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"Quick Flutter Skip": Midlife Women's Descriptions of Palpitations

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Abstract

Objective: To describe peri- and post-menopausal women's experiences of palpitations (quality, frequency, severity, distress, duration and temporal pattern, aura, associated symptoms, and aggravating/alleviating factors) and related healthcare experiences.

Methods: Qualitative descriptive methods were used. Semi-structured interviews were conducted with women who reported palpitations and were enrolled in a larger case-control pilot study comparing electrocardiographic results between women with and without palpitations. Authors analyzed women's narratives using standard content analytic procedures.

Results: Fourteen participants (mean age 54.5 [SD=4.8], range 46 to 62; 79% post-menopausal) completed interviews. The interviews revealed the women (a) often had difficulty describing their palpitations until prompted by the interviewer, (b) experienced noteworthy variations in the quality and other dimensions of their palpitations, (c) had a wide variety of healthcare experiences related to their palpitations, including not reporting their symptoms to providers, having providers dismiss their symptoms, and having providers be aware of their symptoms and provide diagnostic tests, and, (d) at times, created worst case scenarios (downward shifts) under which they would seek treatment for their palpitations, thus enabling them to minimize their symptoms and avoid healthcare.

Conclusion: This study advances understanding of how women describe their palpitations and related healthcare experiences. Findings could have implications for building research and clinical tools to guide assessment, communication, and/or education for patients and/or providers about palpitations and for developing and testing behavioral interventions to address this poorly understood symptom in peri- and post-menopausal women.

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Keywords

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INTRODUCTION

Palpitations are more common in women than in men and are associated with negative health outcomes.[1] Women may experience palpitations during peri- and post-menopause,[2] along with vasomotor and other menopausal symptoms. Although much has been written about menopausal vasomotor symptoms, less has been written about menopausal palpitations. In peri- and post-menopausal women, more distress from palpitations is associated with worse sleep disturbance,[3, 4] depressive symptoms,[3] stress,[3] and menopausal quality of life.[3, 4] In the broader population, palpitations account for 16% of general physicians' visits and are the second leading reason for cardiologist visits.[5] In addition, palpitations that affect sleep and work increase risks for cardiac arrythmias.[6]

Very little is known about women's experiences of palpitations during the menopause transition. Two major gaps were identified based on recent reviews of the literature.[4, 7-9] First, no published articles contain qualitative accounts of menopausal women's palpitations or their healthcare experiences related to this symptom. Second, wide variation exists in current palpitation measurement tools.[9] It is also questionable whether currently available measures contain words that are meaningful to women in describing their symptoms. For example, if women are asked about "palpitations," they may not understand the word or label their sensations using that specific word.

Understanding how peri- and post-menopausal women describe their palpitations and their healthcare experiences related to the symptom is foundational for building tools to promote women's health. Such an understanding could be used to build tools to assess palpitations in clinical practice and research, prepare women to talk with their providers about the symptom, educate women and/or providers, and determine what interventions may be needed. Thus, the purpose of this study was to describe peri- and post-menopausal women's experience of palpitations and their healthcare experiences related to the symptom.

METHODS

The qualitative data used for this study (referred to as the secondary study) were drawn from a larger case-control study where the primary objective was to understand the incidence and nature of palpitations in women who did and did not report palpitations (referred to as the primary study). The primary study is briefly described below as it provides the context for the secondary study reported here.

Primary Study

The primary study was a pilot study that used a case-control design and included fifteen women with palpitations and ten women without palpitations who were recruited and enrolled between November 2021 and January 2023 and were followed prospectively over a period of two to four weeks. The study was approved by the Institutional Review Board

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and all participants provided electronically signed consent and authorization to use protected health information.

