


# BMJ Open Nurses' perspectives on the barriers to and facilitators of the implementation of secondary prevention for people with coronary heart disease: a qualitative descriptive study

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**To cite:** Ni Y, Wen Y, Bao Y, *et al.* Nurses' perspectives on the barriers to and facilitators of the implementation of secondary prevention for people with coronary heart disease: a qualitative descriptive study. *BMJ Open* 2022;**12**:e063029. doi:10.1136/bmjopen-2022-063029

► Prepublication history for this paper is available online. To view these files, please visit the journal online (<http://dx.doi.org/10.1136/bmjopen-2022-063029>).

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Received 21 March 2022  
Accepted 01 September 2022



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## ABSTRACT

**Objectives** To identify the barriers to and facilitators of secondary prevention among people with coronary heart disease from the perspectives of nurses.

**Design** A qualitative descriptive design using face-to-face semistructured interviews.

**Setting** This study was conducted in China from October to November 2021.

**Participants** Registered nurses who had experience conducting secondary prevention for coronary heart disease were purposively recruited. Twelve nurses from 10 hospitals participated in this study. The data were analysed using content analysis based on the Theoretical Domains Framework.

**Results** Based on the Theoretical Domains Framework, barriers to and facilitators of secondary prevention were identified within four key themes: nurse attributes (eg, knowledge and skills, motivation), patient characteristics (eg, age, education and economic conditions), the environmental context and resources (eg, organisational support, including financial support, clarity of responsibilities) and social influence (eg, economic development level, patient feedback).

**Conclusions** This research highlights the importance of nurses' motivation for delivering preventive care. Organisations should provide adequate support and establish a quality management system to maintain the quality of secondary prevention.

## INTRODUCTION

Coronary heart disease is the leading cause of death worldwide, with an estimated 9.4 million people dying from coronary heart disease in 2016.<sup>1</sup> The prevalence of coronary heart disease is predicted to rise from 6.8% (2015) to 8.2% (2035).<sup>2</sup> In China, more than 11.3 million people currently live with coronary heart disease, and the incidence of this disease is increasing.<sup>3</sup> Patients with established coronary heart disease are at high risk of recurrent cardiovascular events,<sup>4</sup> which is where the greatest economic burden lies.<sup>5</sup>

## STRENGTHS AND LIMITATIONS OF THIS STUDY

- ⇒ Our use of semistructured qualitative interviews produced novel and varied insights into nurses' specific perceptions of the implementation of secondary prevention for people with coronary heart disease.
- ⇒ The views and experiences we collected from nurses with varying demographic characteristics broadened our understanding of the barriers to and facilitators of secondary prevention, which can inform the development of strategies for improving adherence.
- ⇒ We enhanced the rigour of the study by taking field notes, creating an audit trail and using a peer-reviewed topic guide.
- ⇒ However, we acknowledge that the findings may not be adequately represented in various contexts since we recruited participants from hospitals, and participants from other contexts, such as communities, were not enrolled.

The literature has demonstrated that among patients who survived an experience of acute myocardial infarction, 20% suffered a second cardiovascular event within a year.<sup>6</sup>

Secondary prevention is considered a cost-effective intervention among people with coronary heart disease and is strongly recommended by clinical practice guidelines to maintain functional capacity and improve quality of life.<sup>7</sup> With comprehensive and effective secondary prevention, recurrent cardiac events and mortality could be reduced by up to approximately 50% and 32%,<sup>8,9</sup> respectively. Secondary prevention is systematic, multifaceted, and evidence-based intervention designed to stabilise and slow the progress of an established disease process, as well as to optimise the patient's physical, psychological and social functioning and improve

quality of life. Secondary preventive measures include pharmacotherapy and lifestyle modification, such as smoking cessation, healthier food choices, regular physical activity, an optimal psychological state, healthy weight maintenance and alcohol intake restriction.<sup>10</sup>

Although abundant evidence has shown the benefits of secondary prevention,<sup>9 11 12</sup> preventive care for coronary heart disease has repeatedly been shown to be unsatisfactory (eg, low intervention uptake, insufficient intervention doses).<sup>13 14</sup> In a survey of people with coronary heart disease approximately 1 year after their acute event, 48.6% of patients who smoked persisted in doing so, little or no physical activity was reported by 59.9%, and over one-third (37.6%) were obese.<sup>13</sup> As a result, guideline-recommended targets in regard to blood pressure, low-density lipoprotein, waist circumference and blood lipids are not always achieved.<sup>15</sup>

