Quantitative Literature Review

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N434: Evidence-Based Practice

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"Effect of a Nurse-Led Diabetes Self-Management Education Program on Glycosylated Hemoglobin Among Adults With Type 2 Diabetes"

Literature Review:

Literature reviews are organized summations of available research and existing knowledge on a given subject. It analyzes what the current understanding is, how accurate the evidence is, and reinforces efforts to continue to analyze the subject matter. It is particularly preoccupied with numerical data points and may involve multiple pieces of research in an aggregated fashion (Houser, 2023). In the nursing realm, this is often done to maintain up-to-date evidenced-based practice efforts and guide clinical care to the best outcomes that our current understanding of a given disease process allows. This is particularly critical with novel or poorly understood diseases, or those with significant routine evolution in its continued understanding.

One such disease is diabetes. Type 2 diabetes, for example, continues to rank simultaneously as one of the most prevalent and most preventable major chronic health conditions on the globe. The nursing field is tied to the chronic management of diabetes and plays roles in prevention education, disease management, patient monitoring, and harm reduction related to this disease. As such, literature review is focused on these aspects and how nurses can, to the best of our knowledge at any given moment, address the impacts of Diabetes. Studies such as the meta-analysis performed by Azami et al. (2018) do just this and seek to refine what constitutes best-practice in nursing as it relates to Type 2 Diabetes by examining what works well and what does not.

Introduction:

In the meta-analysis ”Effect of a Nurse-Led Diabetes Self-Management Education Program on Glycosylated Hemoglobin Among Adults With Type 2 Diabetes” performed by Azami et al. (2018), the authors sought to examine how much of an impact nursing interventions have on the effort to reduce HbA1c levels – which is data point that offers insight into a clients long-term management successes/failures to control their blood glucose levels. Data was collected from multiple clinical trials, and their study was to determine what, if any, the positive impacts on effect A1c management were made by having direct nursing management of client Type 2 Diabetes Mellitus (T2 DM).

Key Points:

The review performed was a meta-analysis of quantitative and randomized controlled trials (RCTs). Analysis was conducted on 24 different RCTs, each of which was focused on nurse-led T2DM management, from around the world over a 20-year period from the years 2000 to 2020. Participants were legal and consenting adults. Interventions were delivered by nurses. The metric for intervention success was derived from A1c levels taken before and after intervention. The results of which demonstrated that nursing-led intervention of T2DM contributed a decrease of nearly half a percentage point (0.44%), on average, to clients A1c levels. This was noted to be significant when set against a p-value of less than 0.05, suggesting that nurse-led intervention was in fact the contributing force, and the degree of impact they made was notable (Azami et al., 2018). This review therefore supports that nursing-led T2DM management is an effective approach for improving glycemic control for clients receiving treatment/guidance from them.

Assumption:

As such, the study reinforces that nurses who are adequately trained and supported are able to make a significant impact on modifying patient knowledge, behavior, and adherence to T2DM in ways that have positive real-world and measurable outcomes. Assuming, of course, that these nurses are capable of independently tackling these aspects with the patient on their own. As well as assuming that nurses will have adequate access to the patient such that they can engage and educate/motivate them as needed to effectuate and sustain such changes (Azami et al., 2018).

Deficits/Conclusion:

The authors did an excellent job of pooling data from numerous sources to improve the credibility of their central claim(s). Their argument for nursing-led T2DM interventions represents a significant opportunity in healthcare to increase the use of nurses in chronic diabetes management, and the positive impacts on glycemic control in patients it offers. Further, these improvements represent potential financial cost offsets to healthcare organizations looking to improve independent T2DM efforts with downstream benefits to reducing recidivism of primary or emergent care visits related to T2DM mismanagement in those they serve. The analysis the authors conducted, however, was limited in scope, utilizing only about 142 adults, and only over a 24-week duration (Azami et al., 2018). Further, they lacked specificity in which interventions were most recommended/not recommended and further failed to stratify the patient populations targeted. That is to say they didn’t discern whether outcomes were influenced by the context of a given client – be it their geographical location, cultural/ethnic background, or socioeconomic

status. As such, further study into these disparities would be highly valuable and may even influence outcomes as to which interventions work best based on their contextual use.

Article #2:

“Efficacy of Empowerment Strategies for Patients with Hypertension: A Systematic Review and Meta-Analysis"

In the article by Zhao et al. (2020) they explore how strategies for empowering patients through interventions based in education and behavior modification can be utilized to improve healthcare outcomes in clients diagnosed with hypertension. Hypertension and diabetes often have strong overlap, and both represent conditions that are chronic and require persistent management efforts by the client and healthcare. As such, efforts to improve metrics on either share much in comon. Here, empowerment was measured via clinical measurements such as blood pressure, medication/treatment adherence, and patient participation.

