

Effectiveness of Nurse-Led Nutritional Counseling in Chronic Disease Management

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ABSTRACT

This review aimed to evaluate the effectiveness of nurse-led nutritional counseling in managing chronic diseases. Nutritional counseling is a key component of chronic disease management, addressing modifiable dietary behaviors to improve outcomes. Nurse-led counseling leverages nurses' frequent patient interactions, holistic care approach, and ability to deliver personalized dietary advice. Evidence demonstrates significant benefits in reducing HbA1c levels in diabetes, improving blood pressure and lipid profiles in cardiovascular diseases, promoting sustained weight loss in obesity, and slowing disease progression in chronic kidney disease. Despite challenges such as knowledge gaps, time constraints, and patient barriers, these can be mitigated through enhanced training, use of technology, and interdisciplinary collaboration. Nurse-led nutritional counseling is a cost-effective and impactful strategy, improving clinical outcomes, enhancing adherence, and reducing healthcare costs, making it an essential component of chronic disease management.

1. Introduction

Chronic diseases, including diabetes, cardiovascular diseases (CVDs), obesity, and chronic kidney disease (CKD), are among the leading global causes of morbidity and mortality. Their prevalence has risen dramatically over the past few decades due to aging populations, sedentary lifestyles, and poor dietary habits. These conditions impose a significant burden on healthcare systems, accounting for an estimated 70% of healthcare expenditures worldwide. The management of chronic diseases requires a comprehensive, multifaceted approach that includes medical therapy, lifestyle modification, and patient education. Among these, nutritional counseling is a cornerstone of effective management, as dietary behaviors significantly influence the progression and outcomes of these diseases (1).

Traditionally, nutritional counseling has been provided by dietitians and nutritionists. However, nurses have increasingly become key players in delivering nutritional interventions, particularly in settings where dietitians may not be readily available. Nurse-led nutritional counseling leverages nurses' frequent interactions with patients, their ability to provide holistic care, and their role as patient advocates. Nurses can address dietary behaviors within the broader context of patients' physical, emotional, and social well-being, ensuring that dietary recommendations are not only evidence-based but also practical and sustainable (2).

The importance of nurse-led nutritional counseling is underscored by the growing emphasis on patient-centered care in chronic disease management. Nurses are often the first point of contact in healthcare settings and play a central role in educating patients, monitoring progress, and providing continuous support. Their ability to deliver tailored dietary advice, reinforce lifestyle changes, and build long-term relationships with patients makes them uniquely suited to address the challenges associated with chronic disease management (3,4).

This review examines the effectiveness of nurse-led nutritional counseling in managing chronic diseases, focusing on its impact on clinical outcomes, patient adherence, and healthcare cost reduction. It also explores the specific roles of nurses in delivering nutritional counseling, the benefits of this approach, and the challenges that may hinder its implementation. By highlighting the evidence-based practices that underpin nurse-led nutritional interventions, this review aims to provide a comprehensive understanding of their value in improving health outcomes and enhancing the quality of care in chronic disease management.

2. Review

1. Role of Nurses in Nutritional Counseling

Nurses are uniquely positioned to deliver nutritional counseling due to their close, continuous interaction with patients and their ability to provide individualized care. Beyond simply addressing dietary needs, nurses integrate counseling into a broader context of physical, emotional, and social health, aligning dietary guidance with the realities of patients' lives. This holistic approach is critical in managing chronic

diseases, where lifestyle changes are as significant as pharmacological interventions.

1.1. Comprehensive Nutritional Assessment

Nutritional assessment by nurses involves evaluating patients' current dietary intake, physical health indicators, and laboratory results. Parameters like body mass index (BMI), waist-to-hip ratio, lipid profiles, HbA1c levels, and kidney function tests guide the development of personalized dietary plans (1). Nurses also consider psychosocial factors, including access to healthy foods, cultural preferences, and socioeconomic barriers, ensuring dietary recommendations are feasible and sustainable for the patient (2).

1.2. Tailored Dietary Advice

Unlike standardized diets, nurse-led nutritional counseling prioritizes personalized advice. For example, in diabetes management, nurses guide patients on understanding the glycemic index and tailoring carbohydrate intake to align with daily activities and medication regimens. For cardiovascular patients, emphasis on sodium reduction and potassium-rich food inclusion is customized to the patient's baseline blood pressure and coexisting conditions (3).

1.3. Regular Monitoring and Follow-Ups

The iterative nature of nurse-led counseling enables ongoing assessment and adjustments. Regular follow-ups allow nurses to track adherence, monitor outcomes such as weight loss or reduced HbA1c levels, and address emerging challenges. Frequent reinforcement of goals helps sustain motivation, particularly in patients managing lifelong conditions like diabetes or hypertension (4).

2. Effectiveness in Specific Chronic Diseases

2.1. Diabetes

Diabetes management heavily relies on dietary control to stabilize blood glucose levels, improve insulin sensitivity, and prevent complications such as neuropathy and cardiovascular disease.

