.A., Luttikholt, J.T.M. and Vonkeman, H.E. (2021) Patient perspectives on how to improve education on medication side effects: cross-sectional observational study at a rheumatology clinic in The Netherlands. *Rheumatology International*. [Online] 41 (5), 973–979. Available at: doi:10.1007/s00296-021-04815-5 (Accessed: 6 December 2023).

Heidegger, M., Stambaugh, J. and Heidegger, M. (1996) *Being and time*. Suny series in contemporary continental philosophy. Albany, NY, State Univ. of New York Press.

Hennell, S., Spark, E., Wood, B. and George, E. (2005) An evaluation of nurse-led rheumatology telephone clinics. *Musculoskeletal Care*. [Online] 3 (4), 233–240. Available at: doi:10.1002/msc.13 (Accessed: 2 January 2024).

Hershberger, P.E. and Kavanaugh, K. (2017) Comparing appropriateness and equivalence of email interviews to phone interviews in qualitative research on reproductive decisions. *Applied Nursing Research*. [Online] 3750–54. Available at: doi:10.1016/j.apnr.2017.07.005 (Accessed: 4 January 2024).

Hesselink, G., Sir, Ö., Koster, N., Tolsma, C., et al. (2022) Teach-back of discharge instructions in the emergency department: a pre–post pilot evaluation. *Emergency Medicine Journal*. [Online] 39 (2), 139–146. Available at: doi:10.1136/emermed-2020-210168 (Accessed: 23 June 2024).

Hider, S., Muller, S., Gray, L., Manning, F., et al. (2022) Digital exclusion as a potential cause of inequalities in access to care: a survey in people with inflammatory rheumatic diseases. *Rheumatology Advances in Practice*. [Online] 7 (1), rkac109. Available at: doi:10.1093/rap/rkac109 (Accessed: 4 January 2024).

Hirsch, J.K., Toussaint, L., Offenbächer, M., Kohls, N., et al. (2020) Educational needs of patients with rheumatic and musculoskeletal diseases attending a large health facility in Austria. *Musculoskeletal Care*. [Online] 18 (3), 391–396. Available at: doi:10.1002/msc.1474 (Accessed: 2 January 2024).

Hoffmeister, R.T. (1983) Methotrexate therapy in rheumatoid arthritis: 15 years experience. *The American Journal of Medicine*. [Online] 75 (6A), 69–73. Available at: doi:10.1016/0002-9343(83)90477-1.

Holloway, I. and Galvin, K. (2017) *Qualitative research in nursing and healthcare*. 4th edition. Chichester, West Sussex, UK ; Ames, Iowa, John Wiley & Sons Inc.

Homer, D., Nightingale, P. and Jobanputra, P. (2009) Providing patients with information about disease-modifying anti-rheumatic drugs: Individually or in groups? A pilot randomized controlled trial comparing adherence and satisfaction. *Musculoskeletal Care*. [Online] 7 (2), 78–92. Available at: doi:10.1002/msc.141 (Accessed: 2 January 2024).

Hong, Q.N., Pluye, P., Bujold, M. and Wassef, M. (2017) Convergent and sequential synthesis designs: implications for conducting and reporting systematic reviews of qualitative and quantitative evidence. *Systematic Reviews*. [Online] 6 (1), 61. Available at: doi:10.1186/s13643-017-0454-2 (Accessed: 6 December 2023).

Hope, H.F., Bluett, J., Barton, A., Hyrich, K.L., et al. (2016) Psychological factors predict adherence to methotrexate in rheumatoid arthritis; findings from a systematic review of rates, predictors and associations with patient-reported and clinical outcomes. *RMD Open*. [Online] 2 (1), e000171. Available at: doi:10.1136/rmdopen-2015-000171 (Accessed: 6 January 2024).

Hope, H.F., Hyrich, K.L., Anderson, J., Bluett, J., et al. (2019) The predictors of and reasons for non-adherence in an observational cohort of patients with rheumatoid arthritis commencing methotrexate. *Rheumatology*. [Online] kez274. Available at: doi:10.1093/rheumatology/kez274 (Accessed: 2 January 2024).

Horne, R. (1999) Patients' beliefs about treatment. *Journal of Psychosomatic Research*. [Online] 47 (6), 491–495. Available at: doi:10.1016/S0022-3999(99)00058-6 (Accessed: 7 January 2024).

Horne, R., Chapman, S.C.E., Parham, R., Freemantle, N., et al. (2013) Understanding Patients' Adherence-Related Beliefs about Medicines Prescribed for Long-Term Conditions: A Meta-Analytic Review of the Necessity-Concerns Framework Yinglin Xia (ed.). *PLoS ONE*. [Online] 8 (12), e80633. Available at: doi:10.1371/journal.pone.0080633 (Accessed: 6 December 2023).

Horne, R., Hankins, M. and Jenkins, R. (2001) The Satisfaction with Information about Medicines Scale (SIMS): a new measurement tool for audit and research. *Quality in health care: QHC*. [Online] 10 (3), 135–140. Available at: doi:10.1136/qhc.0100135..

House W (2017) *Immunisation against infectious diseases*. [Online]. London, The Stationery Office. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/954759/Greenbook_cover_Jan21.pdf.

Howick, J., Moscrop, A., Mebius, A., Fanshawe, T.R., et al. (2018) Effects of empathic and positive communication in healthcare consultations: a systematic review and meta-analysis. *Journal of the Royal Society of Medicine*. [Online] 111 (7), 240–252. Available at: doi:10.1177/0141076818769477.

Hummelinck, A. and Pollock, K. (2006) Parents' information needs about the treatment of their chronically ill child: A qualitative study. *Patient Education and Counseling*. [Online] 62 (2), 228–234. Available at: doi:10.1016/j.pec.2005.07.006 (Accessed: 3 January 2024).

Humphreys, J.H., Warner, A., Costello, R., Lunt, M., et al. (2017) Quantifying the hepatotoxic risk of alcohol consumption in patients with rheumatoid arthritis taking methotrexate. *Annals of the Rheumatic Diseases*. [Online] 76 (9), 1509–1514. Available at: doi:10.1136/annrheumdis-2016-210629 (Accessed: 7 July 2024).

Husserl, E., Carr, D. and Husserl, E. (1984) *The crisis of European sciences and transcendental phenomenology: an introduction to phenomenological philosophy*. Studies in phenomenology & existential philosophy. 6th pr. Evanston, Ill, Northwestern Univ. Press.

Johnson, P. (2000) *On Heidegger*. Cengage Learning.

Jones, B., Bennett, S., Larsson, I., Zangi, H., et al. (2022) Disseminating and assessing implementation of the EULAR recommendations for patient education in inflammatory arthritis: a mixed-methods study with patients' perspectives. *RMD Open*. [Online] 8 (1), e002256. Available at: doi:10.1136/rmdopen-2022-002256 (Accessed: 2 January 2024).

Kadura, S. and Raghu, G. (2021) Rheumatoid arthritis-interstitial lung disease: manifestations and current concepts in pathogenesis and management. *European Respiratory Review*. [Online] 30 (160), 210011. Available at: doi:10.1183/16000617.0011-2021 (Accessed: 7 January 2024).

Kay, J. and Upchurch, K.S. (2012) ACR/EULAR 2010 rheumatoid arthritis classification criteria. *Rheumatology*. [Online] 51 (suppl 6), vi5–vi9. Available at: doi:10.1093/rheumatology/kes279 (Accessed: 6 January 2024).

Kay, L., and Lanyon, P. (2021) *Rheumatology: GIRFT Programme National Specialty Report* [Online]. Available at: https://www.gettingitrightfirsttime.co.uk/wp-content/uploads/2021/08/Rheumatology-Jul21h-NEW.pdf.

Kelly, A., Tymms, K., Tunnicliffe, D.J., Sumpton, D., et al. (2018) Patients' Attitudes and Experiences of Disease-Modifying Antirheumatic Drugs in Rheumatoid Arthritis and

Spondyloarthritis: A Qualitative Synthesis. *Arthritis Care & Research*. [Online] 70 (4), 525–532. Available at: doi:10.1002/acr.23329 (Accessed: 3 January 2024).

