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The awareness and knowledge of dysphagia among health care practitioners in Egypt

Aisha Fawzy Abdel Hady*, Heba Mahmoud Farag and Ayatallah Raouf Sheikhany

Abstract

Background There is a lack of research relating to awareness associated with dysphagia-specific knowledge of health care practitioners in Egypt. The study aimed at determining the level of awareness and knowledge of dysphagia among health care practitioners in Egypt to detect the pitfalls to be addressed through awareness-raising programs.

Methods A questionnaire was distributed online to be filled in by health care practitioners apart from those with the highest knowledge about dysphagia as otolaryngologists, phoniaticians, and gastroenterologists. It consists of 4 sections including sociodemographic data, the participants' level of awareness and knowledge about dysphagia through questions about dysphagia identification, symptoms and signs, and complications, data about the practice of dysphagia in their hospitals, and their level of awareness and knowledge of the role played by the phoniaticians in dysphagia management in addition to the availability of this specialty in their centers.

Results Forty-seven percent of the participants rated themselves as having moderate to high contact with dysphagia cases. Sixty-six percent of the participants did not receive training in dysphagia. Only 18.1% of the participants indicated the presence of a dysphagia clinic in their institute. Forty percent of the participants refer dysphagia cases to GIT followed by 37.8% of the participants refer to ENT then 18.6% of them refer to Phoniaticians. Forty-six percent of the participants do not know the investigations work-up for dysphagia.

Conclusion Egyptian health care practitioners in the Greater Cairo area encountered in this study differ in their knowledge and awareness level about dysphagia according to their specialties and their degree of contact with dysphagia cases. Minimal awareness was found in specialties with low contact. Fair awareness was found in specialties with moderate to high contact with dysphagia cases. There was insufficient knowledge about non-overt symptoms and signs of dysphagia, the widely used investigations, and the role of phoniaticians in dealing with dysphagia cases. Neurology was the specialty with a relatively higher awareness.

Keywords Awareness and knowledge, Phoniaticians, ENT, Dysphagia

Background

Dysphagia refers to problems in transferring liquid or food from the mouth to the stomach [1]. It also refers to difficulties in any of the four phases of the swallowing process, i.e., the oral preparatory, oral, pharyngeal, and

esophageal phases. Dysphagia may appear with solid or liquid intake [2].

Dysphagia can be caused by acute neurological fallouts, degenerative conditions, various cancers [3], and trauma-related injuries [4]. These disorders affect patients of all ages, and the prevalence increases in the elderly population not only due to aging process but also affected by stroke and neurodegenerative diseases including skeletal disorders [5, 6]. The consequences of dysphagia include aspiration [7].

Although some clinical signs, like coughing, help in the diagnosis of aspiration, silent aspiration may occur

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[8], which, being asymptomatic, may remain undetected by observation [9]. This may lead to aspiration pneumonia [7]. Dysphagia patients have a higher rate of pneumonia compared to those without dysphagia (29.7% vs. 3.7%). Dysphagia can reduce patients' quality of life and increase hospital stays, socio-sanitary charges, and the risk of mortality [10, 11]. Limited food and fluid intake to avoid aspiration in patients with liquid dysphagia may lead to the onset of malnutrition and dehydration [12].

Dysphagia management is typically implemented by phoniatricians and speech-language pathologists (SLPs) and includes the identification, assessment, and management of swallowing difficulties, in addition to the prevention of related secondary medical complications [13].

An interprofessional health model, where medical workers of different services provide comprehensive health services for patients, is recommended by the WHO [14]. It leads to improved coordination of health services and better health outcomes [15].

Awareness in dysphagia refers to the knowledge in identifying the presenting signs and symptoms of dysphagia with information regarding acute or chronic signs of aspiration. This is vital as awareness of dysphagia signs affects actions taken and referral to other health care practitioners. In addition, each specialty must possess awareness and value the contributions and perspectives of other professionals in interprofessional collaboration [16]. Having adequate levels of training is also vital to the execution of clinical responsibilities and the provision of quality services by health care practitioners [17].

Obviously, the presence of a team is important in raising awareness, developing consistent assessment protocols with shared goals, and appropriate intervention [18]. Sometimes, the interprofessional collaboration is not a consistently viable option because of insufficient coordination between health care professionals along with a lack of physical resources [19].

There is a lack of research relating to awareness associated with dysphagia-specific knowledge of health care practitioners in Egypt. So, this study is a trial to show if there is still a need for the implementation of guidelines and/or protocols for the management of patients with dysphagia, with the aim of promoting the training of different health care practitioners. It will help highlight the future clinical needs of these professionals with respect to dysphagia to improve their approach to patients with this condition in order to help refer the dysphagic patients to a qualified specialist. Then, the phoniatricians will need to share effective methods in raising awareness about the dysphagia practice to ultimately improve service delivery.

This study aimed at determining the level of awareness and knowledge of dysphagia among health care practitioners in the Greater Cairo area in Egypt in order to

detect if there are any pitfalls that need to be addressed through awareness-raising programs to ensure adequate referral and establish efficient quality services in the management of the dysphagia cases.

Methods

Population of study

The study involved 188 health care practitioners with different levels of contact with dysphagia cases in governmental and private hospitals in the Greater Cairo area in Egypt. The study was approved by the ethical committee of otolaryngology and the ethical committee of the Faculty of Medicine with a reference number N-84-2022. The study was conducted in the period from May to September 2022. They included neurologists, physiotherapists, internal medicine physicians, pediatricians, and from other specialties based on the following inclusion and exclusion criteria.

Inclusion criteria

Participants should be graduated and post-graduated health care practitioners dealing with dysphagia cases in their medical practice. They should be Egyptian health care providers who work in Egyptian hospitals.

Exclusion criteria

Those with higher awareness about dysphagia practice include ear, nose, and throat physicians including phoniatricians in addition to gastroenterologists.

Methodology in details

A number of 3 phoniatricians designed the questionnaire about the awareness and knowledge of dysphagia. There is no standardized questionnaire found in the literature about the health care practitioners' dysphagia awareness and knowledge so the questions were based on the doubts and questions of health care professionals whom phoniatricians deal with in their clinical practice and guided by previous researches such as Xinyi et al. [20] and Sánchez-Sánchez et al. [21].

The questionnaire was divided into four sections (see Additional file 1).

- *The first section* was to collect sociodemographic data about the participants; their age, sex, specialty, if they received academic and/or professional guidance in dysphagia and if they dealt with dysphagia cases in their practice in addition to determining the degree of their contact with dysphagia cases high, moderate, or low, the role of the participants in dysphagia management, and if they received academic/ professional training in dysphagia. The question of "dealing with dysphagia cases in their medical practice" was man-

datory to be answered with “yes” in order to further proceed filling in the questionnaire. The participants were divided according to their grade of contact with dysphagia into two groups; those with moderate to high contact and other specialties with low contact.