Inclusion and exclusion criteria—Inclusion criteria for the primary study were as follows: assigned female at birth, not undergoing gender transition with medical or surgical treatments, age 40-62 years old, peri- or post-menopausal via self-reported menstrual history, no current use of an intrauterine device, and willing to adhere to study procedures. Exclusion criteria were as follows: current pregnancy or breastfeeding; history of arrhythmias (except sinus bradycardia, sinus arrhythmia or sinus tachycardia), stroke, heart failure, permanent pacemaker, use of antiarrhythmic drugs (with the exception of ß-blockers, diltiazem or verapamil), or skin allergies interfering with ability to wear a multi-day continuously recording electrocardiographic (ECG) patch. The study group (the palpitations group) had to have experienced palpitations in the previous two weeks, whereas the case control group (the no palpitations group) had to have experienced no palpitations in the previous six months.

Recruitment and enrollment—Participants for the primary study were recruited via email through a research participant registry and via word-of-mouth through flyers posted in and around a midwestern university campus. The campus is located in the third largest urban metropolitan area in the midwestern United States. Interested women scanned a quick response (QR) code and answered screening questions online. Those who screened eligible were shown an online informed consent and authorization form. Women who provided their electronic consent/authorization were then asked to provide their contact information for scheduling the study. Once contacted by the study nurse, participants were asked to complete a two-week diary to verify the presence/absence of palpitations for eligibility.

Data collection and analysis—For the primary study, women made two to three study visits for placement and removal of the multi-day ECG patch. The women wore the ECG patch for fourteen to twenty-eight days of monitoring, pushed an event monitoring button when they experienced a palpitation, and maintained a written symptom diary. They also completed standardized questionnaires and provided blood for laboratory analyses. The primary study analysis compares the incidence and nature of arrhythmias, event markers, diaries, questionnaires, and laboratory data between women in the palpitations and no palpitations groups. The results of these primary analyses will be reported elsewhere.

Secondary Study

Data collection—For the secondary study, women in the palpitations group were invited to participate in a semi-structured interview to describe their experiences with palpitations and their healthcare experiences related to the symptom. The semi-structured interviews were conducted by an experienced nurse scientist with expertise in qualitative methods and menopause symptoms (JSC). Interviews were scheduled during the study period at a mutually agreeable time via a secure video chat platform. All but one participant was interviewed while wearing the ECG monitor, while the other was interviewed after.

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The semi-structured interview guide is shown in Table 1. The team developed the interview guide after a thorough review of common assessment tools used to measure palpitations, literature on the common manifestations of palpitations, and clinical management recommendations.[5, 9, 10] Using the guide, the interviewer asked participants to describe their palpitations along eight dimensions as is common in a standard nursing symptom assessment (e.g., quality, frequency, severity, distress, duration and temporal pattern, aura, associated symptoms, aggravating/alleviating factors). The interviewer then asked participants about any healthcare experiences (provider contacts, discussions, referrals, laboratory or other tests) they had related to their palpitations. For severity and distress, the interviewer asked women to provide a numerical rating from zero (not at all) to ten (extremely) and then describe their choice of rating. The interviewer used prompts throughout the interview to better understand how participants experienced their palpitations and healthcare experiences.

Each interview lasted between twenty and thirty minutes. The videochat platform automatically generated transcriptions of each interview. At least one author de-identified and verified all transcriptions (RF, MAA), and the interviewer (JSC) served as a second verification in situations where the audio quality was poor.

Data analysis—Descriptive statistics were used to summarize the sample characteristics. Interview data were analyzed by three authors using standard content analytic procedures as described by Miles, Huberman, and Saldaña.[11] All three authors read the transcripts (JSC, RF, MA). One author extracted text units that reflected participants' responses to each of the main interview questions (MA or JSC) and a second author verified those extractions (JSC or RF). Two authors then coded each relevant segment of text with a label to capture the essential meaning, grouped similar codes together, and organized them into categories (JSC, RF). Another author then verified the written results (CBD). One author wrote a case summary of each woman (JSC or RF) that was verified by a second author (RF or JSC). The authors then selected two contrasting case studies that exemplified the group findings and demonstrated some key variations in the women's experiences.

