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PREVALENCE OF NECK PAIN IN A RURAL COMMUNITY IN NORTHWEST NIGERIA

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Abstract
Neck pain (NP) is a common health problem which exerts significant stress on physical functioning, work, productivity and health costs. However, there is a dearth of published studies on community prevalence of neck pain in rural communities in Nigeria. This study aimed at finding out the prevalence of NP among people living in Kura Local Government area in Kano State, Northwest Nigeria. Information obtained from 305 participants included socio-demographic characteristics and analysis of neck pain, using a bio data form and standardized Nordic musculoskeletal questionnaire (NMQ). The lifetime, one-year and point prevalence of neck pain in the study population were 67.9%, 65.9% and 17.0% respectively. Male gender (OR = 0.325, CI = 0.16-0.67), being married (OR = 0.308, CI = 0.103-0.920) and being a secondary school certificate holder (OR = 0.340, CI = 0.192-0.602) were important risk factors for neck pain when socio-demographic variables were adjusted for one another. Prevalence of Neck pain is high in this study population. The likelihood of having NP was higher among males, secondary school certificate holders and married individuals. Further research is warranted on ergonomic risk factors for the development of NP in these settings.

Introduction

Neck pain (NP) is a pain in the posterior neck localized between the superior nuchal line and the spinous process of the first thoracic vertebra [1]. It is one of the most common musculoskeletal disorders, second only to low back pain [2]. Although poorly understood, NP exerts significant load on physical functioning, work, productivity and health care costs [3-5]. Features of NP include exacerbations, and high rate of recurrence and persistence [6-7]. Although, symptoms of neck pain subside in the acute phase, most cases do not resolve [8, 9]. Neck pain is a multifactorial disease, inferring there are several factors contributing to its onset and perpetuation. According to Guzman and Colleagues, these include physical, psychosocial and individual-related factors [10]. Neck pain is a common problem and at any given time about two thirds of people will experience

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NP at some time in their lives [11]. Also, more than one third of patients with NP will develop long-lasting symptoms within 6 months [12]. Nonspecific NP accounts for majority of complaints [13].

Globally, the overall, 12 months and point prevalence of NP range between 0.4% and 86.8% (mean 23.1%), 4.8% to 79.5% (mean 25.8%) and 0.4% to 41.5% (mean 14.45%) respectively [11]. Differences in study population and genetic dispositions of participants accounted for these wide range in NP prevalence. Neck pain is common among women than men [14, 15]. It is also common among people living in urban areas than rural areas [11]. Neck pain is a common symptom in clinical settings and it places a significant and unduly heavy load on physiotherapy care [16, 17]. There are various studies which have reported the prevalence of NP in urban regions [18-21]. However, rural community based studies on the prevalence of musculoskeletal problems (such as neck pain) are uncommon generally and particularly in the Nigerian settings. Rural dwellers whose major occupation is farming face diverse health hazards. Such physical hazards experienced include: carrying heavy loads, working with the trunk often flexed and risk of falls on slippery and or uneven walkways [22]. Others include risk of accidents caused by unpredictable actions of livestock and exposure to vibration from farm machinery [22]. Further, rural settlements may vary from urban settings in lifestyle, culture, economy, social organization and behaviours associated with illness and health care use. So, reports from studies of prevalence of NP in urban areas may not correctly represent what is obtainable in the rural environment, hence the importance of finding out the prevalence of NP among rural community dwellers. This study aimed at finding out the prevalence of NP among people living in Kura Local Government area of Kano State, Northwest Nigeria.

Methods

The study population comprised males and females living in Kura Local Government Area, Kano State. Kura local government has a population of 144,601 with a landmass area of 206km^2. The local government area comprises 10 wards. Kura town, the headquarters of the local government located along Zaria expressway is about 30 kilometres away from Kano metropolis. The main occupation of Kura people is farming. The Fischer's sample size formula derived a minimum sample size of 300 participants for the study. Participants' recruitment into the study was through a multistage cluster sampling technique. Simple random sampling technique by balloting was used to select five out of the 10 wards. Determination of the number of people interviewed in each ward was by a probability proportionate to size method, using the number of households in each ward. A starting point or prominent landmark, such as; marketplace, mosque or bus station was selected in each ward. Each successive house was surveyed until the sample size for that ward was attained.

