

# Women's reasons for declining cardiovascular screening – a qualitative study

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## Research article

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# Abstract

## Background

During 2011–2013, women from a municipality in Denmark who were born in 1936, 1941, 1946 or 1951 were invited to cardiovascular screening (n = 1984); of those, ten nonattendees were interviewed about their perspectives on cardiovascular screening. The interviews were re-analysed to gain a deeper understanding of their motives for viewing screening as personally irrelevant. A salutogenic perspective formed the premise for the data analysis.

## Methods

A secondary analysis applying a deductive content analysis inspired by Elo and Kyngäs. The core components of Sense of Coherence were used as a theoretical framework.

## Results

We found that nonattendance was rooted in the women's social role as caregiver and their individual inner logics. Being a caregiver provided the women with a feeling of Sense of Coherence in their daily lives. The inner logics reflected a line of reasoning without critical reflections and the women acted upon these when declining screening. Inner logics were used as a strategy to uphold their social role and identity.

## Conclusion

The women had a salutogenic orientation to life and they found screening meaningless. Inner logics, caring role and personal desire to maintain control of one's life interact with individuals' experiences of Sense of Coherence, and thus their identities. If women are expected to attend screening, it must be emotionally and cognitively meaningful for them. This could be facilitated by using a salutogenic approach in the screening invitation.

## Background

Cardiovascular disease (CVD) remains a predominant cause of morbidity, mortality and reduced quality of life (1). Regardless, efforts have been made to identify effective strategies to reduce the risk of CVD among people and the associated costs. General health checks have been offered at national levels in several countries (2, 3) and recently, screening targeting preclinical and manifest CVD has been in focus (4–6). The World Health Organization defines screening as *'the presumptive identification of unrecognized disease in an apparently healthy, asymptomatic population by means of tests, examination or other procedures that can be applied rapidly and easily to the target population'* (7).

Solitary screening for abdominal aortic aneurysm has been found cost effective among men aged 65 (8, 9) and thus been implemented in the UK, Sweden and Germany (9–11). Moreover, in a randomised triple screening programme for abdominal aortic aneurysm, peripheral arterial disease and hypertension, screening was found to be effective by reducing the mortality significantly by 7% in a five-year period (12). Whether cardiovascular screening among women is effective is less investigated and conclusive. However, a multifaceted cardiovascular observational screening study among postmenopausal women reduced the mortality non-significantly by 11% (13). Besides effectiveness, screening and health checks have received attention for their potential psychological impact (14–16), for facilitating informed decision-making when an individual is faced with a screening invitation (17) and for the facilitators of and barriers to attendance (18, 19). A recent systematic review of factors for attendance in a health check for cardiometabolic diseases in primary care found lower age, lower education, smoking and living alone to be related to nonattendance; however, the results were not unambiguous (20). Conversely, cardiovascular screening research has shown that attendance decreases with age (6, 19). In addition, qualitative findings for attendance indicated that nonattendees declined participation because they preferred not to worry about the outcome, because they had negative attitudes towards health checks or prevention in general and because they had low self-perceived severity or susceptibility. As such, nonattendees tended to think ‘it may happen to others, but not to me’, despite being aware of increased risk due to cardiovascular risk factors (20, 21). According to Cheong et al. (22), patients’ motivation for accepting screening is related to their preparedness to deal with the test results, including a diagnosis and need for interventions (both medical and lifestyle modifications). In addition, Dahl et al. (21) found that nonattendance was related to preferring unclarity and wanting not to disturb the feeling of being healthy or running the risk of discovering health problems. This seems to be a time-independent reason for nonattendance as a similar tendency was found in an interview study performed in 1994 among men and women declining health checks by their general practitioners (GP) (23).

When receiving a screening invitation, invitees have been found to be influenced by the views of their significant others or GP (Cheong, Khoo (22)). However, Dahl et al. (21) found that in the event of decisional ambivalence regarding attendance, nonattendees did not discuss the decision with their GPs; the ambivalent nonattendees preferred to discuss the screening invitation with relatives who had similar attitudes towards screening so they would not persuade them to participate.

