FUNDAMENTAL AND MANAGEMENT NURSING JOURNAL
Vol. 7, No. 2, October 2024

Laman jurnal: https://e-journal.unair.ac.id/FMNJ
http://dx.doi.org/ 10.20473/fmnj.v7i2.60627

Original Research

Nurses' Knowledge, Attitude, and Practice of Implementing Heart Failure Management Guidelines

Racheal Chidimma Jideofor* **and Jefferson S. Galanza**

Saint Louis University, Baguio City, Philippines

ARTICLE HISTORY

Received: July, 21 2024
Revised: October, 06 2024
Accepted: October, 07 2024
Available online: October, 10 2024

KEYWORDS

patient education; readmission; self-care management

CORRESPONDING AUTHOR

Racheal Chidimma Jideofor
rachealjideofor96@gmail.com
Saint Louis University, Baguio City, Philippines

ABSTRACT

Introduction: Heart failure presents a global concern with significant morbidity and mortality rates. In Nigeria, Heart failure has become prevalent, with patients exhibiting inadequate self-care due to nurses' limited knowledge of management guidelines, lack of motivation to utilize clinical practice guidelines, and difficulties implementing management guidelines that incorporate patient education. The study analyzed the nurses' level of knowledge, degree of attitude, and extent of practicing education on heart failure management guidelines. Also, the relationship between nurses' knowledge and practice in implementing heart failure management guidelines.

Methods: This quantitative study employed a descriptive-correlational survey design. Purposive sampling was employed to select two government-owned hospitals in northeast Nigeria. A stratified random sampling technique was utilized to recruit two hundred twenty (220) nurse respondents. A self-made survey questionnaire was utilized to gain more extensive information from respondents. Data were analyzed using descriptive statistics and Spearman's correlation.

Results: The results showed nurses' insufficient knowledge (Mean 14.5 ± 2.91) of heart failure management guidelines, favorable attitude (mean 4.37 ± 0.43), and high extent of practice (mean 4.16 ± 0.66). Furthermore, a very weak, no significant negative correlation was discovered between knowledge and practice of Heart Failure management guidelines.

Conclusions: Nurses showed positive attitudes toward heart failure patient care, yet inconsistently engaged in patient education despite recognizing its benefits. The absence of a relationship between nurses' knowledge and practice of patient education underscores the need to address factors impeding patient education.

Cite this as:

Jideofor, R. C. & Galanza, J. S. (2024). Nurses' Knowledge, Attitude, and Practice of Implementing Heart Failure Management Guidelines. *Fundam Manaj. Nurs. J.* 7(2). 106-117 doi.org/10.20473/fmnj.v7i2.60627

1. INTRODUCTION

Heart failure (HF) is traditionally described as the heart's incapacity to pump nutrient and oxygen-rich blood enough to meet the tissues' requirements (Hinkle & Cheever, 2017). HF is a global health pandemic, a complex and deadly syndrome estimated to affect 64 million individuals globally (Savarese et al., 2023). Living with HF is a shared, demanding journey between patients and their caregivers. As a growing global issue, HF has profound social impacts, such as a reduction in quality of life, increased mortality and morbidity (Malik et al., 2023; Polikandroti, 2022), and caregiver burden (Liu et al., 2020), and economic impact on patients such as high health care costs.

Patients with HF often experience a reduced quality of life due to symptoms such as fatigue, shortness of breath, and limited physical activity (Malik et al., 2023), which affects patient's ability to

engage in daily activities and social interactions, leading to isolation and decreased social participation (Polikandroti, 2022). Economically, HF imposes substantial costs on both individuals and healthcare systems. Even in Sub-Saharan Africa, HF is linked to frequent hospitalization, considerable economic burdens, and high morbidity and mortality rates, affecting people with high disability-adjusted life years (S. Ogah et al., 2019).

Contrary to the trend of HF in high-income countries like Western Europe, Japan, and North America, where HF is known to be an age-related disease, in sub-Saharan Africa, HF is common among young and middle-aged individuals (S. Ogah et al., 2019). In Nigeria, HF ranked fourth(4th) among the top 20 diseases responsible for mortality (Odunaiya, 2019), accounts for 7- 8% of total medical admissions, and constitutes 44.9% of cardiovascular conditions in certain medical facilities (Ogunmodede et al., 2021). The rising prevalence and incidence of heart disease in Nigeria are attributed to cardiovascular disease, mainly hypertension (Odunaiya, 2019), the primary contributor to heart failure, affecting 56.3% of the population (Onwuchekwa, 2009). Data have shown a general increase in cardiovascular deaths, especially in the urban populace, owing to the growing prevalence of CVD risk factors, the adoption of a Western diet and lifestyle, urbanization, and poor prognosis (Ike & Onyema, 2020).

Also, in Nigeria, a developing country where many citizens cannot afford cardiovascular care nor access other healthcare services due to economic state of the nation (Ike & Onyema, 2020), leading to poor quality of life and poor healthcare. Developing nations have hospital readmission issues due to limited resources, uncoordinated healthcare provision, and lack of funding (Botha et al., 2014). According to Ogbemudia & Asekhame (2016), readmission rates associated with HF are still high, especially among older people. Almost 50% of patients return to the hospital within six months of discharge (van Walraven et al., 2011). These readmissions were linked to a high hospital mortality risk, increased patient financial burden, and a suboptimal healthcare system (Ogbemudia & Asekhame, 2016). The rise in the prevalence of HF and its social and economic impact has underscored its importance as a public health concern, prompting global efforts to mitigate these effects (Savarese et al., 2023).

A systematic review and meta-analysis conducted by Tian et al. (2024) investigated the effects of nurse-led education on mortality, readmission, and quality of life in heart failure patients found that nurse-led education programs, as a nursing intervention, reduced heart failure-related readmissions by 25%, decreased mortality by 13%, and improved the quality of life. Healthcare providers reduce the likelihood of readmission for patients with heart failure if they are prioritized and provided adequate education, as patient education improves clinical outcomes and reduces hospital readmissions (Malik et al., 2023). Proper management interventions have been substantially shown to reduce the rate of hospital readmission and cost while improving the quality of life for patients with heart failure (Doughty, 2002).

Bozkurt (2018) expressed that successful HF management commands an understanding of new treatments' signs, contraindications, benefits, safety, and risks. It also comprises patient education, care coordination, monitoring, managing comorbidities, and individualizing therapies based on the American College of Cardiology/American Heart Association (ACC/AHA)/Heart Failure Society of America (HFSA) clinical practice guidelines for treating and managing HF. AHA/ACC/HFSA 2022 HF clinical practice guidelines (CPG) present evidence-based approaches to the management of HF patients, including self-care management intervention to improve the quality of care and align care to the patient's interest (Heidenreich et al., 2022).