- *The second section* was to collect data about the participants’ level of awareness and knowledge about dysphagia through questions about dysphagia identification, symptoms, signs, and complications.
- *The third section* was to collect data about the practice of dysphagia in the participants’ hospitals; the specialty they refer dysphagia cases to, the presence of a swallowing clinic in their institute, the used questionnaires, screening tests, dysphagia investigations, and the management regimens.
- *The fourth section* was to collect data about the participants’ level of awareness and knowledge of the role played by the phoniaticians in dysphagia management and the availability of this specialty in their centers.

The survey design was created using the free access google form application, and the link of the Google form online survey was sent to the health care practitioners. It was conducted in English as the participants were from the medical field and English is the language used in daily medical practice.

Before distributing the link, a pilot study was done on a number of 10 health care practitioners to ensure the applicability of the survey and that the items were comprehended easily. No modifications were needed as the questions were sufficiently understandable.

Then, the link was distributed among the health care practitioners. In order to guarantee the dissemination of the questionnaire, social platforms such as Twitter, Facebook, WhatsApp, and Instagram were used. The data were collected and then statistically analyzed.

Statistical analysis

All collected data was revised for completeness and accuracy. Pre-coded data was entered on the computer using the statistical package of the Social Science software program, version 26 (SPSS) to be statistically analyzed. Data was summarized using mean and SD for quantitative variables and number and percent for qualitative variables.

Comparison between qualitative variables was done using the chi-square test, while independent *T* test for

quantitative variable which was normally distributed and nonparametric Mann-Whitney tests for quantitative variables which was not normally distributed. One-way ANOVA was used to compare the quantitative variables between more than two categories for quantitative variables which was normally distributed and nonparametric Kruskal-Wallis tests for quantitative variables which was not normally distributed. *P* value < 0.05 was considered significant.

The sample size was calculated using “statistics and sample size pro” considering the following data: The proportion of the participants that did not know the Eating Assessment Tool (EAT-10) dysphagia screening test was 39.2% (19) with an alpha error of 0.05, and the power of the study was 95%. So, the sample should include at least 90 participants, and after adding 10% for the risk of non-respondents, the sample size was at least 100 participants.

Results

Section I

Sociodemographic data

The sociodemographic data of participants under study showed that 54.8% of the participants were females and 45.2% were males. The highest percentage was 56.4% of the participants aged between 25 and 35 years old followed by 36.7% aged between 35 and 45 years old and the remaining of the participants aged above 45 years old. All participants were from the Greater Cairo area including 72.3% from Cairo, and 27.7% were from Giza. About 46.8% of the participants work in hospitals only, 33% of them work in more than one place, and the remaining either work in clinics or universities.

The specialties participated in the study included the following: 47.3% of the participants were of high to moderate contact with dysphagia cases. They involved 17% physiotherapists, 13.8% internal medicine physicians, 12.2% neurologists, and 4.3% pediatricians, and the remaining 52.7% were of other specialties of lower contact with dysphagia cases. They included 10.1% family medicine, 10.1% surgery, 7.5% rheumatology, 7.4% clinical pathology, 5.4% endocrinology, and 4.3% radiology, and the remaining were specialized in obstetrics and psychiatry in addition to general practitioners.

Percentages of responses of the participants regarding their role in dysphagia management

About 48.9% of the participants refer cases to ENT, 39.9% of them conduct an assessment of patients with dysphagia, 35.1% recommend the safest diet and the healthy lifestyle, 33% of them conduct swallowing screening test, and then 32.45% of them refer cases to phoniaticians (Fig. 1).

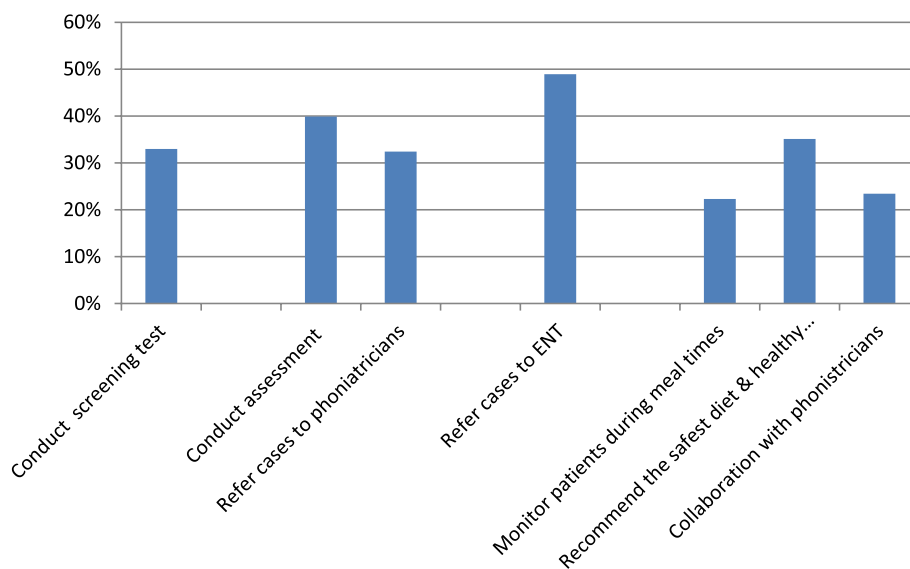


Fig. 1 The percentages of responses of the participants regarding their role in dysphagia management

Percentages of receiving academic and/or professional training in dysphagia in different specialties

The majority 66% of the participants did not receive training in dysphagia. The higher percentages of getting trained were in the following specialties: 59.4% physiotherapy followed by 56.5% neurology followed by 50% internal medicine, then the lower percentages were in specialties of low contact with dysphagia cases and pediatrics (Fig. 2).

Section II

Level of awareness of dysphagia symptoms, signs, and complications

Comparison among the participants in different specialties regarding their responses about dysphagia symptoms, signs, and complications About 46.3% of the participants suspected dysphagia by the presence of the sign of difficult swallowing, 35.6% of them by history and the disease type of the cases then 14.9% of them by the presence of bulbar symptoms and signs such as choking and

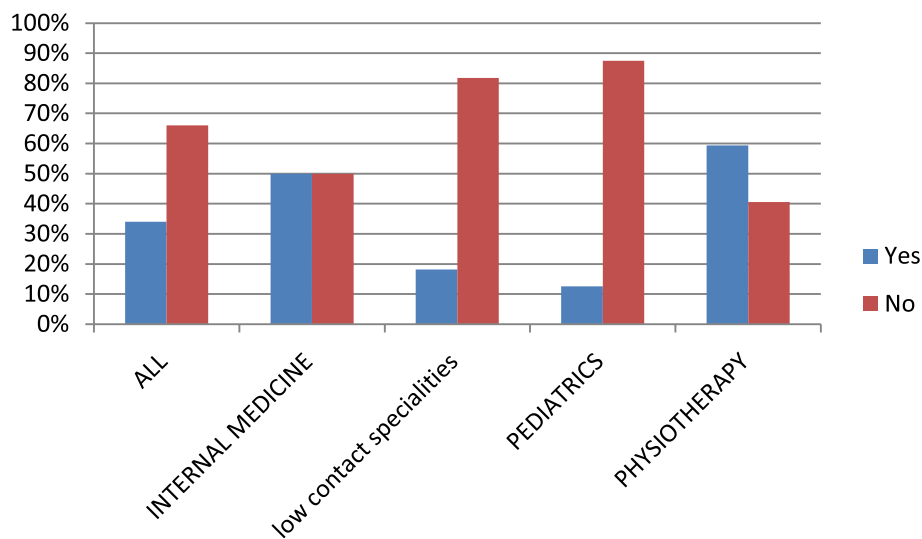


Fig. 2 Percentages of receiving academic and/or professional training in dysphagia in different specialties

aspiration. The least percentages were suspecting dysphagia by the presence of GIT symptoms, signs of dehydration and malnutrition, and change of voice.

