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Perceptions of coping with non-disease related life stress for women with osteoarthritis: a qualitative analysis

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ABSTRACT

Objective: Coping with arthritis-related stress has been extensively studied. However, limited evidence exists regarding coping with stress extraneous to the disease (life stress). This study explored life stress and coping in a subset of older women with osteoarthritis from a larger longitudinal study.

Design: A qualitative study using semi-structured telephone interviews.

Participants: Women who indicated being diagnosed or treated for arthritis in the previous three years in the fifth survey of the Australian Longitudinal Study on Women's Health (conducted in 2007) provided the sampling frame. Potential participants were randomly sampled by a blinded data manager using a random number generator.

Methods and Analysis: Potential participants were mailed a letter of invitation/participant information statement by the ALSWH. Invitations were sent out in small batches (primarily ten). Interviews were conducted until data saturation was achieved using a systematic process (n=19). Digitally recorded interviews were transcribed verbatim and de-identified. Data were thematically analysed.

Results: Thematic analysis revealed that coping with life stress involved both stable attitudinal coping processes developed early in life (i.e. stoicism) and transient cognitive and support-based responses. Women also described a dualistic process involving a reduction in the ability to cope with ongoing stress over time, coupled with personal growth.

Conclusions: This is the first study to examine how individuals cope with non-arthritis related stress. The findings add to the current understanding of stress and coping, and have implications regarding the prevention of arthritis in women. Importantly, this study highlighted the potential detrimental impact of persistent coping patterns developed early in life. Public health campaigns aimed at stress mitigation and facilitation of adaptive coping mechanisms in childhood and adolescence may assist with arthritis prevention.

Keywords: psychological stress, coping, osteoarthritis, women, ageing

Strengths and limitations of this study

- This is the first study to examine how women with osteoarthritis cope with non-arthritis related stress
- Although women with osteoarthritis used similar approaches to coping with life stress as has been reported for arthritis-related stress, fewer life-stress coping strategies were identified. Life-stress coping strategies were focused on cognitive and help-seeking approaches, with a strong reliance on stoicism.
- This study focused on retrospective accounts of coping with life stress using a sample of women who had osteoarthritis as their primary diagnosis. The results may not be generalisable to women with other rheumatic conditions or males with osteoarthritis.

INTRODUCTION

Considerable interest has been generated around understanding the role of psychosocial factors in influencing disease trajectories. In particular, research has increasingly highlighted the role of psychological stress in the aetiology and progression of chronic disease.[1-3] The role of psychological stress in the onset, and course of disease has been highlighted as particularly pertinent for women, with research suggesting that women are exposed to a greater number of life stressors and have a tendency to perceive stressors as more stressful than men.[4] Arthritis in particular has been found to be a major cause of disability, limited mobility and chronic pain in women.[5] The majority of stress-related research has focused on the occurrence of chronic major and minor life events.[6-8] However, the way in which individuals perceive stress, coupled with the coping strategies employed to reduce the impact of stress have been found to be more important than the exposure to a stressor.[9]

Studies have consistently demonstrated that coping strategies employed by an individual in response to a stressful event have a significant impact on psychological as well as physical outcomes.[10-12] In terms of coping with arthritis, passive or emotion-focused coping has been found to be associated with increased arthritis pain, disability and depression in comparison to those who employ active (problem-based) coping strategies.[10,13,14] Meanwhile, a qualitative study of Canadian adults involved in a self-management program (aged 45-78), found that stress was the *'biggest factor'* in their lives. Coping involved *'just getting through the day'* or participating in leisure-time activities in order to achieve *'enjoyment'* or *'balance'*.[15] On the other hand, Tak [16] identified cognitive, behavioural or social diversion-based activities and assertive actions (e.g. directly addressing the problem by seeking a solution or talking to someone) were found to reduce the effects of stress in those with arthritis. More recently, psychological adjustment to arthritis over time was found to be attributed primarily to cognitive and attitudinal factors including stoicism and making downward comparisons).[17]

Importantly, coping with arthritis was viewed as a dynamic 'day to day' process involving a constant struggle between grieving physical losses and increasing dependence amidst symptom management.

While a large body of evidence exists regarding arthritis-specific coping strategies,[18,19] limited evidence exists regarding coping with stress extraneous to arthritis (i.e. life stress). Harris and colleagues[20] recently demonstrated in a longitudinal cohort study, that perceived stress is a critical modifiable risk factor for arthritis onset in older women. Women chronically experiencing high stress levels had a 2.4-fold increase in developing arthritis compared to women who experienced no stress. Understanding women's coping patterns (including their origin) may assist in further elucidating the stress-chronic disease relationship. Studies focused on understanding this concept are currently lacking. It is important to understand whether women with arthritis cope with life stress differently to how they cope with arthritis-related stress. Therefore, the purpose of this study is to expand upon the recent quantitative evidence concerning the relationship between stress and arthritis onset by exploring non-disease related stress-coping processing in a sub-sample of women with arthritis. With the majority of arthritis diagnoses driven by osteoarthritis, the experiences of women with osteoarthritis formed the focus of this study. A qualitative approach was applied in order to capture the personal meaning associated with stress and the complexities surrounding cognitive appraisal.[21]

MATERIALS AND METHODS

Ethical approval

Ethical approval was granted for all aspects of the project by the University of Newcastle's Human Research Ethics Committee prior to the commencement of data collection, with all

interviews and verbal consent procedures carried out in accordance with the University of Newcastle's Human Research Ethics Committee policies regarding telephone interviewing.

Participant sampling frame

Participants were sampled from the 1946-1951 cohort of the Australian Longitudinal Study on Women's Health (ALSWH).[22,23] Women who indicated being diagnosed or treated for arthritis at survey 5 (conducted in 2007) and meeting the inclusion criteria (i.e. fluent in English, did not have a proxy (e.g. carer) complete their surveys, or had not withdrawn from either the longitudinal study or further sub-studies) were included in the sampling frame (n=2,802). Potential participants were then randomly selected from the remaining pool by a blinded data manager using a random number generator. A sample of 60 women meeting the inclusion criteria was initially drawn, assuming a 50% response rate. Women however were sampled until data saturation had been reached. Key demographic and health-related factors such as education, area of residence, Body Mass Index, physical activity and health-related quality of life were monitored throughout the recruitment process in order to achieve a diverse sample.

Recruitment process

Potential participants randomly selected from the study participant pool were mailed a letter of invitation/participant information statement by the ALSWH. Invitations were sent out in small batches (primarily ten). Potential participants were contacted by the research team (MLH) two to four weeks following the mailout in order to gain informed consent and clarify osteoarthritis diagnosis.

Interview process

The interview process has been described in detail elsewhere.[17] Briefly, to ensure consistency in data collection, the semi-structured interviews were conducted by the first author (MLH), a PhD candidate with a background in psychology and post graduate training in qualitative research (who had no personal experience of osteoarthritis and was not in the sampled age bracket). All semi-structured telephone interviews were conducted at the offices of the Research Centre for Gender, Health and Ageing located at the University of Newcastle and digitally recorded. Prior to the commencement of the interviews, participants provided verbal consent. The provision of informed verbal consent was more appropriate to written consent to reduce participant burden. While interviews were primarily guided by the interview schedule, participants were able to direct the conversation and concentrate on issues they felt were most important. During (and after) the interview, field notes were collected. These included points of interest to follow-up, the emotional condition of the participant, impressions of the interview and a summary of significant findings. Interviews ranged in duration from 15 minutes to 2 hours 50 minutes, with an average time of 1 hour 10 minutes.

Semi-structured interview schedule

The semi-structured interview was retrospective in nature. Interview questions were designed to guide women to reflect upon their life experiences (i.e. stressors) and coping mechanisms across the life course (including during their childhood and early adult years, at the time of arthritis diagnosis and post-diagnosis). Consistent with a realist-orientated approach (i.e. aiming to explain the phenomenon with a degree of objectivity),[24] the main interview questions were open-ended. This provided an environment for the participant to tell their story without direction from the interviewer. While the main questions provided a certain amount of structure in order to conduct the interview, they were not prescriptive. To provide the contextual material necessary to understand the phenomenon, the content of the interview was ultimately co-determined by both the researcher and participant.

Data analysis

Women were sampled until 'data saturation' had been reached using a systematic process similar to Francis and colleagues[25] which recommended an *a priori* sample size of ten be set, and a stopping criterion of three for structured interviews. Due to the diverse nature of the interview schedule and semi-structured approach, an initial sample size of 15 was established, with a stopping criterion of three. The stopping criterion was employed in order to determine the point when no more themes (or sub-themes) were identified in the data. The stopping criterion was tested after each successive interview. At the point when three successive interviews had been analysed without further thematic identification, data saturation was said to be achieved. As the final two interviews were carried out in succession, this criterion was exceeded by one.

