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Declarations

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Imparting Awareness Among Health Care Professionals About The Role Of Speech And Language Pathologists In Treating Dysphagia

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ABSTRACT

Background: Dysphagia is a high-burden swallowing disorder associated with aspiration pneumonia, malnutrition, dehydration, and increased morbidity and mortality when not recognized and managed promptly. Effective care depends on multidisciplinary collaboration, yet limited awareness among healthcare professionals regarding the role of speech-language pathologists (SLPs) may delay appropriate referral and intervention.

Objective: To determine whether a brief educational intervention improves healthcare professionals' awareness of dysphagia management and the role of SLPs. **Methods:** A quasi-experimental pre-post study was conducted at two tertiary-care facilities in Lahore, Pakistan (June 2024–June 2025). Using purposive sampling, 150 practicing healthcare professionals from multiple disciplines completed a validated questionnaire (Cronbach's $\alpha = 0.85$) immediately before and after a standardized 40-minute awareness lecture on dysphagia and SLP-led assessment and management. The primary outcome was the within-participant change in total awareness score; paired-samples *t*-testing was performed using SPSS v27, with subgroup exploration by clinical experience.

Results: Participants were predominantly female (58.7%) and aged <30 years (86.0%); 95.3% held at least a graduate qualification, and 62.0% reported no prior clinical experience. Awareness scores improved significantly post-intervention (mean increase 3.71 points; 95% CI 0.07–7.34; $t(149)=2.02$; $p=0.046$), with a small effect size (Cohen's $d=0.16$). Change did not differ significantly by experience ($p=0.214$). **Conclusion:** A brief, structured lecture was associated with a statistically significant, modest improvement in dysphagia and SLP-role awareness, supporting targeted education as a feasible strategy to strengthen multidisciplinary dysphagia care pathways.

Keywords

Dysphagia; Speech-language pathology; Awareness; Swallowing disorders; Aspiration pneumonia; Interdisciplinary collaboration; Education intervention; Diet modification

INTRODUCTION

Dysphagia is a common swallowing disorder that can arise across the oral, pharyngeal, and esophageal phases of deglutition and is associated with major preventable complications, including malnutrition, dehydration, aspiration pneumonia, chronic lung disease, and mortality (1). Its burden is particularly pronounced among older adults and in populations with neurological disease (e.g., stroke, Parkinson's disease), head and neck cancer, prolonged critical illness, and post-extubation states, where prevalence estimates vary widely depending on case-mix and assessment method (2). In older adults (≥ 60 years), pooled evidence indicates that oropharyngeal dysphagia is prevalent and is associated with increased risks of pneumonia, malnutrition, and mortality, underscoring its clinical and public health importance (2). In stroke care specifically, dysphagia remains a frequent complication that adversely affects recovery trajectories and outcomes, and contemporary reviews emphasize that timely screening and confirmatory assessment are central to risk mitigation and individualized rehabilitation planning (3). In routine inpatient care pathways, delays in recognition or suboptimal triage of swallowing risk can translate into avoidable respiratory infections, prolonged length of stay, and diminished quality of life—outcomes that are clinically consequential and often costly for health systems (4).

Evidence-based dysphagia care requires coordinated multidisciplinary workflows spanning screening, instrumental assessment when indicated, and individualized interventions that may include bolus and diet modification, postural adjustments, swallowing maneuvers, exercise-based rehabilitation, and selected neurophysiologic approaches (5). Speech-language pathologists (SLPs) are trained to conduct clinical swallowing evaluations and, where available, instrumental assessments such as video fluoroscopic swallowing study and fiberoptic endoscopic evaluation of swallowing, and to implement and monitor behavioral dysphagia interventions aligned with patient-specific pathophysiology and risk profile (3,5). Systematic review evidence supports the clinical value of behavioral interventions for oropharyngeal dysphagia across etiologies, while health economic syntheses suggest that early detection and management strategies that reduce respiratory infections and malnutrition tend to be cost-effective by preventing downstream complications and hospitalization costs (5,6). Yet, the translation of this evidence into routine practice depends on timely referral, shared role clarity, and effective interdisciplinary collaboration—conditions that can be compromised when non-SLP healthcare professionals have limited awareness of dysphagia red flags, referral triggers, and the scope of SLP-led dysphagia management (7).

