OPEN ACCESS

Kashf Journal of Multidisciplinary Research
Vol: 02 - Issue 05 (2025)
P-ISSN: 3007-1992 E-ISSN: 3007-200X
https://kjmr.com.pk

EXPLORING THE ASSOCIATION BETWEEN PSYCHOLOGICAL STRESS AND NECK PAIN AMONG MILITARY PERSONNEL IN KARACHI

*[1]Aqsa Latif *, [2]Maira Muneer, [3]Okasha Anjum*
[1, 2, 3]Department Of Physical Therapy And Rehabilitation Sciences, Indus University.
**Corresponding author: Aqsa Latif (aqsalatif620@gmail.com)*

Article Info

Abstract

OBJECTIVE: To investigate the association between psychological stress and neck pain in a military population.

METHODOLOGY: This cross-sectional investigation was conducted over a duration of six months involving 103 active-duty naval personnel in Karachi, Pakistan, employing a convenience sampling methodology. Participants within the age range of 20 to 55 years completed questionnaires utilizing the Neck Disability Index (NDI), Visual Analog Scale (VAS), and Perceived Stress Scale (PSS) to evaluate the prevalence of neck pain and psychological distress. Additionally, demographic and lifestyle information was gathered. The Statistical Package for the Social Sciences (SPSS) version 29 was utilized for statistical analysis, employing descriptive statistics and chi-square tests to examine the associations between neck pain, psychological stress, and pertinent factors.

RESULT: The findings indicate that among Karachi military personnel, psychological stress is significantly correlated with neck pain. Stress prevalence is highlighted by the results, which show that the majority of respondents frequently felt anxious and agitated (53.2%) and that fewer felt confident in managing personal issues (38.6%). The most often reported symptom (77.2%) associated with both neck pain and stress was headache. All null hypotheses were rejected after correlation analysis revealed significant positive connections between some PSS and NDI components and chi-square testing validated statistically significant associations. Diagnostic tests verified that the data satisfied the majority of statistical assumptions, with a few minor exceptions because of tiny sample groups, such as divorced people, and reliability ratings ranged from satisfactory to outstanding.

CONCLUSION: This chapter evaluates the association between psychological stress and neck discomfort in Karachi military soldiers utilizing instruments such as the Perceived Stress Scale (PSS), Visual Analog Scale (VAS), and Neck Disability Index (NDI). According to the study, stress and neck pain are strongly correlated, and this relationship is modified by age, occupation, and length of service. Statistical testing verified substantial connections, while issues with data homogeneity and multicollinearity were observed. The study highlights the value of incorporating mental health support into military healthcare despite its constraints in order to enhance both individual well-being and overall readiness.

Keywords: *Neck pain, psychological stress, military personal, musculoskeletal disorder, perceived stress scale, visual analog scale.*

INTRODUCTION

The bones, ligaments, and muscles that make up the neck's anatomy allow for movement and head support. Along with a network of nerves governed by the brain and spinal cord, the neck is also home to a large number of bones and muscles that offer stability and strength. Support for the head is provided by the upper back and lower neck. [1] Psychological stress is the weight or oppression that people's ideas, feelings, and other internal processes carry, together with the emotional shifts caused by everyday life, work, school, society, interpersonal connections, and other factors. [2] It has been demonstrated that psychological stress, which includes worry, hopelessness, and severe distress, has a substantial impact on the development and maintenance of musculoskeletal disorders, particularly neck pain. Psychological factors can influence how pain is experienced, exacerbate suffering, and prevent recovery. Managing psychological stress may be crucial to managing neck pain and preventing associated deficits since mental health and physical symptoms interact. [3] Neck discomfort can also be caused by physical factors like poor posture, repetitive strain, accidents, or degenerative spine problems, in addition to psychological factors like stress, anxiety, and depression that can worsen muscle tension and pain sensitivity. Common symptoms include headaches, stiffness, localized discomfort, and pain that travels to the arms. Tingling, numbness, and limited neck movement are other potential symptoms, particularly in cases of nerve compression. [4] Military troops occasionally have neck discomfort in addition to the conditions of their jobs, which include carrying firearms, going on nighttime root marches, donning bulky, bulletproof coats, and performing tasks at checkpoints. Military neck, often referred to as linear cervical vertebra, affects the cervical region. [1] Although frequency varies by location, neck pain is extremely frequent worldwide. In Europe, neck pain affects about 30% of people and can have major social and economic consequences. In military populations, psychological stressors like anxiety, depression, and post-traumatic stress disorder (PTSD) are often associated with neck pain. For instance, 4% to 17% of US service members who return from the Iraq War suffer from PTSD, which is commonly linked to increased neck pain. Additionally, studies indicate that psychological stress may exacerbate pain perception and contribute to the development of musculoskeletal disorders, including neck pain. Neck discomfort is prevalent across a range of populations, as evidenced by the fact that 31.2% of Pakistani medical students experience mild neck pain and 37% suffer sleep disturbances. [5, 6, 7] According to primary care and health surveys, neck pain is the second most prevalent musculoskeletal condition. It has a major financial and health impact and is a prevalent cause of disability. Significant risk factors for neck pain among students include using a computer, being older, having a higher body mass index, carrying large bags and belongings during the day, and getting less sleep each day. A detailed investigation into the frequency of musculoskeletal system