There was a significant difference among different specialties regarding suspecting dysphagia by the presence of weight loss (p value= 0.026) with a higher percentage in internal medicine and neurology then specialties with low contact. There was a significant difference among different specialties regarding suspecting dysphagia by the presence of chest infection (p value = 0.027) with a higher percentage in neurology then specialties with low contact. There was a significant difference among different specialties regarding suspecting dysphagia by the presence of bulbar symptoms and signs (p value = 0.014) with a higher percentage in physiotherapy, neurology, and specialties with low contact. There was a significant difference among different specialties regarding suspecting dysphagia by history and disease type (p value = 0.017) with higher percentages in specialties with low contact followed by physiotherapy then internal medicine (Table 1).

Percentages and comparison among participants in different specialties regarding their responses about the identification of dysphagia Fifty percent of the participants depend on combining questioning the patient and asking him/her to ingest or drink something while 46.3% of them depend only on questioning the patient. There was a significant difference among the participants in various specialties regarding the identification of dysphagia through questioning the patient (p value = 0.006) with a higher percentage in pediatrics followed by specialties with low contact with dysphagia. There was a significant

difference among the participants in various specialties regarding the identification of dysphagia through combining the two methods of questioning the patient and asking him to ingest or drink something (p value = <0.0001) with higher percentages by neurologists followed by physiotherapists and pediatrics (Table 2).

Percentages and comparison among the participants in different specialties regarding their responses about the indicative symptoms and signs of dysphagia About 92% of the participants identified difficulty in swallowing and/or feeling of food stuck in the throat as indicative of dysphagia followed by coughing or choking while eating then weight loss. There was a significant difference among the responses of the participants in different specialties regarding identifying coughing or choking while eating, as indicative of dysphagia (p value= <0.001) with higher percentages by pediatrics followed by neurology then physiotherapy. There was a significant difference among participants regarding choking on saliva during non-meals (p value= <0.001), and anterior leakage (drooling) (p value= <0.001) as indicative of dysphagia with higher percentages by pediatrics followed by physiotherapy then neurology.

There was a significant difference among participants regarding identifying oral residue (p value= <0.001) and if the texture of drinks/food may influence the ability to swallow (p value=0.045) as indicative of dysphagia with higher percentages by physiotherapy, neurology, and pediatrics.

There was significant difference among participants regarding identifying a change in the voice and/or

Table 1 Comparison among the participants in different specialties regarding their responses about dysphagia symptoms, signs, and complications

	All (N%)	Internal medicine (N=26)	Other specialties with low contact (N=99)	Pediatrics (N=8)	Neurology (N=23)	Physiotherapy (N=32)	P value
Weight loss	10 (5.3%)	4 (15.4%)	3 (3%)	0 (0%)	3 (13%)	0 (0%)	0.026*
GIT symptoms	2 (1.1%)	0 (0%)	2 (2%)	0 (0%)	0 (0%)	0 (0%)	0.63
Chest infections	9 (4.8%)	1 (3.8%)	3 (3%)	1 (12.5%)	4 (17.4%)	0 (0%)	0.027*
Difficult swallowing	87 (46.3%)	12 (46.2%)	44 (44.4%)	6 (75%)	11 (47.8%)	14 (43.8%)	0.59
Bulbar symptoms/choking/aspiration/GERD	28 (14.9%)	3 (11.5%)	8 (8.1%)	2 (25%)	7 (30.4%)	8 (25%)	0.014*
Signs of dehydration/malnutrition	2 (1.1%)	1 (3.8%)	1 (12.5%)	0 (0%)	0 (0%)	0 (0%)	0.64
Change in voice	2 (1.1%)	2 (7.7%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0.071
By history/disease type	67 (35.6%)	7 (26.9%)	43 (43.4%)	0 (0%)	4 (17.4%)	13 (40.6%)	0.017*

GIT gastrointestinal, GERD gastro-esophageal reflux

*Significant P value <0.05

Table 2 Percentages and comparison among participants in different specialties regarding their responses about the identification of dysphagia

	All (N%)	Internal medicine (N=26)	Other specialties with low contact with dysphagia cases (N=99)	Pediatrics (N=8)	Neurology (N=23)	Physiotherapy (N=32)	P value
By questioning the patient	87 (46.3%)	14 (7.7%)	54 (54.5%)	5 (62.5%)	5 (21.7%)	9 (28.1%)	*0.006
By asking the patient to ingest a drink or some food	36 (19.1%)	5 (19.2%)	17 (17.2%)	3 (37.5%)	6 (26.1%)	5 (15.6%)	0.51
By combining the two previous measures	94 (50%)	11 (42.3%)	35 (35.4%)	5 (62.5%)	22 (95.7%)	21 (65.6%)	*<0.0001
Do not know	16 (8.5%)	2 (7.7%)	12 (12.1%)	0 (0%)	0 (0%)	2 (6.25%)	0.428

*Significant P value <0.05

frequent clearance after drinking or eating (*p* value= 0.001) as indicative of dysphagia with higher percentages by neurology, physiotherapy, and pediatrics.

swallowing ability (*p* value= 0.005) as indicative of dysphagia with higher percentages by physiotherapy, pediatrics, and neurology (Table 3).

There was a significant difference among participants regarding identifying poor chewing and poor tongue movement (*p* value= <0.001) and if posture influences

Percentages and comparison among the participants in different specialties regarding their responses about problems agreed to be complications of dysphagia The

Table 3 The percentages and comparison among the participants in different specialties regarding their responses about the indicative symptoms and signs of dysphagia