Keogh, E. (2021) The gender context of pain. *Health Psychology Review*. [Online] 15 (3), 454–481. Available at: doi:10.1080/17437199.2020.1813602 (Accessed: 2 January 2024).

Kessels, R.P.C. (2003) Patients' memory for medical information. *Journal of the Royal Society of Medicine*. [Online] 96 (5), 219–222. Available at: doi:10.1177/014107680309600504.

King, A. and Hoppe, R.B. (2013) 'Best practice' for patient-centered communication: a narrative review. *Journal of Graduate Medical Education*. [Online] 5 (3), 385–393. Available at: doi:10.4300/JGME-D-13-00072.1.

Klareskog, L., Stolt, P., Lundberg, K., Källberg, H., et al. (2006) A new model for an etiology of rheumatoid arthritis: Smoking may trigger HLA–DR (shared epitope)–restricted immune reactions to autoantigens modified by citrullination. *Arthritis & Rheumatism*. [Online] 54 (1), 38–46. Available at: doi:10.1002/art.21575 (Accessed: 8 January 2024).

Kłodziński, Ł. and Wisłowska, M. (2018) Comorbidities in rheumatic arthritis. *Reumatologia*. [Online] 56 (4), 228–233. Available at: doi:10.5114/reum.2018.77974.

Koch, T. (1995) Interpretive approaches in nursing research: the influence of Husserl and Heidegger. *Journal of Advanced Nursing*. [Online] 21 (5), 827–836. Available at: doi:10.1046/j.1365-2648.1995.21050827.x (Accessed: 4 January 2024).

Kottak, N., Tesser, J., Leibowitz, E., Rosenberg, M., et al. (2018) Ethnographic Observational Study of the Biologic Initiation Conversation Between Rheumatologists and Biologic-Naive Rheumatoid Arthritis Patients. *Arthritis Care & Research*. [Online] 70 (7), 997–1004. Available at: doi:10.1002/acr.23527 (Accessed: 4 January 2024).

Krouwel, M., Jolly, K. and Greenfield, S. (2019) Comparing Skype (video calling) and in-person qualitative interview modes in a study of people with irritable bowel syndrome – an exploratory comparative analysis. *BMC Medical Research Methodology*. [Online] 19 (1), 219. Available at: doi:10.1186/s12874-019-0867-9 (Accessed: 4 January 2024).

Krueger, R.A. and Casey, M.A. (2015) Focus Group Interviewing. In: Kathryn E. Newcomer, Harry P. Hatry, and Joseph S. Wholey (eds.). *Handbook of Practical Program Evaluation*. 1st edition. [Online]. Wiley. pp. 506–534. Available at: doi:10.1002/9781119171386.ch20 (Accessed: 6 January 2024).

Kuhn, T.S. (2012) *The structure of scientific revolutions. U*. Fourth Ed. University of Chigago press.

Kumar, K., Reehal, J., Stack, R.J., Adebajo, A., et al. (2019) Experiences of South Asian patients in early inflammatory arthritis clinic: a qualitative interview study.

Rheumatology Advances in Practice. [Online] 3 (2), rkz017. Available at: doi:10.1093/rap/rkz017 (Accessed: 6 January 2024).

Kwon, Y., Lemieux, M., McTavish, J. and Wathen, N. (2015) Identifying and removing duplicate records from systematic review searches. *Journal of the Medical Library Association: JMLA*. [Online] 103 (4), 184–188. Available at: doi:10.3163/1536-5050.103.4.004.

Lavielle, M., Puyraimond-Zemmour, D., Romand, X., Gossec, L., et al. (2018) Methods to improve medication adherence in patients with chronic inflammatory rheumatic diseases: a systematic literature review. *RMD open*. [Online] 4 (2), e000684. Available at: doi:10.1136/rmdopen-2018-000684.

Ledingham, J., Gullick, N., Irving, K., Gorodkin, R., et al. (2017) BSR and BHPR guideline for the prescription and monitoring of non-biologic disease-modifying anti-rheumatic drugs. *Rheumatology*. [Online] 56 (6), 865–868. Available at: doi:10.1093/rheumatology/kew479 (Accessed: 2 January 2024).

Lempp, H., Baggott, R., Scott, D.L., Parker, L., et al. (2020) The value, impact and role of nurses in rheumatology outpatient care: Critical review of the literature. *Musculoskeletal Care*. [Online] 18 (3), 245–255. Available at: doi:10.1002/msc.1467 (Accessed: 7 January 2024).

Lennon, R., Gasper, A. and Carpenter, D. (2012) Nominal group technique: its utilisation to explore the rewards and challenges of becoming a mental health nurse, prior to the introduction of the all graduate nursing curriculum in England. *Working Papers in Health Sciences*. 1:2.

Leonardo, N., Lester, S., Graham, M., Barrett, C., et al. (2020) Selection and perception of methotrexate treatment information in people with rheumatoid arthritis. *International Journal of Rheumatic Diseases*. [Online] 23 (6), 805–812. Available at: doi:10.1111/1756-185X.13833 (Accessed: 6 December 2023).

Ley, P (1988) *Communicating with patients: Improving communication, satisfaction and compliance.* Kent, UK, Croom Helm.

Lillie, K., Ryan, S. and Adams, J. (2013) The Educational Needs of Nurses and Allied Healthcare Professionals Caring for People with Arthritis: Results from a Cross-Sectional Survey. *Musculoskeletal Care*. [Online] 11 (2), 93–98. Available at: doi:10.1002/msc.1035 (Accessed: 8 January 2024).

Lim, A.Y.N., Ellis, C., Brooksby, A. and Gaffney, K. (2007) Patient satisfaction with rheumatology practitioner clinics: can we achieve concordance by meeting patients' information needs and encouraging participatory decision making? *Annals of the Academy of Medicine, Singapore*. 36 (2), 110–114.

Lincoln, Y.S. and Guba, E.G. (1986) But is it rigorous? Trustworthiness and authenticity in naturalistic evaluation. *New Directions for Program Evaluation*. [Online] 1986 (30), 73–84. Available at: doi:10.1002/ev.1427 (Accessed: 8 February 2024).

Lockwood, C., Munn, Z. and Porritt, K. (2015) Qualitative research synthesis: methodological guidance for systematic reviewers utilizing meta-aggregation. *International Journal of Evidence-Based Healthcare*. [Online] 13 (3), 179–187. Available at: doi:10.1097/XEB.0000000000000062 (Accessed: 6 December 2023).

Logan, H., Wolfaardt, J., Boulanger, P., Hodgetts, B., et al. (2013) Pilot study: evaluation of the use of the convergent interview technique in understanding the perception of surgical design and simulation. *Journal of Otolaryngology - Head & Neck Surgery*. [Online] 42 (1), 40. Available at: doi:10.1186/1916-0216-42-40 (Accessed: 3 January 2024).

Lopez-Olivo, M.A., Siddhanamatha, H.R., Shea, B., Tugwell, P., et al. (2014) Methotrexate for treating rheumatoid arthritis Cochrane Musculoskeletal Group (ed.). *Cochrane Database of Systematic Reviews*. [Online] 2014 (6). Available at: doi:10.1002/14651858.CD000957.pub2 (Accessed: 6 January 2024).

Lorig, K. (1992) *Common sense patient education*. Victoria, Australia, Fraser Publications.

Lowe, S.S., Milligan, C. and Brearley, S.G. (2020) Activity and advanced cancer: A grounded theory. *Palliative Medicine*. [Online] 34 (2), 231–244. Available at: doi:10.1177/0269216319888989 (Accessed: 3 January 2024).

Madill, A. and Gough, B. (2008) Qualitative research and its place in psychological science. *Psychological Methods*. [Online] 13 (3), 254–271. Available at: doi:10.1037/a0013220 (Accessed: 4 January 2024).

Maguire, T., Garvey, L., Ryan, J., Olasoji, M., et al. (2022) Using the Nominal Group Technique to determine a nursing framework for a forensic mental health service: A discussion paper. *International Journal of Mental Health Nursing*. [Online] 31 (4), 1030–1038. Available at: doi:10.1111/inm.13023.

