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LEVEL OF DISABILITY AND RISK OF CHRONIFICATION AMONG PATIENTS PRESENTING WITH NECK PAIN AT A TERTIARY HOSPITAL

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ABSTRACT

Objective: The aim of this study was to determine the level of disability and risk of chronification among patients presenting with neck pain at tertiary hospital in Kenya.

Design: A cross-sectional descriptive study.

Setting: Physiotherapy and general outpatient clinics at Nakuru Level V Hospital in Nakuru, Kenya.

Subjects: 45 patients who presented with neck pain

Main outcome measures: Neck Disability Index (NDI) and Orebro Musculoskeletal Pain Screening Questionnaire (OMPSQ) to screen for disability and pain chronicity respectively.

Method: Data was collected using Neck Disability Index (NDI) and Orebro Musculoskeletal Pain Screening Questionnaire (OMPSQ). It was then analyzed using the statistical package for the social sciences (SPSS) version 25.0 for descriptive and inferential statistics.

Results- Out of the 45 participants, majority were female 73.3% (n=33), 82.2 % (n=37) were aged 36 years and above, 68.9% (n=31) were married, 42% (n=19) were office workers and 60% (n=27) were employed. Most of the participants (55.5%) were at low risk of chronification and 56% had a moderate disability. The mean NDI score was highest among the patients who scored high on the (OMPSQ) (45.5). There were significant mean differences between the domains of pain chronification with Orebro score.

Conclusion: Persistence and high pain duration in neck pain patients seems to be associated with high levels of disability. The study emphasizes on the

importance of educating and increasing awareness of neck pain to prevent chronicity and reduce its economic burden.

INTRODUCTION

Prolonged disability due to neck pain is widespread. Studies have shown that 22% to 70% of the overall population have had at least one incident of neck pain (1). Studies have further shown that of the people who experience acute neck pain 50% to 84% of them will report pain 1 to 5 years (2). Neck pain presents a serious health concern. In terms of years lost to disabilities (YLDs) neck pain is the fourth highest cause of disability. It is classified as number two after back pain as a the leading cause for medical consultation globally (3,4).

Neck pain is a diverse concept that has been defined differently by different authors. However as a point of reference (5) in 2010 using a study on Global Burden of Health, distinctively defined neck pain as any activity limiting pain located in the region of the neck with non-radiating or radiating symptoms into both or one of the upper extremities, head or trunk and can last for at least a day. Due to lack of homogeneity and variance in defining neck pain, it has been difficult to establish the frequency of occurrence of neck pain in the overall population (6). However some epidemiological studies have reported neck pain prevalence estimate of between 40% and 29% for females and males respectively (7) and 146 and 213 per 1000 patients incidence rate per 1 year (8).

The occurrence of neck pain is more common in women than in men approximating 27.2% and 17.5% respectively and higher in individuals who are 45 years and above (9,10). High cost of treatment, compensation claims, lost wages and work absenteeism contribute greatly to economic burden resulting in neck disorders. Neck related disabilities can significantly impact on

workforce productivity, lead to a high employee turnover, and reduce households and communities' economy (4). There are three distinct stages of chronicity of neck pain; 0-3 weeks- acute stage, 4-12 weeks- sub-acute stage and 12 or more weeks- chronic stage (1). Many patients presenting with acute neck pain will improve. However a fraction of them will develop bouts of disability and pain six months after the first episode (11). The common clinical features that can predict chronicity in patients with neck pain have been classified into physical, psychosocial (work demands, anxiety, stress), work environment factors (repetitive work) and individual factors (demographic factors) (12). Important factors like past medical history of neck pain, trauma, female gender, old age and presence of low back pain have been seen to contribute towards poor treatment outcome further contributing to transitioning of acute neck pain into chronic neck pain (11).

Due to the chronic and disabling nature of neck pain there is need to identify and educate the population at risk on the risk factors, preventive measures and the importance of earlier diagnosis for better management of neck pain (10). In Kenya the risk for the development of chronic neck pain is not known and most physiotherapists manage all neck pain patients the same way hence compromising the patients' treatment outcomes. Therefore, our study aimed to determine the level of disability and risk of chronification of neck pain among patients presenting with neck pain at Nakuru Level V Hospital in Nakuru County, Kenya. This study will contribute to establishment of a better understanding of neck pain which is relevant for effective patient management, implementation and informing better practice towards identification of patients

who can easily transition to chronic neck pain.

MATERIALS AND METHODS

Area of study: Our study was conducted at the physiotherapy and general out-patient clinics. *Study design:* We utilized a cross-sectional design within the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) reporting guidelines (8). The assessor was blinded to the condition of the patient.

Study population: We recruited all patients who presented with neck pain as their main primary symptom who attended the physiotherapy and general out-patient clinics from January 2020 to April 2020. This permitted suitable persons to be included in the sample.

