REVIEW

# Framework for roles and responsibilities of nurses in nurse-led cardiovascular disease clinics in primary health care: An integrative review

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## ABSTRACT

**Background:** Cardiovascular disease (CVD) is a global health issue. Literature has shown that primary care nurse-led cardiovascular disease clinics improve cardiac patient outcomes. These clinics improve the level of services provided, increase patient satisfaction, and decrease the mortality rate.
**Aim:** This literature review aims to identify the roles and responsibilities of nurses working in CVD nurse-led clinics and to identify the outcomes of these nurse-led clinics.
**Method:** Whittemore and Knafl's framework guided this integrative review. Seventeen studies published between 2017 and 2022 were included in the review. The Mixed-Method Appraisal Tool was used to assess the quality of the studies.
**Results:** Three themes emerge in this literature review: roles and responsibilities of nurse-led CVD clinics, the impact of nurse-led CVD clinics, and the qualifications of nurses working in these clinics.
**Conclusions:** This integrative review identifies a framework for the roles and responsibilities of nurse-led CVD clinics and highlights the positive patient outcomes. This framework will help CVD nurse-led clinics to meet the needs of patients and achieve a high level of patient satisfaction.

**Key Words:** Nurse-led clinic, Cardiovascular disease, Role and responsibilities, Outcome

## 1. INTRODUCTION

Cardiovascular disease (CVD) is a global problem with increased prevalence and more than 18 million deaths recorded annually.[1] CVD is "a group of disorders of the heart and blood vessels." (para. 1)[2] CVD includes hypertension, coronary heart disease, ischemic heart disease, heart failure, cerebrovascular accident, and peripheral vascular disease.[3] In the eastern Mediterranean region, CVD accounts for 54% of all non-communicable disease deaths.[3] Several CVD risk factors can cause CVD including unhealthy lifestyles such as smoking, lack of exercise, and an unhealthy diet.[4]

CVD has direct and indirect impacts. According to Mei et al.,[5] the direct impacts of CVD include various physical symptoms, such as fatigue, dyspnea, and chest pain, which adversely affect the quality of life. Globally, 25% of the working population cannot work because of CVD.[6]

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Moreover, CVD affects the working-age population in low- and middle-income countries. For example, in sub-Saharan Africa, half of the cardiovascular deaths occur in the 30 to 69-year-old age group.[7] In addition, Hare et al.[8] found that two-thirds of CVD patients have mental illnesses such as depression and anxiety. The indirect impact of cardiovascular disease involves its staggering associated costs. For example, CVD resulted in a cost of 987 billion U.S. dollars in 2010 and is expected to cost 1,160 billion U.S. dollars globally in 2030.[9]

Nurses are expected to play a more active role in providing services to these patients. One of these roles is leading clinics that specifically provide care for individuals with CVD. Nurse-led clinics have been defined as "clinical practice where nurses have their patient caseload." (p25)[10] Nurse-led clinics play a key role in helping patients improve their health. Nurses in these clinics are expected to provide a level of care equal in quality to that provided by physicians.[11] A nurse working in a nurse-led clinic can either be a clinical nurse specialist, an advanced practice nurse (APN), or a nurse practitioner (NP).[12] These nurses have different educational qualifications. APNs and NPs often have master's degrees and are trained to diagnose and treat common medical conditions, such as heart failure.[12]

Advantages of nurse-led clinics include reduced patient waiting times, increased patient satisfaction, increased time allotted to provide care to patients, and improved patient-nurse relations.[10] The tasks of nurses in these clinics are assessing patients' conditions, providing health education, giving treatment, monitoring patients, arranging for hospital admissions and/or referrals to other health facilities, and providing psychological support to patients.[10]

The purpose of this integrative literature review is to identify the roles and responsibilities of nurses working in nurse-led CVD clinics. In addition, this integrative review will provide evidence related to the outcomes and benefits for patients treated in nurse-led CVD clinics.

## 2. METHOD

An integrative literature review is an appropriate method to identify a framework for the roles and responsibilities of nurses working in nurse-led CVD clinics. Whittemore and Knafl's[13] integrative framework has five stages: problem identification, literature search, data evaluation, data analysis, and presentation of results.