Malterud, K., Siersma, V.D. and Guassora, A.D. (2016) Sample Size in Qualitative Interview Studies: Guided by Information Power. *Qualitative Health Research*. [Online] 26 (13), 1753–1760. Available at: doi:10.1177/1049732315617444 (Accessed: 6 January 2024).

Maranini, B., Bortoluzzi, A., Silvagni, E. and Govoni, M. (2022) Focus on Sex and Gender: What We Need to Know in the Management of Rheumatoid Arthritis. *Journal of Personalized Medicine*. [Online] 12 (3), 499. Available at: doi:10.3390/jpm12030499.

Marklund, B., Silfverhielm, B. and Bengtsson, C. (1989) Evaluation of an Educational Programme for Telephone Advisers in Primary Health Care. *Family Practice*. [Online] 6 (4), 263–267. Available at: doi:10.1093/fampra/6.4.263 (Accessed: 2 January 2024).

Marques, A., Livermore, P., Martin, U., Ludvigsen, A., et al. (2023) OP0306-HPR POINTS TO CONSIDER FOR PATIENT EDUCATION PROVIDED BY NURSES ON METHOTREXATE USE. A EUROPEAN CONSENSUS INITIATIVE. In: *Health Professionals in Rheumatology Abstracts*. [Online]. June 2023 BMJ Publishing Group Ltd and European League Against

Rheumatism. pp. 198–199. Available at: doi:10.1136/annrheumdis-2023-eular.626 (Accessed: 6 December 2023).

Marques, A., Matos, C., Nikiphorou, E., Livermore, P., et al. (2023) Towards a consensus for nurse education of methotrexate for people with rheumatic and musculoskeletal diseases: A scoping review. *Musculoskeletal Care*. [Online] msc.1804. Available at: doi:10.1002/msc.1804 (Accessed: 6 December 2023).

Marshall, M.N. (1996) Sampling for qualitative research. *Family Practice*. [Online] 13 (6), 522–526. Available at: doi:10.1093/fampra/13.6.522 (Accessed: 6 January 2024).

Martin, U., O'Gradaig, D., Nolan, D.F. and Sheehy, C. (2019) Development of a methotrexate educational guide/information/monitoring booklet for inflammatory arthritis. *Musculoskeletal Care*. [Online] 17 (2), 234–241. Available at: doi:10.1002/msc.1398 (Accessed: 2 January 2024).

Martin, U.E.S., (2020) P94 Development of a methotrexate digital media card and methotrexate website. *Rheumatology*. 59 (2), 1111–092.

Martinez-Calderon, J., Meeus, M., Struyf, F. and Luque-Suarez, A. (2020a) The role of self-efficacy in pain intensity, function, psychological factors, health behaviors, and quality of life in people with rheumatoid arthritis: A systematic review. *Physiotherapy Theory and Practice*. [Online] 36 (1), 21–37. Available at: doi:10.1080/09593985.2018.1482512 (Accessed: 7 January 2024).

Martinez-Calderon, J., Meeus, M., Struyf, F. and Luque-Suarez, A. (2020b) The role of self-efficacy in pain intensity, function, psychological factors, health behaviors, and quality of life in people with rheumatoid arthritis: A systematic review. *Physiotherapy Theory and Practice*. [Online] 36 (1), 21–37. Available at: doi:10.1080/09593985.2018.1482512 (Accessed: 7 July 2024).

Martyn Hammersley (1989) *Routledge Revivals: The Dilemma of Qualitative Method (1989): Herbert Blumer and the Chicago Tradition*. Routledge.

Matcham, F., Rayner, L., Steer, S. and Hotopf, M. (2013) The prevalence of depression in rheumatoid arthritis: a systematic review and meta-analysis. *Rheumatology (Oxford, England)*. [Online] 52 (12), 2136–2148. Available at: doi:10.1093/rheumatology/ket169.

Mathijssen, E.G., Vriezekolk, J.E., Eijsbouts, A.M., Van Den Hoogen, F.H., et al. (2018) Support needs for medication use and the suitability of eHealth technologies to address these needs: a focus group study of older patients with rheumatoid arthritis. *Patient Preference and Adherence*. [Online] Volume 12349–358. Available at: doi:10.2147/PPA.S152759 (Accessed: 6 December 2023).

Matos, C., Marques, A., El Aoufy, K., Buerki, K., et al. (2023) OP0274-HPR PATIENTS' AND CLINICIANS' PERSPECTIVES AND EXPERIENCES ON EDUCATION AND SUPPORT ABOUT METHOTREXATE: FINDINGS FROM A SURVEY TO 24 EUROPEAN COUNTRIES. In: *Health Professionals in Rheumatology Abstracts*. [Online]. June 2023 BMJ Publishing

Group Ltd and European League Against Rheumatism. pp. 180–181. Available at: doi:10.1136/annrheumdis-2023-eular.6102 (Accessed: 8 January 2024).

McCaughan, E. and McKenna, H. (2007) Information-seeking behaviour of men newly diagnosed with cancer: a qualitative study. *Journal of Clinical Nursing*. [Online] 16 (11), 2105–2113. Available at: doi:10.1111/j.1365-2702.2006.01785.x.

McConnell-Henry, T., Chapman, Y. and Francis, K. (2009) Husserl and Heidegger: Exploring the disparity. *International Journal of Nursing Practice*. [Online] 15 (1), 7–15. Available at: doi:10.1111/j.1440-172X.2008.01724.x (Accessed: 4 January 2024).

McCormack, B. (2003) A conceptual framework for person-centred practice with older people. *International Journal of Nursing Practice*. [Online] 9 (3), 202–209. Available at: doi:10.1046/j.1440-172X.2003.00423.x (Accessed: 7 July 2024).

McCormack, B. and McCance, T. eds. (2017) *Person-centred practice in nursing and health care: theory and practice*. Second edition. Chichester, West Sussex, UK, Wiley Blackwell.

McCormack, B. and McCance, T.V. (2006) Development of a framework for person-centred nursing. *Journal of Advanced Nursing*. [Online] 56 (5), 472–479. Available at: doi:10.1111/j.1365-2648.2006.04042.x (Accessed: 6 January 2024).

Mcguire, L.C. (1996) Remembering what the doctor said: Organization and adults' memory for medical information. *Experimental Aging Research*. [Online] 22 (4), 403–428. Available at: doi:10.1080/03610739608254020 (Accessed: 2 January 2024).

McIntosh, C. and Cambridge University Press eds. (2013) *Cambridge advanced learner's dictionary*. Fourth edition. Cambridge, Cambridge Univ. Press.

McKenna, V.B., Sixsmith, J. and Barry, M.M. (2017) The relevance of context in understanding health literacy skills: Findings from a qualitative study. *Health Expectations*. [Online] 20 (5), 1049–1060. Available at: doi:10.1111/hex.12547 (Accessed: 7 July 2024).

Mehta, B., Pedro, S., Ozen, G., Kalil, A., et al. (2019) Serious infection risk in rheumatoid arthritis compared with non-inflammatory rheumatic and musculoskeletal diseases: a US national cohort study. *RMD open*. [Online] 5 (1), e000935. Available at: doi:10.1136/rmdopen-2019-000935.

Metoyer-Duran, C. (1993) The Information and Referral Process in Culturally Diverse Communities. *RQ*. 32 (3), 359–371.

MHRA (2020) *Methotrexate once-weekly for autoimmune diseases: new measures to reduce risk of fatal overdose due to inadvertent daily instead of weekly dosing* [Online]. Available at: https://www.gov.uk/drug-safety-update/methotrexate-once-weekly-for-autoimmune-diseases-new-measures-to-reduce-risk-of-fatal-overdose-due-to-inadvertent-daily-instead-of-weekly-dosing#review-of-medication-errors-with-once-weekly-methotrexate.

Mistry, P. and Jabbal, J. (2023) *Moving from exclusion to inclusion in digital health and care* [Online]. Available at: https://www.kingsfund.org.uk/insight-and-analysis/long-reads/exclusion-inclusion-digital-health-care#what-is-digital-exclusion-in-health-and-care? (Last accessed: 24 February 2024).

