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REVIEW SUMMARIES

Summaries of systematic reviews on public health nursing-related issues from the Cochrane Library, Cochrane Nursing Care Field, and other evidence review organizations

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Multimedia Educational Interventions for Consumers about Prescribed and Over-the-Counter Medications

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This is a summary of a Cochrane Review: The full citation and the names of the researchers who conducted the Review are listed in the Reference section below:

Review Question

What are the effects of using multimedia patient education interventions when compared with traditional forms of educational delivery for prescribed and over-the-counter medications in patients and carers of all ages?

Keywords: medication skill acquisition, multimedia patient education, patient medication knowledge.

Type of Review

This is a summary of a Cochrane systematic review of 24 randomized control trials (RCTs) and quasi-RCTs of multimedia-based patient education compared with traditional forms of education interventions for prescribed or over-the-counter medications. The systematic review provides a narrative summary of 24 studies enrolling a total of 8112 participants meeting the inclusion criteria to evaluate the educational outcomes associated with knowledge, skill acquisition, and compliance with medications. The effects of multimedia education on the outcomes of patient satisfaction, self-efficacy and health outcomes were not reported due to the inadequate number of studies available for conclusive analysis. Significant heterogeneity in comparators between studies precluded the ability to pool data for aggregate results, perform meta-analysis, or derive conclusions regarding the clinical significance of differences between the outcomes measured. Multimedia education interventions are described as educational programs that use more than one format to provide information, including written words, diagrams and/or pictures combined with audio, animation, or video. Comparators included no education, usual care (non-standardized education provided as part of usual clinical care), control multimedia interventions (generic information), or co-interventions (written or brief standardized instructions provided by a health professional).

Relevance for Public Health Nursing

The consumer's need for access to timely, accurate, and evidence-based health information continues to

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be an ever-expanding component of healthcare, particularly in the public health setting where principles of self-care management are critical in maximizing patient engagement in health decisions. Self-care management incorporating medication safety is known to improve treatment outcomes; thus, evaluating educational methods best suited for patients encountered in the public health setting would strengthen effective patient teaching strategies contributing to desired outcomes.

Evidence suggests that traditional means of medication education (e.g., verbal communication between the provider and the patient supplemented with written materials) yield varied levels of success. Multimedia educational programs utilizing multiple formats tailored to a variety of consumer characteristics may offer potential advantages over traditional forms of education in the public health environment. Multimedia programs with flexibility in technology platforms provide access to information on a consumer-driven basis at a time and place where the information is actually needed and desired, potentially improving self-management skills in people with chronic disease. Although there are distinct advantages to be derived from multimedia programs, there is a concern that development, application, and widespread adoption of this platform may precede the evidence of efficacy to justify the associated costs.

Characteristics of the Evidence

This systematic review provides a summary of evidence from 24 studies including a total of 8112 participants of all ages, who had been prescribed a particular medication or medication regimen, or obtained an over-the-counter medication. Children and carers were included if the medication was prescribed for the child's use. Studies considered in the review also included participants who had received education about a particular medication, medication regime, or over-the-counter medication, regardless of whether or not they had actually been prescribed the medication or obtained the medication. Exclusion criteria included studies relating to unlicensed medications, vitamins, nutritional supplements, and/or complimentary medicines.

The extensive variability of the comparators and outcomes measured in different studies resulted in comparisons based upon subsets of data from participants within various studies. The heterogeneous nature of the instruments used for data collection and the outcomes selected for report in the various studies also limited the ability to compile data for direct comparison. Formulating conclusions to characterize the clinical significance of the study comparators and associated outcomes was also limited due to lack of information provided in the studies describing specific content of the multimedia interventions and comparators to evaluate the quality and differences between outcomes.

The intervention "multimedia education" refers to using a combination of at least two of the following formats: (1) text, still graphics or photographs; (2) animation and video; or (3) audio. Multimedia programs for review included interactive or tailored interventions, as well as interventions directed at participants prior to medication initiation and during the course of treatment. Criteria for inclusion also required the intervention to be designed to inform or educate consumers or carers about a particular medication or group of medications as the primary focus.

