

Dysphagia Management Practices Among Speech-Language Pathologists in Malaysia

Rahayu Mustaffa Kamal^{1,2}, Elizabeth Ward^{1,3} and Petrea Cornwell^{4,5}

¹School of Health and Rehabilitation Sciences, The University of Queensland, Australia

²Faculty of Health Sciences, The National University of Malaysia, Malaysia

³Centre for Functioning & Health Research (CFAHR), Queensland Health, Australia

⁴Metro North Health Service District, Queensland Health, Australia

⁵Griffith Health Institute, Behavioural Basis of Health Program, Griffith University, Australia

Authors: **Rahayu Mustaffa Kamal** (corresponding author)

B.Sp.Sc.(Hons), MSLT

School of Health and Rehabilitation Sciences (Speech Division)

The University of Queensland, St Lucia QLD 4072, Australia

Telephone: +617 38700447 / +614 50691074

Fax: +617 33651622

E-mail: rahayu.mustaffakamal@uqconnect.edu.au

Professor Elizabeth Ward

B.Sp.Thy(Hons), Grad Cert Ed, PhD

Centre for Functioning & Health Research (CFAHR), Queensland Health

P.O. Box 6053, Buranda, Queensland, 4102, Australia

Telephone: +617 34062265 (CFAHR) / +617 33653079 (UQ)

Fax: +617 3365 1622

E-mail: liz.ward@uq.edu.au

Dr Petrea Cornwell

B.SpPath(Hons), PhD

Behavioural Basis of Health, School of Psychology

Psychology Building (M24), Griffith University

Messines Ridge Road, Mt Gravatt QLD 4122, Australia

Telephone: +617 3139 6112

Fax: +617 3139 6228

E-mail: petrea_cornwell@health.qld.gov.au

Dysphagia Management Practices Among Speech-Language Pathologists in Malaysia

Abstract

In Malaysia, speech pathology services for dysphagia management are yet to be fully established. Detailed knowledge of current practices is necessary to inform future training and infrastructure needs. Therefore, the current study aimed to (a) explore current practice for dysphagia management among speech-language pathologists (SLPs) in Malaysia and (b) compare Malaysian practice to those of SLPs working in settings with an established dysphagia service (Queensland Health, Australia). A questionnaire was mailed to all 43 SLPs working in Malaysian government hospitals. Thirty Malaysian respondents were included in the current study. The same set of questionnaire was then mailed to SLPs in Queensland government hospitals until 30 clinicians who matched the Malaysian cohort responded. Survey findings from the Malaysian clinicians revealed at least moderate consistency of practice for 24 out of 25 clinical items examined, with 71% of these items classified as having high practice consistency. Comparisons with a matched cohort of SLPs from Queensland Australia, revealed patterns of practice were comparable across 19 of the 25 (76%) aspects of dysphagia assessment and treatment examined. The most noticeable areas of inconsistency of practice between the two groups related to the proportion of active caseload dedicated to dysphagia management, the use of a team approach to dysphagia management, involvement in making diagnoses, and differences regarding the nature and frequency of use of instrumental diagnostic tools. Despite identifying a number of areas

which require further education and training, overall the current study demonstrated that the dysphagia service in Malaysia is moving towards standards of practice largely comparable to more established services. The findings provide an insight into patterns of service development for other countries developing dysphagia services.

Key Words: dysphagia management, speech-language pathologist, practice pattern, dysphagia assessment, dysphagia treatment, team management

Introduction

The evolution of dysphagia management within health care settings started in the early 1970s (Groher, 1997). Before the 1970s, simple radiographic procedures were largely utilized to assess patients with suspected swallowing problems (Logemann, 1998) and treatment of the problem was limited to utilization of gastrostomy or nasogastric tubes (Groher, 1997). Due to increased awareness among health professionals regarding the importance of appropriate dysphagia management, advances in technology, and the commencement of research in the area in the 1970s, management of this disorder has advanced from this basic level. To date, numerous improvements with regard to dysphagia assessment and treatment have been witnessed internationally and this process is still on-going as a consequence of continuous research into the basics of swallowing physiology, the advancement of effective diagnostic techniques, and evidence of effective clinical interventions.

However whilst acceptance and the evidence base for speech pathology services, including the clinical practice area of dysphagia management, have been developing rapidly across a number of countries around the world (e.g. Australia, Canada, the United Kingdom, the United States of America), the establishment of the speech pathology profession in many developing countries (e.g. Bangladesh, Indonesia, Thailand) is still in the early stages. As the speech pathology profession is relatively new within these health care services, practice patterns across all clinical areas, including dysphagia services, are also in the early stages of development and acceptance.

The Malaysian context is one example of where speech pathology services are still developing and expanding. Although recognized as the first country in South East Asia to offer speech pathology program (Universiti Kebangsaan Malaysia, 2010), speech pathology services within the country have been available in government health settings for just over 10 years. A recent pilot survey of dysphagia management practices within the Malaysian context was conducted in 2004 which revealed that there were critical limitations to dysphagia services provided by Malaysian speech-language pathologists (SLPs) in comparison to international standards (Sharma, Harun, Mustaffa-Kamal, & Noerdin, 2006). The most significant findings from that study revealed a reduced number of SLPs providing dysphagia services to the patients; that dysphagia comprised only a small proportion of the caseload among the SLPs who manage the problem; limited services (no instrumental swallowing examination) were provided by the SLPs; and reduced skills and training in dysphagia management were reported by the clinicians. As such, the dysphagia management practices employed by Malaysian SLPs were less developed

compared to international best practice standards (American Speech-Language-Hearing Association (ASHA), 2001; Heart and Stroke Foundation of Ontario, 2002).

In part, the results obtained by Sharma et al. (2006) were not unexpected considering the relative infancy of the speech pathology profession in Malaysia and the limited number of clinicians available to provide dysphagia services. Malaysia began to offer a speech pathology training program (undergraduate level) in 1995 and produced the first graduates in 1999, just five years prior to the survey by Sharma and colleagues (2006). At the time of the survey, the SLP workforce in Malaysia was reported to be only 72 clinicians with less than 20 working in Malaysian government hospitals (Sharma et al., 2006). Not surprisingly then it was found that only 50% of the 44 Malaysian SLPs surveyed had managed dysphagia, and the proportion of their caseload which was spent with patients with dysphagia was much lower than reported by other established countries (Armstrong, 2003; ASHA, 2005; Martino, Pron, & Diamant, 2004; Pettigrew & O'Toole, 2007). It has also been acknowledged by the Malaysian teaching university (Fakulti Sains Kesihatan Bersekutu, 1995) that training in, and clinical exposure to dysphagia management provided to the initial Malaysian speech pathology graduates was limited. This in turn could explain the reduced skills and confidence reported by clinicians managing dysphagic patients.