Given that many people do not follow the medical treatment guidelines and that there are large gaps in adherence to lifestyle modification, it is important to understand the barriers to and enablers of implementing secondary prevention that aligns with evidence-based recommendations.<sup>16</sup> The reasons for non-adherence to pharmacotherapy and lifestyle modification are complex and multifaceted, varying across different settings, countries and local regulations.<sup>16</sup> A small number of studies are available that have explored factors influencing the implementation of and adherence to lifestyle interventions among people living with coronary heart disease. However, these studies have focused on the perspective of patients.<sup>16</sup> Health professionals, who prescribe and guide the implementation of specific secondary preventive interventions, have been considered important persons facilitating treatment adherence.<sup>16</sup> Nonetheless, there is limited evidence of the influencing factors of secondary prevention from the specific perspective of such professionals, especially from studies in low-income and middle-income countries and studies considering the cultural context. Nurses are the primary caregivers in different healthcare settings, playing a significant role in conducting secondary prevention and usually acting as a liaison between participants and other professionals. Nurses' perceptions of the barriers to and enablers of the implementation of secondary prevention may help us gain a better understanding of the influencing factors of secondary prevention. Hence, this qualitative study aims to identify the influencing factors of secondary prevention among people with coronary heart disease from the specific perspectives of nurses involved with secondary prevention.

## METHODS

### Design

A qualitative, descriptive approach drawing from the naturalistic paradigm was used.<sup>17</sup> Examples of questions used in qualitative, descriptive research include 'What are the concerns of people about an event? What reasons

do people have for using or not using a service or procedure? What factors facilitate and hinder recovery from an event?'<sup>18</sup> These questions are suitable for this study, which aims to explore the barriers to and facilitators of secondary prevention for coronary heart disease.

### Participants

Purposive sampling with maximum variation was performed to recruit participants. The inclusion criteria included individuals who (1) were licensed as an RN (individuals who obtained a diploma, associate degree or bachelor's degree, completed a clinical clerkship in the hospital for at least 8 months, passed the licensure examination, could obtain a registered nurse license in China<sup>19</sup> and (2) had experience working in conducting secondary prevention for coronary heart disease. Nurses who were not working in the hospitals due to holidays, maternity leave or sick leave during the study period were excluded. The sample size was determined through data saturation when no new information was found.<sup>20</sup> Data saturation was achieved at 10 participants, and 2 additional participants were interviewed to confirm saturation.<sup>21</sup> Thus, 12 nurses at 10 tertiary hospitals in China participated in this study.

### Data collection

A semistructured, face-to-face interview approach was used. Written informed consent was obtained before participants took part in the research process. The interview guide was developed based on the literature review<sup>16 22 23</sup> and the Theoretical Domains Framework.<sup>24</sup> This framework integrates a range of behaviour change theories and finally outlines 14 key theoretical domains (eg, knowledge, skills, social/professional role and identity), providing a useful conceptual basis for exploring the determinants of behavioural change and identifying implementation challenges.<sup>24 25</sup> Probing questions were asked to elicit detailed conversations regarding secondary prevention implementation. Examples include 'Can you please tell me more about it? Can you please elaborate? Can you please give me some examples?'

The interviews were carried out in a quiet discussion room. All interviews were conducted by the same researcher (YN), who has a PhD in nursing, to ensure consistency. The interviewer (YN) was formally trained in qualitative research and had no previous relationship with the participants. The average time of the interviews was 31 min. Field notes were taken during the interviews to capture nonverbal cues and to enrich the collected data. Memos were produced throughout the research process to clarify the thoughts about the codes and themes, map research activities and establish credibility.<sup>26</sup> All interviews were audiorecorded and transcribed verbatim.