RESULTS

Sample description

One participant could not be reached for the interview. Therefore, interviews were completed with fourteen of the fifteen participants who experienced palpitations. Participants were a mean of 54.5 years old (SD=4.8, range 46 to 62). Women self-reported as being Non-Latina White (n=8), Non-Latina Black (n=4), Latina White (n=1), or Non-Latina Asian (n=1). Most were married/partnered (71%, n=10), working full time (n=11, 79%), post-menopausal (n=79%), and reported no difficulty paying for basics (n=11, 79%). In terms of education, 2 women (13%) had a high school education or less, 13% had some education beyond high school (trade school or some college), and the remainder had completed college (64%). Mean body mass index (BMI) was 30.5 (SD=7.6).

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Description of Heart Palpitations

In response to the interview questions, participants described their palpitations along eight dimensions listed above, provided descriptions of their experiences of the symptom in their own words, and described their healthcare experiences related to the symptom. A summary of the information they provided is presented below.

Quality

Eight women revealed that describing their palpitations was difficult for them. They indicated that they were not sure what their symptoms felt like or could not put it into words. One women said, "There's sort of a general sense that something is funny." Five women described what they felt by clapping their hands or by enunciating the feeling (e.g., "boom, boom, boom").

All the women described palpitations as heartbeats that were racing or more rapid than normal. One said her heartbeats "surged forward quickly." Thirteen described palpitations as heartbeats that felt stronger than normal. They said their heartbeats were "pounding," "more intense and heavier," "exaggerated," or "aggressive." Others described palpitations in unique ways. One said, "My heartbeat is out of context for the situation." Another said, "[It feels] as if I'm coming down in a giant Ferris wheel."

When prompted by the interviewer, the women provided additional descriptions of their palpitations. When asked if they felt a fluttering sensation, nine agreed that they had. One said palpitations felt a "a quick flutter skip," and another said she felt like a "baby started moving" in her chest. When asked if they felt irregular heartbeats, six agreed that they had. They described irregular heartbeats as delayed, skipping, or swishing. One said her heartbeats felt like "a lurch, like the rhythm is interrupted." When asked if they felt a jumping sensation, five agreed that they had. They said they probably or "sort of" felt a jumping sensation or were unsure how jumping was different from skipping. When asked if they felt their heart stopping, no woman had felt this.

Five women described palpitations as a linear progression of sensations. For example, one described rapid heartbeats that evolved to pounding heartbeats. When she felt the pounding heartbeats, she then began to worry and sweat. Another woman described how skipped beats would make her cough, which would get her rhythm back to normal.

Frequency

Eight women had difficulty specifying how frequently they felt palpitations. Four said they happened frequently but not daily, three said they happened daily or near daily (e.g., six to seven days per week), three said they happened between three to five days per week, and three said they happened one to two days per week. Some women became aware of their palpitations only because they had the ECG monitor with event marker button for the study. One woman said, "I really don't pay that close attention to them, but with this study and having the monitor on, it seems like I've been feeling them like every other day. Because you're supposed to press the button and you're supposed to pay attention." Another said she

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would be more aware of her symptoms “if I had them every hour or every day or two or three a day.”

Severity

When asked to rate the severity of their palpitations, the women’s ratings ranged from one to ten. Seven women provided a single rating, six rated the severity of their palpitations to be between one and four (mild), and one rated it as ten (extremely severe). The other seven women provided a range of ratings (e.g., “between a one and a six”). Three said their palpitations fluctuated during a 24-hour period and provided different ratings for daytime and nighttime palpitations. One woman said “During the day, it's not as strong as a nine. I would say a five or six. But at night, it's definitely more. Nine or ten at night.” Three women identified a time when their palpitations were most severe. One said, “There was one instance when I thought, ‘Do I need to go to the emergency room?’” Five talked about longitudinal changes in severity over time; three said their palpitations increased in severity over time, one said the severity decreased over time, and another said the severity increased, peaked, and was now decreasing.

