

Patient and healthcare professionals' perceived barriers and facilitators to the implementation of psychosocial screening in cardiac practice: A Delphi study

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ABSTRACT

Background: Psychosocial risk factors contribute to the incidence and progression of coronary heart disease (CHD). Psychosocial screening may identify individuals who are at risk and aid them with getting appropriate care. To successfully implement psychosocial screening in the cardiology practice, the current study aims to identify key barriers and facilitators to its implementation and evaluate their perceived importance among health care professionals (HCPs) and patients.

Methods: We took a modified 3-round Delphi study approach to gain insight into key determinants that could either impede or ease implementation. Round 1 gathered data from HCPs ($n = 9$; cardiologists, medical psychologists, cardiac nurses) and CHD patients ($n = 21$), which we transcribed verbatim, coded, and processed into unique determinants. In rounds 2 and 3, participants were asked to select the most relevant determinants and rank them based on importance. Subsequently, determinants were classified by implementation level.

Results: Patients were generally more positive towards screening. HCP barriers included time-constraints, disruption of primary activities, and limited knowledge on psychosocial risk and screening, while patient barriers were commonly related to accessibility and patient characteristics (e.g., health literacy, motivation). Facilitators of both groups mainly pertained to the use of the screener and follow-up care, such as increasing the accessibility and the benefits of the screener.

Conclusion: Barriers may be targeted by enhancing the effects of the facilitators. Increasing the accessibility to the screener and interventions, improving information provision, and appointing a contact person to oversee the screening process may ease the screening and care process for both patients and HCPs.

1. Introduction

Ischemic heart disease has been the main cause of mortality worldwide for decades [1]. Therefore, prevention aiming to reduce the harmful effects of cardiac risk factors is receiving increasing attention. Psychosocial risk factors are associated with an elevated risk of developing coronary heart disease (CHD) and patients with established heart disease risk a worsened prognosis [2,3], such as adverse events [4], and a poorer health-related quality of life [5–7]. The risk associated with psychosocial risk factors is believed to be of comparable size as other well-known risk factors, like smoking and hypertension [8].

CHD patients commonly experience psychosocial problems, such as

anxiety and depression [9,10], and chronic [11] and traumatic stress [12], which in turn may lead to adverse outcomes. Additionally, personality factors such as anger [13–15], hostility, [16] and Type D (distressed; i.e., social inhibition and negative affectivity) [17,18] are likewise associated with an elevated risk. Psychosocial risk factors are increasingly acknowledged in cardiac practice nowadays [2] and are becoming more often screened for in programs such as cardiac rehabilitation (CR) as it presents a good opportunity to assess for a wider variety cardiac risk factors [19]. However, systematic screening is not commonly performed in cardiac practice and when done it mainly focuses on depression and anxiety [20]. Moreover, psychosocial risk tends to get assessed only once while it is recommended to follow-up multiple

Abbreviations: CHD, Coronary Heart Disease; CR, Cardiac Rehabilitation; ESC, European Society of Cardiology; HCP, Health Care Professional; THORESCI, Tilburg Health Outcomes Registry of Emotional Stress after Coronary Intervention; TICD, Tailored Implementation for Chronic Diseases.

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times [19,21]. Routine screening for psychosocial risk factors is important for patients with established heart disease as it could aid individuals with getting appropriate counseling or care [22,23], which subsequently could improve their quality of life [24–27]. Moreover, it is recommended to assess psychosocial risk factors as it could likewise identify potential barriers to treatment adherence and lifestyle change [22,28,29].

In a prior study [30], we examined the validity of an updated version of a comprehensive psychosocial screening instrument based on recommendations in the 2016 European Society of Cardiology (ESC) guidelines [24] among a general and a patient population with CHD. Results indicated that the comprehensive screener validly assessed eight psychosocial risk factors with sufficient to good diagnostic accuracy. The next step is to implement the screening instrument in clinical care as a part of CR (i.e., during the intake), and an annual follow-up before each appointment with the cardiologist. The need for an improved and more comprehensive psychosocial screener within the cardiac practice has been discussed commonly (e.g., [19,20,30]). Furthermore, the implementation of systematic screening as a part of CR has been extensively studied before [31]. However, the specific determinants influencing the implementation of a comprehensive, department-wide psychosocial screening program remain unknown. Merely implementing systematic screening within CR means that patients who are neither referred to nor participate in CR may be overlooked. Consequently, a substantial number of patients may remain undetected if screening is exclusively limited to CR.

Implementation concerns the actions that refer to adopting and committing to research-based methods in the clinical practice to ultimately improve the quality and efficiency of healthcare and health services [32,33]. It is argued that a tailored implementation strategy is most effective, as it takes the context that the implementation will take place into consideration [34]. There are different determinants that can influence the implementation and use of the psychosocial screener. I.e., barriers are context-relevant determinants that impede the implementation of the psychosocial screener, while factors that promote the implementation are considered to be facilitators [35]. Working to reduce found implementation barriers and focus on facilitators will aid implementation [36]. A previous systematic review on implementation suggested that barriers and facilitators operate on various levels, specified as external, organizational, professional and interventional [37]. Though this systematic review mainly focused on primary care, the authors concluded that their results were not restricted to a specific clinical discipline or topic, implying it could be of relevance to a variety of healthcare settings. Additionally, Hanssen et al. [38] argued that barriers and facilitators may also exist at the patient level, as patients could ultimately play a role in implementation, too. In the current study we combine these two viewpoints when discussing at which level which barriers and facilitators are at play.

In the current study, we aimed to identify key barriers and facilitators to which all stakeholders (i.e., patients, cardiologists, cardiac nurses, medical psychologists) (in)directly could get exposed to while implementing and systematically using a psychosocial screening instrument in the cardiology practice. Furthermore, we examined on which level of the implementation (i.e., external context, organization, intervention, patient, professional) these determinants were located.

