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Effects of Self-management Health Education Programs on Obesity Management in Older Adults

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Abstract: *Obesity remains a major silent killer in the US and globally. The disorder remains challenging to manage, owing to its numerous risk factors, such as a sedentary lifestyle, diets, genetics, and various comorbidities, including hypertension and type 2 diabetes, which complicate treatment. Developing the correct approaches to address the unique challenges posed by obesity is crucial in improving the health outcomes of those affected. The systematic review aimed to explore the role of self-management in diabetes control for older populations in reducing morbidity, symptom severity, and premature death. A search was conducted utilizing Public Medline, the Cochrane Library, and Cumulative Index to Nursing and Allied Health Literature, observing the Preferred Reporting Items for Systematic Reviews and Meta-Analyses. Data from the 18 most relevant articles were systematically analyzed using the screening criteria developed to guide the research process and answer the question, what role do self-management, education programs, and technology play in controlling diabetes for older adults to reduce morbidity, symptom severity, and premature deaths? The findings show self-management, education programs and technology effectively reduce obesity morbidity, symptom severity, and premature deaths. The results offer policymakers, healthcare providers, and nurses collaboration opportunities to develop mechanisms for accommodating self-management, health education, and technology to improve the quality of care provided to these patients and related benefits.*

Introduction

Obesity is a global pandemic affecting millions of individuals. From 1980 to 2014, the condition's prevalence doubled globally in the adult population, increasing from 4.7% to 8.5% (Lamb et al., 2021). Moreover, the illness affects 33% of people aged 65 and above globally, although persons aged 45 and above have the highest risk (Lamb et al., 2021). According to Mikhael et al. (2020), current evidence-based management methods, such as physical activity, are effective, although poorly implemented and adhered to, as most patients are not aware of the existence and usefulness of such methods. Despite such interventions, diabetes incidence and prevalence continue to increase, highlighting the need for different approaches to improve management efficacy. In such cases, self-management and education programs may effectively reduce symptom severity in other diseases, such as osteoarthritis (Bennell et al., 2020) and diabetes (Mikhael et al., 2020).

Additionally, combining self-management and technology may lead to better outcomes in disease prevention, owing to enhanced access and utilization of recommended practices (Kondo et al., 2022). The research question was what role do self-management, education programs, and technology play in controlling diabetes for older adults to reduce morbidity, symptom severity, and premature deaths? Therefore, this systematic review aimed to explore the role of self-management in diabetes control for older populations in reducing morbidity, symptom severity, and premature death.

Methods

The paper adopted a systematic literature review design with the self-management health education program as the primary research concept. In this regard, an initial preview of the studies was used to narrow the topic research and ensure the selected sources aligned with the research question; what is the role of self-management, education programs, and technology in controlling diabetes for older adults to reduce morbidity, symptom severity, and premature deaths? A literature search followed, including three databases, CINAHL, PubMed, and the Cochrane Library. As Khan et al. (2003) highlight, the process included a systematic process with the following steps, (a) identifying the relevant after framing an initial question to guide the research process. The emphasis was on computerized journals from the three databases selected for the study.

