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**Women's perceptions of chemotherapy-induced cognitive side effects on work
ability: A focus group study.**

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Abstract

Aims & objectives: To investigate women's awareness of chemotherapy-induced cognitive changes, their perception of cognitive limitations in carrying out daily tasks and subsequent return to work decisions and perceptions of work ability.

Background: Evidence suggests that women diagnosed with breast cancer experience cognitive changes as a consequence of chemotherapy treatment. Although these changes tend to be subtle deficits in memory, concentration, and the ability to organise information, there has been no published research identifying how they can impact patient's ability to work and subsequent employment decisions.

Design: This was a qualitative study

Method: Data were collected from breast cancer survivors using semi-structured interviews with two focus groups (n = 6, n = 7). Interviews were transcribed verbatim and analysed using Template Analysis.

Results: Data were categorised into four main themes: 1) Awareness of cognitive changes during and following chemotherapy, 2) Cognitive ability and confidence in return to work, 3) Impact of cognitive changes on work ability, and 4) Information on the cognitive side effects of chemotherapy.

Conclusion: The views and experiences of breast cancer survivors toward returning to work and subsequent work ability were affected by chemotherapy induced cognitive impairment. More specifically the appraisal of returning to work and ability to manage work were influenced by three interrelated factors: 1) actual cognitive ability following chemotherapy, 2) awareness of cognitive failures by the women and their families, and 3) the subsequent impact on their confidence in carrying out daily tasks including work tasks.

Relevance to clinical practice: More information and support is needed to help cancer patients manage chemotherapy-induced cognitive impairments within home and workplace. Nurses are increasingly asked about the impact of cancer and its treatment on work, and are therefore well positioned to offer this advice. Subsequently, nurses require additional knowledge and guidance to provide this information and support.

Word count: 300

Keywords: cognitive function, cancer, oncology, work ability, qualitative

BACKGROUND

It is well-documented that recent advances in the detection and treatment of breast cancer has led to higher survival rates in women recovering from cancer (Cancer Research UK 2008). As survival times increase, addressing the impact of breast cancer treatment on long-term outcomes such as employment have become progressively significant (Bradley et al. 2005). Many working-aged women surviving breast cancer treatment perceive returning to paid work as an important milestone in recovery and returning to normality (Bradley & Benareck 2002). Although some breast cancer patients are able to continue working during detection and treatment, or return to work successfully; for a significant number of women successful return to work is hindered by impairments due to their illness and treatment (Bradley & Benareck 2002; Bradley et al. 2005). Such impairments are associated with a decrease in their work ability and in some cases even in disability (Chirikos et al. 2002).

Studies have associated work ability problems with the side (late) effects of chemotherapy, a vital feature of breast cancer treatment as it significantly contributes to increased survival rates (Eifel et al. 2001). Side effects such as loss of appetite, hair loss, nausea, fatigue, insomnia, depression and premature menopause are well understood (Kaplan 1992, Schag et al. 1993, Broeckel et al. 1998, Dorval et al. 1998, Savard et al. 2001, Coyne et al. 2004, Massie 2004). Importantly, cognitive side-effects have also been linked to chemotherapy (Castellon et al. 2004, Falletti et al. 2005, Stewart. et al 2006, Vardy et al. 2007) with growing evidence for underlying biological mechanisms including cytokine dysregulation (Ahles & Saykin 2007).

Both cross-sectional and longitudinal studies using objective measures of cognitive function show small to moderate impairments in cognitive function compared with controls or published norms. These include language, spatial ability, verbal and nonverbal memory, attention and executive function (Ahles et al. 2002, Schagen et al. 2002, Phillips & Bernhard 2003, Wefel et al. 2004, Jansen et al. 2005, Jansen et al, 2008). Longitudinal studies have shown that following completion of treatment there is improvement in cognitive function over time, although for a significant number of patients effects can last up to 2 years post treatment (Ahles et al. 2002, Fan et al. 2005) and longer.