2. Methods

2.1. Background

The present study comprises additional research as a part of a larger, observational cohort study. The Tilburg Health Outcomes Registry of Emotional Stress after Coronary Intervention (THORESCI) study follows patients who underwent acute or elective percutaneous coronary intervention for CHD at the Elisabeth-TweeSteden hospital in Tilburg, the Netherlands. Eligibility criteria and other details regarding the

THORESCI project have been described in detail previously [30]. The Dutch version of the comprehensive psychosocial screening instrument [30] central in the current study is based on the 2016 European Society of Cardiology psychosocial risk factors [24]. The instrument comprises 19 items distributed over eight pre-defined domains (depression, anxiety, work stress, family stress, traumatic stress, Type D personality, anger, and hostility) and serves as quick assessment (< 5 min) to identify psychosocial risk. We previously confirmed that the screener is a valid and reliable tool to determine the patient's psychosocial risk status [30]. Ethical approval was granted by the Medical Ethical Review Board (METC Brabant, reference number NL46259.028.13) and the Ethics Review Board of Tilburg University's School of Social and Behavioral Sciences (TSB_RP242).

2.2. Participants

HCPs and patients were invited to participate either through email or in person, using a convenience sampling method. Recommendations pertaining to sample size differ widely, as there is no standard recommended size. However, in the majority of the published studies, a sample size between 10 and 100 is commonly utilized [39]. Therefore, we aimed for a participant number above 10. Before participation in either the interview and/or questionnaire, additional information was provided about the research aims, duration and content of the questions, and privacy considerations.

2.2.1. HCPs

From May 2021 to July 2021, we interviewed nine HCPs (five cardiologists, two medical psychologists and two cardiac nurses (67% male)) involved in the care for patients with CHD. HCPs were familiar with the THORESCI study, but not directly involved. The interviews with cardiologists were held individually, while the two other interviews (i.e., one with both cardiac nurses and one with both medical psychologists) were held together. All interviews took place at the hospital, except for one interview with a cardiologist which was done through a phone call.

2.2.2. Patients

Patient participants had to be enrolled in the THORESCI study from May 2018 onwards, as the validated Comprehensive Psychosocial Screener [30] was part of THORESCI since this time. Furthermore, we considered only those patients who had not indicated their opposition to being contacted for further research upon enrollment. All eligible participants were invited by email to take part in the current study during the winter of 2022, of which 19 patients completed most of the patient questionnaire. From this group, five participants were interviewed either through phone or at the Elisabeth-TweeSteden hospital. In addition, we conducted interviews with two patients who were not part of the THORESCI study but were part of a patient panel that was interviewed in the study design stage, instead. For that purpose, they had previously participated in a focus group interview about psychosocial screening. These interviews took place in 2019, and aimed to better understand patient needs related to psychosocial care and screening. Following their participation, the two patients that partook in the current study expressed interest in being contacted again. This resulted into a total of 21 patients (76.2% male; $M_{age} = 64.26 \pm 7.85$; 63.2% elective PCI) who were included in the current study, and seven participants who were interviewed.

2.3. Procedure and data analysis

To identify key barriers and facilitators, we used a modified Delphi approach consisting of three rounds. This method provides a structured way to answer the current research questions by gaining consensus across all participant groups. Characteristics of this approach include guaranteeing anonymity among the participants involved, gaining

controlled feedback on the found outcomes and taking an iterative approach [40]. One benefit of this approach is to reduce bias that otherwise could occur in a group-setting by for example the need to conform and the influence of dominant individuals [41]. Within the Delphi technique, several tailored variations exist; in the current study, we made use of the ranking-type Delphi technique to gain an insight in the perceived importance of barriers and facilitators [42]. Since HCPs and patients may encounter different barriers and facilitators concerning the implementation of the psychosocial screener, we performed the analyses separately for each group.

In the *first round* we gathered data on barriers and facilitators by administering patient questionnaires (through Qualtrics XM) and conducting interviews with both patients and HCPs. Based on all assessments, we identified key determinants and summarized these in two lists with barrier and facilitator statements for the patient and HCP groups separately. In *round 2*, we asked all participants to select ten statements that were most important according to them. Then, in *round 3*, participants ranked each selected statement based on their perceived importance. Both rounds 2 and 3 were assessed through Qualtrics XM. Data collection (round 1) ran from May 2021 to July 2021 for the HCPs and January to March 2022 for the patients. Round 2 and round 3 were held in March and April 2022 for the HCPs and patients, respectively. Each round is described in more detail below.

2.3.1. Round 1: identification and narrowing down of barriers and facilitators

Patient Questionnaires –THORESCI participants received an email including an information letter and link to access the questionnaire through Qualtrics. They were asked to give their opinion on psychosocial screening and barriers and facilitators related to screening. After providing consent, they were directed to the questionnaire which took about 15 min to conclude. First, a brief explanation was provided on what barriers and facilitators entailed within the context of the aforementioned domains (i.e., the external, organizational, professional and intervention domain) [37,38] as well as examples to give the participants a general idea of how the domain could relate to the screener. For example, we specified that the ‘external factors’ domain could be related to digitalizing the screener and the role that other healthcare professionals, like the family doctor, could play in the screening process. Following this explanation, three questions were posed per domain: first, we asked to list (1) barriers and (2) facilitators of the given domain, followed by a question on how to counter the mentioned barriers or induce the effect of the mentioned facilitators. If participants could not come up with barriers or facilitators in each domain, they could continue without answering. We additionally added three questions aside from the domains to identify ancillary barriers and facilitators. Participants could leave their contact information if they were interested in being interviewed.

