



Menopausal symptoms following breast cancer treatment: A qualitative investigation of cognitive and behavioural responses

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ABSTRACT

Objectives: Menopausal symptoms – hot flushes and night sweats (HF/NS) – are particularly troublesome for women who have undergone breast cancer treatment. Non-medical treatments, such as cognitive behaviour therapy, are being developed but there is a lack of information about cognitive and behavioural reactions to HF/NS in breast cancer patients.

Methods: Thirty-five women who had completed active breast cancer treatment with at least 10 HF/NS per week completed questionnaires assessing HF/NS, mood and beliefs, and took part in interviews to elicit cognitive and behavioural reactions and a thematic content analysis used to analyse the data.

Results: The mean weekly frequency of HF/NS was 76 (SD=46) (57 HF and 19 NS). Smokers reported significantly more night sweats, but BMI and mood were not associated with HF/NS frequency. Cognitive and behavioural responses were varied but broadly similar to those of well women. The main cognitive themes were: embarrassment/social anxiety, loss of control, beliefs about NS, sleep and tiredness, and the main behaviours were: carry on and ignore them, cool down, avoidance, communication with others.

Conclusions: The results are discussed within a cognitive behavioural framework and might inform the development of psychological interventions for these treatment related symptoms.

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1. Introduction

Hot flushes and night sweats (HF/NS) affect 65–85% of breast cancer survivors, are more severe in this population, and are associated with sleep problems and reduced health-related quality of life [1–3]. They can be induced or exacerbated by treatments such as chemotherapy and tamoxifen and those taking hormone replacement therapy (HRT) are generally advised to stop treatment [4]. There is therefore a clear need for safe and effective treatment of these symptoms in view of the increasing survival rates for women following breast cancer treatment.

HF/NS are associated with alterations in oestrogen levels, and neurotransmitters (norepinephrine and serotonin) have been implicated in their pathogenesis [5,6]. Freedman [7] proposes that there is a narrowed thermoneutral zone in symptomatic women resulting in flushes being triggered by small elevations in core body temperature, caused by changes in ambient temperature or trig-

gers, such as stimulants. There is evidence from animal research that the zone is narrowed by elevated brain norepinephrine [7] and from laboratory studies that stress can increase or potentiate the general level of HF reporting [8]. This research provides a rationale for the use of SSRIs/SNRIs [9] and also the development of psychological interventions [10–12], as alternatives to HRT.

Depressed mood and anxiety have been associated with HF/NS [13,14] and certain cognitions associated with more problematic HF/NS in well women [15,16]. Studies using a physiological measure of HF/NS (sternal skin conductance, SSC) have found a degree of discordance between objective and subjective measures with a tendency for women to under-report HF/NS [3,17,18]. Women might be more or less aware of HF/NS for a variety of reasons; psychological processes, such as attentional focus, negative affectivity and cognitive representations of hot flushes might act as filters in the perception and interpretation of these bodily sensations [19,20]. There is also evidence that behavioural interventions, using paced breathing and relaxation, can reduce HF and NS [11,12].

Cognitive behavioural interventions have been developed which focus on cognitions and behaviours [21,22], but while there have been studies of cognitions, i.e. beliefs about HF/NS, amongst naturally menopausal women [23], there is a lack of information about cognitive and behavioural responses of women who have had breast cancer, who have more severe symptoms, which may be chemi-

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cally induced or exacerbated. The main aim of the current study is to examine the cognitive and behavioural components of HF/NS in women who have undergone breast cancer treatment using qualitative methods.

2. Methods

Breast cancer patients, who reported having HF/NS (at least 10 per week for at least 3 months) and had completed active breast cancer treatments (surgery, chemotherapy and radiotherapy), were recruited into the study by nurse specialists and doctors at the Guy's Breast Unit, London. Following a telephone screen women were provided with an information sheet and those who consented completed questionnaires and a 2-week daily diary and were interviewed by a clinical researcher. Breast cancer patients aged 18 plus, English speaking and who did not have current major psychiatric disorders were included.