### 2.1 Problem identification stage

This integrative literature review aims to identify a framework that describes the roles and responsibilities of a nurse-led cardiac clinic and to identify the outcomes of these nurse-led clinics. This is expected to facilitate the introduction of a nurse-led clinic at the Primary Health Care Corporation in Qatar for the service of cardiac patients.

### 2.2 Literature search stage

Three databases were used to search for relevant literature: Cumulative Index to Nursing and Allied Health Literature (CINAHL), Embase, and MEDLINE. The key search terms were *nurse-led, nurse-managed, nurse-delivered, center, clinic, competence*, role*, responsible*, skill*, objective, outcome, impact, effect, implicit*, benefit, cardi*, heart,* and *coronary**. The keywords were combined using the Boolean operators AND and OR. The inclusion criteria for this research were (a) peer-reviewed original sources, (b) publication date between January 2017 and September 2022, (c) nurse-led clinics among cardiac patient populations, and (d) English language. The initial search generated 290 possible sources.

### 2.3 Data evaluation stage

The 290 articles were further evaluated for inclusion in this review. After 83 duplicate articles were removed, 207 articles remained. A further 147 articles were excluded following a title and abstract screening according to the inclusion and exclusion criteria. The remaining 57 articles were fully reviewed and screened. A total of 43 studies were excluded because they were not related to the topic of this integrative review. For example, studies that described hospital-based nurse-led clinics outside primary health care or that did not describe the roles and responsibilities of nurse-led clinics were eliminated from the search. As a result, 14 articles from the original search were included in this integrative review. Three additional articles were found through a manual search of the references list of these 14 articles. Thus, 17 articles were included in this review. Each of these articles was a quantitative study. The Mixed Method Appraisal Tool (MMAT) version 2018 was used to assess the quality of the 17 studies, which were deemed to have adequate quality for further analysis.

### 2.4 Data analysis stage

The process of data analysis involves ordering, coding, categorizing, and synthesizing data from primary sources into a unified and integrated conclusion about the research problem.[13] The goal of the data analysis stage is to interpret primary sources thoroughly and unbiasedly while synthesizing the evidence in a creative way.[13] Data analysis consists of four processes: data reduction, data display, data comparison, and conclusion drawing and verification.[13] An extraction table was used to extract and organize the data and

identify common themes from the 17 articles.

## 3. Results

The overall aims of the 17 quantitative primary studies included in this review were to explore the roles and responsibilities of nurses at nurse-led CVD clinics and the patient-related outcomes of these clinics. It is important to note that none of these studies assessed the cost-effectiveness of implementing nurse-led CVD clinics. The studies included in this integrative review were from Sweden (n = 3), Ireland (n = 2), Australia (n = 2), Spain (n = 2), Thailand (n = 1), India (n = 1), China (n = 1), New Zealand (n = 1), Korea (n = 1), Singapore (n = 1), Turkey (n = 1), and Brazil (n = 1). Seven studies described the qualifications of nurses leading CVD clinics. All participants described in these studies had cardiovascular illnesses and were 18 years of age and above. The major themes that emerged were the roles and responsibilities of nurses at the nurse-led CVD clinics, the patient related outcomes of the nurse-led CVD clinics, and the qualifications of nurses working in these clinics (see Table 1).

**Table 1.** Themes and subthemes

| Themes | Sub-themes |
|---|---|
| Roles and responsibilities | • Patient assessment and documentation<br>• Patients' education<br>• Pharmacological interventions<br>• Referrals<br>• Follow up |
| Outcomes of the nurse-led CVD clinics | • Physical impact<br>• Reduce readmission rate, mortality rate, and emergency room visits<br>• Education and knowledge outcome<br>• Improved smoking cessation rate<br>• Improved medication adherence and lab result<br>• Better reported quality of life and patients' satisfaction |
| Qualifications of the nurses | • Master's degrees, advanced physical assessment skills, specialist university-level HF qualification, or specialize in cardiology |

### 3.1 Roles and responsibilities

#### 3.1.1 *Patient assessment and documentation*

Patient assessment involved taking a health history and conducting a physical assessment. For example, a cardiovascular physical assessment was done at nurse-led CVD clinics[14–18] that involved the assessment of vital signs, such as heart rate, respiratory rate, blood pressure as well as cardiac and peripheral vascular examination,[19–22] and current health status for patients undergoing open heart surgeries.[14] Furthermore, nurses in nurse-led CVD clinics obtained a history of symptoms before and after percutaneous coronary intervention[20] and assessed symptoms and complications of atrial fibrillation (AF).[23] Moreover, nurses in nurse-led CVD clinics were involved in the assessment of 12-lead electrocardiogram and waist circumference measurement as well as calculating body mass index.[21] In addition, nurses collaborated with multidisciplinary team members to assess postoperative heart surgery patients.[14]