Interviews – All participant groups (i.e., THORESCI participants, cardiology outpatients, HCPs) received information after which they could provide consent to participate in an interview. Participants could indicate whether they preferred to have on-site interviews (i.e., at the hospital), online or through a phone call. We conducted semi-structured interviews to discuss three main themes: (1) shared decision making within the context of psychosocial risk factors, (2) implementation of the screening instrument and the suggested screening process, and (3) sex and gender. However, for the present study we were merely interested in the second theme. A list of open-ended questions was composed for patients and HCPs separately. Each theme had a certain number of fixed questions that were asked in each interview, with follow-up questions differing based on answers provided to the main questions to gain more context or additional information. After each theme, we summarized the answers provided to verify if we understood the participant(s) correctly. Interviews lasted 30 to 60 min approximately and were always held by the same interviewer (SH). All interviews were recorded and transcribed verbatim and saved in a secured database to which only the involved

researchers and research assistants had access. All transcripts were then exported to Atlas.ti 9.0, a qualitative data analysis software, and relevant quotes were coded into barriers and facilitators.

A careful examination of both the answers to the questionnaire as well as relevant quotes from the interviews was made to ensure the inclusion of only those determinants that were related to the implementation, since participants also mentioned factors that were unrelated to the current study (e.g., COVID-19, the THORESCI study itself). Relevant determinants were then exported into Excel so multiple raters (i.e., SH and two research assistants) could independently code the provided answers based on the Tailored Implementation for Chronic Diseases (TICD) checklist [43]. The focus of the TICD is specifically tailored to healthcare settings that treat patients with chronic disease, like our sample. Moreover, tailored implementation strategies are more sensitive to the specific context in which an implementation is intended, potentially enhancing the overall effectiveness [34]. On some occasions, none of the codes of the TICD checklist was applicable in the given context. Hence, new codes were created upon agreement. The use of multiple codes per determinant was possible but discouraged. Upon disagreement, codes were discussed among the raters until consensus was reached. Finally, NK independently assessed the codes by checking their consistency and applicability to assure analytic rigor. The codes were then combined for both the HCP group (i.e., cardiologists, cardiac nurses, and medical psychologists) and the patient group (i.e., THORESCI participants and other cardiology outpatients), followed by creating two lists of which one contained barrier statements and the other one facilitator statements.

2.3.2. Round 2: selecting the most important barriers and facilitators

The lists that were created in round 1 were distributed among all participants using Qualtrics XM. We asked all participants to select the ten most important barriers and facilitators each. We included an optional textbox in the questionnaire to facilitate the need for additional explanations, when a barrier or facilitator was not listed but still important to mention or when the participant disagreed with a statement. In case participants ranked more than ten statements, we would carefully examine the corresponding rankings as provided in round 3 and omit a ranking if necessary.

2.3.3. Round 3: ranking barriers and facilitators

After selecting the ten most important barriers and determinants, participants were prompted to rank the determinants ranging from 1 (= least important) to 10 (= most important) for only those statements they selected in round 2. Since participants were asked to rank only those statements that they selected, some statements were ranked more often than others due to being selected more frequently. Following a similar approach to other Delphi studies, we selected only codes that reached the agreement threshold of 50% [44] and calculated their mean and standard deviation [38,44] for easier interpretation. Additionally, a zero was assigned to indicate it was not of importance to a participant, but also so we could incorporate it in the mean and standard deviation calculation. Each ranking was supposed to be mentioned only once. However, if participants added the same ranking twice, we would average the ranking. If a patient selected and ranked less than ten statements, we would manually adjust the ranking so that it would be ranked downwards from 10 (i.e., most important) since the participant only selected those statements important to them. Additionally, if the participant would rank more than ten statements, we would not consider the statement that was ranked 10th or higher.

Finally, we organized the barriers and facilitators by using the recommended approach of Lau et al. [37] and Hanssen et al. [38] by looking at the external context, organization, professional, patient and intervention. External context refers to those determinants (i.e., barriers and facilitators) pertaining to regulations, incentives, finances, public awareness, advances in technology and system infrastructure. The organizational level relates to the organization in which the

implementation takes place at, and contains determinants on the organization of care, culture, readiness, resources, inter-professional relationships, task division and involvement. Determinants applicable to the professional level are the perceptions HCPs have about their knowledge, values, personality, skills, and attitude. The intervention itself (i.e., the use of a psychosocial screening instrument in the cardiovascular practice) encompasses determinants such as the possible benefits and drawbacks, cost-effectiveness, complexity, and resources that are required for its implementation [37]. Lastly, based on Hanssen et al. [38] we included a patient domain as well which in the current study includes all barriers and facilitators in which a patient is involved, such as feelings, needs, choices, and abilities of patients. By using this approach, we can ultimately get an insight into which levels of the implementation require the most attention.

3. Results

3.1. Round 1: identification and narrowing down of barriers and facilitators

3.1.1. HCP barriers and facilitators

Based on the interviews with the HCPs, we discovered 132 barriers and 83 facilitators. The most common barriers based on the TICD were the availability of necessary resources and capacity to plan change. Another frequent code was patient other (e.g., age, disabilities, personality), which we created ourselves to indicate those patient characteristics that the TICD did not consider. The most frequently mentioned facilitators were communication and influence, referral processes, and organization (self-created). We brought the determinants down to a list of 31 barriers and 21 facilitators after coding and organizing the determinants into code-specific statements.

3.1.2. Patient barriers and facilitators

After careful examination, we identified 190 determinants (61 barriers, 129 facilitators) based on the interviews, and 130 determinants (58 barriers, 72 facilitators) based on the Qualtrics questionnaire. The codes attached to the determinants indicated that the most common barriers were related to clarity, patient beliefs and knowledge, and patient other. Facilitators were likewise focused on clarity, communication and influence, and information provision (self-created). We narrowed down all barriers and facilitators to 24 and 25 unique statements, respectively.