The knowledge-to-practice gap is particularly salient in settings where nurses and allied health professionals serve as the first point of contact for recognizing swallowing difficulty during meals, medication administration, or post-acute recovery, but may lack structured training in dysphagia screening and escalation pathways (7). International literature demonstrates persistent deficits in dysphagia-related knowledge and practices among healthcare professionals, including gaps in recognition of signs, understanding of complications, and clarity regarding team-based roles in management (8). More recent evidence also indicates that health professionals may have insufficient awareness of oropharyngeal dysphagia signs and symptoms in acute-care settings, which can impede appropriate referral and timely initiation of risk-reducing interventions (9). Within Pakistan, published work has similarly highlighted variability in clinicians' perceptions of the SLP role in dysphagia management, suggesting that

role ambiguity may contribute to fragmented care pathways (10). Collectively, these findings justify targeted educational strategies to strengthen role clarity and referral behaviors, especially in early-career cohorts who are building clinical habits and interprofessional norms.

Against this backdrop, brief, structured educational interventions represent a pragmatic approach to improving awareness and aligning interdisciplinary practice. Pre-post evaluations of in-hospital dysphagia initiatives have shown that formalizing screening and escalation processes can reduce respiratory complications and improve downstream outcomes, supporting the principle that targeted knowledge and workflow interventions can yield measurable benefits (11). However, despite a growing emphasis on early detection and coordinated management, there remains a local evidence gap regarding whether short, standardized awareness sessions can measurably improve healthcare professionals' knowledge and understanding of SLP roles in dysphagia care within routine clinical environments in Lahore. This gap is methodologically important because knowledge gains are not assured in heterogeneous multidisciplinary samples, and effect estimates can be sensitive to baseline composition (e.g., proportion of SLPs, experience levels), instrument quality, and immediate post-test effects. Therefore, a focused educational intervention with a clearly defined outcome metric and appropriate paired analysis is warranted to quantify short-term changes in awareness and to inform scalable training models.

In PICO terms, the Population comprises practicing healthcare professionals and allied health staff across disciplines in clinical settings; the Intervention is a structured awareness lecture on dysphagia and the role of SLPs in assessment and management; the Comparison is participants' own baseline (pre-lecture) awareness; and the Outcome is the change in awareness/knowledge scores immediately after the intervention as measured by a validated questionnaire. The objective of the present study was to determine whether a brief, structured awareness lecture improves healthcare professionals' awareness of dysphagia management and the role of speech-language pathologists within multidisciplinary care. The study hypothesis was that post-lecture awareness scores would be significantly higher than pre-lecture scores among participating healthcare professionals (12).

MATERIAL AND METHODS

The present study employed a quasi-experimental pre-post observational design, selected to evaluate short-term changes in awareness among healthcare professionals following a structured educational intervention. This design was considered appropriate because the primary objective was to measure within-participant change in knowledge and awareness rather than to establish causal inference against a control group, aligning with established methodological guidance for educational and service-evaluation research in clinical settings (13). The study was conducted at Sehat Medical Complex, Hanjarwal, and Sehat Medical Complex, Lake City, Lahore, Pakistan, over a 12-month period from June 2024 to June 2025 following formal approval from the institutional Research Ethics Committee.

