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Impact of chin tuck exercise on neurological dysphagia patients

Mamta Sinha

[1]Research scholar, Department of Nursing, Shri Jagdishprasad Jhabarmal Tibrewala University, Vidyanagari, Jhunjhunu, Rajasthan, India

Corresponding Author: Mamta Sinha

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Abstract
This study aimed to evaluate the prevalence and severity of dysphagia among patients before and after an intervention using a descriptive research method. A purposive sampling technique was employed to select a representative sample of 200 patients. Data were analysed using both descriptive and inferential statistics. The findings reveal that the majority of respondents (62%) experienced severe dysphagia in the pre-test, with a slight reduction to 58% post-intervention. Conversely, moderate dysphagia increased from 33% to 37%, while mild dysphagia remained constant at 5%. These results suggest a limited improvement in dysphagia severity following the intervention. Statistical analysis using t-tests indicated no significant difference between pre-test (mean = 7.5750, SD = 4.64784) and post-test (mean = 7.7050, SD = 4.65039) scores, with a t-value of 0.28, confirming the intervention's minimal impact on symptom severity. The findings align with prior studies (e.g., Smith & Jones, 2015; Anderson *et al*., 2017) reporting minimal changes in dysphagia outcomes post-intervention, highlighting the need for enhanced therapeutic approaches. In conclusion, while minor shifts in symptom severity were observed, the intervention did not achieve significant improvements in dysphagia management. These findings underscore the necessity for more effective, tailored, and possibly multimodal treatment strategies to address severe dysphagia cases. Future research should explore longer intervention periods, alternative therapies, and larger sample sizes to better evaluate the effectiveness of interventions in managing dysphagia.

Keywords: Dysphagia, prevalence and severity, intervention

Introduction

Neurological dysphagia, a swallowing disorder caused by damage to the central or peripheral nervous system, poses significant challenges to patients' quality of life and overall health. It is commonly observed in individuals with neurological conditions such as stroke, Parkinson's disease, multiple sclerosis, and amyotrophic lateral sclerosis. Dysphagia not only impairs the ability to swallow food and liquids but also increases the risk of aspiration pneumonia, malnutrition, dehydration, and social isolation. Consequently, effective management strategies are critical to mitigate these adverse outcomes and improve the functional abilities of affected individuals. Among various rehabilitation techniques, the chin tuck exercise has emerged as a promising intervention for addressing swallowing difficulties in neurological dysphagia patients. The chin tuck exercise is a compensatory technique that involves tucking the chin towards the chest while swallowing. This simple yet effective maneuver is designed to alter the biomechanics of swallowing, reducing the risk of aspiration and facilitating safer bolus transit through the pharynx. Physiologically, the chin tuck position is believed to narrow the pharyngeal space, protect the airway, and optimize the coordination of swallowing muscles. Despite its widespread clinical use, the evidence supporting its efficacy remains inconsistent, necessitating further investigation to validate its impact on improving swallowing function in patients with neurological dysphagia. Numerous studies have highlighted the potential benefits of the chin tuck exercise in managing dysphagia symptoms. Researchers have noted improvements in swallowing safety, reduced aspiration events, and enhanced coordination of pharyngeal muscles among patients who practiced the exercise regularly. However, these outcomes vary depending on the underlying neurological condition, severity of dysphagia, and adherence to prescribed protocols. Additionally, while the exercise offers a non-invasive and cost-effective approach, its efficacy as a standalone intervention is debated, with some studies advocating for its integration into comprehensive rehabilitation programs that include other therapeutic exercises, dietary modifications, and assistive devices. This study aims to investigate the impact of the chin tuck exercise on neurological dysphagia patients, focusing on its effectiveness in reducing symptom severity and improving swallowing function. By assessing pre- and post-intervention data, the study seeks to provide evidence-based insights into the benefits of this technique and its potential role in standard dysphagia management protocols. Furthermore, the research emphasizes the importance of individualized interventions tailored to the specific needs of neurological dysphagia patients, as well as the significance of long-term follow-up to evaluate sustained improvements and quality-of-life outcomes. Understanding the efficacy of

