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ORIGINAL RESEARCH

Knowledge, Attitudes, and Practices Regarding Swallowing Disorders Among General Practitioners

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Background: Swallowing disorders constitute a significant clinical concern, necessitating effective management and early detection. General practitioners (GPs) play a pivotal role in identifying and referring patients with swallowing disorders, emphasizing the importance of assessing their Knowledge, Attitudes, and Practices (KAP) in this domain.

Methods: A cross-sectional study was conducted between July and October 2023, involving general practitioners who completed a self-administered questionnaire containing demographic information and KAP assessment.

Results: The final analysis included 365 participates, with 242 (66.3%) completed by female participants and 106 (29.04%) by individuals with 5–10 years of professional working experience. The mean scores for knowledge, attitude, and practice were 12.41 ± 4.202 (possible range: 0–18), 22.25 ± 2.06 (possible range: 6–30), and 32.81 ± 9.48 (possible range: 10–50), respectively. Knowledge was demonstrated a positive correlation with attitude *(r* = 0.329, P < 0.001) and practice (r = 0.375, P < 0.001), while attitude also showed a positive correlation with practice (r = 0.309, P < 0.001). According to multivariate analysis, knowledge (OR = 1.13, 95% CI: [1.07–1.20], P < 0.001) and attitude (OR = 1.19, 95% CI: [1.05–1.36], P = 0.005) were independently associated with proactive practice.

Conclusion: General practitioners demonstrated moderate knowledge, attitudes, and practices regarding swallowing disorders. Targeted educational interventions are essential to enhance general practitioners' knowledge regarding swallowing disorders.

Keywords: knowledge, attitudes, practices, swallowing disorders, general practitioner, cross-sectional study

Introduction

Swallowing disorders, also known as deglutition disorders, encompass challenges in the swallowing process arising from various causes and impacting eating and nutrient absorption, as well as posing a risk of aspiration pneumonia, which can be life-threatening.[1] These disorders often manifest as early symptoms of underlying conditions such as stroke, neuromuscular diseases, and throat cancer.[2,3] The prevalence of swallowing disorders has increased, particularly among older individuals, bringing attention to the critical aspects of swallowing rehabilitation. Notably, an increased incidence of chewing and swallowing disorders occurs post-stroke, affecting 30%–50% of stroke survivors and posing a significant risk of aspiration pneumonia.[4,5] The broader context reveals a prevalent issue among the older population, suffering from masticatory, swallowing, and digestive disorders, hindering their essential nutrient intake.[6] Early diagnosis and treatment are of utmost importance for reducing complications and improving the quality of life for these populations, especially when considering that general practitioners may sometimes overlook or misdiagnose swallowing disorders. It is vital to investigate the general practitioners' awareness and diagnostic capabilities, as it may lay the groundwork for future improvements in their diagnostic skills and overall comprehension of swallowing disorders.

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The knowledge, attitudes, and practices (KAP) model is a widely adopted framework in healthcare research that examines the relationship between cognitive understanding (knowledge), predispositions toward action (attitudes), and actual behavioral patterns (practices). This model has been extensively used in public health research to understand healthcare providers' clinical decision-making and identify areas for improvement.[7–9] Studies have shown that healthcare practices are influenced by both the theoretical knowledge possessed and the attitudes formed through clinical experience. The KAP framework helps identify gaps between what practitioners know and what they actually do in clinical settings. This approach has been particularly valuable in healthcare settings where behavioral change is crucial for improving patient outcomes. For instance, KAP surveys have been successfully used to assess healthcare providers' competencies in managing various clinical conditions and to design targeted educational interventions.[10,11] The model suggests that while knowledge forms the foundation of clinical practice, attitudes serve as important mediators in translating knowledge into actual clinical behaviors. Understanding these relationships is crucial for developing effective interventions to improve clinical practice.[12] This theoretical foundation is particularly relevant for examining general practitioners' approach to specialized conditions like swallowing disorders, where early detection and appropriate management are crucial for patient outcomes. General practitioners often serve as patients' primary point of contact with the healthcare system, thus posing a crucial link in the ongoing healthcare the patient receives. For early detection and intervention, it is essential to investigate general practitioners' KAP regarding swallowing disorders thereby improving patient treatment outcomes. Given the evident shortage of KAP studies, particularly in the specific domain of swallowing disorders, this research aimed to address this gap. By offering valuable insights into the awareness and clinical approaches of general practitioners in managing swallowing disorders, the study contributes to a broader understanding of this medical domain. Therefore, the present study aimed to investigate general practitioners' KAP concerning swallowing disorders. This study can potentially guide future medical education and training improvements, ensuring that general practitioners acquire comprehensive medical knowledge to effectively address the growing health challenges affecting the older population.

