

Diagnostic and therapeutic care pathway of the Cardiac Network for Heart Failure

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ABSTRACT

The Cardiac Network for Heart Failure integrates patients into a dedicated clinical pathway to enhance care and improve quality of life, creating a personalized approach according to current guidelines. This study seeks to evaluate nurses' familiarity with health literacy tools and assessment scales in managing chronic heart failure to improve patient outcomes and reduce hospital readmissions through a survey on health literacy tools and assessment scales. Our findings underscore the need for continuous education through regular training on scales and health literacy tools. Enhanced structured health education is essential, with nurses requiring additional time and resources to focus on patient education strategies beyond symptom management. Encouraging the use of innovative technologies, such as multimedia tools and digital platforms, could improve the quality and frequency of educational interventions, addressing time constraints faced by healthcare staff. Increasing follow-up frequency,

ideally to at least monthly, could improve patient monitoring and reduce hospital readmissions. Greater awareness and commitment among nurses are critical for effectively managing chronic heart failure. Targeted training and additional resources are necessary to address existing gaps, ultimately improving patient care and outcomes.

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Introduction

The management of patients with heart failure is highly complex, which led to the creation of the Cardiac Network for Heart Failure.¹ This network aims to ensure patient reception and assessment, integrate them into a dedicated clinical care pathway, coordinate care through shared pathways that encompass hospital, specialized outpatient care, and primary care physicians, improve patient care and quality of life by utilizing validated tools, and promote continuous training of healthcare professionals to enhance service delivery. The pathway begins with the diagnosis of heart failure, which can be established either during a hospital admission or directly in a community healthcare setting. Each patient's pathway is personalized and guided by the Diagnostic, Therapeutic, Care Pathway,^{2,3} reducing the need for hospital outpatient visits by utilizing telemedicine where possible. It includes diagnosis and identification of the underlying causes of heart failure, treatment planning, identification of factors that may trigger or worsen acute heart failure, evaluation of comorbidities, and assessment of cardiovascular risk according to current guidelines.⁴⁻⁶ Our study aims to assess whether nurses are familiar with the use of health literacy tools and assessment scales in managing patients with chronic heart failure to improve outcomes and reduce hospital readmission. Our survey explores the use of these assessment scales and health literacy tools in the clinical setting, focusing on nurses who work closely with patients suffering from chronic heart failure. These nurses are responsible for patient education, early identification of worsening symptoms, and continuous support for daily disease management. We aim to understand how nurses use these tools in everyday clinical practice, including identifying any challenges or barriers healthcare providers may encounter by

applying them and suggesting strategies for improving and refining clinical practices.

Materials and Methods

The role of nurses in managing heart failure patients at the community level

Nurses play a critical role in the management of heart failure patients in the community. They are responsible for: i) providing health education and counseling for patients and their families; ii) measuring clinical parameters (such as blood glucose, weight, blood pressure, *etc.*) to monitor patients' health status; iii) educating patients on self-management of diuretics and self-monitoring of parameters like urine output, weight, and pulse; iv) managing home telemonitoring technologies, enabling remote tracking of vital signs; v) updating databases and organizing appointments for follow-ups and diagnostic tests; vi) coordinating with various community healthcare providers, including hospital physicians during post-acute discharge, heart failure clinic doctors, and primary care physicians, to maintain seamless care continuity; vii) informing patients to ease their access to hospital services, home care, and at-home therapeutic support; viii) conducting proactive outreach to patients, handling reception, completing data intake forms, and preparing integrated health records. Nursing assessments are crucial for collecting information on lifestyle, symptomatology, daily functioning, and sleep quality; ix) managing collected data in patient records and assessing adherence to prescribed medications, including the use of assessment tools like the Morisky scale, when applicable.^{7,8}

The primary reason for hospital readmissions among heart failure patients is poor adherence to medication and dietary instructions, combined with difficulty recognizing early signs of worsening symptoms. It is essential to encourage patient empowerment at each scheduled visit, enabling patients to take an active role in managing their condition. This is increasingly important given limited healthcare resources; active patient participation is key to effective health management. Patient empowerment means centering the patient in their care and keeping them consistently informed and involved in decision-making, as their personal decisions can significantly impact their physical and mental health. Patient empowerment is especially important for individuals with chronic conditions, as it supports long-term engagement and self-management.