Malik et al. (2023) advocated that the discharge plan provided by the nurses for HF patients should comprise comprehensive patient education on medication management and compliance, adhering to fluid restriction guidelines, adopting a low-sodium diet, recommended activity and exercise, smoking cessation, and identify the HF worsening signs and symptoms. Therefore, nurses must enhance their knowledge to empower patients with self-care management practices. Jahromi (2016)defined patient education as a strategy for enhancing patients' knowledge, skills, and behaviors for better health outcomes. A process of enabling patients to improve their health. It encompasses formal and informal interactions between patients and nurses to achieve improved health outcomes (Oyetunde & Akinmeye, 2015). Nurses must be familiar with the most recent guidelines for HF management to educate patients effectively.

Hart et al. (2011) have suggested future studies on nurses' knowledge of HF self-management, particularly a study investigating the relationships between nurses' knowledge and the effectiveness of patient education. Practicing patient education by the nurses is seen as heart failure guideline implementation in this study, designed to bridge and develop HF management skills essential to managing heart failure. It ensures that patients possess the necessary knowledge and understanding to make an informed decision about their self-care at home. Therefore, Nurses' knowledge and attitude toward HF guidelines are essential in affecting HF implementation of evidence-based CPG (Kim & Hwang, 2014).

Studies have identified some barriers impeding patient education that are nurse-related: insufficient time or heavy workloads, lack of educational facilities, poor knowledge, and deficient communication skills (Demissie et al., 2021; Ghorbani et al., 2014) also motivational factors influencing patient education, such as knowledge, respect and appreciation, work interest, and support of team members (Toloei et al.,

2006). Organizational support, educational material, training, and seminars are facilitators to improve patient education (Oyetunde & Akinmeye, 2015)

The European Guidelines for Diagnosis and Treatment of Heart Failure have highlighted self-care as a component of routine HF management and patient empowerment (Ponikowski et al., 2016). Hence, self-care management helps HF patients maintain physiological stability (Riegel et al., 2016), empowers patients to understand their role in managing their symptoms, monitoring dietary intake, determining the amount of fluid and exercise appropriate for them, and being aware of changes that require immediate consultation with health care providers.

Riegel et al. (2009) highlighted the need to promote self-care management behavior in heart failure patients due to its ability to improve their quality of life and reduce the risk of mortality or hospitalization. However, patients with heart failure have displayed a lack of self-care knowledge (Negarandeh et al., 2020). Health Care Providers (HCPs) fail to address patients' ability to self-care due to HCPs' (nurses') lack of knowledge of HF management guidelines and lack of time for adequate patient education (Riegel et al., 2009).

AHA identified self-care behaviors for HF patients as dietary adherence, symptom management, medication adherence, smoking cessation, exercise, and preventative behaviors (Riegel et al., 2009). Also, Delaney et al. (2011) identified evidence-based education topics on dietary, symptom identification, weight monitoring, medication compliance, activity level, and follow-up appointments as necessary for managing heart failure based on guidelines. Education on these subjects is essential because it enables early intervention, improves patients' quality of life, and reduces the severity of the deterioration, hospital readmission, and cost.

European Society of Cardiology provides clinical practice guidelines that aid nurses in managing people with HF. These HF guidelines were not consistently implemented or followed during treatment (Odunaiya, 2019). When treatment guidelines are slowly adopted and inconsistently applied, they often fail to improve patient care and outcomes (Fonarow et al., 2007). Nigeria is unlike other Western countries where easy accessibility of evidence-based clinical practice guidelines is adopted and implemented. There is a suboptimal use of guidelines in many healthcare facilities due to poor organizational structure (Odunaiya, 2019). A study conducted in Nigeria that examined the experiences of nurses implementing evidence-based practice in bureaucratic healthcare settings concluded that nursing practices in Nigeria have traditionally relied on rituals and routines that may be inadequate for addressing the healthcare needs of patients (Ominyi et al., 2019). Also, Ekong et al. (2016), a study conducted among Registered Nurses and Licensed Vocational Nurses working in a home healthcare agency in southern California, USA, exposed a significant deficit in nurses' knowledge and skills in HF self-care management. They concluded that Nurses could reduce hospital readmission rates and other adverse outcomes through effective patient education when nurses improve their knowledge of HF self-care.

This paper determined the nurses' level of knowledge, degree of attitude, and extent of practicing patient education on heart failure management guidelines. The research further investigated the relationship between nurses' knowledge and practice in implementing Heart Failure management guidelines.

2. METHODS

2.1 Research Design

This quantitative study utilized a descriptive-correlational survey design that describes the variables, relationship, direction, and magnitude.

2.2 Population, Sample and Sampling

The respondents were part- and full-time registered nurses with diplomas, bachelor's, master's, and doctorate degrees, working routinely in an intensive care unit (ICU), accident and emergency ward, surgical ward, and in the general medical unit where HF patients were cared for, they are nurses who had cared for and educated patients with HF. Excluded were nurses without HF care experience, student nurses, and those on leave during the study. The respondents were recruited from the selected hospitals using a stratified random sampling technique. The nurses were grouped into two strata based on the hospitals: Taraba State Specialist Hospital and Federal Medical Center Jalingo, each of which formed a stratum. The 220 respondents were then chosen utilizing a simple random sampling technique via a computerized random number generator.

2.3 Instruments

The study data were obtained through a self-made structured survey questionnaire to circumvent interference and ensure anonymity. The questionnaire underwent rigorous face and content validity by a panel of medical and cardiology nursing experts and was pretested to assess its clarity and applicability. It consists of three parts.

Part A is the nurse Knowledge level, which comprises twenty-two (22) statement items related to five (5) crucial educational aspects: Dietary intake, signs and symptoms of the worsening fluids volume status, condition, exercise, and medications. The part contains precise instructions for respondents to answer the questions correctly. Nurses must determine if each statement is "True or False." The knowledge question yield (α=0.73).

Part B focused on determining the nurse's attitude toward implementing HF management guidelines, which comprised eleven (11) statements related to the five educational themes and yield (α=0.73). The responses were graded from 5 to 1 following a 5-point Likert scale varying from (strongly agree) to (strongly disagree).

Part C ascertained nurses' extent of practicing education of heart failure management guidelines to HF patients, which comprised eleven (11) items related to the five educational themes and yield (α=0.81). The responses were graded from 5 to 1 following a 5-point Likert scale varying from (Always) to (Never).

2.5 Procedure

The researcher obtained Ethics approval from the Saint Louis University Research Ethics Committee (SLU-REC 2023-024) and the Taraba State Ministry of Health, Health Research Ethics Committee (TRSHREC/2023/APP/013). Formal approval was secured from both hospitals through the ethics committees: the Health Research & Ethics Review Committee of Federal Medical Center, Jalingo (FMC/JL/ADM/330/VOL1), and the Taraba State Specialist Hospital administrator (TRS/TSSH/SUB/10/VOL1). Then, an informed consent form and questionnaire were given to the respondents. The survey was conducted individually and face-to-face at the respondents' workplaces. The respondents were required to complete the questionnaire whenever it was convenient for them within the designated day to avoid interfering with work hours and patient care, which might lead to negligence of patient care. Data were meticulously collected between October and November 2023, ensuring the reliability and accuracy of the results. Only aggregate data was presented in the study report. The researcher then encoded data for statistical treatment and interpretation. The hospitals also provided the researcher with trained assistants to support the study.