	All (N%)	Internal medicine (N=26)	Specialties with lower contact with dysphagia cases (N=99)	Pediatrics (N=8)	Neurology (N=23)	Physiotherapy (N=32)	P value
Difficulty in swallowing and/or feeling of food stuck in the throat	173 (92%)	23 (88.5%)	92 (92.9%)	8 (100%)	22 (95.7%)	28 (87.5%)	0.7
Coughing or choking while eating	108 (57.4%)	13 (50%)	45 (45.5%)	7 (87.5%)	19 (82.6%)	24 (75%)	*<0.001
Choking on Saliva during non-meals	56 (29.8%)	4 (15.4%)	18 (18.2%)	5 (62.5%)	10 (43.5%)	19 (59.4%)	*<0.001
Anterior leakage (drooling)	54 (28.7%)	4 (15.4%)	18 (18.2%)	6 (75%)	9 (39.1%)	17 (53.1%)	*<0.001
Oral residue	32 (17%)	2 (7.7%)	8 (8.1%)	2 (25%)	8 (34.8%)	12 (37.5%)	*<0.001
A change in the voice and/or frequent clearance after drinking or eating	57 (30.3%)	6 (23.1%)	22 (22.2%)	2 (25%)	16 (69.6%)	11 (34.4%)	*0.001
Poor chewing and poor tongue movement	46 (24.5%)	5 (19.2%)	10 (10.1%)	4 (50%)	8 (34.8%)	19 (59.4%)	*<0.001
The need for longer time to finish the meal	60 (31.9%)	7 (26.9%)	29 (29.3%)	4 (50%)	4 (17.4%)	16 (50%)	0.065
The need for multiple swallows each mouthful	55 (29.3%)	7 (26.9%)	27 (27.3%)	3 (37.5%)	7 (30.4%)	11 (34.4%)	0.89
If the texture of drinks/ food may influence the ability to swallow	68 (36.2%)	11 (42.3%)	27 (27.3%)	3 (37.5%)	9 (39.1%)	18 (56.3%)	*0.045
If posture influences swallowing ability	44 (23.4%)	5 (19.2%)	15 (15.2%)	3 (37.5%)	6 (26.1%)	15 (46.9%)	*0.005
Weight loss	85 (45.2%)	16 (61.5%)	40 (40.4%)	3 (37.5%)	10 (43.5%)	16 (50%)	0.37
Do not know	7 (3.7%)	0 (0%)	6 (6.1%)	0 (0%)	0 (0%)	1 (3.1%)	0.7

*Significant P value <0.05

higher percentage 78.2% of the participants agreed with malnutrition followed by 69.7% of participants agreed with aspiration then 67.6% of them agreed with pneumonia to be dysphagia complications. There was a significant difference among participants regarding an agreement with increased mortality (p value= <0.0001) as a complication of dysphagia with higher percentages by physiotherapy, followed by pediatrics then neurology. There was a significant difference among participants regarding an agreement with pneumonia (p value= 0.01) as a complication of dysphagia with higher percentages by pediatrics, neurology, then internal medicine. There was a significant difference among participants regarding an agreement with problems with digestion (p value= 0.026) as a complication of dysphagia with higher percentages by internal medicine, followed by pediatrics and physiotherapy. There was a significant difference among participants regarding an agreement with dehydration (p value= 0.003) as a complication of dysphagia with higher percentages by neurology, physiotherapy, and internal medicine. There was a significant difference among participants regarding an agreement with chest pain (p value= 0.028) as a complication of dysphagia with higher percentages by internal medicine, pediatrics, then specialties with lower contact with dysphagia cases (Table 4).

Section III

Level of awareness about the dysphagia practice in their institute

Percentages and comparison among the participants in different specialties regarding their responses about the

specialty to which dysphagia cases are referred About 40.4% of the participants refer dysphagia cases to GIT followed by 37.8% of the participants refer to ENT then 18.6% of them refer to phoniatics.

The comparison among the specialties showed that there was a significant difference regarding referring dysphagia cases to phoniatics (p value= <0.0001) with higher percentages by physiotherapy then neurology. There was a significant difference regarding referring dysphagia cases to neurology (p value= <0.0001) with higher percentages by physiotherapy. There was a significant difference regarding referring dysphagia cases to GIT (p value= <0.0001) with higher percentages by internal medicine followed by other specialties with low contact with dysphagia cases. There was a significant difference regarding referring dysphagia cases to pediatrics (p value= 0.043) and radiology (p value= 0.043) with higher percentages by pediatrics. There was no significant difference regarding referring dysphagia cases to ENT (p value= 0.32), nutrition (p value=0.47), surgery (p value= 0.23), and chest (p value= 0.86) (Table 5).

Percentages and comparison among participants in different specialties regarding their responses about the presence of a swallowing clinic in their institute Only 18.1% of the participants indicated the presence of a dysphagia clinic in their institute. There was a significant difference among the participants in different specialties regarding their responses about the presence of a dysphagia clinic in their institute (p value= 0.001) with higher percentages by neurology followed by internal medicine and physiotherapy (Fig. 3).

Table 4 The percentages and comparison among the participants in different specialties regarding their responses about problems agreed to be complications of dysphagia

	All (N%)	Internal medicine (N=26)	Specialties with lower contact with dysphagia cases (N=99)	Pediatrics (N=8)	Neurology (N=23)	Physiotherapy (N=32)	P value
Increased mortality	73 (38.8%)	6 (23.1%)	27 (27.3%)	5 (62.5%)	13 (56.5%)	22 (68.8%)	*<0.0001
Pneumonia	127 (67.6%)	19 (73.1%)	57 (57.6%)	8 (100%)	20 (87%)	23 (71.9%)	*0.01
Anaphylactic shock	9 (4.8%)	2 (7.7%)	4 (4%)	0 (0%)	0 (0%)	3 (9.4%)	0.49
General weakness	94 (50%)	14 (53.8%)	52 (52.5%)	4 (50%)	8 (34.8%)	32 (100%)	0.64
Problems with digestion	82 (43.6%)	16 (61.5%)	42 (42.4%)	4 (50%)	4 (17.4%)	16 (50%)	*0.026
Aspiration	131 (69.7%)	19 (73.1%)	60 (60.6%)	7 (87.5%)	20 (87%)	25 (78.1%)	0.054
Dehydration	86 (45.7%)	12 (46.2%)	37 (37.4%)	3 (37.5%)	19 (82.6%)	15 (46.9%)	*0.003
Chest pain	52 (27.7%)	10 (38.5%)	31 (31.3%)	3 (37.5%)	1 (4.3%)	7 (21.9%)	*0.028
Malnutrition	147 (78.2%)	19 (73.1%)	79 (79.8%)	8 (100%)	15 (56.2%)	26 (81.3%)	0.28
Hematemesis	10 (5.3%)	3 (11.5%)	4 (4%)	1 (12.5%)	1 (4.3%)	1 (3.1%)	0.32

*Significant P value <0.05

Table 5 Percentages and comparison among the participants in different specialties regarding their responses about the specialty to which dysphagia cases are referred

	All (N%)	Internal medicine (N=26)	Other specialties with low contact with dysphagia cases (N=99)	Pediatrics (N=8)	Neurology (N=23)	Physiotherapy (N=32)	P value
Phoniatrics	35 (18.6%)	3 (11.5%)	4 (4%)	1 (12.5%)	11 (47.8%)	16 (50%)	*<0.0001
ENT	71 (37.8%)	7 (26.9%)	43 (43.4%)	2 (25%)	10 (43.5%)	9 (28.1%)	0.32
Neurology	17 (9%)	1 (3.8%)	2 (2.02%)	1 (12.5%)	3 (13%)	10 (31.3%)	*<0.0001
GIT	76 (40.4%)	16 (61.5%)	49 (49.5%)	3 (37.5%)	6 (26.1%)	2 (6.25%)	*<0.0001
Nutrition	1 (0.5%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	1 (3.1%)	0.47
Pediatrics	3 (1.6%)	1 (3.8%)	0 (0%)	1 (12.5%)	0 (0%)	1 (3.1%)	*0.043
Surgery	8 (4.3%)	2 (7.7%)	5 (5.1%)	1 (12.5%)	0 (0%)	0 (0%)	0.23
Chest	1 (0.5%)	0 (0%)	1 (1%)	0 (0%)	0 (0%)	0 (0%)	0.86
Radiology	1 (0.5%)	0 (0%)	0 (0%)	1 (12.5%)	0 (0%)	0 (0%)	*0.043
Do not know	2 (1.1%)	0 (0%)	2 (2%)	0 (0%)	0 (0%)	0 (0%)	0.63