The previous study by Sharma et al. (2006) highlighted a number of issues that needed to be addressed in order to improve dysphagia services in Malaysia. Since the time of that study, the number of SLPs working in Malaysian government hospitals has more than doubled, which may mean that changes in dysphagia service provision have occurred since the time. In addition, the amount of dysphagia training in the undergraduate program has increased (to an average of 20

hours) and increased opportunities for postgraduate training in dysphagia have been offered annually over the past five years (Mustaffa-Kamal, Ward, & Cornwell, 2010). Consequently, it is expected that there could be some improvements in dysphagia services in Malaysia since the previous report.

Providing services in accordance to the best practice standard are always a target among the health care providers. Understanding the weaknesses within a system, followed by identifying and overcoming these weaknesses are the critical first stages to improving services in a health care setting (National Institute for Health and Clinical Excellence, 2007). Thus in order to further assist in the development of better dysphagia management practices particularly in Malaysia, the current study was designed to re-explore the current strengths and weaknesses facing this service particularly in relation to infrastructure, training, and support networks. Additionally, it was important to benchmark current clinical practice in Malaysia with a reference group of SLPs working in health care settings with established dysphagia services (Public Health Service, Queensland, Australia) to ascertain practice levels in relation to an international standard. Therefore, the present study had two specific aims: (a) to explore current practice patterns for dysphagia management among SLPs in Malaysia and (b) compare Malaysian practice to those of SLPs working in settings with an established dysphagia service. In the literature to date there is minimal reported evidence regarding the nature of dysphagia management practices in countries where speech pathology services are emerging (Blackwell & Littlejohns, 2010; Sharma et al., 2006). As such, the current study provides insight into those factors that can impact the growth and development of dysphagia services in such settings.

Methodology

Participants

The current study involved two participant cohorts: SLPs working in government hospitals throughout Malaysia and a comparison sample of practicing SLPs working in Queensland Health (government hospitals) across the state of Queensland. All participants were required to provide written consent for the study, and their data were stored in a de-identified manner. Ethical clearances were received from the Medical Research Ethics Committee of the Ministry of Health in Malaysia and the Medical Research Ethics Committee of The University of Queensland, with gatekeeper approvals received from the Economic Planning Unit, Malaysia and the Dysphagia Special Interest Group (DSIG), Queensland.

The Malaysian cohort was recruited from a list of the SLPs working in government hospitals in Malaysia, obtained from the Ministry of Health, Malaysia. At the time of data collection, there were 43 SLPs in Malaysia working in 27 government hospitals. The Hospital Director in each setting was approached in writing to invite their SLP staff to participate in the study. Each site was then sent a survey package which contained a copy of an information sheet, a consent form and a questionnaire which the Hospital Directors provided to suitable staff. Since this study aimed to explore current practice in managing dysphagia of the Malaysian SLPs, only those SLPs who worked full time in Malaysian government hospitals and identified that they managed patients with dysphagia were included. No other inclusion or exclusion criteria were applied. Thirty-one SLPs in Malaysia returned the completed questionnaire, however one survey had to be excluded as the clinician failed to meet the inclusion criteria. The valid survey response

sample represented 69.8% (30/43) of practicing clinicians in Malaysian government hospital settings.

Australia is recognized as a country with established dysphagia management (Armstrong, 2003), therefore clinicians working in government hospital settings within Queensland, Australia were recruited as the reference group. Recruitment of potential participants was facilitated by the DSIG of Queensland, which included SLPs from 18 government hospitals (both metropolitan and rural) across the state of Queensland at the time of the study. Packages containing multiple surveys were sent to the Head of Department of all the hospitals, and those willing to assist the project then distributed the surveys to all of their speech pathology staff who managed dysphagia as part of their clinical caseload. Data collection continued until a cohort of 30 surveys were received from SLPs who worked full time in government hospitals and were matched with the Malaysian cohort in terms of years of clinical practice (less than 10 years). Analysis confirmed no statistically significant difference ($\chi^2=3.459$, $p=0.326$) in the years of clinical practice of the two cohorts, with most of the clinicians in both cohorts (Malaysian $n=13$, Queensland $n=19$) having between 1-3 years of experience, with lower numbers of more experienced clinicians in both groups (>6 years experience, Malaysian $n=9$, Queensland $n=6$). All respondents undertook their entry level degree in the field of speech-language pathology in their own country of practice. Although six Queensland SLPs qualified with a coursework masters degree, it should be noted that in Australia this degree is also an entry level qualification.

Survey

The questionnaire provided to SLPs was specifically designed to explore a range of aspects of

dysphagia service including current practice patterns, as well as skills and training of the SLPs. Its development was based on prior published questionnaires and guidelines used in previous relevant studies from a range of countries (Bateman, Leslie, & Drinnan, 2007; Martino et al., 2004; Mathers-Schmidt & Kurlinski, 2003; O'Donoghue & Dean-Claytor, 2008; Pettigrew & O'Toole, 2007; Speech Pathology Australia, 2004; Ward, Jones, Solley, & Cornwell, 2007). The questionnaire consisted of a total of 56 questions divided into seven parts: (1) Part A - demographic data; (2) Part B - formal education; (3) Part C - in-service training; (4) Part D - caseload characteristics; (5) Part E - dysphagia assessment; (6) Part F - dysphagia treatment; and (7) Part G - skills and training in dysphagia management. The focus of the current paper, however, is only on practice patterns for dysphagia management undertaken by SLPs in Malaysia, and therefore 28 questions from only four parts of the survey (Part A, D, E and F) relevant to the study are reported here. The remaining elements of the survey will be analysed and reported separately in other publications.

The format of the survey questions included forced choice, multiple choice, listing and five-point Likert scale (never - always) ratings (see Appendix). Part A of the questionnaire consisted of multiple-choice demographic questions relating to working experience and formal education. Part D contained combinations of multiple-choice, rating scale and listing type questions regarding the participant's caseload and team management of dysphagia. Finally, Part E and F required participants to select a single option from the Likert rating scale regarding general and specific procedures used in dysphagia assessment and treatment respectively. The content and language of the questionnaire were validated by a group of independent Malaysian and Australian SLPs to ensure its suitability to be used in both countries and whether or not it could address the

objectives of the study. The questionnaire was then edited and finalized according to the recommendations made by the reviewers.

