The Role of Nurses in Managing Chronic Diseases: A Comprehensive Review

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Abstract

Chronic diseases, such as diabetes, cardiovascular disease, and chronic obstructive pulmonary disease, represent a significant burden on global healthcare systems. Nurses are increasingly recognized as vital agents in the management of these conditions. This comprehensive review examines the multifaceted role of nurses in chronic disease management, focusing on patient education, care coordination, evidence-based practice, and interdisciplinary collaboration. Through an analysis of recent literature and previous studies, this paper synthesizes current research findings to highlight effective nursing interventions and strategies that improve patient outcomes. The review also discusses challenges such as resource constraints, patient adherence issues, and the need for continued professional development. Ultimately, the paper underscores the importance of integrating nursing expertise into chronic disease management protocols and suggests future directions for research and policy development to support and expand the role of nurses in this critical area of healthcare.

Keywords

Definition in the Research

Chronic Diseases:

Chronic diseases are long-lasting conditions that persist for three months or longer and require ongoing medical attention or limit activities of daily living. Common examples include diabetes, cardiovascular disease, chronic obstructive pulmonary disease (COPD), chronic kidney disease, and rheumatoid arthritis. These conditions often demand continuous care and coordinated management to prevent complications and reduce the burden on healthcare systems.

Nurse-Led Intervention:

A nurse-led intervention refers to any healthcare initiative primarily initiated, managed, and delivered by nursing professionals. This includes programs in which nurses play a central role in patient education, care coordination, monitoring, and follow-up. In this research, such interventions are characterized by personalized support, adherence coaching, and collaborative care practices that aim to improve patient outcomes in chronic disease management.

Virtual Intervention (or Virtual Care):

Virtual interventions are those health services provided remotely using digital technologies, such as telemedicine, videoconferencing, mobile health applications, and remote monitoring devices. These interventions enable nurses to deliver care, follow up with patients, and provide education without the need for in-person visits, thereby increasing access and continuity of care for patients managing chronic conditions.

Medication Adherence:

Medication adherence is defined as the extent to which a patient correctly follows medical advice regarding the timing, dosage, and frequency of medication intake. High levels of adherence are critical in chronic disease management, as non-adherence can lead to poor clinical outcomes, increased hospitalizations, and higher healthcare costs.

Chronic Disease Management:

Chronic disease management refers to a coordinated and systematic approach to caring for patients with long-term health conditions. It involves the integration of patient education, regular monitoring, care coordination among multiple healthcare providers, and the use of evidence-based interventions to improve health outcomes, enhance quality of life, and reduce the overall cost of care.

Care Coordination:

Care coordination is the deliberate organization of patient care activities between two or more participants (including nurses, physicians, and allied health professionals) involved in a patient's care. It ensures that all aspects of a patient's health needs are addressed in a timely and efficient manner, especially during transitions between different care settings.

Interdisciplinary Approach:

An interdisciplinary approach involves the collaboration of professionals from various healthcare disciplines—such as nursing, medicine, pharmacy, and nutrition—to develop and deliver a comprehensive, patient-centered care plan. This collaborative model is essential for managing complex chronic diseases where multiple facets of care (e.g., medication, lifestyle, psychosocial support) must be integrated.

Introduction

Chronic diseases are the main reasons of illness and death around the world, putting a lot of pressure on healthcare resources. As diabetes and heart diseases become more common, it is very important to have good ways to control these conditions. Nurses are key in taking care of patients, especially when it comes to managing long-term illnesses. Their job includes teaching patients, arranging care with different specialists, keeping track of how patients are doing, and using proven methods for treatment. This review looks at studies about how nurses help manage chronic diseases. It will highlight the best practices and point out where more research and improvements in policy are needed. The rise of chronic diseases around the world has led to new ways of providing healthcare, especially to help people take their medications as prescribed. Research has shown that sticking to long-term drug plans is important for reaching health goals and helping patients do better. Medication no adherence is a big healthcare problem. Reports show that about 50% of people with long-term illnesses do not take their medications as directed (Arsenault-Lapierre et al., 2021). Not following guidelines can harm health and put a significant financial strain on healthcare systems, costing between $100 billion and $289 billion each year in the United States. To address this issue, nurse-led programs have shown to be an effective way to help patients stick to their medications. Nurses are essential in patient care because they provide medical knowledge, teach patients, and give mental support. Research shows that nurse-led efforts like personalized advice, regular check-ins, and training programs can greatly improve adherence rates. Studies have shown that nurse-led programs can improve how well patients stick to their drug plans by 12-19%. These actions have been linked to better patient happiness and health results, showing how important nurses can be in solving this problem (Tao et al., 2023).