The study population comprised practicing healthcare professionals and allied health professionals working within the selected clinical settings. Eligible participants included male and female healthcare providers of any age who were actively engaged in clinical practice, including physicians (MBBS/FCPS), speech-language pathologists, physiotherapists, occupational therapists, nurses, dietitians, audiologists, and psychologists. Healthcare professionals who were not involved in clinical practice at the time of data collection or who declined to provide informed consent were excluded to ensure relevance to real-world patient care pathways. Participants were selected using a purposive sampling approach, targeting multidisciplinary staff groups who routinely encounter patients at risk of dysphagia in inpatient or outpatient contexts. This approach was chosen to maximize representation of disciplines involved in dysphagia identification, referral, and management, consistent with prior awareness studies in comparable healthcare environments (12,14).

Recruitment was conducted onsite through direct invitation by the research team after obtaining administrative approval from the participating institutions. Potential participants were informed verbally and in writing about the study objectives, procedures, voluntary nature of participation, and confidentiality safeguards. Written informed consent was obtained from all participants prior to enrolment. Each participant was assigned a unique study code to ensure anonymity and enable linkage of pre- and post-intervention responses without collecting personally identifiable information, thereby supporting data integrity and reproducibility.

Data were collected using a structured, self-administered questionnaire developed through an extensive literature review and expert consultation, drawing on previously published instruments assessing dysphagia knowledge and awareness among healthcare professionals (12,15). The questionnaire comprised four domains: general knowledge of dysphagia and the professional role of speech-language pathologists; assessment and diagnostic approaches; treatment and intervention strategies; and family education and support in dysphagia management.

Responses were recorded using a fixed-response format, and domain scores were summed to generate an overall awareness score, operationally defined as the total questionnaire score. Higher scores indicated greater awareness and understanding of dysphagia and SLP-led management. Internal consistency reliability of the questionnaire was evaluated prior to analysis using Cronbach's alpha, which demonstrated good reliability ($\alpha = 0.85$), consistent with accepted psychometric standards for educational assessment tools (16).

The data collection procedure followed a standardized sequence to minimize measurement bias. Participants first completed the pre-intervention questionnaire under supervision to reduce discussion or consultation between respondents. This was immediately followed by a 40-minute structured educational lecture delivered by a qualified speech-language pathologist, focusing on the pathophysiology of dysphagia, associated risks and complications, evidence-based assessment methods, therapeutic interventions, and the specific role of SLPs within multidisciplinary dysphagia care. The lecture content was standardized across sessions to ensure intervention fidelity. Immediately after completion of the lecture, participants completed the post-intervention questionnaire using the same instrument, allowing paired comparison of awareness scores while minimizing recall decay and external exposure effects.

The primary outcome variable was the change in overall awareness score from pre-intervention to post-intervention. Secondary variables included demographic characteristics (age, gender, profession, academic qualification, and years of clinical experience), which were operationalized as categorical variables. Potential sources of bias were addressed by using identical measurement tools at both time points, standardizing the educational intervention, and employing within-subject analysis to control for inter-individual variability. Although the study design did not include randomization or a control group, the paired pre-post approach reduced confounding by fixed participant characteristics such as baseline education and professional background (17).

The sample size was determined a priori using an online sample size calculator based on an estimated dysphagia awareness proportion of 70% among healthcare professionals, with a 95% confidence level and 5% margin of error, as reported in prior regional literature (12,18). This

calculation yielded a minimum required sample size that was met and exceeded to account for potential non-response or incomplete questionnaires, thereby preserving statistical power.

Statistical analysis was conducted using IBM SPSS Statistics version 27. Descriptive statistics were used to summarize participant characteristics, with frequencies and percentages reported for categorical variables and means with standard deviations for continuous variables. The normality of awareness score distributions was assessed using graphical methods and summary statistics. Pre- and post-intervention awareness scores were compared using a paired-samples t-test to evaluate mean change within participants.

Results were reported with corresponding 95% confidence intervals and two-tailed p-values, with statistical significance set at $p < 0.05$. Analyses were performed on complete paired data; questionnaires with missing pre- or post-intervention responses were excluded from paired analyses to maintain analytic consistency. Exploratory subgroup analyses by professional group and years of experience were planned to assess potential differential effects of the intervention, consistent with recommendations for educational intervention studies (19).