#### 3.1.2 *Patient education*

The studies included in this review showed that most patients who attend nurse-led CVD clinics need education about their conditions. Coskun and Duygulu[14] reported that patients undergoing open heart surgery needed education before and after surgery. In Lee et al.'s[24] study, heart transplantation patients received face-to-face education during an outpatient visit or by phone from a nurse. Topics selected for educational activities in da Silva et al.'s[21] study were based on the needs identified during the patient visits to the nurse-led CVD clinic.

Specific diseases need specific education from nurses. In Rivera-Caravaca et al.'s[23] and Woo et al.'s[18] studies, patients with AF were provided with education about their condition, treatments such as anticoagulation, and other related conditions. In Liljeroos and Strömberg's[25] as well as Ortiz-Bautista et al.'s[26] studies, specific education was provided for heart failure (HF) patients related to their treatment regimens, such as a flexible dosing regimen for diuretic therapy, recognition of warning clinical symptoms, and adherence to HF treatments. Patients also receive education about sign and symptom management;[16,25] lifestyle management, such as exercise and physical activity;[18,21,25,27,28] smoking cessation;[15,27,28] dietary habits;[18,22,25–28] daily

weight monitoring, particularly for individuals with HF;[26] blood pressure monitoring;[21,26] and other self-care practices.[17,24] Moreover, education about prescribed medication was also offered.[15,20–22,25,28,29]

#### 3.1.3 *Pharmacological interventions*

One main role for nurses in nurse-led CVD clinics is medication adjustment. Patients may need some medication added, stopped, and/or modified.[15–17,26,27] According to Ingram et al.,[20] 228 patients (48%) who attended the nurse-led clinics in their study needed medication adjustments. More than 96% of patients in Ibrahim et al.'s[27] study who were receiving statin therapy had their dose adjusted according to their cholesterol levels. Participants in Ögmundsdottir et al.'s[22] study with uncontrolled blood pressure and lipids had their medications titrated at nurse-led clinics after consulting with the treating cardiologist.

#### 3.1.4 *Referrals for further investigations or other specialty services*

Nurses in nurse-led CVD clinics have the authority to refer patients to do more lab tests or other special investigations.[16] For example, patients may be referred for exercise stress tests;[15,20] blood tests and Holter monitoring;[20] and CT coronary angiogram.[15] Patients (5.7%) in Ibrahim et al.'s[27] study were referred to endocrinology because they had recently been diagnosed with diabetes at the nurse-led clinic based on their HbA1C levels. Patients in McLachlan et al.'s[15] study were referred to a medical specialist review, psychology service, or a hyperventilation clinic. Patients with heart transplants in Lee et al.'s[24] study needed special referrals, such as referral to psychiatry for assistance with any psychosocial problems and to the infectious disease department for additional vaccinations.

#### 3.1.5 *Follow-up*

The nurses in nurse-led CVD clinics have a role in following up with their clients. The nurses in You et al.'s[30] study contacted patients by telephone to assess their conditions (e.g., symptoms of HF and weight changes), ensure that medications were taken as prescribed, and provide recommendations regarding what to do next. In addition, nurses' roles in da Silva et al.'s[21] study involved contacting patients with hypertension every two months to remind them of their consultation agendas and provide guidance for adopting healthy habits and disease control. Furthermore, nurses work to make sure that percutaneous coronary intervention patients take the antiplatelet therapy prescribed to them before discharge.[27] According to Coskun and Duygulu,[14] nurses visited open-heart surgery patients at home within 24 hours and then again during the second, sixth, and ninth weeks after discharge from the hospital.

### 3.2 The outcomes of the nurse-led CVD clinics

#### 3.2.1 *Physical outcomes*

Patients improve physically after they are treated at nurse-led CVD clinics. For example, patients have improved body weight and systolic blood pressure.[21,22,28] Ingram et al.[20] reported that 75% of patients treated at nurse-led clinics were symptom-free, 18% experienced ongoing symptoms, and 7% reported new symptoms. In addition, patients with hypertension who attended nurse-led primary care clinics in a southern Brazilian city in da Silva et al.'s[21] study had a greater reduction in waist circumference and BMI.