Results

Prior to data analysis, the five categories from the Likert scales (never, seldom, half the time, usually and always) were simplified into three categories; where (a) 'never' was left by itself, (b) 'seldom' and 'half the time' were combined, and (c) 'usually' and 'always' were combined. The simplification of categories was conducted in order to reduce possible errors caused by distraction of perception and thus increases reliability of analysis (Trochim & Donnelly, 2007). Two levels of analysis were then applied to address the research questions in this study. The first explored the practice patterns of SLPs in Malaysia by determining the level of clinical consistency for each aspect of assessment and treatment examined. Using the process reported by Mathers-Schmidt and Kurlinski (2003), a high level of clinical consistency was considered present when 75% or more respondents indicate a similar pattern of practice. Moderate clinical consistency related to agreement levels of between 50 and 75%. Where there was less than 50% agreement for a particular aspect of management, this indicated minimal or no clinical consistency.

To explore any differences in the patterns of clinical practice between the Malaysian and Queensland cohorts, inferential statistics (chi-square tests) were conducted. A conservative alpha of 0.01 was adopted in order to minimize the potential for Type II error due to multiple comparisons (Shearer, 1982). Results falling between $p>0.01$ and $p<0.05$ were considered potential trends.

Caseload Characteristics

All Malaysian SLPs reported managing a mixed caseload of adult and paediatric clients, of which the predominant percentage of time was spent with paediatric clients (mean: 65%, range 5% to 90%). Regarding the management of adult clients, 60% of clinicians responded that less than 10% of their total adult caseload involved dysphagia management, 20% reported between 10-49% of their adult caseload involved dysphagia management and only 20% spent half or more of their clinical caseload with adult patients with dysphagia. In contrast, in the Queensland sample, the majority (98%) of SLPs managed an adult caseload only while 2% had a mixed adult/paediatric caseload. On average 75% of the Queenslanders' adult caseload was related to dysphagia management. Statistically, the study populations differed significantly in terms of their primary caseload ($\chi^2=53.333$, $p<0.001$) and the proportion of their caseload that was dedicated to dysphagia management ($\chi^2=35.103$, $p<0.001$). The dysphagia population most frequently managed by clinicians in both groups was patients with neurological deficits (Figure 1).

[Insert Figure 1 here]

Team management was low in the Malaysian cohort, with less than half (13/30) of respondents reporting the availability of team management of dysphagia at their work place. A chi-square test comparing practice across the two countries revealed a significant difference ($\chi^2=14.700$, $p<0.001$) in terms of a team approach to dysphagia management, with Queensland SLPs reporting that 90% of their clinical practice in dysphagia management occurred within a team.

In both countries, referrals to SLPs for dysphagia management were most frequently received from a medical officer, however in Malaysia this profession also represented the predominant referral source (see Figure 2). In contrast, SLPs in Queensland commonly received referrals from additional sources, including allied health professionals (occupational therapist, physiotherapist and dietician), nursing and other health staff. Chi-square analysis revealed that referrals from professionals other than medical officers was significantly lower ($\chi^2=101.569$, $p<0.001$) in Malaysia when compared to Queensland practice.

[Insert Figure 2 here]

Dysphagia Assessment

Regarding patterns of practice in dysphagia assessment, the data revealed no significant difference between the two cohorts ($\chi^2=5.455$, $p=0.065$) in the use of a clinical swallowing examination (CSE), with 83.3% of the Malaysian and 100% of the Queensland SLPs reported they usually/always perform a clinical examination on patients with swallowing issues (high clinical consistency). High clinical consistency was also observed within the Malaysian cohort for performing the components of a CSE, with the majority (86.7%) usually/always taking a case history, assessing communication status (96.7%), conducting thorough oromotor examination (83.3%), and performing food and fluid trials (90%). However moderate consistency in practice was found for usually/always providing information to the patients regarding the outcomes, benefits and risks associated with dysphagia management before the services are provided (60%), usually/always using cervical auscultation (50%), and “never” using pulse oximetry (66.7%). The

patterns of practice of the Queensland clinicians did not differ significantly for most of these elements, with equally high consistency observed for usually/always conducting an oromotor examination (90%; $\chi^2=0.577$, $p=0.448$), food/fluid trials (100%; $\chi^2=3.158$, $p=0.076$), and moderate consistency for usually/always using cervical auscultation (62.1%; $\chi^2=4.719$, $p=0.094$) and providing information to the patients (66.7%; $\chi^2=0.287$, $p=0.592$). The only significant difference between the two groups was “use of pulse oximetry” ($\chi^2=15.60$, $p<0.01$) where only 16.7% of Queensland clinicians reported “never” using it, with the majority (70%) using it during assessments seldom-half the time. Trends ($p>0.01$ but <0.05) for a difference between the two cohorts were noted for history taking ($\chi^2=4.286$, $p=0.038$) with all Queensland clinicians indicating they usually/always completed this step, and for assessing communication status ($\chi^2=4.043$, $p=0.044$) where fewer Queensland clinicians (80%) usually/always included communication assessments in their routine CSE.

Regarding instrumental assessment practices, statistical comparisons revealed no significant difference ($\chi^2=2.827$, $p=0.243$) between the two cohorts, with high consistency of practice in both the Malaysian (80%) and Queensland clinicians (93.1%) for usually/always referring patients for further instrumental examination. However, the nature of the instrumental assessment used differed between the two cohorts. Analysis revealed significantly ($\chi^2=23.785$, $p<0.001$) higher use of fiberoptic endoscopic examination of swallowing (FEES) by the Malaysian cohort, with 56.7% usually/always using it compared to Queensland clinicians where the majority (73.3%) only reported using it seldom to half of the time. In contrast, use of videofluoroscopic swallowing study (VFSS) was found to be significantly higher ($\chi^2=36.753$, $p<0.001$) for the clinicians in

Queensland where 89.3% used it seldom to half the time compared to the majority of Malaysian clinicians who reported “never” using it (86.7%).

For diagnosis and referral patterns, there were trends between the two groups regarding the proportion of clinicians who reported usually/always providing a diagnosis (Malaysian 60%, Queensland 90%; $\chi^2=7.371$, $p=0.025$), providing detailed diagnostic statements (Malaysian 53.4%, Queensland 83.3%; $\chi^2=7.642$, $p=0.022$), and referring to other professionals (Malaysian 76.7%, Queensland 100%; $\chi^2=7.925$, $p=0.019$).