2.1. Measures

Socio-demographic and health information (body mass index (BMI), exercise levels and smoking) were recorded.

2.1.1. Hot flush measures

Two weeks of daily diary records of hot flushes (frequency and severity (1 = mild, 2 = moderate, 3 = severe)) and *The Hot Flush Rating Scale (HFRS)* [15] were completed. The HFRS is a standardised measure of frequency and the extent to which the hot flushes are problematic (based on three 10 point Likert scales rating the extent to which the HF/NS were distressing, problematic and interfering with life). Beliefs about menopausal symptoms were measured using a short form of the *Hot Flush Beliefs Scale (HFBS)* [23] which was standardized on naturally menopausal women. The full scale includes 27 items reflecting a range of beliefs such as: self-beliefs in a social context (embarrassed, everyone's looking at me), self-efficacy dealing with HF, and beliefs about night sweats and sleep. The original 27-item scale had internal consistency of 0.88. The 9-item short-form of the HFBS scale was used in the current study which correlated highly with the original ($r = 0.93$, $p < 0.0001$) and had high internal consistency (Cronbach alpha = 0.84).

2.1.2. Mood

The Women's Health Questionnaire (WHQ) [24] is a 36-item questionnaire developed to assess mood and health in mid-aged women. It has high internal reliability (Cronbach alpha 0.7–0.84) and test–retest reliability (0.78–0.96). Depressed mood and anxiety subscales were used in the current study.

Open questions elicited descriptions of cognitive and behavioural reactions to HF/NS:

1. Could you describe what happens during a hot flush/night sweat in your own words?
2. What thoughts do you have when you have hot flushes/night sweats?
3. What do you do when you are having hot flushes/ night sweats?
4. On a day-to-day basis how do you deal with these symptoms?

Responses to the open questions were transcribed verbatim (SC). A psychologist (NM), not involved in the interviews, analysed the information using a thematic content analysis [25]. This is a content analysis method that involves summarising and classifying data within a thematic framework. The method involves a case by theme approach and analysis of text for themes, connections and concepts. These emergent themes are grouped to form super-ordinate themes. The scripts were coded independently by two raters (NM,

Table 1

Sample characteristics (means and standard deviations and percentages as appropriate) ($n = 35$).

Age	52(6.3)
Marital status	
% married/cohabiting	56%
% single	22%
% divorced/separated	8%
% widowed	11%
Education >16 years	51%
% Employed	77%
Ethnicity	
White British	91%
Black British	9%
BMI >26	46%
Cigarette smokers	34%
No exercise	26%
Breast cancer treatments	
Surgery	
Lumpectomy	63%
Single mastectomy	31%
Double mastectomy	6%
Chemotherapy	57%
Radiotherapy	86%
Tamoxifen	74%
Other adjuvant therapies	17%

SC). There was 82% agreement between the two raters. Where there was disagreement a third rater (EG) examined the coded scripts and discussed the coding with one of the original raters (SC) until a consensus on the coding was reached.

3. Results

Thirty-five patients were interviewed and completed questionnaires. Sample characteristics are shown in Table 1. They were on average just over 2 years post-breast cancer diagnosis (25.2 (SD = 26) months) at the time of the interview. At the time of breast cancer diagnosis 16 (46%) were premenopausal, 9 (26%) early or late transition (perimenopausal), and 10 (28%) were postmenopausal. Breast cancer treatments are summarized in Table 1. At the time of interview all were having menopausal symptoms, being peri or postmenopausal following breast cancer treatments, and had had HF/NS for an average of 2.1 (SD = 1.4) years.

Total weekly frequency of HF/NS was 75.91 (SD = 45.9), with 56.61 (SD = 45.1) being HF and 18.55 (13.9) NS. The average Problem Rating score was 5.81 (SD = 1.9) (10 point scale). Two weeks daily diary records of HF/NS gave similar results: weekly average of HF/NS 74.06 (SD = 47.23) with 21.82 (SD = 46.2) rated as severe. The average duration of HF was 3.89 (SD = 2.9) min and NS lasted longer (mean 5.40 (SD = 3.3) min). When asked about what aspect was most problematic 14 (40%) said HF, 15 (43%) said NS, and 6 (17%) mentioned tiredness, resulting from symptoms.