*Significant P value <0.05

Percentages and comparison among the participants in different specialties regarding the used swallowing tests or dysphagia investigations in their institute About 46.3% of them selected “don’t know”. There was a significant difference among participants regarding their choice of water test (p value= <0.0001), and FEES (p value= <0.0001), with higher percentages by neurology. There was a significant difference among participants regarding their choice of manometry (p value= 0.012) with higher percentages by pediatrics. There was a significant difference among participants regarding their choice of Dysphagia Handicap Index (p value= 0.002) with a higher percentage by physiotherapy. There was a significant difference among participants regarding their choice

of don’t know (p value= 0.001) with higher percentages by specialties with lower contact with dysphagia cases (Table 6).

Percentages and comparisons among the participants in different specialties regarding the management of dysphagia cases About 44.7% of them selected “No advice just refer the patient to another specialist” while 40.4% selected trying semi-liquid fluid. There was a significant difference among participants regarding their choice of trying semi-liquid fluid (p value= 0.003), changing the position while feeding the patient (p value= <0.0001), and “Do not swallow anything yet you need a feeding tube” (p value= <0.0001), with the higher percentage by

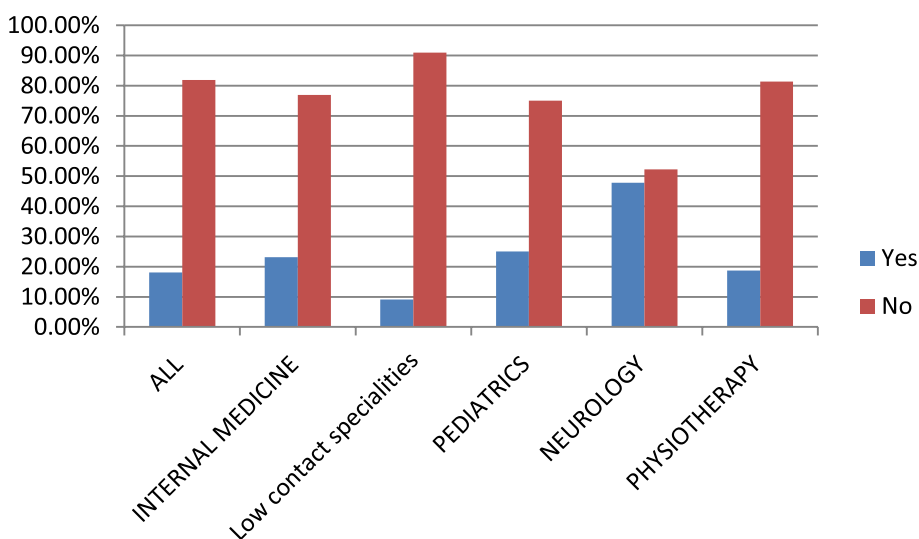


Fig. 3 Percentages and comparison among participants in different specialties regarding their responses about the presence of a swallowing clinic in their institute

Table 6 Percentages and comparison among the participants in different specialties regarding the used swallowing tests or dysphagia investigations in their institute

	All (N%)	Internal medicine (N=26)	Specialties with lower contact with dysphagia cases (N=99)	Pediatrics (N=8)	Neurology (N=23)	Physiotherapy (N=32)	P value
Water test	44 (23.4%)	3 (11.5%)	15 (15.2%)	1 (12.5%)	18 (78.3%)	7 (21.9%)	*<0.0001
Blue-dye test	14 (7.4%)	2 (7.7%)	7 (7.1%)	1 (12.5%)	2 (8.7%)	2 (6.25%)	0.89
FEES	50 (26.6%)	8 (30.8%)	11 (11.1%)	3 (37.5%)	16 (69.6%)	12 (37.5%)	*<0.0001
VFSS/Modified Barium study	36 (19.1%)	6 (23.1%)	14 (14.1%)	0 (0%)	6 (26.1%)	10 (31.3%)	0.1
Manometry	30 (16%)	7 (26.9%)	18 (18.2%)	3 (37.5%)	1 (4.3%)	1 (3.1%)	*0.012
Cine MRI	11 (5.9%)	3 (11.5%)	5 (5.1%)	0 (0%)	1 (4.3%)	2 (6.25%)	0.74
SWAL-QOL	5 (2.7%)	0 (0%)	4 (4%)	0 (0%)	0 (0%)	1 (3.1%)	0.93
EAT-10	5 (2.7%)	0 (0%)	3 (3%)	0 (0%)	0 (0%)	2 (6.25%)	0.6
Dysphagia handicap index	8 (4.3%)	2 (7.7%)	0 (0%)	0 (0%)	1 (4.3%)	5 (15.6%)	*0.002
Don't know	87 (46.3%)	10 (38.5%)	55 (55.6%)	4 (50%)	2 (8.7%)	16 (50%)	*0.001

SWAL-QOL Swallowing Quality of Life, FEES fiber-optic evaluation of swallowing), VFSS video-fluoroscopic swallowing study

*Significant P value <0.05

neurology. There was a significant difference among participants regarding their choice of “No advice just refer the patient to another specialist” (*p* value= <0.0001), with a higher percentage by specialties with lower contact with dysphagia cases (Table 7).

Section IV

Level of awareness and knowledge of the role played by the phoniaticians in dysphagia management and the availability of this specialty in their centers

Percentages and comparisons among the participants in different specialties regarding their responses about the presence of phoniatic specialty in their institute About 53.7% of them admitted the presence of the unit of

phoniaticians and 33% of them admitted its absence. There was a significant difference among the participants regarding their responses about the presence of the specialty of phoniaticians in their institute (*p* value= <0.0001) with a higher percentage by neurology (Fig. 4).

