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Artikel Asli/*Original Articles*

Evaluation of a Professional Development Model for Enhancing Knowledge, Skill and Confidence in Dysphagia Management

(Penilaian Model Pembangunan Profesional untuk Meningkatkan Pengetahuan, Kemahiran dan Keyakinan dalam Pengendalian Disfagia)

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ABSTRACT

There were critical limitations to dysphagia services in Malaysia with speech-language pathologists' (SLPs) reported lacking skills and confidence in managing the disorder. This study examined the impact of providing professional development training in dysphagia management. Aims were to determine if: (1) delivery of a training series enhances SLPs knowledge in dysphagia management, (2) knowledge translated into improved clinical skills and (3) clinicians' perception of their knowledge, skills and confidence improved post-training. The study used a single cohort pre- and post-test research design and involved nine Malaysian SLPs. Participants underwent assessment at pre- and immediately post-training and again at one month post-training. At each assessment level, knowledge and skills were assessed via a written examination and observational assessment of clinical performance respectively. Visual analogue scales were used to measure clinician's perceptions of knowledge, skills and confidence. The training model involved four consecutive; 4-hour week-end workshops with opportunity to apply new knowledge and develop networking in clinical practice in the weekdays between each session. Significant ($p < 0.05$) improvements in knowledge and clinical skills were observed immediately post- and at one month after training. Clinician's perceptions of knowledge, skills and confidence were also significantly higher immediately post- and at one month post-training. The current 4-week structured professional development model was found to be effective in enhancing SLPs' knowledge and skills in dysphagia management and improving their perceptions and confidence. The findings highlight the benefits that can be achieved through well designed professional development programs.

Keywords: Dysphagia management; speech-language pathologist; professional development; skill; knowledge; confidence

ABSTRAK

Terdapat kekangan kritikal terhadap perkhidmatan disfagia di Malaysia di mana patologis pertuturan-bahasa (SLP) melaporkan kurang kemahiran dan keyakinan dalam mengendalikan kecelaruan ini. Kajian ini memeriksa kesan pemberian latihan pembangunan profesional dalam pengendalian disfagia. Tujuan kajian adalah untuk mengenal pasti sama ada: (1) penyampaian siri latihan meningkatkan pengetahuan SLPs dalam pengendalian disfagia, (2) terdapat perpindahan pengetahuan ke arah peningkatan kemahiran klinikal, dan (3) persepsi klinisyen tentang pengetahuan, kemahiran dan keyakinan mereka meningkat selepas latihan. Kajian ini menggunakan reka bentuk kajian pra- dan pasca-ujian kumpulan tunggal dan melibatkan sembilan SLP Malaysia. Peserta melalui penilaian pra- dan sebaik sahaja pasca-latihan dan sekali lagi sebulan pasca-latihan. Di setiap peringkat penilaian, pengetahuan dan kemahiran dinilai melalui peperiksaan bertulis dan penilaian pemerhatian persembahan klinikal secara respektif. Skala analog visual digunakan untuk mengukur persepsi klinisyen terhadap pengetahuan, kemahiran dan keyakinan. Model latihan ini melibatkan empat 4-jam bengkel hujung minggu yang berturutan dengan peluang untuk mengaplikasi pengetahuan baru serta membentuk jaringan dalam amalan klinikal pada hari bekerja di antara setiap sesi. Peningkatan ketara ($p < 0.05$) bagi pengetahuan dan kemahiran klinikal diperhatikan sebaik pasca-latihan dan sebulan selepas tamat latihan. Persepsi klinisyen terhadap pengetahuan, kemahiran dan keyakinan juga adalah ketara lebih tinggi sebaik dan sebulan pasca-latihan. Model empat minggu pembangunan profesional berstruktur ini didapati berkesan dalam meningkatkan pengetahuan dan kemahiran SLP dalam pengendalian disfagia serta meningkatkan persepsi dan keyakinan mereka. Hasil kajian menekankan kelebihan yang boleh dicapai melalui program pembangunan profesional yang direka bentuk dengan baik.