Methods

Study Design and Participants

This cross-sectional study surveyed general practitioners between July 7, 2023, and October 6, 2023. The inclusion criteria encompassed practicing physicians in medical institutions engaged in general practice diagnosis and treatment. Exclusion criteria pertained to incomplete questionnaire filling, which could impact data collection and the robustness of analysis. The study obtained ethical approval from the Institutional Review Board of Guizhou Provincial People's Hospital (Lun Shen (Scientific Research) 2023049), and all participants provided informed consent.

Questionnaire and Quality Control

The knowledge dimension of the questionnaire was developed based on the shared approach of *Consensus of Chinese Swallowing Disorder Assessment and Treatment Experts (2017 Edition), Chinese Expert Consensus on Dietary and Nutritional Management of Swallowing Disorders (2019 Edition)*, and *Chinese Expert Consensus on Family Nutrition Management for Elderly Patients with Swallowing Disorders (2018 Edition)*.[13–15] Subsequently, a preliminary pilot test involving 40 participants was conducted, resulting in a reliability coefficient of 0.868, confirming the internal consistency of the questionnaire.

The final questionnaire was administered in Chinese, and it encompassed the following four dimensions across a total of 34 items: basic information (9 items), the knowledge dimension (9 items), the attitude dimension (6 items), and the practice dimension (10 items). The items in the knowledge dimension were graded on a 0–18 scale; the items in the attitude and practice dimension were evaluated on a five-point Likert scale, with a final score ranging from 6–30 points and 10–50 points, respectively. Participants who scored > 80% of the total were defined as having adequate knowledge, positive attitude, and proactive practice. Scores were categorized as good/positive (≥70%), moderate (50–70%), or poor/negative (<50%) for knowledge, attitudes, and practices assessment.[16]

The research team enrolled willing participants by contacting established hospitals and their respective medical professionals. An electronic survey was developed using a questionnaire tool and a generated QR code. Researchers

distributed this QR code to participants through a designated WeChat group. Subsequently, participants accessed and completed the questionnaire using the provided QR code. Rigorous measures were applied to guarantee the reliability and completeness of the questionnaire responses; each IP address was restricted to a single submission, and completing all items was made compulsory. To uphold the quality of collected data, the research team meticulously assessed the integrity, internal consistency, and validity of all questionnaires.

Statistical Analysis

Statistical analysis was performed by Stata 14.0 (Stata Corporation, College Station, TX, USA). Continuous data were presented as mean ± standard deviation (SD), with intergroup comparisons conducted using t-tests or analysis of variance. Categorical data were described by n (%). Pearson correlation analysis was employed to assess the correlation between knowledge, attitudes, and practice scores. Univariate and multivariate analyses of good knowledge, positive attitudes, and proactive practices were conducted using logistic regression, with the cut-off value set at 70% of the total score. The inclusion of variables in multivariate regression was determined based on the significance of variables ($P < 0.05$) in the univariate analysis. All statistical tests were two-tailed, and a P-value < 0.05 was considered statistically significant.

