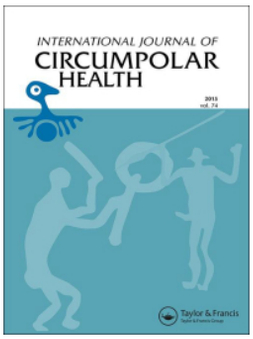

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RESEARCH ARTICLE

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Women's perceptions of sauna bathing and its impact on health and well-being: insights from a cross-sectional study

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ABSTRACT

Sauna bathing has gained increasing attention in medical and nursing research for its potential health-enhancing properties. It may be a valuable self-care practice for women, complementing conventional healthcare in prevention of diseases and promoting health and well-being. Since most studies focus on male participants, it is important to explore women's experiences with sauna bathing and its significance for their health and well-being. The aim of this study was to examine women's perceptions of sauna bathing and its impact on their health and well-being. A cross-sectional study was conducted using an online questionnaire comprising 17 items and four open-ended questions, which formed a subset of a larger questionnaire. A total of 384 women sauna users participated. Data was analyzed using descriptive statistics and qualitative content analysis. Women described a range of health and well-being experiences, with sauna bathing perceived as restorative and emotionally grounding, promoting improved sleep and reduced bodily pain, yet occasionally associated with social insecurity and counterproductive effects.

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Health; health promotion; sauna bathing; well-being

Introduction

Sauna bathing has garnered increasing interest in medical and nursing research due to its potential health-promoting effects [1,2], Laukkanen & Kunutsor [3], such as on cardiovascular diseases, rheumatological and immune-mediated diseases, chronic pain syndromes, depression, lungs, and airways [2], Laukkanen & Kunutsor [3]. Sauna bathing is traditionally characterised by exposure to high temperatures for a brief period [2], Laukkanen & Kunutsor [3], often associated with relaxation, social bonding, and cultural rituals [4]. Since most studies about sauna bathing focus on the effect on men [5], Laukkanen & Kunutsor [3], it is essential to understand women's lived experiences of sauna bathing and its importance for health and well-being.

Pilch et al. [6] studied nine healthy, non-smoking women undergoing sauna sessions every other day over two weeks. The study found reductions in triacylglycerols (TG) and low-density lipoprotein cholesterol (LDL-C), suggesting potential cardiovascular benefits. Podstawski et al. [7] examined sauna use among female university students and found that socioeconomic and psychological factors influenced sauna participation. Despite low overall interest, sauna bathing was associated with improved mental health and recommended as a calming and health-promoting practice. Kirby et al. [8] explored sex-based differences in heat acclimation following post-exercise sauna bathing. Their findings suggest that while both men and women benefit from improved exercise performance, the underlying thermoregulatory adaptations may differ between men and women.

Sauna bathing triggers a range of hormonal responses that can vary between people depending on sauna habituation, age, sex, and bodily composition [9]. A summary of the current literature by Yanovich et al. [10] showed differences in thermoregulation between men and women primarily caused by

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physiological, anatomical, and hormonal factors. Women tend to have a higher body surface-to-mass ratio and more subcutaneous fat, which can influence heat absorption and insulation. Additionally, hormonal fluctuations during the menstrual cycle, such as changes in oestrogen and progesterone levels, affect thermoregulatory responses, including body temperature and sweating thresholds. Despite having a smaller sweating response overall, women often exhibit greater evaporative efficiency, helping them maintain core temperature effectively. Men generally have more lean muscle mass and a higher metabolic rate, contributing to different heat production and dissipation patterns. Therefore, while basic mechanisms are similar, the responses to heat and cold can differ between sexes due to these underlying factors [10].

The study by Podstawski et al. [11] concludes that 80 °C is a safe and beneficial sauna temperature for women who are not regular users, while 120 °C poses significant health risks. Another study [12] showed a reduction in both systolic and diastolic blood pressure after a 15-minute sauna session at a temperature of 90–91°C regardless of sex. Previous studies [11,12] emphasise the need for tailored thermal exposure based on users' experiences and physiological tolerance and underscore the need for further research and dissemination of existing evidence to harness sauna bathing as a health promotion intervention.