Inclusion criteria: Neck pain patients who met the following criteria were included in our study; presence of pain in the cervical area referred to the shoulder, occiput and upper extremities with no proven structural pathology present in the spinal cord, cervical spine and cervical nerve roots.

Exclusion criteria: Participants who presented with the following features were excluded from the study; symptoms that pointed towards the risk of specific disorders that will otherwise simulate cervical pain, for example, insidious progression of a condition, loss of sensation in more than one dermatome or weakness in movement comprising more than one myotome. Clinical features indicative of cerebrovascular insufficiency for example drop attacks, dizziness, transient ischemic attack and cerebrovascular accident as well as history of malignancy and signs and symptoms of mental instability were also excluded.

Protocol: The researchers identified participants with neck pain who met the inclusion criteria. They were then issued with participant information sheet which explained participants' expectations and the

aim of the study. Informed written consent was then obtained from the participants. Those who were deemed suitable for the study provided their socio-demographic particulars and were issued with Neck Disability Index and the Orebro Musculoskeletal Pain Screening Questionnaire for self-completion. The social-demographic information that was provided included gender, marital status, educational attainment, occupational group and occupational status.

Instrumentation

Measuring chronification: The Orebro Musculoskeletal Pain Screening Questionnaire (OMPSQ) a self-administered questionnaire was used in predicting the risk of chronicity in patients presenting with chronic pain. It is a well validated tool with good reliability and validity in identifying chronicity of pain (13). It comprises of 25 items which have been classified into 5 categories assessing risk factors for extended disability: psychological variables, pain, fear-avoidance beliefs, perceived function, prolonged disability, background and patient demographics.

Measuring disability: The Neck disability index (NDI) an out-come measurement tool was used in patients presenting with cervical pain to determine the level of debility (disability) related to neck pain. The tool has shown good "test-retest" reliability in previous studies (14). The NDI comprises of 10 items that address functional activities comprising of reading, sleeping, personal care, lifting, recreational, work and driving. For each item there are six choices scored from 0-5 0 being no disability and 5 being total disability. The final score is calculated in percentage and the higher the percentage scores the greater the pain and disability.

Statistical analysis: Data was entered into Microsoft Excel and statistical analysis was conducted using Statistical Package for Social Sciences software (SPSS). Frequency and percentages were used to describe data. The

relationship between the level of disability and risk of chronification and variables were analysed using Multivariate ANOVA.

Ethical consideration: The authors obtained permission, approval and ethical clearance from Jomo Kenyatta University of Agriculture and Technology (JKUAT) ethical review committee (Reference number: JKU/2/4/896B) and was approved by the National Commission of Science, Technology and Innovation (NACOSTI/P/19/2347).

RESULTS

A total of 85 participants were screened, out of which 45 (52.9%) were illegible and gave consent to participate in the study. Most of the subjects, 82.2 % (n=37) were older adults aged 36 years and above. Of the 45 participants 73.3% (n=33) were females a proportion that was significantly higher than the males who were at 26.7% (n=12). More than half of the study participants 68.9% (n=31) were married. Majority of the respondents 33% (n=15) were college graduates, 68.9% (n=31) were employed 60% (n=27) and 42% (n=19) were doing office work.

Table 1

Socio-demographic characteristics of study participants (n=45)

Parameters	Frequency	Percentage	
Age group	Below 18 years	3	6.7
	18-25 years	2	4.4
	26-35 years	3	6.7
	36 years and above	37	82.2
Gender	Male	12	26.7
	Female	33	73.3
Marital status	Single	9	20.0
	Married	31	68.9
	Divorced/Separated	2	4.4
	Widowed	3	6.7
Education	Primary	11	24.4
	Secondary	7	15.6
	College	15	33.3
	University	12	26.7
Occupational status	Employed	27	60.0
	Unemployed	6	13.3
	casual laborer	9	20.0
	Others	3	6.7
Occupational group	office work	19	42.2
	non-office manual	11	24.4
	unskilled labor intensity	15	33.3
Total number of patients		45	100.0

Level of disability among study participants

About 56% (n=25) of the study participants were found to have moderate disability as

determined by NDI while 38% had severe disability, complete disability (4.4%) and mild (2.2%).

Table 2
Neck disability

Level of neck disability	Frequency	Percentage
Complete disability	2	4.4
Mild disability	1	2.2
Moderate disability	25	55.6
Severe disability	17	37.8
Total	45	100.0

Risk of chronification among study participants

A self-administered OMPQ was used to determine the risk of chronification of neck pain among the study participants. The

OMPQ groups indicated that most of the patients were low risk (55.5%), followed by moderate (35.5%) and high-risk patients (9%).

Table 3
Risk of chronification of neck pain

Patients' level of risk for neck pain chronification		Frequency	Percent
Valid	Low risk	25	55.5
	Moderate risk	16	35.5
	High risk	4	9.0
	Total	45	100.0

Comparison between OMPQ and NDI scores

The mean NDI score was highest among patients who scored high on the OMPSQ (45.5), followed by low (35.0) and medium

(34.6) but there were no significant differences in mean NDI score by Orebro groups.