In previous work, Dahl et al. (21) explored a female nonattende’s perspective in the context of a multifaceted cardiovascular screening programme offered to Danish postmenopausal women. In this primary study, findings indicated that women declined participating in the screening programme because they found it personally irrelevant. In the present study, we performed a secondary analysis with the aim of gaining a more profound understanding of the women’s motives for viewing screening personally irrelevant. The present study contributes with important knowledge to evaluate the rationale of implementing a multifaceted cardiovascular screening programme in accordance with the screening criteria outlined by the Health Authorities (24–26).

## Method

From 2011 to 2013, women born in 1936, 1941, 1946 or 1951 who lived in the Municipality of Viborg were invited to participate in a multifaceted cardiovascular screening programme for abdominal aortic aneurysm, peripheral arterial disease, carotid plaque, hypertension, dyslipidemia, atrial fibrillation and type 2 diabetes. A total of 1984 women were invited, and 74.3% participated (6). As part of the research, an interview study was designed focusing on the group of women who declined the screening invitation (21). The approach used for the interview study followed the recommendations of Brinkmann and Kvale (27) and the aim was to explore the understanding of nonattendees' perspectives on cardiovascular screening. Individual face-to-face interviews supplemented with reflective notes were performed during the period from September to October 2013, using a pilot-tested semi-structured interview guide developed with reference to the evidence regarding nonattendance in screening or health checks for CVD and diabetes in both the primary and secondary health sectors. The audio-taped interviews were conducted in the informants' own homes and transcribed verbatim by the first author. A purposeful sampling strategy was applied selecting informants representing the different age groups of nonattendees women invited for screening.

The primary analysis was performed by the first author of this article using an inductive, non-linear and iterative process (21). The characteristics of the ten interviewed women are displayed in Table 1. The initial interview study and the present study followed the COnsolidated criteria for REporting Qualitative research (COREQ) (28) (Additional file 1).

Table 1  
 Characteristics of the informants in the interview study.

Adapted from Dahl et al. (21).

Informant	Age	Marital status	Self-reported health issues	Risk factors for CVD and DM	Social status
1	67	Married	Feeling healthy No diseases	Smoking	Retired, previously a health care worker
2	72	Widowed	Severe anxiety Hypertension	Weight Smoking Family history of CVD	Retired, previously self-employed
3	77	Married	Pacemaker Hypertension Osteoporosis	Weight Former smoker Family history of CVD	Retired, previously a sewing machinist
4	67	Married	Feeling healthy	Former smoker	Retired, previously a music teacher
5	67	Married	Feeling healthy No diseases	None	Retired, previously an assisting wife
6	62	Married	Previous depression, deep vein thrombosis, osteoporosis and psoriasis.	Weight Family history of CVD	Retired, previously an office assistant
7	72	Widowed	Feeling healthy Slowly developing muscular dystrophy	Family history of CVD	Retired, previously a public-sector employee
8	72	Single	Feeling healthy Hypertension	Weight Smoking	Retired, previously a cleaning assistant
9	77	Married	Feeling healthy Hypertension	Former smoker	Retired, previously a hairdresser

Informant	Age	Marital status	Self-reported health issues	Risk factors for CVD and DM	Social status
10	62	Married	Ischemic stroke and subsequent mildly impaired memory  Hypertension	Smoker	Retired, previously a cleaning assistant

## The secondary analysis

In the primary analysis, the main theme for nonattendance was *“screening seems personally irrelevant”* with the following subthemes: personal health and risk beliefs, personal knowledge of the screening offer and disease prevention, distrust in the healthcare system and the ability to change the belief that the screening offer was considered personally irrelevant (21). These findings led us to realise the relevance of analysing the interviews from a new perspective. Thus, the authors of this article performed a deductive content analysis of the empirical data, using the principles outlined by Elo and Kyngäs (29). The components of Sense of Coherence (SOC) were considered to provide an appropriate framework for a secondary analysis (30) that could lead to a more profound understanding of the women’s motives behind their decision to decline screening. The SOC framework in the secondary analysis was developed in the late 1970s by Aaron Antonovsky (31) and reflects his salutogenic model of health which is concerned with the question “what are the origins of health?”. The core in Antonovsky’s theory is the concept of SOC, which reflects how an individual’s life situation influences the movement towards experience of health (32). Antonovsky’s (31) fundamental contribution to the salutogenic question concerned what creates well-being and health in contrast to the pathogenic question concerning what causes development of disease. Thus, SOC is a major determinant for individuals to maintain their position on the continuum of health and disease and balance towards the healthy end. Figure 1 is a simplified illustration of the three components of SOC together with the dynamic interrelations between the components and the individual’s experience of health. The three components that all interact with the experience of SOC are:

- **Comprehensibility:** the extent to which individuals perceive arising stimuli as structured, predictable and explicable
- **Manageability:** the extent to which individuals perceive to have the adequate resources to handle stimuli. These resources can be personally controlled or controlled by trusted others like family member, friends or a physician.
- **Meaningfulness:** to be willing and motivated to handle stimuli. Meaningfulness arises when individuals experience that part of their lives makes sense both emotionally and cognitively (31).

# Data analysis

Following the recommendations by Elo and Kyngäs (29), the analysis in this article relied on a deductive, non-linear and iterative content analysis with SOC as a theoretical lens to explore the nonattending women’s considerations about viewing screening as personally irrelevant (Fig. 2). The analysis included the data from the initial interview study (21).

In this secondary analysis, the data was analysed from two perspectives. Firstly, we explored the women’s experiences of SOC using a structured categorisation matrix inspired by Antonovsky’s core components of SOC during the abstraction process: from coding meaning units to generating subcategories and then main categories. The software program NVivo, version 12 Pro (QRS International Pty Ltd, Victoria, Australia) was used as a structural tool to facilitate this part of the analysis. Secondly, we interpreted the informants’ experiences in relation to the three components of SOC. Each informant was assessed low or high in relation to the components and then we predicted their SOC in terms of stable, rare and pressure to move up or down. This is Antonovsky’s (31) contribution to the way in which an individual’s SOC can be predicted from a sociological perspective (Table 2. Example of prediction assessment). The two perspectives combined provided different analytical foci which informed each other and made it possible to establish a more profound understanding of the women’s experiences.

Table 2  
Example of analysis process related to prediction of each informant’s Sense of Coherence.

Informant	Core components			Prediction
	Comprehensibility	Manageability	Meaningfulness	
6	Low  <i>‘They (the doctors) think that the leukaemia is gone, that is his counts are not moving up or down. So they are at what they call a stable level, but still a level that’s good enough. They are not saying that he can’t have a relapse. But we take things as they come – it’s all you can really.’</i>	Low  When they ring from the hospital, then grandma and grandad will just drop everything and come up north to look after the little one (grandchild) – it can’t be helped! Over by my husband’s bed, there are two holdalls; we just have to grab them and go.	High  I probably had that attitude when I read it (the screening invitation) and I read it over several days, and then I thought that those who are older than me are probably at greater risk than I am.	Pressure Upwards

## Results

In the secondary analysis, we found that the women based their decision to decline participation on a high sense of meaningfulness in their daily lives. The women’s experience of meaningfulness seemed to be rooted in their social role as caregivers and in personal inner logics, which provided the women with a feeling of SOC in their daily lives.

This led us to formulate two main categories with underlying subcategories.

- The social role of the women
  - Imposed caring role
  - Self-imposed caring role
- Relying on inner logics
  - Feeling healthy
  - Desire to maintain life unchanged

## The social role of women

We found that the women considered themselves to be in a caring role that seemed to interact with their decision to decline participation in screening. In the analysis, we established two types of the caring role in subcategories: an imposed and a self-imposed caring role.

### Imposed caring role

The imposed caring role could be characterised as undesirable and caused by circumstances in childhood or later in their lives. A 76-year-old woman felt forced to take care of her disabled husband, a task that took all her energy and resources. *'After my husband had a stroke, I expected him to end up in a nursing home...but I was persuaded by the hospital and the local authority not to do that...it would be best for him to stay in his own environment...now I'm stuck'* (Informant 3). The imposed caring role seemed undesirable for the women, resulting in a reduced sense of comprehensibility and manageability. Regardless of having an imposed caring role, the women experienced meaningfulness in their daily lives also by having a self-imposed caring role. However, we found that the women relying on their imposed role and interpreting that role as being the main caregiver in the family indicated that it contributed to their decision not to attend the screening.