Multiple non-standardized comparators utilized across the 24 trials, regardless of the assessed risk of bias, included: (1) "no education"; (2) "usual care" (non-standardized education provided from health professionals involved in their care); (3) "control multimedia interventions" (multimedia programs that provide generic information, or information not pertaining to the medication or treatment considered in the study); and (4) "co-interventions" (written information or brief standardized instructions provided by a health professional).

Numerous outcomes were measured to a varying degree across multiple studies; however, only a summary list of primary outcomes of interest was selected for inclusion in the review: (1) Knowledge acquisition (patient or carer knowledge about the medication); (2) skill acquisition; (3) compliance; (4) disease-related outcomes; (4) adverse effects related to the medication; (5) quality of life; and (6) self-efficacy.

Knowledge Acquisition: Twenty-two of the 24 studies measured the primary outcomes of knowledge and/or skill acquisition. Pooled results from six studies provided statistically significant evidence that multimedia education is superior to "no education" or "usual care" to improve patient knowledge, although the quality of evidence is low (standardized mean difference: 1.04; 95% confidence intervals

[CI]: 0.49–1.58). The review also provided moderate quality evidence that multimedia education has a superior effect on knowledge when added to "co-interventions" (written information or brief standardized instructions provided by a health professional), as opposed to use of "co-interventions" alone (two studies with 381 participants: mean difference [MD]: 24.59; 95% CI: 22.34–26.83). Overall, the review authors suggest that multimedia education is superior to "usual care" for knowledge acquisition, but not superior when the health care professional provides "co-interventions" (written educational or instructional information provided by a health care professional) plus additional information that may include the same or similar information that would be provided in the multimedia education program.

Skill Acquisition: Studies included in the review evaluated skill acquisition relevant to the use of metered dose inhalers. There is statistically significant evidence of moderate quality that multimedia education was more effective than "usual care" or "no education" (MD: 18.32; 95% CI: 11.92–24.73, two studies with 94 participants). Multimedia education was also found to be statistically more effective in enhancing skill acquisition than the "co-intervention" of written education (Risk Ratio of improved inhaler technique 2.14, 95% CI: 1.33–3.44, two studies with 164 participants). Additionally, multimedia education was found to be an equally effective intervention when compared with "usual care" (MD of inhaler technique score −1.01%, 95% CI: −15.75 to 13.72, three studies with 130 participants); however, the quality of evidence is very low.

Compliance with Medications: There was moderate quality evidence indicating that multimedia education did not improve compliance with medication compared with "usual care" or "no education", based upon data from two studies with 4552 participants (RR of complying 1.02, 95% CI: 0.96–1.08).

Disease-related outcomes, adverse effects related to medications, quality of life, and self-efficacy: Review authors were unable to determine the effect of multimedia education on the aforementioned outcomes due to the inadequate number of studies.

Implications for Population-Based Practice

- Evidence to support the superiority of multimedia interventions for consumers about prescribed and over-the-counter medications was limited and of low quality; therefore, no recommendation for nursing practice to substitute "multimedia interventions" over "usual care" (written education and/or education provided by a health professional) can be offered from this review.
- It is noteworthy that there was value derived from multimedia education; therefore, it should be considered as an adjunct to "usual care" (information provided by a health professional) or as supplementary material in the public health setting where provision of extensive, detailed education by a health professional is not always feasible due to limited resources.

Implications for Public Health Nursing Research

- Inconclusive evidence from this review to draw conclusions for clinical practice application emphasizes the need for further research in this area derived from multicenter studies providing consistent research comparators for study.
- High-quality study designs based on theoretical frameworks, standardized educational pedagogies, and identifiable learning outcomes would strengthen the ability to evaluate interventions across multiple educational platforms and facilitate meta-analysis of data.
- Cost-effective analysis of teaching methodologies that demonstrate improvement in clinical outcomes are needed to inform decision-makers in future allocation of economic resources to provide support for the exponential demands facing public health nursing as a result of future health policy initiatives.

Reference

Circiriello, S., Johnston, R. V., Osborne, R. H., Wicks, I., deKroo, T., Clerehan, R., et al. (2013). Multimedia educational interventions for consumers about prescribed and over-the-counter medications. *Cochrane Database of Systematic Reviews*, *4*, Art. No.: CD008416. doi:10:1002/14651858.CD008416.pub2.