Title

Can interactive clinical avatars improve pre-registration pharmacists’ knowledge base?

Dr J. Thompson, Dr S. White, Professor S. Chapman

Keele University  
[j.f.thompson@keele.ac.uk](mailto:j.f.thompson@keele.ac.uk)

Introductory Line

The variability in pre-registration training experiences[1] and the increasing digital native generation of students[2] encourages the exploration of interactive clinical avatars (ICAs) as a learning tool.

Aim

To quantitatively assess the ability of ICAs to enhance the knowledge base of pre-registration pharmacists compared to non-interactive case studies.

Research Design and Methodology

Following institutional ethical approval, a purposive sample of pharmacist pre-registration trainees (2014-2015) were recruited from the hospital and community sectors via presentations and emails. Those who consented were randomly stratified based on their gender and training sector to receive three ICA or three non-interactive (control) case studies. Each case was associated with the same pre-and post-quiz to assess knowledge improvement from completing the cases. Both groups received case studies on the same topics: emergency hormonal contraception (EHC), renal function (RF) and childhood illnesses (CI), only differing in their presentation to allow comparison of the delivery methods.

Participants were emailed a link to the first pre-quiz. Once completed, they were directed to the first ICA or control case study and then onto the associated post-quiz. Trainees had access to each case study for one month and were required to complete all components (case, pre-and post-quiz) to receive the next case study and associated quizzes.

Answers on the pre-and post-quizzes were marked as ‘correct’ or ‘incorrect’. Results were analysed using descriptive and inferential statistics to determine knowledge improvement from using the cases (pre-to-post). A p-value of ≤0.05 was considered significant.

Results

In total, 165 pre-registration trainees were randomly stratified - 83 ICA group and 82 control group. The majority were female (72%), in their early twenties (mean age 23) and completing their training in a community pharmacy (56%). Similar response rates were observed for both groups; the control group had a higher overall completion rate of 44% (n=36) compared to 33% (n=27) in the ICA group.

For all three cases, trainees in both groups significantly answered more questions correctly on the post-quizzes (p≤0.05); EHC n=124 (98%), RF n=86 (97%), CI n=26 (96%) apart from the control group for the CI case (p=0.6); n=35 (97%). No significant differences were observed in knowledge improvement between the groups for any of the case studies (p>0.05); EHC n=100 (79%), RF n=63 (70%), CI n=46 (73%). Significant improvements in knowledge were found between the training sectors; the EHC case improved hospital-based trainees knowledge most significantly (p<0.05); n=54 (43%), whereas the RF (p<0.01); n=52 (58%), and CI (p<0.05); n=35 (56%) cases improved community-based trainees knowledge most significantly.

Conclusions

Significant improvements in knowledge were found between the training sectors which may have resulted from the variability in pre-registration experiences and support. No significant differences in knowledge improvement (pre-post) between the groups were found for any of the case study topics, indicating that the ICAs were not a superior learning tool, however this could be a limitation of the sample size. Both types of case study were an additional resource to ‘usual practice’ which may have impacted individuals’ learning. Further research evaluating ICAs against no intervention is required to determine their effectiveness as a learning tool.

References

[1]The General Pharmaceutical Council, Pre-registration Surveys 2014, Surveys of 2013/14 pre-registration trainees and tutors - summary of findings and points for consideration, (<https://www.pharmacyregulation.org/sites/default/files/gphc_response_to_2013-2014_pre-reg_surveys_final.pdf>)

[2]Prensky, M. (2001) ‘Digital natives, digital immigrants part 1’, *On the Horizon*, 9(5), pp. 1–6.