Moloney, C., Gow, J., Beccaria, G., Mullens, A., et al. (2023) Understanding COPD Emergency Department presentations: using thematic analysis to explore the voices of patients, nurses, and doctors on the lived experience of managing COPD. *Australian Journal of Advanced Nursing*. [Online] 40 (1). Available at: doi:10.37464/2023.401.195 (Accessed: 3 January 2024).

Moola, S., Munn, Z., Sears, K., Sfetcu, R., et al. (2015) Conducting systematic reviews of association (etiology): The Joanna Briggs Institute's approach. *International Journal of Evidence-Based Healthcare*. [Online] 13 (3), 163–169. Available at: doi:10.1097/XEB.0000000000000064.

Moola, S., Munn, Z. and Tufanaru, C. (2020) Chapter 7: Systematic reviews of etiology and risk. In: *JBI Manual for Evidence Synthesis*. [Online]. JBI. p. Available at: doi:10.46658/JBIMES-20-08 (Accessed: 8 January 2024).

Morgan, D.L. (2019) *Basic and advanced focus groups*. Los Angeles, SAGE.

Morrison, T., Foster, E., Dougherty, J. and Barton, J. (2022) Shared decision making in rheumatology: A scoping review. *Seminars in Arthritis and Rheumatism*. [Online] 56152041. Available at: doi:10.1016/j.semarthrit.2022.152041 (Accessed: 7 July 2024).

Morse, J.M. (1995) The Significance of Saturation. *Qualitative Health Research*. [Online] 5 (2), 147–149. Available at: doi:10.1177/104973239500500201 (Accessed: 6 January 2024).

Moustakas, C. (1994) *Phenomenological research methods*. [Online]. 2455 Teller Road, Thousand Oaks California 91320 United States of America, SAGE Publications, Inc. Available at: doi:10.4135/9781412995658 (Accessed: 4 January 2024).

Nadesalingam, K. and Short, C. (2020) P74 Group counselling: a holistic care model. *Rheumatology*. [Online] 59 (Supplement_2), keaa111.073. Available at: doi:10.1093/rheumatology/keaa111.073 (Accessed: 6 December 2023).

Nakafero, G., Grainge, M.J., Williams, H.C., Card, T., et al. (2023) Risk stratified monitoring for methotrexate toxicity in immune mediated inflammatory diseases: prognostic model development and validation using primary care data from the UK. *BMJ*. [Online] e074678. Available at: doi:10.1136/bmj-2022-074678 (Accessed: 8 January 2024).

Nash, P. and Nicholls, D. (2013) Perceptions of methotrexate use in rheumatoid arthritis by rheumatologists and their patients: an Australian survey study. *International Journal of Rheumatic Diseases*. [Online] 16 (6), 652–661. Available at: doi:10.1111/1756-185X.12183 (Accessed: 6 December 2023).

National Patient Safety Agency (2004) *Patient safety alert. towards the safer use of oral methotrexate*

NHSE (2024) *NHS England: Person-centred care: Workforce, training and education* [Online]. Available at: https://www.hee.nhs.uk/our-work/person-centred-care (Accessed: 7 July 2024).

Ndosi, M., Lewis, M., Hale, C., Quinn, H., et al. (2014) The outcome and cost-effectiveness of nurse-led care in people with rheumatoid arthritis: a multicentre randomised controlled trial. *Annals of the Rheumatic Diseases*. [Online] 73 (11), 1975–1982. Available at: doi:10.1136/annrheumdis-2013-203403.

Ndosi, M., Vinall, K., Hale, C., Bird, H., et al. (2011) The effectiveness of nurse-led care in people with rheumatoid arthritis: A systematic review. *International Journal of Nursing Studies*. [Online] 48 (5), 642–654. Available at: doi:10.1016/j.ijnurstu.2011.02.007 (Accessed: 8 January 2024).

Neville, S., Adams, J. and Cook, C. (2016) Using internet-based approaches to collect qualitative data from vulnerable groups: reflections from the field. *Contemporary Nurse*. [Online] 52 (6), 657–668. Available at: doi:10.1080/10376178.2015.1095056.

NHSE (2023) *Health Literacy Toolkit* [Online]. Available at: https://library.nhs.uk/wp-content/uploads/sites/4/2023/06/Health-Literacy-Toolkit.pdf.

NICE (2021a) *Management of inflammatory arthritis* [Online]. Available at: https://www.nice.org.uk/about/what-we-do/into-practice/measuring-the-use-of-nice-guidance/impact-of-our-guidance/nice-impact-arthritis/management-of-inflammatory-arthritis (Accessed: 1 September 2023).

NICE (2018) *Rheumatoid Arthritis in Adults: Management (NICE Guidelines NG100)* [Online]. Available at: https://www.nice.org.uk/guidance/ng100/resources/rheumatoid-arthritis-in-adults-management-pdf-66141531233989.

NICE (2021b) *Shared Decision Making* [Online]. Available at: doi:https://www.nice.org.uk/guidance/ng197/chapter/recommendations#shared-decision-making.

Nikiphorou, E., Santos, E.J.F., Marques, A., Böhm, P., et al. (2021) 2021 EULAR recommendations for the implementation of self-management strategies in patients with inflammatory arthritis. *Annals of the Rheumatic Diseases*. [Online] 80 (10), 1278–1285. Available at: doi:10.1136/annrheumdis-2021-220249.

NMC (2018) *Future nurse: Standards of proficiency for registered nurses* [Online]. Available at: https://www.nmc.org.uk/standards/standards-for-nurses/.

NMC (2015) *The Code: Professional standards of practice and behaviour for nurses, midwives and nursing associates* [Online]. Available at:

https://www.nmc.org.uk/globalassets/sitedocuments/nmc-publications/nmc-code.pdf.

Nowell, W.B., Karis, E., Gavigan, K., Stradford, L., et al. (2022) Patient-Reported Nausea and Fatigue Related to Methotrexate: A Prospective, Self-Controlled Study in the ArthritisPower® Registry. *Rheumatology and Therapy*. [Online] 9 (1), 207–221. Available at: doi:10.1007/s40744-021-00398-6 (Accessed: 7 January 2024).

Noyes, J., Booth, A., Cargo, M., Flemming, K., et al. (2019) Qualitative evidence. In: Julian P.T. Higgins, James Thomas, Jacqueline Chandler, Miranda Cumpston, et al. (eds.). *Cochrane Handbook for Systematic Reviews of Interventions*. 1st edition. [Online]. Wiley. pp. 525–545. Available at: doi:10.1002/9781119536604.ch21 (Accessed: 8 January 2024).

NPSA (2006) *Patient safety alert: improving compliance with oral methotrexate guidelines.*

NPSA (2004) *Patient safety alert. towards the safer use of oral methotrexate. document*

NRAS (n.d.) *Information about Rheumatoid Arthritis* [Online]. Available at: https://nras.org.uk/information-support/information/ (Accessed: 1 September 2023).

Nune, A., Iyengar, K.P., Ahmed, A., Bilgrami, S., et al. (2021) Impact of COVID-19 on rheumatology practice in the UK—a pan-regional rheumatology survey. *Clinical Rheumatology*. [Online] 40 (6), 2499–2504. Available at: doi:10.1007/s10067-021-05601-1 (Accessed: 8 January 2024).

O'Cathain, A., Croot, L., Duncan, E., Rousseau, N., et al. (2019) Guidance on how to develop complex interventions to improve health and healthcare. *BMJ open*. [Online] 9 (8), e029954. Available at: doi:10.1136/bmjopen-2019-029954.

Office for National Statistics (2021) *Ethnic Group, England and Wales: Census 2021.* [Online]. Available at: https://www.ons.gov.uk/peoplepopulationandcommunity/culturalidentity/ethnicity/bulletins/ethnicgroupenglandandwales/census2021 (Accessed: 1 December 2022).

Olive, J.L. (2014) Reflecting on the Tensions Between Emic and Etic Perspectives in Life History Research: Lessons Learned. *Forum Qualitative Sozialforschung / Forum: Qualitative Social Research*. [Online] Vol 15No 2 (2014). Available at: doi:10.17169/FQS-15.2.2072 (Accessed: 4 January 2024).