#### 3.2.2 *Impact on readmission, mortality rate, and emergency room visits*

The literature included in this review assessed the impact nurse-led CVD clinics have on patients.[17,23–27,29,30] Cardiac patients who are followed at nurse-led CVD clinics have shown reduced rates of unplanned hospitalization.[14,17,24–27,30] In addition, visits to nurse-led CVD clinics have been shown to reduce emergency room visits.[17,25,26,30] As well, reduced mortality rates among patients after being followed up and treated at nurse-led AF[23] and HF clinics[30] have been reported.

#### 3.2.3 *Education and knowledge outcomes*

Patients' knowledge has been found to increase through education received by nurses in nurse-led CVD clinics. Patients in Corones-Watkins et al.'s[19] study noted that they became aware of cardiac events and procedures. These patients also stated that they became familiar with emotional and physical changes after discharge from the hospital. Similarly, patients in Woo et al.'s[18] study reported significantly higher AF knowledge after following treatment at a nurse-led AF clinic for six months.

#### 3.2.4 *Improved smoking cessation rate*

Nurse-led CVD clinics in this literature review showed a positive impact on smoking cessation rates.[15,16,22,28] Ögmundsdottir et al.[22] reported that 25 out of 40 patients (63%) who attended nurse-led clinics quit smoking compared to 18 out of 43 (42%) who received traditional care. Patients in Premkumar et al.'s[28] study reported moderate to good smoking cessation rates ($p < .01$). In McLachlan et al.'s[15] study, 118 out of 397 patients who smoked accepted pharmacotherapy, such as nicotine replacement therapy and Varenicline, to help them quit smoking after they visited nurse-led CVD clinics.

#### 3.2.5 *Improved medication adherence and lab results*

Cardiac patients that are followed up in nurse-led CVD clinics beome committed to taking their medications and their laboratory results improve. Patients have reported better

commitment to adherence to taking their medication after being followed up at the nurse-led clinics.[18,28,30] In addition, patients in Ögmundsdottir et al.'s[22] study had lower levels of total and LDL cholesterol after attending CVD nurse-led clinics compared to those who visited traditional clinics. Furthermore, Premkumar et al.[28] reported total cholesterol levels ($p$ = .014), Triglycerides ($p$ = .04), and VLDL ($p$ = .01) were significantly reduced in the serum lipid profile in patients treated at nurse-led CVD clinics.

#### 3.2.6 *Better reported quality of life and patient satisfaction*

Nurse-led CVD clinics improve quality of life and increase patient satisfaction. In this review, quality of life was found to improve for patients who attended nurse-led clinics.[14,18,26,28,29] The participants in Premkumar et al.'s[28] study reported improved quality of life as a result of education provided to them by nurses related to maintaining a more active lifestyle and following a healthier diet. Patients were significantly more satisfied with nursing care,[27,29] length of the appointment,[28] and information they received at the nurse-led CVD clinics.[25,28]

### 3.3 Qualifications of the nurses

The nurses working in nurse-led CVD clinics must have specific skills, competencies, and qualifications. For example, these clinics are run by APNs with master's degrees.[18,20,29] Nurses at the nurse-led clinics have advanced physical assessment skills.[20] In addition, Premkumar et al.[28] reported that nurses who worked in nurse-led clinics were trained in cardiology nursing with American Heart Association certification.

## 4. DISCUSSION

The purpose of this integrative review was to identify nurses' roles and responsibilities in nurse-led CVD clinics and the impact of these clinics on patients. Nurses' roles and responsibilities in nurse-led CVD clinics, the impact of the nurses-led CVD clinics, and the qualifications of nurses working in these clinics were the three major themes that emerged from the literature.