Out of the 330 questionnaires administered to 330 participants, 305 were valid for data analysis. Information obtained from consenting individuals aged 18 and above in each house surveyed included socio-demographic characteristics and analysis of neck pain using a bio data form and standardized Nordic Musculoskeletal Questionnaire (NMQ) respectively

(Appendix). The Bio data form garnered socio-demographic information such as gender, age, marital status, occupation, educational status, smoking or tobacco consumption history and household income per month from consenting participants. The neck symptoms version of the NMQ, a standardized questionnaire, used for the analysis of musculoskeletal symptoms in an ergonomic or occupational health context, provided information about prevalence and effects of NP and health seeking practices of patients with NP [23]. This instrument was pretested on 20 patients with NP before use in the study. Test-retest reliability of the instrument, 24 hours apart, yielded an intra-class correlation of 0.95. IBM SPSS Statistics 20.0 (IBM Corp., Armonk, NY, USA) was used for data analysis. Data was summarised using descriptive statistics (mean, standard deviation and frequency of distribution). Associations between neck pain and socio-demographic characteristics were analysed using Chi-square. The correlates of socio-demographic parameters with neck pain prevalence were determined using binomial logistic regression. Alpha level set was at 0.05.

Results

Table 1 presents the socio-demographic characteristics of all the participants surveyed in the study. The ages of participants ranged between 18 and 65 years (mean = 34.70 SD = 13.33), 60% were females, 65.6% were less than 40 years old, 64.9% described themselves as blue collar workers. Out of the 198 blue collar job respondents in this study, 51.0%, 33.8%, 7.6% and 7.6% were petty traders, peasant farmers, artisans and middle-scale businessmen/women respectively. The lifetime, one-year and point prevalence of neck pain in the study population were 67.9%, 65.9% and 17.0% respectively. The predominant occupation among male blue collars and female blue collar workers with reports of neck pain (12 months prevalence) were peasant farming (57.5%) and petty trading respectively (90.7%).

Neck pain was significantly common among: males (76.2 %, χ^2 = 9.65, p = 0.002); primary school-leavers (75.0%, χ^2 = 11.97, p = 0.008); married individuals (72.9%, χ^2 = 12.35, p = 0.000) and among smokers (94.4%, χ^2 = 6.94, p = 0.008) [Table 2]. Table 3 shows the socio-demographic correlates (Adjusted ORs, standard error of means (SE) and confidence intervals [CI]) of NP. Gender, marital status and highest educational level were important risk factors for neck pain. Participants were less likely to report NP if they were females (OR = 0.325, CI = 0.16-0.67) compared to males or if they had more than the secondary school certificate (OR = 0.340, CI = 0.192-0.602) compared to a secondary school certificate holder or illiterate/primary school certificate holder. Also, individuals who were not married (OR = 0.308, CI = 0.103-0.920) were less likely to present with NP than their married counterparts. Out of the 207 participants that had neck pain in the past 1-year, neck trouble (pain, ache or discomfort) caused 40.8% (n = 82) and 45.8% (n = 92) to reduce their work and leisure respectively. Few participants (n = 22, 11.9%) reported ever having hurt their neck in an accident; changed jobs because of neck pain (n = 32, 15.9%) or had their neck trouble managed by a doctor, physiotherapist (n = 43, 21.4%). Table 4 shows the total time individuals had neck trouble and could not do their

Table 1: Socio-demographic characteristics of participants

Variable	Frequency	Percentage (%)
Gender		
Male	122	40
Female	183	60
Occupation		
Unemployed	92	30.2
Blue collar job	198	64.9
White collar job	15	4.9
Age Group		
<40	200	65.6
41-50	63	20.6
>50	42	13.8
Marital Status		
Single	69	22.6
Married	199	65.2
Divorced	15	4.9
Widowed	22	7.3
Education		
None	72	23.6

Primary School	68	22.3
Secondary School	117	38.4
Tertiary	48	15.7
Smoking History		
Smoker	18	5.9
Non-Smoker	287	94.1
Highest earned income per month		
Less than N13,000	236	77.4
Between N13,000-N49,000	69	22.6