Digitally recorded interviews were transcribed verbatim and de-identified. All interview transcripts were checked for accuracy (MLH) and the data were entered into the qualitative management program Nvivo v.9 (QSR International Pty Ltd, 2010) for analysis. Thematic analysis was applied to the data, with data coded by the first author (MLH) following the procedure outlined by Braun and Clarke.[26] Briefly, finalised transcripts were systematically read and re-read prior to thematic coding to obtain an overall sense of the data,[27] with patterns and meanings identified. Phase two involved generating initial codes from the raw data. Transcripts were read in a line by line fashion, giving equal attention to each data item within the dataset, with sections of text relevant to the research entered into Nvivo as free standing 'nodes' (i.e. categories). Throughout the coding process, all transcripts were repeatedly reviewed and analysed. Similarities and differences were constantly compared to each other in an iterative fashion, with similar phenomena (or similar aspects of a phenomenon) grouped together. Comparisons were made within and across transcripts.[28] The refinement of higher order concepts (i.e. themes) involved ensuring that the generated codes

formed coherent patterns within and across the datasets with disconfirming, as well as confirming evidence sought.[29-31] The first author reviewed and discussed the content of the identified themes and example extracts on multiple occasions with the senior author (DL) to ensure that the themes accurately reflected the participants' narratives.

Additional participant information

The following demographic variables (described in detail by Harris and colleagues[20,32]) were used to provide participant characteristics: age, marital status, highest educational qualification, occupation, area of residence and country of birth.

RESULTS

Participant characteristics

Nineteen women (out of 44 invited to take part) with an average age of 62.5±1.3 years at the time of the interviews participated in the interviews. All women had osteoarthritis as their primary diagnosis, with three women reporting rheumatic comorbidity. Participants had been diagnosed more than four years prior to the interview, with the majority (n=11/19) first reporting their diagnosis at survey 3 (conducted in 2001). Additional sociodemographic characteristics are shown in Table 1.

Summary of themes

Women with osteoarthritis described experiencing stressful life events revolving around death, illness and relationship strain. A number of women also reported an accumulation of stress over the life course. However, coping with life stress over time was found to be complex. Coping has been identified as important in the mitigation of the stress response and facilitation of psychological adjustment following stress exposure. The following provides a discussion surrounding the coping strategies employed by participants in dealing with life

stress, the patterns of coping that emerged over time, and factors that influenced psychological adjustment to life stress.

Theme 1: Approaches to coping with stress

Women with osteoarthritis identified a number of strategies for minimising the immediate effects of life stress. Health behavioural approaches such as physical activity were rarely reported by the women. Participants most often reported utilising either help-seeking practices, cognitive-based coping or drew upon personal belief systems and attitudes in order to deal with life stress.

Help-seeking and support-based approaches

Eighteen women reported that seeking support from others was particularly important as a means of coping with life stress. While some women sought emotional support from a variety of sources, other women described being more constrained in their choices. For women who valued this coping approach and had difficult or generationally stereotypical relationships with their spouses (i.e. where emotional expression and empathy were not core features of the relationship) *"he would no sooner talk about his feelings than fly to the moon"* [Participant 5], this involved seeking informal support from individuals outside the marital union. Children, siblings, friends or other women *"full of wisdom"* within the community were identified as key sources:

> *there are inspirational women out there. They have been through the black hole, you know through that tunnel of life, there is nothing they haven't been through you know between you know ill children, dying children, gay children, whatever children, divorces …* [Participant 11]

A number of women also spoke about receiving professional help regarding their problems and sought counsel from psychologists, psychiatrists, grief counsellors, general practitioners or other alternative and complementary health practitioners as well as attending self-development courses. Seeking help from others facilitated an emotional release, a factor that was seen as pivotal to the maintenance of good mental health:

> *I think the main thing is to be able to talk about it … You know some people sort of, they clam up and they don't talk about it, well they're the ones that really have the breakdowns aren't they?* [Participant 9].

A few women also used 'information seeking' practices in order to reduce the impact of a stressor. This was particularly useful when the stressor related to the illness of a spouse or family member. For one participant whose husband was possibly in the early stages of Alzheimer's disease, the ability to source information from the internet was viewed as a *"God send"* for her and others that live in *"less developed parts of the countryside"*. For her, having information readily available either dispelled concerns regarding the source of stress or provided a sense of control over the situation in which plans to combat the issue could be outlined. Being educated about the source of stress was also supported by other participants, *"the more you know, it does stop you worrying"* [Participant 12].

Cognitive approaches

Women often spoke about using cognitive approaches to modify their thoughts surrounding life stressors. These practices included mind blocking strategies or distraction in order *"to not dwell on all th[e] kind of crap that happens'* and *'put [the stress] back where it belongs"* [Participant 11]. Activities that provided distraction included reading, watching television, listening to music, bird watching, paid work, playing with a pet and being involved in craft activities. These activities were reported to have a calming effect and facilitated relaxation.

Women also employed positive self-talk, although to a lesser extent. These techniques allowed for the participant to either minimise or discount the stress they were experiencing:

> *sometimes you know you can be feeling down and, and you've, and you have to say to yourself well come on it's in your mind, … it's not as bad as you think it is. It's just the way you're feeling …* [Participant 5].

Other cognitive processes (paralleling arthritis-specific coping efforts) included the use of comparative coping (i.e. comparing their stress with others) in order to normalise stress:

> *I've been divorced once um infertile for a lot of years … lost a baby at three days old, my husband had um a stage two melanoma and then bowel cancer and just the usual problems … normal life when you think of it compared to most other people* [Participant 13].

Faith-based approaches

Religious or faith-based coping was identified by a minority of women (n=6) as important to coping with stress, *"…even though I'm not a church goer now I still have very strong faith and I do think that … has helped me right through life face things"* [Participant 5]. This type of coping not only related to formal prayer and belief in Christianity, but also included engagement in meditation in order to promote emotional expression. Formal prayer methods were often used by participants when other coping strategies had been exhausted and the participant could no longer carry the burden, "*when I feel like it's getting too heavy and I can't carry it anymore that's when I hand it over* [to God] …" [Participant 19].

Stoicism

Being stoic and repressing (or denying) emotions was consistently chosen as an attitudinal-based coping strategy by the participants (n=15). This type of coping was particularly noted in response to traumatic stress or the compounding of life events:

> *my mother took us kids and we left my father in I suppose I was about seven or eight um … and we sort of soldiered on on our own, and then um I met my late husband ... We had 28 years, three children, he passed away, then I met my current husband and here we are … things like that they make you bottle it up* [Participant 3].

In response to dealing with her daughter and husband having cancer at the same time, one participant commented *"… that's the sort of person I am I just cope. You have to do it and I had to be there for her because there was no one else and you just do it"* [Participant 18]. Other women provided a similar analysis of the stress they experienced often simply suggesting that *"I just had to get on with it, there was no time to dwell on things"* [Participant 4].

Theme 2: Origins of coping responses

Although the participants reported coping with life stress through either cognitive, help-seeking, attitudinal or faith-based practices, coping with stress did not appear to be a dynamic process. Throughout the course of the interviews, distinct patterns regarding the ways in which women with osteoarthritis approached life stress over time emerged. Coping responses particularly during times of intense stress were often a result of unconscious mechanisms that emerged early in life (n=14). The women often indicated that the ability to cope was either an intrinsic quality (i.e. being born like that), a result of a *"survival"* mechanism or the influence of parent-driven coping characteristics taken on at an early age, *"we were brought up to be*

strong" [Participant 10]. One participant in particular noted that having been brought up by a single mother she learned to *"just get on with things":*

> *Well we got taught when we were quite young 'cause mum had to bring the two of us up on her own to you know you've got to just get on with life no matter what happens to you you've got to just pick yourself up and get on with things. You don't dwell on things or else you'll go under* [Participant 2].

Women with osteoarthritis appeared to repeatedly choose coping mechanisms developed in childhood across the life course and often modelled their *"very strong sort of character"* on a significant caregiver. For one participant, the ability to *"soldier on"* [Participant 19] in the face of stress was described as an admirable and necessary quality that she modelled from her mother. Another participant applied the coping responses learned during childhood to coping with having her daughter and husband diagnosed with cancer at the same time:

> *my mother was a very strong person. I think she had to be to get through our childhood … she had quite a few setbacks in her life but I think that's where I get it from. I am a lot like her …* [Participant 18].

Thus, coping with early experiences had long-term implications, shaping the way in which the women approached not only future stressful life experiences, but their view of life in general.