2.6 Data Analysis

The study used a simple frequency table to analyze and interpret the nurses' knowledge, attitude, and practice of educating heart failure management guidelines. The Spearman correlation test was employed to determine the relationship between nurses' level of knowledge and the extent of the practice in implementing heart failure management guidelines.

2.7 Ethical Clearance

The researcher adhered to all government protocols and guidelines, ensuring confidentiality, safety, and privacy protection through data anonymization. The respondents were notified that their involvement was entirely voluntary and that they had the right to withdraw or decline from the study at any time.

3 RESULTS

Table 1 shows the Nurses' level of knowledge in implementing Heart Failure management guidelines in five education themes was below average (Mean 14.5 ± 2.91). The study revealed that the highest percentage of correctly answered questions by the respondents were related to exercise (74.66%). The items related to signs and symptoms of worsening conditions yielded the lowest percentage of correctly answered by the nurses (47.82%).

The Nurses demonstrated in Table 2 a favorable attitude towards implementing Heart Failure management guidelines (mean 4.37 ± 0.43: 98%) a highly positive attitude. The study revealed that the question about checking sodium intake limitations in heart failure patients' food before consumption has the highest attitude mean score of 4.65. The lowest mean score is 4.05 for questions about potassium-based salt substitutes.

Table 3 indicated a high extent of practice of patient education on heart failure management guidelines (mean 4.16 ± 0.66; 82%). The study revealed that nurses' practice of patient education on heart failure conditions and exercising has the highest mean score of 4.40. In contrast, patient education on the expected weight and weight gain has the lowest mean score of 4.02.

Table 4. outline a Spearman's rank correlation to determine the relationship between 220 nurses' level of knowledge of Heart failure guidelines in five educational themes and the practice of education in implementing Heart Failure management guidelines. There was a very weak, negative association between Knowledge and practice of Heart Failure management guideline, which was statistically not significant at 0.05 ($r_s(220) = -.052$, $p = .44$). Conversely, the Nurse's Knowledge of exercise shows a negative correlation with the nurse's extent of practice education in implementing Heart Failure management guidelines, which was statistically significant at 0.05 ($r_s(220) = -.189$, $p = .005$).

4 DISCUSSION

Nurses' knowledge of heart failure management guidelines can be understood as the information inherent in nurses to perform patient education. The result demonstrates that the nurses have a mean score of 14.5 a below-average knowledge of heart failure management guidelines. The result indicates that the nurses are considered to have some necessary understanding of HF management guidelines. This level of knowledge needs to be improved to enable the nurses to acquire adequate information that would help them perform their duty as patient educators effectively. The study implies that nurses need continuous learning and experience

Table 1. Nurses' level of knowledge in implementing Heart Failure management guidelines.

Nurses' knowledge mean score				**Mean**	**SD**	**Min**	**Max**
Result	Range Scores	frequency	Percentage	14.5	2.91	6	21
Excellent knowledge	19.50 – 22.00	7	3%				
Average knowledge	16.50 – 1.9.49	159	72%				
Below average knowledge	11.50 – 16.49	19	9%				
Poor knowledge	0.00 – 11.00	35	16%				
		220	**100%**				

Table 2. Nurses' level of attitude in implementing Heart Failure management guidelines.

Nurses' Attitude Mean score				**Mean**	**SD**	**Min**	**Max**
Result	Range scores	Frequency	Percentage	4.37	0.43	2.91	5.00
Favorable attitude	3.41-5.00	216	98%				
Unfavorable attitude	1.81- 3.40	4	2%				
		220	**100%**				

Table 3. Respondents' extent of practicing patient education of Heart Failure management guidelines.

Nurses' practices mean score				**Mean**	**SD**	**Min**	**Max**
Result	Range scores	Frequency	Percentage	4.16	0.66	2.45	5.00
Comprehensive patient education	3.41- 5.00	181	82%				
Limited patient education	1.81- 3.40	39	18%				
		220	**100%**				

Table 4. Relationship between respondents' level of knowledge and extent of practice in implementing Heart Failure management guidelines.

Correlates of the extent of the practice	**Spearman rank Correlation**	**p-value**
Knowledge of Dietary Intake.	0.131	0.052
Knowledge of Fluids Volume Status.	-0.077	0.252
Knowledge of Signs and symptoms of a worsening condition.	-0.071	0.291
Knowledge of Medications.	0.107	0.113
Knowledge of Exercise.	-0.189	0.005
Overall, Knowledge	-0.052	0.440

Legend: Correlation is significant at equal to less than 0.05.

to deepen their understanding and ensure comprehensive patient education, which will enhance the patient's self-management skills and quality of life, lowering hospital readmission and cost. The present study's result affirms an array of literature in which respondents' knowledge of HF management guidelines needs improvement (Delaney et al., 2011; Washburn et al., 2005) Ghorbani et al. (2014) emphasized the necessity of providing nurses with the requisite knowledge and skills to carry out effective patient education, given that patient education is crucial to nurses and student nurses.

Questions related to exercise were the highest the nurses correctly answered, with 74.44%. However, the score is a deviation from the expected, suggesting the nurses possess a limited understanding of heart failure management guidelines that need improvement. The nurses need to deepen their learning about HF-related exercises, such as low-impact aerobic exercises (walking and running) and resistance training exercises, which improve circulation and help maintain body composition. Also, the nurses must understand the importance of exercise and routine to ensure comprehensive HF patient education. Enabling nurses to convey the benefits of exercise, helping patients develop personalized exercise plans, and monitoring their progress to ensure they safely and effectively incorporate physical activity into their daily routines. Regular physical activity is essential to heart failure management as it can improve patients' symptoms, exercise tolerance, and quality of life. This study results support the findings of Krówczyńska & Jankowska-Polańska (2022) that the Polish nurses demonstrated the highest knowledge in exercise-related questions among the five domains studied.

The nurses' insufficient knowledge in the present study is most pronounced in questions

concerning signs and symptoms of worsening HF conditions, which exhibited low correct answers at (47.82%). The percentage score was interpreted to be poor knowledge of signs and symptoms of worsening HF conditions. The result highlights a major concern that needs to be addressed, as significant errors characterize nurse knowledge levels and reflect an unacceptable understanding of HF management guidelines, given that nurses are the primary source of information and education for most patients. The study results aligned with those of Fowler (2012) and Washburn et al. (2005), together, identified that assessing signs and symptoms of worsening HF as the most challenging aspect for nurses. Nurses need to be more aware of patients' worsening HF signs and symptoms such as unexpected weight gain, frequent dry hacking cough, use of 2-3 pillows at bedtime to alleviate shortness of breath, and difficulty breathing while lying flat in bed or with activity.

