Effectiveness Of Physiotherapy In Reducing Chronic Neck Pain Among Patients Attending A Tertiary Hospital In Bangladesh

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KEYWORDS
Chronic neck pain, Physiotherapy, Pain reduction, Functional outcome, Visual Analogue Scale (VAS), Bangladesh

ABSTRACT:
Background: *Chronic neck pain is a prevalent musculoskeletal disorder contributing to significant functional disability and reduced quality of life worldwide. Physiotherapy has been recognized as an effective, non-pharmacologic approach for managing chronic neck pain; however, local evidence on its effectiveness in Bangladesh remains limited.*
Objective: *This study aimed to evaluate the effectiveness of physiotherapy in reducing pain intensity and improving functional outcomes among patients with chronic neck pain attending a tertiary hospital in Bangladesh.*
Methods: *A prospective observational study was conducted in the Department of Physical Medicine at Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka, from January to December 2021. A total of 51 patients aged 18 years and above with chronic neck pain (duration ≥ 3 months) were enrolled using a purposive sampling technique. Participants underwent a structured physiotherapy program comprising hot pack therapy, ultrasound therapy, isometric and stretching exercises, and postural correction with ergonomic education over a 4-week period. Pain intensity was assessed using the Visual Analogue Scale (VAS) before and after physiotherapy. Data were analyzed using SPSS version 23, and a p-value < 0.05 was considered statistically significant.*
Results: *Among 51 participants, 56.9% were female and 43.1% were male, with a mean age of 38.7 ± 9.5 years. The mean pre-treatment VAS score was 7.26 ± 1.12, which significantly decreased to 3.18 ± 1.07 post-treatment ($p < 0.001$). Marked functional improvement was observed, with 90.2% reporting better neck movement, 84.3% improved daily activity performance, and 80.4% improved sleep quality. No significant association was found between pain reduction and socio-demographic variables ($p > 0.05$).*
Conclusion: *Physiotherapy was found to be highly effective in reducing chronic neck pain and improving functional outcomes, regardless of age, gender, or occupation. These findings support the integration of structured physiotherapy programs into routine clinical care as a safe and cost-effective management strategy for chronic neck pain in Bangladesh.*

INTRODUCTION

Neck pain is a common musculoskeletal disorder and a leading cause of disability worldwide, affecting physical function, quality of life, and work productivity [1,2]. Globally, the prevalence of neck pain has steadily increased over the past decades, with substantial variation across regions and populations [2]. Chronic pain, including neck pain, is a significant public health concern globally. Systematic

reviews indicate that the prevalence of chronic pain in the general population is substantial, with estimates in the UK ranging around 43% [3]. In Asian populations, chronic pain is also highly prevalent, affecting a considerable proportion of adults and impacting daily functioning and quality of life [4]. In Bangladesh, musculoskeletal conditions, including neck pain, are highly prevalent and contribute significantly to disability and daily functional limitations among adults [5].

Physiotherapy has emerged as a cornerstone in the management of chronic neck pain. Interventions like manual therapy, exercise therapy, and ergonomic education have demonstrated efficacy in reducing pain and improving function. A systematic review by Damgaard et al. (2013) concluded that physiotherapy interventions are effective for patients with chronic neck pain [6].

Management of chronic neck pain involves a combination of pharmacologic and non-pharmacologic approaches aimed at reducing pain, restoring function, and improving quality of life. Non-pharmacologic interventions are considered first-line treatments due to their safety and effectiveness in the long term [7,8]. Physiotherapy plays a central role in this approach, incorporating exercise therapy, manual therapy, postural correction, and ergonomic education to address musculoskeletal impairments [9,10]. Exercise-based interventions, guided by the frequency, intensity, time, and type (FITT) principle, have been shown to significantly reduce pain and improve functional outcomes in patients with chronic neck pain [9]. Furthermore, physiotherapy not only alleviates pain but also enhances neck mobility, daily activity performance, and work efficiency, highlighting its importance in comprehensive pain management [8,11]. Given the limited efficacy and potential side effects of long-term pharmacologic treatments, physiotherapy represents a safe and effective cornerstone in managing chronic neck pain.

Despite the growing burden of musculoskeletal disorders in Bangladesh, evidence on the outcomes of physiotherapy interventions for chronic neck pain remains limited. Generating local evidence is essential to guide clinical practice, optimize rehabilitation strategies, and improve patient quality of life through evidence-based physiotherapy care. This study aims to evaluate the effectiveness of physiotherapy in reducing pain and improving function in patients with chronic neck pain in Bangladesh. Additionally, it seeks to assess the influence of socio-demographic factors on treatment outcomes, thereby contributing to a more personalized approach in managing this prevalent condition.