### Data analysis

Content analysis was performed by using both deductive and inductive coding processes.<sup>27</sup> A priori code sheet was determined based on the Theoretical Domains

Framework,<sup>24</sup> which guided the initial direction of data analysis. Prior to data analysis, the researchers read every interview several times to acquire a whole vision of the experience and to identify units of meaning.<sup>27</sup> Then, the specific codes were categorised with the initial coding sheet. Any text that could not be categorised with the initial coding sheet was inductively analysed to ensure that important information was not lost. Each transcript was analysed by one researcher (YN) and independently reviewed by another two researchers (YW, GY). Any discrepancies were discussed to reach consensus. NVivo V.12.0 software was used to facilitate coding management.

### Trustworthiness

Lincoln *et al*'s<sup>28</sup> criteria for evaluating qualitative research were used to ensure trustworthiness. Credibility was established by selecting a heterogeneous sample and taking field notes.<sup>29</sup> The transcriptions were sent by email to the participants so that they could confirm their interview content. Transferability was established through comprehensive reporting of all research processes, including the participants' quotes.<sup>29</sup> An audit trail detailing the data analysis process was created, and the findings were discussed among the researchers. Consensus was reached, ensuring the dependability and confirmability of the findings.<sup>30</sup>

### Patient and public involvement

Patients or the public were not involved in the design, conduct, reporting or dissemination of our research.

## FINDINGS

### Sample characteristics

The participants' ages ranged from 28 to 48 years. All participants worked in the cardiology department. [Table 1](#) shows detailed information about the sample.

Characteristics	Frequency
Sex (female)	12
Age (in years)	
Range	28–48
Mean age	33.6
Marital status	
Married	10
Single	2
Educational level	
Bachelor's	10
Master's	2
Work experience (in years)	
Range	6–30
Mean	11.0
Position	
Staff nurse	7
Group leader	4
Head nurse	1

### Themes

The nurses described the barriers to and facilitators of the implementation of secondary prevention for coronary heart disease. In particular, barriers or facilitators may function in opposite ways in different situations. For example, the participants described helpful organisational support as a facilitator for them in implementing secondary prevention; however, some participants described insufficient organisational support as a barrier to implementing secondary prevention for coronary heart disease. Thus, during coding, it was difficult to completely separate the barriers from the facilitators. We did not categorise the codes into barriers and facilitators. Furthermore, we performed both inductive and deductive methods rather than an overly structured application of the guidance of the Theoretical Domains Framework.<sup>31</sup> Hence, the themes were not completely consistent with the Theoretical Domains Framework. Finally, the following four themes emerged: nurse attributes, patient characteristics, the environmental context and resources, and social influences. The themes and subthemes are shown in [table 2](#).

#### Theme 1: nurse attributes

A large number of participants reported that limited knowledge or non-proficient skills acted as barriers. Notably, knowledge and skills were comprehensive, including cardiovascular, rehabilitative, nutritional, psychological and communication skills.

I think...the main reason for the poor implementation of secondary prevention is lack of ability, especially knowledge and skills related to rehabilitation and nutrition. The nutritional prescriptions are very difficult for me. I only know some basic nutrition knowledge. (N9)

The participants expressed that they had poor knowledge of how to search for useful information about secondary prevention, even though they had not thought to search for literature to guide their practice. They often relied on their own experience rather than following up-to-date guidelines when conducting secondary prevention.

I do not know how and where to get information on secondary prevention for coronary heart disease. (N10)

Almost all of the participants mentioned personal traits that may affect secondary prevention for coronary heart disease, such as attitudes, motivation, responsibility and sense of worth. The term 'personal traits' in this study is comprehensive and reflects one's thoughts and feelings, covering several domains of the Theoretical Domains Framework, such as social/professional role and identity, beliefs about capabilities, optimism and intentions.

A few nurses were reluctant to participate in secondary prevention, which was considered a barrier, reflecting the social/professional role and identity in the Theoretical

**Table 2** Themes and subthemes

Themes	Subthemes
Nurse characteristics	▶ Knowledge and skills
	▶ Personal traits
Patient characteristics	▶ Willingness
	▶ Socioeconomic characteristics
	▶ Family caregivers
Environmental context and resources	▶ Organisational support
	▶ Quality management system
	▶ Multidisciplinary team
Social influences	▶ Social context
	▶ Patient feedback
	▶ Nurses' family support

Domains Framework. These nurses did not realise that it was their responsibility to implement secondary prevention. One nurse expressed that secondary prevention was additional work, serving as a burden.

