Pain Medicine Advance Access published February 13, 2016

Pain Medicine 2016; 0: 1–9
doi: 10.1093/pm/pnv111

Original Research Article

The Prevalence and Cross-Sectional Associations of Neuropathic-like Pain Among Older, Community-Dwelling Women with Arthritis

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Funding sources: The Hunter Medical Research Institute, via the Lions Club of Adamstown, NSW Australia [Grant number HMRI 11-35].

Disclosure: All authors substantially contributed to the writing of this manuscript and declare that they have no competing interests.

Abstract

Objective. To estimate the prevalence and examine the associations of neuropathic-like pain in a community-based sample of older Australian women with arthritis.

Design. Population based cross-sectional survey.

Setting. Participants were recruited from the 1946-1951 cohort of the Australian Longitudinal Study of Women's Health.

Subjects. Women with self-reported arthritis (n = 147).

Methods. Primary outcome measure was self-reported neuropathic-like pain, defined as scores ≥12 via the painDETECT screening tool. Descriptive statistics summarized health and socio-demographic characteristics, and comparisons made using student's *t*-test or Wilcoxon Rank Sum test, and Chi-square tests. Independent health and demographic variables were examined by univariable logistic regression, and significant variables included in multiple variable logistic regression modelling.

Results. Thirty-nine women (26.5%) were screened as having neuropathic-like pain. Women with neuropathic-like pain were more likely to have poorer health, worse pain, higher pain catastrophizing, more fatigue, and more depression than women with nociceptive pain. Neuropathic-like pain was significantly associated with higher scores on the SF-MPQ sensory scale and pain catastrophizing scale, and with more medication use.

Conclusions. Neuropathic-like pain in women with arthritis was common and is associated with greater disability and poorer quality of life.

Key Words. Key Words. Arthritis; Pain; Neuralgia; Cross-Sectional Study; Women

Introduction

Pain is often the first symptom of arthritis and is primarily the main finding in the clinical setting [1]. Imperative in the potential to prevent, control, and treat arthritis effectively is the importance of understanding the broad pain experience [2,3]. Unfortunately, the experience of pain in arthritis is not well understood [4] or well captured by measures used in epidemiological studies in osteoarthritis [5], and as such the management of pain in arthritis remains a challenging clinical goal.

The mechanism of pain in osteoarthritis is a complex interaction of peripheral tissue damage, inflammation, and altered responses in both the peripheral and central nervous system. Nociceptive pain arises from the stimulation of peripheral nociceptors by synovium, ligaments, capsule, subchondral bone, and surrounding tissues, with the exception of articular cartilage [3,6]. This initiates

a cascade of inflammatory markers. But with prolonged stimulus the threshold of pain is lowered, resulting in abnormal changes in pain sensitivity at the site of inflammation [7] and sensory abnormalities such as allodynia, and primary and secondary hyperalgesia [6]. Abnormal pain sensitivity causes irregular excitation of neurons, up-regulation in the transfer of sensory input, and dysfunctional processing in the somatosensory cortex of the brain. This plastic modulation of the nervous system after chronic and persistent provocation, known as central sensitization, is understood to contribute to the experience of neuropathic pain in arthritis [8]. A subgroup of people that have osteoarthritis and with troubling persistent pain were found to have low pain threshold, enhanced duration of pain, secondary hyperalgesia, and increased neuronal firing [8]. Increased pin-prick hyperalgesia has also been shown in people with rheumatoid arthritis [9]. While a robust body of literature supports the role of neuropathic pain and central pain contributions in arthritis [10,11], a population-based approach to neuropathic pain in arthritis remains a significant yet inadequately studied area.

Neuropathic pain is defined as "pain arising as a direct consequence of a lesion or disease affecting the somatosensory system" [12]. The prevalence of neuropathic pain in the community according to self-administered questionnaires varies between 3% and 8% [13–15]. In a qualitative study of people with joint pain, descriptors of neuropathic pain were present in over 50% of people reporting joint pain, with heat pain thresholds and mechanical pain sensitivity significantly associated with neuropathic pain [16]. Of 80 focus group participants with knee osteoarthritis, 34% used pain quality descriptors suggestive of neuropathic pain. Descriptors included radiating pain (59.2%), electrical shocks (50.4%), sensitivity to pressure (34.9%), and burning pain (33.3%) [17]. Knee osteoarthritis patients awaiting total joint replacement demonstrated an array of somatosensory abnormalities, with 70% reporting at least one abnormality [18]. Clinical studies have found that neuropathic pain features are strongly correlated with poorer quality of life and pain intensity in hospital orthopaedic clinic patients with severe osteoarthritis of the knee [19]. Neuropathic pain is associated with poorer physical and mental health [15,20]; however, to our knowledge no studies have investigated associations of neuropathic-like pain with health-related quality of life and socio-demographic variables in a community sample of people with arthritis. In response to this research gap, the aim of this paper is to estimate the prevalence and examine associated factors of neuropathic-like pain in a community-based sample of older Australian women with arthritis.