3.2. Round 2 and Round 3: selecting and ranking the most important barriers and facilitators

The most selected barriers and facilitators according to the HCPs are displayed in Tables 1 and 2, respectively, whereas all statements, their corresponding codes and frequency are listed in Table S1 (HCP barriers) and Table S2 (HCP facilitators). For the patients, the most selected barriers and facilitators are displayed in Table 3 and Table 4, respectively, while all barrier and facilitator statements are displayed in Supplemental Tables S3 and S4. Finally, to provide a clear insight into where the most important statements operate in the implementation process, we displayed the most important barriers (Fig. 1) and facilitators (Fig. 2) for patients and HCPs combined and colour-coded the statements based on implementation level [37].

In total, 7 out of 9 HCPs (~78%) responded to the follow-up questionnaire. However, one HCP only selected and ranked four facilitators and another HCP did the same for five barriers. Among patients, the response in round 2 and round 3 was somewhat lower due to reported issues with Qualtrics XM: merely twelve out of 21 patients (60%) selected the determinants that were most important to them. Not all participants followed the instructions properly, which resulted in too many or too few selected determinants or giving the same ranking twice. For the barriers, two patients selected only five statements which were

Table 1

The top seven most selected barriers of the implementation of a psychosocial screening instrument by the HCPs ($n = 7$), coded based on the TICD checklist and ranked based on perceived importance (mean and standard deviation [SD]).

Ranked based on perceived importance (mean and standard deviation [SD]).		Round 2 (n = 7)	Round 3 (n = 7)	
Barriers			Mean Rank	SD
TICD checklist				
Accessibility of the recommendation	<i>‘The use of the screener is not equally accessible for all patients, e.g., due to a language barrier or not having a computer’</i>	5	5.57	4.20
Compatibility	<i>‘Adding the screener to the outpatient activities can lead to primary activities being disrupted, for example the flow of patients and longer waiting times’</i>	5	4.57	3.74
Observability	<i>‘It is unclear what the benefits of psychosocial screening may be in cardiology practice’</i>	4	4.14	4.26
Skills needed to adhere	<i>‘The limited knowledge on psychosocial risk means that as a cardiologist I am unsure what the possibilities are for psychological treatment’</i>	5	3.71	3.82
Assistance for organizational changes	<i>‘There is too little assistance within the cardiological practice to ensure a smooth implementation and use of the screener’</i>	4	3.43	3.95
Capacity to plan change	<i>‘There is not enough time to consider or discuss psychosocial risk factors’</i>	5	3.29	3.15
Other expertise*	<i>‘Discussing the results of the psychosocial screener is not something the cardiologist should do’</i>	5	1.86	1.77

Note: only statements selected by at least 50% of the participants are displayed. Higher rank mean indicates higher importance.

* Self-created code.

manually recoded ranging from 6 to 10. Additionally, one participant selected and ranked all statements while another participant did neither, which led to exclusion in the analyses on the barriers for these two participants. Furthermore, one participant selected and ranked eleven statements and thus gave the same ranking (5) to two different statements. We omitted the statement that was ranked 10th and kept both statements that were ranked fifth. Regarding the facilitators, one patient selected five statements but did not rank them while another selected and ranked six statements. Another patient selected ten statements but ranked eleven by giving a 1-ranking to two statements. We omitted the two lowest ranked statements in both round 2 and round 3.

3.2.1. HCP barriers

In total, seven barriers were selected by at least four HCPs. Five out of seven HCPs (~63%) believed that it should not be the cardiologist's responsibility to discuss the screener results and acknowledged that cardiologists lack knowledge on treatment possibilities. Furthermore, time constraints and the disruption of primary activities were similarly selected to be main barriers according to five HCPs. Lastly, HCPs were concerned about the fact that the screener may not be accessible to all patients because of language barriers or a lack of digital literacy (~63%). Statements selected by 57% of the HCPs were related to the uncertainty of the benefits of psychosocial screening and the lack of assistance to implement the screener. In round 3, we found that the barriers on the limited accessibility of the screener, disruption of primary activities and the uncertainty of potential benefits of screening were ranked the highest (Table 1). Following the implementation levels

Table 2

The top eight most selected facilitators of the implementation of a psychosocial screening instrument by the HCPs (n = 7), coded based on the TICD checklist and ranked based on perceived importance (mean and standard deviation [SD]).

Facilitators		Round 2 (n = 7)	Round 3 (n = 7)	
			Mean Rank	SD
TICD checklist				
Quality of evidence supporting the recommendation; Strength of the recommendation	<i>‘There is strong evidence that psychosocial risk factors are important to consider in the cardiology practice’</i>	5	5.57	4.96
Compatibility	<i>‘By offering a comprehensive screener instead of several, separate questionnaires allows for a more practical identification of cardiac patients with psychosocial problems’</i>	4	4.86	4.71
Referral processes	<i>‘There is a good referral system for patients who need psychological support’</i>	6	4.14	2.67
Patient beliefs & knowledge	<i>‘The screener can better quantify the patient’s gut feeling’</i>	4	3.71	4.50
Timing*	<i>‘Administering the screener during the CR intake and then once a year before the appointment with the cardiologist provides good insight into how the patient is doing’</i>	4	3.14	3.18
Accessibility of the intervention	<i>‘Psychological aftercare following the screener (in the context of CR) is accessible to patients’</i>	4	3.14	3.84
Accessibility of the recommendation	<i>‘The screener in the way we want to offer it, is accessible to patients’</i>	4	2.71	3.68
General accessibility*	<i>‘Care and care providers are accessible to patients’</i>	4	2.43	3.74

Note: only statements selected by at least 50% of the participants are displayed. Higher rank mean indicates higher importance.

* Self-created code.

from Lau et al. [37], barriers were located at the interventional, professional, and organizational levels (Fig. 1).

