Data Access Statement: The questionnaire used and datasets analysed during the current study are available from the corresponding authors on reasonable request.

Psychosocial correlates of pain intensity and neck disability index among people with non-specific neck pain in a low-resource setting: a cross-sectional study

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ABSTRACT

Background: Psychosocial factors such as pain catastrophising (PC), kinesiophobia, and pain self-effi-cacy (PSE) complicate disease burden among people with chronic pain and disability.

Purpose: To investigate the psychosocial correlates of neck pain intensity and disability among Nigerians with non-specific neck pain (NSNP).

Methods: We conducted a cross-sectional study of Nigerians with NSNP through hospitals-based con-secutive sampling. Numeric Pain Rating Scale and the Neck Disability Index questionnaire were used to assess participants' pain intensity (PI) and neck disability (ND), respectively. Kinesiophobia, PC, and PSE were assessed using Tampa Scale for Kinesiophobia (TSK), Pain Catastrophising Scale, and Pain Self-efficacy Questionnaire, respectively. Data analyses were completed using descriptive statistics, independent samples t-test, Pearson's correlation coefficient, and multiple linear regression at $p \leq 0.05$. **Results:** Participants were (24 males, 48 females) aged 51.56 ± 14.31 years. The average PI (5.28 ± 1.80) and ND (35.03 ± 17.85) were moderate. There were significant correlations between PC and PI ($r = 0.350$, $p = 0.003$), and ND ($r = 0.339$, $p = 0.004$); kinesiophobia and ND ($r = 0.314$, $p = 0.007$); and PSE and ND ($r = -0.561$, $p < 0.001$). Multiple linear regression analysis showed that PC ($\beta = 0.270$, $p = 0.026$) and ND ($\beta = 0.494$, $p = 0.001$) significantly predicts PI, while age ($\beta = 0.197$, $p = 0.038$), PI ($\beta = 0.344$, $p = 0.001$), and PSE ($\beta = -0.474$, $p < 0.001$) predicts ND. There were no statistically signifi-cant gender differences in PC, kinesiophobia and PSE.

Conclusion: Non-specific neck pain and ND correlates with psychosocial factors such as PC and PSE, respectively. There were no gendered differences in psychosocial responses to NSNP, however, older individuals tend to have more severe ND. Assessment of age and psychosocial factors should be included in management of NSNP.

KEYWORDS Catastrophising; neck pain; pain management; pain measurement; psycho-logical distress

Introduction

Neck pain with no known cause is called non-specific neck pain (NSNP), it may be transient, intermittent, or chronic – if it lasts longer than three months [1,2]. Neck pain is one of the most common musculoskeletal complaints which accounts for 25 percent outpatient visits to physiotherapy, with two out of every three individuals experiencing neck pain in their lifetime [3–6]. The cost of neck pain to the individual and society is enormous in terms of health spending, absenteeism from work, and disability[5,7,8]. Neck pain and its related disability have a huge negative impact on individuals and their families, communities, health-care systems, and businesses [9,10]. Individuals may have difficulties with many activities and a reduced ability to participate in work, social, and sporting endeavours [10], which in turn can further increase the burden associated with neck pain.

In the search for factors associated with development of neck pain, as well as related disability, patients' attitudes and beliefs about pain are increasingly being studied [5,11–13]. Clinicians are becoming informed that NSNP may go beyond a simple clinical problem to a complex disorder where biophysical, psychological, and social factors interact to cause and sustain disability [13,14]. Some psychosocial factors such as kinesiophobia, pain Catastrophising (PC), and pain self-efficacy (PSE) are being linked with pain intensity (PI), physical functioning, and disability in persons with NSNP [12,15–17].

Increasing attention has been drawn to examining the contributions of 'catastrophising' to the prediction of pain and disability in individuals suffering from chronic neck pain [13,16,18]. Several clinical investigations and systematic reviews have suggested that catastrophising may heighten pain experience [18,19], psychological distress, physical functioning, and disability, and psychosocial dysfunction [19–21].

