

The Characteristic of Pain and Disability among Patients with Neck Pain in Nepal: A Study in a Tertiary Hospital

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ABSTRACT

Background

Neck pain is a major public health problem and found to be associated with people who have low income, low educational levels, and occupational activities that involve strenuous, manual labor work. Agriculture is the main occupation for the majority of the Nepalese population and they are potentially exposed to these risk factors. Hence, it is important to explore the characteristics of neck pain among the Nepalese population.

Objective

To explore characteristics of socio-demographic, pain and disability among the Nepalese population with neck pain.

Method

A cross-sectional study was conducted using convenience sampling in Dhulikhel Hospital from February 2019 to April 2019. Patients with neck pain, aged > 18 years were included in the study. Information on age, sex, marital status, occupation, educational status, income, and working hours were collected from the patients. Nepali versions of the Neck Disability Index and Numerical Pain Rating Scale were used to assess disability and pain intensity respectively.

Result

Among 120 participants, 88 patients were included in the study. The mean age of the patients was 41.38 (SD 15.26) and the majority (72%) were females. The majority were uneducated (35.2%) and unemployed (64.8%). The mean score of pain in the past 24 hours was 6.48 (SD 1.28). The majority had a mild disability (55.7%) followed by moderate disability (43.2%).

Conclusion

Neck pain is common among women, the middle-aged population, and patients with a poor level of education and income. The patients reported moderate neck pain with mild to moderate disability. The results of our study highlighted the importance of implementing screening measures to enable the timely identification and treatment of neck pain, especially among high-risk individuals. This would prevent or minimize the development of disability associated with neck pain.

KEY WORDS

Disability, Neck disability index, Neck pain, Numerical pain rating scale, Socio-demographic characteristics

INTRODUCTION

Neck pain is a public health problem leading to considerable pain, disability and high economic cost.¹ Neck pain is defined as “pain in the neck with or without pain referred into upper limbs that lasts for at least one day”.² Globally, the age-standardized rates for point prevalence of neck pain per 100 000 populations was 3551.1 in 2017.³ In Nepal, there are limited studies on neck pain and few studies have reported the prevalence according to the occupation. A study conducted among 246 Nepalese farmers reported the neck pain prevalence as 12.3%.⁴ Another study conducted among 103 Nepalese dentists reported the prevalence to be 52.4%.⁵

In Nepal, the main source of income is agriculture that involve activities such as carrying heavy loads, manual handling, twisting, and bending activities which are the risk factors of neck pain.^{4,6} Modifiable and non-modifiable risk factors for neck pain include low income, low educational level, strenuous physical activity, increasing age, more in women, high body mass index (BMI), previous history of musculoskeletal pain, poor postural habits, increase stress level, anxiety and depression.⁷⁻¹²

Neck pain and disability have a positive correlation.¹⁰ The disability related to neck pain affect the functional activities and psychological aspect that affects the quality of life.¹³ Neck pain can become a chronic problem and identifying protective or risk factors can help guide the prevention, diagnosis and management of neck pain.^{11,14} Hence the aim of the study was to explore the characteristics of socio-demographics, pain and disability among the Nepalese population with neck pain.

METHODS

A quantitative cross-sectional study using convenience sampling was conducted from February 2019 to April 2019 at Dhulikhel Hospital physiotherapy outpatient department.

A total of 120 patients were eligible for the study. Patients were included in the study if they reported to have neck pain in the past 4 weeks. To confirm further a body chart was used where patient indicate their pain area. Patients were excluded if they presented with referred pain, diagnosed psychiatric disorder and unable to follow instruction. Oral and written consent was obtained from patients who agreed to participate in the study. The study was conducted after the approval from institutional Review Committee (131/19), Kathmandu University School of Medical Sciences considering the guidelines to conduct research given by Declaration of Helsinki.

The sample size was determined by using formula $n = Z^2 p(1-p)/d^2$ where n = sample size, Z = standard normal coefficient=1.96, P = The value of proportion as decimal percent=6.07, d = desired precision level expressed as

half of the maximum acceptable confidence interval width=0.05. Therefore, the sample size is calculated as 88.