Olson, C.A. (2013) Using the Grey Literature to Enhance Research and Practice in Continuing Education for Health Professionals. *Journal of Continuing Education in the Health Professions*. [Online] 33 (1), 1–3. Available at: doi:10.1002/chp.21159 (Accessed: 3 January 2024).

Oncology Nursing Association (2024) *Tailored information* [Online]. Available at: https://www.ons.org/node/ (Accessed: 7 July 2024).

Opdenakker, R.J.G. (2006) Advantages and disadvantages of four interview techniques in qualitative research. *Qualitative Social Research*. 7 (4), art-11.

Otón, T., Carmona, L. and Andreu, J.L. (2022) Patient's experiences of the barriers and facilitators to Methotrexate. *Musculoskeletal Care*. [Online] 20 (1), 158–166. Available at: doi:10.1002/msc.1577 (Accessed: 6 December 2023).

Otón, T., Carmona, L. and Andreu, J.L. (2023a) What do patients on methotrexate need and expect at the clinic? An online patient survey. *Rheumatology International*. [Online] 43 (4), 735–741. Available at: doi:10.1007/s00296-022-05249-3.

Otón, T., Carmona, L. and Andreu, J.L. (2023b) What do patients on methotrexate need and expect at the clinic? An online patient survey. *Rheumatology International*. [Online] 43 (4), 735–741. Available at: doi:10.1007/s00296-022-05249-3.

Packham, J., Arkell, P., Sheeran, T., Brownfield, A., et al. (2017) Patient experiences, attitudes and expectations towards receiving information about anti-TNF medication: a quantitative study. *Clinical Rheumatology*. [Online] 36 (11), 2595–2600. Available at: doi:10.1007/s10067-017-3642-5 (Accessed: 6 December 2023).

Page, M.J., McKenzie, J.E., Bossuyt, P.M., Boutron, I., et al. (2021) The PRISMA 2020 statement: An updated guideline for reporting systematic reviews. *International Journal of Surgery*. [Online] 88105906. Available at: doi:10.1016/j.ijsu.2021.105906 (Accessed: 6 December 2023).

Painter, J.E., Borba, C.P.C., Hynes, M., Mays, D., et al. (2008) The Use of Theory in Health Behavior Research from 2000 to 2005: A Systematic Review. *Annals of Behavioral Medicine*. [Online] 35 (3), 358–362. Available at: doi:10.1007/s12160-008-9042-y (Accessed: 7 July 2024).

Papakonstantinou, D. (2021) Work disability and rheumatoid arthritis: Predictive factors. *Work*. [Online] 69 (4), 1293–1304. Available at: doi:10.3233/WOR-213550 (Accessed: 6 January 2024).

Pasma, A., Hazes, J.M.W., Busschbach, J.J.V., Van Der Laan, W.H., et al. (2017) Psychosocial predictors of DMARD adherence in the first three months of treatment for early arthritis. *Patient Education and Counseling*. [Online] 100 (1), 126–132. Available at: doi:10.1016/j.pec.2016.07.019 (Accessed: 2 January 2024).

Pasma, A., van 't Spijker, A., Luime, J.J., Walter, M.J.M., et al. (2015) Facilitators and barriers to adherence in the initiation phase of Disease-modifying Antirheumatic Drug (DMARD) use in patients with arthritis who recently started their first DMARD treatment. *The Journal of Rheumatology*. [Online] 42 (3), 379–385. Available at: doi:10.3899/jrheum.140693.

Pasma, A., Van'T Spijker, A., Hazes, J.M.W., Busschbach, J.J.V., et al. (2013) Factors associated with adherence to pharmaceutical treatment for rheumatoid arthritis patients: A systematic review. *Seminars in Arthritis and Rheumatism*. [Online] 43 (1), 18–28. Available at: doi:10.1016/j.semarthrit.2012.12.001 (Accessed: 6 January 2024).

Pelzang, R. (2010) Time to learn: understanding patient-centred care. *British Journal of Nursing*. [Online] 19 (14), 912–917. Available at: doi:10.12968/bjon.2010.19.14.49050 (Accessed: 2 January 2024).

Pietkiewicz, I. and Smith, J. (2014) A practical guide to using Interpretative Phenomenological Analysis in qualitative research psychology. *Czasopismo Psychologiczne Psychological Journal*. [Online] 20 (1). Available at: doi:10.14691/CPPJ.20.1.7 (Accessed: 4 January 2024).

Pinto, R.Z., Ferreira, M.L., Oliveira, V.C., Franco, M.R., et al. (2012) Patient-centred communication is associated with positive therapeutic alliance: a systematic review. *Journal of Physiotherapy*. [Online] 58 (2), 77–87. Available at: doi:10.1016/S1836-9553(12)70087-5

Poh, L.W., He, H. -G., Lee, C.S.C., Cheung, P.P., et al. (2015) An integrative review of experiences of patients with rheumatoid arthritis. *International Nursing Review*. [Online] 62 (2), 231–247. Available at: doi:10.1111/inr.12166 (Accessed: 3 January 2024).

Popay, J., Roberts, H., Sowden, A., Petticrew, M., et al. (2006) *Guidance on the conduct of narrative synthesis in systematic reviews: A product from the ESRC Methods Programme*. [Online]. Lancaster University. Available at: doi:10.13140/2.1.1018.4643 (Accessed: 3 January 2024).

Pope, C. and Mays, N. eds. (2020) *Qualitative Research in Health Care*. 1st edition. [Online]. Wiley. Available at: doi:10.1002/9781119410867 (Accessed: 4 January 2024).

Porritt, K., Gomersall, J. and Lockwood, C. (2014) JBI's Systematic Reviews: Study Selection and Critical Appraisal. *AJN, American Journal of Nursing*. [Online] 114 (6), 47–52. Available at: doi:10.1097/01.NAJ.0000450430.97383.64 (Accessed: 8 January 2024).

Purssell, E. and Gould, D. (2021) Undertaking qualitative reviews in nursing and education - A method of thematic analysis for students and clinicians. *International Journal of Nursing Studies Advances*. [Online] 3100036. Available at: doi:10.1016/j.ijnsa.2021.100036 (Accessed: 3 January 2024).

Rai, S.K., Howren, A., Wilcox, E., Townsend, A.F., et al. (2018) Exploring strategies to support medication adherence in patients with inflammatory arthritis: a patient-oriented qualitative study using an interactive focus group activity. *Patient Preference and Adherence*. [Online] Volume 122015–2025. Available at: doi:10.2147/PPA.S174672 (Accessed: 6 December 2023).

Rathbone, J., Carter, M., Hoffmann, T. and Glasziou, P. (2016) A comparison of the performance of seven key bibliographic databases in identifying all relevant systematic reviews of interventions for hypertension. *Systematic Reviews*. [Online] 5 (1), 27. Available at: doi:10.1186/s13643-016-0197-5 (Accessed: 3 January 2024).

Ray, M. (1994) The richness of phenomenology: Philosophic, theoretic and methodolgical concerns. In: *Critical Issues in Qualitative Research Methods.* US, Sage. pp. 117–134.

RCN (2020) *A Competency Framework for Rheumatology Nurses* [Online]. Available at: https://www.rcn.org.uk/Professional-Development/publications/pub-009004 (Accessed: 12 November 2023).

RCN (2021) *Administering Subcutaneous Methotrexate for Inflammatory Arthritis* [Online]. Available at: https://www.rcn.org.uk/Professional-Development/publications/administering-subcutaneous-methotrexate-for-inflammatory-arthritis-uk-pub-009-675 (Accessed: 11 November 2023).

RCN (2022) *Rheumatology Nurse Competency Framework Evaluation Report* [Online]. Available at: https://www.rcn.org.uk/Professional-Development/publications/rheumatology-nurse-competency-framework-evaluation-report-uk-pub-009-993#detailTab.