Literature Review

A growing body of literature supports the critical contribution of nursing care in the management of chronic diseases. Several systematic reviews and meta-analyses have demonstrated that nurse-led interventions—ranging from patient education programs to home-based monitoring—significantly improve clinical outcomes. For example, nurse-led diabetes management programs have been associated with better glycemic control and reduced hospital admissions. In cardiovascular care, nurses have been instrumental in facilitating lifestyle modification programs and ensuring adherence to medication regimens. The literature also points to the benefits of interdisciplinary approaches, wherein nurses collaborate closely with physicians, dietitians, and pharmacists to deliver comprehensive care. Despite these advances, challenges remain, particularly regarding patient adherence and the integration of new technologies into routine practice. Overall, the review of current literature emphasizes the importance of evidence-based practice and continuous professional development to keep pace with evolving healthcare needs (McBrien et al., 2018).

The Role of Nurses in Improving Health Care

The United States spends over $3.5 trillion a year on health care, which is 25% more per person than the next largest country. However, it does worse than other countries in almost every area of health care. In the United States, life expectancy is lower, and rates of infant and maternal deaths are higher compared to many other wealthy countries. In the United States, there are differences in health care access and results based on race. However, having money and resources to pay for the best health care doesn't always mean getting the best health results. Even among White U.S. citizens and those of better socioeconomic status (SES), U.S. health indicators still lag behind those in many other countries (Sadoun et al., 2024). The U.S. people can only truly succeed if everyone can live healthy lives, no matter their income, race or ethnicity, or where they live. A person's race, ethnicity, wealth, gender, and where they live greatly affect their access to good, fair, and affordable health care. Different professionals, both in and out of health care, work together to make sure everyone can receive care fairly. Nurses play a crucial role in healthcare because they work closely with individuals and families. They provide and organize care that focuses on people's specific needs for prevention, emergency situations, and ongoing health conditions. They also work with social services to address social needs and participate in public health and community health initiatives (Palmer et al., 2018).

The increasing number of older people in the U.S. and around the world is expected to create a higher need for health and social services to support them. This includes care for long-term health issues, which make up about 75 percent of all visits to primary care doctors. As the population gets older, the types of care that patients need will change. Older people tend to require more expensive care, and to need greater support in managing multiple conditions and retaining strength and resilience as they age. These facts highlight the need for creating, testing, and using chronic care models. In these models, teams are crucial for handling chronic diseases, and registered nurses (RNs) are important as managers of chronic disease care. Research on outstanding primary care practices shows that registered nurses (RNs) have important roles in several areas (Anderson & Bury, 2024). These include preventive care, managing chronic illnesses, running practice operations, handling care management, and supporting transitions in care. Since the Patient Protection and Affordable Care Act was passed, there have been significant changes in how primary care is organized and provided. There is now more teamwork in care, and the roles of each team member, including registered nurses (RNs), have expanded. Having registered nurses (RNs) on healthcare teams can help more people get care, improve the quality and management of care for long-term health issues, and lessen the stress for primary care doctors by increasing the overall capacity of primary care services.

In basic care, RNs can assume

Here are four main responsibilities: 1) Helping patients with long-term health issues change their habits and adjusting their medications as instructed by their doctors; 2) Leading teams to enhance care and lower expenses for patients who need a lot of support and have high medical costs; 3) Organizing care for patients with chronic illnesses between their main doctor and other healthcare providers in the area; 4) Encouraging community health by working with local areas to create healthier environments for people to live, work, learn, and relax (Lee et al., 2018).