Theme 3: Changes in coping with life stress over time

Coping responses employed by the participants were often developed early in life and persisted across the life course. Consistently coping with psychosocial stressors using the same strategies, although adaptive in the short-term, were described as being detrimental to both physical and mental health over the long-term. The persistent use of attitudinal-based

coping resources such as the stoic *"just get on with it"* approach were reported to coincide with a reduced ability to cope with ongoing stress. This process was often described by participants as a *"loss of resilience"*. For the majority of participants, new coping strategies were sought only when strategies used in the past began to fail. For some participants, the quest for new and effective coping strategies was a difficult process. As one participant indicated *"I think I've lost some of my ability to manage my stress and I haven't found … something that works"* [Participant 10].

The majority of women described having barrelled through life where the burden of responsibility and expectations associated with being a woman allowed participants to get through difficult and often traumatic times

> *When you are so busy … you don't become stressed because you don't have time to think about it. You don't have time to worry you, you're only concern is oh my God I've got three kids at home, I've still got to put a meal on the table for them …* [Participant 13].

Over time, however, this method of coping was ineffective and detrimental to both their physical and mental health. A lack of time promoted the use of survival coping, with the effects of this process only evident once chronic stressors were removed. This self-sacrificing mentality facilitated some women remaining in stressful situations despite their own needs and health, "*I guess I just pressed on regardless of my own health needs*" [Participant 4].

Theme 4: Surviving life stress

Coping with stress over time ultimately appeared to be dualistic in nature. While the majority of women reported experiencing psychosocial stress over the life course, a number of women described an ability to see the 'silver lining' in their experiences. This process of 'stress-

related growth' was vital to long-term psychological adjustment. This theme describes the factors participants perceived as important in the reappraisal of life stress over time. Stressful experiences were viewed by participants as character building, assisting in the cultivation of empathy for others, *"it just made me more caring for other people and gave me more empathy I do think"* [Participant 14] and presented a learning experience. For instance:

> *I think you don't know what's in you until you are solely tested, that's what I tell my kids, we don't know what strengths we have and it's easy when you're cruising along but that's when you find out who you really are and how you grow I think* [Participant 11].

Accepting the process of life and being grateful for the positive experiences were also noted by a few women as key factors in facilitating personal growth. Another participant suggested that her life involved *"a lot of trial and error"*, particularly during her early adult years. This period was critical in the development of resourcefulness and although she viewed the coping strategies developed as less than optimal, it created the platform for adjustment in later years.

The overarching sentiment flowing through the interviews however, revolved around *"survivorship"*. Despite whatever they had experienced, including abuse, significant loss, or having *"nervous breakdowns"*, the majority of women created meaning from these experiences. This process allowed participants to come to terms with their experiences, accept them as a part of life and get up 'off the floor' and keep moving forward:

> *I think I'm a survivor. I've, I have come through a very good marriage and a sad marriage and I've lost my parents um and I've always moved forward, I've always kept going forward it never occurred to me to give up and I think it's the genes I have from my parents who were survivors as well* [Participant 7].

DISCUSSION

Summary of findings

This study aimed to qualitatively explore aspects of coping with life stress in women with osteoarthritis. Coping strategies included cognitive (e.g. positive self-talk), help-seeking (e.g. social support and stressor education), faith-based and attitudinal (e.g. stoicism) practices. These practices were static and often developed early in life. Particularly, the persistence of attitudinal coping styles over time were detrimental to long-term adjustment, with significant reappraisal required in order to process stressful life events. The findings suggest that the adjustment to stress over the life course for participants was complex, with women describing a dualistic process involving both reduced resilience and personal growth. These findings add to the wider body of knowledge surrounding stress-coping and arthritis onset in women.

Coping with stress and coping with arthritis: two sides of the same coin?

The strategies used by women to minimise the immediate effects of life stress in the current study were found to be similar to those used to cope with an arthritis-related stressor.[17] However, fewer life-stress coping strategies were identified. Life-stress coping strategies were heavily focused on cognitive (e.g. positive self-talk), and help-seeking (e.g. social support and stressor education). In contrast, previous research has found that women use a combination of strategies to cope with an arthritis-related stressor, including physical activity, distraction, activity restriction, pain minimisation, positive self-talk, prayer, social support and the repression of emotion. This is a novel finding, as previous qualitative research using samples with arthritis have viewed coping with stress as part of coping with arthritis[16] and have not been able to provide an in-depth account of the subtle differences in coping with life stress as opposed to coping with an arthritis-related stressor.

In contrast to Lazarus and Folkman's transactional model of stress and coping which posits that coping is a dynamic process involving a transaction between the threat, the appraisal and the response,[9] coping with life stress by women in this study appeared to involve static attitudinal coping processes that were developed early in life. This approach included stoicism, in conjunction with more stressor-dependent cognitive and support-based coping responses such as positive self-talk and help-seeking, as well as relaxing leisure activities (e.g. reading). These results are partially supported by Tak[16] and Iwasaki and Butcher.[15] In particular, Iwasaski and Butcher[15] found that middle-aged and older women with arthritis used spiritual-based coping, social support, physical activity, altruistic endeavours, maintaining a positive attitude, and educational help-seeking practices in order to cope with arthritis-related stress. However, Harris, et al. [20] recently found that educational help-seeking practices were rarely employed when dealing with arthritis-associated stressors. Leisure coping (or diversional) activities in particular have been found to have stress-buffering effects[33] by reducing negative feelings towards the event and providing the capacity for cognitive reframing to occur.[34] The use of a stoic attitude in order to cope with life stress among women with arthritis, however, is unique to the current study and extends the concept of coping involving emotion and problem-focused efforts.[9] The findings add to the current understanding surrounding coping with stress and highlight the detrimental long-term mental and physical health effects of such coping practices. The expansion of quantitative coping inventories beyond currently recognised problem-focused and emotion-focused approaches is required. This may also have implications for coping with the effects of arthritis, such as pain.

Social support and help-seeking were found to be particularly important for the women in this study. Some women sought support from a number of sources, while others were constrained in their choices and chose to seek emotional support from outside the marital union. The

expectation surrounding the source of support was pivotal to its efficacy, with women resigned to accept gender stereotypical behaviours. In the absence of social support, the women relied heavily on their own personal resources (e.g. cognitive approaches such as distraction or stoicism) in order to cope. Hawkley and Cacioppo[35] provided evidence for the role of social factors (particularly loneliness) in maintenance and reparative processes via pro-inflammatory cytokine mediators (interleukin-1β and tumor necrosis factor). Therefore, women with osteoarthritis may benefit from extending their social support networks by joining arthritis support groups in order to not only address arthritis-specific issues, but also assist with coping with life stress.

The employment of ingrained coping styles over the life course appeared to be detrimental to long-term psychological adjustment to life stress in the current study and previous research,[36] with women describing a loss of resilience over time. Emotional repression, characteristic of a stoic attitude, has been found to be associated with the reporting of low levels of distress despite high levels of physiological reactivity.[37,38] Diamond and colleagues[39] noted a relationship between attachment style developed early in life and coping patterns. Particularly, their findings demonstrated that attachment avoidance (i.e. a pattern of caregiver attachment which is characterised by the minimisation and suppression of negative emotions)[40,41] was associated with a pattern of physiological stress reactivity characteristic of repressive coping. As such, tasks that elicited negative thoughts and feelings were accompanied by heightened and escalating sympathetic nervous system reactivity in the absence of self-reported distress. This pattern was more pronounced in women. In the current study, while stoicism appeared to be adaptive in the short-term by mitigating an emotional response to the stressor, this was not representative of 'true' resilient (i.e. adaptive) behaviour. Continually responding to stress with a stoic attitude may have increased the physiological arousal associated with this passive style of coping and facilitated the onset of

arthritis. While this finding requires further investigation at an epidemiological level, it may have implications for arthritis prevention.

Moreover, for women in this study, changes to their coping approach were only made following significant impact on either their emotional or physical health (including being diagnosed with arthritis). Adopting a balanced or flexible coping approach may be the key to long-term adjustment to stress.[42,43] Interventions aimed at increasing emotional expression and coping flexibility may be pertinent to the management of life stress in women with osteoarthritis, particularly as women combat additional stressors associated with ageing and disease management.

The process of coping with stress over the life course appeared to be dualistic. While the participants described experiencing a reduction in their ability to cope with ongoing life stress over time, this was coupled with personal growth. Participants described implementing cognitive reappraisal techniques that allowed them to see the silver lining in their experiences. Life stress was viewed as character building and provided women with the ability to cultivate or increase the depth of existing qualities such as empathy. The development of greater empathy has been reported in studies involving other chronic conditions.[44,45] The notion of co-occurring positive and negative psychological states in response to chronic stress is supported by Zautra.[46] It has been suggested that the ability to find benefit in a negative experience assists the individual with reinstating valued beliefs about themselves in relation to a world that is orderly, predictable, meaningful and benevolent.[47] The struggles associated with coming to terms with life stress may have provided the skills necessary to psychologically adjust to the physical changes associated with arthritis. Alternatively, for these women, the diagnosis of, and increasing disability associated with arthritis may have provided the impetus for the re-evaluation of pre-existing schemas surrounding stress.[48] While this finding requires further investigation, it provides

evidence for widening the scope in which to view stress and coping in arthritis and has important clinical implications. Cognitive-behavioural stress management interventions aimed at assisting in the reappraisal of stressful life events may not only facilitate psychological well-being but also assist with the psychological adjustment to arthritis. Likewise, the mitigation of the adverse effects of stress in childhood and adolescence may assist with arthritis prevention as coping patterns were shown to develop early and persist over time.