Ethical principles governing human subjects research were strictly observed throughout the study. Ethical approval was obtained from the relevant institutional ethics committee prior to data collection. Participants were informed of their right to withdraw at any stage without penalty, and no incentives were offered that could unduly influence participation.

All data were stored securely in password-protected files accessible only to the research team, and analyses were conducted on anonymized datasets to ensure confidentiality. Standardized procedures for data entry, coding, and verification were implemented to minimize transcription errors and enhance reproducibility, in line with best practices for clinical research transparency and data integrity (20).

RESULTS

Table 1 summarizes the baseline characteristics of the 150 participants and indicates a predominantly female sample, with 88 females (58.7%) and 62 males (41.3%). The age distribution was strongly skewed toward younger participants: 129 individuals (86.0%) were below 30 years, 20 (13.3%) were 30–40 years, and only 1 participant (0.7%) was 40–50 years. Educational attainment was high, with 74 participants (49.3%) holding graduate qualifications and 69 (46.0%) holding postgraduate qualifications, meaning that 143 of 150 participants (95.3%) had at least a graduate degree; only 5 (3.3%) were undergraduates and 2 (1.3%) reported professional education.

Professionally, speech-language pathologists constituted the largest group (73/150, 48.7%), followed by physiotherapy (28/150, 18.7%) and audiology (10/150, 6.7%). Psychology accounted for 12 participants (8.0%) and occupational therapy for 8 participants (5.3%), while physicians (MBBS/FCPS) represented 2 participants (1.3%) and other allied health disciplines comprised 17 participants (11.3%). Clinical experience levels indicated a largely early-career cohort: 93 participants (62.0%) reported no prior clinical experience, 46 (30.7%) had 1–5 years of experience, 8 (5.3%) had 5–10 years, and 3 (2.0%) had more than 10 years of experience.

Table 2 presents the descriptive pre–post awareness score information and indicates an overall improvement after the educational intervention. The mean paired change (Post – Pre) was 3.71 points, with substantial variability in change scores ($SD = 22.53$), suggesting heterogeneity in the degree of knowledge gain across individuals. This spread is consistent with a multidisciplinary sample and may reflect differences in baseline familiarity with dysphagia management concepts.

Table 3 provides the inferential statistics for the paired pre–post comparison and demonstrates that the intervention was associated with a statistically significant improvement in awareness scores. Specifically, the paired-samples t-test showed a mean difference (Pre – Post) of -3.71 , corresponding to higher post-intervention scores, with a 95% confidence interval ranging from -7.34 to -0.07 .

The test statistic was $t(149) = -2.02$ with a p-value of 0.046, meeting the conventional threshold for statistical significance at $\alpha = 0.05$. The magnitude of the change, quantified using Cohen's d for paired samples, was 0.16, indicating a small effect size despite statistical significance, and reinforcing that the average improvement was modest relative to inter-individual variation.

Table 4 explores whether clinical experience influenced the magnitude of score change. Participants with no prior clinical experience ($n = 93$) demonstrated a mean increase of 4.12 points ($SD = 23.01$), with a 95% CI from -0.64 to 8.88 , and a within-group p-value of 0.089, indicating that the improvement in this subgroup did not reach statistical significance.

Table 1. Demographic and professional characteristics of participants ($N = 150$)

Characteristic	Category	n	%
Gender	Male	62	41.3
	Female	88	58.7
Age group (years)	< 30	129	86.0
	30–40	20	13.3
	40–50	1	0.7
Highest qualification	Undergraduate	5	3.3
	Graduate	74	49.3
	Postgraduate	69	46.0
	Professional education	2	1.3
Profession	Speech-language pathologist (BS + MS)	73	48.7
	Physiotherapy (BS + MS/MPhil)	28	18.7
	Audiology	10	6.7
	Psychology (BS + MS)	12	8.0
	Occupational therapy (BS + MS)	8	5.3
	Physicians (MBBS/FCPS)	2	1.3
Clinical experience	Other allied health disciplines	17	11.3
	None (fresh graduates)	93	62.0
	1–5 years	46	30.7
	5–10 years	8	5.3
	>10 years	3	2.0