Methods

Study Design, Setting, and Participants

The participants for this cross-sectional study were from the Australian Longitudinal Study on Women's Health (ALSWH). ALSWH is a longitudinal study that has been examining the relationships between biological, psychological, social, and lifestyle factors and Australian women's physical health, emotional well-being, and their use of and satisfaction with health care since 1996. Detailed methods for the recruitment and maintenance of the ALSWH cohorts have been described [21]. Details of the protocol for this sub study of ALSWH have been published [22]. The study was approved by the Human Research Ethics Committee of the University of Newcastle; Approval number: H-2012-0144.

Women from the 1946-1951 cohort of ALSWH (aged 61 to 66 years in 2012) were considered for this sub study. 700 women were sent a postal survey asking questions about their health, arthritis and experience of pain. Women who wished to participate provided written consent and returned surveys to the ALSWH office. For all consenting women ($n = 579$), demographic and health data from ALSWH Survey 6 (2010) was accessed and linked to the sub-study data (2012). In the sub-study questionnaire, women who answered 'yes' to the question "In the past three years, have you been diagnosed or treated for: osteoarthritis, rheumatoid arthritis, psoriatic arthritis, gout or other form of arthritis," were included in the statistical analysis. Self-report data on arthritis-related procedures from the ALSWH cohort have been found to have good agreement and is supported for use in epidemiological studies [23]. Participants' responses were dichotomized to indicate the presence or absence of arthritis.

Neuropathic-like Pain Definition

In the sub-study questionnaire women who reported "joint pain, tenderness, swelling or stiffness in ANY of your bones, joints and muscles" were asked to complete the painDETECT measure [24] in recall of their joint pain. The PainDETECT is a self-report screening tool for neuropathic pain. It includes three 11-point numerical ratings scales on current pain, as well as strongest and average pain in the last month. Nine items relate to sensory descriptors and the temporal and spatial characteristics of pain. Scores ≤ 12 indicate that a neuropathic component is unlikely, and scores ≥ 19 indicate likely neuropathic pain; scores between 13 and 18 reflect a possible/ambiguous neuropathic pain component [24]. In previous studies, a modified painDETECT score cut-point of 12 was used in knee osteoarthritis patients [25]. To reflect the mixed neuropathic/nociceptive pain mechanism in arthritis [17,26], participants' responses were dichotomized to indicate as the presence or absence of neuropathic-like pain based on the screening cut off point ≥ 12.

Health, Pain, and Socio-Demographic Variables

Health-related quality of life was assessed using the Medical Outcomes Study: 36 Item Short Form Survey (SF-36).[27] Eight different aspects of health were assessed, including physical functioning, role limitations due

to physical health problems (role physical), bodily pain, general health, vitality, social functioning, role limitations due to emotional problems (role emotional), and psychological distress (mental health). Item scores can then be aggregated into a physical component summary and mental component summary score. Scores range from 0 to 100 with higher score indicates higher quality of life. [27] The Fatigue Severity Scale (FSS) measures the impact of fatigue in a variety of rheumatologic and neurologic disorders [28] and was used to measure fatigue. Dimensions of the pain experience were assessed using the McGill Pain Questionnaire (Short Form) (SF-MPQ) [29], and the Pain Catastrophizing Scale (PCS) [30], as well as the individual pain severity variable ("Please rate the SEVERITY of your joint pain at PRESENT/NOW:" on an 11-point numerical rating scale) and duration ("How long have you had your JOINT PAIN?" in months). The measures and their appropriateness for inclusion have been discussed previously [22]. Depression was defined using the four-category response 10-item form of the Center for Epidemiologic Studies Depression Scale (CESD-10). This measure is one of the most commonly used self-report depression scales, is designed to screen for symptoms of depressed mood in older adults, and allows accurate estimates of the prevalence of depression using consistent measurement criteria across samples and time. The number of medications was also included. Demographic variables included in the analyses were area of residence ('urban' and 'rural' according to the Rural Remote and Metropolitan Areas classification system), smoking status ('never/ex-smoker' or 'current smoker') [31], marital status, employment status, Body Mass Index (BMI) (aggregated into three categories: 'underweight/normal', 'overweight,' and 'obese') [32], and alcohol status ('non/rare-drinker,' 'low risk,' and high risk') [33].

