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Life before Myocardial Infarction

—A Qualitative Study of Middle-Aged Women

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Abstract

The health burden of myocardial infarction is rising for middle-aged women and they are underrepresented in research of cardiovascular diseases. The aim of this qualitative study was to explore how life had been for middle-aged women before they suffered a myocardial infarction (MI). Through a health care register, we identified all women (n = 46) under 65 years of age in a defined region in southeast Sweden who had suffered an MI the past 2 years and a strategic selection of n = 16 women from these was made. These selected women were interviewed and their narratives were interpreted by qualitative content analysis. The qualitative interviews generated five general themes: "Serious life events", "Negative affectivity", "Loneliness", "Being a good girl" and "Lack of control". The interviews revealed that many of these women had been exposed to extreme and repeated traumatic life events in their lives. Many had a cynical attitude towards others, felt lonely and experienced a lack of social support. Many of these women endeavored to "be a good girl", which was a special psychosocial phenomenon found. This study uncovered that these women before they suffered an MI were affected by a variety of psychosocial factors. The study stresses the importance of psychosocial risk factors in the assessment of middle-aged women's risk profile for MI. A general conclusion for clinical practice is that in the assessment of the individual risk for myocardial infarction for middle-aged women, potential psychosocial factors might also be considered.

Keywords

Myocardial Infarction, Women, Risk Factors, Psychosocial Factors, Qualitative Research

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1. Introduction

The burden of cardiovascular diseases (CVD), particularly myocardial infarction (MI)—the main type of CVD, is increasing for middle-aged women, and is one of the most seriously neglected health problems in the world. Women are underrepresented in research and there is a need for a more profound and gender-specific knowledge concerning women and CVD [1] [2]. Classic risk factors such as high blood pressure, hyperlipidemia, smoking and diabetes, only partly explain why people develop CVD.

The knowledge of the importance of psychosocial risk factors for CVD is increasing [3]. Psychosocial risk factors have been found to be highly associated with CVD and are linked to the classic risk factors in a causal chain that precede myocardial infarction [4] [5]. The majority of these factors can be avoided, and account for approximately 2/3 of all cardiovascular diseases [4] [6]. The INTERHEART Study considers psychosocial factors to be of greater importance than hypertension [6]. Psychosocial risk factors increase the risk of developing and worsening the prognosis of CVD and the psychobiological mechanism is well described in the literature [5] [7] [8]. Social factors such as low socio-economic status including a poor residential area, low educational level, low-status job, and low income predispose for CVD, especially in individuals of working age [5] [9]. However, the higher presence of classic risk factors in low socio-economic groups only partly explains the difference [10]. Work-related stress with high demands and lack of control are risk factors while social support seems to be a protective factor [4]-[6]. Stress in the family and the close social environment such as conflicts and family crises especially affect women's risk of CVD [5]-[13].

Psychological symptoms such as depression and anxiety increase the risk and worsen the prognosis for CVD [5]. Anxiety is a key component of how stress leads to ill health. Since it could prolong the exposure to stress, stress levels will remain high even if the person is not objectively exposed to the stressors [14] [15]. Personality and attitudes also play a role as potential CVD risk factors. Being cynical and hostile and having maladaptive social relations and suppressed anger increase the risk of CVD [5]. Distressed personality, or type-D personality, is a general tendency for negative affectivity and a chronic risk factor compared to the more episodic depression and anxiety [5] [16]. Being positive and optimistic are protective factors, as is a forgiving attitude [17] [18]. Major life events such as violence and abuse, diseases, or even losing your job, causes tress in the body and therefore increase the risk of cardiac events [8] [19]. In addition, serious events and disasters in the community, like the earthquake and tsunami in Japan 2011, increased the CVD incidence immediately and during the following year [20].

Middle-aged and elderly women's risk of suffering a myocardial infarction is often underestimated because it is believed to be a male disease, even though the number of women of this age who die from MI is even higher than men. However, the incidence of myocardial infarction is relatively rare among younger women of reproductive ages, most likely due to the protective effect of high levels of estrogen [21].

Psychosocial factors are now more accepted as a part of the pathogenesis for CVD [22] and women seem to be more sensitive to psychosocial risk factors than men [1]-[3]. However, many of these psychosocial risk factors are measured on men rather than on women. A generalization of such risk factors measured on men to also be valid for women is not appropriate in modern research. To increase our knowledge of psychosocial factors involved in the intricate web of risk factors for myocardial infarction (the major CVD) among middle-aged women, a broad picture is necessary where women's narratives of their life circumstances is brought to light.