Some of my colleagues think, 'I have completed my routine work, I have no obligation to complete other work, including secondary prevention. (N12)

Some participants highlighted that motivation was critical for secondary prevention for coronary heart disease. Motivation affects individuals' pursuits and behaviour, that is, how they allocate their time and effort. Motivation falls into two categories, namely, intrinsic and extrinsic motivation. Intrinsic motivation was mentioned as a sense of achievement and satisfaction by the participants.

I am willing to implement secondary prevention because I get a sense of achievement. I can help my patients live a healthy lifestyle and improve their quality of life. (N8)

Extrinsic motivation was discussed by one participant, who stated that the implementation of secondary prevention for coronary heart disease would not generate any extra income.

Secondary prevention for coronary heart disease is free in our hospital. Some nurses are not willing to take part in it, as they cannot make money from it. (N2)

Some participants expressed a lack of confidence in conducting secondary prevention because they believed that there were numerous obstacles in their management of coronary heart disease, including the perceptions of limited capacity. These views were in line with the domain of beliefs about capabilities from the Theoretical Domains Framework.

I do not think I have sufficient ability to implement effective secondary prevention. It is challenging for me to manage my patients' lifestyle. (N12)

## Theme 2: patient characteristics

The majority of the participants emphasised that patients' willingness to participate in secondary prevention affected its implementation. The participants explained that patients did not wish to be disturbed by health professionals after discharge. They reported that some patients refused to change their routine lifestyles, considering secondary prevention to be 'troublesome.'

I told to my patient, 'You should eat according to the nutrition prescription.' However, he said it was troublesome (laughter). He said it was too troublesome. (N6)

Patients' socioeconomic characteristics, including age, educational level, economic status and race, influenced the implementation of secondary prevention for coronary heart disease. More specifically, old age, a low educational level and poor economic conditions were considered barriers to secondary prevention. The participants stated that for these patients, it was very difficult to fully understand and implement secondary prevention measures due to their poor comprehension ability. They did not even know how to use smartphones, making it difficult for nurses to provide distance health education.

He is an old man and lives alone. He does not have a smartphone. If he had a smartphone, I could send him videos or pictures about diet, and he would see more clearly. (N4)

Positive support from family caregivers acted as a facilitator of secondary prevention for coronary heart disease. Some of the participants highlighted the crucial role of family caregivers in the long-term management of patients. Family caregivers had to spend time and effort supervising patients, such as accompanying patients to follow-up visits, which was a challenge for most family caregivers, particularly young caregivers.

The family members of many patients are busy with work. They seldom participate in the management of patients. (N7)

## Theme 3: environmental context and resources

The participants reported that support from the organisation, supervisors and colleagues acted as a facilitator in the work environment, contributing to the implementation of secondary prevention for coronary heart disease. On the other hand, insufficient organisational support was a barrier. Organisational support was described by the participants as follows: training opportunities, encouragement with regard to secondary prevention, financial support and resources. Almost all participants highlighted understaffing as a barrier. The nurses expressed that while they were keen to carry out secondary prevention, they were often prevented from doing so by other work commitments (eg, processing doctors' orders).

We are often responsible for many work tasks, like processing doctors' orders, medication rounds...It is

impossible to arrange specific nurses for secondary prevention. However, if we want to do this work better, more nurses must be involved in it. (N6)

Financial support, particularly to establish and employ artificial intelligence (AI) systems for coronary heart disease, was considered a facilitator. AI systems promoted communications between health professionals and patients and were very convenient.

Our hospital has a well-designed IT system. During coronary heart disease management, patients can make an appointment for follow-up and see all the contents of prescriptions, including exercise prescriptions and nutritional prescriptions. Patients upload their diet and exercise records through the system. Our health professionals can read these records immediately. (N2)

Most participants commented that a lack of standardised processes and regulations was a barrier to secondary prevention for coronary heart disease because each hospital was a different organisation, making quality assurance more difficult. The following problems with regulations and processes were cited by the participants: rough management content, inconsistent and inconvenient intervention processes, a lack of supervision of the implementation process and unclear role responsibilities. The majority of the participants suggested that it was time to establish a quality management system to trace the implementation of intervention, modify intervention strategies (eg, follow-up frequency) and finally improve the intervention effects of secondary prevention. One participant described her experience as follows:

Our responsibilities are unclear; sometimes, one task may be completed by multiple nurses, such as patient enrollment and telephone follow-up. In another situation, a nurse may have different tasks. That is, there is no specific person in charge of a task. (N3)

Almost all participants talked about collaborating with a multidisciplinary team when implementing secondary prevention for coronary heart disease. These participants suggested that strong communication and collaboration with health professionals in other disciplines is necessary for better performance in secondary prevention. Some participants felt discouraged since little support was available from other health professionals.