Strengths and limitations

Trustworthiness of the research conducted in this study was evaluated according to the criteria suggested by Kitto and colleagues[49] and was conducted in accordance with the consolidated criteria for reporting qualitative research.[50] Particularly, factors such as purposefully sampling participants with arthritis, creating transparency at each stage of the process (including a comprehensive description of the decisions and procedures involved in the collection, recording and analysis of the data) as well as creating an 'audit trail' that may be subject to external scrutiny contributed to the study's rigour. Added to this, a systematic process was used in order to achieve data saturation.[25] Please note that although member checking was considered as a method of increasing trustworthiness of the data by validating the themes, interpretation and conclusions, there are inherent difficulties associated with the use of this approach. Lillibridge and colleagues[51] argue that experiences described during an interview represent particular moments in time and revisiting these experiences can be distressing and unwanted. Although the depth of the findings surrounding the stress appraisal process in women with osteoarthritis is a particular strength of the study, it must be considered in light of a few limitations. Firstly, this retrospective study focused on a sample of women who had osteoarthritis as their primary diagnosis. The results may not be generalisable to women with other rheumatic conditions such as rheumatoid arthritis.

Likewise, studies have shown gender differences in stress reactivity and approaches to coping.[52,53] These findings may not be generalisable to the coping practices of males with arthritis.

Conclusion

This qualitative study extends the foundational findings regarding perceived stress and arthritis onset in women,[20] and adds to the current understanding of stress and coping in arthritis. Coping with life stress appeared to involve both static attitudinal coping processes developed early in life, coupled with stressor-dependent cognitive and support-based responses. However, coping with life stress over the life course was complex, with women describing a dualistic process involving both reduced resilience and personal growth. The constant psychological readjustment over the long-term associated with these processes may have contributed to deleterious physiological effects through increased arousal of stress systems. The development of accurate quantitative measures in order to assess the complexity involved in coping and adjustment are required to confirm the findings from this study at a population level (including the expansion of coping inventories to encompass more attitudinal-based coping). Further research is also required in order to better understand the role of stoicism and the effects of emotional repression on arthritis outcomes, and its role in the onset of chronic diseases more generally. Widespread public health campaigns aimed at stress mitigation and the facilitation of adaptive coping mechanisms early in life may assist with the prevention of arthritis in future generations of women.

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CONTRIBUTORS

MLH contributed to the study concept, study design, data analysis and interpretation, drafting and editing of the manuscript as well as reviewing the manuscript for intellectual content. JB and NT reviewed the manuscript for intellectual content. DL contributed to the study concept, study design, supervision of the data analysis and review of the manuscript for intellectual content. All authors approved the final version.

COMPETING INTERESTS

None declared.

PROVENANCE AND PEER REVIEW

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No additional data are available.

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Table 1. Participant characteristics

	Missing n (%)	Frequency n (%)	Range	[a]M(SD)
Arthritis-related factors				
Type of arthritis				
Osteoarthritis only		16 (84.2%)		
Osteoarthritis & inflammatory arthritis		3 (15.8%)		
Missing	*0 (0.0%)*			
First reported arthritis diagnosis				
Survey 3 (2001)		11 (57.9%)		
Survey 4 (2004)		1 (5.3%)		
Survey 5 (2007)		7 (36.8)		
Missing	*0 (0.0%)*			
Demographics				
[b]**Age**				
Mean (SD)			60.3 – 64.7	62.5 (1.3)
Missing	*0 (0.0%)*			
Marital status				
Married/de facto		14 (73.7%)		
Separated/divorced/widowed		4 (21.1%)		
Never married		1 (5.3%)		
Missing	*0 (0.0%)*			
Area of residence				
Urban		6 (31.6%)		
Rural/remote		13 (68.4%)		
Missing	*0 (0%)*			
Educational attainment				
Tertiary/post graduate		2 (10.5%)		
Trade/diploma		6 (31.6%)		
School/higher school certificate		7 (36.8%)		
No formal education		2 (10.5%)		
Missing	*2 (10.5%)*			
Occupation				
Highly skilled		4 (21.1%)		
Skilled		2 (10.5%)		
Less skilled		1 (5.3%)		
No employment		9 (47.4%)		
Missing	*3 (15.8%)*			
Country of birth				
Australia		14 (73.7%)		
Other English speaking		2 (10.5%)		
Europe		2 (10.5%)		
Asia		1 (5.3%)		
Missing	*0 (0.0%)*			

[a] means and standard deviations are reported.

[b] age at the time of the interview.

Consolidated criteria for reporting qualitative studies (COREQ): 32-item checklist

Developed from:
Tong A, Sainsbury P, Craig J. Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. *International Journal for Quality in Health Care*. 2007. Volume 19, Number 6: pp. 349 – 357

No. Item	Guide questions/description	Reported on Page #
Domain 1: Research team and reflexivity		
Personal Characteristics		
1. Inter viewer/facilitator	Which author/s conducted the inter view or focus group?	7
2. Credentials	What were the researcher's credentials? E.g. PhD, MD	7
3. Occupation	What was their occupation at the time of the study?	7
4. Gender	Was the researcher male or female?	7
5. Experience and training	What experience or training did the researcher have?	7
Relationship with participants		
6. Relationship established	Was a relationship established prior to study commencement?	6
7. Participant knowledge of the interviewer	What did the participants know about the researcher? e.g. personal goals, reasons for doing the research	N/A
8. Interviewer characteristics	What characteristics were reported about the inter viewer/facilitator? e.g. Bias, assumptions, reasons and interests in the research topic	7
Domain 2: study design		
Theoretical framework		
9. Methodological orientation and Theory	What methodological orientation was stated to underpin the study? e.g. grounded theory, discourse analysis, ethnography, phenomenology, content analysis	7-8
Participant selection		
10. Sampling	How were participants selected? e.g. purposive, convenience, consecutive, snowball	6
11. Method of approach	How were participants approached? e.g. face-to-face, telephone, mail, email	6
12. Sample size	How many participants were in the study?	9
13. Non-participation	How many people refused to participate or dropped out? Reasons?	9

Setting		
14. Setting of data collection	Where was the data collected? e.g. home, clinic, workplace	7
15. Presence of non-participants	Was anyone else present besides the participants and researchers?	N/A
16. Description of sample	What are the important characteristics of the sample? e.g. demographic data, date	9
Data collection		
17. Interview guide	Were questions, prompts, guides provided by the authors? Was it pilot tested?	7
18. Repeat interviews	Were repeat inter views carried out? If yes, how many?	N/A
19. Audio/visual recording	Did the research use audio or visual recording to collect the data?	7
20. Field notes	Were field notes made during and/or after the inter view or focus group?	7
21. Duration	What was the duration of the inter views or focus group?	7
22. Data saturation	Was data saturation discussed?	8
23. Transcripts returned	Were transcripts returned to participants for comment and/or correction?	N/A
Domain 3: analysis and findings		
Data analysis		
24. Number of data coders	How many data coders coded the data?	8
25. Description of the coding tree	Did authors provide a description of the coding tree?	N/A
26. Derivation of themes	Were themes identified in advance or derived from the data?	8
27. Software	What software, if applicable, was used to manage the data?	8
28. Participant checking	Did participants provide feedback on the findings?	21
Reporting		
29. Quotations presented	Were participant quotations presented to illustrate the themes/findings? Was each quotation identified? e.g. participant number	8
30. Data and findings consistent	Was there consistency between the data presented and the findings?	17-22
31. Clarity of major themes	Were major themes clearly presented in the findings?	10-16
32. Clarity of minor themes	Is there a description of diverse cases or discussion of minor themes?	12

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Perceptions of coping with non-disease related life stress for women with osteoarthritis: a qualitative analysis

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Perceptions of coping with non-disease related life stress for women with osteoarthritis: a qualitative analysis

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ABSTRACT

Objective: Coping with arthritis-related stress has been extensively studied. However, limited evidence exists regarding coping with stress extraneous to the disease (life stress). This study explored life stress and coping in a subset of older women with osteoarthritis from a larger longitudinal study.

Setting: An Australian regional University.