Results

A total of 365 questionnaires were finally included in the statistical analysis. Among these, 242 (66.3%) were filled out by female participants, 292 (80%) were filled out by participants aged < 45 years, 253 (69.32%) by those with bachelor's degree; 132 (36.16%) by those with junior title, 106 (29.04%) by those who had worked in the profession for 5–10 years, 159 (43.56%) by those who were working in public tertiary hospitals, and 218 (59.73%) by those working in a teaching hospital. The mean knowledge, attitude, and practice scores were 12.41 ± 4.202 (possible range: 0–18), 22.25 ± 2.06 (possible range: 6–30), and 32.81 ± 9.48 (possible range: 10–50), respectively. The attitude and practice scores varied among general practitioners with different professional titles ($P = 0.001$ and $P = 0.034$), years of work experience ($P = 0.045$ and $P = 0.011$), and whether their hospital was a teaching one ($P < 0.001$ and $P = 0.010$). In addition, the type of hospital where participants worked also had an impact on their knowledge, attitude, and practice scores ($P = 0.021$, $P < 0.001$, and $P = 0.002$), as participants from public tertiary hospitals were more likely to have higher scores (Table 1).

In the knowledge dimension, the two questions with the highest number of participants opting for "Well-known" and "Heard of" were:

> Common clinical manifestations of swallowing disorders include drooling or food spilling from the mouth, holding food in the mouth without swallowing for extended periods, food or liquid regurgitating through the nose (nasal regurgitation), food

Table 1 Baseline Characteristic and KAP

	N (%)	Knowledge Score		Attitude Score		Practice Score	
		Mean±SD	P	Mean±SD	P	Mean±SD	P
Total Score	**N=365**	12.41±4.202		22.25±2.06		32.81±9.48	
Gender			0.752		0.309		0.420
Male	123(33.7)	12.53±3.99		22.15±2.19		33.29±9.01	
Female	242(66.3)	12.53±3.99		22.15±2.19		33.29±9.01	
Age (years)	36.09±8.68						
Age (group)			0.609		0.135		0.756
<45	292(80)	12.33±4.24		22.33±2.03		32.80±9.36	
≥45	73(20)	12.69±4.04		21.91±2.11		32.80±9.99	

(*Continued*)

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Table 1 (Continued).

	N (%)	Knowledge Score		Attitude Score		Practice Score	
		Mean±SD	P	Mean±SD	P	Mean±SD	P
Residence			0.357		0.829		0.682
Rural	84(23.01)	11.97±4.55		22.32±2.20		33.54±9.46	
Urban	258(70.68)	12.61±4.13		22.22±1.99		32.54±9.57	
Suburban	23(6.3)	11.69±3.57		22.26±2.28		33.04±8.69	
Education			0.433		0.064		0.728
College/Technical School and below	45(12.33)	11.82±5.40		21.57±2.50		32.73±10.2	
Bachelor's	253(69.32)	12.64±3.96		22.42±1.92		33.02±9.49	
Master's and above	67(18.36)	11.89±4.12		22.05±2.12		32.04±8.97	
Professional title			0.197		0.001		0.034
No Title	30(8.22)	10.9±5.22		21.56±2.40		33.2±9.56	
Junior	132(36.16)	12.77±4.01		22.73±1.87		34.35±9.37	
Intermediate	130(35.62)	12.16±4.24		21.81±2.12		31±9.75	
Associate Senior/Senior	73(20)	12.80±3.89		22.43±1.90		33.06±8.75	
Years of work experience			0.659		0.045		0.011
<5 years	93(25.48)	11.91±4.31		22.24±2.12		33.32±9.16	
5–10 years	106(29.04)	12.67±4.21		22.66±2.14		34.65±8.82	
10–15 years	76(20.82)	12.42±4.16		22.03±1.62		30.10±9.79	
>20 years	90(24.66)	12.58±4.13		21.94±2.16		32.38±9.86	
Family history of swallowing disorders			0.407		0.170		0.166
Yes	26(7.12)	13.03±4.82		22.65±2.44		35.34±9.14	
No	339(92.88)	12.35±4.15		22.22±2.02		32.61±9.48	
Type of Hospital You Work			0.021		<0.001		0.002
Public Tertiary	159(43.56)	13.00±3.84		22.67±1.80		34.69±9.12	
Public Secondary	65(17.81)	12.73±4.18		22.86±2.17		33.63±8.88	
Public Primary	126(34.52)	11.84±4.17		21.63±2.01		30.40±9.66	
Private Hospital	15(4.11)	9.33±6.21		20.26±2.12		29.46±9.75	
Teaching hospital			0.072		<0.001		0.010
Yes	218(59.73)	12.76±3.97		22.60±1.91		34.01±9.05	
No	147(40.27)	11.87±4.47		21.72±2.15		31.02±9.84	