Distress

When were asked to rate the level of distress associated with their palpitations, one woman did not answer and the other women’s ratings ranged from zero to ten. Seven provided a single number for distress; five provided a rating between zero to four (mild distress) and two provided a rating between five and seven (moderate distress). The women with mild distress said they were not extremely worried by their palpitations although they were an annoyance. The other seven women provided a range of numbers for distress that crossed from mildly to moderately distressing, mildly to extremely distressing, or moderately to extremely distressing. Three women described their distress as increasing over time, and three said their distress had decreased over time. One said she would have rated her palpitations distress as a ten when they first started but now they caused no distress (zero). Three women said their distress stemmed from concerns that their palpitations were part of a family history or an early sign of heart disease. One participant said, “My mother has heart issues and so I do wonder if it’s an early sign.” Another said when she had palpitations she said to herself, “Oh my goodness, am I having a heart attack? Wait, is my arm going numb?”

Duration and temporal pattern

None of the women could pinpoint a specific date or month that palpitations had started. Six women thought the palpitations started within the past twelve months, three said they started more than one year but two or less years ago, and five said they started more than two years prior. When asked whether they remembered having palpitations during puberty or pregnancy, one woman agreed to having them at puberty and one woman agreed to having them during a pregnancy. The remaining twelve women did not remember having them at either of those times. Six women said their palpitations began gradually, three said they had a sudden onset, and five could not remember how they started.

Only one woman identified a regular daily pattern to the palpitations. Ten said their palpitations lasted less than one minute, three said they lasted more than one but less than

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three minutes, and one said they could last up to one hour. One women said that while her palpitations typically lasted less than five seconds, she experienced one episode in which the palpitations lasted continually for two days.

Aura

Five women experienced an aura before their palpitations but nine did not. One women felt "dizziness" sometimes, one felt "maybe some anxiety," one experienced "a little bit of blurred vision," one felt "head pressure," and one felt a swelling or pressure in her chest that was comparable to the beginning of a hot flash but without the hot flash.

Associated symptoms

All women required prompting to consider whether their palpitations were associated with other symptoms. Two women did not associate palpitations with any other symptoms. The remaining twelve women agreed their palpitations were associated with at least one other symptom; seven associated palpitations with sleep difficulties; six with sweating or nocturnal sweating that was different than vasomotor symptoms; four with shortness of breath; three with fatigue; three with anxiety or depression; three with dizziness, lightheadedness, faintness, or pallor; three with chest pain; and one with neck pain. No women associated polyuria with palpitations.

Aggravating and alleviating factors

When asked if there were any aggravating or alleviating factors affecting their palpitations, five women initially answered they were unsure or had not noticed any such factors. However, when women were prompted with specific factors (e.g., caffeine, alcohol, nicotine, exercise/activity, stress, medications, sleep/rest, or other), most identified aggravating and alleviating factors.

Ten women identified factors that aggravated their palpitations. Two said their palpitations were worsened by caffeine, whereas two said they were unsure about the effects of caffeine. Four said alcohol definitely or possibly exacerbated their palpitations. Three said exercise, such as when they exerted themselves, got up too fast, or climbed stairs, aggravated their palpitations. Three said laying down for daytime rest or nighttime sleep brought on their palpitations. Two indicated that stress related to work or family heightened her palpitations. One said her medications caused her heart to race.

Five women identified a factor that alleviated their palpitations. Three reported that coughing eased their palpitations. One said regular hot yoga practice eliminated her palpitations. She said, "I restarted my yoga practice more consistently and I stopped having those symptoms [palpitations] at all." One said deep diaphragmatic breathing lessened her palpitations.

Some factors were neither alleviating nor aggravating. When asked about nicotine, eleven women said they were non-users and the remaining three denied that nicotine aggravated their palpitations. When asked about sleep, five said that sleep was neither an aggravating nor alleviating factor.

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Healthcare Experiences Related to Heart Palpitations

In the second portion of the interview, women were asked to describe any healthcare experiences they had related to their palpitations. These experiences included informing providers about their palpitations or deciding not to do so and having their palpitations addressed or dismissed by a provider. Below we describe the women's experiences when providers were aware of the palpitations and when providers were not aware of them.