Design: This qualitative study involved semi-structured telephone interviews. Potential participants were mailed a letter of invitation/participant information statement by the Australian Longitudinal Study on Women's Health (ALSWH). Invitations were sent out in small batches (primarily ten). Interviews were conducted until data saturation was achieved using a systematic process (n=19). Digitally recorded interviews were transcribed verbatim and de-identified. Data were thematically analysed.

Participants: Women who indicated being diagnosed or treated for arthritis in the previous three years in the fifth survey of the ALSWH (conducted in 2007) provided the sampling frame. Potential participants were randomly sampled by a blinded data manager using a random number generator.

Results: Coping with life stress involved both attitudinal coping processes developed early in life (i.e. stoicism) and transient cognitive and support-based responses. Women also described a dualistic process involving a reduction in the ability to cope with ongoing stress over time, coupled with personal growth.

Conclusions: This is the first study to examine how individuals cope with non-arthritis related stress. The findings add to the current understanding of stress and coping, and have implications regarding the prevention of arthritis in women. Importantly, this study highlighted the potential detrimental impact of persistent coping patterns developed early in

life. Public health campaigns aimed at stress mitigation and facilitation of adaptive coping mechanisms in childhood and adolescence may assist with arthritis prevention.

Keywords: psychological stress, coping, osteoarthritis, women, ageing

Strengths and limitations of this study

- This is the first study to examine how women with osteoarthritis cope with non-arthritis related stress
- Although women with osteoarthritis used somewhat similar approaches to coping with life stress as has been reported for arthritis-related stress, fewer life-stress coping strategies were identified. Life-stress coping strategies were focused on cognitive and help-seeking approaches, with a strong reliance on stoicism (developed early in life).
- This study focused on retrospective accounts of coping with life stress using a sample of women who had osteoarthritis as their primary diagnosis. The results may not be generalisable to women with other rheumatic conditions or males with osteoarthritis.

INTRODUCTION

Considerable interest has been generated around understanding the role of psychosocial factors in influencing disease trajectories. In particular, research has increasingly highlighted the role of psychological stress in the aetiology and progression of chronic disease.[1-3] The role of psychological stress in the onset and course of disease has been highlighted as particularly pertinent for women, with research suggesting that women are exposed to a greater number of life stressors and have a tendency to perceive stressors as more stressful than men.[4] Arthritis in particular has been found to be a major cause of disability, limited mobility, and chronic pain in women.[5] The majority of stress-related research has focused on the occurrence of chronic major and minor life events.[6-8] However, the way in which individuals perceive stress, coupled with the coping strategies employed to reduce the impact of stress, have been found to be more important than the exposure to a stressor.[9]

Studies have consistently demonstrated that coping strategies employed by an individual in response to a stressful event have a significant impact on psychological as well as physical outcomes.[10-12] In terms of coping with arthritis, passive or emotion-focused coping has been found to be associated with increased arthritis pain, disability and depression in comparison to those who employ active (problem-based) coping strategies.[10,13,14] Meanwhile, a qualitative study of Canadian adults involved in a self-management program (aged 45-78), found that stress was the *'biggest factor'* in their lives. Coping involved *'just getting through the day'* or participating in leisure-time activities in order to achieve *'enjoyment'* or *'balance'*.[15] On the other hand, Tak [16] identified cognitive, behavioural or social diversion-based activities and assertive actions (e.g. directly addressing the problem by seeking a solution or talking to someone) were found to reduce the effects of stress in those with arthritis. More recently, psychological adjustment to arthritis over time was found to be attributed primarily to cognitive and attitudinal factors including stoicism and making downward comparisons.[17]

Importantly, coping with arthritis was viewed as a dynamic 'day to day' process involving a constant struggle between grieving physical losses and increasing dependence amidst symptom management.

While a large body of evidence exists regarding arthritis-specific coping strategies,[18,19] limited evidence exists regarding coping with stress extraneous to arthritis (i.e. life stress). Harris and colleagues[20] recently demonstrated in a longitudinal cohort study that perceived stress is a critical modifiable risk factor for arthritis onset in older women. Women chronically experiencing high stress levels had a 2.4-fold increase in developing arthritis compared to women who experienced no stress. Understanding women's coping patterns (including their origin) may assist in further elucidating the stress-chronic disease relationship. Studies focused on understanding this concept are currently lacking. It is important to understand whether women with arthritis cope with life stress differently to how they cope with arthritis-related stress. Therefore, the purpose of this study is to explore non-disease related stress-coping processing in a sub-sample of women with arthritis. With the majority of arthritis diagnoses driven by osteoarthritis, the experiences of women with osteoarthritis formed the focus of this study. A qualitative approach was applied in order to capture the complexities surrounding cognitive appraisal.[21]

MATERIALS AND METHODS

Ethical approval

Ethical approval was granted for all aspects of the project by the University of Newcastle's Human Research Ethics Committee prior to the commencement of data collection, with all interviews and verbal consent procedures carried out in accordance with the University of Newcastle's Human Research Ethics Committee policies regarding telephone interviewing.

Participant sampling frame

Participants were sampled from the 1946-1951 cohort of the Australian Longitudinal Study on Women's Health (ALSWH).[22,23] Women who indicated being diagnosed or treated for arthritis at survey 5 (conducted in 2007) and meeting the inclusion criteria (i.e. fluent in English, did not have a proxy (e.g. carer) complete their surveys, or had not withdrawn from either the longitudinal study or further sub-studies) were included in the sampling frame (n=2,802). Potential participants were then randomly selected from the remaining pool by a blinded data manager using a random number generator. A sample of 60 women meeting the inclusion criteria was initially drawn, assuming a 50% response rate. Women however, were sampled until data saturation had been reached. Key demographic and health-related factors such as education, area of residence, Body Mass Index, physical activity and health-related quality of life were monitored throughout the recruitment process in order to achieve a diverse sample.

Recruitment process

Potential participants randomly selected from the study participant pool were mailed a letter of invitation/participant information statement by the ALSWH. Invitations were sent out in small batches (primarily ten). Potential participants were contacted by the research team (MLH) two to four weeks following the mailout in order to gain informed consent.

Interview process

The interview process has been described in detail elsewhere.[17] Briefly, to ensure consistency in data collection, the semi-structured interviews were conducted by the first author (MLH), a PhD candidate with a background in psychology and post graduate training in qualitative research (who had no personal experience of osteoarthritis and was not in the sampled age

bracket). All semi-structured telephone interviews were conducted at the offices of the Research Centre for Gender, Health and Ageing located at the University of Newcastle and digitally recorded. Prior to the commencement of the interviews, participants provided verbal consent. The provision of informed verbal consent was more appropriate to written consent to reduce participant burden. While interviews were primarily guided by the interview schedule, participants were able to direct the conversation and concentrate on issues they felt were most important. During (and after) the interview, field notes were collected. These included points of interest to follow-up, the emotional condition of the participant, impressions of the interview and a summary of significant findings. Interviews ranged in duration from 15 minutes to 2 hours 50 minutes, with an average time of 1 hour 10 minutes.

Semi-structured interview schedule

The semi-structured interview was retrospective in nature. Interview questions were designed to guide women to reflect upon their life experiences (i.e. stressors) and coping mechanisms across the life course (including during their childhood and early adult years, at the time of arthritis diagnosis and post-diagnosis). Consistent with a realist-orientated approach (i.e. aiming to explain the phenomenon with a degree of objectivity),[24] the main interview questions were open-ended. This provided an environment for the participant to tell their story without direction from the interviewer. While the main questions provided a certain amount of structure in order to conduct the interview, they were not prescriptive. To provide the contextual material necessary to understand the phenomenon, the content of the interview was ultimately co-determined by both the researcher and participant.

Data analysis

Women were sampled until 'data saturation' had been reached using a systematic process similar to Francis and colleagues[25] which recommended an *a priori* sample size of ten be set,

and a stopping criterion of three for structured interviews. Due to the diverse nature of the interview schedule and semi-structured approach, an initial sample size of 15 was established, with a stopping criterion of three. The stopping criterion was employed in order to determine the point when no more themes (or sub-themes) were identified in the data. The stopping criterion was tested after each successive interview. At the point when three successive interviews had been analysed without further thematic identification, data saturation was said to be achieved. As the final two interviews were carried out in succession, this criterion was exceeded by one.

Digitally recorded interviews were transcribed verbatim and de-identified. All interview transcripts were checked for accuracy (MLH) and the data were entered into the qualitative management program Nvivo v.9 (QSR International Pty Ltd, 2010) for analysis. Thematic analysis was applied to the data, with data coded by the first author (MLH) following the procedure outlined by Braun and Clarke.[26] Briefly, finalised transcripts were systematically read and re-read prior to thematic coding to obtain an overall sense of the data,[27] with patterns and meanings identified. Phase two involved generating initial codes from the raw data. Transcripts were read in a line by line fashion, giving equal attention to each data item within the dataset, with sections of text relevant to the research entered into Nvivo as free standing 'nodes' (i.e. categories). Throughout the coding process, all transcripts were repeatedly reviewed and analysed. Similarities and differences were constantly compared to each other in an iterative fashion, with similar phenomena (or similar aspects of a phenomenon) grouped together. Comparisons were made within and across transcripts.[28] The refinement of higher order concepts (i.e. themes) involved ensuring that the generated codes formed coherent patterns within and across the datasets with disconfirming, as well as confirming evidence sought.[29-31] The first author reviewed and discussed the content of the

identified themes and example extracts on multiple occasions with the senior author (DL) to ensure that the themes accurately reflected the participants' narratives.