3.2.2. HCP facilitators

Eight out of 22 statements were selected by at least four HCPs. The statement pertaining to the current referral system was selected six times, which indicates that the current referral process between cardiology and psychology is perceived to work well according to HCPs and may therefore facilitate the screening process. Moreover, five out of seven HCPs agreed that the evidence on the influence of psychosocial risk in CHD is strong. Other statements were mainly focused on the intervention: e.g., the comprehensive screener is believed to be a practical tool to quantify patients’ feelings and may be better at identifying patients who need help as compared to the current tools that are used (both ~57%). Furthermore, four HCPs agreed that both psychological care, healthcare, and HCPs and the screener are accessible. Lastly, offering the screener during CR followed by a yearly recurrence when visiting the cardiologist is believed to get a good insight into a patient’s well-being. Interestingly, the most selected facilitators were not necessarily the highest ranked: while the statement on the referral system between cardiology and psychology was selected by ~86% HCPs, it was ranked as the third most important statement, following the statements

Table 3

The top eight most selected barriers of the implementation of a psychosocial screening instrument by the cardiac patients (n = 10), coded based on the TICD checklist and ranked based on perceived importance (mean and standard deviation [SD]).

Barriers		Round 2 (n = 10)	Round 3 (n = 10)	
			Mean Rank	SD
TICD checklist				
Patient behavior	<i>‘The behavior of cardiac patients (e.g., social desirability, timidity) may lead to not everyone filling out the screener (correctly)’</i>	7	5.50	3.59
Health illiteracy*	<i>‘Cardiac patients know too little about how feelings and thoughts can affect the heart and their health. Therefore, they do not see the usefulness of the screener.’</i>	8	5.11	3.91
Patient beliefs and knowledge	<i>‘Cardiac patients may have trouble expressing their feelings’</i>	8	4.90	3.14
Reaching patients*	<i>‘Since not all people (sufficiently) master the Dutch language or are not digitally skilled, not all patients can be reached’</i>	7	4.60	3.59
Clarity	<i>‘Complicated language makes it difficult to fill out the screener’</i>	6	4.30	4.18
Patient other*	<i>‘Characteristics of people (e.g., age, language skills, health, self-insight) may cause the screener to give a distorted picture or may lead to the screener not being filled out correctly’</i>	6	3.60	3.38
Patient motivation	<i>‘Cardiac patients do not feel like filling out an annual screening instrument’</i>	6	3.00	4.09
Information provision*	<i>‘Patients may not fill in the screener due to a lack of information about psychological screener and options for psychological care’</i>	5	2.00	3.33

Note: only statements selected by at least 50% of the participants are displayed. Higher rank mean indicates higher importance.

* Self-created code.

on the strong evidence for psychosocial risk and that the current screener would be more suitable as compared to current questionnaires to identify of patients in need of more psychological support (Table 2). Six out of eight facilitators operated on the intervention level, one on the organizational level and one on the professional level (Fig. 2).

3.2.3. Patient barriers

Ten patients provided valid barriers data, and eight barriers were selected by five or more patients. Three barriers were selected by 80% of the patients and pertained to the knowledge, perception, and behavior of patients: e.g., (1) patients could experience difficulties in expressing their feelings, (2) be dishonest because of social desirability, or (3) may not be aware of the influence of psychological factors on CHD and health. Four other frequently selected statements gave an insight in reasons as to why a patient could face difficulties when filling out the screener: the inability to reach all patients due to language barriers and digital illiteracy (70%), the experienced effort it may take (60%), the complexity of the screener (60%), and patient characteristics (e.g., language skills, health; 60%) may impede the proper use of the screener. Lastly, five out of ten patients assumed that other patients would not use the screener due to a lack of information on screening and possibilities for psychological aftercare. The barriers concerning the knowledge and behavior of patients and the limited accessibility of the screener were ranked highest (Table 3). Five out of eight barriers pertained to the patient level, while the other three barriers were related to the intervention itself (Fig. 1).

Table 4

The top six most selected facilitators of the implementation of a psychosocial screening instrument by cardiac patients ($n = 12$), coded based on the TICD checklist and ranked based on perceived importance (mean and standard deviation [SD]).

Facilitators		Round 2 ($n = 12$)	Round 3 ($n = 11$)	
			Mean Rank	SD
TICD checklist				
Reaching patients*	'By offering psychological care in multiple ways (e.g., digitally or in the hospital), more patients can be reached'	9	5.09	4.55
Patient other*	'Involving the patient's close ones is important to provide good psychological care'	7	4.45	3.78
Assistance for organizational changes	'By appointing a contact person (e.g., the cardiac nurse), people can be helped with filling in the screener if necessary'	6	4.27	4.61
Effort	'Filling out an annual screener does not take too much effort to fill out'	8	3.64	3.41
Clarity	'The screener is clear and understandable'	6	3.09	3.86

Note: only statements selected by at least 50% of the participants are displayed. Higher rank mean indicates higher importance.

* Self-created code.

3.2.4. Patient facilitators

Twelve patients selected facilitators. A total of five facilitators was selected by at least 50% of the patients. The most selected facilitator (75%) pertained to the way the screener is offered to the patients: by providing both a digital version, as well as a paper version more patients can be reached. Furthermore, patients also believed that appointing a general contact person may be beneficial for those patients who require help with filling in the screener (50%). Regarding the screener itself,

patients perceived it to be clear and understandable (50%) and believed it would not take much effort (~67%). In case the screener indicates that a psychological intervention may be needed, patients expressed that it is important to involve family members when psychological treatment is offered (~59%). While twelve patients selected statements, only eleven of these patients also ranked them. We found that the way the screener is offered was perceived to be most important, followed by involving family in follow-up care and having a contact person to oversee the screening process. The two lowest ranked statements pertained to the screening instrument itself (Table 4). Interestingly, the most important facilitators were all related to the intervention (i.e., the screener, follow-up; Fig. 2).