discomforts revealed that the neck and shoulders were the most affected locations. [8] It looks into the psychological challenges that military personnel face in high-altitude environments, where stress is known to exacerbate mental and physical health issues. The study pinpoints the primary reasons of depression in this demographic, including environmental and social problems, as well as the unique stress of working in demanding, distant settings. [9] All things considered, stress, pain catastrophizing, depression, sleeplessness, and alcohol use can all lead to alterations in the spine, brainstem, or cortical levels of central pain processing. Distant hyperalgesia is one way these alterations could show themselves. Further research is required to determine the ways in which these lifestyle, cognitive, and affective factors impact central pain processing in non-traumatic neck pain. [10] Psychological factors have a substantial impact on the severity and degree of neck pain conditions. shown that people with chronic neck pain who also suffer from psychological problems like depression and anxiety have a lower quality of life, suggesting that improving mental health is crucial to better patient outcomes. A complete therapy strategy is necessary, since it was discovered that a combination of clinical, psychological, and individual factors influence the functional status of individuals with neck discomfort. Our findings emphasize the importance of psychological support in conjunction with physical treatment for individuals with chronic neck pain in order to enhance overall management and quality of life. [11, 12]

METHODOLGY

STUDY DESIGN

This study was an observational cross sectional study.

STUDY POPULATION

The military members in the study included active-duty soldiers, veterans, and those employed in high-stress environments, such combat zones.

STUDY DURATION

Data was collected over a 6 month period (after the approval of the synopsis).

SAMPLE SIZE

Statistically calculated sample size by using online open epi with 5% chance of error and 95% confidence interval required at least n=103 of this study

Formula,

$$n=z^2pq/e^2$$

SAMPLE TECHNIQUE

It was a non-probability convenience sampling technique.

DATA COLLECTION PLAN

The aim of the data collection plan was to investigate the connection between military personnel's psychological stress and neck pain. Standardized tools such the Neck Disability Index (NDI), Visual Analog Scale (VAS), and Perceived Stress Scale (PSS) were used to quantify the degree of psychological stress and neck discomfort, and surveys were employed to gather data. Additionally gathered were demographic data, characteristics unique to the military, and lifestyle patterns.

DATA ANALYSIS

SPSS version 29 was used to enter and evaluate the data, and statistical methods such as descriptive statistics, chi-square tests was used.

RESULTS

This chapter provide a thorough examination of the statistical methods employed to investigate the connection between psychological stress and neck pain in Karachi military personnel, with an emphasis on the ways in which factors like age, marital status, occupation, length of service, and type of service affect this relationship. The Perceived Stress Scale (PSS), the Visual Analog Scale (VAS), and the Neck Disability Index (NDI) were three standardized tools used in the study to collect multidimensional data. The chapter is divided into multiple parts, starting with a summary of the findings and moving on to data visualizations based on demographic factors. According to descriptive statistics, most respondents had high stress levels along with varied degrees of neck pain and impairment. Notably, the NDI indicated the greatest impairment in "driving" tasks, and 68% of respondents experienced high levels of stress. Meanwhile, the VAS results showed that 43.6% of respondents had substantial pain levels.