Additional participant information

The following demographic variables (described in detail by Harris and colleagues[20,32]) were used to provide participant characteristics: age, marital status, highest educational qualification, occupation, area of residence and country of birth.

RESULTS

Participant characteristics

Nineteen women (out of 44 invited to take part) with an average age of 62.5±1.3 years at the time of the interviews participated in the interviews. All women had osteoarthritis as their primary diagnosis, with three women reporting rheumatic comorbidity. Participants had been diagnosed more than four years prior to the interview, with the majority (n=11/19) first reporting their diagnosis at survey 3 (conducted in 2001). Additional sociodemographic characteristics are shown in Table 1.

Summary of themes

Women with osteoarthritis described experiencing stress and adversity at some point throughout their lives. For some women, these experiences were intermittent, while for others they began early in life and accumulated across the life course. Although three women reported experiencing reasonably happy childhoods with *"no major dramas"*, a number of women reported significant stress prior to arthritis onset, particularly from an early age. These events were often described as being 'traumatic' by the participants and primarily revolved around the illness or death of a parent, poverty, as well as experiencing physical or sexual abuse. However, coping with life stress over time was found to be complex. Coping

has been identified as important in the mitigation of the stress response and facilitation of psychological adjustment following stress exposure. The following provides a discussion surrounding the specific coping strategies employed by participants in dealing with life stress (as opposed to coping with arthritis symptoms and limitations), the patterns of coping that emerged over time, and factors that influenced psychological adjustment to life stress.

Theme 1: Approaches to coping with stress

Women with osteoarthritis identified a number of strategies for minimising the immediate effects of life stress. These women appeared to be able to compartmentalise certain strategies for coping with arthritis and coping with non-arthritis stress. For instance, health behavioural approaches such as physical activity emerged as a key factor in coping with pain (i.e. *"use it or lose it"* philosophy), they were rarely reported by the women in terms of coping with stress over the life course. Participants most often reported utilising either help-seeking practices, cognitive-based coping or drew upon personal belief systems and attitudes in order to deal with life stress.

Help-seeking and support-based approaches

Eighteen women reported that seeking support from others was particularly important as a means of coping with life stress. While some women sought emotional support from a variety of sources, other women described being more constrained in their choices. For women who valued this coping approach and had difficult or generationally stereotypical relationships with their spouses (i.e. where emotional expression and empathy were not core features of the relationship) *"he would no sooner talk about his feelings than fly to the moon"* [Participant 5], this involved seeking informal support from individuals outside the marital union. Children, siblings, friends or other women *"full of wisdom"* within the community were identified as key sources:

> *there are inspirational women out there. They have been through the black hole, you know through that tunnel of life, there is nothing they haven't been through you know between you know ill children, dying children, gay children, whatever children, divorces ...* [Participant 11]

In contrast to generational stereotypes, a number of women also spoke about receiving professional help regarding their problems and sought counsel from psychologists, psychiatrists, grief counsellors, general practitioners or other alternative and complementary health practitioners as well as attending self-development courses. Seeking help from others facilitated an emotional release, a factor that was seen as pivotal to the maintenance of good mental health:

> *I think the main thing is to be able to talk about it ... You know some people sort of, they clam up and they don't talk about it, well they're the ones that really have the breakdowns aren't they?* [Participant 9].

A few women also used 'information seeking' practices in order to reduce the impact of a stressor. This was particularly useful when the stressor related to the illness of a spouse or family member. For one participant whose husband was possibly in the early stages of Alzheimer's disease, the ability to source information from the internet was viewed as a *"God send"* for her and others that live in *"less developed parts of the countryside"*. For her, having information readily available either dispelled concerns regarding the source of stress or provided a sense of control over the situation in which plans to combat the issue could be outlined. Being educated about the source of stress was also supported by other participants, *"the more you know, it does stop you worrying"* [Participant 12].

Cognitive approaches

Women often spoke about using cognitive approaches to modify their thoughts surrounding life stressors. These practices included mind blocking strategies or distraction in order *"to not dwell on all th[e] kind of crap that happens'* and *'put [the stress] back where it belongs"* [Participant 11]. Activities that provided distraction included reading, watching television, listening to music, bird watching, paid work, playing with a pet and being involved in craft activities. These activities were reported to have a calming effect and facilitated relaxation. Women also employed positive self-talk, although to a lesser extent. These techniques allowed for the participant to either minimise or discount the stress they were experiencing:

> *sometimes you know you can be feeling down and, and you've, and you have to say to yourself well come on it's in your mind, ... it's not as bad as you think it is. It's just the way you're feeling ...* [Participant 5].

Other cognitive processes (paralleling arthritis-specific coping efforts) included the use of comparative coping (i.e. comparing their stress with others) in order to normalise stress:

> *I've been divorced once um infertile for a lot of years ... lost a baby at three days old, my husband had um a stage two melanoma and then bowel cancer and just the usual problems ... normal life when you think of it compared to most other people* [Participant 13].

Faith-based approaches

Religious or faith-based coping was identified by one-third of women as important to coping with stress, *"...even though I'm not a church goer now I still have very strong faith and I do think that ... has helped me right through life face things"* [Participant 5]. This type of coping not only related to formal prayer and belief in Christianity, but also included engagement in

meditation in order to promote emotional expression. Formal prayer methods were often used by participants when other coping strategies had been exhausted and the participant could no longer carry the burden, "*when I feel like it's getting too heavy and I can't carry it anymore that's when I hand it over* [to God] …" [Participant 19].

Stoicism

Being stoic and repressing (or denying) emotions was consistently chosen as an attitudinal-based coping strategy by the participants (n=15). This type of coping was particularly noted in response to traumatic stress or the compounding of life events:

> *my mother took us kids and we left my father in I suppose I was about seven or eight um … and we sort of soldiered on on our own, and then um I met my late husband … We had 28 years, three children, he passed away, then I met my current husband and here we are … things like that they make you bottle it up* [Participant 3].

In response to dealing with her daughter and husband having cancer at the same time, one participant commented *"… that's the sort of person I am I just cope. You have to do it and I had to be there for her because there was no one else and you just do it"* [Participant 18]. Other women provided a similar analysis of the stress they experienced often simply suggesting that *"I just had to get on with it, there was no time to dwell on things"* [Participant 4].

Theme 2: Origins of coping responses

Although the participants reported coping with life stress through either cognitive, help-seeking, attitudinal or faith-based practices, throughout the course of the interviews distinct patterns regarding the ways in which women with osteoarthritis approached life stress over time emerged. Coping responses particularly during times of intense stress were often a result

of unconscious mechanisms that emerged early in life (n=14). The women often indicated that the ability to cope was either an intrinsic quality (i.e. being born like that), a result of a *"survival"* mechanism or the influence of parent-driven coping characteristics taken on at an early age, *"we were brought up to be strong"* [Participant 10]. One participant in particular noted that having been brought up by a single mother she learned to *"just get on with things":*

> *Well we got taught when we were quite young 'cause mum had to bring the two of us up on her own to you know you've got to just get on with life no matter what happens to you you've got to just pick yourself up and get on with things. You don't dwell on things or else you'll go under* [Participant 2].

Women with osteoarthritis appeared to repeatedly choose coping mechanisms developed in childhood across the life course and often modelled their *"very strong sort of character"* on a significant caregiver. For one participant, the ability to *"soldier on"* [Participant 19] in the face of stress was described as an admirable and necessary quality that she modelled from her mother. Another participant applied the coping responses learned during childhood to coping with having her daughter and husband diagnosed with cancer at the same time:

> *my mother was a very strong person. I think she had to be to get through our childhood ... she had quite a few setbacks in her life but I think that's where I get it from. I am a lot like her ...* [Participant 18].

Thus, coping with early experiences had long-term implications, shaping the way in which the women approached not only future stressful life experiences, but their view of life in general.

Theme 3: Changes in coping with life stress over time

Coping responses employed by the participants were often developed early in life and persisted across the life course. Consistently coping with psychosocial stressors using the same strategies, although adaptive in the short-term, were described as being detrimental to both physical and mental health over the long-term. The persistent use of attitudinal-based coping resources such as the stoic *"just get on with it"* approach were reported to coincide with a reduced ability to cope with ongoing stress. This process was often described by participants as a *"loss of resilience"*. For the majority of participants, new coping strategies were sought only when strategies used in the past began to fail. For some participants, the quest for new and effective coping strategies was a difficult process. As one participant indicated *"I think I've lost some of my ability to manage my stress and I haven't found ... something that works"* [Participant 10].