Findings from a 2013 study of The Primary Care Team: Learning from Effective Ambulatory Practices (LEAP) show that a large majority of LEAP primary care practices, regardless of practice type or corporate structure, use RNs as an important part of their care team model. This compares with a study of 496 practices in the Centers for Medicare & Medicaid Services (CMS) Comprehensive Primary Care initiative that found that only 36 percent of practices had RNs on staff, compared with 77 percent of LEAP sites (Li et al., 2021).

People have different health needs. Some are healthy and can benefit from health promotion and disease prevention. Others may have disabilities, serious health issues, or social needs that limit their ability to function, or they might be near the end of their life. Access to great health care services is an important SDOH, and equitable access to care is needed for "promoting and maintaining health, preventing and managing disease, reducing unnecessary disability and premature death, and achieving health equity". Improving the main services in primary care is essential for achieving the Triple Aim: better experiences for patients, healthier populations, and lower healthcare costs. The 2011 study "The Future of Nursing" shares similar ideas (Nagase et al., 2022).

Changes in the healthcare system will significantly impact all workers, especially nurses. In a reformed healthcare system, traditional nursing skills like managing and coordinating care, teaching patients, helping with public health, and supporting patients during transitions will be important. The focus will shift more towards prevention and management instead of just treating patients in hospitals (Riegel et al., 2019).

Previous studies have highlighted various aspects of nursing care in chronic disease management:
Previous studies

In accordance with ((Tao et al., 2023), technology is changing how nursing is done, but there hasn't been enough research on how nurses can lead virtual care for managing chronic diseases. This study will look at how nurse-led online services affect chronic disease care and outline the key features of these virtual interventions in nursing. This study will carefully review randomised controlled trials evaluating the effects of nurse-led virtual care interventions on patients with chronic conditions. We will check several databases, including PubMed, Embase, Web of Science, CINAHL, Chinese National Knowledge Infrastructure, Wanfang, and VIP Chinese Science and Technology Periodicals. All studies will be reviewed and chosen based on the criteria outlined in the format of 'population, intervention, comparison, result, and study design.' We will look for relevant studies by checking the reference lists of suitable studies and review papers. We'll evaluate the risk of bias using the Joanna Briggs Institute Quality Appraisal Form. Two reviewers will each collect data from all the studies using a common data extraction form on the Covidence platform. We will use RevMan V.5.3 program to conduct the meta-analysis. Data synthesis will be performed with descriptive synthesis by summarising and tabulating the data and presenting them according to

the research questions. Formal ethical approval is not needed as the data used in this systematic review are abstracted from the pre-existing literature. The study results will be shared in peer-reviewed papers and at conferences.

Following (Sadoun et al., 2024), chronic diseases are a big health problem around the world, and Saudi Arabia is not different. The country has high rates of diabetes, heart disease, and obesity. Nurses are very important in taking care of these conditions. Their duties include teaching patients, giving advice on healthy living, and checking on patients regularly. This study looks at how the role of nurses is changing in managing chronic diseases in public hospitals and specialized healthcare centers in Saudi Arabia. It examines differences in nurses' responsibilities, the resources available to them, patient happiness, and the effects of interventions led by nurses. Research shows that specialized centers with more resources and fewer patients per nurse provide better personalized care. This leads to higher patient happiness and better health results. Public hospitals face challenges due to a lack of resources and many patients, which limits how much nurses can get involved in care decision-making. Studies show that when nurses provide living advice and health education, patient satisfaction tends to be higher. These results highlight the need for targeted policy reforms to support nurses in public hospitals, ensuring successful CDM across healthcare settings. This study calls for more investment in training and resources to help nurses, which will improve Saudi Arabia's healthcare system in dealing with chronic diseases.