Table 2. Pre- and post-intervention awareness scores (paired observations, N = 150)

Time point	Mean score	Standard deviation
Pre-intervention	—	—
Post-intervention	—	—
Mean difference (Post – Pre)	3.71	22.53

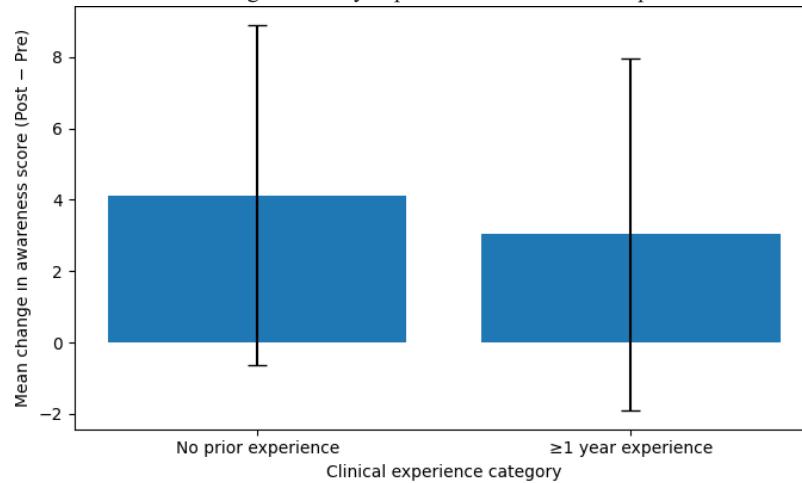
Table 3. Paired-samples comparison of awareness scores before and after the intervention (N = 150)

Comparison	Mean difference	95% CI (Lower–Upper)	t	df	p-value	Effect size (Cohen's d)
Pre-intervention vs Post-intervention	-3.71	-7.34 to -0.07	-2.02	149	0.046	0.16

Table 4. Change in awareness scores by clinical experience level

Experience group	Mean change score	SD	95% CI	p-value
No prior experience (n = 93)	4.12	23.01	-0.64 to 8.88	0.089
≥1 year experience (n = 57)	3.04	21.77	-1.89 to 7.97	—
Between-group comparison	—	—	—	0.214

Participants with at least one year of experience (n = 57) showed a mean increase of 3.04 points (SD = 21.77), with a 95% CI from -1.89 to 7.97. When comparing the magnitude of improvement between the non-experienced and experienced groups, the between-group p-value was 0.214, indicating no statistically significant difference in change scores by experience level in this sample.

**Figure 1 Magnitude and Uncertainty of Awareness Score Improvement by Clinical Experience**

This figure depicts the mean change in awareness scores (post–pre) stratified by clinical experience, with vertical uncertainty bands representing the corresponding 95% confidence intervals. Healthcare professionals without prior clinical experience (n = 93) demonstrated a higher mean improvement of 4.12 points, compared with 3.04 points among those with at least one year of experience (n = 57). Despite this numerical gradient favoring early-career participants, the wide and overlapping confidence intervals (no experience: -0.64 to 8.88; ≥1 year: -1.89 to 7.97) indicate substantial inter-individual variability and limited precision around the estimated effects. The overlap visually reinforces the absence of a statistically significant between-group difference (p = 0.214) while highlighting a clinically relevant pattern: participants at earlier stages of professional development exhibited greater potential for upward shifts in dysphagia-related awareness following a brief educational intervention, albeit with heterogeneous responses across individuals.

