

**Research Article**

Understanding Nonattendance among Women Invited to a Cardiovascular Preventive Initiative - A Supplementary Analysis of Nonattendees' Perspectives

Marie Dahl^{1,2*}, Anne Bendix Andersen³, Kristin Margrete Heggen^{4,5}, Susanne Friis Søndergaard^{3,6}

¹Vascular Research Unit, Department of Surgery, Viborg Regional Hospital, Viborg, Denmark

²Department of Clinical Medicine, Aarhus University, Aarhus, Denmark

³Centre for Research in Clinical Nursing, VIA University College/Viborg Regional Hospital, Viborg, Denmark

⁴Centre for Sustainable Healthcare Education, Faculty of Medicine, University of Oslo, Oslo, Norway

⁵ Faculty of Medicine, University of Oslo, Norway

⁶Department of Public Health, Nursing and Health Care, Aarhus University, Aarhus, Denmark

***Corresponding author:** Marie Dahl, Vascular Research Unit, Department of Surgery, Viborg Regional Hospital, Viborg, Denmark

Citation: Dahl M, Andersen AB, Heggen KM, Søndergaard SF (2022) Understanding Nonattendance among Women Invited to a Cardiovascular Preventive Initiative- A Supplementary Analysis of Nonattendees' Perspectives. Int J Nurs Health Care Res 5: 1270. DOI: 10.29011/2688-9501.101270

Received Date: 17 January, 2022; **Accepted Date:** 24 January, 2022; **Published Date:** 28 January, 2022

Abstract

Background and Aim: Understanding the reasons for nonattendance in screening is crucial to any efforts to ensure acceptability of such initiatives. It was on this background that we performed a supplementary analysis of women's reasons for refusing cardiovascular screening aiming to achieve a profound understanding of nonattendance. **Methods:** We applied a deductive content analysis of semi-structured interviews using Antonovsky's theory of Sense of Coherence as a theoretical framework. **Results:** We found that nonattendance was rooted in the women's social role as caregiver and their individual inner logics, which attested to a line of reasoning without critical reflection. A self-imposed caring role provided the women with meaningfulness in their daily lives, a role they were unwilling to risk by participating. As such, accepting screening was perceived as an unpredictable threat to upholding their social role. Inner logics were used as a strategy to keep life unchanged and uphold their identity. Women who felt healthy, found meaningfulness in relying on their own interpretation of their health status and thus considered screening unnecessarily. Moreover, nonattendance was related to the balance between personal resources and daily caring demands. **Conclusion:** Screening must be emotionally and cognitively meaningful for women to attend. This study contributed with valuable knowledge on what constitutes public acceptability in relation to cardiovascular preventive initiatives, making it relevant to healthcare professionals and policymakers alike. Involving targeted invitees in designing the screening initiative is likely to facilitate acceptability and encourage participation.

Keywords: Cardiovascular disease; Screening; Nonattendance; Supplementary content analysis; Women

Abbreviations: CVD: Cardiovascular Disease; GP: General Practitioner; SOC: Sense of Coherence

Introduction

When considering the efficiency of screening, we need to bear in mind the factor of nonattendance as screening needs to be acceptable to the invitees in accordance with the screening criteria [1], which was already formulated by the World Health Organization in 1968 [2]. As such, when advocating any screening programme, we need to track nonattendance and explore the reasons, as screening must be acceptable from the invitees' perspective. In previous work, Dahl, et al. [3] found that interviewed women declined participating in cardiovascular screening because they found it personally irrelevant. But the authors concluded that there is a need to explore further the reasons for nonattendance. In the present study, we performed a supplementary analysis with focus on gaining a more profound understanding of the women's reasons for viewing screening as personally irrelevant. The issue of personally irrelevant drew our attention to the concept of meaningfulness and in turn, the relevance of using the theory of Sense of Coherence (SOC) as a theoretical lens [4]. As such, the findings of the study contribute new theoretically grounded knowledge on the acceptability of cardiovascular screening from a nonattendee's perspective.