Another psychosocial factor relevant in NSNP management is kinesiophobia – avoidance of movement, exercises, or activities due to fear of pain or re-injury [22,23]. This maladaptive behaviour can lead to an increase in pain perception, development of physiological consequences such as fibrosis, atrophy due to immobility, and finally prolonged disability [22]. K inesiophobia is believed to be one of the most important factors for the transition from acute to chronic pain and disability [12]. A previous study also examined the effect of pain self-efficacy (PSE), a belief in one's personal capabilities to cope with pain experiences [24]. The PSE is among the psychosocial correlates of reported pain and disability [25]. Psychosocial correlates should be considered in regular clinical practice due to their impact on musculoskeletal care outcomes [22].

Nigeria is the Africa's most populous nation with over 200 million citizens [26]. However, the country is regarded as a low-resource setting where subscription for orthodox musculoskeletal care is low due to poverty, dearth of health insurance, health illiteracy, and cultural practices such as the use of herbal remedies and traditional bone-setting [27,28]. Nonetheless, the orthodox hospitals are underfunded, unsophisticated, and biomedical in approach, with little or no emphasis on psychosocial dimensions of musculoskeletal care [29]. Psychosocial factors such as kinesiophobia, PC, and PSE play a vital role in the prediction of pain intensity, disability, treatment seeking behaviour, response to treatment, and barriers to recovery among people with musculoskeletal disorders [12,16,18,25]. However, there is a paucity of studies on the psychosocial correlates of neck pain and disability among people with NSNP in low-resource settings such as Nigeria.

Therefore, this study was designed to investigate the associations of kinesiophobia, PC, and PSE with PI and neck disability (ND) among people with NSNP in Nigeria. The authors hypothesised that there will be no significant (a) gender difference in kinesiophobia, PC, and FSE, (b) correlation among age, pain duration, PI, ND, kinesiophobia, PC, and PSE, and (c) association between the demographic and psychosocial factors with each of PI, and ND among the participants.

Methods

Study design

The study was a cross-sectional study of 72 NSNP patients who were receiving treatment in South-Western Nigerian hospitals. The approved protocol, participants' privacy, and confidentiality of data were strictly adhered to. Ethical approval for this study was sought and obtained from the Research and Ethics Committee of the University of Ibadan/University College Hospital, Ibadan, Nigeria (UI/EC//15/0069). All the eligible participants signed an individual informed consent form before partaking in the study. Participants were informed of their right to withdraw at any point in the study.

Setting and recruitment

The study was completed in various physiotherapy departments in South-Western Nigeria. People of South-Western Nigeria speak both English and Yoruba languages [30]. In Nigeria, orthodox musculoskeletal care starts with general practitioners who make a provisional diagnosis, prescribe medications, and refer the patients to specialists in the secondary and tertiary hospitals [29]. If necessary, the specialist orders for allied health care services such as physiotherapy [28]. Therefore, the participants were consecutively recruited from the already specialist-diagnosed physiotherapy-attending NSNP patients across secondary and tertiary hospitals in South-Western Nigeria. Permission to conduct the study was obtained from the hospital authorities and from the respective heads of physiotherapy departments before the commencement of the study.

Participants and eligibility criteria

Participants eligible inclusion criteria were being (a) diagnosed and receiving physiotherapy for NSNP, (b) fluent in the English language, and (c) willing to grant an informed consent and participate in the study procedures. Participants were excluded from the study if they had (a) neck pain with a definitive diagnosis such as whiplash injury, cervical fracture, cervical (canal and foraminal) stenosis, ligamentous instability, cancer, infection diseases of the throat and neck, cervical degenerative disc disease, spondylo-arthropathies, and vertebrobasillary insufficiency, (b) recent cervical surgery, (c) complex regional pain syndrome, and (d) inflammatory rheumatic diseases.

Sample size determination

The sample size for the present study was calculated using the G*Power 3.1.9.4 software. A sample of 72 participants was appropriate for a 7-predictor multiple linear regression given a medium effect size of 0.15, error of probability = 0.05, and power = 95.0%.