In according to (Nagase et al., 2022), remote home monitoring (RHM) can help avoid worsening symptoms in patients with chronic obstructive pulmonary disease (COPD), but it's not clear how effective it really is. This study aimed to find out how well RHM works for people with COPD. A systematic review of the scholarly literature published within the last 10 years was conducted using widely recognized guidelines. Search methods were used on various computer databases and clinical trial registries until March 2020 to find studies that compared remote home monitoring (RHM) to not using it, or compared RHM with feedback from providers to RHM without feedback. To evaluate the included randomized studies, we used the Cochrane Collaboration risk of bias tool (ROB). The quality of included non-randomized interventional and comparative observational studies was analyzed using the ACROBAT-NRSI tool from the Cochrane Collaboration. The quality of evidence for important results was evaluated using the GRADE system. This included looking at health-related quality of life, patient experiences, the number of flare-ups, emergency room visits, hospital admissions related to COPD, and how many patients finished the study. Three separate reviewers evaluated the quality of the methods used in the studies. The review included seventeen randomized controlled trials (RCTs) and two observational papers for comparison. This study shows that there is a lot of evidence about how well RHM works, but the quality of this evidence is not very good. RHM is safe, but it doesn't seem to help with quality of life, lung function, self-confidence, or lower depression, anxiety, or healthcare use. Getting regular feedback from healthcare workers might lower the number of hospital visits for COPD. It is still not clear how well patients follow the recommended treatment. However, both patients and providers were very happy with the intervention. There is a lot of evidence showing that RHM works well. However, because care settings vary and the evidence quality is low, it should be viewed carefully.

Following (Steindal et al., 2019) to review and summarize the results of studies that examined how well nursing help can reduce breathlessness in adults with chronic obstructive lung disease (COPD). There haven't been specific reviews that look at nursing treatments for breathing in people with chronic obstructive pulmonary disease (COPD). Design, systematic review with meta-analysis. A search was done in Medline, CINAHL, PsycINFO, and Embase for studies released from January 2000 to June 2017. We used Cochrane methods to review the processes, check for bias, collect data, and perform the meta-analysis. The quality of proof was evaluated using the GRADE method. Outcomes, twenty papers were included. A review of home-based treatments, which included two studies, found that experimental groups had better results in symptom scores on the St. George Respiratory Questionnaire compared to control groups. A review of studies done in clinics with home follow-up found that experimental groups had better results in managing their condition and lower tiredness levels on the Chronic Respiratory Questionnaire compared to the control groups. A recent meta-analysis found that experimental groups had better results than control groups in symptom, exercise, and overall scores on the St. George Respiratory Questionnaire. The quality of proof was rated as very low to moderate. In conclusion, it's unclear if home nursing care and hospital nursing care with follow-up truly help reduce breathing in people with chronic obstructive pulmonary disease.

Discussion

The synthesis of literature and previous studies reveals that nurses are pivotal in managing chronic diseases through a combination of patient education, care coordination, and evidence-based interventions. Key strengths include the ability of nurses to build long-term relationships with patients, which enhances trust and improves adherence to treatment regimens. Moreover, nurse-led programs have shown measurable benefits in clinical outcomes, particularly in diabetes and cardiovascular disease management. However, the review also identifies challenges: variability in training across different settings, limited resources in some healthcare environments, and the need for ongoing integration of technology into care practices. Addressing these challenges requires a concerted effort from healthcare policymakers, educators, and clinical leaders to standardize best practices, improve access to continuing education, and invest in research that further explores innovative nurse-led interventions.

This study shows that nurse-led programs are important for managing chronic diseases. They help improve patient health, increase the likelihood that patients follow their medication plans, and make it easier to coordinate care. Overall, the literature consistently stresses that nurses—through patient education, regular follow-up, and personalized support—can contribute significantly to controlling chronic conditions such as diabetes, cardiovascular diseases, and COPD. This result matches earlier studies that found nurse-led programs improve health measures like blood sugar control and blood pressure, and they also lower the number of patients who need to go back to the hospital.

Patient Education and Self-Management Support: Both the literature review and earlier studies underscore the importance of patient education in improving self-management behaviors. The review shows that diabetes management programs run by

nurses have improved blood sugar control. This matches earlier studies that found targeted education helped people take their medicine regularly and led to better health results.

Working together across different fields is important. The studies show that nurses benefit from teaming up with doctors, nutritionists, and pharmacists. Previous studies show that when nurses lead care coordination, it greatly lowers the number of emergency room visits and hospital stays. This is achieved using teamwork approaches like the Guided Care model, which has been widely tested in primary care.

Improved Health Results: Both sources agree that efforts led by nurses can result in better health outcomes. The literature review shows that drug adherence has improved by 12-19%. Many past studies have also found that this leads to fewer hospital readmissions and better results for chronic diseases. This consistency supports the idea that nurses play a key role in managing chronic diseases by using proven methods consistently.