Studies have examined the effects of cognitive impairments on quality of life (Bernhard et al. 2004, Bernhard et al. 2008, Bower 2008) but not to the same extent on the quality of working life (Main et al. 2005, Kennedy et al. 2007, Pryce et al. 2007). Questionnaire-based studies typically report the association between treatment (chemotherapy) and return to work outcomes (if, and when a patient returns to work), rather than effects of chemotherapy upon cognitive functioning and its subsequent impact on various work-related factors. Studies that do report on work ability largely focus on the overall effects of impaired work ability or only differentiate between physical and mental work ability (Bradley et al. 2005, Spelten et al. 2002, Taskila & Lindbohm 2007, de Boer et al 2008). Other studies have focused on fatigue related to chemotherapy and their effects on work performance (Messias, et al. 1997, Spelten et al. 2005). A few studies have reported that those recovering from cancer experience difficulties in concentration, forgetfulness and speech difficulties at work (Kennedy et al. 2007, Pryce et al. 2007). However, the direct impact of these on work have not been explored in any sufficient depth.

A better understanding of chemotherapy-induced cognitive side-effects on continuing or returning to work during/after treatment is important for patients, employers and health professionals involved in the treatment and management of cancer patients. As work plays a vital role in an individual's economic, social and psychological health (Waddell & Burton 2006), studies highlight the need for cancer patients to receive better information from health professionals in oncology teams, general practice and occupational health on the effects of treatment upon working life (Pryce et al. 2007, Taskila & Lindbohm 2007, Amir et al., 2008). Data suggests that although 62-84% of cancer patients return to work following cancer treatment, a significant proportion return to work with impaired work ability and are more likely to change or leave employment altogether (Spelten et al. 2002, de Boer et al. 2008, Bouknight et al. 2006). Although some treatment side effects impacting quality of working life have been examined (e.g. fatigue), the effects of chemotherapy on cognitive functioning at work are poorly understood. It is possible that women may be sensitive to subtle changes in cognitive function that are not picked up by objective tests or through self-report questionnaires. Awareness of such changes might influence women's confidence in their ability to return to work and resume daily tasks (Kennedy et al. 2007). Studies in other illness types have shown that a patient's own assessment of illness and work ability do predict work outcomes (Nieuwenhuijsen et al. 2001, Reiso et al. 2003).

The exploratory study presented in this paper sought to investigate the awareness of chemotherapy-induced cognitive changes [among those treated for breast cancer](#), their perception of cognitive limitations in carrying out daily tasks and subsequent return to

work decisions and perceptions of work ability. Breast cancer was the focus of this study as the majority of neuropsychological studies on cognitive functioning are reported on the effects of chemotherapy for breast cancer (Falletti et al. 2005), as this type of cancer is more likely to undergo aggressive treatment regimes (Fan et al. 2005). . This study would enhance that literature as a first step to furthering our understanding of the impact of cognitive functioning on working life.

Objectives

- a) To investigate awareness of cognitive changes following chemotherapy treatment.
- b) Explore perceptions of cognitive ability and subsequent confidence in carrying out daily tasks.
- c) Identify impact of perceptions in ability on return to work decisions and work ability.

METHOD

Design

As participants were recruited via charities and support groups, rather than NHS clinics, NHS ethics was not sought for this study. Rather, ethics approval was approved by the University's ethics committee. Women participating in the study gave fully informed written consent prior to data collection. Qualitative research methods were used as they explore the perceptions, interpretations and beliefs of individuals which shape their decisions and behaviour, rather than attributing cause and effect (Henwood & Pidgeon 1993).

Data collection

A focus group approach was taken with two groups of women who had completed chemotherapy treatment. A focus group is a style of group interview comprising of between 6-8 participants whereby the data obtained arise from the interaction and discourse generated by a group discussion (Morgan 1997). Discussion topics are supplied by the researcher who acts as 'moderator' for the discussions. Under these conditions the moderator undertakes a dominant role in facilitating discussion rather than interviewing. The focus group technique is well suited to the aims of this research where the researchers wished to elicit information on the side effects of chemotherapy on different aspects of cognitive functioning and the impact of these on different aspects of both personal and working life. Therefore, focus groups provide rich and detailed qualitative data.