Treatment

Both the Malaysian and Queensland clinicians reported comparable levels of high clinical consistency for usually/always being involved in planning and conducting swallowing intervention (Malaysian 86.7%, Queensland 96.7%; $\chi^2=1.964$, $p=0.161$). Regarding specific treatment approaches/techniques there was no significant difference in the patterns of clinical consistency observed between the groups for usually/always use diet modifications (Malaysian 80%, Queensland 93.3%; $\chi^2=2.308$, $p=0.129$) and postural changes (Malaysian 70%, Queensland 76.7%; $\chi^2=1.158$, $p=0.561$). Although 56.7% of Malaysian clinicians usually/always and 40% seldom to half the time used swallowing manoeuvres, this was not found to be significantly different ($\chi^2=3.062$, $p=0.216$) to the Queensland clinicians (60% seldom-half the time, 40% usually/always). The majority of both groups never used electrical stimulation in dysphagia treatment (Malaysian 86.7%, Queensland 66.7%; $\chi^2=5.552$, $p=0.062$).

For the remaining treatment items, analysis revealed significant differences between the treatment practices of the two groups, with significantly ($\chi^2=13.372$, $p=0.001$) more use of

sensory enhancement techniques in the Malaysian group (usually/always 43.3%, seldom-half the time 46.7%) than the Queensland cohort (usually/always 10%, seldom-half the time 90%), and oromotor exercises (Malaysian usually/always 83.3% and seldom-half the time 16.7%, Queensland usually/always 40% and seldom-half the time 60%; $\chi^2=11.915$, $p=0.001$). Although the majority of both groups usually/always provided education to carers and other professionals (Malaysian 76.7%, Queensland 100%), there was significantly more clinical consistency in the Queensland cohort ($\chi^2=7.925$, $p=0.005$). Similarly, despite high practice consistency in both groups, there was a trend ($\chi^2=4.286$, $p=0.038$) for more clinicians routinely providing patient education (Malaysian 86.7%, Queensland 100%) and for usually/always monitoring treatment outcomes (Malaysian 80%, Queensland 96.7%; $\chi^2=4.043$, $p=0.044$) in the Queensland cohort. No clinicians in either group routinely used biomechanical devices, however there was a trend for slightly more Queensland clinicians to use these devices seldom-half of the time (Malaysian 3.3%, Queensland 26.7%; $\chi^2=6.405$, $p=0.011$).

Discussion

The Malaysian context is one example of where speech pathology services are still developing and expanding, with preliminary research published in 2006 suggesting that dysphagia services within the country were not comparable to those expected elsewhere in the world (Sharma et al., 2006). In comparison to these findings, the present study has demonstrated some progresses have been achieved in a short time period, with clinicians reporting a number of dysphagia management practices in Malaysian government hospitals that fall in line with international practice patterns. The current study results however did highlight areas of continued challenge for

SLPs aiming to provide evidence based dysphagia services in Malaysia, including a limited SLP workforce, minimal team involvement, access to some instrumental assessment procedures, and reduced involvement in making dysphagia diagnoses and referring to other professionals. Overall the current findings suggest that considerable gains can be made in SLP practice within developing countries in a short-time frame where issues have been identified. However, some areas may not develop as quickly as others. The study highlights challenges facing Malaysian clinicians that need to be addressed in order to further assist the growth and development of the profession and specifically the clinical services provided to dysphagic patients.

The Malaysian workforce is potentially servicing a population of 28.25 million (Department of Statistics Malaysia, 2010) compared to the Queensland population of 4.50 million (Australian Bureau of Statistics, 2010). While an audit of SLPs in Queensland revealed that in 2006, 30% of the 985 registered clinicians were working in Queensland Health settings (Speech Pathologists Board of Queensland, 2009), only 43 SLPs are employed in the 27 Malaysian government hospitals to manage adults and children with communication and swallowing problems. This represents a workforce almost seven times smaller than that of Queensland. Even though there was growth in the provision of dysphagia services in Malaysia than previously reported in 2006 (Sharma et al., 2006), workforce constraints continue to be a great barrier to the establishment of the service in the country. This was evidenced across a range of variables including caseload mix, team involvement and referral patterns. In Malaysia, the proportion of available caseload currently dedicated to the management of dysphagic patients remains dramatically lower (<10% of their adult caseload) than in Queensland ($\geq 75\%$ of adult caseload) and most other established countries such as Canada, Ireland and the United States (>30% of

their entire caseload) (ASHA, 2005; Martino et al., 2004; Pettigrew & O'Toole, 2007). In addition, Malaysian clinicians managed mainly paediatric patients. This pattern of practice is noted to be in line with the early developmental stages of speech pathology services in other established countries such as Canada and Ireland where the initial scope of practice was limited to children in educational and health settings (Martin, 2010; Irish Association of Speech and Language Therapists, 2006). Gradual broadening of the scope of speech pathology practices was observed within Canada and Ireland following increasing numbers in the clinical workforce. It would be anticipated that Malaysia will also follow this developmental pattern and show expansion of adult services as the available workforce increases.

With an insufficient clinical workforce comes limited potential for Malaysian SLPs to be involved in multidisciplinary team management of dysphagic patients, a valuable component in the management of the disorder (Martens, Cameron, & Simonsen, 1990). As their workload is spread across many areas, with minimal time for active involvement with dysphagic patients, this in turn leads to reduced awareness and knowledge among other health professionals of SLP's roles in dysphagia management. Lack of awareness of the SLPs role in the clinical management of dysphagic patients is also a key factor influencing the low number of referrals received by SLPs in Malaysia. Encouragingly, early work in the United States revealed that team management can evolve and be enhanced over time (Groher, 1997). Less than 10% of the 172 Department of Veterans Affairs medical settings in the United States were reported to have a team approach in 1986, yet this number had increased to 56% in just four years (Groher, 1997). Hence improvement can be anticipated in team involvement and referral patterns in the future when more clinicians are available for active dysphagia management. Overall, the current

evidence supports that there is a need to increase the number of SLPs in Malaysia in order to increase clinical involvement with dysphagia management, promote the role of the SLP to other health professionals with respect to dysphagia management and increase the number of patients receiving management. This issue needs to be addressed both at a government and university training level.

Regarding specific components in dysphagia management, the current study showed considerable progression in terms of dysphagia practices in Malaysia across both assessment and intervention practices since the previous study in 2006. However, there are some areas that continued to differ between Malaysian and Queensland practices that support the need to identify and address relevant confounding factors limiting achievement of best practice dysphagia services. The high consistency of practice and similarity of practice with the Queensland respondents with respect to CSE was a positive finding where the majority of clinicians in both cohorts were usually/always completing the key components of a comprehensive CSE (McCullough, Wertz, Rosenbek, & Dinneen, 1999). The results were also comparable to the clinical patterns demonstrated by clinicians within the United States (Mathers-Schmidt & Kurlinski, 2003). The only item examined by the survey differed significantly between the two cohorts was limited use of pulse oximetry by the Malaysian clinicians. However, utilization of pulse oximetry has also been found to be inconsistent across clinicians in the United Kingdom and Ireland (Bateman et al., 2007). This discrepancy in clinical practice patterns is possibly a reflection of a lack of evidence to support the effectiveness of pulse oximetry in detecting aspiration (Ramsey, Smithard, & Kalra, 2006; Wang, Chang, Chen, & Hsiao, 2005).