Assessment scales for health status and quality of life in heart failure patients

These tools are useful for assessing the health status and quality of life in heart failure patients.

Self-Care Heart Failure Index

This questionnaire measures self-care abilities in heart failure patients. Patients actively managing their condition often experience better psychological outcomes and fewer complications than those who are more passive. The Self-Care Heart Failure Index focuses on symptoms like shortness of breath and edema, major factors leading to hospital readmissions.^{9,10}

Morisky Medication Adherence Scale

The Morisky Medication Adherence Scale is a four-item scale commonly used to evaluate medication adherence. This validated tool is widely referenced in the literature.¹¹

Minnesota Living with Heart Failure Questionnaire

Evaluating the quality of life in patients with chronic heart failure is challenging due to the chronic, progressively disabling nature of the disease, which involves frequent hospitalizations and disruptions to daily life. One of the most widely used tools is the Minnesota Living with Heart Failure Questionnaire (MLHFQ), which consists of 21 items.^{12,13}

Hamilton Scales for Anxiety and Depression

The Hamilton Depression Rating Scale is used to evaluate the severity of depressive and anxiety symptoms, commonly in psychiatric settings. The scale assesses symptoms like sadness, hopelessness, insomnia, loss of interest, and other somatic or cognitive symptoms, such as suicidal thoughts and mental anxiety.^{14,15}

The Hamilton Anxiety Rating Scale assesses anxiety across 15 different areas, including worry, tension, phobias, insomnia, somatic symptoms (muscular, gastrointestinal, cardiovascular), and obsessive-compulsive behaviors. Each area is scored from 0 (absent) to 4 (very severe).^{14,15}

Borg Scale

The Borg Scale is highly useful for assessing the subjective perception of effort during physical activity, particularly for symptoms like shortness of breath, pain, and muscle fatigue.¹⁶

Telenursing

Telenursing allows for remote nursing care, supporting patients outside the hospital through phone or telematic consultations, and the implementation of transmitting objective vital signs to monitor and manage the patient's clinical conditions directly from their homes. Through these consultations, nurses regularly contact patients, providing consultations, clinical assessments, and emotional support.¹⁷⁻¹⁹

The survey was conducted from September 5, 2024, to October 5, 2024. During this period, a digital questionnaire was distributed to nurses in the Territorial District of Brindisi, in the Cardiology and Internal Medicine Departments at the Francavilla Fontana Hospital and Brindisi Hospital, the Geriatrics Department at Brindisi Hospital, and the IRCCS in Bari. The questionnaire was sent by email to nurse coordinators. Google Forms, a platform provided by the American company Google, was used for creating the form and collecting responses. Microsoft Excel was employed for data processing and analysis.

The questionnaire was structured anonymously and consisted of 17 multiple-choice questions, with some questions marked as optional and others as mandatory. The questionnaire is divided into three sections: i) classification of respondents (3 questions); ii) evaluating nurses' experience with health literacy in patients with chronic heart failure and

examining the educational tools available for these patients. This section assesses whether nurses have ever implemented health literacy interventions and identifies the educational tools that can enhance patient understanding and management of the condition, such as informational materials, multimedia supports, or specific technologies for education related to symptom recognition, adherence to therapies, and adoption of healthy behaviors (8 questions); iii) assessing knowledge and use of evaluation scales for patients with chronic heart failure, exploring the frequency and manner in which these are used in clinical practice. This includes identifying the most commonly used scales for monitoring disease severity, assessing quality of life, and managing symptoms, as well as pinpointing potential gaps in training or usage of these tools (6 questions).