Strong associations between some stress indicators and pain symptoms were found by correlation analysis; for example, headaches and general neck health were positively correlated by 77.2%, while feeling powerless over significant parts of life was positively correlated by 57%. All null hypotheses were rejected when chi-square tests revealed significant correlations between demographic characteristics and the connection between stress and neck pain. There was some multicollinearity in the diagnostic tests, but overall reliability scores were adequate (PSS: 0.68, NDI: 0.86, Combined: 0.85). With the exception of the divorced subgroup, which had a small sample size, normality was generally fulfilled, and the

homogeneity assumptions were met for the majority of the variables, with the exception of age on the PSS scale.

Population insights revealed important behavioral patterns in pain and stress: 48.5% reported mild pain on the VAS, 45.6% indicated mild neck impairment, and 68% reported high stress. According to the study's findings, psychological stress significantly affects neck discomfort and associated disabilities, particularly in military members whose jobs require both psychological and physical strain. In order to enhance health outcomes and military preparedness, it emphasizes the necessity of an integrated treatment strategy that include both physical therapy and psychological assistance.

	Perceived Stress Scale				**Total**
Age Bracket	**Low Stress**	**Moderate Stress**	**High Stress**	**Very High Stress**	
up to 25	1	4	6	0	11
26-30	0	2	15	1	18
31-35	0	1	7	1	9
36-40	0	11	15	1	27
41-45	0	5	7	0	12
46-50	0	1	15	0	16
51-55	0	2	5	3	10
Total	1	26	70	6	103

The above table shows that age group of "25-34" and "36-40" exists with highest numbers i.e. 16 (15.53%) each and “up to 25” with minimum number of 06 (5.83%) of total population of "high" and "very high stress" status cross-tabulated over PSS

	Neck Disability Index					**Total**
Age Bracket	**No Disability**	**Mild Disability**	**Moderate Disability**	**Severe Disability**	**Complete Disability**	
up to 25	3	3	3	2	0	11
26-30	1	11	5	1	0	18
31-35	1	3	2	3	0	9
36-40	2	14	7	3	1	27
41-45	3	7	0	1	1	12
46-50	0	5	6	4	1	16
51-55	1	4	2	2	1	10
Total	11	47	25	16	4	103

The above table shows that age group of "46-50" exists with highest numbers i.e. 06 (4.85%) and “26-30” with minimum number of 01 (0.97%) of total population of "Severe" and "complete" disability status cross-tabulated over prevalence to NDI.

	Visual Analog Scale				Total
Age Bracket	No Pain	Mild Pain	Moderate Pain	Severe Pain	
up to 25	3	3	4	1	11
26-30	0	12	6	0	18
31-35	1	3	2	3	9
36-40	1	15	8	3	27
41-45	0	9	2	1	12
46-50	1	3	9	3	16
51-55	0	5	3	2	10
Total	6	50	34	13	103

The above table shows that age group of "31-35", "36-40" and"46-50" exists with highest numbers i.e. 03 each (2.91%) and “26-30” with minimum number of 00 (0.0%) of total population of "Severe pain" status cross-tabulated over prevalence to VAS

	Perceived Stress Scale				Total
Marital	Low Stress	Moderate Stress	High Stress	Very High Stress	
Married	0	22	60	5	87
Unmarried	1	4	9	1	15
Divorced	0	0	1	0	1
Total	1	26	70	6	103

The above table shows that marital status group of "Married" exists with highest numbers i.e. 65 (63.11%) and “un married” with minimum number of 10 (9.71%) of total population of "high" and "very high stress" status cross-tabulated over PSS

	Neck Disability Index					Total
Marital	No Disability	Mild Disability	Moderate Disability	Severe Disability	Complete Disability	
Married	9	39	21	14	4	11
Unmarried	2	8	3	2	0	18
Divorced	0	0	1	0	0	9
Total	11	47	25	16	4	27

The above table shows that marital status group of "Married" exists with highest numbers i.e. 18 (17.48%) and “un married” with minimum number of 02 (1.94%) of total population of "Severe" and "complete" disability status cross-tabulated over prevalence to NDI.