The participants filled the socio-demographic data that included age (years), sex (male, female), BMI (height in cm, weight in kg), ethnicity, education level (uneducated, primary level, secondary level, bachelor, master's level), marital status (married, single, divorced/separated), economical status (No income, Below 8000 8000-16000, Above 1600), occupation (Farmer, Housewife, Business, Office-worker, Student, Others).¹⁵ Further, the participants also responded to the Nepali version of neck disability index (N-NDI) and Nepali version of numerical pain rating scale (N-NPRS) questionnaires. N-NDI is the most widely used scale for measuring disability in the patient with neck pain.¹³ It is the self-administered questionnaire which consists of 10 questions in the following domains like pain intensity, personal care, lifting, reading, headaches, concentration, work, driving, sleeping and recreation. Each question contains six answers choice which scored from 0 (no disability) to 5 (complete disability) which takes < 5 minutes to administer N-NDI shown to be valid and reliable tool. The Nepali version of Neck disability index demonstrated excellent test retest reliability with ICC (95% of confident interval) of 0.87.¹⁶ NPRS is a segmented numeric version of the visual analog scale (VAS) and is a valid outcome tool with high test retest reliability for measuring pain intensity.¹³ The pain intensity was shown by selecting a whole number (0-10 integers) by the participants in which '0' representing no pain and '10' representing worst pain imaginable. It takes < 1 minutes to complete and is easy to administer and score. The Nepali version of numerical rating scale was used in this study and has demonstrated good test retest reliability 0.81, minimal detectable change (1.13) and standard error of measurement 0.49.

Statistical analysis was done using the software, Statistical Package for Social Sciences (SPSS) version 25. The data were arranged, entered and tabulated in SPSS version 25 to analyze the findings of the study. Each data was given de-identification code during entering the data. Categorical data were presented as numbers and percentages. Descriptive data were presented as mean (standard deviation) if normally distributed and as median if skewed.

RESULTS

Among 120 patients, 88 patients were included in the study. The mean age was of 41.38 years (standard deviation (SD) 15.26) (Table 1). Among them one-third were females (72%). Neck pain were high in married population (70.45%) and smokers (72.7%). Similarly, it is high in the subjects whose economic status (64.8%) and education (35.2%) was low. Majority of the patients were in acute/subacute stage (80%). The mean score of N-NPRS in past 24 hour was 6.48 (SD 1.28). About forty-nine patients (55.7%) had mild disability and thirty-eight (43.2%) subjects had moderate disability.

Table 1. Socio-demographic characteristics of the participants (n=88)

Variables	Value / n (%)
Age (years), mean, standard deviation (SD)	41.38, 15.267
Gender	
Male	25 (28.4)
Female	63 (72)
Marital status	
Divorced/separated	0 (0)
Married	62 (70.45)
Single	25 (31.8)
Body mass index (kg/m ²)	
Underweight	10 (11.4)
Normal	56 (63.6)
Overweight	19 (21.6)
Obese	3 (3.4)
Ethnicity	
Brahmin	32 (36.4)
Chettri	14 (15.9)
Newar	22 (25)
Others	20 (22.7)
Occupation	
Farmer	25 (28.4)
Housewife	20 (22.7)
Business	7 (8)
Office-worker	14 (15.9)
Student, Others	22 (19.3)
Community	
Rural	45 (51.1)
Sub-urban	34 (38.6)
Urban	9 (10.22)
Education level	
Uneducated	31 (35.2)
Primary	13 (14.8)
Secondary	9 (10.2)
High school	8 (9.1)
Bachelor, Master	27 (30.7)
Employment Status	
Employed	31 (35.22)
Unemployed	57 (64.8)
Income	
No income	57 (64.8)
Below 8000	3 (3.4)
8000-16000	9 (10.2)
Above 16000	19 (21.6)
Carry Namlo	
Yes	43 (48.9)
No	45 (51.1)
Smoking	
Never smoked	64 (72.7)
Smokers	15 (17)
Ex-smoker	9 (10.2)
Bending activities for more than 4-6hrs, mean (SD)	4.85, 2.64

The table 2 given below illustrates the mean score of N-NPRS and N-NDI. Overall, the mean N-NPRS in past 24 hrs is 6.48 (SD 1.28) and present NPRS is 5.28 (SD 1.33). In mild (mean= 6.31) and moderate (mean=6.76) disability, mean is comparatively higher in NPRS in past 24 hrs. The table 2 also showed percentage of NDI score which was categorized into no disability, mild disability, moderate disability and complete disability. Out of 88 participants, 55.7% had mild disability, 43.2% had moderate disability, 1.1% had no disability.

Table 2. Mean score of Numerical pain rating scale (NPRS) and Neck Disability Index (NDI) (n= 88)

Clinical variables	Value / n (%)
NPRS (0-10) in past 24 hrs, mean, SD	6.48 (1.28)
NPRS (0-10) at present, mean, SD	5.28 (1.33)
NDI score	
No disability	1.1 %
Mild disability	55.7 %
Moderate disability	43.2 %

SD: Standard deviation

DISCUSSION

The purpose of the study was to explore the socio-demographic characteristics of the patient with neck pain. A secondary purpose was to determine the level of pain and disability in the patient with neck pain. The descriptive analysis of this cross-sectional study showed that majority of the patients had neck pain who were in middle-aged, females, patients with low level of education and unemployed. Similarly, neck pain was also common among patients who use 'namlo' to carry and transfer the objects and was reported to have moderate intensity of pain and mild to moderate disability.

