

ORIGINAL ARTICLE

An Audit of Dysphagia Patients Attending Speech Therapy Clinic at a Tertiary Hospital in Malaysia

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ABSTRACT

Swallowing involves 55 muscles, five cranial nerves and two cervical nerve roots. When the coordination of this reflex is disturbed, dysphagia occurs. Dysphagia refers either to the difficulty someone may have with the initial phases of a swallow or to the sensation that the foods or the liquids are being obstructed in their passage from the mouth to the stomach. The objective of the study was to identify the diagnosis of patients attending Speech Therapy clinic, in Queen Elizabeth Hospital, Kota Kinabalu, Sabah, and to identify the demography of dysphagic patients. From the 406 patients that came during the study period, 139 patients (34.2%) were diagnosed with dysphagia, followed by developmental language disorders (33.3%). Of the 139 patients diagnosed with dysphagia, most of them are within the 41 to 60 (43.2%) and above 60 (42.2%) age groups. The majority were males (66.2%). A total of 81 (58.3%) patients with dysphagia had a history of cerebrovascular accident. Dysphagia is a common disorder among patients attending Speech Therapy Clinics at Queen Elizabeth Hospital, Kota Kinabalu. Training of Speech Therapists and early dysphagia intervention leads to a better outcome.

INTRODUCTION

The swallowing process is a complex series of events, which is classified into oral, pharyngeal, and oesophageal stages (Dodds, 1989) The whole process involves 55 muscles, five cranial nerves and two cervical nerve roots. The swallowing control centre is in the medullary

area of the brain stem. It receives input from the mouth and pharynx regarding the bolus size and consistency, the respiratory centre to coordinate swallowing and breathing, and from cortical and subcortical areas of the brain; all of which results in the modulation of and duration of different phases of the pharyngeal swallow, but the sequence of events remains consistent (Kendall et al., 2000; Molfenter & Steele, 2014). The pharynx is a common pathway for ingested food or liquid and inspired air. As food and liquid pass through the pharynx, air will enter the larynx and food or liquid pass over and around the larynx and continues to the oesophagus. A series of well-timed and sequential movements involving the cricopharyngeus and thyropharyngeus muscles form part of the airway protective mechanisms during a swallow. If an individual suffers from any cerebrovascular insults which hinder the process of any of these sequenced movements, dysphagia occurs (Matsuo & Palmer, 2008).

Dysphagia is defined as someone who has difficulty either with the initial phases of a swallow (oropharyngeal dysphagia) or to the sensation that the food or the liquid are somehow being obstructed in their passage from the mouth to the stomach (oesophageal dysphagia) (Malagelada et al., 2014). Dysphagia is also defined as an abnormal delay in transit of liquid and food, which may cause pain or discomfort during the passage of liquid or food while entering the stomach (Jalil et al., 2015).

There are numerous etiologies for dysphagia. For oropharyngeal dysphagia, in younger patients, it is mostly caused by muscle diseases, laryngeal webs or rings. For older patients, it is usually caused by stroke, Parkinson disease and dementia (Malagelada et al., 2014). In oesophageal dysphagia, common causes are intrinsic encroachment (e.g. rings, webs, tumours, infection, foreign bodies), Extrinsic compression (e.g. mediastinal masses, vascular compression), and motor disorders (Aslam & Vaezi, 2013).

The incidence of dysphagia is high (The Ontario Association of Speech-Language Pathologists and Audiologists [OSLA], 2016). The prevalence of dysphagia is generally reported to be more common among older patients compared to the general population (Bhattacharyya, 2014; Cabré et al., 2014; Roden & Altman, 2013). A few studies (Lindgren & Janzon, 1991; Tibbling & Gustafsson, 1991) have estimated that dysphagia may be as high as 22% in adults over 50 years of age and higher in elderly populations receiving inpatient medical treatment, where up to 30% of the patients may have symptoms of dysphagia (Layne et al., 1989). The numbers increase for residents in long-term care settings, where more than half of the residents there (68%) have dysphagia (Steele et al., 1997). There is a wide range of 13% – 38% prevalence among elderly individuals who are living independently (Kawashima et al., 2004; Serra-Prat et al., 2011)