Thirteen Women were recruited from two local support groups affiliated to a national cancer support charity working closely with NHS oncology clinics across the UK in providing information and support to those diagnosed with cancer. The following inclusion criteria were applied for participation:

- a) Primary breast cancer diagnosis.
- b) To have completed chemotherapy (neo-adjuvant or adjuvant) between 12 months to ten years ago. This criteria was applied so that full information could be obtained with regard to employment outcomes i.e. those who successfully returned to work, those who encountered difficulties and those who had not (Kennedy 2007, Hurricane Voices Breast Cancer Foundation, 2007).

- c) To have been employed (≥ 18.5 hours per week) at time of diagnosis.

Study information was disseminated to members of each support group by the group leader. Women who met the inclusion criteria initially agreed to participate and met the researcher who explained the project details and sought written informed consent following a formal assessment of the inclusion criteria using a questionnaire.

Demographic information (age, occupation, employment status, sick leave during breast cancer treatment) were collected at the same time. The 25-item cognitive failures questionnaire (Broadbent et al. 1982)) was used to assess women's current perceptions of their cognitive functioning. A total score is calculated ranging from 0 to 100, where higher scores indicate greater cognitive impairments.

Six women from one support group and seven women from the other group (total n= 13) met participation criteria. The same researcher facilitated both focus groups at the location where the support groups' met. Each focus group lasted 40 minutes and questions to facilitate each session were open ended around the following topics: perceptions of cognitive ability (attention, memory, problem-solving) prior to diagnosis and treatment; awareness of cognitive changes during and following treatment; impact of these changes on perception of cognitive ability (e.g. confidence in completing task and taking on new tasks); whether perceived changes in cognitive ability affected employment decisions and work ability. The researcher used prompts as appropriate to encourage respondents to encourage flow of focus group interactions (Morgan 1997). Both focus groups were tape recorded with permission.

Analysis

All interviews were transcribed verbatim and analysed using template analysis (Crabtree & Miller 1992). According to this approach, the researcher develops a list of themes, the “template”, to capture the themes identified in the textual data. While some themes are defined a priori, subsequent interpretation of the material allows expansion of the themes (Crabtree & Miller 1992). The first phase of data analysis involved careful reading and re-reading of all transcripts. Initial themes were guided by the research questions from the focus group and the study’s objectives. These themes were modified and refined as additional ones emerged from the data. The second phase involved organising and subdividing the coded data into text segments for each emergent theme and sub-themes to aid the interpretive process. The data under each theme was summarised and verbatim quotes used to illustrate the theme being described. The reliability of the analysis was ensured through systematic review of the data by three members of the research team.

RESULTS

Table 1 summarises the demographic profile of the participants. All participants received chemotherapy. In addition, the participants also received a number of other related treatments such as surgery, radiotherapy and hormonal therapy. Mean age was 48.8 years and 43.2 years at diagnosis. All women were in employment at the time of diagnosis with seven working full-time. Eleven women took long-term sickness absence during treatment. Seven women reported their employment had not changed since diagnosis/treatment, two reduced the number of hours worked and four reported to have taken early retirement or left employment. Participants reported average to below average cognitive functioning (mean 49.84, SD = 16.05). Normative scores

range from 35.02 to 52.48 (Broadbent et al, 1982). Data from the focus groups are summarised into four main themes below.

Awareness of cognitive changes during and following chemotherapy.