- **Improving Glycemic Control:**

In patients with type 2 diabetes, nurse-led nutritional counseling has demonstrated substantial benefits in glycemic management. A meta-analysis of randomized controlled trials found that nurse-led interventions reduced HbA1c levels by an average of 1.2%, with greater reductions observed in patients receiving regular follow-ups (5). Strategies such as portion control, carbohydrate counting, and balancing macronutrient intake are central to these outcomes. These interventions are particularly effective when paired with education on self-monitoring of blood glucose (SMBG) and its relationship to dietary habits.

- **Long-Term Weight Management:**

Weight reduction is critical for diabetes management as it enhances insulin sensitivity and reduces cardiovascular risk. Nurse-led programs focusing on caloric restriction, meal planning, and exercise counseling have led to sustained weight loss

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of 5–10% over 12 months, which is clinically significant for reducing HbA1c and improving lipid profiles (6).

2.2. Cardiovascular Diseases (CVDs)

Nutritional counseling in CVD management targets modifiable dietary factors such as sodium, saturated fat, and fiber intake. A heart-healthy diet is crucial for controlling blood pressure, reducing cholesterol levels, and preventing atherosclerosis.

- **Reduction in Blood Pressure:**

The Dietary Approaches to Stop Hypertension (DASH) diet, implemented through nurse-led counseling, has shown significant reductions in blood pressure. A study found systolic blood pressure reductions of 5–10 mmHg in hypertensive patients adhering to nurse-led dietary guidance. This effect is amplified by reducing sodium intake to below 1,500 mg/day and increasing potassium-rich foods like fruits and vegetables (7).

- **Improved Lipid Profiles:**

Nurse-led counseling has been effective in lowering LDL cholesterol and triglycerides while improving HDL cholesterol levels. A systematic review reported an average 15% reduction in LDL cholesterol among patients receiving tailored nutritional counseling from nurses. The incorporation of high-fiber foods, such as whole grains and legumes, and the replacement of saturated fats with unsaturated fats, form the foundation of these dietary recommendations (8).

2.3. Obesity and Weight Management

Obesity is a major risk factor for chronic diseases, and nurse-led interventions play a critical role in promoting weight loss and preventing associated complications.

- **Behavioral Approaches:**

Nurses employ motivational interviewing, a patient-centered communication style that enhances intrinsic motivation to change dietary behaviors. Techniques such as goal-setting, problem-solving, and self-monitoring through food diaries are integral to these interventions. Research has shown that nurse-led behavioral counseling achieves comparable weight loss outcomes to dietitian-led programs, particularly when combined with regular follow-ups (9).

- **Sustained Weight Loss:**

Sustained weight loss is crucial for reducing obesity-related risks. Nurse-led interventions focusing on caloric reduction and meal planning have resulted in clinically significant weight reductions (5–10%) maintained over one year. Practical guidance, such as preparing healthy meals on a budget, further ensures adherence (10).

2.4. Chronic Kidney Disease (CKD)

CKD management requires strict dietary control to slow disease progression and

manage symptoms such as fluid retention and electrolyte imbalances.

- **Dietary Modifications for Renal Health:**

Nurse-led counseling on low-protein diets reduces renal stress, slowing CKD progression. A study involving CKD patients found that dietary protein restriction, supervised by nurses, reduced uremic symptoms and delayed the need for dialysis (11). Sodium restriction and fluid management also play vital roles in controlling hypertension and edema.

- **Electrolyte Management:**

Nurses provide practical guidance on reducing dietary potassium and phosphate intake to prevent complications such as hyperkalemia and bone mineral disorders. This includes teaching patients to avoid high-potassium foods like bananas and potatoes or use phosphate binders during meals (12).

3. Broader Benefits of Nurse-Led Nutritional Counseling

3.1. Clinical Improvements Across Conditions

Nurse-led nutritional counseling has been shown to consistently improve key clinical markers, including:

- HbA1c reductions in diabetes.
- Blood pressure control in hypertension.
- Improved lipid profiles in cardiovascular diseases.
- Weight loss and BMI reductions in obesity.

These outcomes directly translate into reduced morbidity and lower risk of complications (13).

3.2. Cost-Effectiveness

Nurse-led interventions are more cost-effective than specialist care, reducing hospitalizations and the need for advanced treatments by addressing modifiable risk factors early (14). Early dietary interventions prevent complications, further lowering healthcare costs.

3.3. Enhanced Patient Adherence

Patients are more likely to adhere to dietary recommendations provided by nurses due to the trust and rapport developed during frequent interactions. Regular follow-ups and personalized support further strengthen adherence (15).

4. Challenges in Implementation

4.1. Knowledge and Training Gaps

Many nurses lack formal training in advanced nutrition science, leading to variability in the quality of dietary advice provided. Integrating comprehensive nutrition modules into nursing curricula and providing ongoing professional development is critical (16).