Table 2: Association between Socio-demographic factors and Prevalence of Neck Pain

		12 months prevalence		χ^2	P
		Yes	No		
		Number (%)	Number (%)		
Gender	Male	93.0 (76.2)	29.0 (23.8)	9.65	0.002
	Female	108.0 (59.0)	75.0 (41.0)		
Age group	<40	135.0 (67.5)	65.0 (32.5)	1.68	0.432
	40-50	42.0 (66.7)	21.0 (33.3)		
	>50	24.0 (57.1)	18.0 (42.9)		
Educational level	Never attended school/primary	87.0 (62.1)	53.0 (37.9)	11.97	0.008
	Secondary School	83.0 (70.9)	34.0 (29.1)		
	Tertiary	31.0 (64.6)	17.0 (35.4)		
Occupation	Unemployed	56.0 (60.9)	36.0 (39.1)	1.68	0.431
	Blue collar job	134.0 (66.7)	64.0 (32.3)		
	White collar job	11.0 (73.3)	4.0 (26.7)		
Marital Status	Married	145.0 (72.9)	54.0 (27.1)	12.35	0.000
	Not Married	56.0 (52.8)	50.0 (47.2)		
Smoking Status	Smoker	17.0 (94.4)	1.0 (5.6)	6.94	0.008
	Non-smoker	184.0 (64.1)	103.0 (35.9)		
Income/Month	Less than N13,000	150.0 (63.6)	86.0 (36.4)	2.55	0.111
	N 13000 - 49000	51.0 (73.9)	18.0 (26.1)		

Key: χ^2= Chi square value, **P**= level of significance,

Table 3: Socio-demographic correlates of Neck Pain

Variable		[a]OR	SE (OR)	95% CI
Gender				
	Male	1.00		
	Female	0.325	0.371	0.16-0.67*
Age Bracket				
	<40 years	1.00		
	40-50 years	0.873	0.368	0.425-1.796
	Above 50 years	0.737	0.408	0.331-1.641
Marital status				
	Married	1.00		
	Not married	0.340	0.291	0.192-0.602*
Highest educational level				
	No formal education/ Primary school certificate	1.00		
	Secondary School Certificate	1.023	0.352	0.513-2.039
	> Secondary School Certificate	0.308	0.559	0.103-0.920*

	School Certificate			
Occupation				
	Unemployed	1.00		
	Blue collar job	0.792	0.309	0.433-1.452
	White collar job	1.492	0.791	0.317-7.030
Highest earned income				
	<₦13,000	1.00		
	₦13,000-₦49,000	1.194	0.456	0.489-2.919
Smoking Status				
	Non-smoker	1.00		
	Smoker	6.466	0.592	0.770-54.308

[a]OR adjusted for all variables in the table, *significant OR

OR= Odds ratio, SE= standard error, CI= confidence interval.

Table 4: The total length of time individuals have had neck trouble and have been prevented from doing their normal work during the last 12 months

Total length of time individuals have had neck trouble during the last 12 months				The total length of time individuals were prevented from doing their normal work during the last 12 months		
	0 days	1-7days	8-30days	1-7days	8-30days	> 30 days but not everyday
Frequency	62	124	21	62	113	32
Percentage	30.0	59.9	10.1	30.0	54.6	15.4

normal work (at home or away from home) during the last 12 months.

Discussion

The lifetime prevalence of NP (67.9%) reported in this study is higher than that of Chiu and Liung [24] and Son et al [3] (20.8%) but lower than that reported by Chiu et al (75.7%) [16]. Also, in this study, we found that the point prevalence of NP was lower than that reported by Chiu et al (20.2%) [16], but higher than that of Son et al (10.1%) [3]. Further, 12-months prevalence (64.6%) in the study of Chiu et al was lower [16]. Two of the studies compared with this cross-sectional study employed a telephone survey [16, 24]. The differences in the survey instruments used and in the geographical settings could have accounted for these varied results.