### Self-imposed caring role

In this sub-category, we found the caring role changed from an imposed role to a more voluntary one. As such, the women in this category did not have responsibilities as primary carers but often chose to help their relatives on a daily basis and emphasised that others depended on them: *'... you know, the guy we are working with here on the farm, his wife's working too; well, the place had gotten into a bit of a state, so I cycled out here, spent a couple of hours and cycled back again.'* (Informant 5).

Our findings showed that the women saw themselves as the “glue” holding the family and the community together. One informant had a newly divorced daughter with a child suffering from leukaemia and spoke of how she was always ready to step in to support the daughter: *'When they ring from the hospital, then grandma and grandad will just drop everything and come up north to look after the little one (grandchild) – it can't be helped! Over by my husband's bed, there are two holdalls; we just have to grab them and go.'* (Informant 6). Therefore, being capable of helping had a direct influence on declining the screening. Such

quotes could indicate that the risk of being diagnosed could compromise the woman's life situation and threaten her position in the family and community. Conversely, the perceived importance of the self-imposed caring role could cause decisional ambivalence. Firstly, this was the case when informant 5 spoke of how she found her role in the family contradicted her decision not to attend: *'would it be the right thing for my family...this is not only me'*. Thus, the self-imposed caregiver role could cause pressure to favour this role over personal preferences for screening. Secondly, the women who were confident in their decision to decline screening did not see it as an opportunity to prevent future cardiovascular events and thereby a chance to be able to maintain life unchanged. Finally, when the women decided to decline the screening, their perception of the social role of women became pivotal, because the women referred to their role as "the glue" of the family and the community as being threatened, if they were diagnosed with a disease.

## Relying on inner logics

The women expressed themselves according to a form of inner logics that interacted with their decision to decline the screening. These inner logics may be defined as statements or key assumptions that the women did not reflect on critically but presumed to be true. The inner logics were the product of the women's life experiences and reflected their individual feelings, habits and beliefs. The women acted upon these inner logics when deciding whether screening could be relevant to them. The inner logics fell into two subcategories: feeling healthy and desire to maintain life unchanged.

### Feeling healthy

The women expressed an inner logic that reflected their perceptions of feeling healthy. They expressed how they were aware of their own bodies and had definite insight into their medical needs. Informant 4 said: *'I'm fine...it seemed a little extraneous to me...you probably consider cardiovascular diseases as important, but my heart has been tested. It was probably 7–8 years ago when I got a heart diagram, and he (GP) said that I was as strong as an ox...'* On account of such lines of reasoning, we found that the women viewed screening as meaningless and therefore they were reluctant to attend. Furthermore, the women spoke of how their decision whether or not to seek medical advice was rooted in their upbringing. Here, informant 2 stated: *'Well, I was raised to make sure not going to the GP without good reason. You see, people of my age (72) – we are on a count-down, right?'*

Our analysis indicated that, this resistance to contact their GP was in fact a more universal reluctance to having any contact with the healthcare system. This also influenced their decision to decline the screening, because it was considered meaningless and a waste of the doctor's time. Therefore, avoiding seeking medical advice had less to do with the GP and more to do with the women's perceptions of feeling healthy.

### Desire to keep life unchanged

In addition to feeling healthy, we found that the women wished to keep their life situation unchanged. They had several strategies that could help them to maintain control over their lives and continue to avoid

contacting the traditional healthcare system. Such strategies involved consulting alternative treatment in situations where the women experienced symptoms, and they relied on an idea that the problem would disappear by itself. Informant 4 said: *'I'm not very comfortable with hospitals, I prefer to take care of myself...I receive alternative treatments for gallbladder stones, so the doctor doesn't refer me to the hospital for gallbladder surgery. I hold on to my organs.'* The women argued that they were the only ones responsible for their lives, and that solving health related problems by using alternative treatments could help them maintain control.