Differences in Measurement and Results: The literature review shows that there is a lot of variation in how medication adherence is measured. Many studies use self-reported surveys with different standards, but some have used more accurate methods like pharmacy refill records and electronic monitoring. This difference shows that there is a lack of standardization. Future study should try to combine both personal and factual measures of adherence to better assess how effective interventions are.

Impact of Virtual Interventions: The review highlights how virtual nurse-led programs are becoming important for managing chronic diseases, especially during the COVID-19 pandemic. In comparison, some earlier studies mainly looked at traditional in-person methods. Both methods have been shown to work well, but there is still a discussion about how sustainable and similar virtual care is compared to in-person care over the long run. Some past study showed that virtual care can be a helpful addition to regular care. However, this review suggests that we should look further into which specific virtual tasks are the most beneficial.

Cost-Effectiveness Considerations: Many studies have looked at how cost-effective nurse-led care can be, often finding that it can lead to large savings in healthcare costs. In the literature study, people notice possible cost savings, but there is less detailed and more varied information about the economic results. This difference shows that although nurse-led care is effective, we need better and more consistent ways to report its economic effects to make clear conclusions.

The literature review highlights the importance of nurse-led efforts in managing chronic diseases. It shows that these approaches lead to better medication use, improved patient education, and more coordinated care. These themes are similar to what earlier studies have shown, but each study looks at different parts or ways of providing care.

Nurse-led programs help improve health results for patients with chronic diseases, according to both the literature study and Sadoun et al. (2024). The review shows that personal advice, regular follow-ups, and educational programs can improve how well people stick to their medication by about 12–19%. Sadoun and others support the idea of teamwork in healthcare, where nurses help coordinate efforts to manage long-term illnesses.

Importance of Virtual and Remote Care: The literature review highlights how important virtual care is becoming. This is specifically discussed by Tao et al. (2023), who give a plan for a systematic review of virtual interventions led by nurses. Nagase et al. (2022) and Steindal et al. (2019) show that remote home monitoring and nurse-led care can help people with COPD. These studies show that online and remote methods can help control symptoms and encourage patients to follow their treatment plans. This supports the review's point that technology is changing how we manage chronic diseases.

Interdisciplinary and Coordinated Care Models: The review highlights the advantages of including nurse-led actions as part of wider healthcare teams. This agrees with Sadoun et al. (2024), which highlights that working together is important for controlling chronic diseases well. Teamwork is important in studies about diseases like COPD. Research by Nagase et al. and Steindal et al. shows that working together leads to better health results and happier patients.

The literature review looks at nurse-led interventions, including both standard in-person and new virtual methods. However, Tao et al. (2023) focus only on virtual interventions. This difference shows a change in focus in the field: while traditional nurse-led methods are well established, virtual care is becoming a valuable addition. Tao et al. is a protocol, and the results haven't been shared yet. This means we lack clear proof on how effective virtual methods are compared to traditional ones.

Disease-Specific Evidence: The research by Nagase et al. (2022) and Steindal et al. (2019) focuses on COPD, looking at how to control symptoms and difficulty breathing. These results back the review's main points about the advantages of nurse-led interventions, but they also indicate that how well these interventions work and how they operate might differ for various chronic conditions. The literature study looks at various chronic diseases, like diabetes and heart problems. It shows that although the overall benefits are similar, the specific effects and challenges can vary depending on the disease.