Statistical Analysis

Descriptive statistics were used to summarize health and socio-demographic characteristics. Variables were compared amongst women with nociceptive pain versus neuropathic-like pain using student's *t*-test for normally distributed continuous variables or Wilcoxon Rank Sum test for non-normally distributed continuous variables, and Chi-square tests for categorical variables. Independent health and socio-demographic variables were examined by univariable logistic regression, with $p < 0.25$ chosen as the screening criterion for variable inclusion in a multiple variable logistic regression model. Parsimonious models were obtained using a stepwise backward elimination approach. Statistical significance was set at $p < 0.05$. All analyses were conducted using statistical program STATA 12.0 (StataCorp LP, College Station, TX, USA). The results have been presented as the odds ratio (OR) with corresponding 95% confidence interval (CI).

Results

A total of 579 women responded to the sub-study survey (82.7% response rate). Of these, 227 women self-reported having arthritis (39.2%). Due to incomplete or missing data, 80 women (35.2%) were excluded from the analysis. Results for the remaining 147 women were analyzed. According to the painDETECT, 10 women (6.8%) had likely neuropathic pain and 29 women (19.7%) had possible neuropathic pain. A total of 39 women (26.5%) were screened as having neuropathic-like pain. Characteristics of women in the two groups (nociceptive pain versus neuropathic-like pain) are shown in Table 1. Women in the two groups were similar with respect to socio-demographics, but women with neuropathic-like pain were more likely to be employed and be overweight or obese (Table 1). In respect to health characteristics, women with neuropathic-like pain were more likely to have poorer health than women with nociceptive pain (Table 2). In six of the eight SF-36 domains (physical functioning, role physical, bodily pain, general health, vitality, and mental health) and both component scores (physical and mental), women with neuropathic-like pain had statistically significant lower mean scores (Table 2). Women with neuropathic-like pain had worse pain, pain catastrophizing, fatigue and a higher score of depression than women with nociceptive pain (Table 2).

Univariable Logistic Regression Analysis

Table 3 shows the univariable OR and 95% CI for the analysis of health and socio-demographic variables in older women with arthritis. There was an increased risk of neuropathic-like pain in the BMI obese group (OR = 3.3, 95% CI 1.2, 9.2, $p = 0.025$), in women with higher depression scores (OR = 1.1, 95% CI 1.1, 1.2, $p < 0.0001$), with higher pain severity (OR = 1.4, 95% CI 1.2, 1.7, $p < 0.0001$), with higher SF-MPQ sensory (OR = 1.2, 95% CI 1.1, 1.3, $p < 0.0001$) and affective qualities (OR = 1.6, 95% CI 1.3, 2.0, $p < 0.0001$), as well as fatigue (OR = 1.5, 95% CI 1.2, 1.9, $p = 0.001$) and pain catastrophizing (OR = 1.1, 95% CI 1.1, 1.2, $p < 0.0001$). Women who were not employed (OR = 0.4, 95% CI 0.2, 0.8, $p = 0.009$) and who had a higher SF-36 physical component scale score (OR = 0.9, 95% CI 0.9, 1.0, $p < 0.0001$) had lower risk of neuropathic-like pain. The area of residence, smoking status, marital status, alcohol status, number of medications, and SF-36 mental health component scale score were not statistically significantly associated with an increased risk of neuropathic-like pain.

Multiple Variable Logistic Regression Analysis

Having neuropathic-like pain was significantly associated with higher SF-MPQ sensory score (OR = 1.2, 95% CI 1.1, 1.3, p = 0.001), higher score on the pain catastrophizing scale (OR = 1.1, 95% CI 1.0, 1.1, p = 0.003), and use of more medications (OR = 1.2, 95% CI 1.0, 1.3, p = 0.008) (Table 4).