Kata kunci: Pengendalian disfagia; patologis pertuturan-bahasa; pembangunan profesional; kemahiran; pengetahuan; keyakinan

INTRODUCTION

As the primary health professionals responsible for managing dysphagia (American Speech-Language-Hearing Association (ASHA) 2001; Royal College of Speech and Language Therapist (RCSLT) 2005; Speech Pathology Australia 2004), it is important that speech-language pathologists (SLPs) have adequate levels of clinical competency in order to deliver quality services. Current evidence however would suggest that the levels of clinical competency in dysphagia management for SLPs in Malaysia are not adequate. A survey of 44 clinicians conducted in 2004 revealed that there were critical limitations to dysphagia services in Malaysia with SLPs reporting a lack of skills and confidence in managing the disorder (Sharma et al. 2006). More recent research into the level of clinical training received by and confidence of 30 Malaysian clinicians has highlighted that there continues to be significant issues regarding their levels of training, knowledge, skill and confidence in dysphagia management (Mustaffa Kamal et al. 2012). In particular, this most recent study revealed that the Malaysian clinicians received limited hours of formal education focused on dysphagia with minimal opportunities for mentoring/supervision prior to beginning independent practice as compared to international standards (Mustaffa Kamal et al. 2012). These factors were seen as impacting on their preparedness for clinical care of this population. Acknowledging these shortfalls, it was not surprising then that the Malaysian clinicians surveyed expressed the desire to undertake further training in the area (Mustaffa Kamal et al. 2012).

Ongoing workforce training to health professionals has been shown to have positive outcomes in terms of increasing knowledge and skills (O'Loughlin & Shanley 1998; Senarath et al. 2007). As yet however there is no published research as to the most effective means of providing professional development training to SLPs aimed at improving clinical knowledge and skills. Considering the identified need to enhance the clinical knowledge, skills and confidence in Malaysian clinicians it is important that any professional development which is introduced is evaluated for its impact and value to improve services.

Developing a professional development model for health care providers however is a challenging task where both the content and delivery style need careful consideration. In particular the design of any workforce training program needs to: (1) encourage deep learning for maintenance of skills in the long term (Biggs 1993; Trigwell & Prosser 1991), (2) optimize transference of theory into practice (Glanz & Rimer 2005; Scholten 2001) and (3) cater to adult learning styles and the commitments of full time working professionals (Mihall & Belletti 1999). Training programs therefore need to ensure they incorporate both theoretical and practical application of knowledge to facilitate transition of knowledge into practice (Mihall & Belletti 1999; Scholten 2001) and employ various styles of teaching in order to encourage knowledge learning, the application of knowledge to practical situations and to cater to different learning styles (Fleming 2006; Kolb 1984; Mihall & Belletti 1999).

The training methods need to be carefully planned to ensure participants experience a positive learning process. Within the design of the training model, it is recognized that both knowledge and clinical exposure are two fundamental elements in training required for clinical practice (Manley et al. 1999; Speech Pathology Australia 2004). Scholten (2001) conducted interviews with 14 speech-language pathology university lecturers in order to determine the connection between teaching and learning in dysphagia. All interviewees believed that classroom training provides valuable benefits to prepare students for effective clinical practice. In addition to comprehensive knowledge, the lecturers perceived that it is beneficial to include practical aspects into classroom training by using examples of videotapes and case studies of real patients (Scholten 2001). Utilization of case-based training is recognized in the literature as a means of facilitating deep learning (Higgs 1997) for achieving long term learning effect (Biggs 1993; Trigwell & Prosser 1991). Various other delivery methods including use of demonstrations, role plays and group discussions are also valuable when training adult learners in the health professions (Mihall & Belletti 1999; Senarath et al. 2007). Incorporating 'reflective practice,' which refers to ones' ability to critically evaluate own performance and experience, discuss it and finally making changes to improve practice (Gibbs 1988; Johns 1995), has also been identified as an important part of the on-going skill development required within clinical-based professional learning (Mamede & Schmidt 2004; Walker 1996).