Instrumental assessments are found to be a critical technique to confirm findings from the CSE (Langmore & Logemann, 1991) and are more sensitive in detecting aspiration (McCullough, Wertz, & Rosenbek, 2001). The current survey revealed a dramatic increase in the use of instrumental assessment in Malaysia compared to no reported use of the techniques six years ago in the country (Sharma et al., 2006). There was, however, a considerable difference noted between the types of instrumental assessment. The dominance for VFSS as the primary mode of instrumental assessment in the Queensland cohort has also been reported in other countries such as in the United States (Mathers-Schmidt & Kurlinski, 2003) and Ireland (Pettigrew & O'Toole, 2007). The contrasting pattern of using FEES predominantly in Malaysia could possibly be attributed to the fact that all speech pathology services in Malaysian government hospitals were initially allocated under the Department of Ear, Nose and Throat (ENT) and to date, most of them still remain under the department. This practice indirectly puts the SLPs in a close working relationship with the ENT staff and increases access to ENT facilities. Furthermore, the profession of speech pathology in Malaysia emerged after the introduction of FEES as a 'new' instrumental procedure in swallowing assessment (Langmore, Schatz, & Olsen, 1988). While the increased access to instrumental swallowing assessment techniques (i.e. FEES) reported by the current group of Malaysian clinicians is a positive finding compared to earlier research, FEES and VFSS are seen as complementary, not equal instrumental assessment tools for dysphagia (Bastian, 1993; Langmore et al., 1988). Thus ideally, it is important for clinicians to have equal opportunity to access both VFSS and FEES when necessary for complete diagnostic decision making.

Reduced clinical involvement in diagnostic decision making and reporting by Malaysian clinicians was observed and most likely relate to historical medical practices in the country where management and diagnosis of dysphagia was the doctors' responsibility. Another factor could possibly be reduced skills and confidence with the Malaysian clinical group in providing a swallowing diagnosis. These factors need to be examined further in order to determine the factors preventing Malaysian SLPs involvement in diagnostic decisions. Providing swallowing diagnosis is well recognized as a component of practice for SLPs as documented in the practice guideline worldwide (ASHA, 2001; Royal College of Speech-Language Therapy, 2005; Speech Pathology Australia, 2004), thus barriers to Malaysian SLPs fulfilling this role need to be identified and changed.

The findings from the examination of dysphagia treatment practices recognized that the majority of Malaysian SLPs routinely implemented a range of compensatory and rehabilitative techniques for management of the disorder, which was largely similar to the range of techniques used by the Queensland respondents. Where variability existed between the practices of the two cohorts, a possible contributing factor for the difference could be the lack of evidence to support practice, such as the use of oromotor exercises (Arvedson, Clark, Lazarus, Schooling, & Frymark, 2010), and sensory enhancements (Power et al., 2006), or access to equipment, such as the use of biomechanical devices. Although there was high clinical consistency within the Malaysian cohort for usually/always providing both patient and carer education, this was found to be statistically less than in the Queensland cohort. It is positive that the Malaysian SLPs recognize the importance of educate patients, caretakers and other professionals in order to facilitate safe swallowing and assist in the intervention processes (ASHA, 2001). It is possible

that the time constraints faced by the Malaysian clinicians at their workplace as a result of reduced workforce may be an influencing factor in the study differences observed.

While the current data provides both an insight into the clinical practices for dysphagia management in Malaysia, and how this compares to a clinical service with more established practices, there are issues which should be considered when interpreting the current data. One limitation is that the matching of the two cohorts did not account for the differences of caseload types and practice patterns. The Queensland cohort consisted of clinicians who managed mainly adult patients, with many providing specialist services dealing only with dysphagic patients. Thus their clinical practice and experience was not identical to the study group who managed mixed (adult/paediatric) caseloads and saw all nature of speech and language disorders. It is also recognized that there are considerable differences in the practice patterns between a 1st year clinician and a clinician with 9 years experience, this diversity in practice must be considered when examining the practice patterns in both groups. However considering that there was no significant difference between the average years of experience of the two groups and that the distribution of less and more skilled clinicians within the groups was largely comparable, we do not believe that levels of experience within the two groups is an issue contributing to the group differences observed. It is however, recognized that as a slightly larger proportion of both groups had less than 3 years experience, the practice patterns reported may be more representative of clinicians new to clinical practice. Another final consideration relates to the fact that the practice patterns reported are based solely on clinician report and clinician perceptions, and thus may not be a true reflection of actual practice (John & Robins, 1994). It is therefore recommended that future studies include direct observational methods to examine practical skills and clinical

decision making in order to obtain more reliable information on the level of clinical skill relating to dysphagia management available in Malaysia.

Conclusion

The present data demonstrated that dysphagia service in Malaysia is moving towards international standards of practice especially with regard to the utilization of assessment and treatment procedures. It is also recognized that the current Malaysian practice has dramatically improved compared to the 2006 report by Sharma and colleagues. At this point, the overall practice patterns displayed by the Malaysian SLPs are acceptable given that the profession is still in its infancy stage in the country. However, in order to further establish the service, certain aspects need to be addressed including: (a) increased numbers of SLPs in Malaysia in order to provide more services to patients with dysphagia; (b) establishing a team approach to dysphagia management; (c) increase SLPs' ability to manage the disorder to enable them to provide the services; (d) increase the responsibility of SLPs to provide swallowing diagnosis; and (e) to enhance access to VFSS when necessary. By addressing the barriers that currently exist, this will ultimately lead to enhanced service provision for patients with dysphagia in Malaysia.

Acknowledgements

The authors acknowledge financial assistance from the University of Queensland and the National University of Malaysia. We thank the following speech pathologists for their assistance in reviewing the survey items: Bena Cartmill, Kelly Beak, Basyariatul Fathi Othman, Radziah Mohd Fahmy, and Susheel K. Dhillon. We also wish to thank the members of the Dysphagia

Special Interest group as well as Anna Rumbach, Sophie Gudgeon and Dr Moya Pattie for their assistance in recruiting Queensland participants for the present study.