Fifty questionnaires have been completed.

Results

Part 1: classification of respondents

Demographic overview

The sample consists of 29 (58%) women and 21 (42%) men.

Question 1. How long have you worked in the heart failure clinic?

This optional question received 36 responses. The majority (15 responses) reported working in the clinic for less than 5 years. 30% (11 responses) have worked there for 5 to 10 years. A smaller proportion has worked longer: 17% (6 responses) had 10 to 15 years of experience, and 11% (4 responses) had over 15 years.

Question 2. Have you attended training or refresher courses related to heart failure?

52% of respondents (26 responses) reported attending training courses on heart failure. Another 34% (17 responses) expressed interest in attending such training, while 14% (7) did not participate in any course.

Part 2: nurse experiences with health literacy and educational tools for patients with chronic heart failure

Question 3. Have you ever implemented health literacy interventions with heart failure patients?

52% (26 responses) of respondents reported using health literacy interventions. 20% (10 responses) indicated they had not used such interventions, while 28% (14 responses) stated they had not yet had the opportunity.

Question 4. Do you think health education is essential for patients with heart failure, where monitoring and reassessment are critical to preventing complications?

All respondents (100%, 50 responses) agreed that health education is vital for these patients.

Question 5. What tools do you use to provide patient information?

According to the survey, 35% use one-to-one consultations to educate patients, 27% rely on brochures, magazines, or leaflets, and 19% use phone follow-ups. 12% refer to public authority websites, 6% use multimedia content, and 1% use other tools.

Question 6. How much time is typically spent educating a patient during in-person sessions?

Most respondents [35 (70%)] spend 10 to 30 minutes educating patients, 10 (20%) dedicate just 5 minutes, and less than 5 (10%) spend between 30 and 60 minutes. No respondent spends more than an hour.

Question 7. During telephone follow-ups, in addition to assessing symptoms and health status, do you include a component of health education?

This optional question received 48 responses. 60% of respondents include health education in their calls, demonstrating a strong commitment to enhancing patients' awareness and self-management. However, 11% do not include this aspect, and 29% expressed a lack of time despite their willingness, highlighting potential areas for improvement (Figure 1).

Question 8. How often do you conduct telephone follow-ups with patients under your care?

The frequency of follow-ups varies as follows: once a week: ~5%, every 15 days: ~12%, once a month: ~35% (most common), every three months: ~12% every six months: ~3%, as needed: ~20%.

Question 9. In which areas do patients exhibit the greatest gaps in knowledge about heart failure during health literacy interventions?

Respondents could select multiple answers. The results show that 16 (33%) respondents emphasized recognizing symptom aggravation and managing therapy. 9 (18%) highlighted the importance of physical activity when appropri-

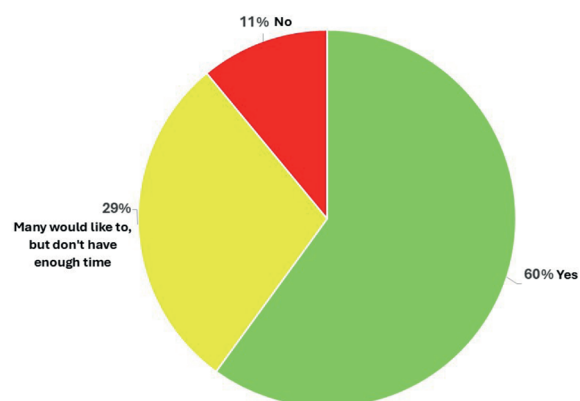


Figure 1. Percentages of respondents who dedicate part of the call to health education.

ate. 8 (16%) focused on dietary habits and daily living activities. These findings suggest that while recognizing symptoms worsening and managing therapy are top priorities, education on physical activity and diet remains essential (Figure 2).