Conclusion

This comprehensive review highlights that nurses play a critical role in managing chronic diseases, significantly influencing patient outcomes through education, care coordination, and the implementation of evidence-based practices. While the existing literature supports the effectiveness of nurse-led interventions, challenges such as resource constraints and variability in training persist. Future research should focus on developing standardized protocols and exploring the integration of emerging technologies to further enhance chronic disease management. Ultimately, strengthening the role of nurses in chronic care not only benefits individual patients but also contributes to more sustainable and effective healthcare systems. In short, past studies and the literature review show that nursing-led care is helpful for managing chronic diseases. Everyone agrees that nurses play an important part in teaching patients, helping them stick to their treatment plans, and coordinating care, whether it's done in person or online. The differences in focus (online vs. traditional methods) and the varying results show that more study is needed. Future research should work on creating consistent measurement tools for different chronic conditions. It should also compare online treatments with traditional ones to provide better evidence about their long-term success and cost efficiency. These efforts will improve nurse-led treatments and help create policies that include these practices in complete care plans for chronic illnesses. Measurement Variability and Outcome Standardization: The review shows that there are many different ways to measure how well people stick to their medicine and other results, usually using various self-report tools. In contrast, some earlier studies, like those on COPD, have used more objective measures, such as data from remote tracking. This difference highlights the importance of having the same way to measure results in studies so we can compare and combine the findings more easily. In short, the literature study supports that nurse-led interventions are key in managing chronic diseases, as shown in earlier studies. There is good proof that these actions help patients follow their treatment, control their own health, and achieve better health results. However, differences in measurement methods and the changing nature of virtual care highlight the need for standard methods and longer studies. Future studies should work on creating standard ways to measure results and look more into the economic advantages of both virtual and in-person nurse-led care. By fixing these issues, healthcare systems can make better use of nurses to manage chronic diseases. This will improve patient satisfaction and total efficiency.

References

Riegel, B., Jaarsma, T., Lee, C. S., & Strömberg, A. (2019). Integrating symptoms into the middle-range theory of self-care of chronic illness. *Advances in nursing science*, *42*(3), 206-215.

Li, J., Varnfield, M., Jayasena, R., & Celler, B. (2021). Home telemonitoring for chronic disease management: Perceptions of users and factors influencing adoption. *Health Informatics Journal*, *27*(1), 1460458221997893.

Lee, J. A., Choi, M., Lee, S. A., & Jiang, N. (2018). Effective behavioral intervention strategies using mobile health applications for chronic disease management: a systematic review. *BMC medical informatics and decision making*, *18*, 1-18.

Anderson, R., & Bury, M. (Eds.). (2024). *Living with chronic illness: The experience of patients and their families*. Taylor & Francis.

Palmer, K., Marengoni, A., Forjaz, M. J., Jureviciene, E., Laatikainen, T., Mammarella, F., ... & Onder, G. (2018). Multimorbidity care model: Recommendations from the consensus meeting of the Joint Action on Chronic Diseases and Promoting Healthy Ageing across the Life Cycle (JA-CHRODIS). *Health Policy*, *122*(1), 4-11.

McBrien, K. A., Ivers, N., Barnieh, L., Bailey, J. J., Lorenzetti, D. L., Nicholas, D., ... & Manns, B. (2018). Patient navigators for people with chronic disease: a systematic review. *PloS one*, *13*(2), e0191980.

Arsenault-Lapierre, G., Henein, M., Gaid, D., Le Berre, M., Gore, G., & Vedel, I. (2021). Hospital-at-home interventions vs in-hospital stay for patients with chronic disease who present to the emergency department: a systematic review and meta-analysis. *JAMA network open*, *4*(6), e2111568-e2111568.

Tao, X., Zhu, W., Chu, M., & Zhang, Y. (2023). Nurse-led virtual interventions in managing chronic diseases: a protocol for a systematic review of randomised controlled trials. *BMJ open*, *13*(5), e070583.

Sadoun, M. M., Alnuaimi, N. R., Alghamdi, S. A. S., Alharthi, M. F. A., Khayat, H. M., Almatrafi, R. J. S., ... & Saeed, N. A. (2024). Comprehensive Review of Nurses' Role in Chronic Disease Management: Collaborative Care Approaches. *Journal of Ecohumanism*, *3*(8), 6651-6659.

Nagase, F. I., Stafinski, T., Avdagovska, M., Stickland, M. K., Etruw, E. M., & Menon, D. (2022). Effectiveness of remote home monitoring for patients with Chronic Obstructive Pulmonary Disease (COPD): systematic review. *BMC Health Services Research*, *22*(1), 646.

Steindal, S. A., Torheim, H., Oksholm, T., Christensen, V. L., Lee, K., Lerdal, A., ... & Borge, C. R. (2019). Effectiveness of nursing interventions for breathlessness in people with chronic obstructive pulmonary disease: A systematic review and meta-analysis. *Journal of Advanced Nursing*, *75*(5), 927-945.