The aim of this qualitative study was to explore how life had been for middle-aged women before they suffered a myocardial infarction (MI) and possibly also to gain some impression of their personalities.

2. Methods

2.1. Participants

The participants in this study were selected from a regional administrative Health Care Register (HCR) in a county in south-east Sweden. The HCR comprises information from medical records for all inhabitants in the county. The information in the HCR covers ICD-diagnosis assigned by physicians at hospitals and in primary care. Data from this register have high accuracy and high validity and are therefore well suited for epidemiological studies [23]. The study population consisted of all women N = 59,217 in the age group 30-64 years, living in one of the two major cities in the county. These two cities are referred to as the Twin cities because of their closeness to each other (45 km), their equal size (130 000 v/s 145,000 inhabitants) and because these cities are

supplied by the same health care organization. The difference lies in the social history of the cities one is a blue-collar city, and the other a white-collar city [10]. During the two-year study period (2009-2010), n = 46 women of our study population had suffered a myocardial infarction (ICD-I21). Of these, n = 28 women lived in the blue-collar city and n = 19 women in the white-collar city. This gave a yearly incidence rate of 4.9 per 10,000 women in the blue-collar city and 3.1 per 10,000 women in the white-collar city, a Risk Ratio difference of 1.51 (95% CI 0.84 - 2.72).

2.2. Informants

A strategic selection within the total group of n = 46 women with MI (ICD-I21) was done with the intention to obtain a social variety concerning type of residential area, age ethnicity, and living in a blue or the white-collar city. All n = 16 women were selected as informants in the study, n = 8 women from each city [24]. The mean age of the women at the time of their MI was 54 years, (ranging from 41 - 64 years). The educational level for the women was n = 3 elementary school, n = 9 above elementary school and n = 4 university education. At the time of the MI, the women's occupations were n = 8 employed, n = 5 unemployed, and n = 3 early retired. All informants in the results presentation were anonymized and given labels: A-P.

2.3. Procedures and Measures

Prior to the data collection a pilot interview with one woman was conducted to test the validity of the interview guide. An information letter regarding the study was sent to the convenience sampled informants, which was followed by a phone call one week later. All contacted women agreed to participate. The majority of the interviews took place at the informants´ homes, except for two made by telephone and one at the university according to these women's preferences. The interviews were conducted from March 2011 to March 2012by the authors (CW) and (MJ), who altered roles as leader or observer. The role as leader was mainly to drive the conversation forward, ask questions etc. while the observer's role instead was to make comments and document impressions during the conversation. Both these interviewers are trained in interview technique and have an extensive experience of the interview situation. In this qualitative content study we applied an open inductive approach described by Graneheim & Lundman (25). So, we used an open interview guide with broad themes which covered the women's life stories including; experiences of their childhood, relations, education, occupation and their own health and well-being. Examples of questions derived from the open interview guide are "*Could you tell us about your childhood*" *or* "*How is your daily life now*?". The interviews lasted 60 - 90 minutes and were recorded and then transcribed verbatim.

2.4. Data Analysis

Qualitative content analysis was chosen as method for analysis of the qualitative interviews [25]. In this study, we followed the recommendations and criteria for reporting qualitative research included in the COREQ checklist [26]. The data were analyzed in the following steps:

1) Audiotapes of the 16 women were listened to and thereafter transcribed, read and re-read by the authors CW, MJ).

2) The text was divided into five content areas; working life, childhood, present life circumstances, serious life events, self-image and view of life, and experiences/perceptions of their myocardial infarction. Each was analyzed separately.

3) Meaning units words, sentences or paragraphs) containing aspects related to each other through content and context were identified.

4) The meaning units were thereafter condensed and labeled with codes. This text was shortened but still preserving the core.

5) These codes were compared based on similarities and differences and sorted into categories based on similarities.

6) The analysis process involved movements back and forth between the whole text, the codes and the categories for each theme.

An interpretation of the underlying meaning, which permeated the categories within the content area, was formulated into five themes. Reliability and validity was ensured by verifying and interpreting data in all stages of the analysis according to standard proceeds for qualitative studies [25]. When the final interpreting of the data

was made, all four researchers gathered and discussed the issues to reach a consensus.

After all data analysis was completed, we decided to send a general short summary of our findings to all participating informants, which we had promised them in connection to the interviews.

2.5. Ethics Statement

The Research Ethics Committee at The Faculty of Health Sciences, Linköping University, Sweden approved the study (No. 2009/26-31). All participants gave their written and informed consent to participate in the study and also gave consent for the researchers to scrutinize their medical records.