All participants reported they had noticed some decline in their cognitive functioning since chemotherapy treatment. The majority felt the effects lasted approximately a year or longer. Women reported poor concentration, confusion and lack of clear thinking:

P12: *'It's like a spiral isn't it really, everything's just sort of spiralling all the time, one thing to another, and concentration you can't, your mind just wanders all the time'*

P10: *'It felt like somebody had removed some of my brain cells... before I had chemotherapy my memory was reasonably good and I was good at multi-tasking and things like that and I can definitely say that from the minute I took chemo, my brain just went into a fog.'*

Problems associated with concentration and divided attention affected women's ability to communicate with more than one person at any one time:

P11: *'I remember having more than one person speaking to me at once, even when they would come round to the house, if I had two or three people, I found that really difficult to cope with because I felt as though they were just doing this'* (makes duck hand gesture).

Many of the women felt frustrated at their incapacity to function as effectively as they could prior to treatment. This was especially apparent with regard to multi-tasking and decision making on a daily basis:

P8: *'I go shopping and I spend five minutes looking at each product going:*

"Which one do I want?"

P9: *'Well I'll go: "For goodness sake", and I'll walk away, and I'll go home and I'm like well I don't know what we are going to have for tea because I was in the shop but I couldn't make my mind up.'*

In addition to poor cognitive functioning, the women felt their ability to cope with problems has also declined significantly following chemotherapy:

P10: *'I don't know if this is the same for any of you, but I found that before treatment I used to have quite a high stress level, I can't deal with too much stress anymore.'*

P7: *'No, I can't.'*

P10: *'There will be a couple of things, and I kind of switch off, I just can't deal with it.'*

As some of the women were receiving or had received other treatments (e.g. tamoxifen) they were asked whether they felt some of the cognitive changes were associated with these treatments. All women reported they were mostly aware of cognitive changes when chemotherapy started and most reported they did not feel

subsequent treatments had further impaired, changed or improved their cognitive functioning.

Cognitive ability and confidence in return to work

All women discussed how their cognitive impairments negatively affected their self-confidence in their cognitive ability. Women reported worrying about appearing slow or incapable, largely due to how family members responded to the changes. Family members often made comparisons between their cognitive problems and types of dementia:

P5: *'I repeat myself that many times my husband says: "Have you got Alzheimer's?" yeah and it's since I had treatment last year I repeat myself atrociously'*

P10: *'I do remember when I was on the chemo, I'd ask the children something and then ten minutes later I would ask them the same thing again and they would say: "What is the matter with you, are you losing the plot?" and I would swear blind I hadn't asked the question and they hadn't answered me.'*

Being aware of memory problems meant that many women felt unconfident in interacting with others in fear of their memory failing as one woman discussed:

P9: *'Sometimes my husband would say: "You're being very quiet", which is unusual for me and I'd sort of say yes, and then I wouldn't say anything and*

then a bit later on I'd end up telling him I just wasn't sure whether I'd told you something and I didn't want to say it again if I had.'

With regard to employment, although most women were keen to return to work for a sense of 'normality' they felt negative about their cognitive ability and how it would affect them in carrying out daily work tasks. This was irrespective of being in a manual or non-manual job. They felt returning to work further emphasised their cognitive impairments and their confidence in their work ability. This led to concerns of not meeting employer expectations upon returning to work:

P9: *'It was when I went back to work I noticed, I felt as though I'd had a lobotomy.'*

P11: *'Yeah, I was having to use my brain in a completely different way to the ten months I'd spent at home'.*

P13: *'It doesn't matter at home does it, if you forget things, it really doesn't matter.'*

P11: *'No it's not the same I don't think, I wasn't really aware until I went back to work...so that affects your confidence and your competence and your ability to know whether you actually can do your job.'*

One woman found alternative employment following recovery. This increased her confidence in her cognitive skills despite the problems, as her new employer and colleagues had no prior expectations of her cognitive abilities:

P13: *'I started a new job and what I found was that I did have a lot of confidence because nobody knew me, so nobody knew what I was capable of, what I did before a hundred years ago and I started from scratch. So for me I was like, I've done chemo so I can take on the world, so I was very different, no I honestly think it would have been a totally different story had I gone back to the original working environment, I think I would have felt very conspicuous, it think it would have jumped out haha, I haven't got a clue what I'm doing!'*

Despite problems with cognitive functioning, those women who felt supported at work by their employer and their colleagues, reported feeling less daunted about returning to work and more confident in completing work tasks:

P6: *'Now I'm back at work they've got me an assistant for six weeks to help me, which I think is really good. The support has been first class.'*

One woman discussed feeling uncertain about her employability since chemotherapy treatment due to the detrimental cognitive side effects. This led to difficulties in deciding whether she was able to return to work.