Variables

Participants' sociodemographic variables included age (year), gender (male, female, or non-binary), and pain duration (weeks). According to Blanpied et al [1], the generally accepted, time-based classification of neck pain is threefold: acute (less than 6 weeks), subacute (6 to 12 weeks), or chronic (greater than 12 weeks). The psychosocial outcomes: PI, ND, kinesiophobia, PSE, and PC were assessed with appropriate instruments and recoded as continuous variables.

Research instruments and procedures for data collection

A biodata form was used to record participants' age, gender, and self-reported pain duration. The Numeric Pain Rating Scale (NPRS) was used to obtain participants' PI on a scale of 0 (no pain) to 10 (worst imaginable pain). The NPRS is a

convenient, valid, reliable, and responsive measure of pain intensity devoid of interference from non-pain factors among people with neck pain [31]. The interclass correlation reliability, $r = 0.67$, Minimum Clinically Important Difference (MCID) = 1.5 [31]. The NPRS-obtained PI can be categorised as mild (1–4), moderate (5–6), or severe (7–10) [32].

The ND was measured using the Neck Disability Index (NDI). The NDI comprised seven items related to activities of daily living, two items related to pain, and one item related to concentration. Each item is scored from 0 to 5, and the total score range between 0 and 50, higher scores indicate greater disability: 0 to 4 (no disability), 5 to 14 (mild disability), 15 to 24 (moderate disability), 25 to 34 (severe disability), and 35 to 50 (complete disability) [33]. The NDI has good psychometric properties, the interclass correlation reliability, $r = 0.88$, and MCID = 5.5 [31]. After obtaining the PI and ND, participants were administered the Tampa scale for kinesiophobia (TSK), pain catastrophising scale (PCS), and the pain self-efficacy questionnaire (PSEQ).

Kinesiophobia

The TSK developed by Miller et al [34], is a self-completed 17-item questionnaire used to assess the subjective rating of fear of movement and associated (re)injury. Each item is rated on a 4-point Likert scale ("strongly disagree" = 1 to "strongly agree" = 4), the total score ranges from 17 to 68, and higher scores (37 and above) indicate an increasing degree of kinesiophobia [35]. The test-retest reliability of TSK ranged from $r = 0.64$ to 0.80 [36].

Pain catastrophising

The PCS developed by Sullivan et al [37], is a self-completed 13-item questionnaire used to measure the degree of catastrophic thoughts about pain vis-à-vis three dimensions: rumination, magnification, and helplessness. Each item is rated on a 5-point Likert scale ("not at all" = 0 to "all the time" = 4), the total score ranges from 0 to 52, and higher scores (26 and above) indicate an increasing degree of catastrophising [37]. The internal consistency (Cronbach alpha) of PCS was $\alpha = 0.87$ [36].

Pain self-efficacy

The PSEQ is a 10-item questionnaire, developed to assess the confidence of people with persistent pain to achieve different activities despite their pain [38]. Each item is rated on a 7-point Likert scale ("not at all confident" = 0 to "completely confident" = 6), the total score ranges from 0 to 60, and higher scores (40 and above) reflect stronger self-efficacy beliefs [39]. The test-retest reliability of Nigerian cross-culturally adapted PSEQ was $\alpha = 0.86$ [40].

Data analysis

The data-the biodata form, NPRS, NDI and the questionnaires were collated in an encrypted electronic spreadsheet. The Statistical Package for Social Sciences (SPSS, version 26) was used for data analysis. Descriptive statistic of mean, standard deviation, percentage as well as frequencies was used to summarise the data. All the continuous variables were normally distributed, hence, we adopted parametric inferential statistic tools. The dataset was diagnosed and fixed for key assumptions of multiple linear regression. One row with a univariate outlier for pain duration was removed from the dataset, remaining 72 valid entries for analysis. There were no problems with linearity, multivariate outlier (*via* Mahalanobis distance), homoscedasticity, and multicollinearity as shown by the tolerance factor in the regression tables. First, independent samples t-test was used to determine if there were significant gender differences in the psychosocial factors. Second, Pearson's correlation coefficient was used to determine the levels of correlation among selected demographic variables and the psychosocial variables. Finally, a simultaneous entry approach for multiple linear regression analysis was used to determine the association between the demographic, clinical, and psychosocial factors (kinesiophobia, PC, and PSE) and each of the outcome variables (PI and ND). The level of significance was set at 0.05.

