

A Systematic Review of Portable Electronic Technology for Health Education in Resource-limited Settings

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Objective: The objective of this study is to conduct a systematic review of the literature of how portable electronic technologies with off-line functionality are perceived and used to provide health education in resource-limited settings.

Methods: Three reviewers evaluated articles and performed a bibliography search to identify studies describing health education delivered by portable electronic device in low- or middle-income countries (defined by World Bank criteria) not requiring constant internet connection. Data extracted included type of technology, method of education, improvement in provider/patient knowledge, impact on provider/patient attitude towards care, and overall health outcomes.

Results: Searches yielded 6,790 titles, 5 met inclusion criteria. Four studies were qualitative, relying on surveys, interviews, questionnaires, or focus group discussions. The remaining quantitative study was a two-arm comparative study that assessed the use of internet-based versus locally loaded smartphone applications. A common educational use of mobile technology involved locally loaded, point-of-care applications used at the bedside and for self-directed learning at home. Study populations had small sample sizes (n=7-31) and were made up primarily of medical trainees or providers. Studies primarily looked at the assessment of developed educational modules on trainee health knowledge, perceptions and usability of technology, and comparisons of technologies. Overall, studies reported positive results for tablet-based health education, frequently reporting increased provider/patient knowledge, increased provider comfort level with technology, and an environment characterized by increased levels of technology-based, informal learning situations. Negative assessments included high investment costs and fear of theft of the device.

Conclusions: While the research is limited, portable electronic educational resources present promising avenues to increase access to effective healthcare education in resource-limited settings, contingent on the development of culturally adapted and functional materials to be used on such devices.