Thus, the women's inner logic was a type of common-sense reasoning that could support their choice of nonattendance. This reasoning occurred again and again in the interviews, reflecting an immanent strategy of keeping life unchanged.

## Prediction of the SOC components

The analysis also included scoring all the informants on the core components of SOC (Table 3). We found it underlined that it was the women's sense of meaningfulness that gave them a high degree of SOC, as women with low comprehensibility or manageability were also interpreted as experiencing SOC.

Combined, the two perspectives in the analysis provided new insight into the informants' SOC and their reasoning for regarding screening as meaningless.

Table 3  
Prediction of the individual's Sense of Coherence from a sociological perspective.

Informant	Core components			Sense of Coherence prediction
	Comprehensibility	Manageability	Meaningfulness	
1	High	High	High	Stable
2	Low	High	High	Rare
3	Low	Low	High	Pressure to move up
4	High	High	High	Stable
5	High	High	High	Stable
6	Low	Low	High	Pressure to move up
7	High	High	High	Stable
8	High	High	High	Stable
9	High	High	High	Stable
10	High	High	High	Stable

## Discussion

In this exploration of postmenopausal women's decision not to attend a screening, we suggest that their nonattendance was related to their social roles and inner logics. We also suggest that such decisions guided the women to spend resources on maintaining meaningfulness, comprehensibility and manageability, and thereby an indisputable experience of SOC. In the following section, we discuss the possible consequences of the influence of social roles and inner logics when deciding whether or not to participate in cardiovascular screening.

## **The social role of women**

This main category is rooted in social norms in Scandinavia in which the women were raised, and it is thereby the context in which their personalities developed. According to Melby et al. (33), the role of Scandinavian women who were born in the twentieth century relies on a discourse based on a norm categorising them as wives, housewives and mothers. In addition, Melby et al. (33) claim that in today's society, women still consider taking care of the family and the children as their responsibility in terms of combining family life and children with having a career.

We found the social role of the women to be central to the nonattendance among both women with a self-imposed and an imposed caring role. We interpret the self-imposed caring role to be based on a personal decision, and for those women who declined screening it seemed closely related to a desire to uphold this role. Conversely, the imposed caring role could be characterised as being related to upholding a balance between personal resources and daily caring demands. Similarly, a review by de Waard et al. (20) found that being busy with e.g. family was a barrier to attending cardiometabolic health checks in primary care. However, none of the original articles in the review provided any further explanation as to this barrier other than to describe it as a sense of duty to family or being busy with family (23, 34). In Antonovsky's (31) understanding, the central problem for a housewife is task overload, and he argues that the contemporary housewife can be viewed as a role where women experience consistency and reasonable balance without an experience of co-determination leading to low scores on meaningfulness. Moreover, this experience interacts with a societal view on the housewife role as a less important social role. However, the women in our study scored high on meaningfulness in daily lives and their scores on the other two concepts varied. According to Antonovsky (31), coping with the situation depends on the overall experience of SOC. Upholding their social role as caregiver was central for the nonattending women to experience meaningfulness in their lives and provided the women with a feeling of SOC. Correspondingly, women with osteoporosis attribute their ability to perform household tasks to upholding their social role and quality of life (35). Similarly, among persons with other types of chronic illnesses, the caring role is valued and favoured over managing personal diseases (36). In addition, Antonovsky (31) highlights that the role of housewife is a determinant of her identity. Thus, we interpret the women's desire to uphold their caring role as fundamental to their decision not to attend the screening.