References

- American Speech-Language-Hearing Association (ASHA). (2001). Roles of speech-language pathologists in swallowing and feeding disorders: Technical report. *ASHA 2002 Desk Reference*, 3, 181-199.
- American Speech-Language-Hearing Association (ASHA). (2005). *ASHA SLP health care survey: Caseload characteristics report*. Rockville, MD: Author.
- Armstrong, E. (2003). Communication culture in acute speech pathology settings: Current issues. *Advances in Speech-Language Pathology*, 5, 137-143.
- Arvedson, J., Clark, H., Lazarus, C., Schooling, T., & Frymark, T. (2010). The effects of oral-motor exercises on swallowing in children: An evidence-based systematic review. *Dev Med Child Neurol*, 52, 1000-1013.
- Australian Bureau of Statistics. (2010). *Australian demographic statistics*. Queensland Treasury, Queensland Government. Retrieved November 8, 2010, from <http://www.oesr.qld.gov.au/products/briefs/aust-demographic-stats/aust-demographic-stats-201003.pdf>.
- Bastian, R. (1993). The videoendoscopic swallow study: An alternative and partner to the videofluoroscopic swallow study. *Dysphagia*, 8, 359-367.
- Bateman, C., Leslie, P., & Drinnan, M. J. (2007). Adult dysphagia assessment in the UK and Ireland: Are SLTs assessing the same factors?. *Dysphagia*, 22, 174-186.

- Blackwell, Z. & Littlejohns, P. (2010). A review of the management of dysphagia: A South African perspective. *Journal of Neuroscience Nursing*, 42, 61-70.
- Clark, H., Lazarus, C., Arvedson, J., Schooling, T., & Frymark, T. (2009). Evidence-based systematic review: Effects of neuromuscular electrical stimulation on swallowing and neural activation. *American Journal of Speech-Language Pathology*, 18, 361-375.
- Department of Statistics Malaysia. (2010). *Population*. Jabatan Perangkaan Malaysia. Retrieved November 8, 2010, from http://www.statistics.gov.my/portal/index.php?option=com_content&view=article&id=54%3Apopulation-updated-31072009&catid=35%3Akey-statistics&Itemid=53&lang=en.
- Fakulti Sains Kesihatan Bersekutu (Faculty of Allied Health Sciences). (1995). *Buku panduan prasiswazah* (Undergraduate student's handbook). Kuala Lumpur: Universiti Kebangsaan Malaysia.
- Groher, M. E. (1997). *Dysphagia: Diagnosis and management* (3rd ed.). Boston: Butterworth-Heinemann.
- Heart and Stroke Foundation of Ontario. (2002). *Improving recognition and management of dysphagia in acute stroke: Best practice guidelines for managing dysphagia*. Retrieved November 9, 2010, from http://www.heartandstroke.on.ca/atf/cf/%7B33C6FA68-B56B-4760-ABC6-D85B2D02EE71%7D/Dysphagia_Overview_2002_FINAL.pdf.
- Irish Association of Speech and Language Therapists. (2006). History of speech and language therapy education in the Republic of Ireland. Retrieved April 4, 2011, from <http://www.iaslt.ie/docs/public/IASLT%20History%20of%20SLT%20in%20Ireland.pdf>.

- John, O. P. & Robins, R. W. (1994). Accuracy and bias in self-perception: Individual differences in self-enhancement and the role of narcissism. *Journal of Personality and Social Psychology, 66*, 206-219.
- Langmore, S. E. & Logemann, J. A. (1991). After the clinical bedside swallowing examination: What next?. *American Journal of Speech and Language Pathology, September*, 13-20.
- Langmore, S. E., Schatz, K., & Olsen, N. (1988). Fiberoptic endoscopic examination of swallowing safety: A new procedure. *Dysphagia, 2*, 216-219.
- Logemann, J. A. (1998). *Evaluation and treatment of swallowing disorders* (2nd ed.). Austin, Texas: Pro-Ed.
- Low, J., Wyles, C., Wilkinson, T., & Sainsbury, R. (2001). The effect of compliance on clinical outcomes for patients with dysphagia on videofluoroscopy. *Dysphagia, 16*, 123-127.
- Martens, L., Cameron, T., & Simonsen, M. (1990). Effects of a multidisciplinary management program on neurologically impaired patients with dysphagia. *Dysphagia, 3*, 147-151.
- Martin, V. (2010). A brief overview of the history of the professions of speech-language pathology and audiology in Canada. Retrieved April 4, 2011, from http://www.acsu.buffalo.edu/~duchan/new_history/canada_martin.html.
- Martino, R., Pron, G., & Diamant, N. E. (2004). Oropharyngeal dysphagia: Surveying practice patterns of the speech-language pathologist. *Dysphagia, 19*, 165-176.
- Mathers-Schmidt, B. A. & Kurlinski, M. (2003). Dysphagia evaluation practices: Inconsistencies in clinical assessment and instrumental examination decision-making. *Dysphagia, 18*, 114-125.

- McCullough, G. H., Wertz, R. T., & Rosenbek, J. C. (2001). Sensitivity and specificity of clinical/bedside examination signs for detecting aspiration in adults subsequent to stroke. *Journal of Communication Disorders, 34*, 55-72.
- McCullough, G. H., Wertz, R. T., Rosenbek, J. C., & Dinneen, C. (1999). Clinicians preferences and practices in conducting clinical/bedside and videofluoroscopic swallowing examinations in an adult, neurogenic population. *American Journal of Speech Language Pathology, 8*, 149-163.
- Mustaffa-Kamal, R., Ward, E., & Cornwell, P. (2010). *Skills and training in dysphagia management among speech-language pathologists in Malaysia*. Presented at the Regional Conference on "Current Developments in Speech, Language & Hearing Sciences in the Asia Pacific Region 2010": Kuala Lumpur, May.
- National Institute for Health and Clinical Excellence. (2007). *How to change practice: Understand, identify and overcome barriers to change*. London: Author. Retrieved July 31, 2010, from www.nice.org.uk/media/D33/8D/Howtochangepractice1.pdf.
- O'Donoghue, C. R. & Dean-Claytor, A. (2008). Training and self-reported confidence for dysphagia management among speech-language pathologists in the schools. *Language, Speech, and Hearing Services in Schools (LSHSS), 39*, 192-198.
- Pettigrew, C. M. & O'Toole, C. (2007). Dysphagia evaluation practices of speech and language therapists in Ireland: Clinical assessment and instrumental examination decision-making. *Dysphagia, 22*, 235-244.