Table 1 Socio-demographic characteristics of older women with arthritis, with nociceptive or neuropathic-like pain

	Women with Nociceptive Pain (n = 108)	Women with Neuropathic-Like Pain (n = 39)	*P*-value
Age (yrs)	64.8 ±1.3	64.5 ±1.5	0.3860
Rural Residence	66 (61.1)	28 (71.8)	0.2340
Non-smoker	98 (90.7)	36 (92.3)	0.7680
Partnered Relationship	78 (72.2)	30 (76.9)	0.5690
Employed	48 (44.4)	27 (69.2)	0.0080
BMI			
Normal/Underweight	34 (32.1)	3 (8.3)	
Overweight	39 (36.8)	15 (41.7)	0.0130
Obese	33 (31.1)	18 (50.0)	0.0008

Values are: mean ±S.D.; n (%).
BMI: body mass index.

Table 2 Health and pain characteristics of older women with arthritis, with nociceptive or neuropathic-like pain

	Women with Nociceptive Pain (n = 108)	Women with Neuropathic-Like Pain (n = 39)	*P*-value
SF-36			
Physical Functioning	67.3 ± 21.9	41.7 ± 28.5	<0.0001
Role Physical	54.0 ± 41.6	26.3 ± 35.3	0.0004
Bodily Pain	50.9 ± 18.6	35.3 ± 20.4	<0.0001
General Health	61.1 ± 20.7	45.4 ± 23.8	0.0006
Vitality	51.6 ± 22.3	43.1 ± 19.7	0.0373
Social Functioning	78.8 ± 21.3	59.0 ± 32.7	0.0008
Role Emotional	80.0 ± 40.0	64.9 ± 44.4	0.0538
Mental Health	74.9 ± 16.8	63.5 ± 21.5	0.0051
PCS	30.7 ± 11.1	39.6 ± 9.5	<0.0001
MCS	50.5 ± 9.9	46.4 ± 13.7	0.2109
Severity	4.0 ± 2.3	5.9 ± 2.2	<0.0001
Duration (Months)	114.3 ± 103.0	187.1 ± 136.2	0.0009
SF-MPQ			
Sensory	7.7 ± 5.1	15.5 ± 6.6	<0.0001
Affective	1.4 ± 1.6	4.2 ± 3.2	<0.0001
Fatigue Severity Score	3.3 ± 1.7	4.6 ± 2.0	0.0009
Pain Catastrophizing Scale	5.5 ± 7.2	16.7 ± 14.8	<0.0001
Depression	5.9 ± 5.1	10.5 ± 7.4	0.0008
Number of Medications	5.6 ± 3.9	6.9 ± 4.1	0.0802

Values are: mean ± S.D.
SF-36: Medical Outcomes Study 36 Item Short Form Survey; NS: non-significant difference between women with and without neuropathic pain; PCS: SF-36 Physical health component score; MCS: SF-36 Mental health component score; SF-MPQ: Short Form McGill Pain Questionnaire.

Discussion

This study estimated the prevalence and investigated associated factors of neuropathic-like pain in a community-based sample of older Australian women with arthritis. According to the painDETECT, 7% of all women had likely neuropathic pain and 20% had possible neuropathic pain. With nearly one third of women

Table 3 Univariable logistic regression analysis of neuropathic-like pain in older women with arthritis (n = 147)

Variable	OR (95% CI)	*P*-value
Area of Residence		
Urban	1	
Rural	1.6 (0.7–3.6)	0.236
Smoking		
Never Smoked/Ex-Smoker	1	
Current Smoker	0.8 (0.2–3.1)	0.768
Marital Status		
Married/De Facto	1	
Separated/Divorced/ Widowed/Single	0.8 (0.3–1.8)	0.569
Employment		
Employed	1	
Not Employed	0.4 (0.2–0.8)	0.009
BMI		
Normal/Underweight	1	
Overweight	2.3 (0.8–6.6)	0.118
Obese	3.3 (1.2–9.2)	0.025
Alcohol Status		
Non/Rare Drinker	1	
Low Risk	0.6 (0.3–1.2)	0.162
High Risk	0.2 (0.0–1.8)	0.153
Number of Medications	1.1 (1.0–1.2)	0.089
Depression	1.1 (1.1–1.2)	<0.0001
Duration of Pain	1.0 (1.0–1.0)	0.003
Severity of Pain	1.4 (1.2–1.7)	<0.0001
Sensory Qualities of Pain	1.2 (1.1–1.3)	<0.0001
Affective Qualities of Pain	1.6 (1.3–2.0)	<0.0001
SF-36 PCS	0.9 (0.9–1.0)	<0.0001
SF-36 MCS	1.0 (0.9–1.0)	0.057
Fatigue	1.5 (1.2–1.9)	0.0001
Pain Catastrophizing	1.1 (1.1–1.2)	<0.0001