4. Discussion

The present study examined key barriers and facilitators for the implementation of department-wide systematic psychosocial screening in cardiology. By employing a ranking-type Delphi technique, we were able to highlight the most important determinants aiding in optimizing the implementation. HCPs mentioned more barriers, while the patient group was rather positive about psychosocial screening and reported more facilitators. HCPs experienced barriers relating to the organization, professional, and intervention, while important barriers as perceived by the patients pertained to the intervention and patient levels. For the facilitators, HCPs and patients were somewhat more in agreement: the facilitators in both groups generally operated on the intervention level.

In general, HCPs' organization-level barriers comprised a lack of resources (e.g., time constraints, interference with primary work activities) echoing previous findings in preventive cardiology [45–49] and the general clinical practice [37,50,51]. Implementation generally leads to more action points, which increases the already experienced time-pressure [51]. Furthermore, in line with other studies [43,52], a lack of organizational support (i.e., assistance) was perceived to hinder the implementation.

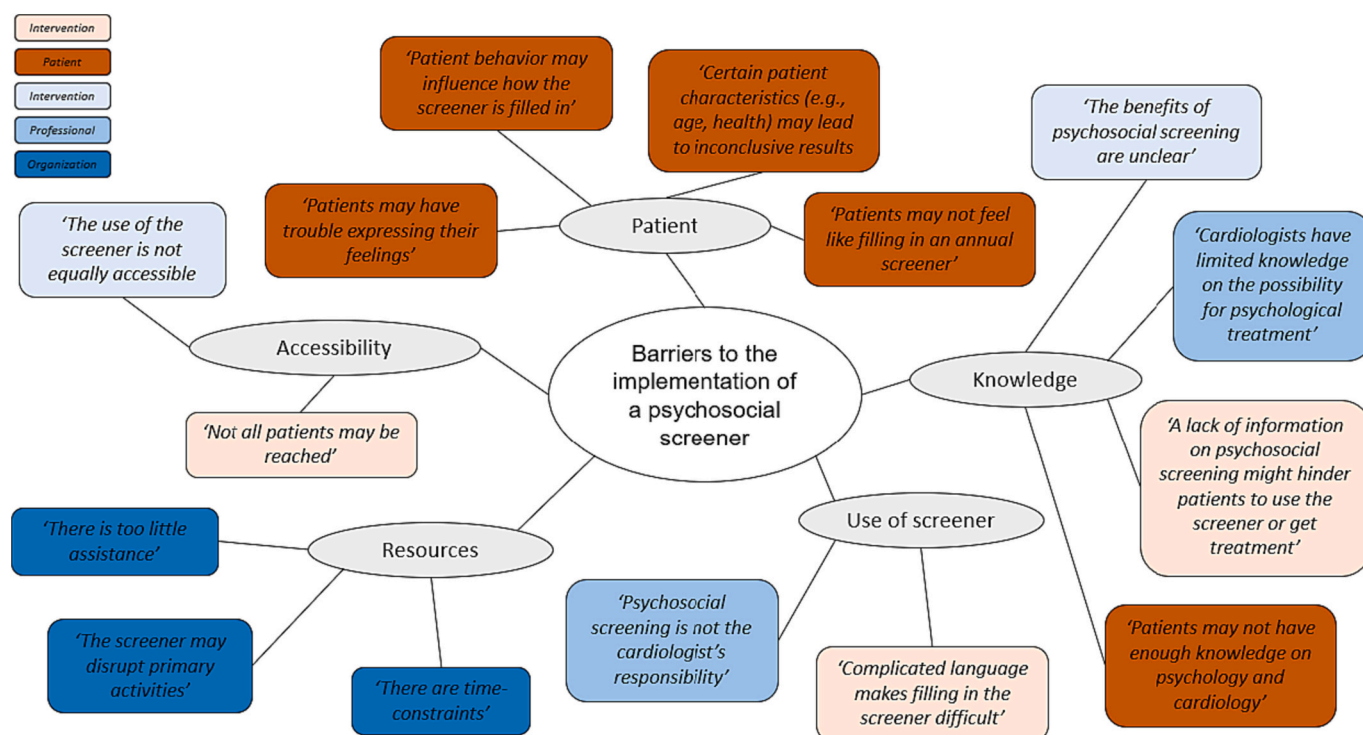


Fig. 1. The most important patient (orange) and HCP (blue) barriers to the implementation of a psychosocial screening instrument in the cardiac practice colored by implementation level. (For interpretation of the references to colour in this figure legend, the reader is referred to the web version of this article.)