Results

Participant's characteristics

Seventy-two patients with NSNP who were aged 51.56 ± 14.31 years completed the study. Table 1 shows that 48 (66.7%) were women, and 24 (33.3%) were men. Majority of the participants 37 (51.4%) were between the ages of 41

Table 1. Participants' demographic, clinical, and psychosocial characteristics ($n = 72$).

Variable	Frequency (*f*)	Percentage (%)
Gender		
Female	48	66.7
Male	24	33.3
Age group (years)		
21 – 40	16	22.2
41 – 60	37	51.4
61 – 80	16	22.2
81 – 83	3	4.2
Pain duration		
Acute (< 6 weeks)	3	4.2
Subacute (6 – 12 weeks)	8	11.1
Chronic (>12 weeks)	61	84.7
Pain intensity		
Mild (1 – 4)	25	34.7
Moderate (5 – 6)	26	36.1
Severe (7 – 10)	21	29.2
Neck disability		
None (0 – 4)	2	2.8
Mild (5 – 14)	29	40.3
Moderate (15 – 24)	26	36.1
Severe (25 – 34)	14	19.4
Complete (35 – 50)	1	1.4
Pain self-efficacy		
Low (<40)	32	44.4
High (≥40)	40	55.6
Pain catastrophising		
Low (<26)	53	73.6
High (≥26)	19	26.4
Kinesiophobia		
Low (<37)	24	33.3
High (≥37)	48	66.7

and 60 years. Sixty-one (84.7%) had chronic pain (which had lasted 12 weeks or more).

Univariate analyses

Table 2 shows some clinical and psychosocial characteristics of the participants. The mean (standard deviation) pain duration was 174.65 ± 229.27 (chronic); PI (5.28 ± 1.80) and ND (17.85 ± 8.93) were moderate. Participants' average scores for PC (19.89 ± 11.08), kinesiophobia (39.29 ± 7.21), and PSE (40.10 ± 13.77) were high.

Bivariate analyses

Independent samples t-test analysis (Table 3) showed no significant mean difference in PC (mean difference [MD] = 0.71, $t = 0.254$, $p = 0.800$), kinesiophobia (MD = 0.64, $t = 0.034$, $p = 0.973$), and PSE (MD = 1.52, $t = 0.439$, $p = 0.662$) between women and men.

There were significant positive correlations between PI and PC scores of the participants ($r = 0.350$, $p = 0.003$) (weak correlation) as well as PI and ND ($r = 0.517$, $p < 0.001$) (moderate correlation). Weak but statistically significant correlations were also observed between ND and PC scores ($r = 0.339$, $p = 0.004$), and ND and kinesiophobia scores ($r = 0.314$, $p = 0.007$). However, there was a moderately significant negative correlation between ND and PSE ($r = -0.561$, $p < 0.001$). Pain duration significantly correlated with kinesiophobia ($r = 0.335$, $p = 0.004$), but not with PC ($r = 0.124$, $p = 0.298$), or PSE ($r = -0.036$, $p = 0.057$). Furthermore, age positively correlated with pain duration ($r = 0.337$, $p = 0.004$), PI ($r = 0.348$, $p = 0.003$), ND ($r = 0.369$, $p = 0.001$), but inversely correlated with PC ($r = -0.104$, $p < 0.001$) (Table 4).

Table 2. Mean age, clinical, and psychosocial characteristics of participants ($N = 72$).

Parameter	Mean	Standard deviation
Age (years)	51.56	14.31
Pain duration (weeks)	174.65	229.27
Pain intensity (NPRS)	5.28	1.80
Neck disability index	17.52	8.93
Pain catastrophizing (PCS)	19.89	11.08
Kinesiophobia (TSK)	39.29	7.21
Pain self-efficacy (PSEQ)	40.10	13.77

NPRS = Numeric pain rating scale, PCS = Pain catastrophising scale, TSK = Tampa scale of kinesiophobia, and PSEQ = Pain self-efficacy questionnaire.