OR: odds ratio; BMI: body mass index; SF-36 PCS: Medical Outcomes Study 36-Item Short Form Survey Physical component scale; SF3-6 MCS: Medical Outcomes Study 36-Item Short Form Survey Mental health component scale.

being screened as having likely or possible neuropathic pain, it can be concluded that neuropathic-like pain in arthritis is common. Women with neuropathic-like pain were also shown to have greater disability, poorer quality of life, more severe pain, more fatigue, and higher pain catastrophizing. Multiple variable logistic regression analysis showed sensory abnormalities, higher pain catastrophizing, and the use of more medications were independently associated with neuropathic-like pain.

It is well understood that people with arthritis have much poorer quality of life, decreased mobility and activities of daily living, and increased disability compared with those without arthritis [34,35]. Women with arthritis, who self-reported neuropathic-like pain, had additional disability, poorer quality of life, more severe pain, more fatigue, and higher pain catastrophizing compared with nociceptive pain. Ultimately, the burden of arthritis is greater in women with neuropathic-like pain. Psychosocial interventions have been shown to significantly lower pain intensity in people with arthritis [36]; however, the primary aim of psychosocial interventions is to increase function and reduce distress by adapting to the presence of chronic pain and learning self-management strategies [37]. Recognizing that people with arthritis may have a neuropathic pain component is important because this type of pain is poorly controlled by common analgesics, such as non-steroidal anti-inflammatory drugs (NSAIDs) [10]. Weak opioids are useful alternatives when treatment with analgesics or NSAIDs is ineffective or contraindicated, and the use of anti-epileptics and antidepressants in osteoarthritis is increasing [38]. People with neuropathic pain are more likely to respond to targeted analgesia (including gabapentinoids) than to NSAIDs [39]; ultimately neuropathic pain requires different drug therapy to nociceptive pain. While existing clinical trials report negative results of gabapentoids for osteoarthritis [40], a combination of an NSAID and pregabalin has been associated with significantly greater pain relief than NSAID or pregabalin used individually [41]. In severe chronic osteoarthritis pain tapentadol was shown to reduce the number of pain attacks and the duration of spontaneous pain [42]. Interventions should be directed towards the management of neuropathic pain mechanisms to lead to better clinical outcomes for patients with arthritis.

In women with arthritis, more sensory abnormalities, higher pain catastrophizing, and the use of more medications were associated with neuropathic-like pain. A relationship between sensory abnormalities in arthritis and neuropathic-like pain is logical, as people with arthritis have previously been reported as having heightened pain [17,43] and higher scores in a modified painDETECT have been associated with greater odds of having signs of central sensitization in knee osteoarthritis [25]. While the findings of this study highlight the importance of recognizing sensory abnormalities affecting women with arthritis in addition to their joint pathology, additional research is needed to identify subgroups of people with arthritis who have stronger central pain contributions to their arthritis pain. Research is also needed to investigate events that lead to the initiation and progression of central pain contributions responsible for a neuropathic pain [6]. Pain catastrophizing has been linked to greater pain severity and lower experimental pain thresholds [44]; it has also been found to attenuate the relationship between neuropathic pain symptoms and signs of central sensitization [25]. The results of this study show association between higher pain catastrophizing scores and neuropathic-like pain. Cognitive factors (beliefs, coping strategies and emotions) may just be as important as pathophysiological factors in understanding the pain experience [45]. In people with neuropathic pain, the level of emotional distress is high with at least one current psychiatric diagnosis present in

Table 4 Multiple variable logistic regression analysis of variables associated with neuropathic-like pain in older women with arthritis (n = 147)