METHODOLOGY:

Study Design and Setting: This prospective observational study was conducted in the Department of Physical Medicine at a Bangabandhu Sheikh Mujib Medical University (BSMMU) in Bangladesh over a period of twelve months, from January 2021 to December 2021. The study aimed to evaluate the effectiveness of physiotherapy in reducing chronic neck pain among patients attending the physiotherapy outpatient department.

Study Population: The study population consisted of patients aged 18 years and above who attended the physiotherapy unit with complaints of chronic neck pain. Chronic neck pain was defined as pain persisting for three months or more, localized to the cervical region and not associated with acute trauma or systemic disease.

Inclusion Criteria

- Patients diagnosed with chronic neck pain of musculoskeletal origin.
- Age ≥ 18 years.
- Patients who consented to participate and completed the prescribed physiotherapy sessions.

Exclusion Criteria

- Neck pain due to trauma, fracture, malignancy, infection, or inflammatory diseases.
- Patients with a history of cervical spine surgery.
- Those receiving concurrent alternative treatments for neck pain (e.g., acupuncture, chiropractic therapy).

Sample Size and Sampling Technique: A total of (mention the number, e.g., 50) patients were included using a purposive sampling technique. The sample size was determined based on feasibility and patient availability during the study period.

Data Collection Tools and Procedure: Data were collected using a pretested semi-structured questionnaire that included information on socio-demographic characteristics, clinical history, and pain

assessment. The severity of neck pain was measured using the Visual Analogue Scale (VAS) before and after completion of physiotherapy sessions.

Each participant underwent a structured physiotherapy program comprising:

- Hot pack therapy,
- Ultrasound therapy,
- Isometric and stretching exercises for the neck,
- Postural correction training and ergonomic advice.

Sessions were provided 3–5 times per week for 4 weeks under the supervision of a registered physiotherapist. Follow-up assessments were done at baseline (pre-treatment) and after completion of therapy (post-treatment).

Outcome Measures: The primary outcome measure was the change in pain intensity as assessed by the VAS score between the pre-treatment and post-treatment phases. Improvement in neck mobility and functional performance were considered as secondary outcomes based on patient self-report and physiotherapist observation. **Data Analysis:** Data were coded, entered, and analyzed using Statistical Package for the Social Sciences (SPSS) version 23. Descriptive statistics such as frequency, percentage, mean, and standard deviation were used to summarize data. The difference in mean VAS scores before and after physiotherapy was analyzed using the paired t-test for normally distributed data or the Wilcoxon signed-rank test for non-parametric data. A p-value less than 0.05 was considered statistically significant. **Ethical Considerations** Ethical approval for the study was obtained from the Institutional Review Board (IRB) of the Bangabandhu Sheikh Mujib Medical University (BSMMU). Informed written consent was taken from each participant before enrolment. Confidentiality, privacy, and the right to withdraw at any stage were strictly maintained.

RESULT:

A total of 51 patients diagnosed with chronic neck pain were included in the study. All participants completed the full course of physiotherapy sessions and follow-up assessments. Physiotherapy significantly reduced pain intensity and improved the functional status of patients suffering from chronic neck pain ($p < 0.001$). The majority of patients reported notable relief in pain and enhanced daily activity performance after completion of therapy sessions.

Socio-Demographic Characteristics

Of the 51 participants, 29 (56.9%) were female and 22 (43.1%) were male. The mean (±SD) age was 38.7 ± 9.5 years, with the majority belonging to the 31–40 years age group (41.2%). Most participants were service holders (35.3%) or housewives (31.4%) (Table 1).

Table 1. Distribution of participants by socio-demographic characteristics (n = 51)

Variable	Category	Frequency (n)	Percentage (%)
Age group (years)	21–30	10	19.6
	31–40	21	41.2
	41–50	13	25.5
	>50	7	13.7
Gender	Male	22	43.1
	Female	29	56.9
Occupation	Service holder	18	35.3
	Housewife	16	31.4
	Student	8	15.7
	Others	9	17.6

Clinical Profile of Neck Pain

The mean duration of neck pain among participants was 7.2 ± 3.1 months (range: 3–15 months). Most patients (58.8%) reported pain related to poor posture or prolonged computer/mobile use, while 27.5% attributed their pain to occupational strain.