Percentages and comparisons among the participants in different specialties regarding their responses about the role of phoniaticians in swallowing management The highest percentages were given for their roles in diagnosing swallowing problems, educating patients, caregivers, and health professionals regarding specific techniques for safe oral intake performing thorough swallowing examination and diagnosing the level of dysphagia. There was a significant difference among different specialties regarding their responses

Table 7 Percentages and comparison among the participants in different specialties regarding the management of dysphagia cases

	All (N%)	Internal medicine (N=26)	Specialties with lower contact with dysphagia cases (N=99)	Pediatrics (N=8)	Neurology (N=23)	Physiotherapy (N=32)	P value
Try liquid fluid	42 (22.3%)	8 (30.8%)	20 (20.2%)	1 (12.5%)	4 (17.4%)	9 (28.1%)	0.64
Try semi-liquid fluid	76 (40.4%)	9 (34.6%)	34 (34.3%)	2 (25%)	18 (78.3%)	13 (40.6%)	*0.003
Try solid food	22 (11.7%)	2 (7.7%)	13 (13.1%)	0 (0%)	3 (13%)	4 (12.5%)	0.92
Change the position while feeding the patient	51 (27.1%)	4 (15.4%)	11 (11.1%)	2 (25%)	14 (60.9%)	2 (6.25%)	*<0.0001
Do not swallow anything yet you need a feeding tube	17 (9%)	2 (7.7%)	1 (1%)	0 (0%)	11 (47.8%)	3 (9.4%)	*<0.0001
No advice just refer the patient to another specialist	84 (44.7%)	10 (38.5%)	56 (56.6%)	4 (50%)	2 (8.7%)	12 (37.5%)	*<0.0001

*Significant P value <0.05

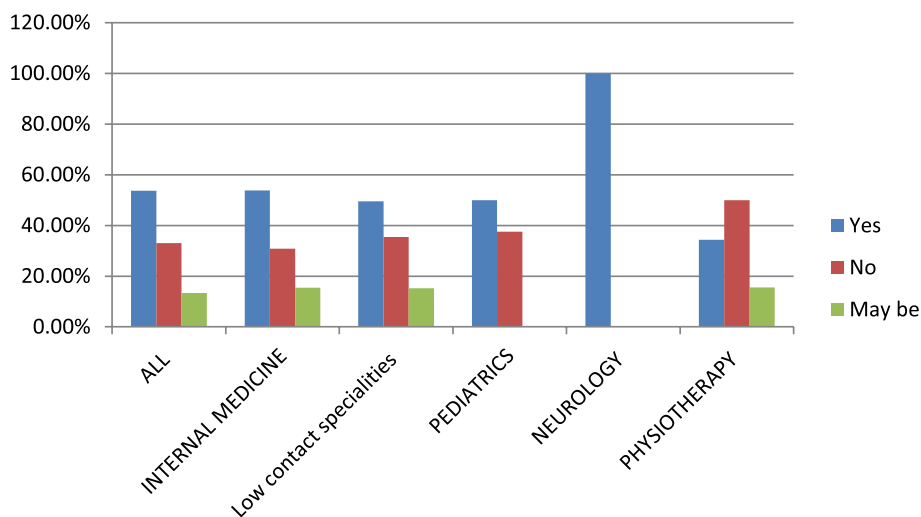


Fig. 4 The percentages and comparison among the participants in different specialties regarding their responses about the presence of phoniatics specialty in their institute

of the role of phoniaticians as in their role of performing thorough swallowing examination (p value = <0.0001) with higher percentages given by neurology followed by physiotherapy. The significant difference among specialties regarding the role of phoniaticians in diagnosing the level of dysphagia (p value = 0.002), consulting other health professionals as appropriate (p value = 0.001), educating patient, caregivers, and health professionals regarding specific techniques for safe oral intake (p value = 0.001), interpreting flexible endoscopic evaluation of swallowing (FEES) (p value = 0.003), planning for intervention and providing treatment (p value = <0.0001) with a higher percentage given by physiotherapy (Table 8).

Test-retest reliability of responses of the participants to the questionnaire There was moderate to strong agreement between the responses of the participants in the test-retest (0.63 to 1) except for the responses related to their method of identification of dysphagia in a patient and the swallowing tests and investigations used in their institute (Table 9).

Discussion

This study is an exploratory study to understand the level of awareness of health care practitioners in Egypt and their knowledge regarding dysphagia and its management. The higher the level of awareness, the better the service administered to this kind of patients. This can be administered through earlier referral to the targeted specialists, administration of the right advice,

sharing in the multidisciplinary approach in dealing with dysphagia patients which is the best practice for them, in addition to avoiding further medical complications for this condition.

It is of utmost importance to collect the profile of this sample of participants. The participants involved the two types of gender with reasonable percentages. This managed to provide sufficient equal input. The highest two percentages were in the two younger age groups between 25 and 45 years old. This age group is the active age group on social media that interacts with questionnaires supplied through various online platforms. This group is usually involved in trainings to improve their practice or as a part of their post-graduate study. This helped to have their input about the presence of academic or professional trainings in dysphagia. All the participants are from the Greater Cairo area either Cairo or Giza. These two governorates are among the areas that provide the best medical service. Patients from all over Egypt seek medical advice in their hospitals. The majority of conferences and trainings are provided in their hospitals. Most of the participants work in hospitals or more than one place. These are the places that involve multidisciplinary teams where almost all specialties are present.

In the current study, specialties of the highest contact with dysphagia cases as ENT, phoniaticians, and gastroenterologists were excluded. Nearly half of the participants rated themselves as having moderate to high contact with dysphagia cases. They included specialties of neurology, physiotherapy, internal medicine, and pediatrics. The remaining specialties rated themselves

Table 8 Percentages and comparison among the participants in different specialties regarding their responses about the role of phoniaticians in swallowing management

	All (N%)	Internal medicine (N=26)	Specialties with lower contact with dysphagia cases (N=99)	Pediatrics (N=8)	Neurology (N=23)	Physiotherapy (N=32)	P value
Perform thorough swallowing examination	99 (52.7%)	8 (30.8%)	45 (45.5%)	4 (50%)	18 (78.3%)	24 (75%)	*<0.0001
Interpret FEES (flexible endoscopic evaluation of swallowing)	75 (39.9%)	8 (30.8%)	30 (30.3%)	3 (37.5%)	15 (56.2%)	19 (59.4%)	*0.003
Interpret videofluoroscopic swallowing study findings	48 (25.5%)	4 (15.4%)	22 (22.2%)	2 (25%)	8 (34.8%)	12 (37.5%)	0.23
Diagnose swallowing problem	105 (55.9%)	11 (42.3%)	50 (50.5%)	6 (75%)	16 (69.6%)	22 (68.8%)	0.091
Diagnose level of dysphagia	88 (46.8%)	12 (46.2%)	35 (35.4%)	4 (50%)	13 (56.5%)	24 (75%)	*0.002
Plan for intervention and provide treatment	73 (38.8%)	7 (26.9%)	26 (26.3%)	5 (62.5%)	13 (56.5%)	22 (68.8%)	*<0.0001
Consult other health professionals as appropriate	78 (41.5%)	12 (46.2%)	30 (30.3%)	4 (50%)	9 (39.1%)	23 (71.9%)	*0.001
Educate patient, caregivers, and health professionals regarding specific techniques for safe oral intake	101 (53.7%)	12 (46.2%)	43 (43.4%)	4 (50%)	16 (69.6%)	26 (81.3%)	*0.001

*Significant P value <0.05

Table 9 Test-retest reliability of responses of the participants to the questionnaire

Question	Kappa agreement
Have you received academic and/or professional training in dysphagia?	1
Do you deal with dysphagia cases in your medical practice?	1
When do you suspect dysphagia?	0.89
Who do you refer dysphagia cases to?	0.89
Do you have a swallowing clinic in your institute?	1
How do you identify dysphagia in a patient?	0
What are the symptoms or signs that you would identify as indicative of dysphagia?	0.63
What are the problems that you would agree to be complications of dysphagia?	0.73
What is your role as a health care practitioners in the management of dysphagia?	0.89
What are the swallowing tests or dysphagia investigations that are used in your institute?	0
How are dysphagia cases managed and what advice do you give the patient?	1
Is the specialty of phoniatics available in your institute?	1
As far as you know, what is/are the role(s) of the phoniatician in swallowing management?	1