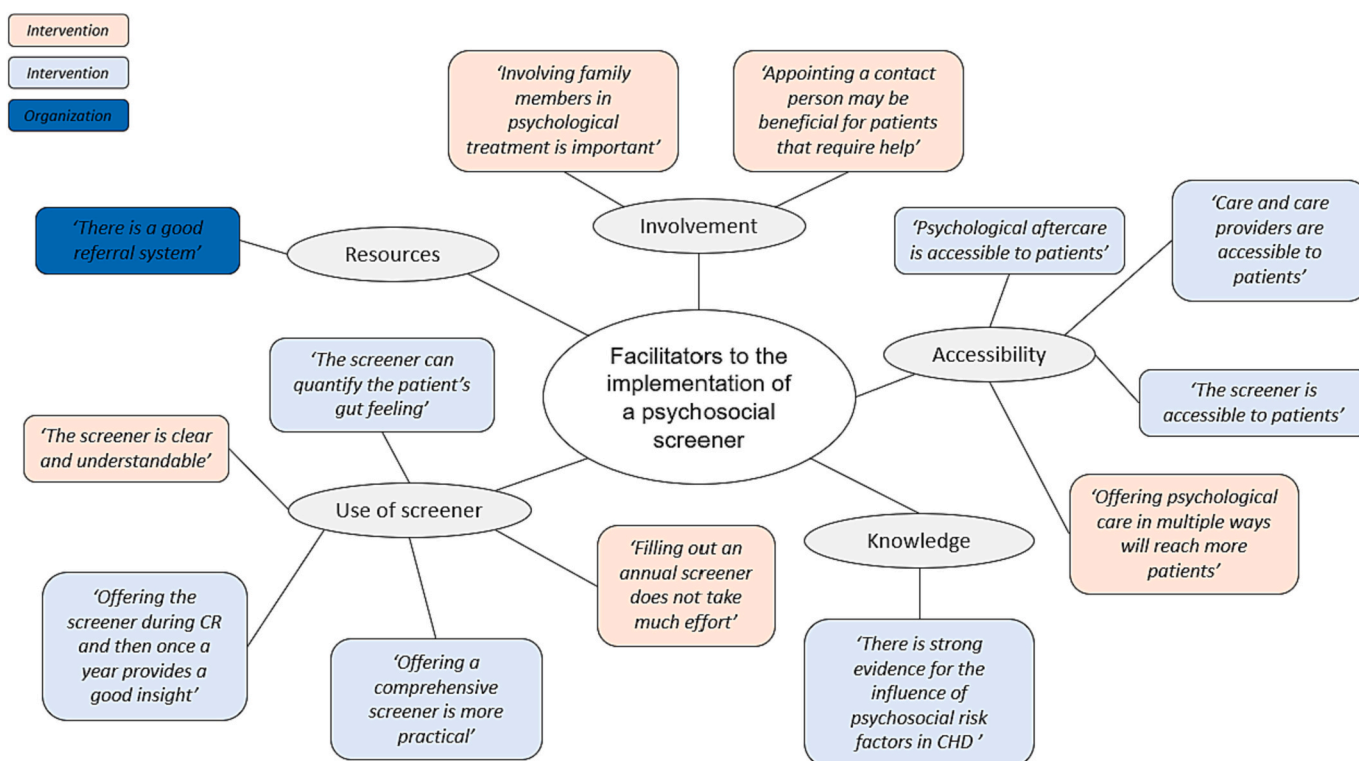


Fig. 2. The most important patient (orange) and HCP (blue) facilitators to the implementation of a psychosocial screening instrument in the cardiac practice colored by implementation level. (For interpretation of the references to colour in this figure legend, the reader is referred to the web version of this article.)

Another important barrier pertained to patients' health literacy (i.e., awareness of psychology and health). Poor awareness of both mental health and corresponding interventions remains a global health concern [53]. A previous study on barriers to the access and uptake of mental health services revealed that a lack of awareness and information on psychosocial distress post CHD and possible interventions is commonly experienced [54] which commensurate with our findings. However, if information was provided (e.g., brochures), this information was often left unexplained or lacked detail which led to a general misunderstanding among patients.

One plausible reason as to why the information provision is lacking may be supported by the expression of HCPs on cardiologists having limited knowledge on the benefits of psychosocial screening and treatment possibilities, which concurs with previous findings [55,56]. The lack of skills, education, and knowledge remain commonly mentioned professional barriers in prevention of cardiometabolic diseases (for an overview, see [49]). Though psychosocial risk in CHD is increasingly acknowledged in cardiac practice [2], cardiologists predominantly focus on medical predictors and outcomes [57,58]. However, the current study revealed that the evidence for the influence of psychosocial risk factors in CHD was believed to be the most important facilitator.

Besides a reduced health literacy, other patient characteristics such as limited self-awareness and facing difficulties with recognizing and expressing emotions (i.e., limited mental health literacy) are likewise important to consider for the implementation of the psychosocial screener. Participants mentioned multiple barriers pertaining to patients' mental health literacy, which reflects findings from previous research on both cardiac patients [54] as well as other populations [59,60]. Additionally, patients may experience a lack of motivation which likewise could be related to having limited information provision on the relationship between psychosocial distress and CHD [54].

Most of the important facilitators were related to the intervention, which emphasizes that a good fit between the intervention (i.e., psychosocial screening and follow-up) and the context it will take place in is

important to improve the chances of successfully implementing the screener [38]. Psychosocial risk is currently assessed in the current practice, but the questionnaires used are somewhat longer and only measure three distinct risk factors (i.e., depression, anxiety, Type D personality). The proposed screening instrument was believed to be more practical as compared to the process as is currently undertaken, which seems to increase the cost-effectiveness and therefore could facilitate its implementation [37]. Furthermore, assessing psychosocial risk somewhat more broadly is perceived to better quantify the patient's feelings. Patients, in turn, believed that the screener was both clear and understandable and would not require much effort while some patients expressed difficult language complicated the use of the screener.

Not only should the screener be accessible to facilitate the implementation, but also possible interventions. HCPs believed that the accessibility of physical health care, mental health care and care providers in the current setting are important facilitators to the implementation of a psychosocial screener. Moreover, the cooperation between cardiology and psychology was likewise believed to be facilitative. One way in which the current practice has optimized its accessibility is by offering collaborative care [61,62], by which additional support is provided to primary care providers in a team-setting to consider behavioral health conditions [62,63].

4.1. Limitations and strengths

There are several limitations that are important to consider. First, by using an approach with several rounds, we experienced increasing attrition with each subsequent round. While for the HCPs participation remained above the recommended cut-off of 70% in round 2 and 3 [64], patient participation in both follow-up rounds was below 70%. We experienced a technical problem with Qualtrics XM that may be responsible for this increased attrition. It is of note that the final number of patients is still adequate in terms of content validity [65]. Furthermore, with nine HCPs we were just below the standard size of 10 [39].

However, it should be noted that the HCP interviews took place during COVID-19 which impacted the availability and time of HCPs on top of their already demanding schedule. While clear guidelines on the appropriate sample size for expert consensus Delphi do not exist [44], we do acknowledge that the results should be interpreted with more caution. Lastly, organizational and healthcare system barriers as mentioned by the HCPs may differ from the perspectives of hospital executives and insurance company leaders in such a way that the medical specialists' perceptions may differ from the true barriers. Although medical specialists in the Netherlands typically have a high level of awareness regarding organizational and healthcare system challenges, we acknowledge that including barriers and facilitators from an executive point of view could prove to be quite compelling.