Question 10. How many educational sessions are required to improve patient knowledge about heart failure?

A total of 39 (78%) respondents believe multiple sessions are necessary, while 11 (22%) think a single session suffices. No respondents indicated that patients were sufficiently informed without educational sessions.

Part 3: use and knowledge of evaluation scales in patients with chronic heart failure

Question 11. Which evaluation scales do you use to manage and follow up with patients with chronic heart failure?

Respondents could select multiple scales. MLHFQ is used by 42 (84%) respondents to assess quality of life. The Borg Scale is used by 29 (58%) respondents to measure perceived exertion. The Morisky Scale is used by 25 (50%) respondents to assess medication adherence. The Depression and Anxiety Scale is used by 12 (24%) respondents. National Early Warning Score (NEWS) is used by 14 (28%) respondents to evaluate vital signs and risk of clinical deterioration. Only one respondent use other methods [1 (2%)]. The MLHFQ is the most commonly used tool, with the Borg and Morisky scales supplementing specific evaluations (Figure 3).

Question 12. Do you think evaluation scales and health literacy tools are beneficial for managing heart failure patients and reducing hospital readmissions?

A total of 48 (96%) respondents agreed that these tools are essential for effective management and preventing hospital readmissions. A minority [2 (4%)] consider them unnecessary.

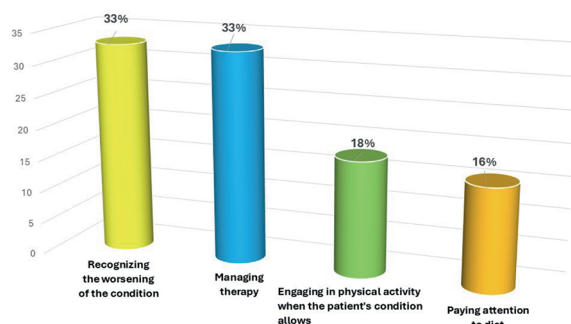


Figure 2. Areas where patients demonstrate the greatest misinformation about their disease.

Question 13. How is the Borg Scale used?

A total of 34 (68%) respondents use it to assess dyspnea and fatigue, 10 (20%) believe it evaluates vital parameters, while 2 (4%) associate it with therapeutic compliance.

Question 14. How is the Morisky Scale used?

A total of 43 (86%) respondents correctly identified its use in assessing medication adherence, 4 (8%) mistakenly associate it with quality of life, and 3 (6%) think it measures anxiety.

Question 15. How is the Minnesota Living with Heart Failure Questionnaire used?

A total of 46 (92%) respondents understand its purpose, while 3 (6%) and 1 (2%) respondents are unfamiliar with its application.

Question 16. How is the National Early Warning Score used?

A total of 48 (96%) respondents correctly recognize its application for assessing clinical deterioration. A small minority [1 (2%)] mistakenly associate it with cardiac output or patient autonomy assessment.

Discussion

The sample is predominantly female (58%) and mostly composed of nurses with relatively short work experience, with 30% having less than 5 years of experience.^{20,21} This may influence their approach to using advanced tools for assessing and managing patients with chronic heart failure. On a positive note, 52% have attended training courses on heart failure, indicating an interest and commitment among nurses to improve their skills. However, 14% have never participated in such classes, and 34% are interested in further training, signaling room for improvement in continuous education. The survey highlights the importance of health literacy: educating patients with chronic heart failure is universally recognized as essential by the entire sample (100% of respondents).^{22,23} However, only 52% reported having implemented health lit-

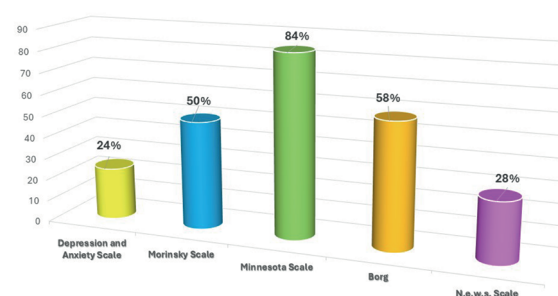


Figure 3. Assessments scales for the management and follow-up of patients with chronic heart failure. N.e.w.s., National Early Warning Score.

eracy interventions, while 20% have never implemented such initiatives, and 28% expressed a desire to do so but lacked the opportunity.