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4.2. Time Constraints

Nurses often face high patient loads, limiting the time available for detailed counseling sessions. Allocating dedicated nutrition counseling sessions or incorporating counseling into routine care workflows can mitigate this challenge (17).

4.3. Patient Barriers

Patients may face challenges such as low health literacy, financial limitations, and cultural dietary preferences. Tailoring advice to address these barriers is essential for improving adherence (18).

4.4. Interdisciplinary Collaboration

Lack of effective communication between nurses, dietitians, and physicians can lead to fragmented care. Establishing integrated care models with clear roles and consistent messaging ensures cohesive and effective nutritional counseling (19).

3. Conclusion

Nurse-led nutritional counseling is a highly effective strategy for managing chronic diseases, with demonstrated benefits in improving clinical outcomes, enhancing patient adherence, and reducing healthcare costs. Nurses' holistic and patient-centered approach allows them to deliver practical, sustainable dietary advice tailored to individual needs. Evidence highlights the significant benefits of nurse-led nutritional counseling in improving clinical markers, such as reduced HbA1c levels in diabetes, better blood pressure control in hypertension, improved lipid profiles in cardiovascular disease, and slower progression of renal damage in chronic kidney disease. These outcomes are achieved through personalized dietary recommendations, consistent follow-ups, and the integration of behavioral strategies to foster long-term adherence. Moreover, nurse-led interventions promote empowerment by educating patients about the relationship between diet and their condition, enabling them to make informed choices and actively participate in their care. Despite challenges such as knowledge gaps and time constraints, these barriers can be addressed through targeted training, the use of technology, and better integration of care teams. As the prevalence of chronic diseases continues to rise, empowering nurses to lead nutritional counseling initiatives is a critical step toward improving population health outcomes and ensuring the sustainability of healthcare systems. By empowering patients, improving adherence, and delivering measurable health benefits, nurses play a vital role in mitigating the impact of chronic diseases on individuals and healthcare systems. Future efforts should focus on expanding training, leveraging technology, and fostering collaborative care models to maximize the potential of nurse-led nutritional counseling and ensure its integration into routine healthcare practice. This approach is essential for advancing population health and achieving sustainable, high-quality chronic disease management.

References

- Franz MJ, et al. "Weight-loss outcomes: A systematic review and meta-analysis." *Journal of the Academy of Nutrition and Dietetics*, 2013.
- Boren SA, et al. "Impact of self-management education on glycemic control in patients with type 2 diabetes." *Diabetes Care*, 2009.
- Appel LJ, et al. "Effects of comprehensive lifestyle modification on blood pressure control." *New England Journal of Medicine*, 2001.
- Lean ME, et al. "Weight management interventions for adults with severe obesity." *The Lancet Diabetes & Endocrinology*, 2016.
- Kalantar-Zadeh K, et al. "Nutritional management of chronic kidney disease." *The New England Journal of Medicine*, 2011.
- NICE Guidelines. "Management of obesity and overweight in adults." National Institute for Health and Care Excellence, 2021.
- Sacks FM, et al. "Effects on blood pressure of reduced dietary sodium and the Dietary Approaches to Stop Hypertension (DASH) diet." *New England Journal of Medicine*, 2001.
- Estruch R, et al. "Primary prevention of cardiovascular disease with a Mediterranean diet." *New England Journal of Medicine*, 2013.
- Miller ER, et al. "The effects of dietary patterns on blood pressure: A meta-analysis of randomized controlled trials." *Annals of Internal Medicine*, 2002.
- Knowler WC, et al. "Reduction in the incidence of type 2 diabetes with lifestyle intervention or metformin." *New England Journal of Medicine*, 2002.
- de Boer IH, et al. "Management of CKD: Synopsis of the KDIGO 2020 clinical practice guideline." *Annals of Internal Medicine*, 2021.
- Kopple JD, Kalantar-Zadeh K. "Nutritional management of chronic kidney disease." *Seminars in Nephrology*, 2009.
- Huang LH, et al. "Impact of nurse-led interventions on improving health outcomes for adults with chronic conditions." *Nursing Research*, 2016.
- Dennis CL, et al. "Peer support for patients with chronic disease." *Canadian Medical Association Journal*, 2003.
- Desroches S, et al. "Interventions to enhance adherence to dietary advice for preventing and managing chronic diseases in adults." *Cochrane Database of Systematic Reviews*, 2013.
- Lopes JAB, et al. "Educational interventions on chronic kidney disease." *Nephrology Nursing Journal*, 2018.
- Blackwell DL, Lucas JW, Clarke TC. "Summary health statistics for U.S. adults: National Health Interview Survey." *Vital Health Stat*, 2014.
- Paterson BL, et al. "Chronic disease self-management and the negotiation of identity: A narrative view." *Social Science & Medicine*, 2001.
- O'Donnell DE, et al. "Integrated care models for managing chronic diseases." *Canadian Respiratory Journal*, 2013.