The majority of women described having barrelled through life where the burden of responsibility and expectations associated with being a woman allowed participants to get through difficult and often traumatic times

> *When you are so busy ... you don't become stressed because you don't have time to think about it. You don't have time to worry you, you're only concern is oh my God I've got three kids at home, I've still got to put a meal on the table for them ...* [Participant 13].

Over time, however, this method of coping was ineffective and detrimental to both their physical and mental health. A lack of time promoted the use of survival coping, with the effects of this process only evident once chronic stressors were removed. This self-sacrificing mentality facilitated some women remaining in stressful situations despite their own needs and health, "*I guess I just pressed on regardless of my own health needs*" [Participant 4].

Theme 4: Surviving life stress

Coping with stress over time ultimately appeared to be dualistic in nature. While the majority of women reported experiencing psychosocial stress over the life course, a number of women described an ability to see the 'silver lining' in their experiences. This process of 'stress-related growth' was vital to long-term psychological adjustment. This theme describes the factors participants perceived as important in the reappraisal of life stress over time. Stressful experiences were viewed by participants as character building, assisting in the cultivation of empathy for others, *"it just made me more caring for other people and gave me more empathy I do think"* [Participant 14] and presented a learning experience. For instance:

> *I think you don't know what's in you until you are solely tested, that's what I tell my kids, we don't know what strengths we have and it's easy when you're cruising along but that's when you find out who you really are and how you grow I think* [Participant 11].

Accepting the process of life and being grateful for the positive experiences were also noted by a few women as key factors in facilitating personal growth. Another participant suggested that her life involved *"a lot of trial and error",* particularly during her early adult years. This period was critical in the development of resourcefulness and although she viewed the coping strategies developed as less than optimal, it created the platform for adjustment in later years.

The overarching sentiment flowing through the interviews however, revolved around *"survivorship"*. Despite whatever they had experienced, including abuse, significant loss, or having *"nervous breakdowns"*, the majority of women created meaning from these experiences. This process allowed participants to come to terms with their experiences, accept them as a part of life and get up 'off the floor' and keep moving forward:

I think I'm a survivor. I've, I have come through a very good marriage and a sad marriage and I've lost my parents um and I've always moved forward, I've always kept going forward it never occurred to me to give up and I think it's the genes I have from my parents who were survivors as well [Participant 7].

DISCUSSION

Summary of findings

This study aimed to qualitatively explore aspects of coping with life stress in women with osteoarthritis. Coping strategies included cognitive (e.g. positive self-talk), help-seeking (e.g. social support and stressor education), faith-based and attitudinal (e.g. stoicism) practices. Survival coping practices were often developed early in life. Particularly, the persistence of attitudinal coping styles over time were detrimental to long-term adjustment, with significant reappraisal required in order to process stressful life events. The findings suggest that the adjustment to stress over the life course for participants was complex, with women describing a dualistic process involving both reduced resilience and personal growth. These findings add to the wider body of knowledge surrounding stress-coping and arthritis onset in women.

Coping with stress and coping with arthritis: two sides of the same coin?

Although the strategies used by women to minimise the immediate effects of life stress in the current study were found to be somewhat similar to those they used to cope with an arthritis-related stressor,[17] fewer life-stress coping strategies were identified. Life-stress coping strategies were heavily focused on cognitive (e.g. positive self-talk) approaches, and help-seeking (e.g. social support and stressor education). In contrast, we previously found that women use a combination of strategies to cope with an arthritis-related stressor, including physical activity, distraction, activity restriction, pain minimisation, positive self-talk, prayer,

social support and the repression of emotion. This is a novel finding, as previous qualitative research using samples with arthritis have viewed coping with stress as part of coping with arthritis[16] and have not been able to provide an in-depth account of the subtle differences in coping with life stress, as opposed to coping with an arthritis-related stressor.

In contrast to Lazarus and Folkman's transactional model of stress and coping which posits that coping is a dynamic process involving a transaction between the threat, the appraisal and the response,[9] coping with life stress by women in this study appeared to involve attitudinal coping processes that were developed early in life. This approach included stoicism, in conjunction with more stressor-dependent cognitive and support-based coping responses such as positive self-talk and help-seeking, as well as relaxing leisure activities (e.g. reading). These results are partially supported by Tak[16] and Iwasaki and Butcher.[15] In particular, Iwasaski and Butcher[15] found that middle-aged and older women with arthritis used spiritual-based coping, social support, physical activity, altruistic endeavours, maintaining a positive attitude, and educational help-seeking practices in order to cope with arthritis-related stress. However, Harris et al.[17] recently found that educational help-seeking practices were rarely employed when dealing with arthritis-associated stressors. Leisure coping (or diversional) activities in particular have been found to have stress-buffering effects[33] by reducing negative feelings towards the event and providing the capacity for cognitive reframing to occur.[34] The use of a stoic attitude in order to cope with life stress among women with arthritis, however, is unique to the current study and extends the concept of coping involving emotion and problem-focused efforts.[9] The findings add to the current understanding surrounding coping with stress and highlight the potential detrimental long-term mental and physical health effects of such coping practices (however this hypothesis would have to be examined in future studies). The expansion of quantitative coping inventories beyond currently recognised

problem-focused and emotion-focused approaches is required. This may also have implications for coping with the effects of arthritis, such as pain.

Social support and help-seeking were found to be particularly important for the women in this study. Some women sought support from a number of sources, while others were constrained in their choices and chose to seek emotional support from outside the marital union. The expectation surrounding the source of support was pivotal to its efficacy, with women resigned to accept gender stereotypical behaviours. In the absence of social support, the women relied heavily on their own personal resources (e.g. cognitive approaches such as distraction or stoicism) in order to cope. Hawkley and Cacioppo[35] provided evidence for the role of social factors (particularly loneliness) in maintenance and reparative processes via pro-inflammatory cytokine mediators (interleukin-1β and tumor necrosis factor). Therefore, women with osteoarthritis may benefit from extending their social support networks by joining arthritis support groups in order to not only address arthritis-specific issues, but also assist with coping with life stress.

The employment of ingrained coping styles over the life course appeared to be detrimental to long-term psychological adjustment to life stress in the current study and previous research,[36] with women describing a loss of resilience over time. Emotional repression, characteristic of a stoic attitude, has been found to be associated with the reporting of low levels of distress despite high levels of physiological reactivity.[37,38] Diamond and colleagues[39] noted a relationship between attachment style developed early in life and coping patterns. Particularly, their findings demonstrated that attachment avoidance (i.e. a pattern of caregiver attachment which is characterised by the minimisation and suppression of negative emotions)[40,41] was associated with a pattern of physiological stress reactivity characteristic of repressive coping. As such, tasks that elicited negative thoughts and feelings were accompanied by heightened and escalating sympathetic nervous system reactivity in the

absence of self-reported distress. This pattern was more pronounced in women. In the current study, while stoicism appeared to be adaptive in the short-term by mitigating an emotional response to the stressor, this was not representative of 'true' resilient (i.e. adaptive) behaviour. Continually responding to stress with a stoic attitude may increase the physiological arousal associated with this passive style of coping and facilitated the onset of arthritis. While this finding requires further investigation at an epidemiological level (as it was not a specific aim of the study), it may have implications for arthritis prevention.

Moreover, for women in this study, changes to their coping approach were only made following significant impact on either their emotional or physical health (including being diagnosed with arthritis). Adopting a balanced or flexible coping approach may be the key to long-term adjustment to stress.[42,43] Interventions aimed at increasing emotional expression and coping flexibility may be pertinent to the management of life stress in women with osteoarthritis, particularly as women combat additional stressors associated with ageing and disease management.