sticking in the mouth or throat, coughing or choking while eating or drinking, altered eating habits, an inability to swallow certain foods, the need for extra liquids to moisten food or assist with swallowing, a hoarse or muffled voice, frequent oral clearing, difficulty or pain while chewing, recurrent pneumonia, unexplained fever, and weight loss. (K3)

Table 2 Correlation Analysis of Knowledge, Attitude, and Practice

	Knowledge	Attitude	Practice
Knowledge	1		
Attitude	0.329 (P<0.001)	1	
Practice	0.375 (P<0.001)	0.309 (P<0.001)	1

with 97.81%; and

> Swallowing disorders are a common clinical symptom, and various conditions can lead to swallowing difficulties, including central nervous system diseases, peripheral neuropathies, neuromuscular junction disorders, muscular conditions, structural abnormalities in the oropharynx, diseases of the digestive and respiratory systems, and postoperative or post-radiation therapy in patients with oropharyngeal problems. (K2)

with 97.53%. On the other hand, the two questions with the highest number of participants opting for the "Unclear" were:

> For patients who can partially ingest orally, using gels to encapsulate medications and ensuring safe ingestion can be a suitable choice to ensure both therapeutic efficacy and safety during meals. (K9)

with 12.05%; and

> Various screening methods for swallowing disorders, including the teste such as: repetitive saliva-swallowing, the water swallow and, the modified water swallow, an eating assessment questionnaire survey, and the Toronto Bedside Swallowing Screening Test, can be employed. (K6)

with 11.23%. These results showed that participants' overall knowledge was high (Table S1).

General practitioners' responses to the attitude dimension of swallowing disorders varied, with 65.75% agreeing that swallowing disorders can affect patients' quality of life and that patients should be actively helped recover (A1). However, more than half of them (50.41%) did not hold the nurse as the first responsible person, instead of the doctor (A2). Of more significant concern is that 92.6% of the participants agreed that nutritional management requires a professional dietitian's involvement, but current conditions cannot meet the demand (A4). Encouragingly, > 90% of the participants had positive attitudes towards the preventability of diseases and patient concerns (A3), active learning of new knowledge and technology (A5), and knowledge dissemination or health promotion for disease-related prevention (A6) (Table S2). Concerning the practice of swallowing disorders, 63.83%, 53.7%, and 52.33% of participants indicated that they always or frequently asked for a comprehensive history and condition of the patient (P3), managed the patient's nutrition (P7), and provided guidance on the patient's rehabilitative care (P10), respectively. On the other hand, conducting volume-viscosity swallow tests (V–VST) as part of bedside eating assessments for all patients (P4, 32.05%), recommending patients for swallowing fluoroscopy and flexible endoscopic evaluation of swallowing (FEES) (P6, 33.15%), and directly assessing the swallowing ability of patients capable of oral intake (P5, 39.45%), were all practiced with a high frequency by ≤ 40% of participants (Table S3).

According to the results of the correlation analysis, knowledge was positively correlated with attitude ($r = 0.329$, $P < 0.001$) and practice ($r = 0.375$, $P < 0.001$), while attitude was also positively correlated with practice ($r = 0.309$, $P < 0.001$) (Table 2).