0–0.2 non-agreement, 0.21–0.39 minimal agreement, 0.40–0.59 weak agreement, 0.60–0.79 moderate agreement, 0.80–0.90 strong agreement, and above 0.90 almost perfect

as having low contact with dysphagia cases. Dysphagia is a symptom of many diseases. It is common in patients with neurological disorders. It can result from damage to the central or peripheral nervous system, as

well as cause muscle and neuromuscular junction disorders. The most common cause of neurogenic dysphagia is stroke [22]. Stroke and brain damage motor handicapped children need a multidisciplinary team to

address their difficulties on the basis of motor problems that need physiotherapists. They need phoniaticians at the level of swallowing and communication problems. They need internal medicine or pediatrics at the level of physical problems [23, 24]. So the previous specialties of neurology, physiotherapy, pediatrics, and internal medicine are exposed to a great extent to dysphagia cases. They are considered the source of referrals to the professionals who deal with these cases: ENT physicians, phoniaticians, and gastroenterologists.

The participants clarified their role in dysphagia management as follows: referring cases to ENT, conducting an assessment of patients with dysphagia, recommending the safest diet and the healthy lifestyle, conducting swallowing screening test, and the least percentage is referring cases to phoniaticians. Nearly half of the participants refer dysphagia cases to ENT and a lesser percentage refers cases to phoniaticians. Nearly one-fourth of them have collaborative practice with phoniaticians. These findings are consistent with previous results of Hussain et al. [25] and Kiyani and Butt [26] who found that medical practitioners preferred ENT specialists to manage dysphagia cases. Also, the study by Xinyi et al. [20] revealed that 58.4% of medical practitioners from family medicine, surgery, and neurosurgery seldom or never made a referral to phoniaticians for dysphagia management. These findings corroborate the fact that the awareness and knowledge levels of dysphagia management and phoniaticians' role among medical practitioners are still low.

Nearly one-third of the participants selected that they conduct swallowing screening and nearly 40% of them selected that they conduct an assessment of dysphagia patients. Nearly 35.1% of participants selected that they recommend the safest diet and healthy lifestyle. Phoniaticians are qualified professionals in assessing and treating oropharyngeal dysphagia patients [27]. Hence, it is a best practice to refer patients directly to phoniaticians to receive early swallowing assessment and intervention. The gold standard for assessing oropharyngeal dysphagia is an evaluation by a phoniatician, who might use fiberoptic nasopharyngoscopy or videofluoroscopy to confirm suspected dysphagia and aspiration. However, an initial bedside swallowing evaluation by a patient's primary clinician often is appropriate [28].

The majority of the participants did not receive training in dysphagia. The high percentages of those who got trainings are in the following specialties; physiotherapy followed by neurology then internal medicine while the lower percentages are in specialties of low contact with dysphagia cases and pediatrics. This result clarifies that the specialties that rated themselves as having moderate

to high contact with dysphagia cases are the specialties that at least half of them got training in dysphagia. Getting trained is one of the sources that increases awareness and knowledge towards the dysphagia practice. To maintain professional development, health care practitioners can read literature and participate in workshops, group discussions, seminars, and practical workshops, so as they can learn new knowledge and skills or continuously improve their professional abilities [29]. In a study by Hussain et al. [25], the medical practitioners have increased awareness of dysphagia symptoms through dysphagia courses.

Our results point to the low awareness and knowledge level of the participants. Less than 50% of them could suspect dysphagia by the presence of the sign of difficult swallowing or by history or the disease type of the patients. Although bulbar symptoms are considered overt symptoms of dysphagia but only 14.9% of the participants suspect dysphagia by their presence. This is not in agreement with the study of Xinyi et al. [20] whose participants showed higher awareness of the presence of coughing and choking during, prior to or after meals. This is supported by the review by Matsuo and Palmer [30] which asserted that coughing or choking are among the most regular problems in dysphagia. It is also reported by McHorney et al [31] and Leopold and Kagel [32], as patients with dysphagia commonly present with coughing and choking on liquids and food in oropharyngeal dysphagia.

Very minimal percentage of participants suspects dysphagia by change of voice although it is an indicator of the presence of aspiration. Aspiration may increase the level of food residue in the vocal folds, increase fold mass and viscosity thus reflecting on the vocal fold vibration affecting voice quality [33]. Also, very minimal percentage of participants suspects dysphagia by the presence of complications such as malnutrition, chest infection, or weight loss. Specialties with low contact showed the highest percentage in suspecting dysphagia depending on only the history and their knowledge about the disease type that the patients have. Physiotherapy and neurology were the specialties with higher percentages that depend on the presence of bulbar symptoms. Also, participants from neurology were the highest percentage that depends on suspecting dysphagia on the presence of chest infection which is a common complication due to aspiration pneumonia. Participants from internal medicine and neurology showed higher percentages that depend on the presence of the complication of weight loss. These results showed that participants from neurology have better awareness and knowledge level about dysphagia symptoms, signs, and complications than other specialties of

moderate to high contact with dysphagia cases participated in the current study.

Participants in this study were nearly equal on the method they use to identify dysphagia. Half of them depend on questioning the patients only and this was selected mainly by pediatrics and specialties of low contact with dysphagia cases. This could be attributed to either the lack of knowledge about what to do or their preference to refer to another specialist or to do further work-up and investigations, while 46.3% of the participants selected combining questioning the patient with asking them to ingest or drink something. This was mainly selected with a higher percentage by neurologists. Neurologists have their role in the diagnosis of the underlying disease, as well as they are well placed to help elucidate the dysphagia mechanism and to give advice in a multidisciplinary context about dysphagia management [34].

Overt symptoms and signs of dysphagia such as choking or coughing and difficulty swallowing or feeling food stuck are better identified than non-overt signs such as anterior leakage, poor chewing, multiple swallows, oral residue, and taking longer time to finish meal by the participants in this study. This finding is in agreement with other studies such as Kamal et al. [27] but is not in agreement with Hussain et al. [25]. The researchers in both studies attributed their findings to the difference in the degree of awareness and knowledge about symptoms and signs of dysphagia. As regards the difference in specialties' awareness regarding the symptoms and signs of dysphagia, the current study shows that neurology, physiotherapy, and pediatrics have relatively higher percentages in identifying overt and non-overt dysphagia symptoms and signs.

Participants in this study have moderate awareness regarding the commonest complications of dysphagia. They identified the main complications of dysphagia as malnutrition, aspiration, and pneumonia. However, lower awareness was found regarding other complications such as dehydration, weight loss, general weakness, and increased mortality. This adds to the importance of having trainings to increase orientation of the dimensions of this common disorder.

The participants refer dysphagia cases to GIT followed by ENT then the least percentage refers to Phoniatics. According to the results of the current study, the referral to phoniatics is done mainly by physiotherapy and neurology. Also physiotherapy was the highest specialty which refers to neurology. Internal medicine and specialties with low contact showed higher percentages in referring to GIT specialty. The decreased referrals to phoniatics might indicate the lack of awareness by the role of phoniaticians in the management of dysphagia.