There were no significant associations between BMI, nor amount of exercise taken (none, <120, >120 min per week), and HF/NS frequency or problem rating. When we compared smokers vs. non-smokers there was a tendency for smokers to report more night sweats ($t = -2.15$, $df = 32$, $p < 0.04$), but no associations with HF frequency; similarly the number of cigarettes smoked was significantly associated with number of night sweats ($r = 0.41$, $df = 33$, $p < 0.01$).

HF/NS frequency and problem rating were not associated with depressed mood or anxiety (WHQ), but women with more negative beliefs as measured by the HFBS had higher scores on the HF/NS Problem Rating Scale ($r = 0.44$, $p < 0.01$). Beliefs were not associated

Table 2

Cognitions (automatic thoughts and assumptions) associated with HF/NS.

Embarrassment/social anxiety

Women reported automatic thoughts associated with embarrassment and social anxiety:

'In a social group, when I feel my hair dripping, I feel very embarrassed and unattractive. I know people are too polite to say anything. I feel trapped' (D71)

'I find the work situation quite embarrassing; sometimes the students say 'Miss you're sweating', I hate this, I feel very uncomfortable' (D82)

'Hot flushes build up from the chest and rise upwards. I feel flushed and although I can't see it in the mirror I'm sure that others can.' (D24)

Some statements reflected quite negative beliefs about the self in a social context, using phrases, *'I am hot, ugly and horrible', 'I am unattractive'*. In a more extreme case, *'I am a freak'*.

Out of control/unable to cope

The need to be in control, as well as distress at not being able to manage HF was important. This theme reflects self-efficacy but also an expectation of control of the body and a fear of being out of control.

'not being able to manage it, having to sit down and let it pass, there's nothing I can do to stop it. I need to take control' (D148)

Attempting to control HF in social contexts added more difficulties in terms of the flush distracting attention.

'I do get agitated with them specially if talking to someone and having to concentrate but also trying to control them, and they can tell, but I feel I can't talk or explain it, for example in the bank it's quite embarrassing and I try to control it' (D33).

NS, sleep quality, and resulting tiredness

Thoughts and beliefs about NS included being woken up and the impact of NS on sleep and tiredness the following day.

'Often wake up very tired, am tired through out the day, sometimes fall asleep at my desk' (D141)

'It'll take a while to get back to sleep and I'll feel tired all the next day' (D157)

'They reduce my sleep which causes me to be more tired, which affects my mood' (D81).

Although some women acknowledged other factors that could affect their sleep:

'It depends on how I have gone to bed mentally. I have thoughts about my divorce, which makes me angry or something that happened at work' (G10)

with HF/NS frequency. There was a trend for negative beliefs to be associated with depressed mood ($r = 0.34, p < 0.05$), and this was due to a significant correlation between the items relating to 'beliefs about coping with night sweats and sleep', and depressed mood ($r = 0.46, p < 0.006$).

Cognitive and behavioural components of HF/NS were explored in the qualitative analysis. The main themes are described in Tables 2 and 3.

4. Discussion

This was a descriptive study of a cognitive and behavioural reactions to menopausal symptoms in a sample of women who were experiencing menopausal symptoms following breast cancer treatment. As expected, the frequency of HF/NS, averaging 76 per week, was higher than that reported in samples of well mid-aged women [24]. In this sample, HF/NS were not associated with level of edu-

Table 3

Behavioural strategies to deal with HF/NS.

Carry on and ignore them

This strategy included both cognitive and behavioural elements. There was a desire not to let HF interfere with daily life and not to overreact. This theme reflected more of an acceptance rather than a striving to control the symptoms. For example,

'In coping with them I don't get anxious or wound up, I just get on with it and not whinge about it' (D111)

'If I have a flush, I have a flush. I hardly ever do anything about it, I just accept it' (D63)

'They don't really impact on my life, some can be annoying, but I must just get on with it' (L11).