- Power, M. L., Fraser, C. H., Hobson, A., Singh, S., Tyrrell, P., Nicholson, D. A., Turnbull, I., Thompson, D. G., & Hamdy, S. (2006). Evaluating oral stimulation as a treatment for dysphagia after stroke. *Dysphagia*, *21*, 49-55.
- Ramsey, D. J. C., Smithard, D. G., & Kalra, L. (2006). Can pulse oximetry or a bedside swallowing assessment be used to detect aspiration after stroke?. *Stroke*, *37*, 2984-2988.
- Royal College of Speech-Language Therapy. (2005). *Royal College of Speech Language Therapy clinical guidelines*. London: Speechmark.
- Sharma, S., Harun, H., Mustaffa-Kamal, R., & Noerdin, S. (2006). Pengendalian disfagia oleh patologis pertuturan-bahasa di Malaysia [Management of dysphagia by speech-language pathologists in Malaysia]. *Jurnal Sains Kesihatan Malaysia*, *4*, 39-51.
- Shearer, W. M. (1982). *Research procedures in speech, language, and hearing*. Baltimore, MD: Williams & Wilkins.
- Speech Pathologists Board of Queensland. (2009). *Report on speech pathologists labour force survey*. Retrieved April 25, 2010, from www.speechpathboard.qld.gov.au.
- Speech Pathology Australia. (2004). *Dysphagia: General position paper*. Melbourne: The Speech Pathology Association of Australia Limited.
- Trochim, W. M. K. & Donnelly, J. P. (2007). *The research methods knowledge base* (3rd ed.). Cincinnati, OH: Atomic Dog Publishing.
- Universiti Kebangsaan Malaysia. (2010). *Department of Audiology and Speech Sciences*. Retrieved March 18, 2011, from http://www.fskb.ukm.my:8080/fskb/index.php?option=com_content&view=article&id=12&Itemid=22&lang=en.

- Wang, T. G., Chang, Y. C., Chen, S. Y., & Hsiao, T. Y. (2005). Pulse oximetry does not reliably detect aspiration on videofluoroscopic swallowing study. *Archives of Physical Medicine and Rehabilitation, 86*, 730-734.
- Ward, E. C., Jones, C., Solley, M., & Cornwell, P. (2007). Clinical consistency in Australian tracheostomy management. *Journal of Medical Speech-Language Pathology, 15*, 7-26.

Appendix

**QUESTIONNAIRE
SKILLS AND TRAINING OF SPEECH-LANGUAGE PATHOLOGIST IN DYSPHAGIA
MANAGEMENT**

Date : _____

In which country do you work?:

Malaysia

Australia

This questionnaire aims to identify your involvement, skills and training in the management of patients with a swallowing problem. There is no right or wrong answer. Please go through each question carefully and tick (✓) in the appropriate box(es).

Note: Where the term ‘speech-language pathologist’ (as known in Malaysia) used in this questionnaire, it also refers to ‘speech pathologist’ (as known in Australia).

PART A: DEMOGRAPHIC DATA

1. How many years have you been practising speech-language pathology?

Less than 1 year	<input type="checkbox"/>
1 – 3 years	<input type="checkbox"/>
4 – 6 years	<input type="checkbox"/>
7 – 9 years	<input type="checkbox"/>
10 – 12 years	<input type="checkbox"/>
13 years and above	<input type="checkbox"/>

2. How many years have you been working in a hospital setting?

Less than 1 year	<input type="checkbox"/>
1 – 3 years	<input type="checkbox"/>
4 – 6 years	<input type="checkbox"/>
7 – 9 years	<input type="checkbox"/>
10 – 12 years	<input type="checkbox"/>
13 years and above	<input type="checkbox"/>

3. What is your highest degree in speech-language pathology?

Bachelor	<input type="checkbox"/>
Master	<input type="checkbox"/>
Doctorate (PhD)	<input type="checkbox"/>

4. Where did you undertake your degree(s) in Speech-Language Pathology?
(Please tick (✓) all relevant options that apply to you)

In Malaysia	<input type="checkbox"/>
In Australia	<input type="checkbox"/>
Other country (specify): _____	<input type="checkbox"/>

PART D: CASELOAD CHARACTERISTICS

1. In your entire caseload (all aspects of speech and language pathology), what type of populations have you been managing?
 (Please tick (✓) all relevant options and write down the weight (%) in the provided column. Total percentage should be 100%)

	Weight (%)
Paediatric	
Adult	

2. Within the last year, what percentage of your total adult caseload was involved with dysphagia management?

Not Applicable	
None	
1 – 9%	
10 – 24%	
25 – 49%	
50 – 74%	
75% or more	

3. What populations do you manage dysphagia in?
 (Please circle only ONE relevant option from the frequency columns for each population type)

Population	Frequency				
	Never	Seldom	Half the time	Usually	Always
Neurological (e.g: CVA, Parkinson's disease)	1	2	3	4	5
Surgical (e.g: maxillofacial, head and neck surgery)	1	2	3	4	5
Trauma (e.g: intubation injury, burns)	1	2	3	4	5
Metabolic (e.g: diabetes, thyroid dysfunction)	1	2	3	4	5
Others (e.g: oncology,	1	2	3	4	5

4. (i) Does the setting in which you work have a team approach for the management of patients with dysphagia?

Yes	
No	

(ii) In your work place, which other medical / health professionals refer patients with dysphagia to you?

(Please list all professionals, e.g. nursing, oncologist, dietitian, etc.)

1		6	
2		7	
3		8	
4		9	
5		10	

PART E: DYSPHAGIA ASSESSMENT

How frequently do you use the following dysphagia assessment procedures on patients?.
(Please circle only ONE relevant option from the frequency columns)

Procedure	Frequency				
	Never	Seldom	Half the time	Usually	Always
1. Perform clinical swallowing examination	1	2	3	4	5
2. Provide information to the patients about the outcomes, benefits & risks of dysphagia management	1	2	3	4	5
3. Thorough history taking	1	2	3	4	5
4. Assess communication status	1	2	3	4	5
5. Thorough oromotor examination	1	2	3	4	5
6. Perform food/fluid trials	1	2	3	4	5
7. Cervical auscultation	1	2	3	4	5
8. Pulse oximetry	1	2	3	4	5
9. Refer for instrumental assessment when required	1	2	3	4	5
10. Videofluoroscopic swallowing study (VFSS)	1	2	3	4	5
11. Fiberoptic endoscopic examination of swallowing (FEES)	1	2	3	4	5
12. Provide diagnosis of dysphagia	1	2	3	4	5
13. Provide detail diagnostic statements (underlying causes, severity level, risk of aspiration & contributing factors)	1	2	3	4	5
14. Refer patients to other health professionals for further management	1	2	3	4	5

PART F: DYSPHAGIA TREATMENT

How frequently do you use the following dysphagia treatment procedures on patients?
 (Please circle only ONE relevant option from the frequency columns)

Dysphagia Management		Frequency				
		Never	Seldom	Half the time	Usually	Always
1. Plan and conduct swallowing intervention based on assessment findings and patient's need?		1	2	3	4	5
2. Compensatory techniques	(a) Postural Changes	1	2	3	4	5
	(b) Sensory Enhancement	1	2	3	4	5
	(c) Diet Modification	1	2	3	4	5
3. Rehabilitative techniques	(a) Oral Motor Exercises	1	2	3	4	5
	(b) Swallowing Maneuvers	1	2	3	4	5
	(c) Electrical Stimulation (e.g. vitalstim)	1	2	3	4	5
	(d) Biomechanical Devices (e.g. surface electro-myography)	1	2	3	4	5
4. Educate patient about his/her swallowing conditions and treatment techniques?		1	2	3	4	5
5. Educate caretakers and other professionals about patient's swallowing conditions and management?		1	2	3	4	5
6. Do you monitor patient outcomes during treatment?		1	2	3	4	5

Once you have completed the questionnaire, please return it using the paid envelope provided.