Multivariate analyses

Tables 5 and 6 showed multiple linear regression analyses for predictors of ND and PI, respectively. Neck disability was significantly predicted by the combination of participant's age ($\beta = 0.197$, $p = 0.038$), PI ($\beta = 0.344$, $p = 0.001$), and PSE ($\beta = -0.474$, $p < 0.001$). The regression model was well fitted, F (7, 64) = 11.618, $p < 0.001$, the overall correlation ($R = 0.748$) was strong. The adjusted $R^2 = 0.56$ indicates that the model explains 56.0% of the variance on ND. Similarly, the model for the prediction of PI intensity had overall moderate correlation ($R = 0.607$), and good fit, F (7, 64) = 5.342, $p < 0.001$. The model explained 30% of the variance in PI (adjusted $R^2 = 0.3$). The significant predictors were PC ($\beta = 0.270$, $p = 0.026$) and ND ($\beta = 0.494$, $p = 0.001$).

Discussion

The study examined the psychosocial correlates of neck pain and disability in a low resource setting. Pain intensity and

Table 3. Independent samples t-test for gender differences in psychosocial factors among participants ($N = 72$).

	Gender (Mean ± SD)				
Psychosocial factors	Female ($n = 48$)	Male ($n = 24$)	Mean difference	t-value	p Value
Pain catastrophising (PCS)	20.13 ± 11.73	19.42 ± 9.87	0.71	0.254	0.800
Kinesiophobia (TSK)	39.31 ± 7.77	39.25 ± 6.12	0.64	0.034	0.973
Pain self-efficacy (PSEQ)	40.60 ± 14.70	39.08 ± 11.90	1.52	0.439	0.662

Independent samples t-test was significant at $p < 0.05$. PCS: Pain catastrophising scale; TSK: Tampa scale of kinesiophobia; PSEQ: Pain self-efficacy questionnaire.

Table 4. Pearson's correlation among participants' age, clinical, and psychosocial parameters.

Parameter ($N = 72$)	Pain duration r-statistic p Value	Pain intensity r-statistic p Value	PC r-statistic p Value	Kinesiophobia r-statistic p Value	PSE r-statistic p Value	NDI r-statistic p Value
Age	0.337 0.004[a]	0.348 0.003[a]	−0.104 <0.001[a]	0.078 0.513	−0.056 0.641	0.369 0.001[a]
Pain duration	–	0.206 0.082	0.124 0.298	0.335 0.004[a]	−0.036 0.764	0.225 0.057
Pain intensity	–	–	0.350 0.003[a]	0.187 0.117	−0.156 0.190	.517 <0.001[a]
PC	–	–	–	0.485 <0.001[a]	−0.310 0.008[a]	0.339 0.004[a]
Kinesiophobia	–	–	–	–	−0.210 0.077	0.314 0.007[a]
PSE	–	–	–	–	–	−0.561 <0.001[a]

[a]Pearson's Correlation Coefficient ® was significant at $p < 0.05$ (2-tailed test).

Table 5. Multiple linear regression showing the demographic and psychosocial predictors of neck disability index.

Predictor	Regression Coefficients (B)	Standardised Regression Coefficients (β)	Partial Correlation	p-value	Tolerance
Age (years)	0.246	0.197	0.256	0.038[a]	0.798
Gender	−1.586	−0.042	−0.062	0.621	0.953
Pain duration (weeks)	0.002	0.025	0.032	0.796	0.769
Pain intensity	3.412	0.344	0.412	0.001[a]	0.760
Pain catastrophising score	−0.009	−0.006	−0.007	0.956	0.652
Kinesiophobia	0.291	0.117	0.144	0.247	0.680
Pain self-efficacy	−0.615	−0.474	−0.559	<0.001[a]	0.892
(Constant)	17.981	–	–	0.141	–

[a]Test statistic was significant at $p < 0.05$. Model summary: F (7, 64) = 11.618, $p < 0.001$; $R^2 = 0.748$, adjusted $R^2 = 0.56$.