In light of recent findings which have reported that Malaysian SLPs had reduced levels of knowledge, skills and confidence in managing dysphagia largely due to minimal training and clinical support opportunities (Mustaffa Kamal et al. 2012; Sharma et al. 2006), the current study aimed to address these training needs in order to help facilitate the development of dysphagia services in Malaysia. In particular, the current study is an evaluation of a professional development model that incorporates various methods into teaching theoretical and practical application of knowledge. The aims of the study are to determine if the training model (1) increases SLPs' knowledge of dysphagia management practices; (2) facilitates translation of knowledge into improved clinical skills; and (3) improves clinicians' perception of their knowledge, skills and confidence in dysphagia management. Furthermore, using participant reflections the study will identify strengths and weaknesses in the training model. Whilst other work has suggested pedagogical elements which may be beneficial to incorporate into dysphagia training (Scholten 2001), no studies to date have formally evaluated the benefits of offering professional development training in dysphagia management to SLPs. In Malaysia particularly, where workplace support and access to the computer and internet are limited (Mustaffa Kamal

et al. 2012), the development of a training model need to take into account these limitations.

METHODS

The current study used a pre- and post-test design with one month follow-up in order to identify the impact of a 16-hour professional development model on SLPs' levels of knowledge, skill and confidence. Ethics approval was granted by the Medical Research Ethics Committee, Ministry of Health, Malaysia (NMRR-08-1496-2641) and Behavioural and Social Sciences Ethical Review Committee, The University of Queensland.

PARTICIPANTS

An invitation e-mail along with the details of the study was sent to all (n = 15) SLPs working in the government hospitals within Klang Valley, Malaysia who manage dysphagia. Ten SLPs responded and expressed their interest to participate in the study. One clinician was subsequently unable to attend the professional development series, resulting in nine SLPs who completed the training and all data collection points. All participants were female aged between 24 to 34 years old (mean, M = 28.6) with an average of four years work experience (range one to nine years). Participants indicated that the percentage of their caseload that provided services to adults ranged from 10 to 70% (M = 36.8%), with dysphagia management required for between 10 to 75% (M = 31.2%) of those adult cases. All SLPs worked in speech pathology departments employing between two to four clinicians.

PROCEDURE

Data collection for the study was completed across three time points: (1) prior to the commencement of training, (2) immediately after training and (3) one month after completion of training. The same data collection procedures were conducted at each time point and comprised of exam assessing knowledge, a direct assessment of clinical skills, as well as evaluation of clinicians' perceptions of their knowledge, skills and confidence in dysphagia management. The assessments and training were conducted by the same person.

ASSESSMENT OF KNOWLEDGE

At each time point, participants were required to complete a 2-hour Dysphagia Knowledge Test specifically designed for this study. The Dysphagia Knowledge Test was scored out of 100 and consisted of two parts: Part A, a theoretical component (70 marks); and Part B, an applied knowledge component (30 marks). Part A covered topics related to anatomy and physiology of swallowing, the components of a dysphagia assessment, sign and symptoms of dysphagia, physiological swallowing deficits, treatment approaches and management planning. Part B involved making diagnostic and management decisions based on two case study scenarios supplemented by video footage of the clinical swallowing examination (CSE) and a videofluoroscopic swallowing study (VFSS). Video footage was repeated twice to assist analysis and interpretation. Question formats used in the test included a combination of multiple choice and short answers (e.g. listing symptoms, labelling anatomical diagram, making diagnostic statements). To ensure appropriateness of test content, the items and the format of the test was checked and revised by a panel of three experienced University lecturers for content validity as recommended by Berk (1990). As the test questions were unchanged for each re-assessment, the authors accept that a learning effect may well have influenced performance on subsequent re-administration of the test (immediately post-training and at one month post-training). However in an attempt to minimize this, no participant was provided with feedback on their exam performance or allowed access to the questions other than during the exam itself.