Based on the results of the nurses' knowledge of heart failure management guidelines, this study implied that nurses are required to enhance their knowledge through training and education. The education intervention on heart failure management guidelines would help the nurses perform their roles as educators and ensure that heart failure patients are well-equipped with better self-care management skills and information for optimal self-care at home. Hospitals need to embark more on in-service training efforts to ensure nurses possess good knowledge of HF management guidelines. This will enhance nurses' engagement in HF patient education, empowering patients to partake in their care and independently self-care at home. Thus, improving patients' quality of life and reducing hospital readmission and cost.

A nurse's attitude toward heart failure management can be understood as their sentiments and perspectives regarding patient education and implementation of HF management guidelines in clinical settings. The striking finding is that out of the eleven (11) attitude survey questions related to dietary intake, fluid volume status, medications, signs and symptoms of worsening condition, and exercise, ten (10) items received highly positive ratings from the nurses. The nurse's overall attitude mean score (4.37) was interpreted to be a favorable mindset toward implementing heart failure management guidelines and patient education. This optimistic attitude toward patient care suggests that the nurses are not only self-assured but also feel confident in effectively implementing heart failure management guidelines. The result of the current study affirms those studies carried out in Ethiopia, where a substantial percentage (94.4%) of respondents displayed a positive attitude toward HF management (Demissie et al., 2021), and in Bahrain, where nurses exhibited a positive attitude with a mean total score of 3.83 towards management of patients with HF (Sanad, 2017).

The question related to checking sodium intake limitations in heart failure patients' food before consumption was the highest, with a mean score of 4.65. The nurses acknowledge the crucial nature of monitoring sodium intake because excessive sodium may lead to fluid retention and worsen heart failure symptoms. The result revealed that the nurses understand the importance of the proactive and preventative approach to managing heart failure. Communicating these strategies would help patients monitor and limit sodium intake and holistically manage their condition, improving overall health outcomes. This study's results corroborate with Heidenreich et al. (2022), supporting that interventions from nurses or dietitian counseling on reducing sodium intake from canned food, processed food, salty snacks, and condiments without compromising nutritional adequacy can reduce HF hospitalizations and improve HF patients' quality of life. Also, the results indicate that nurses adhere to and acknowledge the recommendations 2005 Hunt et al. (2009) provided, emphasizing strict limiting and checking sodium intake for patients with HF should be followed.

The result revealed that the question related to potassium-based salt substitutes had a slightly lower average score of 4.05. This variation implies that while overall attitudes are highly positive, there may be some reservations about nurses' attitudes related to education on using potassium-based salt substitutes. A knowledgeable nurse acknowledges that potassium-based salt substitutes pose some risks to heart failure patients, as they can potentially increase potassium levels in the body. This study shows that nurses need to boost their confidence in ensuring that the patient understands the importance of choosing foods with a lower potassium level by carefully reading food labels since almost all foods contain some potassium.

Based on the results of this study, the nurse possesses a preventative care mindset and understands the impact of lifestyle factors on heart failure patients. Nurses with a favorable attitude towards adhering to recommendations on sodium intake restrictions and checking potassium-based salt substitutes are more likely to educate and communicate these preventive measures to heart failure patients, leading to better patient compliance and improved quality of life. This proactive approach empowers patients with the knowledge necessary to make informed dietary choices, safeguarding their well-being and contributing to effective heart failure management.

Nurses' practice of patient education empowers heart failure patients to effectively manage their condition and integrate guideline-recommended behaviors into their daily lives. The overall result revealed that the nurses exhibit intermittent engagement in patient education on HF management guidelines rather than consistent engagement, which impedes the enhancement of patients' knowledge, standard of living, and self-care management. The present study's result corroborates with those of Oyetunde & Akinmeye (2015), they reported that nurses at University College Hospital in Ibadan,

Nigeria, have a high level of patient education practice. The nurses believed that patient education provided patients with information for self-care, and they acknowledged it as their role. However, the study reported that the nurses could not practice patient education effectively. According to Toloei et al. (2006), patient education is influenced by various motivational factors like appreciation and respect, work interest, knowledge, job security, and professional responsibility. Any of these factors could cause the nurse's intermittent engagement in patient education. They need to adhere to a standardize protocol, healthcare guidelines and hospital policies to balance time and resources and manage workloads that affect patient education engagement since they understand the impact of their role as educators on patients.

According to the respondents' extent of practicing patient education results, two variables attained the highest scores: nurses' patient education on HF patient health conditions and exercising, with mean scores of 4.40, respectively. This result revealed that during patient education engagement, the nurses always educate heart failure patients to a very high extent on their health conditions and encourage them to exercise actively. The consistency of the nurses' exercise education might be a strategy to increase the patient's physical activity and exercise training dosing to prevent a sedentary lifestyle and hospital readmission, as well as improve quality of life among HF patients. The study's result is in association with Lavie et al. (2019), which states that physical activities and exercise are effective therapeutic strategies for improving cardiorespiratory fitness (CRF) in heart failure patients. Also, Nayor & Vasan (2015) showed that a lower risk of HF is related to improved cardiorespiratory fitness, increased physical activity, and a less sedentary lifestyle.

About the second highest mean score, the nurse continually educates patients on health conditions during patient education. The result suggests that the nurses impart self-care management skills to the patients so that they can have the potential to control their conditions at home, prevent complications, and know when to seek medical attention. This action aligned with Riegel et al. (2009) that individuals with heart failure should be strongly encouraged to establish systems for routine monitoring of changes in signs and symptoms.

The tables also revealed that the "expected weight and weight gain report" received the least education practice mean score from the nurses in the study, with 4.02. The results suggest that the nurses only sometimes reinforce the importance of monitoring weight and weight gain among Heart failure patients. Unlike the recommendation of Wang et al. (2014) that nurses should emphasize the need for frequent daily weight monitoring to prevent exacerbations.

Based on the results, patient education is provided to enhance patients' knowledge, improve their standard of living, and foster readiness for self-care management. Nurses engage in patient education to empower patients with the information and skills they need to make informed decisions and care for themselves at home. Through comprehensive patient education for heart failure management, the nurses could adapt their teaching to address specific challenges or barriers the patient faces in adhering to self-care management regimens. Nurses can better support patients in managing their conditions by considering their unique situations.

The study reveals no significant relationship between nurses' knowledge of HF management guidelines and their practices education in fluid overload symptoms relieving, enhancing medication adherence, reducing adverse effects of treatment, and educating patients on dietary modification, self-monitoring of symptoms, and daily weight monitoring adherence. The result signifies that any observed correlation may be due to random chance rather than an actual relationship. The study revealed a disparity between the two examined factors, knowledge and practice, which established a gap between theoretical knowledge and practical application of Heart failure management guidelines through patient education. Numerous factors have been shown to influence patient education at the practice level earlier in the research. This correlation raises concerns about assessing the nurse's skills, techniques, and approaches utilized to educate patients with heart failure. This indicates that other factors beyond knowledge could influence nurse practice of patient education in heart failure management guidelines. Consequently, these factors influencing patient education within the clinical setting must be identified and addressed.