Cardiovascular Disease and Screening

Cardiovascular Disease (CVD) remains a predominant cause of morbidity, mortality and reduced quality of life globally [5], even though 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 [6,7] and recently, there has been focus on screening targeting preclinical and manifest CVD [8,9]. The World Health Organization defines screening as the *presumptive identification of unrecognised 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* [10].

Besides effectiveness [9,11], screening and health checks have received attention for their potential psychological impact [12], for facilitating informed decision-making when an individual is faced with a screening invitation [13] and for the facilitators of and barriers to attendance [14]. A recent systematic review of factors for attendance in a health check for cardio metabolic diseases in primary care found lower age, lower education, smoking and living alone to be related to nonattendance; however, the results were not unambiguous [15]. Conversely, cardiovascular screening research has shown that attendance decreases with age

among invitees above 60 [14,16]. In addition, qualitative findings indicated that nonattendees declined participation because they preferred not to worry about the outcome, because they had negative attitudes towards health checks or preventative measures in general and because they had low self-perceived severity of 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 [3,15]. According to Cheong, et al. [17], invitees' 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). When receiving a screening invitation, invitees have been found to be influenced by the views of their relatives or General Practitioner (GP) [17]. However, Dahl, et al. [3] 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 addition, Dahl, et al. [3] found that nonattendees' reasons to decline the screening invitation were related to their wish to maintain a feeling of being healthy. 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 GPs [18].

Even though Dahl, et al. [3] touched upon the subject of women's reasons for declining screening invitations, they did not present findings that could provide a profound understanding of the women's reasons for nonattendance. Therefore, the aim of this supplementary analysis was to further explore women's reasons for choosing not to participate in a screening programme.

Method

Design

We performed a qualitative study by re-analysing interviews using deductive content analysis as the methodological approach.

Participants

We re-analysed interviews with informants recruited among women born in 1936, 1941, 1946 or 1951 who lived in Denmark and were invited to participate in a cardiovascular screening programme for abdominal aortic aneurysm, peripheral arterial disease, carotid plaque, hypertension, dyslipidaemia, atrial fibrillation and type 2 diabetes. Totally, 1984 women were invited, and 74.3% participated [16]. As part of the research, an interview study was designed focusing on the group of women who declined the screening invitation [3]. A purposeful sampling strategy was applied selecting informants representing the different age groups [3], which was the only information available on the nonattendees. The characteristics of the ten interviewed women are displayed in Table 1, of whom all were Danish born.

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 healthcare 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. 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
10	62	Married	Ischemic stroke and subsequent mildly impaired memory. Hypertension.	Smoker.	Retired, previously a cleaning assistant

Adapted from Dahl, et al. [3].

Table 1: Characteristics of the informants in the interview study.

The Interviews

The approach used for the interview study followed the recommendations of Brinkmann and Kvæle [19] and the aim was to explore the nonattendees' perspectives on cardiovascular screening with focus on their reasons for declining the screening invitation. Individual face-to-face interviews were performed in 2013 in the informants' own homes. The semi-structured interview guide was developed by the first author with reference to the evidence regarding nonattendance in screening or health checks for CVD and diabetes in both the primary and secondary healthcare sectors. The audiotaped interviews were transcribed verbatim [3].

Primary Analysis

The primary analysis was performed by the first author using

an inductive, non-linear and iterative process inspired by Kvæle and Brinkmann [9]. Further details on the interview study and the screening programme are available in previous work [3,16].

The Supplementary Analysis

A supplementary analysis may be performed on existing data and findings, if the purpose is to investigate an emerging issue more deeply [20]. In this supplementary analysis, we chose to perform a deductive content analysis, using the principles of Elo and Kyngäs [21], as this method can provide a new perspective to already constructed data and findings with the aim of enhancing understanding of the data. A deductive content analysis requires a theoretical structure to inform the analytical matrix [21]. We created the structured matrix based on Antonovsky's theory of SOC [4].