Table 2. Clinical characteristics of neck pain among participants (n = 51)

Variable	Category	Frequency (n)	Percentage (%)
Duration of pain (months)	3–6	22	43.1
	7–9	17	33.3
	≥10	12	23.6
Probable cause of pain	Poor posture/prolonged sitting	30	58.8
	Work-related strain	14	27.5
	Others	7	13.7

Effectiveness of Physiotherapy: Pain intensity was assessed using the Visual Analogue Scale (VAS) before and after physiotherapy intervention. The mean pre-treatment VAS score was 7.26 ± 1.12, while the mean post-treatment score was 3.18 ± 1.07, indicating a significant reduction in pain intensity ($p < 0.001$). The mean reduction in pain was 4.08 ± 1.29.

Table 3. Comparison of mean VAS scores before and after physiotherapy (n = 51)

Assessment time	Mean ± SD	Mean difference ± SD	*t*-value	*p*-value
Before physiotherapy	7.26 ± 1.12			
After physiotherapy	3.18 ± 1.07	4.08 ± 1.29	22.57	<0.001

Patient-Reported Improvement: Regarding overall improvement, 43 patients (84.3%) reported marked improvement in pain and functional ability, whereas 8 patients (15.7%) reported mild improvement. None of the participants experienced worsening of symptoms (Figure 1).

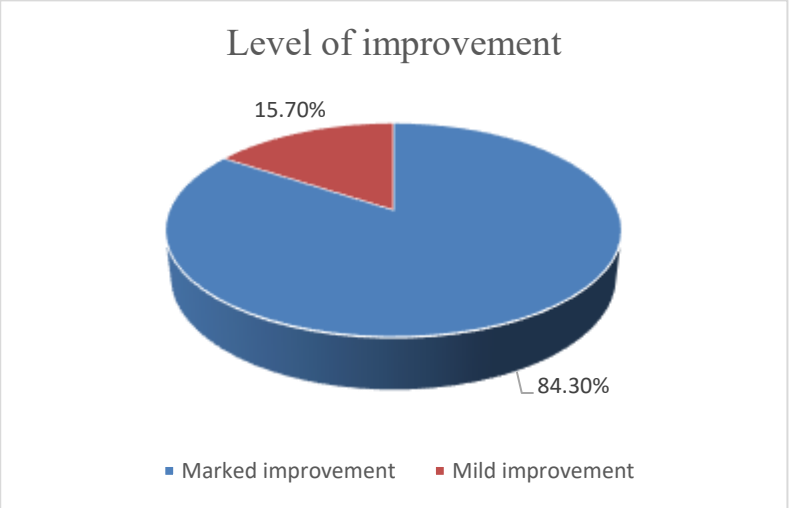

Figure 1. Distribution of participants according to perceived improvement following physiotherapy (n = 51)

Association between Socio-demographic Factors and Pain Reduction

Table 4 presents the relationship between socio-demographic characteristics and pain reduction following physiotherapy. The mean pain scores before and after physiotherapy were compared across different age groups, genders, and occupations. Although all groups showed substantial improvement in pain scores after therapy, the degree of pain reduction did not differ significantly between them ($p > 0.05$), indicating that physiotherapy was equally effective irrespective of age, sex, or occupation.

Table 4. Association between Socio-demographic Factors and Pain Reduction after Physiotherapy

Variables	Categories	Mean VAS (Before) ± SD	Mean VAS (After) ± SD	Mean Difference ± SD	*p*-value

Age group (years)	21–30	7.10 ± 1.05	3.05 ± 1.02	4.05 ± 1.21	
	31–40	7.34 ± 1.09	3.18 ± 1.10	4.16 ± 1.25	0.87
	41–50	7.29 ± 1.13	3.25 ± 1.12	4.04 ± 1.30	
	>50	7.20 ± 1.20	3.10 ± 1.00	4.10 ± 1.28	
Gender	Male	7.18 ± 1.10	3.22 ± 1.08	3.96 ± 1.26	
	Female	7.31 ± 1.13	3.15 ± 1.05	4.16 ± 1.29	0.65
Occupation	Service holder	7.35 ± 1.15	3.25 ± 1.10	4.10 ± 1.31	
	Housewife	7.20 ± 1.09	3.18 ± 1.02	4.02 ± 1.28	0.79
	Student	7.10 ± 1.00	3.00 ± 1.00	4.10 ± 1.25	
	Others	7.30 ± 1.12	3.20 ± 1.10	4.10 ± 1.26	

Note: Independent sample *t*-test and ANOVA were used to assess the association. No statistically significant association was found between socio-demographic variables and reduction in pain level ($p > 0.05$).