A broader perspective on sauna bathing was provided by Hussain et al. [13], who conducted a global online survey with 482 men and women. Participants, particularly from Finland, Australia, and the United States, reported using saunas primarily for relaxation, mental health, and better sleep, with relatively few adverse effects. Engström et al.'s [1] national survey included 641 men and women divided into three groups based on the frequency of sauna use (sauna bathing less than once a month, 1–4 times/month, and 2–7/week). Participants who sauna bathed once a month or more reported better mental health and higher levels of energy compared to those who sauna bathed less than once a month. The results also showed that participants who sauna bathed 1–4 times a month reported greater levels of happiness compared to less or more frequent sauna bathing [1]. Frequent sauna sessions may enhance the positive impact of protective factors like physical activity and cardiovascular fitness while also helping to mitigate the harmful effects of certain health risks such as high blood pressure and systematic inflammation (Laukkanen & Kunutsor [3]).

Women have unique health needs and face specific challenges that differ from those of men [14] and despite progress in human rights and areas of health and development, women continue to experience poorer health outcomes [15]. Advancing women's health requires approaches rooted in principles of human rights, gender equality, and equity [14]. Sauna bathing might be a valuable self-care practice for women, supporting health and well-being alongside traditional healthcare [16]. Capturing the meaning of women's own words offers insights into how women use sauna bathing for self-care, stress relief, and community connection. Qualitative investigations, together with quantitative health outcomes, can inform culturally sensitive health promotion strategies and support the development of women-responsive health promotion interventions. Therefore, the aim of this study was to examine women's perceptions of sauna bathing and its impact on their health and well-being.

Materials and methods

A cross-sectional study was conducted using an online questionnaire with both multiple choice items and open-ended questions. The reporting of results followed the checklist Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) Vandenbroucke et al. [17] This study was part of a larger research project aimed to exploring motivations for sauna and cold bathing and its importance for health and well-being [1].

Participants

Swedish women were recruited through announcements through two sauna bathing groups on social media platforms, one sauna association, and the official webpages of Karlstad University and Luleå University of Technology. Information about the study and a link to the questionnaire were shared on these groups' pages, the Universities' webpages and through the sauna association's newsletters. Each woman could only fill out the questionnaire once. Two reminders were posted on the websites and in the newsletters. Data was collected between 9 March 2025 to 30 April 2025.

Measurement

The questionnaire consisted of 45 multiple choice items and 22 open-ended questions. For this study, 17 multiple choice items and four open-ended questions were relevant. Characteristics and sauna habits were measured using nine items, including age, education, employment status, physical activity, alcohol consumption in relation to sauna bathing, sauna bathing during childhood/teenage years, sauna bathing frequency, cold water immersion in connection to sauna bathing, and preference for private or community saunas. Health and well-being were assessed using eight items related to physical health (1 item), mental health (1 item), stress (1 item), anxiety/depression (1 item), sleep (2 items), and bodily pain (2 items). Each item was phrased as a declarative statement for example "I have good physical health" or I sleep well" and "I sleep better following sauna bathing", and rated on a four-point Likert-type scale ranging from 1 (strongly disagree) to 4 (strongly agree). The Cronbach's alpha coefficient were 0.68 and the statistical analysis was performed on the item level.

The open-ended questions asked participants to describe the importance of sauna bathing for health and well-being. The four open-ended questions were "*Describe a time when you sauna bathed and you found it an extraordinary experience?*" *"What was it that made it feel so good that time"*? "*Describe a time when you didn't feel good about doing sauna bathing?*" and "*What was it that made it not feel good that time?"* A total of 1050 free text answers were collected and 226 of the answers were related to health and well-being.

To ensure the face and content validity, the questionnaire was pilot tested by 10 experienced sauna users. They were asked to assess whether the questions were understandable and clear. This resulted in one added question about age when they started using the sauna, minor linguistic and layout changes.

Data analysis

Quantitative data were analysed using descriptive statistics, presenting categorical variables as numbers and percentages, and continuous variables as means and standard deviations. To evaluate the distribution of the data, histograms were generated and visually inspected for symmetry and bell-shaped curves. Paired samples T-tests were conducted to compare differences in sleep and bodily pain scores before and after sauna bathing. Missing data were handled using listwise deletion, and statistical significance was set at $p < 0.05$. Data analysis was performed using IBM Statistical Package for Social Sciences (SPSS), version 29.0.

Qualitative data from the open-ended questions were analysed using qualitative content analysis with a deductive and manifest approach [18]. The analysis involved reading through the 226 free text answers-about women's description of why they sauna bathed. The analysis was carried out with a manifest approach in three steps. (i) The free text answers were read through several times to obtain a sense of the whole; (ii) an analysis matrix was developed including physical health, mental health and well-being, (iii) the meaning units were coded using the analysis matrix (Table 3)

Ethics and consent

The study received approval from the Swedish Ethical Review Authority (Dnr 2025–00645–01). Women were informed about the study's purpose, voluntary participation, and confidentiality of their identities. By submitting their responses, women agreed to the conditions of the study and the publication of the results.

