

## ORIGINAL ARTICLE

# CORRELATION OF SHOULDER PAIN ON DISABILITY AND HEALTH RELATED QUALITY OF LIFE AMONG PATIENTS ATTENDING PHYSIOTHERAPY AND ORTHOPEDIC OUTPATIENT DEPARTMENTS OF A TERTIARY HOSPITAL

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## ABSTRACT

**Introduction:** Shoulder pain is one of the common musculoskeletal conditions that substantially impact health related quality of life (HRQOL) and results in significant morbidity and disability. Understanding the interplay between pain, disability and HRQOL is crucial for clinicians to comprehend prognosis and evaluate treatment efficacy. Therefore, this study aimed to explore the relationship between shoulder pain, disability and HRQOL.

**Method:** Patients aged 18-60 years with chronic shoulder pain (>3 months) were recruited from the outpatient department of physiotherapy and orthopedics. Data was collected using the Nepali versions of Shoulder pain and disability Index (SPADI-NP) and World Health Organization Quality of Life Questionnaire (WHOQOL-BREF). Statistical analysis included descriptive statistics to summarize the data characteristics, and Pearson correlation analysis to assess relationships between shoulder pain, disability and HRQOL.

**Results:** Among the 96 participants, the mean SPADI-NP score was 72.12±16. The psychological domain (48.34±12.03) was most affected domain of HRQOL, followed by physical domain (50.34±13.48) in WHOQOL-BREF. Significant correlations were found between pain and disability ( $r=0.662$ ,  $P<0.01$ ), pain and HRQOL ( $r=-0.267$ ,  $P<0.01$ ), and disability and HRQOL ( $r=-0.493$ ,  $P<0.01$ ) respectively.

**Conclusion:** This study identified significant relationships between shoulder pain, disability and HRQOL, emphasizing an importance of implementation of biopsychosocial approach for comprehensive treatment and better patient outcomes in those with shoulder pain.

**Key words :** Disability; Shoulder pain; Quality of life

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## INTRODUCTION

Shoulder pain is one of the widespread musculoskeletal issues imposing a significant economic and functional burden.<sup>1-3</sup> It affects a substantial portion of population, ranging from 6.9% to 66.7% across different age groups worldwide.<sup>4</sup> Shoulder pain can severely impede daily activities including work, leisure and even sleep, impacting not only physical wellbeing but also social, emotional and psychological health, ultimately influencing overall wellbeing.<sup>5, 6</sup>

Traditionally, shoulder assessment have predominantly centered on pain and function, influenced by a biomedical paradigm however, adopting a biopsychosocial approach is highly recommended.<sup>7,8</sup> Therefore, evaluating disability and health related quality of life (HRQOL) due to pain is paramount for comprehensive assessments, aiding in treatment planning and prognostic evaluation.<sup>9</sup>

The primary objective was to establish the correlation between shoulder pain, disability and HRQOL. While the secondary objective was to determine the pain severity, disability and HRQOL in patients with shoulder pain.

## METHODS

A hospital based cross-sectional study was conducted in Dhulikhel hospital over six months from October 2022 to March 2023. The ethical approval was obtained from the institutional review committee of Kathmandu University School of medical sciences (approval number: 200/2021). Patients diagnosed with shoulder pain by Physiotherapist or Orthopedician were recruited from Physiotherapy and Orthopaedic outpatient department of the hospital. The study enrolled individuals meeting specific eligibility criteria including shoulder pain for at least three months, aged between

18-60 years of any gender and proficient in Nepali language. Conversely, patients meeting any of the following criteria were excluded from study: unwillingness to participate, a history of surgery of head, neck or upper limb or upper extremity fracture, presence of neurological conditions affecting shoulder, or known current psychiatric illness.