This discrepancy underscores the need for greater practical support to facilitate the application of health education, which may be hindered by factors such as time or resource constraints. Notably, 29% of respondents emphasized that, despite their motivation, they lack the time to adequately focus on health education during telephone follow-up.

Preferred educational methods and allocated time are as follows: the preferred methods for conveying information to patients include one-to-one meetings (35%), brochures or magazines (27%), and telephone follow-ups (19%). However, only a minority use multimedia tools (6%) or rely on public agency websites (12%), suggesting room for greater integration of digital and interactive technologies to enhance health literacy. Educational sessions typically last between 10 and 30 minutes for 70% of respondents, while 20% spend only 5 minutes. These relatively short durations may be insufficient for thorough health education, especially in more complex cases. Additionally, while 60% of professionals dedicate part of their telephone follow-ups to health education, 11% do not allocate any time to this aspect, indicating that some patients may not receive the necessary educational support.

Frequency of follow-ups is as follows: the data shows that telephone follow-ups are primarily conducted once a month (35%), but a significant portion of nurses organize them only when deemed necessary (20%) or at reduced frequency (every three months or more). This points to a potential area for improvement: more regular follow-ups could contribute to closer monitoring of patients' conditions, potentially reducing hospital readmissions.^{24,25} Early recognition of worsening symptoms is considered the top educational priority by 33% of nurses, followed by therapy management. However, less attention is paid to other equally crucial aspects, such as physical activity (18%) and dietary habits (16%). While health education is well-directed toward symptoms and therapy management, it could benefit from greater emphasis on preventive and healthy behaviors.^{26,27} Assessment scales play a crucial role in managing patients with heart failure. MLHFQ is the most used tool (84%), followed by the Borg Scale (58%) for perceived exertion and the Morisky Scale (50%) for therapeutic adherence. This reflects a good understanding of specific evaluation scales, but some challenges remain. For instance, 20% of nurses do not fully understand how to use the Borg Scale, indicating the need for improved training on these tools' correct application.

Nearly all respondents (96%) recognize the importance of assessment scales and health literacy tools in managing chronic heart failure, demonstrating a clear awareness of their role in preventing hospital readmission. However, 4% consider these tools to be of little utility, possibly due to gaps in practical experience or access to high-quality resources. The Morisky Scale is generally well understood for assessing therapeutic adherence (86% of respondents), but a small percentage confuse it with tools for evaluating quality of life or anxiety. Similarly, the NEWS is well known by most respondents, though 4% are unfamiliar with its application. These discrepancies highlight the need for ongoing training to improve understanding and correct usage of these tools.

Conclusions

The study demonstrates the need to improve continuous education by providing regular training opportunities on the proper use of assessment scales and the benefits of health literacy tools. This could help bridge existing gaps, especially regarding the appropriate use of the Borg and Morisky Scales. Structured health education should be enhanced: nurses could benefit from additional time and resources to focus on health education, with an emphasis on strategies beyond symptom management, including diet and exercise. Innovative technologies should also be encouraged: the use of multimedia tools and digital platforms can improve the quality and frequency of educational interventions, addressing the time constraints reported by healthcare staff. Increasing follow-up frequency is essential: implementing more regular follow-ups, ideally at least once a month, could enhance patient condition monitoring and prevent hospital readmissions. Our data highlights a strong awareness and commitment among nurses toward managing chronic heart failure but also identifies areas where further training and increased resources could have a positive impact.

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