According to multivariate analysis, none of the factors was independently associated with good knowledge (Table 3). Moreover, knowledge score (OR = 1.19, 95% CI: [1.12–1.27], $P < 0.001$) was independently associated with a positive attitude while working in a private hospital (OR = 0.13, 95% CI: [0.03–0.56], $P = 0.026$) was independently associated with a negative attitude (Table 4). Furthermore, knowledge score (OR = 1.13, 95% CI: [1.07–1.20], $P < 0.001$) and attitude score (OR = 1.19, 95% CI: [1.05–1.36], $P = 0.005$) were also independently associated with proactive practice (Table 5).

Table 3 Analysis of Factors Affecting Good Knowledge

Knowledge	Univariate Analysis	
	OR (95% CI)	**P**
Gender		
Male	Ref.	
Female	0.84(0.54,1.30)	0.458
Age (years)	1.01(0.99,1.04)	0.158
Age (group)		
<45	Ref.	
≥45	1.19(0.71,1.99)	0.496
Residence		
Rural	Ref.	
Urban	1.19(0.72,1.94)	0.489
Suburban	0.50(0.18,1.35)	0.174
Education		
College/Technical School and below	Ref.	
Bachelor's	1.03(0.55,1.95)	0.91
Master's and above	0.79(0.37,1.70)	0.559
Professional title		
No Title	Ref.	
Junior	1.67(0.74,3.79)	0.216
Intermediate	1.57(0.69,3.57)	0.277
Associate Senior/Senior	1.98(0.82,4.74)	0.125
Years of work experience		
<5 years	Ref.	
5–10 years	1.56(0.88,2.73)	0.121
10–15 years	1.44(0.78,2.66)	0.235
>20 years	1.51(0.84,2.71)	0.165
Family history of swallowing disorders		
Yes	Ref.	
No	0.67(0.29,1.50)	0.333
Type of Hospital You Work		
Public Tertiary	Ref.	
Public Secondary	1.04(0.58,1.85)	0.89
Public Primary	0.66(0.41,1.07)	0.095
Private Hospital	0.32(0.09,1.06)	0.063

(*Continued*)

Table 3 (Continued).

Knowledge	Univariate Analysis	
	OR (95% CI)	**P**
Teaching hospital		
Yes	Ref.	
No	0.68 (0.44,1.04)	0.077

Table 4 Analysis of Factors Affecting Positive Attitude

Attitude	Univariate Analysis		Multivariate Analysis	
	OR (95% CI)	**P**	**OR (95% CI)**	**P**
Knowledge score	1.21(1.13,1.28)	<0.001	1.19(1.12,1.27)	<0.001
Gender				
Male	Ref.			
Female	1.51(0.96,2.40)	0.073		
Age (years)	0.99(0.97,1.02)	0.832		
Age (group)				
<45	Ref.			
≥45	0.88(0.51,1.51)	0.654		
Residence				
Rural	Ref.			
Urban	0.97(0.57,1.66)	0.939		
Suburban	0.58(0.22,1.49)	0.263		
Education				
College/Technical School and below	Ref.			
Bachelor's	1.28(0.65,2.50)	0.461		
Master's and above	0.92(0.42,2.03)	0.85		
Professional title				
No Title	Ref.		Ref.	
Junior	2.49(1.09,5.69)	0.03	1.68(0.65,4.34)	0.276
Intermediate	1.11(0.49,2.47)	0.797	0.82(0.32,2.09)	0.693
Associate Senior/Senior	2.02(0.83,4.91)	0.118	1.31(0.47,3.59)	0.599
Years of work experience				
<5 years	Ref.			
5–10 years	1.69(0.91,3.15)	0.093		
10–15 years	0.80(0.42,1.50)	0.497		
>20 years	1.04(0.56,1.93)	0.878		

(*Continued*)

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Table 4 (Continued).