## **Relying on inner logics and maintaining control**

In our second category we found that the women relied on inner logics which gave them a high SOC and resulted in regarding cardiovascular screening as meaningless. We found that the women's SOC tended

to be combined with a high sense of meaningfulness and a low sense of compensability or/and manageability. This finding is supported by a cohort study exploring predictors for SOC among women with breast cancer (37). Lindblad et al. (37) found a link between a high SOC and coping with life stress for women with breast cancer, as the women used, for example, meaningfulness to accept hormonal treatment even though it had side effects. According to Antonovsky (31), a characteristic of people with a high sense of meaningfulness and a low sense of compensability and manageability is that they demonstrate extensive life courage, finding resources to manage demands in daily life. Furthermore, Antonovsky (31) argues that his research highlights the component of meaningfulness as the most important for people to manage stressors in their daily lives. This also seems to be the case for the women in our study as they built a framework of their own meaningful inner logics to support their choice of nonattendance and thereby keep daily life unchanged.

We found that the women felt healthy and their statements reflected a salutogenic orientation to life. They were aware of their bodies and any symptoms they might experience. The women found meaningfulness in relying on their own interpretation of their health status. Several studies indicate that managing a potential stressor through self-interpretation seems to be meaningful when facing a screening invitation and deciding not to attend the screening (20, 38, 39). According to the review of Stol et al. (38), people who feel healthy and fit have no concerns about their health status and consider their cardiovascular risk to be low. In addition, both Stol et al. (38) and de Waard et al. (20) found that nonattendees who already were in contact with medical services, e.g. their GPs, had no questions about their health status and therefore found it unnecessary to have a health check. However, we also found that both recent consultations and health checks performed years ago by the GP stopped the women from attending and were used as a line of reasoning when the women justified their decision not to attend. Furthermore, we found that an inner logic of not bothering any health care professionals without severe indications of disease was a meaningful reason for nonattendance in screening. According to the review of Stol et al. (38), older people do not seek medical advice without feeling sick, because they felt they would be misusing the health care system. We found that women in our study presented similar views on a screening invitation as a waste of the health care system's resources, because they experienced themselves as healthy persons.

In our study, the women maintained a high SOC by remaining in control of their daily lives regardless of the presence of many possible stressors. Therefore, a screening invitation could be viewed as a stressor by some of the women, while others found the invitation to be insignificant. Drawing on Antonovsky's SOC (31), defining a stressor and finding strategies for coping with it is an individual experience rooted in the women's life experiences. According to Antonovsky (31), achievement of a high SOC is related to having life experiences that are important to the particular individual. Life experiences that mattered to the women who participated in our study were maintaining control of their daily lives and making their own decisions. Similarly, Swan et al. (39) found a correlation between a high SOC and empowerment. The authors concluded that empowerment supported the individuals who relied on their skills, resources, opportunities and authority to manage their everyday lives. Also Stol et al. (38) address this issue by stating that it has to be taken into account that people interpret and pursue values, such as peace of

mind and autonomy, in very different ways. However, our findings also pointed towards concerns of being diagnosed with a disease as a reason for not attending the screening. The women ignored the risk of having a disease and relied on inner logics as a framework to maintain SOC. Similarly, de Waard et al. (20) found that barriers to participate in cardiovascular health checks were being worried about the outcome and its possible consequences. Thus, we found that the women's various inner logics led to empowerment and meaningfulness; however, the inner logics were of individual relevance and of different importance to the women. Additionally, we found the nonattendance was rooted in inner logics without critical reflection<sup>1</sup>.

Likewise, Dahl et al. (21) found it questionable whether nonattendance was determined by an informed decision, and Ellis et al. (40) found that personal knowledge of prevention and diseases hindered recognising the relevance of having a cardiovascular health check. Drawing upon Antonovsky's theory of SOC (31), finding something meaningful necessitates that it makes sense both emotionally and cognitively. However, as the decision of nonattendance was rooted in inner logics without critical reflection, cardiovascular screening makes no sense for the nonattendee women.

Overall, this study was revealing in terms of providing profound knowledge of what was at stake for the nonattendee women. Therefore, the study contributed with valuable knowledge of the potential psychological and social impact on postmenopausal women faced with a screening invitation for CVD.

## **Discussion of method**

In the present study, we aimed at elaborating on the primary research question from the study which was 'What are nonattendees' perspectives on cardiovascular screening?' (21). We performed a secondary analysis, because we wanted to explore the women's reasoning behind their decision to decline participation. As recommended by Thorne (41) we carefully considered whether it was appropriate to perform a secondary analysis on this empirical material. We suggest that the use of the theory of SOC as a framework for the analysis guided us to perform a rigorous and strategic analysis aimed at unfolding and supporting the informants' statements.