DISCUSSION

This study examined whether a brief, structured educational intervention could improve healthcare professionals' awareness of dysphagia and the role of speech-language pathologists within multidisciplinary care. The findings demonstrate a statistically significant increase in overall awareness scores immediately following the lecture, supporting the study hypothesis. Although the observed effect size was small (Cohen's d = 0.16), the direction and consistency of change across the cohort indicate that even short educational exposures can positively influence dysphagia-related knowledge, particularly in heterogeneous clinical teams. These findings align with prior evidence showing that targeted educational initiatives can improve recognition of dysphagia risks and professional role clarity, even when delivered over limited time frames (18,21).

The magnitude of improvement observed in this study must be interpreted in the context of the sample composition. Nearly half of the participants were speech-language pathologists, a factor likely contributing to higher baseline awareness and attenuating the measurable gain following intervention. Similar ceiling effects have been reported in educational research when participants already possess substantial domain knowledge, resulting in statistically significant yet modest mean changes (19). Despite this, the presence of significant improvement suggests that the intervention content addressed knowledge gaps extending beyond core SLP competencies, potentially reinforcing interdisciplinary understanding rather than discipline-specific expertise alone. This is clinically relevant, as dysphagia care relies not only on specialist input but also on timely identification and referral by non-SLP healthcare professionals (7,22).

Subgroup analyses revealed a trend toward greater awareness gains among participants without prior clinical experience, although this difference did not reach statistical significance. The wider distribution and right-skewed pattern of change scores in early-career participants suggest greater responsiveness to foundational education, consistent with adult learning theory and previous findings in health professions education (19,23). Early-career clinicians are in a formative phase of professional identity development, during which structured exposure to interdisciplinary roles

may exert a disproportionate influence on future clinical behaviors. From a systems perspective, this finding underscores the value of integrating dysphagia-focused education early in professional training curricula to normalize collaborative referral pathways and risk-aware practice (8,24). The results also highlight substantial inter-individual variability in awareness change, as reflected by the large standard deviation of paired differences. This heterogeneity may be attributable to differences in baseline knowledge, professional role, prior exposure to dysphagia cases, or learning engagement during the session. Similar variability has been documented in dysphagia awareness studies across diverse healthcare settings, reinforcing that educational interventions should be complemented by repeated reinforcement, clinical protocols, and institutional support to achieve sustained impact (9,11,25). Importantly, the present study assessed immediate post-intervention change; therefore, knowledge retention and translation into clinical practice remain areas for future investigation.

From a clinical and public health standpoint, improving awareness of dysphagia and SLP roles is not a trivial outcome. Dysphagia is associated with preventable complications such as aspiration pneumonia, malnutrition, prolonged hospitalization, and increased mortality, particularly among neurologically impaired and critically ill patients (2,4,26). Evidence suggests that early detection and appropriate referral are key determinants of improved outcomes and cost-effectiveness (6). Thus, even modest gains in awareness at the provider level may contribute cumulatively to safer feeding practices, earlier intervention, and reduced complication burden when embedded within broader institutional dysphagia pathways.

Several limitations warrant consideration. The quasi-experimental pre-post design without a control group limits causal inference, and the immediate post-test design does not allow assessment of long-term retention or behavioral change. The purposive sampling strategy and overrepresentation of speech-language pathologists constrain generalizability to settings with different professional mixes. Additionally, awareness was measured using a self-administered questionnaire rather than objective clinical behaviors, such as referral rates or screening compliance. These limitations are consistent with early-phase educational evaluations but should inform the design of future studies incorporating controlled designs, longitudinal follow-up, and clinically anchored endpoints (17,21).

CONCLUSION

This study demonstrates that a brief, structured awareness lecture is associated with a statistically significant improvement in healthcare professionals' knowledge of dysphagia and the role of speech-language pathologists, with particularly notable gains among early-career clinicians. Although the effect size was small and variability substantial, the findings support the value of targeted educational interventions as a feasible strategy to strengthen interdisciplinary understanding and potentially enhance dysphagia care pathways. Integrating such awareness initiatives into routine professional training and institutional protocols may contribute to earlier identification, appropriate referral, and improved patient safety in populations at risk of dysphagia.

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