Distraction was mentioned by a few women, for example,

'I try to go to sleep listening to the radio on my earphones, hoping this will distract me from the night sweats' (D82)

Taking practical steps to cool down

These strategies tended to be preventative behaviours, as well as reactive behavioural strategies and were mentioned by most women.

'I wear layers of loose clothing, I bought lots of t-shirts to make it easier to move layers' (RD2)

'I am conscious of the colours of clothes; if I sweat it will be less obvious if I wear darker clothing' (L8)

They also include fanning, drinking, wiping, using tissues,

'I carry water wherever I go' (RD15)

'I must carry a feather fan and a hairclip with me, all the time. I use a fan at work, even with clients' (D105)

'I use wet-wipes and I've a small hairdryer that I use at work' (L47)

And at night kicking off the duvet, having a shower and changing sheets were often used.

'When I have a night sweat, if it is a moderate one, I will throw the covers off, but if it is an intense one, I will get up and go to the bathroom for a wipe down' (D33)

'I use the fan all night as I go off to sleep more easily' (D105)

'I get up go to the loo, have a drink and if it's bad have a shower' (RD2)

Avoidance

Avoidance was frequently mentioned, particularly avoidance of social and intimate situations.

'I have to leave situations where I feel hot and very faint and nauseous, for example sitting down to Christmas dinner or standing in a queue' (D160)

'I avoid dating as I'm afraid of having hot flushes at the time, I don't feel very sexy then. ... I also worry that my sex life would be affected by night sweats' (D149)

'I don't touch my face because I don't want to bring attention to it. I also wear a long fringe to cover half of my face as well as a fake body tan' (D148)

Communicate with others

This strategy relates to dealing with HF in social situations and includes wanting to keep symptoms a secret, but also use of openness, humour which they felt was helpful.

'When at work, I am explicit from the outset about the likelihood of having hot flushes. I find that being upfront helps with other people's embarrassment' (D133)

'I use humour. I believe you can't hide, I try to laugh it off, making a joke that I must be going through the change, but nobody really knows the severity and extent of my symptoms, even my closest friend is not fully aware of this' (L47).

cation, ethnicity, BMI or exercise. Night sweats, but not hot flushes, were associated with cigarette smoking. It is possible that because HF/NS in this sample were chemically induced or exacerbated by adjuvant therapies that the effects of lifestyle variables might be relatively diminished. The sample was socially mixed with approximately half being educated up to 16 years and half above this level of education. Just over a third of this sample smoked cigarettes and 46% had a BMI in the overweight range. The main limitations of the study include the small sample size and lack of control group for analysis of quantitative results and the heterogeneity of the sample with regard to breast cancer treatments. Nevertheless, the association of smoking with night sweats warrants further study, and would not have been detected if HF and NS had been combined.

Anxiety and depressed mood (WHQ) [24] were not significantly associated with frequency or the extent to which HF/NS were seen as problematic. In this sample frequency and problem rating were associated, while in a similar study of well women we found a lack of relationship between these measures [15]. One explanation could be that frequency and problem rating may become more closely linked when symptoms are more severe. However, negative beliefs about HF/NS were associated with more problematic HF/NS but not with frequency and there was a tendency for negative beliefs to be associated with depressed mood (WHQ). This was mainly due to an association between negative beliefs about NS and sleep and depressed mood, but the direction of causality cannot be examined here as beliefs could exacerbate sleep problems and, similarly sleep problems are commonly reported by people with low mood.

The cognitive and behavioural strategies used by the women were examined using thematic content analysis. The themes included cognitions (embarrassment/social anxiety, loss of control, beliefs about NS, sleep and tiredness) and behaviours (carry on and ignore them, cool down, avoidance, communication with others). These were broadly similar to those that have been described in studies of menopausal symptoms in well mid-aged women [15,16], and the cognitive themes were comparable to those found in a factor analytic study of beliefs about HF/NS in well women (HFBS) [23].