	Full Model		Parsimonious Model	
Variable	OR (95% CI)	*P*	OR (95% CI)	*P*
Area of Residence				
Urban vs Rural	1.3 (0.3, 5.1)	0.676		
Employment				
Employed vs Unemployed	0.9 (0.2, 1.2)	0.902		
BMI				
Overweight vs Normal	5.0 (0.7, 34.5)	0.105		
Obese vs Normal	4.4 (0.5, 35.5)	0.163		
Alcohol Status				
Low Risk vs Non/Rare Drinker	4.3 (0.8, 23.8)	0.092		
High Risk vs. Non/Rare Drinker	2.1 (0.1, 36.1)	0.617		
Number of Medications	1.2 (1.0, 1.5)	0.061	1.2 (1.0, 1.3)	0.008
Depression	1.2 (1.0, 1.3)	0.062		
Duration of Pain	1.0 (1.0, 1.0)	0.367		
Severity of Pain	1.3, (0.8, 1.9)	0.283		
Sensory Qualities of Pain	1.2 (1.0, 1.5)	0.023	1.2 (1.0, 1.3)	0.001
Affective Qualities of Pain	0.6 (0.3, 1.1)	0.075		
SF-36 PCS	1.0 (0.9, 1.1)	0.448		
Fatigue	0.7 (0.4, 1.3)	0.310		
Pain Catastrophizing	1.1 (1.0, 1.2)	0.017	1.1 (1.0, 1.1)	0.003
Model R^2	51.19		< 0.001	
Pseudo R^2	34.8%			
N	130			

OR: odds ratio; BMI: body mass index; SF-36 PCS: Medical Outcomes Study 36-Item Short Form Survey Physical component scale.

59% of people with chronic back pain [46]. Cognitive behavioural intervention approaches have been shown as effective in managing pain in arthritis [47]. However, the relationship between cognitive factors and the mechanism of neuropathic pain in arthritis is not yet understood. An assessment of cognitive factors are recommended for participants in pain research [48] and advocated in arthritis research as well. In Australians aged over 50 years, a higher prevalence of medicine use is significantly associated with increasing age, being female, and poorer health status [49]. In the current study higher medication use was also found to be associated with neuropathic-like pain in arthritis. This finding may be due to the fact that neuropathic-like pain is poorly controlled by common analgesics [10] and therefore women with neuropathic-like pain may seek additional medications to control their pain. At the univariable level there was an association between neuropathic-like pain and being obese, severity of pain, sensory and affective qualities of pain, fatigue and poorer physical health. Being unemployed was associated with less likelihood of neuropathic-like pain, suggesting approaching or engaging in retirement may be protective. While both depression and pain catastrophizing were statistically significantly related to neuropathic-like pain at the $p < 0.0001$ level, the small confidence intervals (OR = 1.1, 95% CI 1.1 for both) do not depict an increased risk of either measure.

In this community-based sample of older women, 26.5% of women with arthritis were screened as having neuropathic-like pain. This figure is consistent with Moreton et al., who found 27% of participants with knee osteoarthritis had scores on the painDETECT above 19 [50] and Ahmed et al., who found 33% of participants with rheumatoid arthritis had possible or likely neuropathic pain [51]. The finding that neuropathic-like pain is common in women with arthritis is important for researchers to investigate better pain management that incorporates the mixed neuropathic/nociceptive mechanisms of pain, as well identifying subgroups who may need multi-disciplinary collaboration. That women with neuropathic-like pain have poorer health-related quality of life has implications for policy-makers to prioritize research in the management of neuropathic pain in arthritis to minimize the already substantial socioeconomic burden of arthritis. Finally, the associations of higher medication use, more sensory abnormalities, and higher pain catastrophizing with neuropathic-like pain in women with arthritis is of interest to clinicians who may recognize this subgroup and refer for pain management

outside the scope of traditional, nociceptive pain management.

Strength and Limitations

The strengths of this study included the use of ALSWH, a large nationally representative sample of Australian women. The 700 community-based women recruited allows the inclusion of women with a range of disease severity, disease duration, and from different socioeconomic backgrounds. By using a community-based national sample, rather than a clinical sample, findings may be generalizable to the wider aged community. The response rate of 82.7% in this cross-sectional postal survey is also a strength of this study. A major limitation is the number of women with arthritis who were excluded from analysis due to missing or incomplete data, which has the potential to limit generalizability.

Conclusion

This cross-sectional study found that neuropathic-like pain in arthritis is common and is associated with greater disability and poorer quality of life. Furthermore, women who have arthritis and neuropathic-like pain have significantly more severe pain, a heightened pain experience, and more fatigue. Abnormal sensory changes, higher pain catastrophizing, and using more medications are significantly associated with neuropathic-like pain.

Acknowledgments

The Australian Government and the Department of Health; the Australian Longitudinal Study on Women's Health; Chiropractic and Osteopathic College of Australasia Research Limited; Hunter Medical Research Institute; Lions Club of Adamstown; Professor Gillian Hawker; the Research Centre for Gender, Health and Ageing; the University of Newcastle; the University of Queensland; and the women who participated in the Profile of Pain in Older Women Sub Study are acknowledged.

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