Table 6. Multiple linear regression showing the demographic and psychosocial predictors of pain intensity.

Predictor	Regression Coefficients (B)	Standardised Regression Coefficients (β)	Partial Correlation	p-value	Tolerance
Age (years)	0.019	0.154	0.135	0.180	0.767
Gender	−0.181	−0.048	−0.046	0.642	0.952
Pain duration (weeks)	0.000	0.040	0.035	0.724	0.770
Pain catastrophising score	0.044	0.270	0.227	0.026[a]	0.705
Kinesiophobia	−0.024	−0.094	−0.077	0.439	0.672
Pain self-efficacy	0.025	0.192	0.153	0.128	0.635
Neck disability index	0.050	0.494	0.360	0.001[a]	0.531
(Constant)	1.587	–	–	0.284	–

[a]Test statistic was significant at $p < 0.05$. Model summary: F (7, 64) = 5.342, $p < 0.001$; $R^2 = 0.607$, adjusted $R^2 = 0.3$.

ND are important factors in the quality of life of people with neck pain [7,16,17]. Moreover, researchers had reported that resource constrain, and sociocultural factors influence the musculoskeletal-health-seeking behaviour among Nigerians [27–29]. Ekediegwu et al [29] opined that musculoskeletal care in Nigeria was majorly through biomedical approaches and suggested that biopsychosocial model that incorporates relevant psychosocial assessment and psychotherapy would enhance patient recovery. Implementation of biopsychosocial model of care in Nigeria will warrant capacity building including improvement in funding, equipment, workforce, interprofessional collaboration, and training. In this era of evolution of physiotherapy education in Nigeria [41], stakeholder should understand the role of psychosocial factors in musculoskeletal care for adequate curriculum inputs.

The result of the current study showed significant correlation between pain catastrophising, pain intensity and neck disability. This outcome agreed with Severeijns et al [21] who reported that catastrophising significantly contributed to reported pain intensity, disability, and psychological distress among people experiencing chronic pain. Catastrophising is a psychological problem that leads to exaggeration of pain experience and poses challenges to the subjective measure of pain [19]. Nonetheless, the knowledge of catastrophising will allow clinicians to objectively analyse the subjective pain and disability reports, and to distinguish between the roles biomedical and psychosocial factors play in NSNP [20]. Moreover, there was a correlation between kinesiophobia (fear of movement) and neck disability. This finding concurred with the studies conducted by Asiri et al [22] who observed a strong correlation between kinesiophobia and neck disability. A prolonged reduction in neck mobility and range of motion due to kinesiophobia may lead to an increase in pain perception, development of physiological consequences such as fibrosis, atrophy due to immobility, and finally prolonged disability [12,22].

Similarly, there was an inverse correlation between pain self-efficacy and neck disability. It means that higher self-efficacy correlates with a lower disability. A systematic review of 24 articles on the role of self-efficacy in musculoskeletal pain suggested that higher self-efficacy levels were associated with greater physical functioning, activity participation, health status, work status, satisfaction with the performance, and lower levels of pain intensity, and disability [25]. The regression analyses corroborated the findings from the bivariate tests. Among the sociodemographic, clinical, and psychosocial factors that were simultaneously entered into the models, the multiple linear regression analyses showed that catastrophising and level of disability could significantly predict pain intensity, while age, self-efficacy, and pain intensity predicted disability. This is in consonance with the findings of a study by Hill et al [42] in which psychosocial, functional, and demographic indicators were found to be an important predictor of poor treatment outcomes among patients receiving physiotherapy for NSNP. Therefore, understanding the psychosocial factors will lead to a person-centred care, efficient treatment choices, and better prognosis.