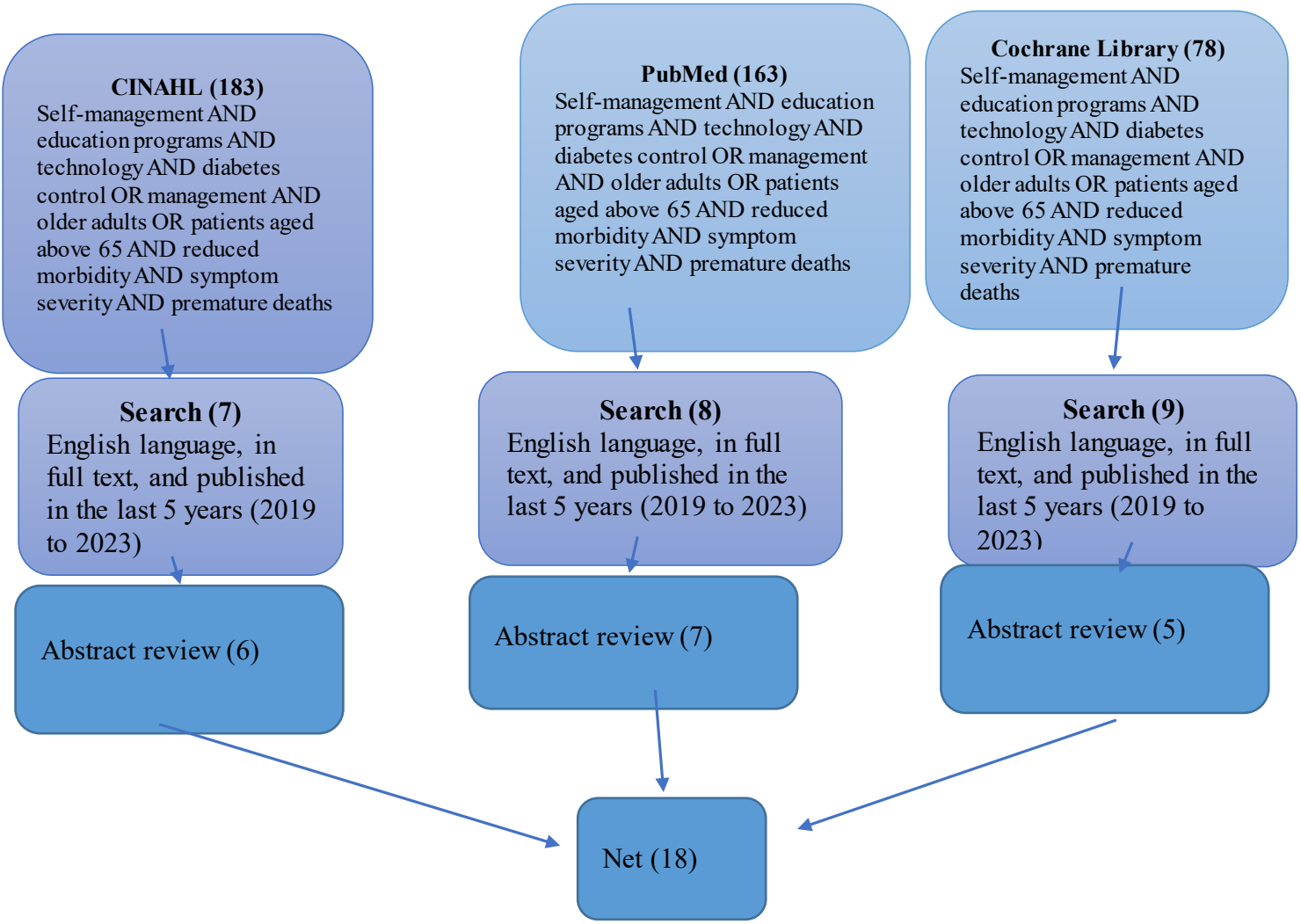
The second step (b) involved an assessment of the quality of the studies. Luchini et al. (2021) highlight various steps of completing the phase, including formulating a study selection criteria and describing the minimum acceptable level of the study design. Moreover, the process entails an exploration of heterogeneity to inform the decision-making criteria for the suitability of the research topics. The third (c) step, according to Khan et al. (2003), entailed a summary of the evidence. In such a case, data synthesis often incorporates tabulating the study's characteristics and data extraction based on the screening approach provided. In the fourth (d) step, the findings were interpreted, including the reporting and disseminating of the findings. An evaluation of the strengths and weaknesses of the studies was also conducted.

The keywords for the database query included *self-management AND education programs AND technology AND diabetes control OR management AND older adults OR patients aged above 65 AND reduced morbidity AND symptom severity AND premature deaths*. As highlighted, Boolean operators improve the relevance and specificity of the research (Gregory et al., 2018). Moreover, the inclusion criteria included (a) works published between 2019 and 2023, (b) full-text articles, (c) published in peer-reviewed journals, and (d) in English. Similarly, the exclusion criteria encompassed (a) studies older than five years, (b) articles not in full text, (c) not published in peer-reviewed journals, and (d) not published in English.

The first query involved the CINAHL database. The first set of results from the search yielded 183 hits. As Ahn and Kang (2018) highlight, narrowing the studies to the most relevant using the limiters suggested in the database improves the outcomes.

Therefore, limiters were selected, including articles published in English, those appearing in full text, and those published in the last five years (2019 to 2023). After the limiters, the query in the first database yielded seven studies. The same process was repeated for PubMed. After the initial query, 163 articles were discovered and narrowed to 8 after applying the limiters (see Figure 1). For the Cochrane Library, the initial search resulted in 78 studies, which were reduced to 9 after the limiters. Abstracts were further reviewed to assess relevance, resulting in 18 studies.