When this study was adjusted for socio-demographic variables, gender was independently associated with the likelihood of reporting NP. This is consistent with many studies reporting an association between gender and NP [11, 14-16, 25]. However, while majority of these studies reported a preponderance of NP in the female gender, this study found higher prevalence among males. Hoy et al. in a study on the global burden of neck pain reported a higher prevalence estimate of NP among females than males (6.0% vs. 4.1%) in Sub-Saharan West Africa [26]. Further, being married was positively associated with NP. Married African adults, especially men have been reported to engage in more job activities as they are mostly breadwinners of the family and the society expects them to provide for their family needs [27]. This could increase their susceptibility to NP. For religious and cultural reasons, most women living in Northern Nigeria in comparison with men do not engage in so much work, thus likely to have lesser complaints of NP.

A higher proportion of secondary school-leavers had NP. The reason for this is unknown. However, it is important to educate this vulnerable group on predisposing risk factors and prevention of NP. A lower percentage of respondents (21.3%) who had neck trouble in the past 1-year received medical care. This was lower than the study of Chiu et al. (25.2%) [16]. Akinpelu et al. opined that although individuals with low educational status may attribute musculoskeletal pain (e.g. neck pain) with occupations and poor postures, they may have insufficient knowledge about its causes and preventive measures [28].

This study reported the community prevalence of NP in a rural setting in North-West, Nigeria. It has also been able to highlight the most important risk factors for, and the utilization of health care facilities by people with NP. However, it is vital to note the limitations of this study. There might have been some level of recall bias as there was an over-reliance on self-report instruments in this study. Also, as this is a cross-sectional study, casual relationships between socio-demographic variables and prevalence of NP cannot be affirmed.

Conclusions

Prevalence of Neck pain is high in this study. The likelihood of having NP was higher among males, secondary school certificate holders and married individuals. Further research is warranted on ergonomic risk factors for the development of NP in these settings.

Conflicts of Interests

The Authors declare no conflicts of interests.

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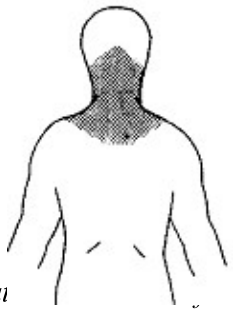
Appendix

Section 1 (Socio-demographic Characteristics of Participants)

1. Gender Male [ ] Female [ ].
2. What is your age (as at last birthday)? _____ Years.
3. What is your marital status? Single [ ] Married [ ] Divorced [ ] Widowed [ ].
4. What is your occupation? _____
5. What is your highest educational level? None [ ] Primary school [ ] Secondary school [ ] Tertiary Institution [ ].
6. Do you smoke cigarette or consume tobacco? No [ ] Yes [ ].
7. What is your highest earned income per month? Less than Less than N13, 000 [ ] Between N13, 000- N49, 000 [ ] Above N49, 000 [ ].

Section 2 (Neck symptoms version of Standardized Nordic Musculoskeletal Questionnaire)



Neck trouble means ache, pain or discomfort in the shaded area. Please concentrate on this area, ignoring any trouble you may have in adjacent parts of the body. There is a separate questionanire for shoulder trouble. Please answer by putting a cross in the appropria each question. You may be in doubt as to how to answer, but please do your best anyway.

1. Have you ever had neck trouble (ache, pain or discomfort)? No [ ] Yes [ ].

   If you answered no to question 1, do not answer the questions 2-8

2. Have you ever hurt your neck in an accident? No [ ] Yes [ ].
3. Have you ever had to change jobs or duties because of neck trouble

   No [ ] Yes [ ].
4. What is the total length of time that you have had neck trouble during the last 12 months? 0 days [ ] 1-7 days [ ] 8-30 days [ ] More than 30 days, but not every day [ ] Everyday [ ].

   If you answered 0 days to question 4, do not answer questions 5-8
5. Has neck trouble caused you to reduce your activity during the last 12 months?

   a) Work activity (at home or away from home)? No [ ] Yes [ ].

   b) Leisure activity? No [ ] Yes [ ].
6. What is the total length of time that neck pain has prevented you from doing your normal work (home or away from home) during the last 12 months?

   0 days [ ] 1-7 days [ ] 8-30 days [ ] More than 30 days [ ].
7. Have you been seen by a doctor or physiotherapist because of neck trouble during the last 12 months? No [ ] Yes [ ].
8. Have you had neck trouble at any time during the last 7 days? No [ ] Yes [ ].