This is consistent with a previous study done by Xinyi et al. [20], Kamal et al. [27], and Kiyani and Butt [26]. Their participants are unaware of the fact that assessment, management, and treatment of patients with dysphagia comes under the domain of speech and language pathologists and phoniaticians. They are the professionals qualified to diagnose, assess, and provide a program of care to address the communication and swallowing need [12].

The result of the current study is not in agreement with Anderle et al. [35]. They found out that the Brazilian medical and nursing teams were completely aware of dysphagia and phoniaticians' roles during the intervention and assessment process. They attributed the difference to the scope of practice and employment areas of phoniaticians in different countries.

Only 18.1% of the participants indicated the presence of a dysphagia clinic in their institute with the higher percentages given by specialties of neurology followed by internal medicine and physiotherapy. In Egypt, there is a limited number of dysphagia-specialized clinics. Dysphagia is handled in the caseload of specialties of phoniatics, ENT, and gastroenterology along with other diseases and disorders addressed by these specialties.

Nearly half of the participants admitted their lack of awareness regarding dysphagia investigations especially in specialties with low contact with dysphagia. Neurology was the specialty of higher percentage in identifying water test and FEES followed by videofluoroscopic swallowing study as investigations for dysphagia. The lack of awareness of such important investigations negatively affects the referrals to the targeted specialties to deal with dysphagia thus hinder the proper timely management of the condition. Participants in the current study showed very minimal awareness of the use of self-reported questionnaires like EAT-10 and DHI. The percentage in the current study was 5% which was even less than the study by Sánchez-Sánchez et al. [21] where 20.8% of their subjects stated that the EAT-10 dysphagia screening test was performed in their center. These figures were lower than those reported by Farpour et al. [36] who concluded that between 49.9 and 52.2% of the participants in their study had used the self-reported questionnaires as a method to evaluate or treat dysphagia. These questionnaires are widely used and easy to apply. Increasing awareness of them can facilitate early detection of dysphagia cases.

Nearly 45% of the participants selected not to give cases with dysphagia any advice and just refer them to another specialist with higher percentages given by specialties with low contact with dysphagia cases. Neurology specialty showed the highest percentage of awareness

regarding different modalities for dysphagia management such as trying semi-liquid fluids, changing the position while feeding the patient, and recommending a feeding tube with no oral intake. General awareness about dysphagia management is highly important to ensure swallowing safety and to protect patients against complications as dysphagia can be life-threatening [37].

Less than half of the participants in the current study recognized the presence of phoniatics specialty in their institute. The highest percentage, 100%, is given by the neurology specialty followed by internal medicine, pediatrics, and specialties with low contact with dysphagia cases with an estimate percentage of 50%. Since its establishment in Egypt in 1974 in Ain Shams University, phoniatics has been a medical subspecialty of otolaryngology department [38] that is present in governmental and private hospitals in Egypt.

Participants in this study showed lack of familiarity with the role played by phoniaticians in swallowing management. The roles of phoniaticians that they recognized the most were related to diagnosing swallowing problem, educating patients, caregivers, and health professionals regarding specific techniques for safe oral intake, performing thorough swallowing examination, and diagnosing the level of dysphagia. This was indicated mainly by neurology and physiotherapy in contrary to the specialties with low contact with dysphagia and internal medicine. This result clarifies the intense need for the phoniaticians to set training sessions and informational presentations. This can assist professionals who provide services to community dwellers in forming an awareness of potential swallowing problems and the different roles played by phoniaticians [39]. This training when provided may help direct the referrals to the swallowing specialists as early as possible. The previous result was in agreement with a study performed in Malaysia by Xinyi et al. [20] in which the awareness of the phoniaticians' role in dysphagia management varied significantly among the medical officers. The phoniaticians' role incorporates conducting clinical and instrumental swallowing examinations with relevant professionals, planning for swallowing management and treatment, referral to relevant professionals, counseling of patients and their caregivers, educating other professionals, working as a team member, and participating in research activities [27].

There was moderate to strong agreement between the responses of the participants in the test-retest except for the responses related to their method of identification of dysphagia in a patient, the swallowing tests, and investigations used in their institute. The presence of more than one choice may lead to decrease consistency and agreement between test and retest results affected by unconsolidated awareness and knowledge.

The lack of training of health care practitioners can lead to a delay in patients' diagnosis and increase the complications derived from this condition, which is an important barrier to the management of these patients [40]. Several authors have studied the knowledge possessed by health professionals finding that this knowledge was moderate [41]. The current study adds evidence in the Egyptian community among different health practitioners with different specialties and with various levels of contact with dysphagia cases. Specific training and experience in caring for patients with dysphagia will provide new and better knowledge [42], thus enhancing ultimate quality service delivery.

The limitations of the current study include the following: this study could not include a wide coverage of other regions in Egypt apart from the capital and other specialties of medical professionals. The awareness and knowledge about dysphagia practice may differ according to the involved governorates and the involved specialties. Obtaining sufficient demographic information is needed to allow for adequate findings generalization. The use of open-ended questions is also important to allow for in-depth understanding of experiences of the participants.

Conclusion

Egyptian health care practitioners in the Greater Cairo area encountered in this study differ in their knowledge and awareness level of dysphagia according to their specialties and their degree of contact with dysphagia cases. Minimal awareness was found in specialties with low contact. Fair awareness was found in specialties with moderate to high contact with dysphagia cases. There was insufficient knowledge about non-overt symptoms and signs of dysphagia, the widely used investigations, and the role of phoniaticians in dealing with dysphagia cases. Neurology was the specialty that had relatively higher awareness.

Recommendation

Establishing more dysphagia-specialized clinics and teams in addition to providing educational programs will be of great benefit and can be regarded as solutions to spread the awareness. This may help increase the chance of dysphagia cases to receive a better and more efficient treatment.

Abbreviations

SLPs	Speech and language pathologists
ENT	Ear, Nose, and Throat
FEES	Flexible endoscopic evaluation of swallowing
DHI	Dysphagia Handicap Index

Supplementary Information

The online version contains supplementary material available at <https://doi.org/10.1186/s43163-023-00387-2>.

Additional file 1.

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Authors' contributions

AFA constructed the idea and wrote the manuscript. HMF constructed the questionnaire and edited manuscript, and ARS shared in constructing the idea, distributed the questionnaire, and edited the manuscript. All authors read and revised the manuscript. The authors read and approved the final manuscript.

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Availability of data and materials

The data sets used and analyzed during the current study are available from the corresponding author upon reasonable request.

Declarations

Ethics approval and consent to participate:

The online questionnaire included a required consent as by submitting the answered survey, the participants' responses would be included in the research study. This study was approved by the Ethics Committee of the Ear, Nose, and Throat Department, Cairo University. The study and data collection were conformed to all local laws and were compliant with the principles of the Declaration of Helsinki. The committee reference number is N-84-2022.

Consent for publication

Not applicable

Competing interests

The authors declare that they have competing interests.

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