Figure 1: Flow Diagram



Results

The question guided the research, what role do self-management, education programs, and technology play in controlling diabetes for older adults to reduce morbidity, symptom severity, and premature deaths? Moreover, the study utilized three databases: CINAHL, PubMed, and the Cochrane Library. As Page et al. (2021) highlight, the PRISMA guidelines were used, with 424 papers initially extracted and gradually narrowed to 20 after applying limiters and a comprehensive abstract review. As Table 1 illustrates, the studies were organized into two columns, including the articles' titles and their findings, with the titles numerically ordered for convenient following.

Table 1
Summarized findings of the literature.

Title	Findings
[1] The role of diabetes self-care education and practice in the management of type 2 diabetes mellitus (T2DM)	Diabetes self-care education effectively enhances symptom severity and promotes patient well-being in individuals affected by type 2 diabetes.
[2] The development and testing of a nurse-led smartphone-based self-management program for diabetes patients with poor glycemic control	Smartphone-based self-management approaches in patients affected by diabetes effectively enhance the quality of glycemic control, with the outcomes indicating similar outcomes with existing evidence.
[3] Effectiveness of a nurse-led smartphone-based self-management program for people with poorly controlled type 2 diabetes: a randomized controlled trial	A nurse-led smartphone-based self-management initiative had significant effects in enhancing self-efficacy and self-care in patients affected by diabetes. The intervention improved health-related quality of life and glycemic levels and reduced acute complications associated with the condition.
[4] Physical exercise and body-mass index in young adults: a national survey of Norwegian university students	A corporate-sponsored weight loss initiative substantially improves adherence to physical activity participation, improving quality of life, weight loss, and overall patient well-being.
[5] Determinants of weight loss maintenance: a systematic review	Weight loss is a challenging aspect. In such a case, prominent aspects that may influence weight loss include patient demographics, behavioral aspects, psychological or cognitive, and social and physical environmental aspects.
[6] The Benefits of Physical Activity for People with Obesity, Independent of Weight Loss: A Systematic Review.	Physical activity participation is related to small-scale and large-scale physiological benefits. Although weight loss is a crucial aspect of such programs, the intervention is associated with overall psychological and physical well-being.
[7] Motives, barriers, and preferences to physical activity in	Although the benefits of physical activity participation are adequately known, barriers to uptake persist. In such a case, prominent factors influencing participation include poor motivation and pain, which substantially reduce uptake rates.

people with obesity: a systematic review.	
[8] Effects of Accumulated Short Bouts of Exercise on Weight and Obesity Indices in Adults: A Meta-Analysis.	Short bouts of exercise participation effectively reduce obesity symptom severity among adults and have a higher motivation rate, emphasizing the need for uptake in various settings, such as schools.
[9] Test of an interprofessional collaborative practice model to improve obesity-related health outcomes in Michigan	Interprofessional collaborative practice educational programs are effective in promoting weight loss in individuals affected by obesity. The intervention positively impacted body weight, reduced body mass indices, and other outcomes, such as reduced body pressure and exercise frequency.
[10] Effect of Information and Communication Technology-Based Self-management System DialBeticsLite on Treating Abdominal Obesity in the Specific Health Guidance in Japan: Randomized Controlled Trial	Mobile health management (mHealth) self-management applications promote the effective monitoring of physical aspects and lifestyle behaviors, a highly effective approach in controlling visceral fat loss and weight loss among adults.
[11] Effectiveness of Diabetes Self-Management Educational Programs For Type 2 Diabetes Mellitus Patients In Middle East Countries: A Systematic Review.	Diabetes self-management education (DSME) has a high efficacy rate in enhancing glycemic control, attaining the recommended lipid profile, body mass index, and moderate effects on blood pressure in individuals affected by diabetes.
[12] Educational differences in diabetes and diabetes self-management behaviors in WHO SAGE countries.	Self-management behaviors were significantly correlated with education level, leading to improved diabetes diagnosis, symptom management, and patient well-being.
[13] Long-term weight loss trajectories following participation in a randomized controlled trial of a weight management program for men delivered through professional football clubs: a longitudinal cohort study and economic evaluation	The Football Fans in Training (FFIT) was associated with substantial weight loss in the long term, as well as enhanced participation in physical activity and diet. Moreover, FFIT is cost-effective and has a cultural component, increasing uptake.