The process of coping with stress over the life course appeared to be dualistic. While the participants described experiencing a reduction in their ability to cope with ongoing life stress over time, this was coupled with personal growth. Participants described implementing cognitive reappraisal techniques that allowed them to see the silver lining in their experiences. Life stress was viewed as character building and provided women with the ability to cultivate or increase the depth of existing qualities such as empathy. The development of greater empathy has been reported in studies involving other chronic conditions.[44,45] The notion of co-occurring positive and negative psychological states in response to chronic stress is supported by Zautra.[46] It has been suggested that the ability to find benefit in a negative experience assists the individual with reinstating valued beliefs about themselves in relation to a world that is orderly, predictable, meaningful and

benevolent.[47] The struggles associated with coming to terms with life stress may have provided the skills necessary to psychologically adjust to the physical changes associated with arthritis. Alternatively, for these women, the diagnosis of, and increasing disability associated with arthritis may have provided the impetus for the re-evaluation of pre-existing schemas surrounding stress.[48] While this interpretation requires further investigation, it provides evidence for widening the scope in which to view stress and coping in arthritis and has important clinical implications. Cognitive-behavioural stress management interventions aimed at assisting in the reappraisal of stressful life events may not only facilitate psychological well-being but also assist with the psychological adjustment to arthritis. Likewise, with resilience found to be a malleable and teachable construct,[49] improving resilience in childhood and adolescence may assist with arthritis prevention considering coping patterns were shown to develop early and persist over time. Importantly, fostering qualities such as optimism and positive mood, self-esteem, self-care, independence, social support, and reduced anxiety, have been found to influence health, including biological processes such as neuroendocrine and immune function.[50]

Strengths and limitations

Trustworthiness of the research conducted in this study was evaluated according to the criteria suggested by Kitto and colleagues[51] and was conducted in accordance with the consolidated criteria for reporting qualitative research.[52] Particularly, factors such as purposefully sampling participants with arthritis, creating transparency at each stage of the process (including a comprehensive description of the decisions and procedures involved in the collection, recording and analysis of the data) as well as creating an 'audit trail' that may be subject to external scrutiny contributed to the study's rigour. Added to this, a systematic process was used in order to achieve data saturation.[25] Please note that although member checking was considered as a method of increasing trustworthiness of the data by validating

the themes, interpretation and conclusions, there are inherent difficulties associated with the use of this approach. Lillibridge and colleagues[53] argue that experiences described during an interview represent particular moments in time and revisiting these experiences can be distressing and unwanted.

Although the depth of the findings surrounding the stress appraisal process in women with osteoarthritis is a particular strength of the study, it must be considered in light of a few limitations. Firstly, this retrospective study focused on a sample of women who had osteoarthritis as their primary diagnosis. There are also potential issues surrounding the retrospective recall of life events. However, it has been found that more salient life events (i.e. personally significant), are reported more consistently.[54] Additionally, the results may not be generalisable to women with other rheumatic conditions such as rheumatoid arthritis or women from other generations (particularly those who are younger). As there was an over-representation from women living in rural areas, it is important to note that some of the coping practices (e.g. help-seeking via the internet or a focus on intrinsic coping strategies) may be specifically related to geographical isolation. Moreover, studies have shown gender differences in stress reactivity and approaches to coping.[55,56] These findings may not be generalisable to the coping practices of males with arthritis.

Conclusion

This qualitative study extends the foundational findings regarding perceived stress and arthritis onset in women,[20] and adds to the current understanding of stress and coping in arthritis. Coping with life stress appeared to involve both attitudinal coping processes developed early in life, coupled with stressor-dependent cognitive and support-based responses. However, coping with life stress over the life course was complex, with women describing a dualistic process involving both reduced resilience and personal growth. The

constant psychological readjustment over the long-term associated with these processes may have contributed to deleterious physiological effects through increased arousal of stress systems. The development of accurate quantitative measures in order to assess the complexity involved in coping and adjustment are required to confirm the findings from this study at a population level (including the expansion of coping inventories to encompass more attitudinal-based coping). Further research is also required in order to better understand the role of stoicism and the effects of emotional repression on arthritis, and its role in the onset of chronic diseases more generally. Widespread public health campaigns and psychological interventions aimed at stress mitigation and the facilitation of adaptive coping mechanisms early in life may be one potentially important approach in assisting with the prevention of arthritis in future generations of women.

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CONTRIBUTORS

MLH contributed to the study concept, study design, data analysis and interpretation, drafting and editing of the manuscript as well as reviewing the manuscript for intellectual content. JB and NT reviewed the manuscript for intellectual content. DL contributed to the study concept, study design, supervision of the data analysis and review of the manuscript for intellectual content. All authors approved the final version.

COMPETING INTERESTS

None declared.

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No additional data are available.

OPEN ACCESS

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Table 1. Participant characteristics

	Missing n (%)	Frequency n (%)	Range	[a]M(SD)
Arthritis-related factors				
Type of arthritis				
Osteoarthritis only		16 (84.2%)		
Osteoarthritis & inflammatory arthritis		3 (15.8%)		
Missing	*0 (0.0%)*			
First reported arthritis diagnosis				
Survey 3 (2001)		11 (57.9%)		
Survey 4 (2004)		1 (5.3%)		
Survey 5 (2007)		7 (36.8)		
Missing	*0 (0.0%)*			
Demographics				
[b]**Age**				
Mean (SD)			60.3 – 64.7	62.5 (1.3)
Missing	*0 (0.0%)*			
Marital status				
Married/de facto		14 (73.7%)		
Separated/divorced/widowed		4 (21.1%)		
Never married		1 (5.3%)		
Missing	*0 (0.0%)*			
Area of residence				
Urban		6 (31.6%)		
Rural/remote		13 (68.4%)		
Missing	*0 (0%)*			
Educational attainment				
Tertiary/post graduate		2 (10.5%)		
Trade/diploma		6 (31.6%)		
School/higher school certificate		7 (36.8%)		
No formal education		2 (10.5%)		
Missing	*2 (10.5%)*			
Occupation				
Highly skilled		4 (21.1%)		
Skilled		2 (10.5%)		
Less skilled		1 (5.3%)		
No employment		9 (47.4%)		
Missing	*3 (15.8%)*			
Country of birth				
Australia		14 (73.7%)		
Other English speaking		2 (10.5%)		
Europe		2 (10.5%)		
Asia		1 (5.3%)		
Missing	*0 (0.0%)*			

[a] means and standard deviations are reported.

[b] age at the time of the interview.

Consolidated criteria for reporting qualitative studies (COREQ): 32-item checklist

Developed from:
Tong A, Sainsbury P, Craig J. Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. *International Journal for Quality in Health Care*. 2007. Volume 19, Number 6: pp. 349 – 357

No. Item	Guide questions/description	Reported on Page #
Domain 1: Research team and reflexivity		
Personal Characteristics		
1. Inter viewer/facilitator	Which author/s conducted the inter view or focus group?	6
2. Credentials	What were the researcher's credentials? E.g. PhD, MD	6
3. Occupation	What was their occupation at the time of the study?	6
4. Gender	Was the researcher male or female?	6
5. Experience and training	What experience or training did the researcher have?	6
Relationship with participants		
6. Relationship established	Was a relationship established prior to study commencement?	6
7. Participant knowledge of the interviewer	What did the participants know about the researcher? e.g. personal goals, reasons for doing the research	N/A
8. Interviewer characteristics	What characteristics were reported about the inter viewer/facilitator? e.g. Bias, assumptions, reasons and interests in the research topic	7
Domain 2: study design		
Theoretical framework		
9. Methodological orientation and Theory	What methodological orientation was stated to underpin the study? e.g. grounded theory, discourse analysis, ethnography, phenomenology, content analysis	7
Participant selection		
10. Sampling	How were participants selected? e.g. purposive, convenience, consecutive, snowball	6
11. Method of approach	How were participants approached? e.g. face-to-face, telephone, mail, email	6
12. Sample size	How many participants were in the study?	9
13. Non-participation	How many people refused to participate or dropped out? Reasons?	9

Setting		
14. Setting of data collection	Where was the data collected? e.g. home, clinic, workplace	7
15. Presence of non-participants	Was anyone else present besides the participants and researchers?	N/A
16. Description of sample	What are the important characteristics of the sample? e.g. demographic data, date	9
Data collection		
17. Interview guide	Were questions, prompts, guides provided by the authors? Was it pilot tested?	7
18. Repeat interviews	Were repeat inter views carried out? If yes, how many?	N/A
19. Audio/visual recording	Did the research use audio or visual recording to collect the data?	6-7
20. Field notes	Were field notes made during and/or after the inter view or focus group?	7
21. Duration	What was the duration of the inter views or focus group?	7
22. Data saturation	Was data saturation discussed?	7-8
23. Transcripts returned	Were transcripts returned to participants for comment and/or correction?	N/A
Domain 3: analysis and findings		
Data analysis		
24. Number of data coders	How many data coders coded the data?	8
25. Description of the coding tree	Did authors provide a description of the coding tree?	N/A
26. Derivation of themes	Were themes identified in advance or derived from the data?	8
27. Software	What software, if applicable, was used to manage the data?	8
28. Participant checking	Did participants provide feedback on the findings?	21
Reporting		
29. Quotations presented	Were participant quotations presented to illustrate the themes/findings? Was each quotation identified? e.g. participant number	8
30. Data and findings consistent	Was there consistency between the data presented and the findings?	17-22
31. Clarity of major themes	Were major themes clearly presented in the findings?	10-16
32. Clarity of minor themes	Is there a description of diverse cases or discussion of minor themes?	12