Results

A total of 384 women completed the questionnaire. Their ages ranged from 24 to 83 years, 88.0% had a university or college of higher education degree, and 77.6% were employed or self-employed. The majority of women considered themselves physically active (82.8%) and 19.3% indicated using alcohol while sauna bathing. They (73.4%) began sauna bathing as children or teenagers, 68.2% used the sauna one to several times a week, and 48.2% also cold bathed in connection to sauna bathing. There was no major difference

between the proportion of women using a private sauna (48.7%) versus a community sauna (51.2%) (see Table 1).

Women perceived good physical and mental health and they perceived decreased stress and decreased anxiety/mildly depressed after sauna bathing. Women perceived better sleep and reduced bodily pain after sauna bathing compared to before (see Table 2).

The importance of sauna bathing

Women have described the importance of sauna bathing and its impact on health and well-being in various ways, as shown in Table 3.

Physical health

The women shared numerous benefits of sauna bathing, especially in physically demanding or cold conditions. After heavy physical labour, sauna bathing was described by women as deeply soothing and health-promoting. Sauna improved sleep, helped ease muscle soreness, and aided recovery after intense workouts. Another woman said that she felt good doing sauna bathing and preferred it to physical exercise. Women described how sauna bathing alleviated symptoms of asthma and rheumatism, and one woman noted improved breathing after pneumonia. Some pregnant women found sauna comforting for tired and aching bodies, while others felt overheated or unwell in the sauna.

Women described experiences such as fainting or feeling dizzy due to high heat, dehydration, or staying too long. Combining sauna with alcohol led to nausea, dizziness, or fainting, and using the sauna while feeling unwell

Table 1. Characteristics and sauna habits of women ($n = 384$).

Variable	*n* (%)	Mean (SD)
Age		51.77 (12.73)
Education ($n = 384$)		
• University or college of higher education	338 (88.0)	
• Upper secondary school	41 (10.7)	
• Compulsory school	5 (1.3)	
Employment ($n = 384$)		
• Employee/self-employed	298 (77,6)	
• Unemployed	15 (3.9)	
• Students	13 (3.4)	
• On sick leave	4 (1.9)	
• Retiree	54 (14.1)	
Physically active ($n = 383$)	317 (82.8)	
Alcohol consumption in connection to sauna bathing ($n = 383$)	74 (19.3)	
Started sauna bathing as a child/teenager (<18 years) ($n = 382$)	282 (73.8)	
Sauna frequency ($n = 384$)		
• Daily	11 (2.9)	
• Several times a week	124 (32.3)	
• Once a week	138 (35.9)	
• Less often	111 (28.9)	
Cold water immersion in connection to sauna bathing ($n = 384$)	185 (48.2)	
Usually use of sauna ($n = 382$)		
• Private	187 (48.7)	
• Community	196 (51.2)	

Table 2. Women's perceptions of physical and mental health, sleep, stress and anxiety/mildly depressed and comparison between perceptions of sleep and bodily pain before and after sauna bathing.

Variable	Before sauna bathing Mean (SD)	After sauna bathing Mean (SD)	Before/after *p*-value
Good physical health ($n = 384$)	3.10 (.74)	-	-
Good mental health ($n = 382$)	3.38 (.68)	-	-
Sleeping well ($n = 382$)	3.01 (.79)	3.29 (.83)	<.001
No bodily pain ($n = 383$)	2.68 (.89)	3.10 (.93)	<.001
Decreased stress ($n = 369$)	-	3.60 (.65)	-
Decreased anxiety/mildly depressed ($n = 303$)	-	3.30 (.90)	-

Scale ranges from 1 (do not agree at all) to 4 (completely agree). Statistical analysis = paired -samples T-test. Significantly different if $p < .005$.

Table 3. Analysis matrix: Importance of sauna bathing for health and well-being.

Physical health	Positive: "…after driving home in the dark during winter for over 14 hours, I arrived home in the middle of the night to find my husband waiting for me. He had heated the sauna, allowing me to relax after the trip and sleep very well."
	Negative: "I had a fever and decided to sweat it out in the sauna. Unfortunately, I fainted upon leaving."
Mental health	Positive: "Sauna bathing is more beneficial than therapy or massage, providing the best recovery in life."
	Negative: "I was experiencing anxiety, and the increasing temperature in the sauna only exacerbated it."
Well-being	*Brings harmonious peace*
	Positive: "Being alone and completely focused on myself, taking care of my body and skin without any distractions like a mobile phone, allows for pure relaxation and reflection. It's a moment to stop and not worry about performing."
	Positive: "…to the sauna with my teenage son, and we engaged in a conversation with others about issues related to being a young man. It was a pleasant moment where different perspectives met and everyone benefited."
	Intimate social interaction
	Positive: "Sometimes, the atmosphere in the sauna becomes special yet ordinary, making it more human. It's not about extravagance, but about simple meetings and building a community that bridges differences."
	Negative: "…too many men in the sauna staring at me, it becomes uncomfortable. During a sauna session with my date, the rest of the group consisted of men who stared and talked about bodies in an uncomfortable manner."