[14] Health coaching to encourage obese adults to enroll in commercially-available weight management programs: The path to a health study.	Health coaching is an effective intervention associated with improved motivation and adherence to available weight loss programs and enhanced behavioral and weight loss success outcomes.
[15] Effectiveness of a general self-management program compared to the diabetes self-management program.	Self-management programs, including generalized and tailored explicitly towards people affected by diabetes, are equally effective in promoting diabetes management, reducing symptom severity, and patient well-being.
[16] Effect of Self- and Family Management of Diabetic Foot Ulcers Programs on Health Outcomes.	Self- as well as family management intervention initiatives in managing diabetic foot ulcers are effective in reducing symptom severity and enhancing the patient's well-being.
[17] The role of telenursing in managing Diabetes Type 1: a randomized controlled trial.	Telenursing significantly improves the motivation of patients affected by type one diabetes management to improve their disease control capacity, with a substantial improvement in glucose control and self-efficacy in symptom monitoring.
[18] Proactive case management of high-risk patients with type 2 diabetes mellitus by a clinical pharmacist: a randomized controlled trial.	Proactive case management involving a pharmacist enhanced glycemic control and self-efficacy in the process of care approaches in individuals affected by type one diabetes.
[19] Impact of self-management on metabolic control indicators of diabetes patients.	Self-management of diabetes effectively managed glycemic levels and decreased fasting blood sugar, with the intervention recommended as an evidence-based practice.
[20] Exploring the role of motivational interviewing in adolescent patient-provider communication about type 1 diabetes.	Motivational interviewing significantly enhances the provider's ability to promote self-care in individuals affected by diabetes.

The 20 articles selected for the research were organized into five primary themes. The rationale for theme selection was guided by the research question in the first section and the trends and patterns observed in the chosen studies (Moosapour et al., 2021). Table 2 illustrates that the themes were directly derived from the research questions. They included (a) symptom severity derived from the sub-themes, such as glycemic control, conforming to the richness and depth of systematic qualitative reviews (Renjith et al., 2021). The other themes encompassed (b) self-efficacy, (c) patient well-being, (d) quality of life, and (e) weight loss, which were primarily derived from reduced morbidity and symptom severity concepts.

Table 2
Frequency of occurrence in the literature.

Theme	Occurrences	Instances of Attributes (n)	Percentage (%)
Theme 1: Symptom severity.	1, 2, 4, 5, 6, 8, 9, 10 11, 12, 13, 14, 15, 16, 17, 19.	(n=14)	70%
Theme 2 Self-efficacy	3, 11, 15, 17, 18.	(n=5)	25%
Theme 3 Patient well-being.	4, 6, 12, 15, 16.	(n=5)	25%
Theme 4 Quality of life.	3, 4, 8, 9, 11, 13, 14. 16, 19, 20.	(n=10)	50%
Theme 5 Weight loss	4, 5, 6, 8, 9, 10, 13, 14,	(n=8)	40%

The research from Table 2 indicates symptom severity was the most prevalent theme at 70% occurring in 14 studies [1, 2, 4, 5, 6, 8, 9, 10 11, 12, 13, 14, 15, 16, 17, 19] as illustrated in table 2. Moreover, the quality of life theme or outcome related to the intervention was the second most prevalent, with ten occurrences [3, 4, 8, 9, 11, 13, 14. 16, 19, 20]. As Bramer et al. (2017) highlight, efficient searches in literature reviews depend on the optimal combination of themes from other research, an approach that the study followed. The weight loss theme or outcome was the third most relevant, with 40% and eight appearances in studies numbered 4, 5, 6, 8, 9, 10, 13, and 14. As well, self-efficacy [3, 11, 15, 17, 18] and patient well-being [4, 6, 12, 15, 16] appeared five times and 25% each.

Discussion

The systematic literature review examined the role of self-management, education programs, and technology in controlling obesity for older adults in reducing morbidity, symptom severity, and premature deaths. Twenty articles published between 2019 and 2023 were selected to assess the study's variables. As Table 2 displays, five main themes emerged from the research, including (a) symptom severity [1, 2, 4, 5, 6, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 19], (b) self-efficacy [3, 11, 15, 17, 18], (c) patient well-being [4, 6, 12, 15, 16], (d) quality of life [3, 4, 8, 9, 11, 13, 14, 16, 19, 20], and (e) weight loss [3, 4, 8, 9, 11, 13, 14, 16, 19, 20].

Symptom severity was the most prevalent outcome of self-management, with 70% of the articles including the theme [1, 2, 4, 5, 6, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 19]. For example, Adams et al. (2021) associated obesity self-care education with improved symptom severity, including glycemic levels.1 Also, Grasdalsmoen et al. (2019) associated a corporate weight loss program with an overall improvement in patient well-being.4 Therefore, self-management health education in obesity may reduce symptom severity.