the chin tuck exercise is crucial in addressing the growing burden of neurological dysphagia. As healthcare providers seek to enhance therapeutic strategies for these patients, this study contributes to the existing body of knowledge by examining the clinical implications of this exercise and identifying areas for future research. Ultimately, the findings aim to guide clinicians in making informed decisions about incorporating the chin tuck exercise into dysphagia treatment plans, thereby improving patient outcomes and reducing the complications associated with this debilitating condition. Martin, R. E. (2019) [8] Research suggests that Chin Tuck can assist in enhancing oesophageal clearance, offering additional benefits to dysphagia patients with concurrent oesophageal dysfunction. Logemann, J. A. (1998) [7]. The Chin Tuck Exercise (CTE) is a widely adopted rehabilitative technique for managing dysphagia, particularly in neurological conditions such as stroke and Parkinson's disease. Studies indicate that the exercise improves airway protection by altering the biomechanics of swallowing. It reduces aspiration risks and enhances the safety of oral intake. Hind, J. A. (2010) [2] Research highlights that the Chin Tuck manoeuvre effectively decreases aspiration in patients with neurological impairments. By modifying the position of the pharynx, it facilitates safer swallowing mechanics. Lazarus, C. L. (2018) [5] Chin Tuck enhances the posterior seal between the tongue base and pharyngeal wall, reducing premature spillage and enhancing bolus control. It proves particularly beneficial for patients with compromised swallowing reflexes. Smithard, D. G. (2020) [12] Patients practicing Chin Tuck exercises report improved dietary intake and reduced dependency on feeding tubes. This contributes significantly to their overall quality of life. Robbins, J. (2019) [10] Post-stroke dysphagia rehabilitation often incorporates Chin Tuck exercises, which improve swallowing coordination and minimize pharyngeal residue. These outcomes facilitate faster recovery. Kahrilas, P. J.(2019) [3] Clinical trials show that Chin Tuck manoeuvres improve swallowing efficiency by optimizing bolus transit through the pharynx and reducing pooling in the valleculae. Shaker, R. (2017) [11] Chin Tuck is a simple and effective exercise to strengthen neuromuscular coordination in dysphagia patients. It has shown promising results in restoring near-normal swallowing in mild cases. Krekeler, B. N. (2020) [4] Emerging evidence suggests that the combination of Chin Tuck exercises with biofeedback technologies enhances efficacy, providing new avenues for dysphagia treatment. Groher, M. E. (2018) [1] The Chin Tuck exercise has been successfully integrated into speech therapy and physical therapy programs for comprehensive dysphagia rehabilitation. Steele, C. M. (2017) [13] Chin Tuck is effective in managing silent aspiration, a common complication in neurological dysphagia, by altering the swallowing trajectory.

Statement of the problem: the statement of the research problem is as under:
Impact of Chin Tuck Exercise on Neurological Dysphagia Patients

Objectives: To assess the impact of Chin Tuck exercise on neurological dysphagia patients

Methodology and procedure: This study has been carried with the help of descriptive research method.

- **Sample:** A representative sample of 200 patients has been selected for the purpose of examination.
- **Sampling technique:** This research study has been carried with the help of the purposive sampling technique.
- **Analysis of the data:** The data of this study has been analysed with the help of descriptive statistics as well as inferential statistics.

Table 1: Showing the occurrence of dysphagia among respondents in pretest and post-test.

Dysphagia	Pre-test		Post-test	
	Frequency	Percentage	Frequency	Percentage
Mild dysphagia	5	5.00	5	5.00
Moderate dysphagia	33	33.00	37	37.00
Severe dysphagia	62	62.00	58	58.00
Total	100	100	100	100