We also noticed patients were overall very optimistic about psychosocial screener and the procedure we proposed. It could be possible that participants with a positive attitude towards psychology and screening may feel more inclined to participate in studies like these. Another limitation concerns anonymity: though we emphasized multiple times that answers would remain anonymous, it is likely that some participants were hesitant to give their honest opinion due to being familiar with the researchers. Lastly, it is worth mentioning that the current study is based on the Dutch healthcare system which may considerably differ from other countries with less access to insurance-based healthcare and thus have limited options regarding CR or psychosocial interventions.

To our knowledge, previous research on determinants of standard psychosocial screening for all patients at the cardiac practice is scarce. While other studies also focus on preventive cardiology, they focus on different disciplines (e.g., lifestyle intervention [45], CR [31,46] eHealth [47]) which have similarities, but are not entirely in line with the current aims. Additionally, since stakeholders may encounter different barriers and facilitators, we decided to assess HCPs and patients separately to gain an insight into their unique needs. Another strength comprises the way we gathered and analyzed the data. Interestingly, determinants that were most frequently mentioned during round 1, were not necessarily most selected in round 2 or perceived to be most important during round 3, which proves the significance of the ranking-type Delphi. Furthermore, by taking this approach we were able to gain consensus [42] while also reducing bias that is otherwise introduced by dominant individuals and group conformity [41].

4.2. Clinical implications

The present study's in-depth exploration of barriers and facilitators in different levels of the implementation for both HCPs and patients separately granted an overview of which areas may require additional attention. Especially those barriers and facilitators regarding accessibility, resources (e.g., appointing a coordinator), and information on psychosocial risk seem to have promising implications for both clinical practice and future research.

Implementing routine screening emphasizes that cardiac care is more than just the physical component. Mental health check-ups on a regular basis may decrease the stigma surrounding psychosocial distress while in turn increasing the access to care [66]. More intensive screening may also lead to more people getting referred for psychosocial interventions [67]. This calls for both comprehensive and time efficient interventions such as relaxation techniques and coping skills [68]. Furthermore, these comprehensive techniques may simultaneously reduce the cost of healthcare while improving its quality and continuity [69,70]. Another possibility could be to provide a smartphone-based CR to reduce barriers related to accessibility. Offering CR online was found to not only have improved admission, adherence and completion rates as compared to CR taking place at a center, but also led to better psychological and physical outcomes [71]. For those who have completed CR and will not be re-admitted, blended collaborative care programs likewise offer automated interventions by mobile phone applications to

cardiac patients [72]. Especially during COVID-19, the demand for eHealth interventions drastically increased [73] of which its outcomes were effective [39].

As collaborative care evolves over time, automated programs could be offered through patients' mobile devices [72], echoing the facilitator that offering multiple ways of psychological care (e.g., in-person, eHealth interventions) will lead to more patients being reached. However, only offering digital care should be avoided as it may be inaccessible to those patients without a computer or limited digital skills. Therefore, a coordinator may be helpful to help those patients who require in-person attention.

The TICD checklist offers valuable examples of implementation recommendations. For instance, when HCPs express limited knowledge regarding psychosocial risk (skills to adhere) or concerns about the screener disrupting their workflow (compatibility), it may be beneficial to provide educational strategies and additional information provision as potential solutions. In addition, for determinants pertaining to effort, the effort may be reduced by providing additional assistance [43]. Appointing a coordinator (e.g., a cardiac nurse) was believed to facilitate the implementation, as it may help overcome organizational barriers such as time-constraints and disruption of primary activities [43]. Furthermore, this could improve the accessibility for patients. Coordinators could provide more information surrounding psychosocial risk, and if necessary, improve patients' motivation to seek mental help [74]. Additionally, they may also assist in providing additional training and education on mental health for HCPs, which likewise may serve as essential facilitators [49,55,56] to the implementation. Besides appointing a coordinator, family involvement in psychological interventions could also offer benefits such as a better self-reported quality of life and better treatment and medication adherence (for an overview, see [75]).

Future research should consider the above recommendations to review their feasibility in clinical practice but the extent to which they facilitate the implementation of the psychosocial screener. As implementation of the screener requires changes on multiple implementation levels, which may interact, additional research is required to optimize the implementation process. While some determinants (e.g., education, coordination) may be easier to implement, other determinants may be more complicated [38], such as organizational barriers as it requires effort across multiple departments. Furthermore, it remains unknown which interventions can be offered and how effective they are for our target group. Therefore, another promising avenue for future research would be implementing interventions following the screener's outcomes. As patients may have diverse needs and preferences, tailored care could improve health outcomes of individual patients rather than taking a uniform approach [76]. Hence, research could investigate possible tailored interventions and keep relevant stakeholders engaged in both the design and delivery of these techniques [36].

5. Conclusion

The current study's in-depth exploration of barriers and facilitators to the implementation of systematic comprehensive psychosocial screening at the cardiology practice granted an overview of which areas may require additional attention. Results demonstrated that HCPs and patients experience different barriers and facilitators across different implementation levels. According to HCPs, barriers pertained to the organizational level whereas facilitators were more often related to characteristics of the intervention. Patients predominantly reported determinants on the patient and intervention levels. With some barriers and facilitators being indirectly related (e.g., HCPs' skills and awareness of mental health, information provision), some barriers may be easier to tackle as compared to others (e.g., patient characteristics). Appointing a contact person to coordinate the screening process, optimizing collaborative care, improving information provision for both patients and HCPs, and offering multiple comprehensive and tailored interventions

may counteract the effects of certain barriers while facilitating the implementation of the screener instrument.

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Declaration of Competing Interest

The authors declare that there is no conflict of interest.

Data availability

The data that has been used is confidential.

Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.genhosppsych.2023.10.002>.

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