The result negates Oyetunde & Akinmeye (2015), which established a significant association between knowledge and the practice of patient education. However, their study reported that nurses faced challenges in effectively practicing patient education despite having the knowledge required. Nurses can be highly knowledgeable about HF management guidelines but may face challenges in delivering HF teaching to patients (Hart et al., 2011). According to Toloei et al. (2006), patient education could be influenced by various motivational factors beyond knowledge, such as work interest, appreciation, job security, and professional responsibilities. Therefore, understanding these dynamics becomes crucial in enhancing the effectiveness of patient education in clinical settings.

The result also revealed a significant negative relationship between nurses' knowledge of exercise and the nurse's extent of practice in implementing heart failure management guidelines, particularly in the context of patient education. The result indicates an inversely proportional relationship, which signifies that an increase in nurses' knowledge of exercise does not essentially translate into more frequent practice that promotes physical activity among the nurses. In essence, nurses may experience demotivation or encounter barriers in educating

heart failure patients about exercise that would be meaningful and crucial to managing heart failure.

Therefore, hospital administrators are encouraged to address challenges such as educational facilities, workload insufficient time, heavy workloads, lack of educational facilities, deficient communication skills, poor knowledge and working conditions (Demissie et al., 2021; Ghorbani et al., 2014) impeding nurses from providing optimal care and patient education. Administrative intervention, like organization support, must address motivational and well-being issues, and training must focus on improving nurses' engagement techniques and communication skills (Oyetunde & Akinmeye, 2015). These will empower the nurses to consistently promote physical activities to improve patient safety and quality of life.

This correlation could have implications for the training and support provided to nurses in managing and educating heart failure patients, as those with good knowledge of the guidelines will likely incorporate them more effectively into their practice (Kim & Hwang, 2014). Given that the nurses in this study, despite their limited knowledge, are actively involved in heart failure guideline implementation, particularly in patient education, this could be detrimental to patient safety and exacerbation of heart failure conditions. Therefore, assessing and evaluating the quality of information conveyed to patients becomes crucial. It is well-established that nurses with insufficient knowledge of heart failure management guidelines may compromise the effectiveness of heart failure management and adversely impact patients' clinical outcomes (Demissie et al., 2021).

5 CONCLUSION

This study analyzed nurses' knowledge, attitude, and practice in implementing heart failure management guidelines and ascertained the relationship between their knowledge level and practice of patient education on Heart Failure management guidelines. The results highlight the implication of addressing barriers that impede nurses from providing patient education to improve patient outcomes in heart failure management. Patient education on heart failure management guidelines enhances patients' capacity for self-care, prevents needless readmissions and expenses, and improves quality of life.

The Nurses demonstrated a basic understanding of heart failure management guidelines that require continuous training and education to perform their duty as educators. However, the nurses possess a favorable mindset toward patient care, an attitude crucial in implementing heart failure management guidelines. This mindset indicates that nurses are willing to provide patient education to their patients and improve continuously.

The absence of a direct relationship between nurses' knowledge of heart failure management guidelines and their implementation practices highlights the importance of nurses to continuously improve their skills, techniques, and approaches utilized in the application of knowledge within the clinical setting as it improves the effectiveness of nursing practices in line with heart failure management

6 REFERENCES

Botha, U. A., Koen, L., Galal, U., Jordaan, E., & Niehaus, D. J. (2014). The rise of assertive community interventions in South Africa: a randomized control trial assessing the impact of a modified assertive intervention on readmission rates; a three year follow-up. *BMC Psychiatry*, *14*(1), 56. https://doi.org/10.1186/1471-244X-14-56

Bozkurt, B. (2018). What Is New in Heart Failure Management in 2017? Update on ACC/AHA Heart Failure Guidelines. *Current Cardiology Reports*, *20*(6), 39. https://doi.org/10.1007/s11886-018-0978-7

Delaney, C., Apostolidis, B., Lachapelle, L., & Fortinsky, R. (2011). Home care nurses' knowledge of evidence-based education topics for management of heart failure. *Heart & Lung*, *40*(4), 285–292. https://doi.org/10.1016/j.hrtlng.2010.12.005

Demissie, B. M., Bekele, D. M., Habte, T., & Wake, A. D. (2021). Knowledge, Attitude and Associated Factors Towards Heart Failure Management Among Nurses Working in the Cardiac Unit of Selected Government Hospitals in Addis Ababa, Ethiopia: A Cross-Sectional Study. *Nursing: Research and Reviews*, *Volume 11*, 41–53. https://doi.org/10.2147/NRR.S329363

Doughty, R. (2002). Randomized, controlled trial of integrated heart failure management. The Auckland Heart Failure Management Study. *European Heart Journal*, *23*(2), 139–146. https://doi.org/10.1053/euhj.2001.2712

Ekong, J., Radovich, P., & Brown, G. (2016). Educating Home Healthcare Nurses About Heart Failure Self-Care. *Home Healthcare Now*, *34*(9), 500–506. https://doi.org/10.1097/NHH.0000000000000453

Fonarow, G. C., Yancy, C. W., Albert, N. M., Curtis, A. B., Stough, W. G., Gheorghiade, M., Heywood, J. T., Mehra, M., O'Connor, C. M., Reynolds, D., & Walsh, M. N. (2007). Improving the Use of Evidence-Based Heart Failure Therapies in the Outpatient Setting: The IMPROVE HF performance improvement registry. *American Heart Journal*, *154*(1), 12–38. https://doi.org/10.1016/j.ahj.2007.03.030

Fowler, S. (2012). Improving Community Health

Nurses' Knowledge of Heart Failure Education Principles. *Home Healthcare Nurse*, *30*(2), 91–99. https://doi.org/10.1097/NHH.0b013e318242c5c7

Ghorbani, R., Soleimani, M., Zeinali, M.-R., & Davaji, M. (2014). Iranian nurses and nursing students' attitudes on barriers and facilitators to patient education: A survey study. *Nurse Education in Practice*, *14*(5), 551–556. https://doi.org/10.1016/j.nepr.2014.06.003

Hart, P. L., Spiva, L., & Kimble, L. P. (2011). Nurses' knowledge of heart failure education principles survey: a psychometric study. *Journal of Clinical Nursing*, *20*(21–22), 3020–3028. https://doi.org/10.1111/j.1365-2702.2011.03717.x

Heidenreich, P. A., Bozkurt, B., Aguilar, D., Allen, L. A., Byun, J. J., Colvin, M. M., Deswal, A., Drazner, M. H., Dunlay, S. M., Evers, L. R., Fang, J. C., Fedson, S. E., Fonarow, G. C., Hayek, S. S., Hernandez, A. F., Khazanie, P., Kittleson, M. M., Lee, C. S., Link, M. S., … Yancy, C. W. (2022). 2022 AHA/ACC/HFSA Guideline for the Management of Heart Failure. *Journal of the American College of Cardiology*, *79*(17), e263–e421. https://doi.org/10.1016/j.jacc.2021.12.012

Hinkle, J. L., & Cheever, K. H. (2017). *Brunner & Suddarth's Textbook of Medical-Surgical Nursing (14th ed.)*. Wolters Kluwer Health / Lippincott Williams & Wilkins.