The Theory of Sense of Coherence as an Analytic Lens

The SOC framework was developed in the late 1970s by Aaron Antonovsky [4] and reflects his salutogenic model of health which is concerned with the question what are the origins of health? The core of Antonovsky's [4] theory is the concept of SOC, which reflects how an individual's life situation influences the movement towards experience of health. Antonovsky's [4] 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. 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.
- **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 [4].

The core components will provide knowledge of the emotional and cognitive aspects related to nonattendance along

with the individual's motivation and resources to handle a screening invitation and whether it is perceived to have predictable consequences.

The Analysis Process

The deductive analysis was performed in an iterative process in four steps. In step 1, we focused on making sense of the empirical data by reading and rereading the transcribed interviews to identify context for interpretation. In step 2, the content of the analysis was coded according to the structured matrix consisting of the core components of SOC: comprehensibility, manageability and meaningfulness. In step 3, we performed an abstraction process by grouping data and then collapsing similar sub-categories into main categories. In the last step 4, we interpreted and discussed our findings based on the theory of SOC and existing literature to determine validity and credibility (Figure 1).

The software program NVivo, version 12 Pro (QSR International Pty Ltd, Victoria, Australia) was used as a structural tool to facilitate the analysis.

Ethical Considerations

This supplementary 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), Central Denmark Region. Prior to being interviewed and giving their written informed consent, the informants were advised that the interviewer took part in the screening programme [3].