DIRECT EVALUATION OF SKILLS

To evaluate clinical skills, all participants were assessed while conducting a CSE including subsequent clinical decision making and recommendations. Each participant was observed conducting a dysphagia assessment on their own patient within their work place at each time point in the project. Participants were given opportunity to select any adult patients with swallowing issues. As the research aimed to assess clinical skills of the clinicians, the patients' medical background and severity level of dysphagia were not controlled. An observational checklist was developed to assist the examiner to assess level of skills in performing seven main components of a CSE including case history taking, pre-feeding patient status evaluation, oromotor examination, food/fluid trials, diagnosis, recommendations and overall management plan (ASHA 2007; RCSLT 2005; Speech Pathology Australia 2004). Performance on each of the seven CSE elements was evaluated on a seven-point Likert scale ranging from 'absent skills' to 'comprehensive skills,' where a rating 'absent skill' (one) was defined as "none of the elements required were performed when necessary" to 'comprehensive' (seven points) when participants performed all the necessary items accurately. The same assessor conducted all assessments at all time points. Although the authors acknowledge that this is not ideal, this was necessary due to a number of unavoidable logistical reasons. Firstly this examiner was the only person available within the region who was deemed adequately qualified for this role. The examiner had over 10 years experience in both dysphagia management and in conducting assessment of students' clinical performance. The examiner also had advanced postgraduate training in dysphagia management. Finally the examiner spoke fluent

Malay, which was the language in which all assessments were conducted. Acknowledging this limitation, a number of strategies were implemented to minimize any bias by the examiner. Firstly, the clinical assessments were rated using a structured assessment tool with clear descriptors for each rating. Furthermore, the examiner was not allowed access to any of the prior assessments of any clinician. To ensure that the examiner did not assist the clinician, but also to ensure patient safety was maintained at all times, the examiner was instructed to remain as a silent observer of all assessments and was not allowed to interact with the patient except to intervene if the patient was placed at risk by a decision made by the clinician.

ASSESSMENT OF CLINICIANS PERCEPTION OF KNOWLEDGE, SKILL AND CONFIDENCE

Participants were asked to rate their perceived level of knowledge, skill and confidence in performing ten items related to dysphagia management (overall management, case history taking, pre-feeding patient status evaluation, oromotor examination, food/fluid trials, performing/conducting VFSS, VFSS interpretation, diagnosis, management planning and providing training to other SLPs and health professionals). A visual analogue scale (VAS) represented as a horizontal 100 millimetres (mm) long line was used by participants to rate each item, where the anchor at the start of the line represented an absence of knowledge/skills/confidence and the anchor at the end of the line represented advanced knowledge/skills/confidence. Participants were instructed to place a cross on the line at the point that related to their perceived level of knowledge, skill or confidence of a particular item. The numerical score obtained from each VAS rating was based on a measurement (in mm) of the distance between the starting point of the scale and the participant's marking point.

DYSPHAGIA WORKSHOPS

Although it is acknowledged that there are multiple ways that theoretical content can be delivered and supported with technology, such as web conferences, online materials and virtual classrooms, such options were not feasible within the current Malaysian setting. Recent research has confirmed that Malaysian clinicians currently have poor computer access, unreliable internet reception and lack of access to online journals or internet web browsing (Mustaffa Kamal et al. 2012; Sharma et al. 2010). Hence the professional development model developed for the current context consisted of 16 hours of dysphagia education delivered in four, face to face 4-hour workshops run once per week over four consecutive weekends. The content of the training workshop covered both performing and interpreting clinical and instrumental swallowing assessments and making management decisions. The format of the sessions was developed taking into consideration different learning styles (Fleming 2006; Kolb 1984) and to maximize participation by SLPs as active learners. Each session employed a variety of teaching methods including lectures, demonstrations, observations and small group case-based discussions. Participants were also encouraged to discuss their own experiences relevant to the topics covered during sessions. Each session followed a set structure, beginning with a short lecture on a specific topic in dysphagia management and followed by discussions based around the presentation and analysis of two case studies. Topics covered in the weekly sessions included dysphagia in specific populations, interpretation of assessment findings, diagnosis and management decisions. To encourage transference of knowledge into practice, clinicians were encouraged at the end of each workshop to apply their new knowledge to clinical cases during the week. During week two to four of the workshops, clinicians were provided with opportunities to discuss these experiences. Participants were also encouraged to communicate with and support each other between workshops to encourage formation of a clinical support network. All participants completed a reflection form at the end of each working week after commencing training to facilitate self-evaluation of their own strengths managing specific dysphagia cases seen within each week, develop action plans to improve specific personal skills areas and identify benefits/difficulties implementing networking with other SLPs.