There is no rehabilitation therapist on our team, so it is difficult for us to carry out the exercise prescription. (N5)

Several participants reported that physicians' dominance in the health system is another barrier. Nurses were not trusted or respected by physicians. One participant described the following:

Doctors do not believe in our nurses. They are skeptical that we can manage our patients well and ultimately bring various benefits. Doctors' limited

participation has negative effects on secondary prevention. Actually, doctors hold dominance. (N6)

#### Theme 4: social influences

Several participants indicated that the social context might influence secondary prevention for coronary heart disease. The aspects of the social context that were mentioned included the economic development level, the social climate and governmental activities. The participants, particularly those in remote or less developed areas, reported difficulty conducting secondary prevention. One participant pointed out the following:

Our region is backward, and it is difficult for patients to pay for secondary prevention care service and purchasing necessary monitoring equipment, such as sphygmomanometer. (N12)

Positive feedback from patients was a facilitator. Two participants mentioned that praise and gratitude from patients could generate positive emotions, such as self-affirmation and a sense of achievement. As a result, these feelings encouraged nurses to make greater efforts for secondary prevention for coronary heart disease.

When patients praised me, I was truly very happy. In addition, I would pay more attention to this patient and do better. (N8)

As the participants mentioned, they usually spent their spare time conducting secondary prevention for coronary heart disease. Thus, several participants emphasised the importance of family support. Whether family members supported their work had an essential impact on the effects of secondary prevention. One participant who had one small child and whose mother was diagnosed with cancer expressed that work–family conflict hindered secondary prevention.

I have to spend time and energy taking care of my family. Carrying out secondary prevention for coronary heart disease is hard for me. (N11)

#### DISCUSSION

This study sought to explore the influencing factors of the implementation of secondary prevention among people with coronary heart disease. Drawing on the Theoretical Domains Framework, the barriers to and facilitators of preventive care were identified. Our findings help to enrich our understanding of the factors that affect the implementation of and adherence to secondary prevention, and in doing so, they can inform the development of strategies for improving adherence.

Our study found that nurses' attributes, such as knowledge, skills, motivation, beliefs and attitudes, influenced secondary prevention implementation. These findings are consistent with those of Svavarsdóttir *et al*,



who found that health professionals' knowledge and skills were essential for patient education for individuals with coronary heart disease,<sup>22</sup> suggesting that for nurses, adequate knowledge and proficient skills could improve adherence to the recommended treatment. We found that personal traits are important attributes of nurses that affect the implementation of secondary prevention, especially nurses' attitudes, beliefs and motivations. Personal traits in this study are comprehensive and related to an individual's inner thoughts and feelings, covering several domains of the Theoretical Domains Framework (eg, social/professional role and identity, beliefs about capabilities, intentions). Similar findings were reported in the studies by Basedow *et al*<sup>32</sup> and Lavallée *et al*,<sup>33</sup> who showed that positive attitudes towards treatment recommendations led to optimal clinical practice. These findings could be explained by Ajzen's theory of planned behaviour, which proposes that one's behaviour is predicted by attitudes and beliefs.<sup>34</sup> In our study, the participants indicated that nurses' positive motivation, whether intrinsic or extrinsic motivation, was a facilitator of secondary prevention implementation. This facilitator was seldom previously identified in conducting secondary prevention among people with coronary heart disease. Previous studies<sup>35-36</sup> mostly focused on the motivation of patients instead of the motivation of care implementers, such as nurses. It is crucial to pay attention to nurses' motivation for implementing preventive care, as motivation channels nurses' effort to accomplish organisational goals.<sup>37</sup>