Provider aware

Seven women reported that a provider was aware of their palpitations. Six had told their providers about their palpitations, and one had a provider who noticed an irregular beat and asked about palpitations. Among these seven women, five reported receiving an in-clinic ECG and were told it was normal. One said, "Of course at that moment I was fine." Three said they did not continue to discuss their palpitations with their providers. One said, "I remember him [physician] saying, 'Oh, we'll just throw this one [the ECG] out.' So there must have been something, but it was never anything that I ever went back for." Two women were recommended for a multi-day at home ECG monitor but did not follow through; one because she wanted to wear the monitor as part of the study. Another did not follow through because she considered the provider "the worst doctor I've ever seen in my life." She said, "I did mention the feeling like my heartbeat was irregular. And she [physician] said, 'Fifty percent of the time it isn't anything, and the other fifty percent of the time it's nothing.'"

Provider not aware

Seven women had not reported their palpitations to a healthcare provider despite having access to one. Three felt their symptoms were not serious enough to mention but specified worst case scenarios in which they would report symptoms. One woman had experienced nearly continuous palpitations and said she would have reported them had they had continued into the subsequent week. Another woman said she would report symptoms if they "stopped me in my tracks" or occurred once a day or more. Two women said they were waiting to talk to the provider; one decided to wait until she had the study ECG results to take with her to the provider. One woman did not report the symptom because she thought the provider would dismiss her concerns. She said "They [her provider] might be like, 'Well you're too young and everything looks fine." Another woman did not report them because she had had a normal echocardiogram and stress test years prior.

Case Summaries

Presented below are the two case summaries that the authors selected to exemplify key differences in how women described their heart palpitations and related healthcare experiences as well as to provide the stories of two women in a more holistic way than allowed for by our preceding group summaries. The case summaries were chosen because one woman (Participant 1) considered her symptoms to be mild and had not revealed them to her provider, whereas the other woman (Participant 2) considered her symptoms to be severe and had received some care for them. Both women, however, had difficulty describing their palpitations and neither received healthcare for their symptoms that would be consistent with

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best practices. Age, race, employment, and body mass index are not provided to maintain confidentiality.

Participant 1—Participant 1 was a single, college-educated, early post-menopausal women who had no difficulty paying for basics. This participant described her current palpitations as a “couple of beats” of pounding. She said it felt as if her heart were “hitting [her] chest wall - like boom, boom, boom.” She experienced occasional skipped beats that “just kind of happens and that’s it and then it goes away.” When asked if she experienced sensations of racing, fluttering, and jumping, she agreed that she did. She stated her palpitations progressed from a “swelling in her chest” to a pounding in her chest and then sometimes to skipped heart beats. She was currently having palpitations five to six times per week, or usually at least one episode every day. She rated severity and distress of her palpitations as mild (one and one). She described the palpitations as randomly occurring with no pattern. She did not identify any associated symptoms. Initially, she did not identify any aggravating or alleviating factors but with prompting described how laying down to rest or sleep seemed to bring them on. She estimated she had had palpitations for the past seven years. In the past, she had had six or more episodes a day and at times continual palpitations for up to two days. She could not remember if she had palpitations during pregnancy or puberty.

Participant 1 reported seeing a healthcare provider (not a gynecologist) regularly but could not remember a time when that provider had asked about menopause or menopause symptoms. She had not discussed her palpitations with her provider and did not seek or receive care from any other providers about menopause. She admitted to always minimizing her health problems and not contacting her health provider unless things were “really bad.” She said she was participating in the study because “[I] didn’t even know that there was a potential correlation with menopause and palpitations” and desired to “find out something” about the palpitations.