	Visual Analog Scale				Total
Marital	**No Pain**	**Mild Pain**	**Moderate Pain**	**Severe Pain**	
Married	4	41	30	12	87
Unmarried	2	8	4	1	15
Divorced	0	1	0	0	1
Total	6	50	34	13	103

The above table shows that marital status group of "Married" exists with highest numbers i.e. 12 (11.65%) and “un married” with minimum number of 01 (0.97%) of total population of "Severe pain" status cross-tabulated over prevalence to VAS

	Perceived Stress Scale				Total
Service Period	**Low Stress**	**Moderate Stress**	**High Stress**	**Very High Stress**	
up to 5	1	4	6	0	11
06-10	0	2	12	1	15
11-15	0	1	6	0	7
16-20	0	5	8	2	15
21-25	0	10	15	0	25
26-30	0	2	10	0	12
More than 30	0	2	13	3	18
Total	1	26	70	6	103

The above table shows that service period group of "> 30" exists with highest numbers i.e. 16 (15.53%) each and “up to 05” and "11-15" with minimum number of 06 (5.83%) each of total population of "high" and "very high stress" status cross-tabulated over PSS

	Neck Disability Index					Total
Service Period	**No Disability**	**Mild Disability**	**Moderate Disability**	**Severe Disability**	**Complete Disability**	
up to 5	4	4	3	0	0	11
06-10	0	8	4	3	0	15
11-15	1	3	2	1	0	7
16-20	0	9	2	4	0	15
21-25	5	12	5	1	2	25
26-30	0	4	3	4	1	12
More than 30	1	7	6	3	1	18
Total	11	47	25	16	4	103

The above table shows that service period group of "> 30" exists with highest numbers i.e. 05 (4.85%) and "un married" with minimum number of 01 (0.97%) of total population of "Severe" and "complete" disability status cross-tabulated over prevalence to NDI.

	Visual Analog Scale				Total
Service Period	**No Pain**	**Mild Pain**	**Moderate Pain**	**Severe Pain**	
up to 5	3	4	3	1	11
06-10	0	9	6	0	15
11-15	1	3	3	0	7
16-20	0	7	5	3	15
21-25	1	17	5	2	25
26-30	1	4	3	4	12
More than 30	0	6	9	3	18
Total	6	50	34	13	103

The above table shows that service period group of "26-30" exists with highest numbers i.e. 04(3.88%) and "06-10" with minimum number of 00 (0.0%) of total population of "Severe pain" status cross-tabulated over prevalence to VAS

	Perceived Stress Scale				Total
Service type	**Low Stress**	**Moderate Stress**	**High Stress**	**Very High Stress**	
Hard work	0	17	54	4	75
Non-hard work	1	9	16	2	28
Total	1	26	70	6	103

The above table shows that service type group of "hard work" exists with highest numbers i.e. 58 (56.31%) each and "non-hard work" with minimum number of 18 (17.48%) of total population of "high" and "very high stress" status cross-tabulated over PSS

	Neck Disability Index					Total
Service type	**No Disability**	**Mild Disability**	**Moderate Disability**	**Severe Disability**	**Complete Disability**	
Hard work	5	39	15	13	3	75
Non-hard work	6	8	10	3	1	28
Total	11	47	25	16	4	103

The above table shows that service type group of "hard work" exists with highest numbers i.e. 16 (15.53%) each and “non-hard work” with minimum number of 03 (3.88%) of total population of "Severe" and "complete" disability status cross-tabulated over prevalence to NDI.

	Visual Analog Scale				**Total**
Service type	**No Pain**	**Mild Pain**	**Moderate Pain**	**Severe Pain**	
Hard work	4	36	27	8	75
Non-hard work	2	14	7	5	28
Total	6	50	34	13	103

The above table shows that service type group of "hard work" exists with highest numbers i.e. 8 (7.77%) each and “non-hard work” with minimum number of 05 (4.85) of total population of "Severe pain" status cross-tabulated over prevalence to VAS

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