Researchers performed a systematic review and meta-analysis of 17 randomized controlled trials. It involved over 2700 participants from a variety of nationalities around the world. Clients chosen were adults with hypertension who had participated in these empowerment sessions. These were nurse-led events comprised of aspects of individualized counseling, establishment of client background and goals, development of action plans, skills training, and follow up teleconferences or 1-on-1 meetings. Zhao et al. (2020) demonstrated that these strategies led to improved outcomes in systolic and diastolic blood pressure levels of participants when compared to control groups. The results, when broken down, suggested an average drop of 4-5 mmHg in systolic blood pressure.

As such, this represents yet another example where nursing-led education of client self-management leads to real-world change and improves client health outcomes long-term when managing chronic conditions. By empowering patients in much the same way as Azami et al. (2018), we see how behavior modifying strategies that improve patient autonomy and involvement in their care through education can make a significant impact. These therefor also represent an excellent investment opportunity by healthcare organizations to reduce cost associated with poorly managed conditions in their community that otherwise lead to recidivistic hospitalizations that outweigh the price of simply engaging these clients in their own care through education to improve independence and quality of self-care.

In Zhao et al. (2020) they acknowledge several limitations. First, variability in defining and measuring “empowerment” across constituent studies, which disrupted continuity. Secondly, the absence in these studies of long-term follow-up review that would further support that benefits were sustained well beyond the scope of the study performed. Finally, the studies included were conducted on a global scale but were unable to reconcile the variability of cultures or socioeconomic factors that were contained within.

Article #3

“Effects of Nurse-Led Telephone Interventions on HbA1c Levels in Patients with Type 2 Diabetes: A Meta-Analysis-Based Evaluation of Follow-Up Protocols”

In my 3rd selected article, Chen et al. (2025), they conducted a meta-analysis of the impacts of nursing-led telephone-based interventions on glycemic control in adult clients with T2DM. The

focus was to determine if routine follow-up by nursing staff over the phone could produce measurable improvements in selected clients' HbA1c levels. The study was congruent with similar efforts being conducted, particularly in a post-covid world, to increasingly leverage technology to simultaneously reduce organizational costs and increase patient accessibility via the use of communication alternatives to in-person visits.

13 randomized controlled trials were assessed, which included 1,642 adult participants with the diagnosis of T2DM. Interventions explored were comprised of nurses engaging in telephone checkups with patients to assess a client's ongoing self-management, reinforce education, and provide additional coaching and motivation to improve client outcomes. Depending on the study, the frequency of these calls could be as common as a weekly call, or as infrequent as a bi-annual checkup. A1c levels remained the primary metric of concern for the study, regardless. In the end, clients observed an A1c decrease of .72% on the high end, and .46% on the low end, or put another way – their A1c came down an average of more than half a percentage point, which is a considerable achievement.

Chen et al. (2025) adds to our other assessed articles by furthering the body of evidence for the efficacy of nursing-led education and engagement with clients in the management of chronic conditions. By tailoring their interactions to the given client and their needs, cultural specifics, or educational background, nurses were able to reinforce client independence and health improvements. It also serves to demosntrate avenues of applying this approach to healthcare that emphasize telehealth as a tool for reaching underserved and/or rural populations.

Limits that the author identified were discrepancies in intervention length, approach nurses utilized in their conversations, and as before – a lack of long-term follow up beyond the studies duration to observe whether improvements were maintained by clients after the fact. It

also noted some disparities in how socioeconomic factors were considered by the studies. But despite this, the evidence provided manages to support the use of telehealth as a means to support client efforts to control their blood sugar.

Conclusions:

The studies observed here each provide their own framework for a shared effort to assess the efficacy of nursing-led education efforts and demonstrate that when nurses lead efforts to provide education on self-management of chronic conditions, it results in significant improvements for the clients participating. Meta-analysis and controlled trials conducted by each consistently demonstrated improvements in key metrics related to their condition, which thereby confirms that such empowerment efforts lead to positive outcomes. As such, this suggests that properly trained and utilized nursing staff can provide a measurable benefit in improving patient long-term disease management outcomes through the use of education in self-management. This analysis and outcome align with the values of evidenced-based practice and quality improvement efforts. It also suggests ways to increase savings and cost-effectiveness in the long-term care and management of these clients through such a prevention-based initiative. It also suggests such efforts have a scalability to them that represents an investment opportunity in improving organization impact and efficiency by eliminating recidivistic costs associated with long-term clientele poorly managing their chronic health condition on their own. This also aligns with QSEN goals and a general moral imperative to improve healthcare equity for those in greatest need. The medical world is increasingly placing value on preventative healthcare, and studies such these demonstrate not just why this is the case but also support the critical role that nurses play in bringing to bear their results. Studies such as these therefore have a considerable potential

impact on the future of nursing as it relates to healthcare, as evidenced based practice, quality improvement, and healthcare cost-effectiveness are all satisfied by these works which reinforce the value of empowering clients in the management of their chronic ailments.

References

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