DATA ANALYSIS

All data were analysed quantitatively using the statistical analysis software, STATA version 10 (StataCorp 2007). Repeated measure ANOVA tests with post hoc repeated measures t-tests were conducted to identify if there were any significant changes in knowledge and clinicians' perceptions across the three points of evaluation. For the ordinal data (1-7 scale) obtained from the skills assessment, analysis involved Friedman's tests with post hoc Wilcoxon signed rank tests. A result was considered significant at $p < 0.05$.

RESULTS

KNOWLEDGE IN DYSPHAGIA MANAGEMENT

Repeated measures ANOVA analysis revealed a significant improvement in knowledge scores recorded before and after training (Table 1). Post hoc analysis revealed a significant increase in the total score obtained on the Dysphagia Knowledge Test from pre- to immediately post-training and pre- to one month post-training (Table 1). No significant change occurred between the two post-training assessment points.

Separate analysis of the two components in the Dysphagia Knowledge Test revealed significant improvements after training for both theoretical ($F(2,16) = 11.4$, $p < 0.001$) and practical application of knowledge

TABLE 1. Mean scores of knowledge before, immediately after and one month after completion of a professional development training obtained by SLPs (n = 9)

Component	(1) Pre-Training		(2) Immediately Post-Training		(3) One Month Post-Training		ANOVA/ Friedman*	Post-Hoc		
	M	SD	M	SD	M	SD		(1) – (2)	(1) – (3)	(2) – (3)
Knowledge	67.22	8.98	78.44	6.01	79.89	3.66	<0.001	0.003	0.003	0.396
Skill	3.42	0.17	4.99	0.25	5.20	0.23	<0.001	0.018	0.018	0.176
Perception of knowledge	43.83	12.61	64.47	11.61	67.58	14.32	<0.001	<0.001	0.003	0.434
Perception of skill	41.31	11.10	59.57	15.37	64.21	13.44	<0.001	0.003	0.003	0.321
Perception of confidence	41.05	10.91	59.77	14.92	64.13	12.05	<0.001	0.003	0.002	0.349

Note: *ANOVA was used for analysis of knowledge and perceptions, while Friedman test was used for analysis of skill

(F(2,16) = 12.9, p < 0.001). Significant improvements were found to be between pre- (theoretical M = 49.2, SD = 6.0; application M = 18.1, SD = 3.3) and immediately post-training (theoretical M = 56.5, SD = 4.8, t(8) = 3.50, p = 0.008; application M = 21.9, SD = 1.8, t(8) = 4.41, p = 0.002) and between pre- and one month post-training (theoretical M = 56.3, SD = 3.1, t(8) = 4.01, p < 0.004; application M = 23.6, SD = 2.6, t(8) = 3.84, p < 0.005). There were no significant differences between immediately and one month after completion of training when compared for both theoretical (t(8) = 0.13, p = 0.899) and practical application of knowledge (t(8) = 1.70, p = 0.128) (Figure 1).

SKILLS IN DYSPHAGIA MANAGEMENT

Analysis revealed that there was a significant improvement in skill level as measured by observation of CSE across the assessment time points with post hoc analysis confirming significant improvements between pre- and immediately post-training skills which were maintained at the one month assessment (Table 1). Descriptive analysis of the data across each of the seven components of the CSE revealed specific areas of weakness (less than a rating of 4 or 'average') pre-training in conducting the oromotor examination, the food/fluid trials, providing swallowing diagnosis, providing recommendations and planning for appropriate dysphagia management (Figure 2). After training, improvements were noticed across all of these areas with post-training ratings scored at 'average' or 'above average' skills.