P3: *'I'm not back at work yet and my doctor said that I don't think that you will go back to that job. She said that you've got very low employability at the minute, I don't particularly want to go back to that job anyway, but I think well, what am I going to do, I just live from one month to the next, I'm in a bit of a nowhere land really, I can't plan anything I just get on with it.'*

Impact of cognitive changes on work ability

All women experienced cognitive-side effects at work and which they felt were related to their chemotherapy treatment. These had a negative effect on their work performance with problems lasting up to a year post return to work. Most felt overwhelmed by their work environment and in some cases found the work environment unbearable. Noise was a key factor that impacted on women's cognitive function and subsequently affected their ability to perform at work:

P12: *'When I went back to work, it was in a factory and it was really, really noisy, but it was like, there was no noise in particular it was just one noise, it was like your head's swimming, it's just noise, it's just all going on but there's no particular thing, no particular talking or voice or something it's just all one. And your head's just going like that (makes funny face). I remember going back to work and thinking: "Oh I just want to get out of here, I can't stand this, all the noise and everything", it was awful it's weird.'*

The women reported that poor concentration, memory problems and difficulties in thinking quickly since chemotherapy has had a negative effect on specific aspects of their job:

P6: *'I found it very difficult to concentrate at work and I mean I read thing over and over again and then I'm thinking, what was all that about and just have to start again, so I am finding that more difficult than before any treatment.'*

P9: *'I can vaguely recall thinking something, well I wasn't sure if I thought it or said it, and then I wouldn't say it because I wouldn't remember whether I'd already said it, and I didn't want to appear to be repeating myself.'*

P12: *'You just can't keep up with it can you, it's just too fast, too demanding to sort of keep that pace up.'*

They also reported problems with organising information and decision-making.

Although some women discussed fatigue affecting cognitive functioning, the majority felt that the effects were largely independent of that. Many felt that their performance was below their standard prior to chemotherapy as one woman described:

P11: *'All people wanting me to make all these decisions and it was almost like I'd got this old tin bin (brain) and I was just putting stuff in there and I felt as if the lid was going to fly off and everything explode, I couldn't cope with it, I felt as though it was like that in the early stages of going back to work.'*

As a result, a number of women hid their cognitive difficulties from their employer rather than discussing them:

P11: *'It's about having to make decisions at work, and it took me I would say a good two months before I felt my brain was starting to operate how it should do, but I just thought, I just felt as though I had become a completely different, inept person, and they were going to find me out!'*

Information on the cognitive side effects of chemotherapy

All women reported receiving insufficient information regarding the cognitive side-effects of chemotherapy from their oncology team or support groups. No verbal or written information was given by the clinics on the cognitive-side effects of chemotherapy. A few of the women had leaflets from major charities or support groups that briefly outlined some of the cognitive effects but the women felt this was not in any detail. It was strongly felt that more information could have helped women understand the changes better and adjust to them more effectively, particularly with regard to returning to, and maintaining work, as one woman summarised:

P8: *'Reassurance as well, that actually, this could be expected or this has been reported, sometimes I just think I might be going off my head and if I was told 'this was normal to experience' that would help.'*

DISCUSSION

Findings from this study indicate that women treated for breast cancer report experiencing cognitive impairments that affect their working life. The cognitive problems experienced by these women range from short-term memory problems, verbal ability, speed of processing information and executive functioning (multi-tasking, making decisions and dividing attention). These findings are consistent with the extant literature on objective measures of cognitive functioning in breast cancer patients (Falleti et al. 2005, Stewart et al. 2006) and other studies reporting the side-effects experienced by those receiving chemotherapy (Hurricane Voices Breast Cancer Foundation, 2007). Women in this study reported that problems with

memory, concentration, decision-making and multi-tasking affected their views and experiences toward returning to work, and subsequent work ability.