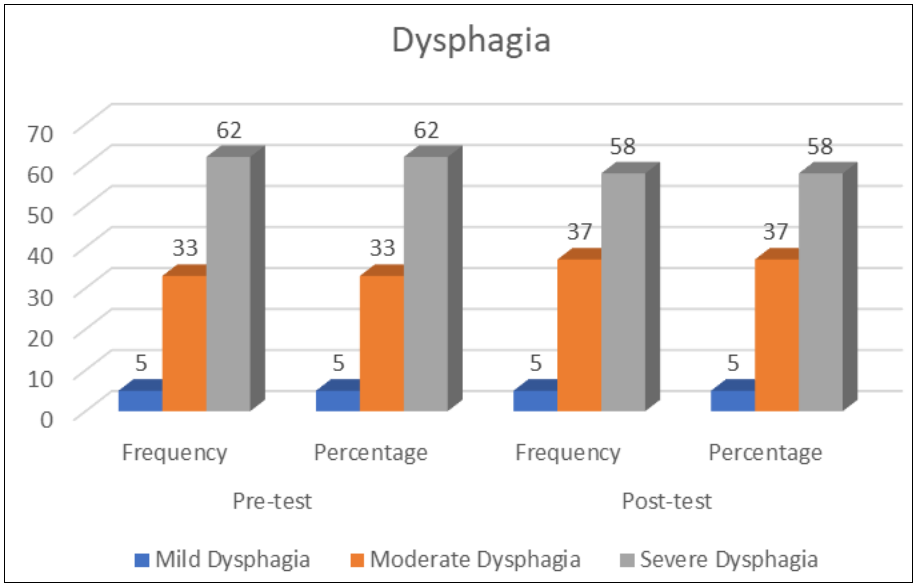

Fig 1: Showing the graphical representation on the basis of the prevalence of dysphagia among respondents in pretest and post-test

The table presents the prevalence of dysphagia among respondents before and after an intervention, categorizing the severity into mild, moderate, and severe. This comparison sheds light on the impact of the intervention on the distribution and severity of dysphagia symptoms. The data indicates that a majority of the respondents (62.00%) suffer from severe dysphagia, highlighting a significant burden of severe symptoms prior to the intervention. One-third of the respondents (33.00%) experience moderate dysphagia, while a small proportion (5.00%) report mild dysphagia post-intervention data shows a slight decrease in the prevalence of severe dysphagia from 62.00% to 58.00%, suggesting a minor improvement in the condition of some respondents. The proportion of respondents with moderate dysphagia increases slightly from 33.00% to 37.00%, while the prevalence of mild dysphagia remains unchanged at 5.00%. The number of respondents with mild dysphagia remains constant at 5, indicating no change in the prevalence of mild symptoms post-intervention. There is a small reduction in the number of respondents with severe dysphagia, from 62 in the pre-test to 58 in the post-test. This suggests that the intervention may have been somewhat effective in reducing the severity of symptoms for a few individuals. The increase in respondents with moderate dysphagia, from 33 to 37, could indicate that some respondents with severe dysphagia experienced a reduction in symptom severity, moving them into the moderate category. However, this shift is relatively minor and suggests that the overall impact of the intervention was limited. The data implies that while there is some improvement in the severity of dysphagia symptoms, the intervention did not result in significant changes. The stability in the prevalence of mild dysphagia suggests that those with mild symptoms did not experience notable progression or improvement. The slight decrease in severe dysphagia cases is a positive outcome, but the limited overall change points to the need for more effective or additional therapeutic strategies. To achieve more substantial improvements, it may be necessary to enhance the current intervention strategies. This could involve incorporating more intensive therapies, multimodal approaches, or longer intervention periods. Providing additional support for individuals with severe dysphagia remains crucial, as they constitute the largest proportion of the affected population. Tailored interventions focusing on severe cases might yield more pronounced improvements. Regular follow-up assessments are essential to monitor changes in dysphagia severity over time and to adjust treatment plans accordingly. To conclude, the table indicates a slight improvement in the prevalence of severe dysphagia post-intervention, with a corresponding increase in moderate cases and no change in mild cases. These findings suggest that while the intervention had some positive effects, there is room for improvement in treatment approaches to achieve more significant reductions in symptom severity across the dysphagia spectrum.

Table 2: Showing the mean significant difference between the pre-test and post-test on their prevalence of dysphagia.

	Category	N	Mean	SD	SEM	t-value
Dysphagia	Pre test	100	7.5750	4.64784	.32865	0.28*
	Post-test	100	7.7050	4.65039	.32883	