The theme 'social anxiety/embarrassment' was the most commonly mentioned. Women described negative self-beliefs about appearance, attractiveness in social situations and believed that other people would have similar thoughts. These cognitions are similar to those of people with social phobia, in that there is concern about behaving in a way that will be humiliating or embarrassing, but there is less intense anxiety and fear of having panic attacks or fainting. Some of the behavioural strategies mentioned, such as avoidance of social situations and use of preventative or 'safety behaviours' (such as covering the face and carrying fans, wipes, etc.), are similar to those that have been shown to be maintaining behaviours in social phobia [26]. Avoidance and 'safety behaviours' (behaviours which are carried out to reduce anxiety typically by avoidance) reduce the opportunities for the development of alternative more neutral interpretations. For example, the belief that 'people will think I'm unattractive or stupid' will not be able to be disconfirmed if a woman with HF/NS avoids social situations or covers her face. Another difference is that women with HF/NS are responding to redness and sweating caused by HF, instead of symptoms of anxiety. However, arguably HF can be exacerbated by an overly anxious, catastrophizing response. Reynolds [27] in a study of well menopausal women found relationships between perceived distress and negative thoughts; highly distressed women had more extreme reactions to the physical sensations of flushing and more negative, shaming attitudes towards the self. Catastrophic thoughts such as, 'I cannot possibly concentrate', 'It is terrible and I feel that it is never going to get any better' were associated with

perceived HF distress [16]. Interestingly, when a mirror was used by one woman in the current study she did not observe the flushing that she believed that others would observe, suggesting that this might be a useful therapeutic technique.

There were also elements of shame and stigma in the women's responses in social situations. It could be argued that they were reacting to social meanings of HF/NS, which are overly negative being linked historically and, particularly in western cultures, to loss of femininity and value and have even been associated with insanity [28]. These cognitions have been found to be responsive to cognitive therapy [29]. The strategy of communicating with openness and humour is also likely to be helpful in countering negative social assumptions, and might help to reduce social anxiety and improve mood.

Another set of cognitions related to beliefs about control. These beliefs about one's response to symptoms have been documented in other conditions, such as premenstrual syndrome [30,31] and General Anxiety Disorder [32]. Believing that one 'should be in control' can set up an internal battle, which can increase rather than decrease frustration and distress. In an interview study of eight women experiencing HF/NS following breast cancer, women reported investing a lot of time and effort into trying to gain control, which involved avoiding triggers and restricting activities [33]. An alternative strategy mentioned by the women in the current study was to carry on and ignore them and to accept them, a strategy which is consistent with newer therapeutic approaches such as mindfulness [34] and acceptance and commitment therapy [35].

Research on sleep and insomnia suggests that negative cognitions, such as 'I'll never get back to sleep' and 'if I wake up at night I'll feel terrible the next day', are associated with maintenance of sleep problems and tiredness [36]. These cognitions increase anxiety and arousal, which leads to increased wakefulness and can result in daytime fatigue [36]. Strategies such as automatically getting up cooling down and going back to bed with neutral thoughts and acceptance are likely to be helpful, as are not taking day time naps and following general advice about 'sleep hygiene' [37].

In conclusion, these results provide detailed accounts of a range of automatic thoughts and behavioural strategies that women engage in, in reaction to their HF/NS. Relaxation therapy and paced respiration [38,39] and cognitive behaviour therapy (CBT) have been found to reduce menopausal symptoms in well women [22,29], although randomised controlled trials are needed. An exploratory trial of Group CBT for breast cancer patients with HF/NS has been carried out with promising results, suggesting that changes in beliefs occur in parallel with reductions in HF/NS [40]. Certain cognitions and behavioural strategies may be more helpful, such as acceptance, carrying on and ignoring symptoms, communicating with others, while others might be less helpful, such as avoidance, negative thoughts about night sweats and sleep, as well as overly negative self-beliefs and beliefs about others' reactions. However, further research is needed to test these specific hypotheses in experimental studies and randomised treatment trials in which specific cognitions and behaviours are measured.

Competing interest

Authors have no competing interests.

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Ethical approval

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