Table 5
Comparison between OMPQ and NDI score (%)

OMPQ group	Mean	Std. Dev.
low	35.0	17.2
medium	34.6	14.0
High	45.5	6.0
Total	35.9	15.3
Sig	Ns	

DISCUSSION

The purpose of this study was to determine the level of disability and risk of chronification among patients presenting with neck pain. The findings of our study indicated that most patients had moderate level of 55.6% of disability and a low risk of transitioning into chronic neck pain. This suggests that neck pain is a moderately disabling condition that has an eminent effect

on a person's ability to cope with and manage everyday activities of living including self-care, work recreation concentration and others. The neck is an integral part of the human body containing very important anatomical and physiological features. Due to its position in the body, it is susceptible to injury compared to other parts of the body. The findings of moderate disability among our respondents is in agreement with a previous studies (15,8), which established

that patients who had pain at the cervical region had mild to moderate disability with the subjects scoring 49% and 26.2% respectively. However a study by (10), which focused on otherwise healthy dentistry students reported a mild disability amongst their respondents. These findings are contrary to our study and could be because of the difference in methods of data collection and variances in defining the symptomatic case. (Inclusion/exclusion criteria).

The findings of this study established a low risk of transitioning into chronic neck pain. According to (16) neck pain is characterized by recurrent, persistent chronic episodes of pain. It has been documented that majority of patients with neck pain tend to ignore the initial acute symptoms only to seek physiotherapy intervention after transitioning into the chronic phase of pain. This has been attributed to factors such as lack of awareness of available treatment options, ineffective referral systems and availability of alternative interventions such as acupuncture, traditional medicine, massage among others (1). Our findings are in agreement with those of (10) which found low levels of chronic pain among their respondents. However the findings of this study are contrary to those of (17) who found high levels of neck pain chronification among their participants. The variance in the risk of developing chronic neck pain found in our study (low) from that of (17) indicate that the chronicity of pain is highly dependent on the length of time that one has had the pain.

There was a positive relationship between high risk of chronicity and high levels of disability. Individuals who present with debilitating pain are likely to have limitation in performing most activities due to pain. When disability is influenced by the intensity of pain, it is important to reconsider the mode of measurement. If the patient's functional abilities are to be influenced by the amount of pain instead of a given intervention, then the tool used to may not be sufficient enough to

detect if there is an improvement therefore the increase in pain may be understood as decrease in functional abilities leading to an increase in disability levels (15). Our findings are consistent with previous studies which have found a positive relationship between high levels of chronicity and disability (8). Contrary to our findings, a cross sectional study carried out in Malaysia on factors related to neck disability in 34 adults with neck pain reported no significance difference between disability and severity of pain in NP (14). This was attributed to adoption of compensatory mechanisms in performing the activities of daily living. Consequences of pain such as altered motion and coordination, muscle inactivation, poor neck posture due to pain contribute to a high risk of developing chronic neck pain. Earlier study findings showed a strong relationship between disability and pain intensity (18).

A higher proportion of neck NP in females is in agreement with majority of previous studies which attributed female gender and neck pain to the physical and hormonal changes which occur in women over time. However cultural aspects and psychosocial mechanisms have also been credited to gender differences in dealing with pain comprising of; coping mechanisms, role socialization, reduced bone density, environmental risk factors, cognitive factors and functional anatomical well-being (19,20,9).

There was a positive relationship between increased age and the development of NP. This can be attributed to repetitive neck motions, prolonged wear and tear over time which predisposes the cervical spine to development of degenerative conditions whose main symptoms are pain and stiffness. The results of our study strongly support the findings of previous studies which found a strong relationship between advanced age and NP. Age advancement is one of the most common demographic factors mostly associated with chronic neck pain with a

prevalence of 15-30% annually and a poor outcome on the recovery process.(21,22,20).

Limitation: Consequently it has been proven that 20% of persons presenting with chronic pains never seek for medical intervention (15). Our study was restricted to a small sample which was based strictly in a hospital clinical setting where most of the participants had gone to seek for treatment due to NP. Therefore, the results of this study may not depict a clear picture in representation to other unrelated group of persons with chronic NP. It is suggested that a great number of participants with chronic NP from different professions, age groups and from more clinical sites should be involved in the forthcoming studies.

CONCLUSION

The results of our study indicate that neck pain is a moderately disabling condition. Female gender and age progression were both negatively and positively correlated with chronicity of neck pain. Persistence and high pain duration seems to be associated with high levels of disability. The socio-demographic factors such as age and gender should be integrated during formulation of neck pain treatment approaches in order to quicken patient recover and prevent pain chronicity.

Creating, educating and increasing awareness on neck pain risk factors, preventive measures as well as management and importance of early detection will aid in quickening patient recovery, preventing chronicity and reducing the economic burden of neck pain.

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