Hunt, S. A., Abraham, W. T., Chin, M. H., Feldman, A. M., Francis, G. S., Ganiats, T. G., Jessup, M., Konstam, M. A., Mancini, D. M., Michl, K., Oates, J. A., Rahko, P. S., Silver, M. A., Stevenson, L. W., & Yancy, C. W. (2009). 2009 Focused Update Incorporated Into the ACC/AHA 2005 Guidelines for the Diagnosis and Management of Heart Failure in Adults. *Circulation*, *119*(14). https://doi.org/10.1161/CIRCULATIONAHA.109.192065

Ike, S., & Onyema, C. (2020). Cardiovascular diseases in Nigeria: What has happened in the past 20 years? *Nigerian Journal of Cardiology*, *17*(1), 21. https://doi.org/10.4103/njc.njc_33_19

Jahromi, Z. B. (2016). A Study of the Barriers and Facilitators of Patient Education from the Viewpoint of Nursing Students at Jahrom College of Nursing. *Bangladesh Journal of Medical Science*, *15*(3), 471–476. https://doi.org/10.3329/bjms.v15i3.30201

Kim, S., & Hwang, W. J. (2014). Palliative care for those with heart failure: Nurses' knowledge, attitude, and preparedness to practice. *European Journal of Cardiovascular Nursing*, *13*(2), 124–133. https://doi.org/10.1177/1474515113519521

Krówczyńska, D., & Jankowska-Polańska, B. (2022). Polish Nurses' Knowledge of Heart Failure Self-Management Principles. *International Journal of Environmental Research and Public Health*, *19*(3), 1327. https://doi.org/10.3390/ijerph19031327

Lavie, C. J., Ozemek, C., Carbone, S., Katzmarzyk, P. T., & Blair, S. N. (2019). Sedentary Behavior, Exercise, and Cardiovascular Health. *Circulation Research*, *124*(5), 799–815. https://doi.org/10.1161/CIRCRESAHA.118.312669

Liu, Z., Heffernan, C., & Tan, J. (2020). Caregiver burden: A concept analysis. *International Journal of Nursing Sciences*, *7*(4), 438–445. https://doi.org/10.1016/j.ijnss.2020.07.012

Malik, A., Brito, D., Vaqar, S., Chhabra, L., & Doerr, C. (2023). *Congestive Heart Failure (Nursing)*. StatPearls Publishing. https://www.ncbi.nlm.nih.gov/books/NBK574497/

Nayor, M., & Vasan, R. S. (2015). Preventing heart failure. *Current Opinion in Cardiology*, *30*(5), 543–550. https://doi.org/10.1097/HCO.0000000000000206

Negarandeh, R., Aghajanloo, A., & Seylani, K. (2020). Barriers to Self-care Among Patients with Heart Failure: A Qualitative Study. *Journal of Caring Sciences*, *10*(4), 196–204. https://doi.org/10.34172/jcs.2020.026

Odunaiya, N. A. (2019). Healthcare professionals' perception of quality of care of patients with cardiac disease in Nigeria: Implication for clinical guideline, inter-professional education and team work. *Malawi Medical Journal*, *31*(1), 31. https://doi.org/10.4314/mmj.v31i1.6

Ogbemudia, E. J., & Asekhame, J. (2016). Rehospitalization for heart failure in the elderly. *Saudi Medical Journal*, *37*(10), 1144–1147. https://doi.org/10.15537/smj.2016.10.15259

Ogunmodede, J. A., Kolo, P. M., Bojuwoye, M. O., Dele-Ojo, B. F., Ogunmodede, A. J., & Omotoso, A. B. (2021). Characteristics of patients with acute heart failure in North Central Nigeria. *Research Journal of Health Sciences*, *9*(3), 221–235. https://doi.org/10.4314/rejhs.v9i3.3

Ominyi, J. N., Agom, D. A., Anyigor, C. N., Nwedu, A. B., & Onwe, S. N. (2019). Experiences of nurses implementing evidence-based practice in an acute care setting in Nigeria: A qualitative study. *Clinical Nursing Studies*, *7*(4), 54.

https://doi.org/10.5430/cns.v7n4p54

Onwuchekwa. (2009). Pattern of heart failure in a Nigerian teaching hospital. *Vascular Health and Risk Management*, 745. https://doi.org/10.2147/VHRM.S6804

Oyetunde, M. O., & Akinmeye, A. J. (2015). Factors Influencing Practice of Patient Education among Nurses at the University College Hospital, Ibadan. *Open Journal of Nursing*, *05*(05), 500–507. https://doi.org/10.4236/ojn.2015.55053

Polikandroti, M. (2022). Perceived Social Isolation in Heart Failure. *Journal of Innovations in Cardiac Rhythm Management*, *13*(6), 5041–5047. https://doi.org/10.19102/icrm.2022.130606

Ponikowski, P., Voors, A. A., Anker, S. D., Bueno, H., Cleland, J. G. F., Coats, A. J. S., Falk, V., González-Juanatey, J. R., Harjola, V.-P., Jankowska, E. A., Jessup, M., Linde, C., Nihoyannopoulos, P., Parissis, J. T., Pieske, B., Riley, J. P., Rosano, G. M. C., Ruilope, L. M., Ruschitzka, F., … van der Meer, P. (2016). 2016 ESC Guidelines for the diagnosis and treatment of acute and chronic heart failure. *European Heart Journal*, *37*(27), 2129–2200. https://doi.org/10.1093/eurheartj/ehw128

Riegel, B., Dickson, V. V., & Faulkner, K. M. (2016). The Situation-Specific Theory of Heart Failure Self-Care. *Journal of Cardiovascular Nursing*, *31*(3), 226–235. https://doi.org/10.1097/JCN.0000000000000244

Riegel, B., Moser, D. K., Anker, S. D., Appel, L. J., Dunbar, S. B., Grady, K. L., Gurvitz, M. Z., Havranek, E. P., Lee, C. S., Lindenfeld, J., Peterson, P. N., Pressler, S. J., Schocken, D. D., & Whellan, D. J. (2009). State of the Science. *Circulation*, *120*(12), 1141–1163. https://doi.org/10.1161/CIRCULATIONAHA.109.192628

S. Ogah, O., Adebiyi, A., & Sliwa, K. (2019). Heart Failure in Sub-Saharan Africa. In *Topics in Heart Failure Management*. IntechOpen. https://doi.org/10.5772/intechopen.82416

Sanad, H. M. (2017). Nurses' knowledge and attitude towards management of patients with heart failure. *Journal of Advanced Pharmacy Education & Research*, *7*(4), 387–393.