Reddy, A., Sessums, L., Gupta, R., Jin, J., et al. (2017) Risk Stratification Methods and Provision of Care Management Services in Comprehensive Primary Care Initiative Practices. *The Annals of Family Medicine*. [Online] 15 (5), 451–454. Available at: doi:10.1370/afm.2124 (Accessed: 2 January 2024).

van Riel, P.L.C.M. and Renskers, L. (2016) The Disease Activity Score (DAS) and the Disease Activity Score using 28 joint counts (DAS28) in the management of rheumatoid arthritis. *Clinical and Experimental Rheumatology*. 34 (5 Suppl 101), S40–S44.

Riemsma, R.P., Taal, E., Kirwan, J.R. and Rasker, J.J. (2004) Systematic review of rheumatoid arthritis patient education. *Arthritis Care & Research*. [Online] 51 (6), 1045–1059. Available at: doi:10.1002/art.20823 (Accessed: 7 July 2024).

Rinaldi, C., D'Alleva, A., Leigheb, F., Vanhaecht, K., et al. (2019) Defensive practices among non-medical health professionals: An overview of the scientific literature. *Journal of Healthcare Quality Research*. [Online] 34 (2), 97–108. Available at: doi:10.1016/j.jhqr.2018.12.005 (Accessed: 7 July 2024).

Robinson, O.C. (2014) Sampling in Interview-Based Qualitative Research: A Theoretical and Practical Guide. *Qualitative Research in Psychology*. [Online] 11 (1), 25–41. Available at: doi:10.1080/14780887.2013.801543 (Accessed: 6 January 2024).

Robinson, S., Adebajo, A. and Walker, D. (2023) Viewpoint: Nurses educating patients about drugs. *Rheumatology*. [Online] kead593. Available at: doi:10.1093/rheumatology/kead593 (Accessed: 6 December 2023).

Robinson, S., Gibson, S., George, E., Martin, U., et al. (2016) Tolerability and Adherence Problems in Patients on a Stable Dose of Methotrexate: Results of a Multicentre Survey. *Musculoskeletal Care*. [Online] 14 (3), 152–155. Available at: doi:10.1002/msc.1129 (Accessed: 6 January 2024).

Robinson, S., Hassell, A., Ryan, S., Adams, N., et al. (2017) A national survey of nurse training: Confidence and competence in educating patients commencing methotrexate therapy. *Musculoskeletal Care*. [Online] 15 (3), 281–292. Available at: doi:10.1002/msc.1212 (Accessed: 6 December 2023).

Robinson, S., Heslop, P. and Walker, D. (2012) What Do Patients Put up with for the Benefit They Get From Methotrexate?. *Arthritis and Rheumatism*. 64 (10), pS737-737.

Robinson, S.M., Ryan, S., Adams, N., Hassell, A., et al. (2018) An exploration of the experiences of rheumatology nurses counselling patients on methotrexate therapy. *Musculoskeletal Care*. [Online] 16 (4), 463–470. Available at: doi:10.1002/msc.1361 (Accessed: 6 January 2024).

Rollnick, S. and Miller, W.R. (1995) What is Motivational Interviewing? *Behavioural and Cognitive Psychotherapy*. [Online] 23 (4), 325–334. Available at: doi:10.1017/S135246580001643X (Accessed: 18 July 2024).

Roodenrijs, N.M.T., Van Der Goes, M.C., Welsing, P.M.J., Van Oorschot, E.P.C., et al. (2021) Non-adherence in difficult-to-treat rheumatoid arthritis from the perspectives of patients and rheumatologists: a concept mapping study. *Rheumatology*. [Online] 60 (11), 5105–5116. Available at: doi:10.1093/rheumatology/keab130 (Accessed: 10 July 2024).

Roter, D. and Hall, J. (2006) *Doctors talking with patients/patients talking with doctors.* torrosa.com.

Rowlands, G., Protheroe, J., Winkley, J., Richardson, M., et al. (2015) A mismatch between population health literacy and the complexity of health information: an observational study. *British Journal of General Practice*. [Online] 65 (635), e379–e386. Available at: doi:10.3399/bjgp15X685285 (Accessed: 7 July 2024).

Russell, M.D., Dey, M., Flint, J., Davie, P., et al. (2023) British Society for Rheumatology guideline on prescribing drugs in pregnancy and breastfeeding: immunomodulatory anti-rheumatic drugs and corticosteroids. *Rheumatology*. [Online] 62 (4), e48–e88. Available at: doi:10.1093/rheumatology/keac551 (Accessed: 2 January 2024).

Russell, M.D., Galloway, J.B., Andrews, C.D., MacKenna, B., et al. (2022) Incidence and management of inflammatory arthritis in England before and during the COVID-19 pandemic: a population-level cohort study using OpenSAFELY. *The Lancet. Rheumatology*. [Online] 4 (12), e853–e863. Available at: doi:10.1016/S2665-9913(22)00305-8.

Ryan, G. (2018) Introduction to positivism, interpretivism and critical theory. *Nurse Researcher*. [Online] 25 (4), 14–20. Available at: doi:10.7748/nr.2018.e1466 (Accessed: 6 January 2024).

Ryan, S., Bullock, L., Manning, F., A. Chew-Graham, C., et al. (2023) Exploring the treatment burden of disease-modifying anti-rheumatic drug monitoring in people with rheumatoid arthritis. *Rheumatology Advances in Practice*. [Online] 7 (2), rkad054. Available at: doi:10.1093/rap/rkad054 (Accessed: 6 January 2024).

Saarijärvi, M. and Bratt, E.-L. (2021) When face-to-face interviews are not possible: tips and tricks for video, telephone, online chat, and email interviews in qualitative research. *European Journal of Cardiovascular Nursing*. [Online] 20 (4), 392–396. Available at: doi:10.1093/eurjcn/zvab038 (Accessed: 4 January 2024).

Sahni, A., Kirkpatrick, P. and Lloyd, M. (2018) O31 Value for money: a biologic pharmacist clinic. *Rheumatology*. [Online] 57 (suppl_3). Available at: doi:10.1093/rheumatology/key075.213 (Accessed: 2 January 2024).

Salisbury, D., Ramsay, M. and Noakes, K. (2006) *Immunisation against infections diseases*. [Online]. Available at: https://www.gov.uk/government/collections/immunisation-against-infectious-disease-the-green-book#the-green-book (Accessed: 1 January 2021).

Salt, E. and Peden, A. (2011) The Complexity of the Treatment: The Decision-Making Process Among Women With Rheumatoid Arthritis. *Qualitative Health Research*. [Online] 21 (2), 214–222. Available at: doi:10.1177/1049732310381086 (Accessed: 3 January 2024).

Sandelowski, M. (1995) Sample size in qualitative research. *Research in Nursing & Health*. [Online] 18 (2), 179–183. Available at: doi:10.1002/nur.4770180211 (Accessed: 6 January 2024).

Sandelowski, M. (1998) Writing a good read: strategies for re-presenting qualitative data. *Research in Nursing & Health*. [Online] 21 (4), 375–382. Available at: doi:10.1002/(sici)1098-240x(199808)21:4<375::aid-nur9>3.0.co;2-c.

Sandelowski, M., Voils, C.I. and Barroso, J. (2006) Defining and Designing Mixed Research Synthesis Studies. *Research in the Schools: A Nationally Refereed Journal Sponsored by the Mid-South Educational Research Association and the University of Alabama*. 13 (1), 29.

Saunders, M. and Bristow, A. (2014) *Heightening awareness of research philosophy: the development of a reflexive tool for use with students.* In: 2014 Belfast. p.

Saunders, M., Lewis, P. and Thornhill, A. (2016) *Research methods for business students*. Always learning. 7th edition. Harlow Munich, Pearson.

Saunders, M.N.K., Lewis, P. and Thornhill, A. (2009) *Research methods for business students*. 5th ed. New York, Prentice Hall.

Savage, J. (2000) Ethnography and health care. *BMJ*. [Online] 321 (7273), 1400–1402. Available at: doi:10.1136/bmj.321.7273.1400 (Accessed: 4 January 2024).

Scherer, R.W. and Saldanha, I.J. (2019) How should systematic reviewers handle conference abstracts? A view from the trenches. *Systematic Reviews*. [Online] 8 (1), 264. Available at: doi:10.1186/s13643-019-1188-0 (Accessed: 3 January 2024).