The clinical and psychological characteristics of our study participants provides a clue to the health-seeking behaviour in our study population. Most of the participants presented with chronic neck pain and disability. Firstly, most orthodox health service users in Nigeria present late, after outsourcing self-care, spiritualism, and traditional remedies, the hospital becomes the last resort [27]. Secondly, hospital-based physiotherapy services in Nigeria and many other countries are through physician's referral[28]. Hence, sometimes, significant time is spent with the physician before the patient is eventually referred to physiotherapy. This may explain the reason why most musculoskeletal neck pain studies among are often on chronic neck pain and disability including degenerative diseases [7,16–18,22,42,43]. In the same vein, the mean scores of all the psychosocial variables were observed to be high. It appears that despite heightened levels of pain catastrophising and

kinesiophobia, participants' belief in having the capability to cope and manage with NSNP was high. Although, coping skill tends to be a positive psychosocial factor, clinician should always encourage their clients to get early medical opinion as neck pain could be a signal of an evolving medical condition such as cervical stenosis or cancer.

Our demographic distribution was similar to other hospital-based studies among people with NSNP [4,44]. This study affirms the fact that neck pain increases with age and is common among the middle-aged population. Our correlation table showed that older adults tend to have more chronic, intense pain, and more catastrophising, this view was equally shared in a general population-based study conducted in the United Kingdom [43]. Similarly, Hill et al [42] found an association between older age and catastrophising among physiotherapy attending neck pain. In terms of gender, our findings concurred with other Nigerian studies that reported higher prevalence of pain among women than men [44,45]. This may be attributable to gender-related biological differences in anthropometry, physiology, and anatomy, or sociocultural roles such as secretarial duties, hair making, childcare, carrying heavy thing on the head (fetching water, firewood, agricultural produce), farming activities, and domestic chores, which predisposes women's neck muscles to repetitive micro strain [46]. Remarkably, there was no gender differences in the psychosocial factors examined in this study. This outcome is divergent from other studies that found female to have more psychosocial maladaptive behaviours to pain than men [47,48]. There may be sociocultural differences in the gender and sickness roles between our study population and those of the other studies that reported gender differences. A recent publication among Nigerians with osteoarthritis, Ekediegwu et al [29] found no gender differences in pain-related psychosocial outcomes. However, the study recommended a large sample with equal gender distribution and age-matched participants to further investigate the psychosocial and cultural influences on pain perception among Nigerians.

Study limitation

The main limitation of this present study is its small sample size which may affect its generalisability. Although our sample had a satisfactory power and the independent samples t-test is robust in detecting mean differences between unequal sample size, we agree with Ekediegwu et al [29] that a larger sample of age- and sex-matched participants will be necessary for further evaluation of the gender differences. Pain intensity and associated factors can be easily influenced by extraneous variables such as medications and psychological state, a cross-sectional study is beneficial to account for short-term effects. However, longitudinal research is needed to verify the existing correlations found in this present study.

Conclusion

Non-specific neck pain and neck disability correlated with psychosocial factors such as pain catastrophising and self-efficacy, respectively. Study participants who catastrophise tend to report higher pain intensity. Neck disability was lesser in those with higher pain self-efficacy, and lesser catastrophising and kinesiophobia (pain-related fear of movement). We learned from other studies that prolonged restriction of neck movement may be sustained or worsen neck pain and disability. There were no gendered differences in psychosocial responses to non-specific neck pain; however, older adults tend to have more severe neck disabilities than the young. Assessment of age and psychosocial factors should be included in the management of non-specific neck pain.

Recommendation

More studies should be conducted to investigate the association of psychosocial factors with pain intensity and disability among people with non-specific neck pain across the ethnic groups in Nigeria. Inter-ethnic comparison within Nigeria and between high-resource countries will facilitate the understanding of cultural and socioeconomic roles in psychosocial responses to neck pain and disability. Assessment of psychosocial factors as yellow flags is deemed fit in the care of people with non-specific neck pain.

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- ## Ethical approval

Ethical approval for this study was sought and obtained from the Research and Ethics Committee of the University of Ibadan/University College Hospital, Ibadan, Nigeria (UI/EC//15/0069).

Disclosure statement

No potential conflict of interest was reported by the author(s).

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Data availability statement

The questionnaire used and datasets analysed during the current study are available from the corresponding authors on reasonable request.

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