Self-management interventions improve self-efficacy in caring for the disease, with 25% of the articles illustrating the theme. Subsequently, Mikhael et al. (2020) found that obesity self-management education helps affected individuals manage their glycemic levels, lipid profile, and BMI.11 Additionally, McGowan (2014) associated self-management programs with improved self-management and patient well-being.15 In this regard, self-management health education helps patients with obesity to improve their self-efficacy in addressing the condition.

Patient well-being as an outcome of self-management interventions in individuals affected by obesity appeared in 25% of the articles reviewed. To illustrate, Pojednic et al. (2021) related self-management with small-scale and large-scale physiological benefits to patient well-being.6 Similarly, Gray et al. (2019) state that family management interventions associated with self-care successfully helped patients manage diabetic foot ulcers, enhancing their well-being.13 The evidence suggests self-management interventions promote patient wellness.

The fourth theme is quality of life, which emerged in 50% of the articles reviewed. As a result, Heredia et al. (2020) associated health coaching, a form of self-management practice, with enhanced behavioral and weight-loss success.14 Moattari et al. (2012) also linked self-management with quality-of-life indicators, such as reduced symptom severity and patient wellness. Also,

Lamb et al. (2021) related self-management behaviors with improved diagnosis, symptom management, and quality of life for those affected.12 As indicated, the intervention may improve the affected patients' quality of life.

The fifth theme that emerged from the research was weight loss, with 40% of the articles including the concept. Kim et al. (2019) found that short-bout exercises significantly improve weight loss and lower glycemic levels in patients with obesity.8 Additionally, Nagelkerk et al. (2018) associated interprofessional collaborative educational practice with effective weight loss, including body mass indices and anthropometric factors.9 Therefore, self-management in obesity management leads to weight loss.

Limitations and Minimizing Limitations

The study had various limitations. Firstly, the study excluded non-English studies, which could be relevant in answering the research question. Secondly, practical time constraints impeded a comprehensive approach to finding all relevant studies. Thirdly, in the initial stages, Google Scholar was used to find some studies which may adversely impact validity and reliability. Fourthly, the researchers used three databases using the exact keywords, which may have introduced new studies. Lastly, researcher bias may have occurred, as the studies were subjectively assessed.

The researcher applied the PRISMA guidelines for systematic reviews to reduce the impact of the identified limitations. Figure 1 illustrates that the initial articles from CINAHL, PubMed, and the Cochrane Library 424 were filtered out to ensure the most relevant studies were selected. Also, the researcher carefully reviewed the abstracts to ensure the studies aligned with the questions to reduce bias. Despite the limitations, evidence strongly suggests self-management helps control obesity, reducing symptom severity and morbidity.

Future Research and Implications

The study offers crucial evidence regarding the importance of self-management programs in improving obesity symptoms and reducing morbidity and premature death. However, there were few studies on mortality, an area that researchers can address to assess the efficacy of self-management in avoiding early deaths in patients with obesity. Nonetheless, implementing self-management programs to enhance patient outcomes can translate the evidence into practice. As emphasized, programs focused on self-management could help reduce symptom severity and promote self-efficacy, well-being, quality of life, and weight loss in obese individuals.

Conclusion

Obesity is a chronic condition with a significant prevalence and subsequent mortality rate, especially in adults aged 65 and above. The condition adversely impacts the quality of life of those affected and is related to other comorbidities, including hypertension and type 2 diabetes. Despite the use of various pharmacotherapy, physical activity, and dieting, the high rates of obesity suggest the poor utilization of such treatments, leading to increased symptom severity and premature deaths. In such a case, self-management, health education programs, and technology on obesity management may offer increased adherence to evidence-based obesity interventions, resulting in improved patient outcomes and quality of life (Mikhael et al., 2020). As a result, this systematic literature review aimed to assess whether self-management, health education programs, and technology in older adults are effective in obesity management in adults. The data analysis resulted in five major themes related to the research question. The primary themes included the effects of self-management, health education programs, and technology on symptom severity, patient self-efficacy, well-being, quality of life, and weight loss on obesity management and patient outcomes. From the findings of this systematic literature review, self-management, health education, and technology significantly affect obesity management in adults. Enhancing the uptake of the three interventions is vital in improving the efficacy of obesity management and enhancing the quality of life of those affected. Therefore, nurses, policymakers, and healthcare providers should develop mechanisms to accommodate self-management, health education, and technology to improve the quality of care offered and related patient benefits.

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