Scotland, J. (2012) Exploring the Philosophical Underpinnings of Research: Relating Ontology and Epistemology to the Methodology and Methods of the Scientific, Interpretive, and Critical Research Paradigms. *English Language Teaching*. [Online] 5 (9), p9. Available at: doi:10.5539/elt.v5n9p9 (Accessed: 4 January 2024).

Sen, D., González-Mayda, M. and Brasington, R.D. (2014) Cardiovascular disease in rheumatoid arthritis. *Rheumatic Diseases Clinics of North America*. [Online] 40 (1), 27–49. Available at: doi:10.1016/j.rdc.2013.10.005.

Sharma, A., Minh Duc, N.T., Luu Lam Thang, T., Nam, N.H., et al. (2021) A Consensus-Based Checklist for Reporting of Survey Studies (CROSS). *Journal of General Internal Medicine*. [Online] 36 (10), 3179–3187. Available at: doi:10.1007/s11606-021-06737-1 (Accessed: 3 January 2024).

Shea, B., Swinden, M.V., Tanjong Ghogomu, E., Ortiz, Z., et al. (2013) Folic acid and folinic acid for reducing side effects in patients receiving methotrexate for rheumatoid arthritis Cochrane Musculoskeletal Group (ed.). *Cochrane Database of Systematic Reviews*. [Online] 2014 (7). Available at: doi:10.1002/14651858.CD000951.pub2 (Accessed: 7 January 2024).

Sherbini, A.A., Gwinnutt, J.M., Hyrich, K.L., RAMS Co-Investigators, et al. (2022) Rates and predictors of methotrexate-related adverse events in patients with early rheumatoid arthritis: results from a nationwide UK study. *Rheumatology*. [Online] 61 (10), 3930–3938. Available at: doi:10.1093/rheumatology/keab917 (Accessed: 8 February 2024).

Sherbini, A.A., Sharma, S.D., Gwinnutt, J.M., Hyrich, K.L., et al. (2021) Prevalence and predictors of adverse events with methotrexate mono- and combination-therapy for rheumatoid arthritis: a systematic review. *Rheumatology*. [Online] 60 (9), 4001–4017. Available at: doi:10.1093/rheumatology/keab304 (Accessed: 3 January 2024).

Shersher, V., Haines, T.P., Sturgiss, L., Weller, C., et al. (2021) Definitions and use of the teach-back method in healthcare consultations with patients: A systematic review and thematic synthesis. *Patient Education and Counseling*. [Online] 104 (1), 118–129. Available at: doi:10.1016/j.pec.2020.07.026 (Accessed: 2 January 2024).

Silman, A.J. and Pearson, J.E. (2002) Epidemiology and genetics of rheumatoid arthritis. *Arthritis Research*. [Online] 4 (Suppl 3), S265. Available at: doi:10.1186/ar578 (Accessed: 7 January 2024).

Silverman, D. (2022) *Doing qualitative research*. 6E, sixth edition edition. Los Angeles ; SAGE.

Sim, J., Saunders, B., Waterfield, J. and Kingstone, T. (2018) Can sample size in qualitative research be determined a priori? *International Journal of Social Research*

Methodology. [Online] 21 (5), 619–634. Available at: doi:10.1080/13645579.2018.1454643 (Accessed: 3 January 2024).

Singh, J.A., Saag, K.G., Bridges, S.L., Akl, E.A., et al. (2016) 2015 American College of Rheumatology Guideline for the Treatment of Rheumatoid Arthritis. *Arthritis & Rheumatology*. [Online] 68 (1), 1–26. Available at: doi:10.1002/art.39480 (Accessed: 7 January 2024).

Smith, J. (2004) Reflecting on the development of interpretative phenomenological analysis and its contribution to qualitative research in psychology. *Qualitative Research in Psychology*. [Online] 1 (1), 39–54. Available at: https://www.tandfonline.com/doi/abs/10.1191/1478088704qp004oa.

Smith, J.A. and Osborn, M. (2015) Interpretative phenomenological analysis as a useful methodology for research on the lived experience of pain. *British Journal of Pain*. [Online] 9 (1), 41–42. Available at: doi:10.1177/2049463714541642 (Accessed: 4 January 2024).

Smith, R.C. and Hoppe, R.B. (1991) The patient's story: integrating the patient- and physician-centered approaches to interviewing. *Annals of Internal Medicine*. [Online] 115 (6), 470–477. Available at: doi:10.7326/0003-4819-115-6-470.

Smolen, J.S. and Aletaha, D. (2010) The assessment of disease activity in rheumatoid arthritis. *Clinical and Experimental Rheumatology*. 28 (3 Suppl 59), S18-27.

Smolen, J.S., Landewé, R.B.M., Bijlsma, J.W.J., Burmester, G.R., et al. (2020) EULAR recommendations for the management of rheumatoid arthritis with synthetic and biological disease-modifying antirheumatic drugs: 2019 update. *Annals of the Rheumatic Diseases*. [Online] 79 (6), 685–699. Available at: doi:10.1136/annrheumdis-2019-216655 (Accessed: 14 July 2024).

Staa, T.P.V., Geusens, P., Bijlsma, J.W.J., Leufkens, H.G.M., et al. (2006) Clinical assessment of the long-term risk of fracture in patients with rheumatoid arthritis. *Arthritis & Rheumatism*. [Online] 54 (10), 3104–3112. Available at: doi:10.1002/art.22117 (Accessed: 7 January 2024).

Stavri, P.Z. (2001) Personal health information-seeking: a qualitative review of the literature. *Studies in Health Technology and Informatics*. 84 (Pt 2), 1484–1488.

Stern, C., Lizarondo, L., Carrier, J., Godfrey, C., et al. (2020) Methodological guidance for the conduct of mixed methods systematic reviews. *JBI evidence synthesis*. [Online] 18 (10), 2108–2118. Available at: doi:10.11124/JBISRIR-D-19-00169.

Stewart, M. ed. (2014) *Patient-centered medicine: transforming the clinical method*. Third edition. London, Radcliffe Publishing.

Sweeney, A.T., Flurey, C.A., McCabe, C.S., Robson, J.C., et al. (2023) Nurse-led care for people with early rheumatoid arthritis: Interview study with thematic analysis.

Musculoskeletal Care. [Online] 21 (4), 1651–1661. Available at: doi:10.1002/msc.1844 (Accessed: 8 January 2024).

Sweeney, A.T., McCabe, C., Flurey, C.A., Robson, J.C., et al. (2021) The patient perspective of nurse-led care in early rheumatoid arthritis: A systematic review of qualitative studies with thematic analysis. *Journal of Clinical Nursing*. [Online] 30 (1–2), 145–160. Available at: doi:10.1111/jocn.15531 (Accessed: 7 January 2024).

Taibanguay, N., Chaiamnuay, S., Asavatanabodee, P. and Narongroeknawin, P. (2019) Effect of patient education on medication adherence of patients with rheumatoid arthritis: a randomized controlled trial. *Patient Preference and Adherence*. [Online] Volume 13119–129. Available at: doi:10.2147/PPA.S192008 (Accessed: 8 January 2024).

Tander, B., Cengiz, K., Alayli, G., İlhanli, İ., et al. (2008) A comparative evaluation of health related quality of life and depression in patients with fibromyalgia syndrome and rheumatoid arthritis. *Rheumatology International*. [Online] 28 (9), 859–865. Available at: doi:10.1007/s00296-008-0551-6 (Accessed: 2 January 2024).

Tarpey, 2015 (n.d.) INVOLVE:What is public involvemet in research. *National Institue for Health and Care Research*. [Online] Available at: http://www.invo.org.uk/find-out-more/what-is-public-involvement-in-research-2/ (Accessed: 23 September 2023).

Thompson, R.N., Watts, C., Edelman, J., Esdaile, J., et al. (1984) A controlled two-centre trial of parenteral methotrexate therapy for refractory rheumatoid arthritis. *The Journal of Rheumatology*. 11 (6), 760–763.