There are no documented dysphagia prevalence data in the general population from neighbouring countries, but several studies reported condition-specific dysphagia prevalence data. Linn et al. (2015) conducted their study at Universiti Sains Malaysia's Hospital (HUSM) in Kelantan and reported a staggering 59.1% of patients with head and neck cancer also experiencing dysphagia either before, during, or after their planned oncology treatment. Similarly, Ho et al. (1999) in Singapore estimated the incidence of achalasia, a type of oesophageal dysphagia, to be at 1.8 per 100,000 in Singapore. Meanwhile, using a combination of screening tools of the repetitive saliva swallowing test (RSST), the water swallowing test (WST) and the eating assessment tool-10 (EAT-10), Tran et al. (2019) revealed that the rate of dysphagia was recorded at 16.5% among elderly patients when they were screened by RSST and WST, whilst EAT-10 reported a 24.6% of dysphagia among the similar population. The literature concludes how dysphagia is experienced across the medical diagnosis and could be a symptom towards more complicated medical conditions.

Speech and language therapist (SLTs) are professionals trained in the assessment, interventions and management of communications and swallowing disorders (Pettigrew & O'Toole, 2007). Patients can range from toddlers to the geriatric population. The SLTs will assess, diagnose and plan intervention, to help the patient.

The SLTs of Queen Elizabeth Hospital (QEH), Kota Kinabalu, Sabah generally reviews two groups of patients, adult and paediatric patients. Adult patients include patients with a history of stroke, degenerative diseases and carcinoma of the larynx. Paediatric patients on the other hand include patients with Attention Deficit Hyperactivity Disorder (ADHD), autism, Down Syndrome and cerebral palsy.

In recent years, there has been an increasing trend of referrals for patients with swallowing disorders to the Speech Therapy (ST) Clinic of Queen Elizabeth Hospital (QEH), Kota Kinabalu, Sabah. Currently, no data assess the demography of dysphagia patients in Malaysia. The only data that we have is the prevalence of dysphagia in Malaysia, which was 65.9% in patients with ischaemic stroke by Hamidon et al. (2006). This randomized prospective clinical trial study by Hamidon et al. (2006) revealed 29 of the 44 patients with acute ischaemic stroke had dysphagia after a week of stroke. There is no other known published data on the common causes of dysphagia in Malaysia.

The objectives of the study were to identify the diagnosis and demography of patients attending Speech Therapy clinic, in Queen Elizabeth Hospital, Kota Kinabalu, Sabah, and to identify the causes of dysphagia in dysphagic patients.

MATERIALS AND METHODS

Institutional Review Board (IRB)/ Ethics Committee approval was obtained from the Malaysia Research and Ethics Committee

(MREC), Ministry of Health (NMRR ID NMRR-18-2954-43920). The study and data collection were conducted in accordance with the Declaration of Helsinki for human research (World Medical Association, 2018).

This was a cross-sectional study. Medical records of these patients were used for data collection. Eligibility of patients was determined by the investigators, based on the inclusion and exclusion criteria. Data collected includes age, sex, referral sources, patient's residence location, ethnicity, referral diagnosis and aetiology of dysphagia. Subject's names were kept on a password-protected database. It was linked only with a study identification number for this research. The identification number instead of patient identifiers were used on subject datasheets. All data were entered into a computer that is password protected.

The study period was between January and July 2019 at QEH, Kota Kinabalu, Sabah. Inclusion criteria were all patients referred to the SLT clinic during the study period, regardless of age and pregnancy status. Exclusion criteria were incomplete data from the medical records and patients who did not fulfil the criteria for the diagnosis of dysphagia, which means patients who are tolerating orally without complications. A sample size calculation using a level of confidence of 95% and a precision of 5% concluded a minimum sample size of 345 (Daniel, 1999). Data were analysed using SPSS version 24.0. Frequencies and percentages were used for descriptive analysis.

RESULTS

A total of 406 patients met the inclusion criteria of this study. The demographic data showed that majority of patients attending the SLT clinic at QEH were aged below 12 years old (41.2%), followed by patients above 60 (25.4%), patients aged 41 to 60 (22.9%) and patients aged 19 to 40 (8.6%). The least number of patients were from the age group of 12 to

18 years old (1.7%). Among the subjects, 269 were males (66.3%), and 137 were females (33.7 %). Most patients were from government hospitals (94.8%).

Patients that attended the clinic were mostly from Kota Kinabalu (24.1%), followed by from Penampang (7.6%) and Kota Marudu (6.4%). Most of the patients were of Dusun ethnicity (24.4%). The demographic data attending the SLT clinic of QEH is in Table 1.