3. Results

3.1. Findings

The findings are presented under five themes: "Serious life events", "Negative affectivity", "Loneliness", "Being a good girl" and "Lack of control". In the next section each theme is described by categories, which are supported by quotations from the interviews. The five themes with their categories are displayed in **Table 1**.

3.2. Theme 1. Serious Life Events

Representative of the interviewed women was that they had all experienced serious life events in their childhood and/or adulthood. Traumatic life events are part of most people's lives. However, these women often had a history of extreme and repeated trauma.

Childhood life events

Women described about being sexual abused from close relatives and the adults pretended not to see what happened. Women expressed that they were abused as a child or lived in dysfunctional families and violent environments. Further on, they convey growing up with parents with alcohol problems and/or mental health problems, not being able to take their responsibility. Informants described experience as a war refugee and had to take an adult responsibility early in life. "*We escaped the holocaust* (…), *it's been very, very tough.*" [D]

Adult life events

In adult life, the informants suffered from severe diseases, were abused or experienced serious betrayals. An abusive husband left a woman while heavily pregnant; another woman discovered as an adult that she had another biological father than her siblings. Furthermore, women had children suffering from severe mental and/or physical illness, or had conflicts at work that resulted in dismissal. One woman reported that she had repeatedly tried to commit suicide. Additional examples are sexual abuse or criminality in the close family. Another illustration is a women how was affected by unemployment in what manner led to a considerable life crisis. "*It really has been hard on me, I mean really, really hard to become unemployed.*" [B]

3.3. Theme 2. Negative Affectivity

Common features for these women were a general negative affectivity with negative attitudes and thoughts, hostility and cynicism.

Cynicism

Some women expressed a negative attitude towards relatives, friends, co-workers and people in general. This was also reflected in the way they described other people and what they expected from them. Statements of mistrust of foster families could illustrate this, "*that they only want money for taking care of children.*" [A]. Another expression of cynicism was self-blame portrayed as an informant who thinks that she deserves punishment. A woman describes disappointment in her husband, and insinuated that he was irresponsible. "*My husband always went away* (…) *I even thought of putting a photo of him on the door so I could tell the children 'this is what your father looks like' so they would recognize him when he showed up.*" [B]

Hostility

To always think the worst of people, and become agitated over their behaviors represents a hostile attitude. Informants express that they blame other people for things they had done wrong. A woman expressed that her manager was stupid, but the woman herself probably failed to do her job. An informant even blamed her neighbors and colleagues for giving her MI since their bad manners upset her. The informants described it is hard not

Table 1. Themes, categories and category content.

Theme	Category	Category content
Serious life events	Childhood life events Adult life events	Statements about been sexual abused how they as a child grow up in dysfunctional families and violent environment. Statements about suffering from severe disease were abused or experienced serious betrayals.
Negative affectivity	Cynicism Hostility	Statements about a negative attitude towards relatives, friends, co-workers and people in general. Statements about to always think the worst of people, and become agitated over their behaviors.
Loneliness	Betrayal Lack of reliance	Statements about experience of severe betrayal in their childhood or/and as adults. Statements about the difficulty to share their thoughts and problems with others.
Being a good girl	Conscientiousness Self-sacrifice	Statements about that the women had the responsibility both for the home and the family while also holding down a full-time job. Statements about how the women never prioritized their own needs completed or did not care about those at all.
Lack of control	Victim of circumstances Failure	Statements about things just happened and they often did not see their potential to change or take control over conditions in life. Statements about dreams and goals with their lives, but they often failed to achieve them.

to care about what others do and that things must be done properly and thoroughly. Furthermore, a woman illustrated that she was aware of her hostile attitude and that it affects her in a negative way.

"*I show my claws* (…) *and always think the worst about people.*" [L]

3.4. Theme 3. Loneliness

Some women expressed lack of social support, and someone to trust. They also had a tendency to keep their problems and sorrows to themselves.

Lack of reliance

The women found it difficult to share their thoughts and problems and had a lack of trust in others. For example by keeping all their feelings within themselves and not be a bother "*I never show my sadness, it goes inwards.*" [A]. This is particularly true for their relations to husbands and close relatives, but they were often willing to listen to and support others. The informants described they always had to fend for themselves and do not expect to get any support from anyone, but our impression is that there are people around who want to listen and help, but the women do not allow them to. "*I've had to take a lot of responsibility, had to rely on myself.*" [B]

Betrayal

The informants described that they had been exposed to severe betrayal in their childhood or/and as adults. Women told us about parents how did not manage to take responsibility for their family. The consequence was that they were left alone without any support as young children. Furthermore, parents and adults did not care when abuse occurred. Another example is a woman being left alone with young children without support of her husband who was an alcoholic. A woman referred to a mother how started conflicts in the family, especially between the siblings, that affected her relationships with other people. "*My mum caused conflicts between us siblings and as a result, my relationship with my sisters is still bad.*" [L]

3.5. Theme 4. Being a Good Girl

The women were in most cases extremely duty-bound and had high demands on themselves. It was important to them and also that others would perceive them as "good girls". They also had a self-sacrificing behavior; always putting their own needs aside.