Participant 2—Participant 2 was a single, peri-menopausal woman who did not finish high school and reported a lot of difficulty paying for basics. This participant said her palpitations were “like I’m running out of breath and [fast clapping of her hands]. That’s how my heart beat is feeling.” With prompted, she agreed the word pounding described the sensation she was experiencing. She said she had not noticed any pattern to her palpitations and could not indicate how many she was having per day or per week but said they lasted between two to three minutes. She rated the severity of the palpitations as fluctuating between eight and ten (extremely severe) but rated distress as a zero (none). She said her palpitations were associated with difficulty sleeping, nighttime sweating (different from vasomotor symptoms), and shortness of breath. Initially, she was unsure about aggravating or alleviating factors but when prompted described how physical exertion seemed to make the palpitations worse. She indicated that coughing could relieve the symptoms. This participant said she could not remember when her palpitations had started or if their onset had been sudden or gradual. She remembered having palpitations and being short of breath during pregnancy. She revealed that losing fifty pounds had seemed to help alleviate the palpitations.

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Participant 2 reported seeing two different healthcare providers regularly and said both were aware of her palpitations. She recalled having an in-office electrocardiogram and a sleep study but was unable to remember the results of these tests.

DISCUSSION

Four findings emerged from this qualitative analysis of women's descriptions of their menopausal palpitations and related healthcare experiences. The first finding was the difficulty many participants had spontaneously describing their palpitations. Many struggled to describe the quality, frequency, duration and temporal pattern, associated symptoms, and aggravating and alleviating factors related to their palpitations. They were unsure of what sensations they were experiencing, how often the palpitations occurred, how they started, and how long they had been occurring. Moreover, many could not identify associated symptoms or aggravating/alleviating factors. Throughout the interviews, the women required prompting to help them find the right words to describe their experiences with palpitations. Before prompting, some participants indicated that simply did not know how to describe their experiences with palpitations. Participants acknowledged they had difficulty remembering, were imprecise in their descriptions of these symptoms, and/or indicated they had not paid much attention to their palpitations.

The women's difficulty describing their palpitations was evident in the case summaries. While Participant 1, whose palpitations were rated as mild, described several sensations and indicated they decreased over time, these descriptions often came only with prompting from the interviewer. Similarly, Participant 2, who rated her palpitations as severe, described strong sensations (e.g., pounding and shortness of breath) and several other associated symptoms (e.g., night sweats, shortness of breath). Similar to Participant 1, many of Participant 2's descriptions of her palpitation experiences came only with prompting. These cases suggest that whether the palpitations are mild or severe, women are unlikely to easily describe them spontaneously.

The authors thus conclude that interview prompts may be needed to elicit a full description of women's experiences with menopausal palpitations. These prompts could be integrated into clinical tools to guide a comprehensive assessment of the palpitations, facilitate communication about the effects of the palpitations on women's lives, and/or provide a framework for education about palpitations for women and/or healthcare providers. Such tools could advance clinical care of peri- and post-menopausal women as current standard assessments mostly use one item to assess occurrence (yes/no) and/or one item to assess other symptom dimensions such as frequency, severity, or distress.[9]

The second finding is the high degree of individual variability in how the women in this sample experienced palpitations. These variations occurred in quality, duration, temporal pattern, presence of aura, associated symptoms, and/or aggravating and alleviating factors. For example, Participant 1 had palpitations that felt like pounding beats, occurred five to six times a week, were mild in severity, did not cause much distress, and were relieved by rest. Participant 2 had palpitations that she described by clapping her hands, lasted two to three

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minutes, were extremely severe but caused no distress, and were associated with several other symptoms including shortness of breath.