Attitude	Univariate Analysis		Multivariate Analysis	
	OR (95% CI)	P	OR (95% CI)	P
Family history of swallowing disorders				
Yes	Ref.			
No	0.61(0.24,1.57)	0.313		
Type of Hospital You Work				
Public Tertiary	Ref.		Ref.	
Public Secondary	0.86(0.43,1.70)	0.673	0.86(0.40,1.83)	0.711
Public Primary	0.36(0.21,0.60)	<0.001	0.50(0.24,1.00)	0.053
Private Hospital	0.10(0.03,0.34)	<0.001	0.13(0.03,0.56)	0.006
Teaching hospital				
Yes	Ref.		Ref.	
No	0.48(0.31,0.76)	0.002	0.87(0.46,1.64)	0.684

Table 5 Analysis of Factors Affecting Proactive Practice

Practice	Univariate Analysis		Multivariate Analysis	
	OR (95% CI)	P	OR (95% CI)	P
Knowledge score	1.15(1.09,1.22)	<0.001	1.13(1.07,1.20)	<0.001
Attitude score	1.30(1.16,1.46)	<0.001	1.19(1.05,1.36)	0.005
Gender				
Male	Ref.			
Female	0.85(0.54,1.32)	0.481		
Age (years)	0.98(0.95,1.00)	0.13		
Age (group)				
<45	Ref.			
≥45	0.89(0.52,1.50)	0.67		
Residence				
Rural	Ref.			
Urban	0.85(0.52,1.41)	0.547		
Suburban	1.22(0.48,3.08)	0.671		
Education				
College/Technical School and below	Ref.			
Bachelor's	0.83(0.44,1.58)	0.585		
Master's and above	0.48(0.22,1.06)	0.072		

(*Continued*)

Table 5 (Continued).

Practice	Univariate Analysis		Multivariate Analysis	
	OR (95% CI)	**P**	**OR (95% CI)**	**P**
Professional title				
No Title	Ref.		Ref.	
Junior	1.14(0.51,2.52)	0.742	0.74(0.30,1.83)	0.523
Intermediate	0.47(0.20,1.06)	0.07	0.40(0.14,1.16)	0.092
Associate Senior/Senior	0.79(0.33,1.87)	0.604	0.62(0.17,2.16)	0.457
Years of work experience				
<5 years	Ref.		Ref.	
5–10 years	0.99(0.57,1.74)	0.999	1.16(0.58,2.29)	0.666
10–15 years	0.47(0.24,0.90)	0.023	0.71(0.29,1.76)	0.467
>20 years	0.70(0.39,1.27)	0.247	0.99(0.36,2.67)	0.988
Family history of swallowing disorders				
Yes	Ref.			
No	0.66(0.29,1.47)	0.311		
Type of Hospital You Work				
Public Tertiary	Ref.		Ref.	
Public Secondary	1.15(0.64,2.06)	0.617	1.08(0.56,2.05)	0.812
Public Primary	0.61(0.37,0.99)	0.049	0.96(0.55,1.66)	0.893
Private Hospital	0.84(0.28,2.49)	0.764	1.50(0.45,5.02)	0.506
Teaching hospital				
Yes	Ref.			
No	0.76(0.49,1.17)	0.223		

Discussion

The current study revealed that general practitioners exhibited a moderate level of knowledge, attitude, and practice regarding swallowing disorders. Our findings highlight the opportunity to improve clinical practices among general practitioners in the context of swallowing disorders. It is recommended to implement targeted educational interventions, specifically tailored to address the identified knowledge gaps.

The present study revealed that general practitioners exhibit moderate knowledge, attitude, and practice toward swallowing disorders, indicating a baseline understanding of practitioners' proficiency in managing this clinical domain, which is consistent with previous research, suggesting widespread moderate competence among general practitioners regarding specialist care.[17] This consistency reinforces the idea that interventions to enhance clinical practice can be effectively implemented, addressing common knowledge and practice gaps observed across studies.