Written and verbal informed consents were obtained from each of the participants. The data collection was conducted in a designated room of Physiotherapy and Orthopaedic OPD and each participant was interviewed for approximately 15-20 minutes. Nepali versions of Shoulder pain and disability index (SPADI-NP) and World Health Organization Quality of Life Questionnaire (WHOQOL-BREF) were utilized for data collection.<sup>10,11</sup> SPADI consists of 13 shoulder specific items in 2 domains: pain (5 items) and disability (8 items). Each item of both domains are scored on a visual analog scale ranging from 0 to 10 where "0" means no pain/no difficulty

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and “10” means worst pain imaginable/so difficult required help.<sup>12</sup> Similarly, WHOQOL-BREF has 26 items which evaluates HRQOL. It is extracted from WHOQOL-100 and is grouped under four domains: physical health [7 items], psychological well-being [6 items], social relations [3 items], environment [8 items] and the other two items measured separately in the questionnaire are: Patient’s overall perception of quality of life and overall perception on his/her overall health.<sup>13</sup>

A total of 96 participants were included in the study following a purposive sampling. Statistical analysis was done using SPSS version 25 (IBM corporation, Armonk, NY, USA). Firstly, the raw scores obtained in four domains of WHOQOL-BREF was converted into transformed scores out of 0-100 as per the guideline provided by the manual of WHOQOL-BREF questionnaire. Then data were assessed for normality and parametric tests were used for statistical analysis. Categorical variables were expressed as percentages and frequencies while continuous variables were summarized using means and standard deviations. The Pearson correlation coefficient was conducted to determine the relationship between the variables and P-value was compared at 0.01. Correlation coefficients were categorized as:  $r < 0.32$  = fair/low,  $0.32 < r < 0.45$  = moderate,  $0.45 < r < 0.6$  = substantial,  $r > 0.6$  = high.<sup>15</sup>

## RESULTS

Most of the participants of our study belonged to 40-50 years age group, with majority being female (62.5%). Agriculture (50%) was the primary source of livelihood, followed by office work and business. The most common shoulder condition was adhesive capsulitis (43.8%), followed by shoulder impingement syndrome (27.1%). Among the participants presenting with shoulder problem, 68.8 % had associated medical conditions such as diabetes, thyroid disorders, hypertension, hypercholesterolemia or rheumatoid arthritis.

The total SPADI score out of 130 was  $72.12 \pm 16.66$ , with mean scores for the pain and disability domains being  $29.45 \pm 6.85$  and  $42.98 \pm 11.28$ , respectively. The overall percentage of SPADI was 55%, indicating a moderate level of shoulder pain and disability. Regarding the perception of quality of life (QOL) and health, approximately 10% of participants reported good QOL, while 19% reported satisfactory health. The lowest mean score was reported for the psychological health domain ( $48.34 \pm 12.03$ ), followed by physical health domain ( $50.34 \pm 13.48$ ). The overall percentage of WHOQOL-BREF was 52.15% suggesting a moderate level of HRQOL.

A strong correlation ( $r = 0.66$ ,  $P < 0.01$ ) was observed between pain and disability. While, a fair correlation ( $r = -0.26$ ,  $P < 0.01$ ) was noted between pain and WHOQOL-QOL. Similarly, a moderate correlation ( $r = -0.49$ ,  $P < 0.01$ ) was identified between disability and WHOQOL-QOL.

**Table 1: Mean scores of SPADI and WHOQOL-BREF**

SPADI	Mean±SD	WHOQOL-BREF	Mean±SD
Pain domain (0-50)	29.45±6.85	Physical domain (0-100)	50.34±13.48
Disability domain (0-80)	42.98±11.28	Psychological domain (0-100)	48.34±12.03
Total score (0-130)	72.12±16.66	Social domain (0-100)	53.69±16.63
		Environmental domain (0-100)	56.24±11.01

**Table 2: Correlation between shoulder pain, disability and WHOQOL-BREF**

Parameters	Correlation coefficient (r)	P-value
Pain Vs disability	0.66 **	<0.01
Pain Vs WHOQOL-BREF	-0.26 **	<0.01
Disability Vs WHOQOL-BREF	-0.49**	<0.01