These variations suggest that palpitations may not be a single entity but rather might reflect irregularities in a variety of factors including heart rate, regularity of heart rhythm, and force of contraction.[12] Further research could be done to determine if subjective descriptions of the symptoms coupled with physiological measures of heart function could differentiate subtypes of palpitations within this population. The European Heart Rhythm Association position paper on management of palpitations from 2011 describes how suspicions of different arrhythmias can arise from a patient's description of palpitations quality (e.g., racing and supraventricular tachycardia) or aggravating factors (e.g., palpitations following physical exertion and atrial fibrillation).[5] If different subtypes emerged in a larger study, it might be possible to further identify their precipitating factors or antecedents (e.g., demographics, gynecological history, menopause status) as well as their impact on health outcomes (e.g., cardiovascular events). Although studies have attempted to identify precipitating factors or antecedents of palpitations in peri- and post-menopausal women,[4] little research has examined their long term impact.[2]

The third finding was the variability in healthcare experiences described by the women. Current clinical practice recommendations for palpitations are to obtain medical history, perform physical examination, and obtain a 12-lead ECG while patients are symptomatic.[5, 13, 14] Although half of women indicated their provider was aware of their palpitations, the providers purportedly responded in a variety of ways – from doing a series of tests to dismissing the women's concerns. Of concern was that the women who had reported palpitations to their providers typically did not report any long-term follow-up. In addition, half of the women had not reported their palpitations to a healthcare provider, despite having access to one. Some felt their symptoms were not important enough to reveal to their provider or anticipated that the provider would minimize their concerns. The latter is a serious issue given the historical minimization of menopause hot flashes[15] and medical gaslighting that has occurred among women.[16]

The case summaries reflect this variability of healthcare experiences. Participant 1 did not reveal her palpitations to any provider nor did any provider inquire about any menopause symptoms. Participant 2 received assessments of her palpitations by two providers but could not remember the results of the tests she had and was apparently no longer followed for this symptom at the time of the interview. Our findings thus suggest that providers who care for peri- or post-menopausal women could assess for palpitations and other menopausal symptoms regularly and consider following recommended practice guidelines for this population.

The fourth finding is that some participants who had not reported their palpitations had created worst case scenarios or thresholds of when they would report their palpitations. Their scenarios reflect the concept of "downward shifts"[17] that arose from Festinger's enduring social comparison theory.[18] A downward shift occurs when people lower standards for their own performance when they are performing poorly, typically in an effort to make themselves feel better.[17] In the context of palpitations, participants lowered standards for

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their own health when they were symptomatic and these downward shifts influenced their decisions to avoid healthcare. For several women in the study, having palpitations alone did not justify reporting them to their providers – only a lower standard of severe or continuous palpitations justified seeking help for these symptoms. Women may have created worst case scenarios to avoid fear of the unknown. In other health situations, however, such as cancer, downward comparisons are more linked to negative emotions, including fear, than to positive emotions.[19] Because these downward shifts and associated avoidance of healthcare could have serious health consequences in women with palpitations, cognitive-behavioral interventions may be needed to help women avoid downward shifts, manage negative emotions, and make decisions about when to seek care for palpitations.

Findings should be considered in light of study strengths and limitations. Several strengths increased the credibility of the findings. The study screening process included a fourteen day screening diary and ECG event marker to verify participants were actively experiencing palpitations during the study period. Moreover, the semi-structured interview guide was based on available evidence about menopausal palpitations and sufficiently detailed to generate nuanced descriptions of the women's palpitations and healthcare experiences. However, the interviews were part of a larger pilot study of women willing to wear a multi-day ECG monitor and findings may not reflect the experiences of women who were not willing to wear a monitor or those who thought their palpitations were too infrequent for the study. The sample was limited to the group of women who participated in the primary study and reported palpitations. While these women's narratives addressed a gap in the menopause literature (e.g., the absence of first-hand accounts from women about their experiences of palpitations and related healthcare encounters), we did not conduct further selective sampling beyond the primary study sample to ensure the sample was diverse in terms of personal or health-related characteristics. Thus, we cannot make claims about the influence of these factors on women's experiences with palpitations. Moreover, because we used an existing sample, there were some issues that we could not explore in depth, such as the scope of healthcare providers' responses to disclosures of palpitations. The data presented here reflect only the experiences of peri- and post-menopausal women, and the findings related to healthcare experiences do not include the perspectives of healthcare providers. Further studies with larger, purposive, and more diverse samples could explore whether our four main findings would differ in women from varying racial/ethnic, socioeconomic, or geographical backgrounds or whether there are other important experiences related to palpitations and healthcare that were not uncovered in our study.