(e.g. fever, cold, premenstrual syndrome) often worsened symptoms. Being overly tired or undernourished made sauna bathing feel too strenuous, and women described incidents including burns from steam, reactions to added substances (e.g. mint crystals), and dangerously high steam levels. Women perceived that high blood pressure, heart palpitations, and recent injuries (e.g. concussion, whiplash) made sauna use risky.

Mental health

Women described sauna bathing as a deeply restorative and emotionally grounding experience, especially in times of stress, lack of energy, or emotional strain. After busy or overwhelming days, sauna bathing helped them unwind, reduce anxiety, and feel emotionally lighter. The women described sauna as an emotional recovery, as it helped after arguments and emotional exhaustion, some even compared it to therapy. For those with demanding jobs or studies, sauna became a cherished moment of decompression and self-care. Combining sauna with cold water dips was seen as especially effective for mental clarity and emotional balance. One woman shared her experience of how early morning sauna and cold plunges helped her recover from burnout, leaving her calm for days.

While most experiences were positive, some women noted that sauna bathing could be counter-productive under certain conditions. When rushed or stressed about time, the sauna experience became less enjoyable or even anxiety-inducing. For some women, especially those with anxiety or after eating too much, the rising heat and heart rate triggered panic-like symptoms. After illness or during emotional lows, sauna sometimes intensified feelings of vulnerability or unease.

Well-being

Brings harmonious peace. Sauna bathing was described as a pleasure and luxury for the body and soul. It brought a harmonious calm both physically and spiritually, and an opportunity to just be in the moment without mobile phones and other digital devices. Sauna bathing was a meditative and sensory experience where warmth, silence, and natural sounds created a meditative atmosphere that promoted inner peace. It was described as important for politicians and decision-makers to realise that sauna bathing was a peaceful and quiet activity and not an "untidy drunken activity." There was also a suggestion for increasing individual well-being by allowing physicians to prescribe sauna bathing.

Women described sauna bathing as an arena for long conversations about life and beyond, where different perspectives meet. It was perceived as a luxury to be able to alternate conversation with absolute silence. The conversations were, in most cases, good and fun. However, it was important that the conversations were conducted in a subdued tone, were inclusive, not whiny, or that loud discussions did not occur. If these considerations were not taken into account, the atmosphere in the sauna could become unpleasant and stressful, where the harmonic calm did not materialise.

Intimate social interaction. Sauna bathing was described as a social gathering and an excellent place to socialise across generations, sex, social class, profession, or ethnicity. Sauna bathing was also described as an inner journey, something intimate, which made it important to show respect for fellow bathers by not speaking too loudly or taking up too much space in the sauna.

The intimate social interaction could also create insecurity among women. They described feeling uncomfortable when it was crowded with strangers or sauna bathing with unknown men. Women described experiences when men wanted to show off their naked bodies or men getting too close to them in the sauna. Women suggested that there needs to be an acceptance that not everyone wants to sauna bathe naked or wants to sauna bathing with someone of different sex, or even prohibit nudity in the sauna.

Discussion

This study provides insights into the sauna habits of women and their perceptions of health and well-being. The results highlight that sauna bathing is not only a routine activity but also a meaningful practice that contributes to health and well-being. The women described sauna bathing as an important element in their self-care, with perceived benefits ranging from relaxation and stress relief to improved bodily function and emotional balance.

The women perceived that sauna bathing improved their sleep and reduced bodily pain. A systematic review by Hussain and Cohen [2] identified a single-group clinical study that investigated women with fibromyalgia. The women reported significant reductions in pain after a 12-week thermal therapy programme, including sauna therapy and underwater exercise, and reduced bodily pain remained stable during the 6-month follow-up period [19]. None of the studies in the systematic review had the specific purpose of investigating sleep, but one small study identified women with fatigue [2]. The results showed that women who bathed in a far-infra-red sauna therapy regularly for 8 weeks reduced bodily pain but had no effect on sleep [20]. In a global sauna survey, where half of the respondents were women, Hussain et al. [13] found that stress reduction was the most cited motive to use sauna, and most sauna bathers cited improved sleep 1–2 nights after using sauna.