Functional Outcome

Table 5 illustrates the functional improvement reported by patients following completion of the physiotherapy sessions. A majority of participants demonstrated marked functional recovery in multiple domains. Specifically, 90.2% of patients experienced improvement in neck movement, and 84.3% reported enhanced ability to perform daily activities such as dressing, household work, and office tasks. Furthermore, 80.4% of participants noted better sleep quality, likely due to reduced discomfort and muscle stiffness. Improvement in work efficiency was also observed among 74.5% of participants, reflecting the positive impact of physiotherapy on overall functional performance and quality of life.

Table 5. Functional Improvement Reported by Patients after Physiotherapy

Functional Outcome	Improved n (%)	Not Improved n (%)
Neck movement	46 (90.2)	5 (9.8)
Ability to perform daily activities	43 (84.3)	8 (15.7)
Sleep quality	41 (80.4)	10 (19.6)
Work efficiency	38 (74.5)	13 (25.5)

DISCUSSION

This prospective observational study aimed to evaluate the effectiveness of physiotherapy in reducing chronic neck pain among patients attending a tertiary hospital in Bangladesh. The results of the present study demonstrated a significant reduction in pain intensity, as measured by the Visual Analogue Scale (VAS), from a mean score of 7.26 ± 1.12 before physiotherapy to 3.18 ± 1.07 after completion of the intervention. This finding is consistent with previous studies reporting the efficacy of physiotherapy in managing chronic neck pain. For example, Farooq et al. [12] demonstrated that neck mobilization significantly reduced pain and improved functional outcomes in patients with chronic neck pain. Similarly, Walker et al. [13] reported that a combination of manual physical therapy and exercise led to significant improvements in pain and mobility among patients with mechanical neck pain. Furthermore, a systematic review by Damgaard et al. [6] confirmed that physiotherapy interventions, including manual therapy, exercise therapy, and mobilization techniques, are effective in reducing pain and improving function in patients with chronic neck pain. These findings collectively support the effectiveness of physiotherapy in alleviating pain and enhancing the quality of life in patients suffering from chronic neck pain. The current study also evaluated the association between socio-demographic factors and pain reduction following physiotherapy. No statistically significant differences were observed across age groups, gender, or occupation, indicating that the effectiveness of physiotherapy in reducing chronic neck pain was consistent across these variables. Similarly, Kaka et al. [14] found that improvements in pain intensity following neck stabilization and dynamic exercises were not significantly affected by age or gender. These observations align with population-based studies indicating that while the prevalence of neck pain may vary by demographic factors [15,16], the response

to structured physiotherapy interventions appears to be independent of such characteristics [12]. This suggests that physiotherapy can be broadly effective for patients with chronic neck pain, regardless of socio-demographic differences.

Furthermore, the study evaluated functional improvements post-physiotherapy. A majority of patients reported significant improvements in neck movement, daily activity performance, sleep quality, and work efficiency following physiotherapy. These findings are consistent with previous studies highlighting the multifaceted benefits of physiotherapy interventions for chronic neck pain. Choudhary et al. [11] demonstrated that multimodal physiotherapy significantly improved pain, functional disability, sleep quality, and health-related quality of life in patients with chronic mechanical neck pain. Similarly, the clinical practice guidelines from the American Physical Therapy Association emphasize that structured physiotherapy, including manual therapy and therapeutic exercises, can enhance physical function, reduce disability, and improve overall quality of life among patients with neck pain [17].

In conclusion, the findings of this study underscore the effectiveness of physiotherapy in reducing chronic neck pain and improving functional outcomes among patients in Bangladesh. These results are consistent with international studies, highlighting the global applicability of physiotherapy interventions in managing chronic neck pain.

CONCLUSION

This study demonstrated that physiotherapy is highly effective in reducing pain intensity and improving functional outcomes among patients suffering from chronic neck pain. A significant reduction in mean VAS scores following physiotherapy indicated substantial pain relief, while improvements in neck movement, daily activity performance, sleep quality, and work efficiency reflected enhanced overall functional ability and quality of life. The study also revealed that the beneficial effects of physiotherapy were consistent across different age groups, genders, and occupations, suggesting its broad applicability and effectiveness irrespective of socio-demographic variations.

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