Table 1 Distribution of patients attending the SLT clinic at QEH (n = 406)

		Frequency	Percentage (%)
Age (years)	Below 12	168	41.2
	12 – 18	7	1.7
	19 – 40	35	8.6
	41 – 60	93	22.9
	Above 60	103	25.4
Sex	Male	269	66.3
	Female	137	33.7
Referral source	Government hospitals	385	94.8
	Government clinics	14	4.2
	Private clinics	4	1.0
Patient’s residence	Kota Kinabalu	98	24.1
	Kudat	24	5.9
	Keningau	21	5.2
	Tambunan	8	2.0
	Tenom	7	1.7
	Beaufort	21	5.2
	Labuan	11	2.7
	Pitas	7	1.7
	Kota Marudu	26	6.4
	Kota Belud	16	3.9
	Penampang	31	7.6
	Ranau	17	4.2
	Tuaran	23	5.7
	Putatan	23	5.7
	Tamparuli	17	4.2
	Sepanggar	8	2.0
	Lawas	1	0.2
	Papar	24	5.9
	Others	5	1.2
	Sipitang	13	3.2
Nabawan	5	1.2	
Ethnicity	Kadazan	56	13.8
	Chinese	77	19.0
	Dusun	99	24.4
	Bajau	59	14.5
	Bisaya	4	1.0
	Malay	19	4.7
	Brunei	24	5.9
	Murut	17	4.2
	Rungus	18	4.4
	Others	33	8.1
Total		406	100

n = Number of patients

From the 406 patients who attended the speech therapy clinic during the study period, the majority of them were diagnosed with dysphagia (34.2%), followed by Developmental Language Disorders (33.3%). The other diagnosis is mentioned in Table 2.

Table 2 Diagnosis of patients attending the clinic (n = 406)

Diagnosis	Frequency	Percentage (%)
Developmental Language Disorder	135	33.3
Hearing Impairment	16	3.9
Speech Sound Disorder	17	4.2
Voice Disorder	27	6.7
Dysphagia	139	34.2
Aphasia	43	10.6
Motor Speech Disorder	29	7.1
Total	406	100

n = number of patients

Of the 139 patients diagnosed with dysphagia, most of them are within the 41 to 60 (43.2%) and above 60 (42.2%) age groups. The majority were males (66.2%). A total of 81 (58.3%) dysphagic patients had a history of cerebrovascular accident. The demographic data of patients with dysphagia were presented in Table 3.

Table 3 Demographic data of patients with dysphagia (n = 139)

		Frequency	Percentage (%)
Age (years)	Below 12	1	0.7
	12 – 18	4	2.9
	19 – 40	15	10.8
	41 – 60	60	43.2
	Above 60	59	42.4
Sex	Male	92	66.2
	Female	47	33.8
Patient's residence	Kota Kinabalu	61	43.9
	Kota Marudu	18	12.9
	Kudat	16	11.5
	Tuaran	15	10.8
	Penampang	14	10.1
	Papar	12	8.6
	Pitas	3	2.2
Ethnicity	Kadazan	31	22.3
	Chinese	29	20.9
	Dusun	28	20.1
	Bajau	24	17.3
	Brunei	10	7.2
	Rungus	5	3.6
	Others	12	8.6
Aetiology of dysphagia	Cerebrovascular accident	81	58.3
	Neurological disorders	22	15.8
	Cancer	25	18.0
	Unknown	11	7.9

n = Number of patients

DISCUSSION

The incidence of oropharyngeal dysphagia in the general population ranges between 2.3% and 16% (Chiocca et al., 2005; Cho et al., 2015; Eslick & Talley, 2008). Using the Standardised Swallowing Assessment (Perry & Love, 2001; Yang et al., 2013) described in a Korean study, the overall prevalence of dysphagia was 33.7% (95% CI, 29.1 – 38.4%) for people above 65 years of age. Barczy et al. (2000) found prevalence rates of 15% in community-dwelling and more independent individuals, and 40% of people living in institutionalised settings such as assisted living facilities and nursing homes.

Based on the findings of the current study, where dysphagia made up the largest group of new cases in the ST Clinic, several measures are suggested to improve service delivery.

In terms of professional development, SLTs need to constantly update their knowledge and skills with current evidence-based treatment strategies. This can be done by applying approved national or international guidelines, attending workshops and clinical training by experienced speech therapists.