THANK YOU FOR YOUR COOPERATION AND TIME

FIGURES

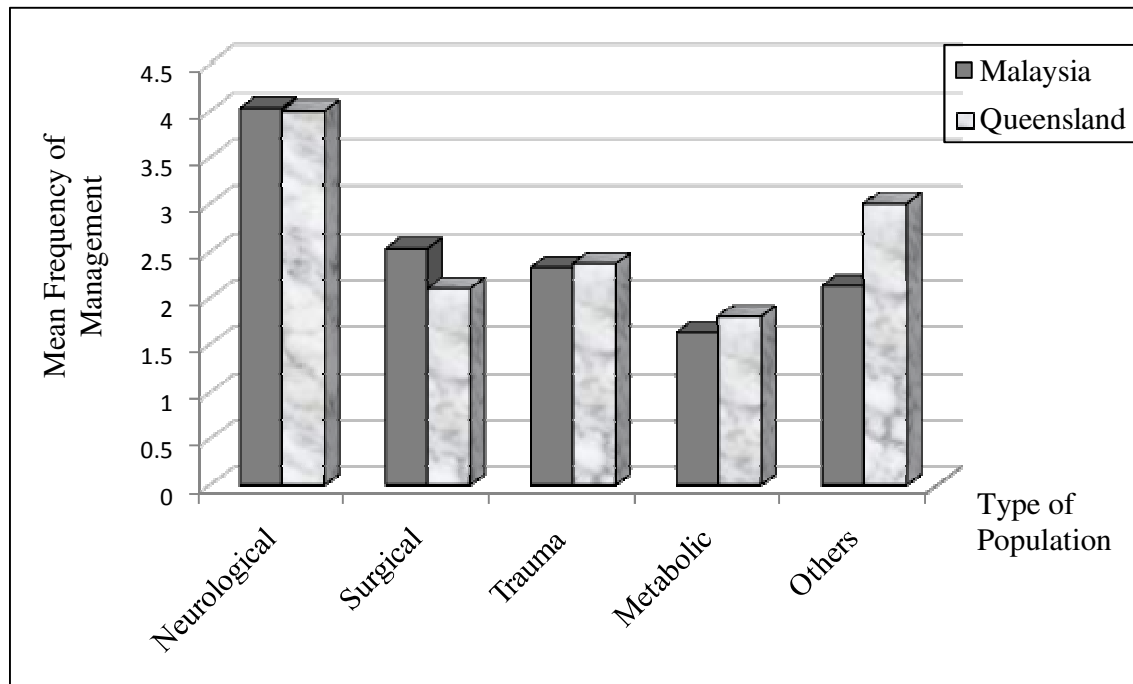


Figure 1. Populations managed by the SLPs in Malaysia (n=30) and Queensland (n=30). (Note: Mean frequency: 1=never, 2=seldom, 3=half the time, 4=usually, 5=always)

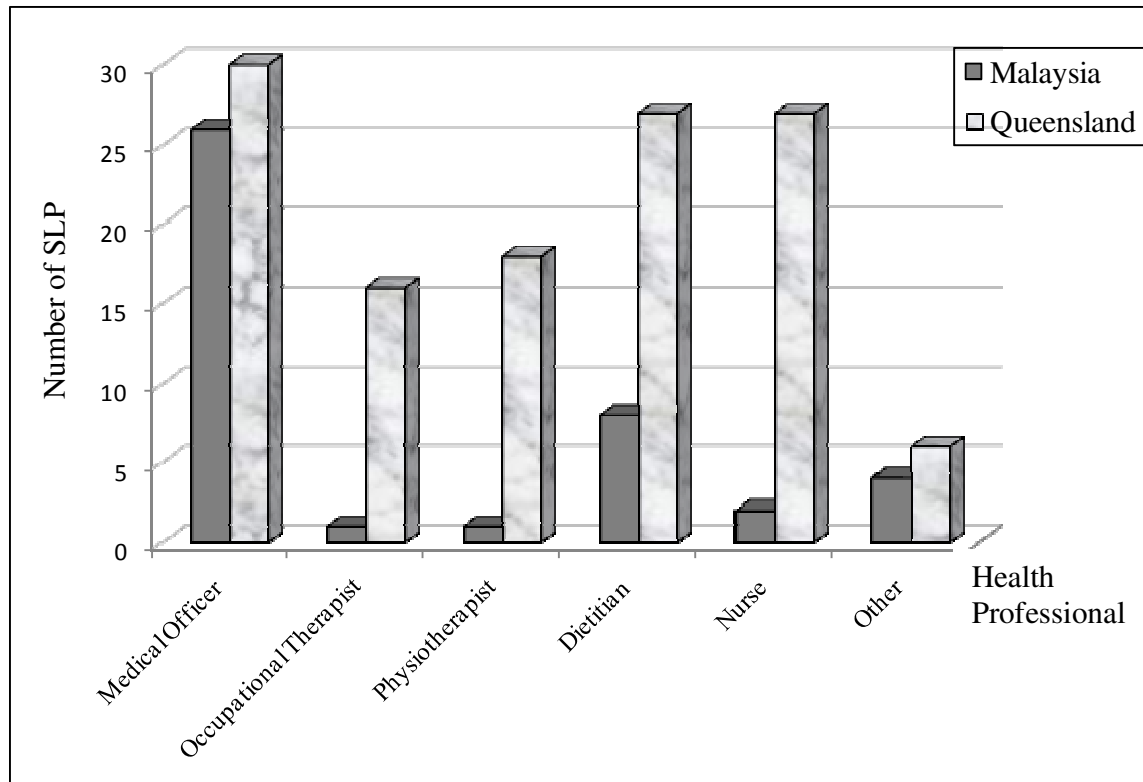


Figure 2. Referral patterns across the Malaysian (n=30) and Queensland SLPs (n=30). Figure shows number of SLPs in the two cohorts who received referral of patients with dysphagia from other health professionals.