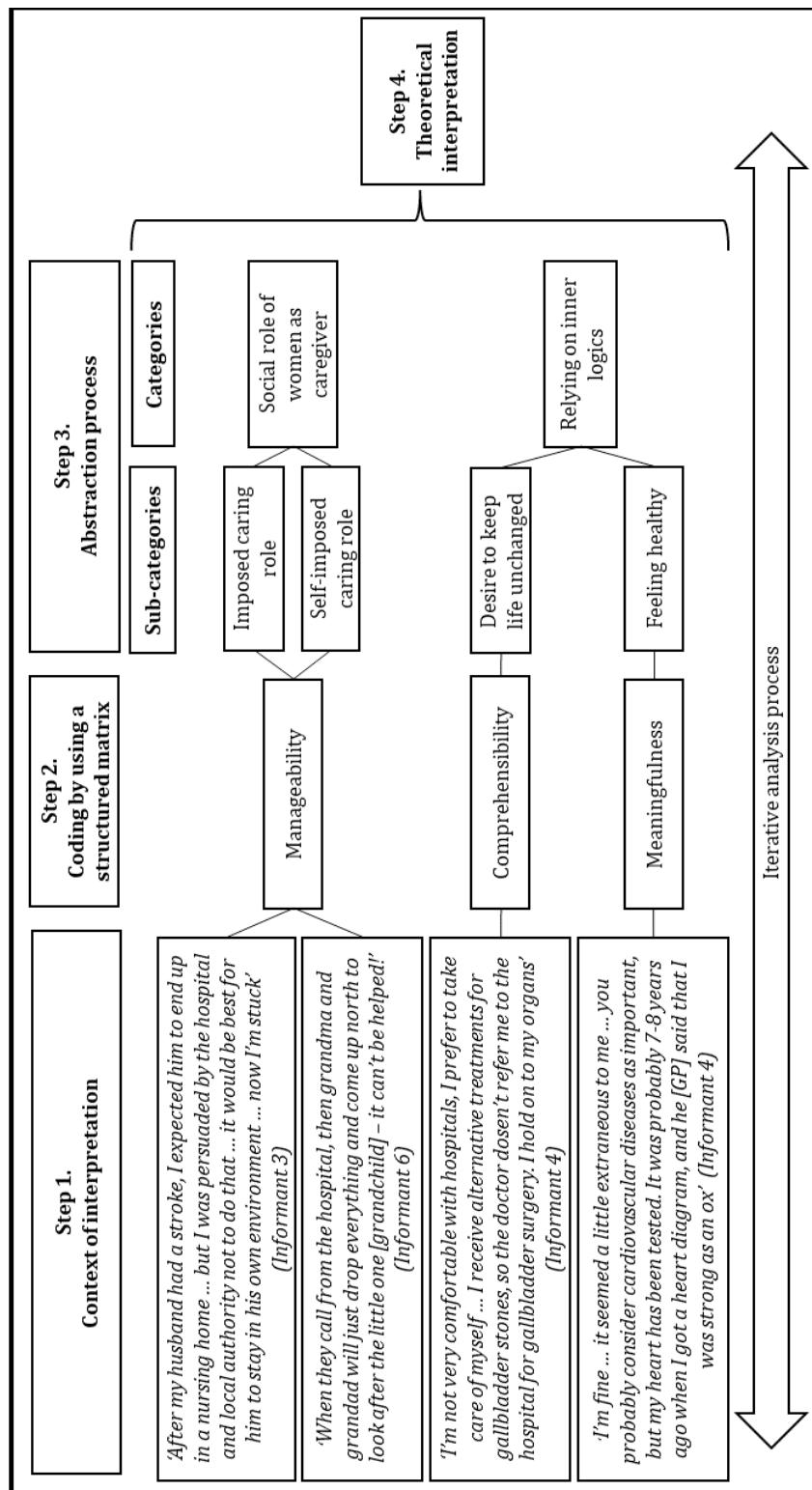


Figure 1: Illustration of the iterative analysis process.

Results

Based on the analysis, we suggest that the women declined participation on account of experiencing meaningfulness in their daily lives alongside challenged comprehensibility or manageability. 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 caregiver
- Imposed caring role
- Self-imposed caring role
- Relying on inner logics
- Feeling healthy
- Desire to keep life unchanged

The Social Role of Caregiver

We found that the women constructed their caring role as an influencing factor in declining screening. In the analysis, we established two types of the caring roles: 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 and demanding for the women, resulting in a reduced sense of comprehensibility and manageability. We found that the women understood their role as the main caregiver as a position where their responsibilities to their families meant that they had to prioritise their families' needs over their own. This position contributed to their decision not to attend the screening.

Self-Imposed Caring Role

In this sub-category, we found the caring role to be voluntary. As such, the women in this category did not have responsibilities as primary carers but often chose to help their relatives or acquaintances on a daily basis and emphasised that others depended on them:

The guy we are working with here on the farm, his wife's working too; well, their place had gotten into a bit of a state, so I cycled out here, spent a couple of hours cleaning and cycled back again. (Informant 5).

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 call from the hospital, then grandma and granddad 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).

Such quotes indicated that the risk of being diagnosed could compromise the woman's life situation and threaten her position in the family and community. Conversely, the importance of the self-imposed caring role could cause decisional ambivalence. 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. In contrast, the women who were confident in their decision to decline screening did not see it as an opportunity to prevent future cardiovascular events.

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 were 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 keep 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 doctor without good reason.

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 resources when they were 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 relied on an idea that the problem would disappear by itself or might involve consulting alternative treatment. 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. The women's inner logics constituted 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.

Overall, we argue that the self-imposed caring role provided the women with a sense of meaningfulness and gave them an experience of SOC in their daily lives. As the women with challenged comprehensibility or manageability also expressed SOC. The self-imposed caring role was central to the women, and inner logics were used as a strategy to keep this role. Thus, the women acted on their inner logics when declining screening.

Discussion

Social roles as caregivers and inner logics were found to be particular phenomena for nonattendance in screening, guiding the women to spend resources on maintaining SOC in their daily lives.

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 a cardiovascular preventive initiative.

The Social Role of Caregiver

This main category is rooted in the social norms in Scandinavia where the women were raised, and thereby the context in which their identities were developed. According to Melby, et al. [22], the role of Scandinavian women born in the twentieth century relies on a discourse categorising them as wives, housewives and mothers. In Antonovsky's [4] understanding, the women knew from childhood that their destined role is that of wife and mother. Through attachment and identification, women gained the great variety of skills needed to handle this social role. They learned early in life that their culture values this role highly and it is viewed as the cornerstone of society.

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. [15] found that being busy with family was a barrier to attending cardio metabolic health checks. 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 [18,23]. In Antonovsky's [4] 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 a challenged experience of meaningfulness. However, the women in our study expressed meaningfulness in daily lives even though the other two core components varied. Moreover, Antonovsky [4] argues 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, and thus their identity.