Interestingly, the women's appraisal of returning to work and managing work were influenced by three interrelated factors: actual cognitive-side effects following chemotherapy, awareness of cognitive failures by the women and their families; and the subsequent impact on their confidence in carrying out daily tasks including work tasks. The influence of family members on the women's self-confidence in their cognitive abilities is a similar finding to that reported by Visser, et al. (2004). They report that family members were often indirectly affected by chemotherapy treatment. They report tension between family members who are frustrated that the chemotherapy recipient can no longer function in the same way prior to treatment. Taken together, the findings from this study and that of Visser et al. (2004), indicate that women who are aware of family members affected by their cognitive impairments, might anticipate continuing to experience such problems when they return to work; thus lowering their confidence and heightening their awareness and anxiety of cognitive problems upon returning to work.

The potential role of women's confidence in their cognitive abilities suggests that self-efficacy (Bandura 1997) maybe an important psychological mechanism influencing perceptions of cognitive ability and subsequent cognitive function. This concept requires further exploration and study as it could have important implications for interventions. Although the objectives of this study did not include exploring avenues for intervention, the focus group gave the women the opportunity to discuss the need for better healthcare information and support to enable them to effectively

manage and cope with their cognitive changes. This is supported by a study by Ferguson et al. (2007) who found that training women in self-awareness and cognitive compensatory strategies helped to recompense for cognitive problems such as memory problems. As the women in this study reported that confidence in their cognitive skills was an issue particularly with regard to returning to, and maintaining work, it is important that this aspect is incorporated into any intervention and evaluated. Overall, further research is required into what cancer patients needs are in relation to information, support and appropriately tailored intervention; and what oncology teams and other healthcare specialists feel they are proficient in delivering.

In terms of cognitive impairments affecting work ability, women in this study reported struggling with short-term memory, concentration, multi-tasking, thinking quickly and making decisions. Again this profile is consistent with studies on cognitive functioning. Interestingly, many of the women tried to hide their cognitive problems from their employers even though they struggled with their work and could have benefited from support or assistance. Studies have documented the problems associated with the effects of chemotherapy on cancer patients' general work ability but have not detailed these effects in terms of specific cognitive problems upon different job types (Kennedy et al. 2007, Pryce et al. 2007, Taskila & Lindbohm 2007). This study significantly contributes to this literature in two important ways: first, it highlights specific aspects of cognitive functioning that affect women in both manual and non-manual jobs alike; and second, these findings are directly based on these women's perspectives and experiences and which they believe affect their work performance. More objective measures may not necessarily detect the impact of these cognitive affects which may only become more apparent when women return to work

and resume work tasks. Indeed, it is well documented that there are no significant correlations between subjective perceptions of cognitive and objective neuropsychological measures (Castellon et al. 2004). This raises a concern that neuropsychological measures do not take into account the environment within which the individual is situated and interacts with, such as the workplace. As women in this study highlight, there is need for more information on chemotherapy-induced cognitive impairment, particularly with regard to returning to, and maintaining work. Healthcare professionals involved in the treatment and care of cancer patients are in a prime position to provide more informative prognosis on chemotherapy-induced cognitive impairments for both patients, their families and their employers (Kennedy et al. 2007, Pryce et al. 2007 , Amir et al. 2008).