Training should also be conducted by SLTs for members of a multidisciplinary team in basic dysphagia management. This includes doctors, nurses, family members and others who are in regular contact with the dysphagic patient. Studies show that multidisciplinary team care is important for dysphagic patients (Ribeiro et al., 2019).

Assessment and management of patients should be based on the recommended International Classification of Functioning Disability and Health (ICF) Framework by the World Health Organization (WHO), as dysphagia is usually a chronic disability and can potentially result in psychosocial consequences in addition to the obvious physical limitations. This is supported by the American Speech-Language-Hearing

Association's (ASHA) Preferred Practice Patterns for the Professional of Speech-language Pathology (ASHA, 1997). ASHA advocates for dysphagia evaluation following the ICF framework, including "normal and abnormal parameters of structures and functions affecting swallowing; effects of swallowing impairments on the individual's activities (capacity and performance in everyday contexts) and participation; and contextual factors that serve as barriers to facilitators".

It is also suggested that the International Dysphagia Diet Standardisation Initiative (IDDSI) framework be implemented. The IDDSI framework (IDDSI, 2019) includes international standardised terminology and definitions for texture modified foods and thickened liquids for persons with dysphagia. This will improve interdisciplinary professional communication and enhance patient safety with standardized terminology and description of modified diet consistencies, which is an important component of dysphagia management.

Since the largest aetiology for dysphagia is stroke, it will be worthwhile to implement dysphagia screening for all acute stroke patients. This protocol has shown to reduce stroke associated pneumonia (Yeh et al., 2011). Training of ward staff in conducting appropriate dysphagia screening is necessary to implement this protocol.

There is a shortage of SLTs in Malaysia now, both in the private and government sectors. The average time for an outpatient review is around 90 days. Now, there are approximately 300 SLTs in Malaysia, with a ratio of SLTs to the population in Malaysia of one SLP to 100,000 people (Chu et al., 2019). This is a far cry from other countries like the United States, where the ratio is 51.5 SLPs to 100,000 population (ASHA, 2020) To improve the services of SLTs, especially to the rural patients of Sabah, more SLPs are needed. While waiting for the numbers to increase, speech therapy can be done via telehealth, with

the use of a computer and internet. Studies have shown that telehealth is feasible and effective (Mashima & Doarn, 2008) Currently, there are 49 hospitals and health clinics in districts, under the Ministry of Health's publicly funded healthcare system which could provide services for patients with dysphagia. Understandably, not every SLP posted at those clinics and hospitals have access to instrumental assessments for dysphagia as per the gold standard, comprising of the modified barium swallow study (MBBS) nor the fiberoptic endoscopic evaluation of swallow (FEES). They may be equipped with basic dysphagia screening expertise such as the WST or quality of life-related assessment tools like the EAT-10.

Dysphagia patients also report lower quality of life compared to the general population and also among patients without a terminal illness (Turley & Cohen S, 2009). A recent systemic review by Jones et al. (2017) also found that not only did dysphagia negatively impact the quality of life, but intervention and improvement in swallowing function resulted in improvement in the quality of life as well. It is suggested that a quality of life measure be included as part of the dysphagia assessment protocol, and these areas are looked into as part of management, to improve the quality of life of patients.

One of the limitations of this study was the study timeframe. After the understanding the importance of identifying the commonest problem seen in the ST clinic of QEH, a longer period of study is needed, preferably a full calendar year would help in illustrating the overwhelming caseload faced by the SLTs in public healthcare. This will translate into better intervention programmes with specific aims of targeting the common diagnosis faced by the health care providers. Another limitation is that all these patients are referred patients only, and therefore does not represent the percentage of patients with dysphagia in Kota Kinabalu. More training programmes need to be organized among government and private

doctors, to raise the awareness of dysphagia, and the need to refer them to ST clinics for better management.

CONCLUSION

Dysphagia is a common diagnosis among patients attending ST Clinics at Queen Elizabeth Hospital, Kota Kinabalu. The majority were males in the 41 to 60 age group. The focus on services in terms of training of SLTs and other health care providers need to be addressed. Early intervention by a multi-disciplinary team is also vital to ensure optimum patient care. Early and focused intervention can produce a better treatment outcome.

CONFLICT OF INTEREST

The authors declare that they have no conflicting interests in publishing this article.

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