Our interpretation was that the women's SOC tended to be combined with a sense of meaningfulness and a challenged sense of compensability or/and manageability. According to Antonovsky [4], a characteristic of people expressing meaningfulness and a lessened sense of compensability and manageability is that they demonstrate extensive life courage in finding resources to manage the demands in their daily lives. Furthermore, Antonovsky [4] argues that 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 who expressed challenged manageability.

Relying on Inner Logics and Maintaining Control

In our second category, we found that the women relied on inner logics which gave them an experience of SOC in their daily lives that further resulted in finding cardiovascular screening as meaningless. However, inner logics were of individual relevance and of different importance to the women.

The women who felt healthy had a salutogenic orientation to life. Moreover, they found meaningfulness in relying on their own interpretation of their health status. According to a review of Stol, et al. [24], people who feel healthy have no concerns about their health and consider their cardiovascular risk to be low. We also found that, the women ignored the risk of having a disease and relied on inner logics as a framework to maintain a SOC. Similarly, de Waard, et al. [15] found that barriers to participate in cardiovascular health checks were being worried about the outcome and its possible consequences. Thus, we suggest that the women's various inner logics were used as a strategy to avoid facing their screening results. Additionally, we argue that nonattendance was rooted in inner logics without critical reflection. 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 [25]. Likewise, Ellis, et al. [26] found that personal knowledge of prevention and diseases hindered recognising the relevance of having a cardiovascular health check. Antonovsky [4] argues it is a general human characteristic that in order for us to find something meaningful, it must make sense to us 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.

The women used an inner logic of not bothering any healthcare professionals without severe indications of disease as a meaningful reason for nonattendance in screening. Similar, both Stol, et al. [24] and de Waard, et al. [15] 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 a health check unnecessary. However, we also found that both recent health checks and checks performed years ago by the GP stopped the women from attending screening and were used as a line of reasoning when the women explained their decision not to attend. According to the review by Stol, et al. [24], older people did not seek medical advice without feeling sick, because they felt they would be misusing the healthcare system. Similarly, Offersen, et al. [27] describe how elderly Danish women and men felt a social responsibility of not being an unnecessary burden on the healthcare service. We found that the women in our study presented similar views on a screening invitation, regarding it as a waste of the healthcare system's resources, because they

experienced themselves as healthy. However, we also found that if they got bodily symptoms, they might favour alternative rather than biomedical solutions based on their logic of self-care with the aim to maintain control of their lives.

In our study, the women maintained the experience of SOC by being in control of their daily lives regardless of many possible stressors. A screening invitation could be viewed as a stressor among those expressing decisional ambivalence, while others found the invitation to be insignificant. In line with Antonovsky's theory of SOC [4], defining a stressor and finding strategies for coping with it constitute an individual experience rooted in one's life experiences. Achieving a sense of SOC is related to having life experiences that are important to the particular individual [4]. Life experiences that mattered to the women in our study were maintaining control of their daily lives.

Overall, this study was revealing in terms of providing new profound knowledge of what was at stake for the nonattendee women. Accepting screening was perceived as an unpredictable threat to upholding their social role and identity. Therefore, the study contributed valuable knowledge on the potential psychological and social impact on women receiving a screening invitation.

Implication for Practice

Improving attendance in screening may be facilitated by involving the invites' usual treatment provider. According to Antonovsky, supporting manageability is possible by involving a trusted physician [4], which may increase the likelihood of participation among those with limited resources. In Denmark, citizens are registered with a specific GP, who may be an obvious person to involve. Moreover, people with diabetes have suggested that accepting cardiovascular screening may be facilitated by personal encouragement from a trusted treatment provider [28]. Ethically, GPs may also be vital in supporting invitees to make a decision based on an informed choice rather than inner logics and in ensuring that the decision is in accordance with the individual's preferences. Moreover, involving the invitees in designing the screening invitation may be beneficial in terms of improving the readability and communicating its relevance [28]. As such public involvement may be a way to make screening emotionally and cognitively meaningful and thereby facilitate screening acceptability and encourage participation. This is a topic for further research.

