Replay, Revise, and Refresh: Smartphone-Based Refresher Training for Community Healthcare Workers in India

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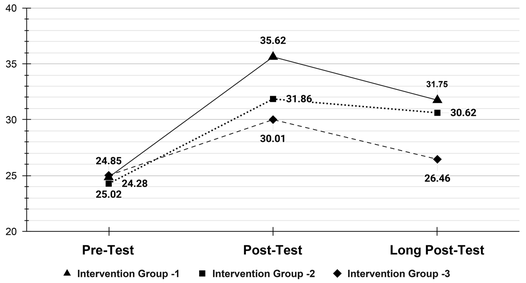
Abstract

In India, Community Healthcare Workers (CHWs) are the primary touchpoints between the state and the beneficiaries, such as pregnant mothers and children. Their healthcare knowledge directly impacts the quality of care they provide through home visits and community activities. Classroom in-person or traditional ways of training are found ineffective in imparting knowledge and render poor knowledge retention, which needs reinforcements through short, frequent revisions. Smartphone games on healthcare topics could be a promising solution as a refresher, as they can be scaled and tailored as per players' requirements. Previous studies have shown mixed effects of implementing quiz [1] and collaborative Augmented Reality (AR) games [2] for refresher training of CHWs. This study aims to check the differences in knowledge gain, pre and post-intervention, and, secondly, to check knowledge retention after six months. 270 CHWs or participants were recruited to evaluate different modes of refresher training and assigned into three equal groups of 90 each. The control group (CG) (n=90) was trained using the standard classroom method, which is usually followed. Intervention Group-1 (IG1)(n=90) was trained in a physical card game format, and Intervention Group-2 (IG2)(n=90) was trained in a smartphone game format. 4 sets of questionnaires were made by shuffling 45 questions based on immunization of equal weightage. The questionnaires were filled out by CHWs by hand and collected, evaluated, and analyzed. Paired t-tests were conducted to compare pre-post knowledge increments and Repeated Measure Analysis of Variance (RM-ANOVA) to check for differences in knowledge retention. Results suggest a significant difference in scores in all three groups. A significant difference was observed between the physical and digital gameplay modes. Pre-post knowledge increment was higher in the digital mode ($p<0.05$), but knowledge retained was not significantly different ($p=0.4$) in digital and physical card versions. Card games confirm their effectiveness in gaining knowledge when compared to classroom training. Through this research, we found that the gamified way of learning has an improved retention rate compared to the traditional training method.



The study compares the effectiveness of learning through two modes of refresher training for CHWs: traditional in-person refresher training and training through games (RQ1). We conducted user trials with groups of Community Healthcare Workers, and discussed ways to make it an adequate refresher training. We compared if there is a difference in knowledge acquisition between physical and digital card play (RQ2). Also, we compared if there is a difference in knowledge retention between physical and digital card play (RQ3). The study provides objective evidence to curriculum designers and decision-makers on implementing the method and the expected short- and long-term deployment outcome.

References

Majhi, A., Mondal, A., Joshi, A., Agnihotri, S. B., 2021. **Refresher Training through Quiz App for capacity building of Community Healthcare Workers or Anganwadi Workers in India**
CHI 2021: Asian CHI Symposium 2021, Yokohama, Japan, May 2021, ACM International Conference Proceeding Series.
https://dl.acm.org/doi/10.1145/3429360.3468186 [1]
Best Paper award

Majhi, A., Agnihotri, S. B., Mondal, A., 2023. **Physical and Augmented Reality based Playful Activities for Refresher Training of ASHA Workers in India** , CHI 2022: Asian CHI Symposium 2022, New Orleans, LA, April 2022, ACM International Conference Proceeding Series.
https://dl.acm.org/doi/10.1145/3516492.3558788 [2]
Best Paper and Best Presentation award

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