Savarese, G., Becher, P. M., Lund, L. H., Seferovic, P., Rosano, G. M. C., & Coats, A. J. S. (2023). Global burden of heart failure: a comprehensive and updated review of epidemiology. *Cardiovascular Research*, *118*(17), 3272–3287. https://doi.org/10.1093/cvr/cvac013

Tian, C., Zhang, J., Rong, J., Ma, W., & Yang, H. (2024). Impact of nurse-led education on the prognosis of heart failure patients: A systematic review and meta-analysis. *International Nursing Review*, *71*(1), 180–188. https://doi.org/10.1111/inr.12852

Toloei, M., Nayeri, N. D., Faghihzadeh, S., & Asl, A. S. (2006). The nurses' motivating factors in relation to patient training. *Hayat*, *12*(2), 43–51.

van Walraven, C., Bennett, C., Jennings, A., Austin, P. C., & Forster, A. J. (2011). Proportion of hospital readmissions deemed avoidable: a systematic review. *Canadian Medical Association Journal*, *183*(7), E391–E402. https://doi.org/10.1503/cmaj.101860

Wang, X.-H., Qiu, J.-B., Ju, Y., Chen, G.-C., Yang, J.-H., Pang, J.-H., & Zhao, X. (2014). Reduction of Heart Failure Rehospitalization Using a Weight Management Education Intervention. *Journal of Cardiovascular Nursing*, *29*(6), 528–534. https://doi.org/10.1097/JCN.0000000000000092

Washburn, S. C., Hornberger, C. A., Klutman, A., & Skinner, L. (2005). Nurses' Knowledge of Heart Failure Education Topics as Reported in a Small Midwestern Community Hospital. *The Journal of Cardiovascular Nursing*, *20*(3), 215–220. https://doi.org/10.1097/00005082-200505000-00014

Botha, U. A., Koen, L., Galal, U., Jordaan, E., & Niehaus, D. J. (2014). The rise of assertive community interventions in South Africa: a randomized control trial assessing the impact of a modified assertive intervention on readmission rates; a three year follow-up. *BMC Psychiatry*, *14*(1), 56. https://doi.org/10.1186/1471-244X-14-56

Bozkurt, B. (2018). What Is New in Heart Failure Management in 2017? Update on ACC/AHA Heart Failure Guidelines. *Current Cardiology Reports*, *20*(6), 39. https://doi.org/10.1007/s11886-018-0978-7

Delaney, C., Apostolidis, B., Lachapelle, L., & Fortinsky, R. (2011). Home care nurses' knowledge of evidence-based education topics for management of heart failure. *Heart & Lung*, *40*(4), 285–292. https://doi.org/10.1016/j.hrtlng.2010.12.005

Demissie, B. M., Bekele, D. M., Habte, T., & Wake, A. D. (2021). Knowledge, Attitude and Associated Factors Towards Heart Failure Management Among Nurses Working in the Cardiac Unit of Selected Government Hospitals in Addis Ababa, Ethiopia: A Cross-Sectional Study. *Nursing: Research and Reviews*, *Volume 11*, 41–53.

https://doi.org/10.2147/NRR.S329363

Doughty, R. (2002). Randomized, controlled trial of integrated heart failure management. The Auckland Heart Failure Management Study. *European Heart Journal*, *23*(2), 139–146. https://doi.org/10.1053/euhj.2001.2712

Ekong, J., Radovich, P., & Brown, G. (2016). Educating Home Healthcare Nurses About Heart Failure Self-Care. *Home Healthcare Now*, *34*(9), 500–506. https://doi.org/10.1097/NHH.0000000000000453

Fonarow, G. C., Yancy, C. W., Albert, N. M., Curtis, A. B., Stough, W. G., Gheorghiade, M., Heywood, J. T., Mehra, M., O'Connor, C. M., Reynolds, D., & Walsh, M. N. (2007). Improving the Use of Evidence-Based Heart Failure Therapies in the Outpatient Setting: The IMPROVE HF performance improvement registry. *American Heart Journal*, *154*(1), 12–38. https://doi.org/10.1016/j.ahj.2007.03.030

Fowler, S. (2012). Improving Community Health Nurses' Knowledge of Heart Failure Education Principles. *Home Healthcare Nurse*, *30*(2), 91–99. https://doi.org/10.1097/NHH.0b013e318242c5c7

Ghorbani, R., Soleimani, M., Zeinali, M.-R., & Davaji, M. (2014). Iranian nurses and nursing students' attitudes on barriers and facilitators to patient education: A survey study. *Nurse Education in Practice*, *14*(5), 551–556. https://doi.org/10.1016/j.nepr.2014.06.003

Hart, P. L., Spiva, L., & Kimble, L. P. (2011). Nurses' knowledge of heart failure education principles survey: a psychometric study. *Journal of Clinical Nursing*, *20*(21–22), 3020–3028. https://doi.org/10.1111/j.1365-2702.2011.03717.x

Heidenreich, P. A., Bozkurt, B., Aguilar, D., Allen, L. A., Byun, J. J., Colvin, M. M., Deswal, A., Drazner, M. H., Dunlay, S. M., Evers, L. R., Fang, J. C., Fedson, S. E., Fonarow, G. C., Hayek, S. S., Hernandez, A. F., Khazanie, P., Kittleson, M. M., Lee, C. S., Link, M. S., … Yancy, C. W. (2022). 2022 AHA/ACC/HFSA Guideline for the Management of Heart Failure. *Journal of the American College of Cardiology*, *79*(17), e263–e421. https://doi.org/10.1016/j.jacc.2021.12.012

Hinkle, J. L., & Cheever, K. H. (2017). *Brunner & Suddarth's Textbook of Medical-Surgical Nursing (14th ed.)*. Wolters Kluwer Health / Lippincott Williams & Wilkins.

Hunt, S. A., Abraham, W. T., Chin, M. H., Feldman, A. M., Francis, G. S., Ganiats, T. G., Jessup, M., Konstam, M. A., Mancini, D. M., Michl, K., Oates, J. A., Rahko, P. S., Silver, M. A., Stevenson, L. W., & Yancy, C. W. (2009). 2009 Focused Update Incorporated Into the ACC/AHA 2005 Guidelines for the Diagnosis and Management of Heart Failure in Adults. *Circulation*, *119*(14). https://doi.org/10.1161/CIRCULATIONAHA.109.192065

Ike, S., & Onyema, C. (2020). Cardiovascular diseases in Nigeria: What has happened in the past 20 years? *Nigerian Journal of Cardiology*, *17*(1), 21. https://doi.org/10.4103/njc.njc_33_19

Jahromi, Z. B. (2016). A Study of the Barriers and Facilitators of Patient Education from the Viewpoint of Nursing Students at Jahrom College of Nursing. *Bangladesh Journal of Medical Science*, *15*(3), 471–476. https://doi.org/10.3329/bjms.v15i3.30201

Kim, S., & Hwang, W. J. (2014). Palliative care for those with heart failure: Nurses' knowledge, attitude, and preparedness to practice. *European Journal of Cardiovascular Nursing*, *13*(2), 124–133. https://doi.org/10.1177/1474515113519521