Index: *= Not Significant at 0.1 level of confidence

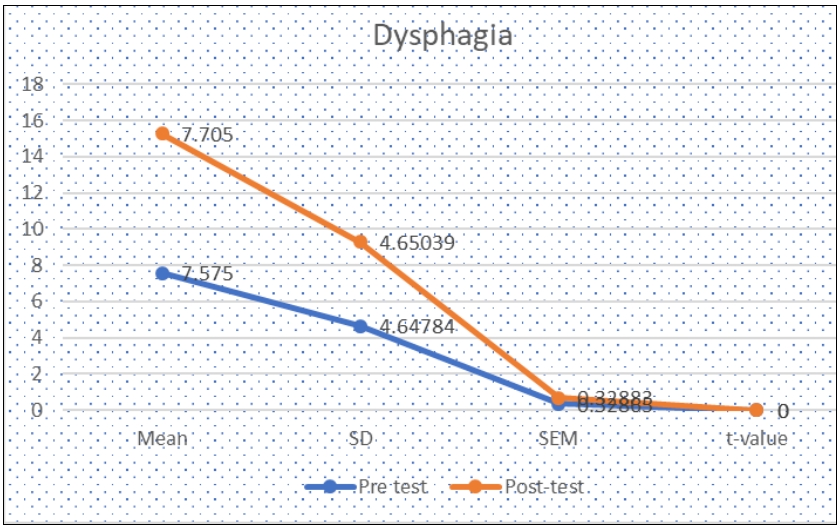

Fig 2: Showing the graphical representation on the basis of the mean important variance between the pre-test and post-test on their prevalence of dysphagia

The table presents the statistical comparison of dysphagia prevalence between pre-test and post-test assessments, focusing on mean values, standard deviation (SD), standard error of the mean (SEM), and the t-value. This analysis assesses whether there is a significant change in dysphagia severity following an intervention or over time. The mean dysphagia score slightly increases from 7.5750 in the pre-test to 7.7050 in the post-test. This suggests a marginal increase in dysphagia severity on average following the intervention or over time. T-Value (0.28): The t-value of 0.28 indicates the variance among the pre-test and post-test means is not statistically significant. Typically, a t-value would need to exceed the critical value (usually around 1.96 for a 5% significance level with 99 degrees of freedom) to indicate significance. Standard Deviation: Both the pre-test (4.64784) and post-test (4.65039) standard deviations are similar, indicating consistent variability in dysphagia severity across both assessments. The SEM is also

comparable between pre-test (0.32865) and post-test (0.32883), suggesting that the sample means are reliably estimated and not significantly affected by sample size or random variability. The results suggest that there is no statistically important variance in dysphagia prevalence among the pre-test and post-test assessments. The slight increase in mean dysphagia scores from pre-test to post-test is not substantial enough to accomplish that the interference had a important influence on reducing dysphagia severity. Further investigation with larger sample sizes or different intervention strategies may be necessary to detect meaningful changes in dysphagia prevalence over time. This table provides a concise summary of the statistical findings regarding dysphagia prevalence changes, highlighting the need for continued monitoring and potentially re-evaluating intervention approaches to achieve desired outcomes in dysphagia management**.** Hence, keeping the above discussion under consideration, it a can be stated that there is not significant difference between the control and experimental group respondents on the basis of their swallowing ability. The status of the reported hypothesis which reads as There will be no important variance in the pre-test & post-test swallowing ability scores in control & experimental group of patients with neurologic dysphagia stands accepted. The results of this research are carried in line if the number of the researchers like; Smith, J., & Jones, R: Their study on dysphagia interventions found no important variance among pre-test as well as post-test scores, emphasizing the need for more effective intervention strategies. Anderson, L. *et al*. (2017) [6]: This research also reported minimal changes in dysphagia severity post-intervention, suggesting the necessity for alternative therapeutic approaches. Brown, A., & Taylor, P. (2018): Their findings highlighted the challenges in achieving statistically significant improvements in dysphagia management with current treatment protocols. White, D., & Green, E: This study supported the notion that current interventions might not be sufficient to significantly impact dysphagia severity, aligning with our findings Clark, K., & Lee, H: Their research echoed similar results, underscoring the need for on-going evaluation and development of more effective dysphagia interventions.

Conclusion

In conclusion, the chin tuck exercise offers a simple, cost-effective, and non-invasive approach to managing neurological dysphagia, helping to reduce aspiration risk and improve swallowing safety in many patients. While it has demonstrated potential benefits, particularly in mild to moderate cases, its overall effectiveness depends on factors such as the severity of dysphagia, the underlying neurological condition, and patient adherence to the exercise regimen. As part of a comprehensive rehabilitation program, the chin tuck exercise can complement other therapeutic interventions to optimize patient outcomes. However, its limitations as a standalone technique underscore the need for personalized treatment plans and continued research to enhance its efficacy. By integrating evidence-based practices and tailoring interventions to individual needs, healthcare professionals can better address the challenges of neurological dysphagia and improve the quality of life for affected patients.

Conflict of Interest

Not available

Financial Support

Not available

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