**\*SD: Standard deviation, SPADI: Shoulder pain and disability index, QOL: Quality of life, WHOQOL: World health organization Quality of life, HRQOL: Health related quality of life**

## DISCUSSION

The mean score of SPADI-NP pain domain was  $29.23 \pm 6.78$  and mean score of disability domain was  $42.89 \pm 11.41$ . The findings align with previous literatures has reported the mean scores for pain and disability falling within the range of 30-35 and 40-50, respectively.<sup>16-18</sup> The mean age of the participants with chronic shoulder pain in this study was above 40 years, engaged in agriculture, with the majority being female living with several comorbidities which could contribute to decrease HRQOL and increase shoulder pain and disability.<sup>19,23</sup> It has been reported that after the age of 40, chronic pain becomes more common which is influenced by factors such as age-related comorbidities, changes in pain perception, and higher pain thresholds due to the degeneration of pain inhibiting pathways.<sup>19,20</sup> Agricultural labour, which involves prolonged manual work, repetitive motions, heavy lifting, and other physically demanding tasks, is common among Nepalese farmers who often exceed the weekly working hours (48 hours per week for more than 20 years), contrary to the Labour Act Nepal, potentially contributing to the higher incidence of musculoskeletal disorders, including shoulder pain.<sup>21,22</sup> Additionally, the prevalence of pain in females may stem from a combination of biological, psychological, and sociocultural factors.<sup>23</sup> In our study, the shoulder pain experienced by participants was predominantly chronic and severe in intensity, lasting more than three months. Thus these, demographic and occupational factors among our participants could have contributed to the heightened levels of pain, disability and a decrease in health-related quality of life (HRQOL). Shoulder pain was strongly correlated with disability in our participants, consistent with the findings by Badcock et al ( $r = 0.536$ ,  $p < 0.01$ ).<sup>24</sup> The greater the severity of shoulder pain, the more pronounced is the shoulder disability.<sup>25</sup> Literatures have reported that chronic persistent shoulder pain could cause disability by several reasons like restricting range of motion<sup>26</sup>, reducing muscle strength and function<sup>4</sup>, impairing activity level and functional capacity<sup>27</sup>, and exacerbating psychosocial factors.<sup>14</sup> A fair correlation was found between shoulder pain and WHOQOL-BREF and a moderate correlation was found between shoulder disability and WHOQOL-BREF. The finding aligns with a result from a previous study, which reported that shoulder pain and disability can lead to a decrease in HRQOL.<sup>28</sup>

Additionally, our study revealed that psychological component of health was more profoundly affected compared to the physical health in HRQOL, which may be due to associated psychological distress related to chronic pain.<sup>29</sup> However, these finding contrasts with a previous prospective cohort study that assessed functional capacity and HRQOL among the patients with adhesive capsulitis, which reported that the physical domain was more impacted than psychological domain.<sup>28</sup> Shoulder pain disorders have multi-dimensional impact, encompassing pain, activity limitations, social restrictions, sleep disruption and emotional distress.<sup>30</sup> Therefore, as clinicians, it is vital to assess patient thoroughly using bio-psychosocial approach rather than just limiting our assessment of shoulder conditions within pain and functional limitations. This approach can lead to more effective and patient-centered care, ultimately improving the well-being and quality of life for individuals living with shoulder pain.

## CONCLUSION

A significant relation between shoulder pain, disability and HRQOL was found in the study underscoring the importance of recognizing shoulder pain as a condition that extends beyond the physical limitations. Future studies can be directed to measure the emotional distress, sleep quality, and pain catastrophizing such that health professionals could be more enlightened with biopsychosocial aspects affecting HRQOL among people with shoulder pain.

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### COMPETING INTEREST

The authors declare no competing interest.