Furthermore, we strived to ensure trustworthiness, as defined by Elo et al. (42) through collaborating in the research group and by working systematically to incorporate the theory of SOC during the analysis. The research group consisted of researchers with a variety of research experiences, who contributed with valuable perspectives to ensure credibility and conformability in the study.

<sup>1</sup> In this study, we define critical reflection as an activity during which the validity and appropriateness of an assumption or a belief is challenged within its present context. Critical reflection challenges acquired knowledge based on experiences together with underlying assumptions, values and beliefs that compel individuals to act as they do in a particular situation (43).

## **Conclusion**

Based on the analysis in this study, we conclude that reasons for declining the screening invitation were embedded in the women's perceptions of SOC. The analysis led us to a more profound understanding of the women's orientation to life and provided some possible reasons as to why the women declined attendance. Overall, cardiovascular screening was considered meaningless, as it did not make sense emotionally or cognitively for the women.

The study contributes with valuable knowledge for future evaluation of the rationale for implementing cardiovascular screening programmes in terms of psychological and social aspects. Future planning of screening programmes must consider how to strengthen women's SOC, if they are expected to attend screening as part of a preventive strategy recommend by the Health Authorities. Since SOC is closely related to a salutogenic orientation to life, it is important to consider whether such an approach could capture these women's attention and thereby promote attendance in cardiovascular screening. In addition, a salutogenic approach in the invitation may make screening meaningful both emotionally and cognitively as well as reduce decisional ambivalence and facilitate an informed decision process for the invitee.

Finally, this study shows that it is difficult to develop a "one-size-fits-all" approach to inviting women to participate in cardiovascular screening. This is due to the influence of inner logics, social roles and a personal desire to maintain control of one's life which interact with the individual's experience of SOC and thus the individual's identity.

## **Abbreviations**

COREQ: Consolidated criteria for REporting Qualitative research; CVD: Cardiovascular disease; GP: General practitioner (GP); SOC: Sense of Cohorence; UK: United Kingdom

## **Declarations**

### **Ethics approval and consent to participate**

This secondary analysis was deemed a non-interventional study by the regional ethics committee, and therefore no approval was required. The interview study was approved by the Regional Data Protection Agency (1-16-02-221-26) a part of the Danish Data Protection Agency. Prior to being interviewed and giving their written informed consent, the informants were advised that the interviewer took part in the screening programme (21).

### **Consent for publication**

Not applicable.

### **Availability of data and materials**

The transcribed interviews used in this study are not publicly available, but parts are available from the corresponding author upon a reasonable request. This is to protect and uphold the participants' anonymity and confidentiality.

### **Competing interests**

The authors declare that they have no competing interests.

### **Funding**

The authors have no funding to disclose.

### **Authors' contributions**

Design of the initial study including data collection: MD; re-coding the empirical data: MD and SFS. Analysis and interpretation of findings: MD, ABA, and SFS; drafting the work: MD, ABA, KH and SFS. All authors contributed with critique during the preparation of the manuscript and all approved the final version to be published.