### 4.1 Roles and responsibilities

This integrative literature review highlighted five key roles and responsibilities of nurses working in nurse-led CVD clinics: assessment, education, pharmacological intervention, referrals, and follow-up. These roles and responsibilities were similar to what has been reported in literature describing nurse-led clinics in other areas. For example, Doumen et al.[31] described nurses' roles in nurse-led rheumatoid arthritis clinics as prescribing or modifying medications, referring clients when needed, and educating patients. Moreover, Berglund et al.[32] stated that the roles of nurses in oncology clinics were to control symptoms and side effects; administer treatment and support; and educate patients and families before, during, and after oncological treatment. In nurse-led chronic kidney disease (CKD) clinics, nurses focus on reviewing laboratory results, treating CKD complications, providing lifestyle advice, educating patients about CKD, and ordering diagnostic tests.[33] Connolly and Cotter[34] conducted a literature review that aimed to show the effectiveness of nurse-led clinics and reported that nurses working in these clinics were involved in conducting health assessments, providing education, teaching self-management skills, and titrating medications.

As nurses who work in nurse-led CVD clinics must be APNs, the roles and responsibilities highlighted in this literature mirror those of APNs. The roles and responsibilities outlined in this review are nearly the same as those outlined by Tracy and O'Grady[35] in their advanced practice framework. Tracy and O'Grady[35] reported that direct clinical practices for APNs include education and counselling for patients and their families, ordering laboratory tests, and administering medications. In addition, APNs' clinical practices include monitoring physical and emotional symptoms, laboratory results, medications, diet, and treatment response.[35] Collaboration between APNs and other multidisciplinary team members is an additional role that allows for the provision of effective and high-quality care for patients.[35]

### 4.2 The impact of the nurses-led CVD clinics

The results of this integrative review were generally consistent with other literature reporting positive patient outcomes from nurse-led clinics. In this integrative review, patients who attended nurse-led CVD clinics reported improved blood pressure control, weight management, readmission rate, mortality rate, adherence to medicine, smoking cessation, and quality of life. In Davis et al.'s[36] systematic review, chronic disease patients who received nurse-led services had their hospitalization rate reduced by 2% to 8.9% and re-admissions reduced by 14.8% to 51%. Additionally, Davis et al.[36] reported that these patients had improved symptom and lifestyle outcomes.

In this integrative literature review, patients with CVD were satisfied with nursing care, length of appointment, information received about their disease, and the ease of communicating with the nurses. According to Coster et al.,[37] patients are more satisfied with the care provided by nurses in nurse-led clinics than that provided by physicians. Similarly, Whiteford et al.[38] reported that patient satisfaction was strongly associated with aspects of care and service delivery

in nurse-led clinics, such as shorter waiting times for appointments, better communication, adequate time for counselling, self-care and management advice, and follow-up care.

### 4.3 Qualifications of nurses

In this literature review, seven studies highlighted that the nurses working in nurse-led CVD clinics need to have specific qualifications such as a master's degree in nursing, advanced practice nurse certificates, specialist university-level HF qualifications, or specialization in cardiology. This was evident in other studies in other contexts. For example, Chan et al.[39] recommended that nurses working in nurse-led clinics should hold a master's degree that is accredited by the International Council of Nurses. As nurses who work in a nurse-led clinic must be an APN or CNS, Tracy and O'Grady's[35] specific criteria or qualifications that must be met before a nurse can be considered an APN are applicable. These criteria are a graduate degree, national certification at an advanced level, and a practice focused on patients and their families.

## 5. Conclusion

Nurses can play important roles with CVD patients who are followed in nurse-led CVD clinics to improve their health outcomes and improve their satisfaction with the care provided. This integrative literature review successfully characterized the roles and responsibilities of nurses working in nurse-led CVD clinics and identified various positive outcomes for these clinics. In addition, this integrative review highlighted the nature of qualifications needed by nurses working in CVD nurse-led clinics. To implement such clinics, a clear and specific scope of practice that outlines the roles and responsibilities of nurses working at CVD nurse-led clinics will facilitate the implementation of the role. Evaluation of these clinics must be conducted once the clinics are operational to assess the impact on patient outcomes as well as satisfaction.

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## Authors contributions

FH was responsible for searching the literature, gathering, analyzing the data, interpreting the results and writing. Dr. FK project supervisor and mentor. HA mentored and supported the projects follow-up. DF made substantial contributions to the design, drafting, and revision of the integrative review. SA made valuable contributions to the design and execution of searches. All authors read and approved the final manuscript.

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## Informed consent

As this was a review article no consent was needed.

## Ethics approval

The Publication Ethics Committee of the Sciedu Press. The journal's policies adhere to the Core Practices established by the Committee on Publication Ethics (COPE).

## Provenance and peer review

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## Data availability statement

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

## Data sharing statement

No additional data are available.

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