Discussion of Method

In the present study, we aimed to elaborate on the women's reasons for declining to participate in screening. As recommended by Heaton [20], we carefully considered whether it was appropriate to perform a supplementary analysis on this empirical material. Using 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. [29] 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 valuable perspectives to ensure credibility and conformability in the study. The authors of the primary analysis continued collecting data until they deemed that further data would not add to the analysis [21], which was also deemed sufficient in this supplementary analysis.

Although we used data collected in 2013, the role as caregiver seems time and age independent for women. As Melby, et al. [22] claim that in today's society, Scandinavian 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. Similarly, Cislaghi and Heise argue that women and men have been generating social norms through acceptable and appropriate actions in all societies and throughout time [30]. We found that the importance of being a caregiver was independent of the women's previous social position. Further research is needed to explore whether our findings are transferable to screening programmes and cardiovascular health checks for women in general.

Conclusion

We conclude that the reasons for declining screening were embedded in the women's experience of SOC in their daily lives, a feeling that the women were unwilling to risk by participating. This study shows that it is inappropriate 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.

Based on the theory of SOC, the women perceived screening as an unpredictable threat to upholding their social role and thereby their identity (comprehensibility). This affected their resources to handle the self-perceived consequences of participating in screening (manageability). As screening did not make sense neither emotionally nor cognitively, they were not motivated to participate (meaningfulness). Manageability was also expressed in terms of upholding a balance between personal resources and daily caring demands, leading to nonattendance. Moreover, women who felt healthy, found meaningfulness in relying on their own interpretation of their health status and thus they considered screening a waste of the healthcare service's resources. Overall, this study contributes new valuable knowledge for future exploration of the rationale of cardiovascular screening among women, particularly in terms of the psychological, social and ethical considerations.

Acknowledgements

We would like to express our gratitude and thanks to the study participants for sharing their experiences and views. We are deeply grateful to associate professor Kirsten Bedholm, Aarhus University, Denmark, for her valuable comments to our article.

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, KMH and SFS; drafting the work: MD, ABA and SFS. All authors contributed with critique during the preparation of the manuscript and all approved the final version to be published.

Data Availability Statement

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

References

1. Dobrow MJ, Hagens V, Chafe R, Sullivan T, Rabeneck L (2018) Consolidated principles for screening based on a systematic review and consensus process. *CMAJ* 190: E422-E429.
2. Wilson JMG, Jungner G (1968) Principles and practices of screening for disease. 34 ed. Geneva: WHO Public Health Papers.
3. Dahl M, Lindholt J, Sogaard R, Frost L, Andersen LS, et al. (2018) An interview-based study of nonattendance at screening for cardiovascular diseases and diabetes in older women: Nonattendees' perspectives. *J Clin Nurs* 27: 939-948.
4. Antonovsky A (1987) Unravelling the mystery of health: How people manage stress and stay well. 1st Edition. San Francisco, California: Jossey-Bass.
5. Timmis A, Townsend N, Gale CP, Torbica A, Lettino M, et al. (2020) European Society of Cardiology: Cardiovascular Disease Statistics 2019. *Eur Heart J* 41: 12-85.
6. Skaaby T, Jorgensen T, Linneberg A (2017) Effects of invitation to participate in health surveys on the incidence of cardiovascular disease: a randomized general population study. *Int J Epidemiol* 46: 603-611.
7. National Health Service (2008) Putting prevention first Vascular Checks: risk assessment and management. In: Health Do, editor. London: National Health Service England.
8. Diederichsen ACP, Rasmussen LM, Sogaard R, Lambrechtsen J, Steffensen FH, et al. (2015) The Danish Cardiovascular Screening Trial (DANCAVAS): study protocol for a randomized controlled trial. *Trials* 16: 554.
9. Lindholt JS, Sogaard R (2017) Population screening and intervention for vascular disease in Danish men (VIVA): a randomised controlled trial. *Lancet* 390: 2256-2265.
10. World Health Organization (2017) Cancer Screening: World Health Organization.