We found that patients' willingness to participate in secondary prevention was related to care implementation. This finding is in line with studies in which patients' adherence to medical therapy and a healthy lifestyle were determining factors influencing optimal secondary prevention.<sup>13 38 39</sup> We further identified specific factors affecting willingness and adherence, such as attitudes towards lifestyle interventions (eg, considering lifestyle intervention as a 'troublesome'), economic status, life customs and support from family members, confirming previous studies finding that the reasons for non-adherence were complex and multifaceted.<sup>16</sup> Notably, the lack of access to telemedicine, for example, not owning a smartphone, was considered a barrier to conducting secondary prevention, which was seldom discussed by previous studies. Although the benefits of telemedicine for chronic disease management<sup>40 41</sup> have been identified, implementing telemedicine through smartphones is difficult in relatively poor areas,<sup>40</sup> such as China, since the prevalence of smartphone use is low.<sup>42</sup>

Our findings highlight positive organisational support as a major facilitator of the implementation of secondary prevention. Similar findings were reported in the studies by Castellà-Creus *et al*<sup>43</sup> and Kwak *et al*,<sup>44</sup> who showed that organisations can offer nurses support and help in the event they encounter difficulties in providing care

to improve quality of care. According to the Theoretical Domains Framework, the environmental context, including the organisational context, can affect the consequences of a particular action of health professionals,<sup>24</sup> which could explain our findings. We further found that the quality management system for secondary prevention may affect its implementation and effects, emphasising the need for quality audits and minimum standards in the delivery of secondary prevention.<sup>16</sup> A good quality management system can regulate the behaviours of team members and clarify everyone's responsibilities at each care stage.<sup>45</sup>

In our study, the participants claimed that effective teamwork within the multidisciplinary team was an important factor influencing preventive care, confirming the domain of environmental context and resources from the Theoretical Domains Framework. These findings concur with those of Hajizadeh *et al*<sup>46</sup> and Lavallée *et al*,<sup>33</sup> who found that building an effective team was beneficial for implementation effects. Unfortunately, multidisciplinary teamwork was reported by several participants as being suboptimal, as nurses were not trusted or respected by other health professionals, implying that nurses' voices need to be heard and acknowledged. To do so, nurses must find ways to be invited into the authoritative discourse of hospital organisations and develop their power.<sup>47</sup> In addition, patients' positive feedback, such as praise and appreciation, was considered a facilitator of the implementation of secondary prevention since it can stimulate nurses' motivation. This point was echoed in the study by Kim *et al*,<sup>48</sup> who showed that the appreciation expressed by patients motivated nurses to perform as well as possible.

This study has several limitations. The participants were recruited from hospitals, while participants from other contexts, such as communities, were not enrolled; thus, the generalisability of the findings to other settings may be limited. Moreover, the themes in our study emerged from a small sample, so the findings should be further explored quantitatively and in longitudinal studies.

## CONCLUSIONS

This study provides new insights into how nurses perceive the barriers to and facilitators of the implementation of secondary prevention among people with coronary heart disease based on the Theoretical Domains Framework. We found that secondary prevention implementation is affected by various factors, including nurse attributes, patient characteristics, the environmental context and resources and social influence. These findings can be applied to design interventions for practice and further research, promoting the better implementation of preventive care.

**Acknowledgements** We thank all the nurses for their participation in the study.

**Contributors** YN, YW and GY: Design of the study; data coding and analysis; drafting of the manuscript or critical revision for important intellectual content. YB, YX and ZC: Development of the study methods; data coding and analysis; revision of the manuscript. XY and JH: Data coding and analysis; revision of the manuscript. GY: Taking the responsible for the overall content as the guarantor.

**Funding** This study was supported by the West China Nursing Discipline Development Special Fund Project, Sichuan University (No. HXHL20029)

**Competing interests** None declared.

**Patient and public involvement** Patients and/or the public were not involved in the design, or conduct, or reporting, or dissemination plans of this research.

**Patient consent for publication** Not applicable.

**Ethics approval** This study was approved by the ethics committee of West China Hospital of Sichuan University (No. 2021-1378). Participants gave informed consent to participate in the study before taking part.

**Provenance and peer review** Not commissioned; externally peer reviewed.

**Data availability statement** Data are available on reasonable request. Data are available on request from the corresponding author.

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