Krówczyńska, D., & Jankowska-Polańska, B. (2022). Polish Nurses' Knowledge of Heart Failure Self-Management Principles. *International Journal of Environmental Research and Public Health*, *19*(3), 1327. https://doi.org/10.3390/ijerph19031327

Lavie, C. J., Ozemek, C., Carbone, S., Katzmarzyk, P. T., & Blair, S. N. (2019). Sedentary Behavior, Exercise, and Cardiovascular Health. *Circulation Research*, *124*(5), 799–815. https://doi.org/10.1161/CIRCRESAHA.118.312669

Liu, Z., Heffernan, C., & Tan, J. (2020). Caregiver burden: A concept analysis. *International Journal of Nursing Sciences*, *7*(4), 438–445. https://doi.org/10.1016/j.ijnss.2020.07.012

Malik, A., Brito, D., Vaqar, S., Chhabra, L., & Doerr, C. (2023). *Congestive Heart Failure (Nursing)*. StatPearls Publishing. https://www.ncbi.nlm.nih.gov/books/NBK574497/

Nayor, M., & Vasan, R. S. (2015). Preventing heart failure. *Current Opinion in Cardiology*, *30*(5), 543–550. https://doi.org/10.1097/HCO.0000000000000206

Negarandeh, R., Aghajanloo, A., & Seylani, K. (2020). Barriers to Self-care Among Patients with Heart Failure: A Qualitative Study. *Journal of Caring Sciences*, *10*(4), 196–204.

https://doi.org/10.34172/jcs.2020.026

Odunaiya, N. A. (2019). Healthcare professionals' perception of quality of care of patients with cardiac disease in Nigeria: Implication for clinical guideline, inter-professional education and team work. *Malawi Medical Journal*, *31*(1), 31. https://doi.org/10.4314/mmj.v31i1.6

Ogbemudia, E. J., & Asekhame, J. (2016). Rehospitalization for heart failure in the elderly. *Saudi Medical Journal*, *37*(10), 1144–1147. https://doi.org/10.15537/smj.2016.10.15259

Ogunmodede, J. A., Kolo, P. M., Bojuwoye, M. O., Dele-Ojo, B. F., Ogunmodede, A. J., & Omotoso, A. B. (2021). Characteristics of patients with acute heart failure in North Central Nigeria. *Research Journal of Health Sciences*, *9*(3), 221–235. https://doi.org/10.4314/rejhs.v9i3.3

Ominyi, J. N., Agom, D. A., Anyigor, C. N., Nwedu, A. B., & Onwe, S. N. (2019). Experiences of nurses implementing evidence-based practice in an acute care setting in Nigeria: A qualitative study. *Clinical Nursing Studies*, *7*(4), 54. https://doi.org/10.5430/cns.v7n4p54

Onwuchekwa. (2009). Pattern of heart failure in a Nigerian teaching hospital. *Vascular Health and Risk Management*, 745. https://doi.org/10.2147/VHRM.S6804

Oyetunde, M. O., & Akinmeye, A. J. (2015). Factors Influencing Practice of Patient Education among Nurses at the University College Hospital, Ibadan. *Open Journal of Nursing*, *05*(05), 500–507. https://doi.org/10.4236/ojn.2015.55053

Polikandroti, M. (2022). Perceived Social Isolation in Heart Failure. *Journal of Innovations in Cardiac Rhythm Management*, *13*(6), 5041–5047. https://doi.org/10.19102/icrm.2022.130606

Ponikowski, P., Voors, A. A., Anker, S. D., Bueno, H., Cleland, J. G. F., Coats, A. J. S., Falk, V., González-Juanatey, J. R., Harjola, V.-P., Jankowska, E. A., Jessup, M., Linde, C., Nihoyannopoulos, P., Parissis, J. T., Pieske, B., Riley, J. P., Rosano, G. M. C., Ruilope, L. M., Ruschitzka, F., … van der Meer, P. (2016). 2016 ESC Guidelines for the diagnosis and treatment of acute and chronic heart failure. *European Heart Journal*, *37*(27), 2129–2200. https://doi.org/10.1093/eurheartj/ehw128

Riegel, B., Dickson, V. V., & Faulkner, K. M. (2016). The Situation-Specific Theory of Heart Failure Self-Care. *Journal of Cardiovascular Nursing*, *31*(3), 226–235. https://doi.org/10.1097/JCN.0000000000000244

Riegel, B., Moser, D. K., Anker, S. D., Appel, L. J., Dunbar, S. B., Grady, K. L., Gurvitz, M. Z., Havranek, E. P., Lee, C. S., Lindenfeld, J., Peterson, P. N., Pressler, S. J., Schocken, D. D., & Whellan, D. J. (2009). State of the Science. *Circulation*, *120*(12), 1141–1163. https://doi.org/10.1161/CIRCULATIONAHA.109.192628

S. Ogah, O., Adebiyi, A., & Sliwa, K. (2019). Heart Failure in Sub-Saharan Africa. In *Topics in Heart Failure Management*. IntechOpen. https://doi.org/10.5772/intechopen.82416

Sanad, H. M. (2017). Nurses' knowledge and attitude towards management of patients with heart failure. *Journal of Advanced Pharmacy Education & Research*, *7*(4), 387–393.

Savarese, G., Becher, P. M., Lund, L. H., Seferovic, P., Rosano, G. M. C., & Coats, A. J. S. (2023). Global burden of heart failure: a comprehensive and updated review of epidemiology. *Cardiovascular Research*, *118*(17), 3272–3287. https://doi.org/10.1093/cvr/cvac013

Tian, C., Zhang, J., Rong, J., Ma, W., & Yang, H. (2024). Impact of nurse-led education on the prognosis of heart failure patients: A systematic review and meta-analysis. *International Nursing Review*, *71*(1), 180–188. https://doi.org/10.1111/inr.12852

Toloei, M., Nayeri, N. D., Faghihzadeh, S., & Asl, A. S. (2006). The nurses' motivating factors in relation to patient training. *Hayat*, *12*(2), 43–51.

van Walraven, C., Bennett, C., Jennings, A., Austin, P. C., & Forster, A. J. (2011). Proportion of hospital readmissions deemed avoidable: a systematic review. *Canadian Medical Association Journal*, *183*(7), E391–E402. https://doi.org/10.1503/cmaj.101860

Wang, X.-H., Qiu, J.-B., Ju, Y., Chen, G.-C., Yang, J.-H., Pang, J.-H., & Zhao, X. (2014). Reduction of Heart Failure Rehospitalization Using a Weight Management Education Intervention. *Journal of Cardiovascular Nursing*, *29*(6), 528–534. https://doi.org/10.1097/JCN.0000000000000092

Washburn, S. C., Hornberger, C. A., Klutman, A., & Skinner, L. (2005). Nurses' Knowledge of Heart Failure Education Topics as Reported in a Small Midwestern Community Hospital. *The Journal of Cardiovascular Nursing*, *20*(3), 215–220. https://doi.org/10.1097/00005082-200505000-00014