11. Wanhainen A, Hultgren R, Linne A, Holst J, Gottsater A, et al. (2016) Outcome of the Swedish Nationwide Abdominal Aortic Aneurysm Screening Program. *Circulation* 134: 1141-1148.
12. Collins RE, Lopez LM, Marteau TM (2011) Emotional impact of screening: a systematic review and meta-analysis. *BMC Public Health* 11: 752.
13. Stacey D, Legare F, Lewis K, Barry MJ, Bennett CL, et al. (2017) Decision aids for people facing health treatment or screening decisions. *Cochrane Database Syst Rev* 4: CD001431.
14. Hansen TB, Sogaard R, Lindholt JS (2020) Pharmacological Preventive Potential among Attenders at Vascular Screening: Findings from the VIVA Trial. *Eur J Vasc Endovasc Surg* 59: 662-673.
15. de Waard AM, Wandell PE, Holzmann MJ, Korevaar JC, Hollander M, et al. (2018) Barriers and facilitators to participation in a health check for cardiometabolic diseases in primary care: A systematic review. *Eur J Prev Cardiol* 25: 1326-1340.
16. Dahl M, Frost L, Sogaard R, Klausen IC, Lorentzen V, et al. (2018) A population-based screening study for cardiovascular diseases and diabetes in Danish postmenopausal women: acceptability and prevalence. *BMC Cardiovasc Disord* 18: 20.
17. Cheong AT, Khoo EM, Tong SF, Liew SM (2016) To Check or Not to Check? A Qualitative Study on How the Public Decides on Health Checks for Cardiovascular Disease Prevention. *PLoS One* 11: e0159438.
18. Nielsen KDB, Dyhr L, Lauritzen T, Malterud K (2004) You can't prevent everything anyway: a qualitative study of beliefs and attitudes about refusing health screening in general practice. *Fam Pract* 21: 28-32.
19. Brinkmann S, Kvale S (2015) *InterViews-Learning the Craft of Qualitative Research Interviewing*. 3rd Edition: Sage Publications Inc.
20. Heaton J (2004) *Reworking qualitative data*. London: Sage.
21. Elo S, Kyngas H (2008) The qualitative content analysis process. *J Adv Nurs* 62: 107-115.
22. Melby K, Ravn AB, Wetterberg CC (2009) *Gender equality and welfare politics in Scandinavia*. 1st Edition. University of Bristol, Great Britain: The Policy Press.
23. Burgess C, Wright AJ, Forster AS, Dodhia H, Miller J, et al. (2015) Influences on individuals' decisions to take up the offer of a health check: a qualitative study. *Health Expect* 18: 2437-2448.
24. Stol YH, Asscher ECA, Schermer MHN (2015) Reasons to Participate or not to Participate in Cardiovascular Health Checks: A Review of the Literature. *Public Health Ethics* 9: 301-311.
25. Mezirow J (1990) *Fostering critical reflection in adulthood: a guide to transformative and emancipatory learning*. San Francisco, Calif: Jossey-Bass Publishers; 27: 388.
26. Ellis N, Gidlow C, Cowap L, Randall J, Iqbal Z, et al. (2015) A qualitative investigation of non-response in NHS health checks. *Arch Public Health* 73: 14.
27. Offersen SMH, Vedsted P, Andersen RS (2017) 'The Good Citizen'. *Anthropology in Action* 24: 6-12.
28. Dahl M, Søndergaard SF, Diederichsen A, Søndergaard J, Thilsing T, et al. (2021) Involving people with type 2 diabetes in facilitating participation in a cardiovascular screening programme. *Health Expect* 24: 880-891.
29. Elo S, Kääriäinen M, Kanste O, Pölkki T, Utriainen K, et al. (2014) *Qualitative Content Analysis: A Focus on Trustworthiness*. SAGE Open 4.
30. Cislaghi B, Heise L (2020) Gender norms and social norms: differences, similarities and why they matter in prevention science. *Sociology of Health & Illness* 42: 407-422.