In our study, about one third patients were in middle-aged population which was consistent to the study done by Praveen et al. where they included 91 participants of NP and majority (79%) of NP patients were in middle aged.¹⁷ Studies have indicated with the increased age especially after the age 45 the prevalence of neck pain rises.¹⁸ It is believed that normal anatomy of the cervical spine changes at advanced ages leading to neck pain and long term disability.¹¹

We found that the burden of more neck pain is higher in females than in men. According to the GBD 2020, the number of year-lived with disability (YLDs) was higher in females (16.4 million (10.0 to 25.1) compare to male (122.7 million) showing the higher burden of neck pain in females.¹¹ Nepal is a patriarchal society where women have a higher workload in unrecognized household and non-household activities which shows adverse effects on health.¹⁰ Another

potential reason could be explained by the study done by Robinson et al. which suggested that men are less willing to report pain compared to female. They further explained that women had lower pain threshold and tolerance and hence could not endure pain for a long time and probably might have been more willing to report pain.⁶

About half of the participants uses 'namlo' to carry and transfer objects. This is similar to the study done by Kadota et al. in the Tanzania which reported about one third of the population experienced neck pain in the population who carry heavy load on the back like namlo.¹⁸ The existing research on load carrying in low-middle income countries (LMIC) suggested negative impact in musculoskeletal pain and function especially in females.¹⁸ Culturally in LMIC, domestic load carrying activities like 'namlo' are regarded as low status activity which is usually assigned to female.¹⁹ In our study most of the patients (70.35%) who reported to have neck pain were married especially females. In context of Nepalese society, married women are expected to look after family and household chores due to which they have additional burden of work.¹⁰ Another study from Nepal have reported that women in addition to washing, cleaning and cooking, they also primarily take care of the child, fetch water and take care of animals.²⁰ This indicates heavy physical workload and could be a reason for Nepalese married women reporting neck pain. Marital status is not risk factor for pain but has been labelled as one of the risk factor.¹⁹ A study by Genebra et al. reported that married population have more ergonomic exposure and psychological stress at home or work.¹⁹

The majority of the patients in this study live in rural (51.1%) followed by sub-urban (38.6%) communities of Nepal. In the study done in developing countries like Brazil and Nepal, low level of income and education are found to be associated with the presence of neck pain.^{19,21} Our finding suggested that 34.8% are uneducated and many are farmers which is a similar finding done by Sharma et al. where they reported that low level of education and low socioeconomic status was associated with more episodes of back pain.²¹ Also it is reported that lower family incomes are usually exposed to strenuous physical workload to fulfill their basic life support making them more vulnerable to musculoskeletal pain.²¹ In addition, relatively few people in Nepal including and especially those with low SES have access to basic health benefits (i.e., medical insurance and paid sick leave).²¹

More than half of patients reported to have 'moderate' level of neck pain and mild to moderate disability. This

finding is in consistent with previous study from Nepal where patients with high pain intensity had low disability.²² It is found that Patients visit to the hospital at the sub-acute stage.²² Majority of the Nepalese people believe pain as a part of natural ageing process and seek medical attention only when pain gets worsen.²² Nepal being agricultural country, maximum (70%) population depends on their farming/agricultural activities for their daily living and need to work daily in order to obtain the resources needed for their basic living.^{23,24} The challenges of survival and meeting basic might have led to the neglect of health problems in Nepal.²⁴

The study provides a baseline information for neck pain socio-demographic characteristics, pain severity and disability in Nepalese patient. From the study we can have an insight by which we can identify high risk groups and plan in prevention/ treatment program. This study is totally hospital based study and cannot be generalized to different community with different life styles. This study will contribute as a reference for other epidemiological study. Further studies might be needed to investigate the association of sociodemographic with the neck pain. This study can be further conducted in the national level to generalized the whole Nepalese population with neck pain.

CONCLUSION

Neck pain is prevalent in middle-aged population, married women, with a low level of education and with a low income. The reported level of neck pain intensity was moderate and the reported disability was mild-moderate. Our study revealed that there is a need to educate people about the underlying causes, preventive measures, and treatment options for neck pain. Additionally, it is advisable to encourage regular check-ups, particularly for individuals at a higher risk of developing neck pain, to facilitate early identification and management of neck pain. Early intervention for neck pain can help prevent the onset of disability associated with neck pain.

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