Tong, A., Sainsbury, P. and Craig, J. (2007) Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. *International Journal for Quality in Health Care*. [Online] 19 (6), 349–357. Available at: doi:10.1093/intqhc/mzm042 (Accessed: 3 January 2024).

Townsend, A., Backman, C.L., Adam, P. and Li, L.C. (2013) A qualitative interview study: patient accounts of medication use in early rheumatoid arthritis from symptom onset to early postdiagnosis: Table 1. *BMJ Open*. [Online] 3 (2), e002164. Available at: doi:10.1136/bmjopen-2012-002164 (Accessed: 3 January 2024).

Treharne, G.J., Douglas, K.M.J., Iwaszko, J., Panoulas, V.F., et al. (2007) Polypharmacy among people with rheumatoid arthritis: the role of age, disease duration and comorbidity. *Musculoskeletal Care*. [Online] 5 (4), 175–190. Available at: doi:10.1002/msc.112 (Accessed: 6 January 2024).

Turan, N. and Kaya, N. (2019) The Defensive Practices of Nurses. *Journal of Health Sciences*. [Online] Available at: doi:10.17532/jhsci.2019.710

UK Public Involvement Standards Development Partnership group. (2019) *UK Public Involvement Standards: Better public involvement for better health and social care.* [Online]. Available at: https://www.nihr.ac.uk/pi-standards/ (Accessed: 1 January 2021).

Van Biljon, H., Du Toit, S.H.J., Masango, J. and Casteleijn, D. (2017) Exploring service delivery in occupational therapy: The use of convergent interviewing. *Work*. [Online] 57 (2), 221–232. Available at: doi:10.3233/WOR-172557 (Accessed: 3 January 2024).

Van de Ven, A. and Delbecq, A.L. (1971) Nominal versus interacting group process for committee decision-making effectiveness. *Academy of Management Journal*. 14 (2), 203.

Van Der Heijde, D., Aletaha, D., Carmona, L., Edwards, C.J., et al. (2015) 2014 Update of the EULAR standardised operating procedures for EULAR-endorsed recommendations. *Annals of the Rheumatic Diseases*. [Online] 74 (1), 8–13. Available at: doi:10.1136/annrheumdis-2014-206350 (Accessed: 2 January 2024).

Vaona, A., Pappas, Y., Grewal, R.S., Ajaz, M., et al. (2017) Training interventions for improving telephone consultation skills in clinicians Cochrane Effective Practice and Organisation of Care Group (ed.). *Cochrane Database of Systematic Reviews*. [Online] 2017 (2). Available at: doi:10.1002/14651858.CD010034.pub2 (Accessed: 2 January 2024).

Vena, G.A., Cassano, N. and Iannone, F. (2018) Update on subcutaneous methotrexate for inflammatory arthritis and psoriasis. *Therapeutics and Clinical Risk Management*. [Online] Volume 14105–116. Available at: doi:10.2147/TCRM.S154745 (Accessed: 7 January 2024).

VersusArthritis (2023a) *Methotrexate* [Online]. Available at: https://www.versusarthritis.org/search?query=Methotrexate (Accessed: 11 November 2023).

VersusArthritis (2023b) *-state-msk-musculoskeletal-health-2023-accessible.docx* [Online]. Available at: https://www.versusarthritis.org/media/25650/versus-arthritis (Accessed: 1 September 2023).

Vliet Vlieland, T.P.M., Van Den Ende, C.H.M., Alliot-Launois, F., Beauvais, C., et al. (2016) Educational needs of health professionals working in rheumatology in Europe. *RMD Open*. [Online] 2 (2), e000337. Available at: doi:10.1136/rmdopen-2016-000337 (Accessed: 2 January 2024).

Voshaar, M., Vriezekolk, J., Van Dulmen, S., Van Den Bemt, B., et al. (2016) Barriers and facilitators to disease-modifying antirheumatic drug use in patients with inflammatory rheumatic diseases: a qualitative theory-based study. *BMC Musculoskeletal Disorders*. [Online] 17 (1), 442. Available at: doi:10.1186/s12891-016-1289-z (Accessed: 6 December 2023).

Wang, W., Zhou, H. and Liu, L. (2018) Side effects of methotrexate therapy for rheumatoid arthritis: A systematic review. *European Journal of Medicinal Chemistry*. [Online] 158502–516. Available at: doi:10.1016/j.ejmech.2018.09.027 (Accessed: 7 January 2024).

Wasserman, A. (2018) Rheumatoid Arthritis: Common Questions About Diagnosis and Management. *American Family Physician*. 97 (7), 455–462.

Weinblatt, M.E. (2013) Methotrexate in rheumatoid arthritis: a quarter century of development. *Transactions of the American Clinical and Climatological Association*. 12416–25.

Weinblatt, M.E., Coblyn, J.S., Fox, D.A., Fraser, P.A., et al. (1985) Efficacy of Low-Dose Methotrexate in Rheumatoid Arthritis. *New England Journal of Medicine*. [Online] 312 (13), 818–822. Available at: doi:10.1056/NEJM198503283121303 (Accessed: 7 January 2024).

West, M., K Armit and Eckert, R. (2015) *Leadership and leadership development in health care: the evidence base*. London, The Kings Fund.

Williams, H.J., Willkens, R.F., Samuelson, C.O., Alarcón, G.S., et al. (1985) Comparison of low-dose oral pulse methotrexate and placebo in the treatment of rheumatoid arthritis. A Controlled Clinical Trial. *Arthritis & Rheumatism*. [Online] 28 (7), 721–730. Available at: doi:10.1002/art.1780280702 (Accessed: 7 January 2024).

Willkens, R.F. and Watson, M.A. (1982) Methotrexate: a perspective of its use in the treatment of rheumatic diseases. *The Journal of Laboratory and Clinical Medicine*. 100 (3), 314–321.

Wilsdon, T.D. and Hill, C.L. (2017) Managing the drug treatment of rheumatoid arthritis. *Australian Prescriber*. [Online] 40 (2), 51–58. Available at: doi:10.18773/austprescr.2017.012.

Woo, B.F.Y., Bulto, L.N., Hendriks, J.M.L., Lim, T.W., et al. (2023) The information needs of patients with atrial fibrillation: A scoping review. *Journal of Clinical Nursing*. [Online] 32 (9–10), 1521–1533. Available at: doi:10.1111/jocn.15993 (Accessed: 2 January 2024).

Wood, S. (2021) *Management of early rheumatoid arthritis with disease modifying anti- rheumatic drugs: guidelines, current practice and the role of community pharmacy*. PhD. [Online]. Manchester, England, University of Manchester. Available at: https://pure.manchester.ac.uk/ws/portalfiles/portal/248791187/FULL_TEXT.PDF (Accessed: 1 August 2023).

World Health Organisation (2015) *People-centred and integrated health services:an overview of the evidence; interim report.* [Online]. Available at: https://iris.who.int/bitstream/handle/10665/155004/WHO_HIS?sequence=1 (Accessed: 1 September 2023).

Wu, Z., Zhu, Y., Wang, Y., Zhou, R., et al. (2022) The Effects of Patient Education on Psychological Status and Clinical Outcomes in Rheumatoid Arthritis: A Systematic Review and Meta-Analysis. *Frontiers in Psychiatry*. [Online] 13848427. Available at: doi:10.3389/fpsyt.2022.848427.

Zangi, H.A., Ndosi, M., Adams, J., Andersen, L., et al. (2015) EULAR recommendations for patient education for people with inflammatory arthritis. *Annals of the Rheumatic Diseases*. [Online] 74 (6), 954–962. Available at: doi:10.1136/annrheumdis-2014-206807 (Accessed: 6 December 2023).

Zwikker, H.E., Van Den Ende, C.H., Van Lankveld, W.G., Den Broeder, A.A., et al. (2014) Effectiveness of a group-based intervention to change medication beliefs and improve medication adherence in patients with rheumatoid arthritis: A randomized controlled trial. *Patient Education and Counseling*. [Online] 94 (3), 356–361. Available at: doi:10.1016/j.pec.2013.12.002 (Accessed: 2 January 2024).