Sauna bathing has been linked to improved mental health, including reduced stress, depression, anxiety, and an intervention for enhancing well-being in health promotion strategies [4]. Furthermore, Dudzik et al. [4] states that while the benefits are significant, caution is advised for people with certain health conditions, emphasising proper hydration and avoiding alcohol, which is in line with previous research [21]. In our results, the women seldom or never used alcohol in connection to sauna bathing, which is a healthy strategy in line with the evidence of risks with alcohol consumption in connection to sauna bathing [22].

The women described sauna bathing as mental recovery and an opportunity to be in the moment without distractions. This state of awareness and observation of the present moment is a description of mindfulness [23] and based on the women's descriptions, sauna bathing can be seen as a form of mindfulness. In today's society where people are constantly connected, it is important to find situations or places where the body and mind can rest. Our results showed that sauna bathing became a place where women could feel free from technology, not being connected, or not being reached due to the use of mobile phones. The sense of constant connectivity to people through mobile phones can be likened to techno invasion that causes techno stress [24], and mindfulness, according to Ioannou [25], might be a strategy to avoid technology ubiquity.

Sauna bathing was described as an intimate social interaction, and the importance of respecting each other in the sauna was emphasised by the women. This emphasis on respect became particularly pronounced in the context of mixed-gender saunas. In Sweden, public mixed saunas are relatively common, largely due to practical and economic considerations, as operating a single shared facility is often more feasible than maintaining separate spaces for men and women. Several women expressed discomfort in these settings, citing experiences of being observed or subjected to unsolicited comments from men in the sauna. Stein [26] shows that mixed-gender saunas have not been without controversy, particularly from women who report feeling uncomfortable being watched or occasionally commented on by members of men. The female body in male-dominated sauna spaces is objectified in these cases, shaping how women claim and manage the space, but also how they might get a bad experience of the sauna and the men. These concerns align with the results of our study, and the availability of women-only sauna sessions might provide a safer environment for those who prefer it and allow them to rest without concerns about being observed by men. Further research is needed to understand the effects of mixed saunas and their impact on whether or not women choose sauna bathing as a safe and health-promoting activity.

The study has limitations. The women comprised a non-probability sample from different sauna bathing groups on social media platforms or sauna associations, and therefore, it was impossible to calculate response rate. Most of the women were highly educated and employed/self-employed. This might affect the generalisability of the results since women with other sociodemographic conditions might have a different perspective. The social media platforms were public and might have followers who are not sauna users. Due to the rapid pace of social media, it is unlikely that all followers of the sauna bathing groups, or sauna association had the possibility to pay attention to the request for participation in the study. There is both a risk and a possibility that the participants of this study were all interested in sauna bathing, and therefore have a positive view, but it also means they all have a lot of knowledge and experience of the phenomenon sauna bathing which were a prerequisite for answering the aim of this study. The women did not answer the questionnaire immediately following sauna bathing and we have not compared the women's health perceptions with any corresponding control group. The analysis of changes in sleep and bodily pain before and after sauna bathing was conducted using paired samples t-tests without adjustment for covariates, meaning that potential confounders were not accounted for. Data was missing to make comparisons between stress and anxiety/mildly depressed before and after sauna bathing. To understand the importance of sauna bathing for health and well-being, well-designed randomised controlled trials are required. In addition, face-to-face interviews can provide insight into how and why an intervention works—or does not work—by capturing women's' subjective experiences, emotions, and contextual factors."

Conclusion

Sauna bathing is culturally grounded and a health promotion intervention with the potential to strengthen women's health and well-being. This study provides valuable insights into the health benefits of sauna bathing, a long-standing practice for many women. The sauna can be a place for physical recovery, and the improvements in sleep and reductions in bodily pain highlight the potential therapeutic benefits of this practice. Sauna bathing may also serve as a health promotion intervention for mental recovery and well-being, but its effects are context-dependent. The health promotion effect is enhanced when the sauna is used consciously and in a calm environment, while stress or physical discomfort can turn the experience into something negative. Sauna bathing can also be seen as a social and emotional ritual, but its positive effects are not universal. Making sauna bathing a safe space for all requires awareness of power, gender, and bodily boundaries. By listening to women's experiences, sauna culture can evolve towards inclusion, safety, and respect.

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Author contributions

Design ML, ÅE. Data collection ML, ÅE, HH. Data analysis ML, ÅE. Preparing the manuscript ML, ÅE, HH. Revising the manuscript ML, ÅE.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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