The observed variability in attitude and practice scores among practitioners with different professional titles, years of work experience, and hospital teaching status may be attributed to variations in exposure to relevant training and experiences. Accordingly, it is imperative to consider these nuances in designing interventions.[12,18] For instance, tailoring

educational programs based on the practitioners' professional titles and experience levels may address specific gaps and promote a more standardized approach to managing swallowing disorders.[19]

Our results revealed positive correlations among knowledge, attitude, and practice, highlighting the interconnected nature of these domains. These findings emphasize the importance of a holistic approach to interventions. As enhancing knowledge alone may not be sufficient, it is necessary to concurrently focus on cultivating positive attitudes and encouraging proactive practices.[20,21] Continuous medical education programs should integrate components addressing this multifaceted relationship, thus fostering a comprehensive and effective approach to managing swallowing disorders.[22,23]

The multivariate analysis highlighted factors independently associated with attitude and proactive practice. Notably, practitioners' work settings emerged as a significant factor, with private hospital affiliation being associated with a negative attitude. This unexpected finding prompts consideration of the factors contributing to this disparity. Further explorations into private hospitals' working conditions, resource availability, and organizational culture are warranted. Interventions to improve clinical practice should tailor strategies to address these specific challenges in private hospital settings, thus fostering a more positive and proactive approach among practitioners.[10,20]

The assessment of general practitioners' knowledge regarding swallowing disorders revealed strengths and notable deficiencies. While a significant portion recognized basic characteristics and clinical manifestations of swallowing disorders, there were notable gaps in understanding specific screening methods and the importance of routine screening, particularly in populations like stroke patients and frail elderly individuals. This aligns with previous study underscoring variations in practitioners' awareness and knowledge across different dimensions of medical conditions.[11] To address these limitations and improve clinical practice, targeted educational initiatives should focus on enhancing practitioners' understanding of comprehensive screening methodologies and the significance of routine screening in high-risk populations.[24,25] Additionally, interventions should emphasize the crucial role of compensatory methods in swallowing rehabilitation and the nuanced considerations in nutrition management for individuals with swallowing disorders.[26–28] To address these limitations and enhance clinical practice, specific educational interventions should be implemented through several approaches. First, structured continuing medical education programs should be developed, incorporating case-based learning and hands-on training sessions. These programs should focus on screening methodologies, early recognition of swallowing disorders, and standardized assessment protocols. Second, regular workshops and seminars can be organized, featuring interdisciplinary collaboration between general practitioners, speech therapists, and nutritionists to share expertise and best practices. Third, the implementation of standardized clinical pathways and decision-support tools can help guide practitioners in their daily practice. Based on previous studies, such educational interventions have shown promising results in improving healthcare providers' knowledge and practices. For instance, implementation of structured training programs has led to significant improvements in early detection rates and appropriate referral patterns for swallowing disorders.[24,25] Additionally, interdisciplinary educational approaches have demonstrated enhanced outcomes in terms of both practitioner confidence and patient care quality.[26–28] Emphasizing integrating these elements into clinical training programs can contribute to a more holistic and informed approach to the management of swallowing disorders.

Examining general practitioners' attitudes toward swallowing disorders illuminated positive and concerning perspectives within the healthcare community. A majority acknowledged the significant impact of swallowing disorders on patients' quality of life and recognized the importance of actively seeking treatment options for their recovery. However, a noteworthy proportion believed that swallowing disorders should be primarily assessed by nurses rather than physicians, potentially indicating a division of responsibilities that may require clarification to ensure comprehensive patient care. Moreover, recognizing that some swallowing disorders can be preventable is encouraging; however, there is a perceived gap in the involvement of dietitians in nutritional management, indicating a need for improved interdisciplinary collaboration. Practitioners expressed a willingness to proactively learn and stay updated on advancements in the field, emphasizing the importance of continuous education. In order to promote these attitudes and enhance clinical practice, initiatives should focus on clarifying the roles of healthcare professionals in assessments of swallowing disorders, fostering interdisciplinary collaboration, and promoting ongoing education to ensure practitioners remain abreast of evolving knowledge and technologies.[20,29]