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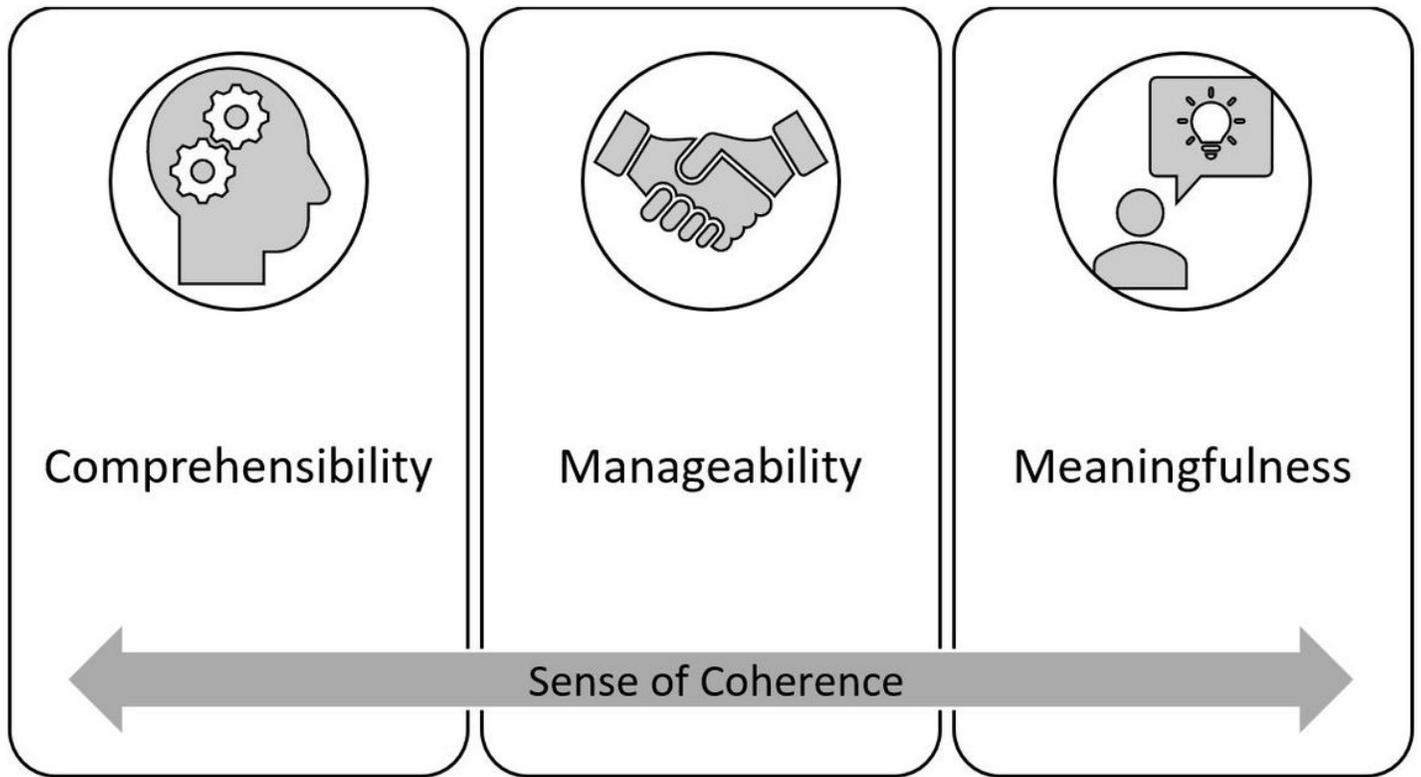
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## Additional Files

**Additional file 1.** This file contains the checklist 'The COnsolidated criteria for REporting Qualitative research (COREQ): a 32-item checklist for interviews and focus group'.

## Figures



**Figure 1**

A simplified illustration of the three components of Sense of Coherence.

<i>Deductive analysis</i>	<i>Prediction of Sense of Coherence from a sociological perspective</i>	<i>Theoretical interpretation</i>
Context of interpretation <ul style="list-style-type: none"> <li>▪ Making sense of the empirical data</li> </ul>	Scoring each informant Scoring related to: <ul style="list-style-type: none"> <li>▪ Comprehensibility</li> <li>▪ Manageability</li> <li>▪ Meaningfulness</li> </ul>	Theoretical framework for interpreting the united findings
Coding Data gathering by content coding by using a structured matrix Matrix: <ul style="list-style-type: none"> <li>▪ Comprehensibility</li> <li>▪ Manageability</li> <li>▪ Meaningfulness</li> </ul>	Predicting each informant Prediction in terms of <ul style="list-style-type: none"> <li>▪ being stable</li> <li>▪ being rare</li> <li>▪ pressure to move up</li> <li>▪ pressure to move down</li> </ul>	
Abstraction process Grouping sub-categories and categories related to the content		

**Figure 2**

Schematic illustration of the iterative analysis process.

## Supplementary Files

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