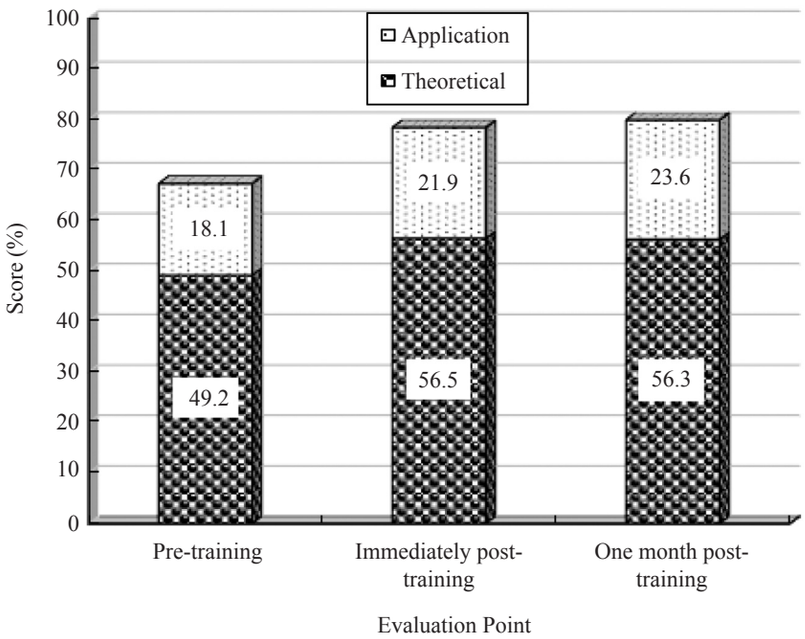

FIGURE 1. Changes of SLPs' theoretical and practical application of knowledge (mean scores) in dysphagia management over time

Note: Total score for theoretical part was 70 and practical application of knowledge was 30

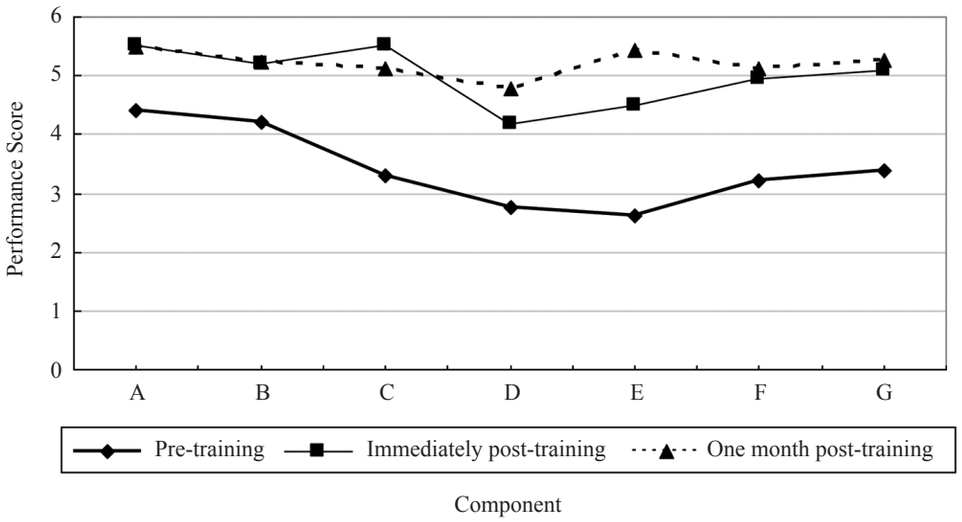

FIGURE 2. Changes of SLPs' skills in performing specific components in dysphagia management over time

Note: On x axis:- Component A = case history taking, B = patient observations, C = oromotor examination, D = food/fluid trials, E = swallowing diagnosis, F = providing recommendations, G = planning for appropriate dysphagia management. On y axis:- 1 = absent, 7 = comprehensive)

CLINICIAN PERCEPTION

A significant change in clinicians' ratings of their perceived clinical knowledge and skills was found over time using repeated measures ANOVA analyses. Post hoc analysis confirmed significant improvements immediately post-training with these maintained one month post-training (Table 1). Although the analysis between the immediately post- and the one month post-training assessment were not significantly different, examination of the mean ratings suggest there was a small degree of continued improvement in clinician perceptions of ability. Results of the analyses to determine if there had been a change in clinician perceptions of confidence when managing patients with dysphagia also revealed a similar pattern, with significant improvement between pre- and immediately post-training and maintained one month post-training (Table 1).

REFLECTION OF INDEPENDENT PRACTICE

Collation of the weekly reflection forms revealed that on average participants applied their new knowledge with an average of 2.3 patients (range 0 – 11) per week between workshop sessions. All clinicians reported that they were participating in discussions with other SLPs in the workshop group regarding management of their patients in between sessions and found it helpful, particularly in terms of sharing of knowledge and guiding appropriate management. However three clinicians commented that although discussing practice with other clinicians was helpful, they felt there remained a lack of experts in dysphagia available to consult for more complex cases. Clinicians reflected that future action plans for their professional development included; attendance at further workshop training in the area (n = 5), further self-directed learning (n = 4) and seeking further supported clinical practice in dysphagia management (n = 4). They also indicated a desire to establish and perform instrumental swallowing assessments (n = 3) in order to improve service.