Conscientiousness

Most of the women had responsibility both for the home and family while also holding down a full-time job. The informants told us that they belong to that generation, to have responsibility for home and family, and are expected to cope with it and enjoy it. Furthermore, informants do not want to work less even if the doctor told them so considering their health, but it was for them perceived as unthinkable. A woman had strict ideas of what was right and wrong and how to manage things; she became so upset with her colleagues mismanaging their jobs that she even thought that this might have caused her MI.

"*I've always been too well-behaved* (…) *shouldered responsibility and became very upset about skiving colleagues.*" [H]

Another woman continued teaching her class at school, despite an ongoing MI. After the class, her colleagues found her unconscious.

"*They had to be allowed to take their test.*" [D]

Self-sacrifice

A common characteristic among the interviewed women was that they had a self-sacrificing behavior and seldom prioritized their own needs. "*You can´t say no, you just have to do your bit.*" [C]. Other perceptions were that you should never go to the doctor because you are just tired. They often wanted to be a perfect wife, mum, friend and worker and were often expected by their friends and family to help out.

"*My family and my parents have also put all responsibility on me because I have the strength to deal with everything…so I have never cared about myself, I've never done that because you're expected to be able to handle everything.*" [D].

3.6. Theme 5. Lack of Control

It appeared that most of the women did not have control of their lives and often failed in their career and relationships. Things just happened and they often did not see their potential to change or take control over conditions in life, they were "victims of circumstances".

Victims of circumstances

Women did not acknowledge that they were responsible for their lives, and blamed others for their misery and they also seemed to have insufficient faith in themselves to manage to influence the future. Illustrated by a woman that could not understand why nobody told her that her son was using drugs. Another example is a woman how just lost her job and did not seem to reflect on why or how she could have avoided it. "*I constantly feel badly treated and that everybody else is in the wrong.*" [A]

Failure

Informants also expressed dreams and goals with their lives, but often failed to achieve them. That could for instance be to get children outside marriage when they were too young. Broken marriages ended up with divorce. Women felt that they had failed their motherhood; they even had children in foster homes. Informants have experienced conflicts at work that resulted in dismissal. Other examples are failure to achieve educational goals or return to work after a period of sick leave.

"*I've had a dream that everything would be like before and that she would go back to work. That was the goal*" *to be like everybody else*", *but then I became a disability pensioner in* 2009 *and then made redundant in* 2010. *That was tough, very hard indeed.*" [P]

4. Discussion

4.1. Study Summary

To get wider knowledge about middle-aged women's lives before myocardial infarction we conducted in-deep and open interviews through inductive qualitative method [25]. Psychosocial risk factors were evident for these women besides some classical cardiovascular risk factors like smoking. They had been exposed to extreme and repeated traumatic life events, expressed a cynical attitude towards others, felt lonely and experienced a lack of social support. Strife to "be a good girl" and having high demands on themselves were common, but they also often had low control of their lives. These kinds of psychosocial risk factors might be distinctive for women, due to their exposure to gender specific roles in their lives.

Our findings show that although many women had some classic risk factors like smoking and overweight,

there was also a variety of psychosocial factors which appeared and thereby altogether provide a better understanding of the causal chains for women's risk for MI. Previous studies have shown that some women who suffered an MI had well-controlled classic risk factors but poorly controlled psychosocial risk factors [27]. Research evidence increasingly shows that the causality pattern for CVD is complex and the psychosocial factors are a complement to the classic risk factors [5].

Psychosocial stress constitutes an important risk factor for cardiovascular diseases and is notably more pronounced in women [5]. However, this could only partially be explained by the tendency to more unhealthy behaviors in this group [6] [7]. An overall impression of the qualitative interviews with these middle-aged women with MI was that they all tend to display both anger and stress but this seemed to be turned inwards. One might denote this as inward stress or an internal strain. This phenomenon also reflects the vulnerability and serious life experiences among these women, which could have been generated from all their negative life events, the loneliness and betrayal in close relationships over the years, which have also influenced their personalities. Internal strain is not the same as the daily hassles that many people experienced in their stressful lives. This phenomenon of internal strain should be elaborated in future studies.