Several limitations must be considered. The findings must be interpreted with caution as the participants were recruited from support groups rather than directly from clinics and were a small sample size. Therefore, their views may not be fully representative of the general population of women diagnosed with breast cancer. Further research is required using a larger and more representative sample to substantiate our findings. A number of women were aged over forty at the time of diagnosis. Women in later life are reported to experience some decline in their cognitive abilities due to ageing (Weuve et al. 2004). Moreover, menopausal status may have contributed towards the cognitive changes experienced (Jansen, 2008). As suggested by Love et al. (1988), it is not possible to attribute all cognitive changes reported to chemotherapy alone, as there are many other variables and treatments that could contribute to these changes. Although a number of studies suggest that fatigue plays a pivotal role in cognitive functioning in cancer patients receiving cancer treatment, this study found that women

reported cognitive problems directly related to chemotherapy. While a couple of the women discussed the effects of fatigue of cognitive functioning, the women felt these were additional problems. This finding is consistent with more objective studies of cognitive functioning that control for the effects of fatigue (e.g. Jansen, 2008).

CONCLUSION

This study provides some important insights into the experiences of women managing the impact of chemotherapy-induced cognitive impairments upon working life. This issue has not been previously explored in sufficient depth. This study provides a starting point for further qualitative research comparing the different aspects of the work environment upon cognitive functioning, supported by quantitative data, which would strengthen data interpretability. The study also highlights the need for more information and support to help cancer patients manage the chemotherapy-induced cognitive impairments within the home environment and especially at work, which plays a pivotal role in the physical, psychological, and social recovery of cancer patients.

RELEVANCE TO CLINICAL PRACTICE

Nurses are well positioned to offer advice to patients on the impact of cancer treatment on work ability. It is important for nurses to identify and better understand how treatment can impact cognitive functioning and subsequently work ability.

Nurses can help to develop effective interventions that enable cancer patients to use strategies that maintain and improve their cognitive functioning during and post treatment. Future work will focus on developing appropriate interventions.

Conflict of interest

None declared

Contributors

Study design: FM, KK

Data collection and analysis: JB

Manuscript preparation: FM, JB, JY, MB

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Table 1. Participant Demographics (n = 13)

| *Pp | Age (years) | Age at diagnosis (years) | Treatment | Other chronic illnesses | Occupation | Work status | Hours/ week | Work Changes | >4 weeks sick leave | CFQ |
|-----|-------------|--------------------------|--------------|-------------------------|---|-------------|-------------|-----------------|---------------------|-----|
| 1 | 60 | 57 | S, C, R& MA | None | Clerical assistant | Full-time | 37 | None | No | 41 |
| 2 | 56 | 52 | S, C & R | None | Head of department | Full-time | 70 | Retired | Yes | 85 |
| 3 | 36 | 34 | R, C, & H | None | Financial accountant | Full-time | 42 | None | Yes | 31 |
| 4 | 48 | 46 | C, S & R | None | Administrator | Full-time | 35 | None | Yes | 28 |
| 5 | 45 | 37 | S, O, C & R | None | Shop assistant | Part-time | 19 | None | Yes | 61 |
| 6 | 49 | 48 | C, S, R & H | None | Professional standards officer | Full-time | 37 | Reduced hours | Yes | 36 |
| 7 | 52 | 46 | S, C, R, & H | None | Warehouse operator | Part-time | 30 | None | Yes | 44 |
| 8 | 48 | 39 | S, C, R & H | None | Operations director | Full-time | 40.5 | Stopped work | Yes | 37 |
| 9 | 51 | 45 | S, C, H | None | Senior receptionist & financial manager | Part-time | 21 | None | No | 60 |
| 10 | 48 | 46 | S, C, MA & R | None | Medical secretary & counsellor | Part-time | 3 | Reduced hours | Yes | 60 |
| 11 | 53 | 40 | S, C & R | None | MR manager | Full-time | 37 | Retired | Yes | 64 |
| 12 | 49 | 40 | C, R, & S | None | Warehouse packer | Part-time | 20 | None | Yes | 47 |
| 13 | 39 | 32 | S, C, R & H | None | Hairstylist | Part-time | 18.5 | Stopped working | Yes | 54 |

* Participant number

S, surgery; C, chemotherapy; R, radiotherapy; H, hormonal therapy; MA, monoclonal antibodies

CFQ = Cognitive Failures Questionnaire