CONCLUSION

The interview data from participants with palpitations who were enrolled in the primary pilot study advances our understanding of how women describe their palpitations and their related healthcare experiences from their own perspectives. Our findings indicate the women had difficulty describing their palpitations, reported a high degree of variability in how they experienced their palpitations and in related healthcare experiences, and seemed to create worst case scenarios or downward shifts that enabled them to minimize their symptoms and avoid seeking healthcare to address the palpitations. The findings could be beneficial for

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building research tools to guide assessment, communication, and/or education of patients and/or providers and for developing and testing cognitive-behavioral interventions.

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Table 1.

Semi-structured Interview Guide for Assessing Palpitations Symptom Dimensions and Healthcare Experiences For This Study

Topic	Script
Introduction	I'm interested in hearing about your experience with feeling palpitations. I'd like to ask you some questions about how they feel. Once we get through those questions, I'd also like to ask you some questions about any healthcare experiences you might have had related to them.
Quality	What do your palpitations feel like to you? (prompt for stopping, irregular heartbeat, jumping, racing, pounding/vigorous heartbeat, fluttering, faintness, chest pain, shortness of breath).
Frequency	How often do you feel them? (prompt for times per day, week, or month)
Severity	Sometimes nurses have people rate their symptoms. Think about a zero to ten point scale, like a thermometer, where ten is extremely severe and zero is not at all severe. What number from zero to ten would you give to the severity of your palpitations? (if severity fluctuates, prompt for more description and ratings of lowest and highest severity).
Distress	How distressing are your palpitations? Think again about a zero to ten point scale, like a thermometer, where ten is extremely distressing and zero is not at all distressing. What number from zero to ten would you give that? (if distress fluctuates, prompt for more description and ratings of lowest and highest severity).
Duration and temporal pattern	Onset – when did the palpitations start? Did they start gradually or suddenly? Daily pattern - Have you noticed any patterns to your palpitations? Do they seem random or regularly occurring? For example, are they more likely to happen or be more severe or distressing at certain times of the day or days of the week? When you have palpitations, how long do they usually last? (Prompt to elicit whether they are momentary or sustained) When did your palpitations start? Do you remember having palpitations when you were going through puberty? Do you remember having palpitations when you were pregnant?
Aura	Do you experience an aura before your palpitations? (explain aura as feelings that come before the palpitations – might be nausea, blurred vision, dizziness, feeling anxiety/doom, etc.)
Associated symptoms	Do you feel any other symptoms with your palpitations? Prompt for associated symptoms: (1) sweating, paleness, feeling faint immediately before, during, or immediately after palpitations; (2) frequent dilute urination; (3) other concurrent symptoms of fatigue, sleep disturbances, anxiety, depression, pain (neck, chest, headaches).
Aggravating and alleviating factors	Sometimes people notice things that make their palpitations better or worse. What are you generally doing when you feel palpitations? Have you noticed anything that makes them better? Have you noticed anything that makes them worse? (prompt for full descriptions of any aggravating/alleviating factors, Prompt for caffeine/nicotine/alcohol, Prompt for palpitations occurring with exercise, rest, work, and sleep)
Healthcare experiences	Have you talked to a healthcare provider about your palpitations? (If not, prompt for reasons). (If yes, continue below). Did your provider ask you questions about your own and your family's cardiac health history? Did your provider do a physical examination including listening to your heart with a stethoscope? Did you have an EKG test? (prompt for who ordered, what type (iPhone in office screening, 12-lead EKG, Holter; prompt for results) Did you have any other tests related to your palpitations? (prompt for who ordered, what test, results; prompt for thyroid tests and CBC for anemia) Did your healthcare provider refer you to any other healthcare providers or specialists? (prompt for who, why, outcome)
Closing	Interviewer reads back condensed understanding of interview so that participant can verify or correct as necessary. Do you have any questions for me?