Several of the interviewed women could be considered as having a low socio-economic status and were poorly educated (both risk factors for MI), especially those of working ages [9]. Stress at work, such as conflicts and layoffs, contributes to these women's feelings of lack of life control. Furthermore, insufficient social support accentuates the risk from work-related psychosocial factors [11] [12]. Women in this study reported stressful social life situations in general and in their close family, which also constitute risk factors for MI [5] [13]. A feeling of loneliness due to scarcity of social support in the close family also constitutes a risk factor, as well as experiences of serious life events [5] [8]. Strong emotional or physical stress might cause spasm in the blood vessels *i.e.* "broken heart syndrome" and is especially pronounced among women [3] [13]. Maybe this phenomenon could explain the occurrence of the disease in some of the women we studied. Many of the interviewed women in this study appeared to be hostile, had negative thoughts, suffered from depression/anxiety and suppressed anger, which in other studies have been shown to increase the risk for MI while positive thinking and an optimistic view of life on the contrary seem to be protective factors [5] [16] [17].

The social environment in general also seems to have an impact on these women. Despite the relatively small group of middle-aged women who had suffered an MI in the defined region, it was initially found that the risk for myocardial infarction was about 50 % higher in the blue-collar than in the white-collar city. Although, due to the qualitative study design, it was not possible to further analyze possible differences in this respect between women from the white-collar or the blue-collar city. Myocardial infarction is still considered to be a predominantly male disease. This, among other things, explains the tendency among women to seek care at a later stage, and having more difficulties accepting their disease compared to men [1]-[3]. Almost all women in this study did not believe they suffered a MI when having symptoms and several could not accept the MI diagnosis even after a year. Being a good girl was another feature among the interviewed women and they felt squeezed between double roles of family life and work, factors previously reported to be associated with risk of cardiovascular disease [3]. This characteristic also reflects strife to improve low self-esteem, which has been shown to lead to over-ambition and a neglect of one's mental and physical limits [28]. Individuals with these characteristics often display high emotional tension, feelings of frustration in performance situations, strong control needs, maladaptive strivings, perfectionism and a hostile attitude towards others [29] [30] [31]. These psychosocial factors could be seen in a gender specific perspective, where female role models in the society might have influenced the personal characteristics of these women.

The perspective of qualitative studies is fundamentally inductive and the primary goal is not to attain generalizable results, but rather to gain new knowledge and hypothesis that could generate new measurement methods for future quantitative studies. The transferability of this study *i.e.* to what extent these results could be transferred to other context or settings, is primarily the responsibility of other researcher doing the generalizing.

4.2. Strengths and limitations

This study has three main limitations. Despite the inductive approach in this qualitative study influences from established knowledge cannot be ruled out. So, the guide used for the qualitative interviews was not developed blindly, but against the background of previous research in this field. Second, the identification of the women with MI was done through a regional administrative Health Care Register (HCR) which might inhabit some diagnose misclassification. However, this register has previously been found to have high validity and precision

and to be quite suitable for epidemiological studies [23]. Thirdly, the women's narratives could have been affected partly by the general recall-bias phenomenon and partly by the women themselves who want to make changes to their life stories.

However, the general impression of the interviews was that the women were credible, trustworthy and reliable which might have been facilitated by the fact that the interviews were carried out in the women's own homes. Although the interview was extensive and lasted 60 - 90 minutes, no signs were reported that the respondents found this boring or meaningless. On the contrary, all women participated with great benevolence. Another advantage is that 16 participating informants are an appropriate number for qualitative studies and quite sufficient to gain saturation in the data collection, even though this number of participants might seem small from a quantitative perspective [24]. In this study, we conducted the interviews with over one third of all women with MI in the defined region during a two-year period, also considering that MI is a quite rare event among younger and middle-aged women [21]. Another advantage of this study is that the same two experienced researchers conducted all the interviews and these were interpreted and coded by four researchers altogether. Furthermore, there was 100% compliance: all women contacted wanted to participate in the study, so there were no dropouts.

4.3. Conclusion

This qualitative interviews of middle-aged women uncovered that these women before they suffered an MI were affected by a variety of psychosocial factors. The findings reviled a broad picture of social factors, life circumstances, personalities and not least psychosocial factors of importance for middle-aged women that had suffered an MI. The importance of the psychosocial phenomenon to strive "to be a good girl" is a hypothesis that needs to be elaborated and operationalized in further up-coming studies of cardiovascular risks for women. The study stresses the importance of psychosocial risk factors in the assessment of middle-aged women's risk profile for MI. A general conclusion for clinical practice is that in the assessment of the individual risk for myocardial infarction for middle-aged women, potential psychosocial factors might also be considered.

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