Assessing general practitioners' practices in managing swallowing disorders unveiled a spectrum of adherence to recommended clinical actions. While a notable proportion indicated regular screening for high-risk individuals, a concerning gap emerged in consistent clinical swallowing assessments for confirmed or suspected cases, potentially impeding timely interventions. Similarly, variations were observed in the thoroughness of obtaining patient history and related information, which are essential for a comprehensive understanding of the patient's condition. Practices related to instrumental assessments, such as volume-viscosity swallow tests, swallowing fluoroscopy, and flexible endoscopic evaluation of swallowing, revealed fluctuations, underscoring the need for standardized protocols. Furthermore, inconsistencies in providing nutritional management, administering treatments to enhance swallowing function, and recommending compensatory methods revealed potential areas for improvement in the overall care continuum. Initiatives to enhance clinical practice should prioritize standardized training on comprehensive assessments, emphasizing the importance of instrumental evaluations and promoting interdisciplinary collaboration to ensure holistic patient care.[14,30,31] These recommendations are consistent with studies emphasizing the necessity of standardized protocols and interdisciplinary collaboration in improving outcomes for patients with swallowing disorders.[15]

A significant limitation of this study is its reliance on self-reported data, introducing the potential for response bias. General practitioners may provide socially desirable answers, impacting the accuracy of the information collected. Additionally, this study primarily focuses on general practitioners, potentially overlooking the contributions of other key medical professionals, such as ENT doctors and speech-language pathologists, in diagnosing and managing swallowing disorders. Future research will explore these groups to gain new insights and further enrich the understanding of this domain. To mitigate these biases in future studies, a multi-center design involving a broader population of healthcare professionals across various medical disciplines will be considered. Moreover, the study lacks intervention research to evaluate the effectiveness of educational measures. Future research will focus on implementing targeted interventions, such as training sessions and lectures for practitioners, and assessing their outcomes. A quasi-experimental design is being considered to achieve these goals. This approach may enhance generalizability and reduce potential biases. Additionally, the cross-sectional design hinders the establishment of causal relationships between variables, offering only a snapshot of practitioners' knowledge, attitudes, and practices at a specific point. Consequently, it cannot capture changes over time. Furthermore, the findings may lack generalizability beyond the surveyed period, highlighting the value of longitudinal research for a more comprehensive understanding.

Conclusion

In conclusion, general practitioners demonstrated a moderate level of knowledge, attitude, and practice concerning swallowing disorders. Enhancing clinical practice in this context necessitates targeted education to address knowledge gaps, the implementation of continuous medical education programs, and a focus on the importance of early intervention. Recognizing the vital role of positive attitudes, given their correlation with knowledge and proactive practices, underscores the need for interventions aimed at fostering supportive healthcare environments, taking into account the influence of work settings on attitudes.

List of Abbreviations

GPs, General practitioners; KAP, Knowledge, Attitudes, and Practices; SD, standard deviation; V-VST, volume-viscosity swallow test; FEES, flexible endoscopic evaluation of swallowing.

Data Sharing Statement

All data generated or analysed during this study are included in this published article and its Supplementary Information files.

Ethics Approval and Consent to Participate

This work has been carried out in accordance with the Declaration of Helsinki (2000) of the World Medical Association. The study obtained ethical approval from the Institutional Review Board of Guizhou Provincial People's Hospital (Lun Shen (Scientific Research) 2023049), and all participants provided informed consent.

Author Contributions

All authors made a significant contribution to the work reported, whether that is in the conception, study design, execution, acquisition of data, analysis and interpretation, or in all these areas; took part in drafting, revising or critically reviewing the article; gave final approval of the version to be published; have agreed on the journal to which the article has been submitted; and agree to be accountable for all aspects of the work.

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Disclosure

The authors declare no competing interests in this work.

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