DISCUSSION

The professional development model used in the current study was found to improve SLPs' knowledge of the theory behind dysphagia assessment and management. It was also found to facilitate enhanced clinical skills. The clinicians also felt they knew more, had better skills and were more confident following the training. Whilst prior authors have proposed core elements (lecture, demonstration, group discussion, case study) which should be included into dysphagia training (ASHA 2007; Scholten 2001) the current data provides evidence that the application of a professional development model incorporating these pedagogical elements can be beneficial.

Pre-training evaluation of SLPs' knowledge in dysphagia management revealed that their performance was just above average, which then improved by more than 10 points after training. This positive finding suggested that the training approach used in the current study incorporating both theoretical and practical elements in the classroom was beneficial in enhancing participants' knowledge in dysphagia management. The inclusion of real case studies was found to be helpful in developing practical application of knowledge as supported by previous studies (Magnus 2001; Scholten 2001). In addition, consideration of multiple factors for optimum learning which mainly included sensitivity to different learning preferences/styles of individuals (Fleming 2006; Kolb 1984), embracing adults

as learners (Brookfield 1991; Merriam et al. 2007; Mihall & Belletti 1999), incorporating methods that encourage deep learning (Biggs 1993; Trigwell & Prosser 1991) and implementing various methods of training delivery (Mihall & Belletti 1999; Scholten 2001) to enhance transference of knowledge to skills were seen to play a positive role in the training outcomes.

It is acknowledged though that a proportion of the positive change in knowledge scores observed over time could be attributed to a learning effect, as the same assessment tool was used at each time point. Attempts were made to minimize the impact of a learning effect, through the number and diversity of test items, the lack of feedback on performance and lack of access to the questions after the assessment. As no participant received perfect scores on either the immediate or one month post-training re-assessment it could be argued that exposure to the test alone was not enough to completely discount new learning as a reason for the improved performance observed on this assessment.

Despite using face-to-face classroom teaching as the main training component, the current study demonstrated that there was translation to improved skills in dysphagia management among participants. This finding gives support to the literature which discusses the importance of comprehensive classroom training for effective clinical practice (Scholten 2001). Another valuable element of the workshop which the instructor felt contributed to improved skills development, was the use of reflective practice. Participants were given the opportunity to self-evaluate their performances in managing patients with dysphagia, make action plans to improve specific areas each week, implement networking with other SLPs and discuss clinical experiences in the classroom. Prior research has recognized that the use of reflective practice is highly beneficial to the learning process, as it assists and stimulates personal and professional growth (Jasper 2003), develops knowledge and skills (Dewing 1990; Walker 1996), assists transference of theory into practice (Walker 1996) and helps to understand and solve complex cases (Mamede & Schmidt 2004; Schon 1987).

However although the current group of clinicians demonstrated improved clinical skills post-training, there were still areas of clinical skills for some clinicians which continued to need further supported training. In the current professional development there was no direct clinical training, though clinicians were encouraged to apply their new knowledge with clinical cases in the weekdays between the weekend workshops. Hence it is possible that a workshop model which incorporates some supervised clinical practice could have helped further advance clinicians' skills. Achieving clinical competence is a combination of both knowledge and skills development (Speech Pathology Australia 2001). Consideration of an extension to the current training model to incorporate some "hands on" clinical practice may thus further enhance the clinical skills outcomes of participants.

With the increase of knowledge and skills in dysphagia management, the current SLPs' perceived they had enhanced knowledge, skills and confidence. With this increased confidence in their skills, clinicians reported they were more self-motivated and prepared to manage patients with dysphagia. They were also interacting with each other in a supportive clinical network. Despite these benefits, the clinicians noted that they continued to face some challenges to ongoing learning after the workshop. One challenge is the large mixed clinical case load of each clinician and the reality that minimal time is available for working with patients who have dysphagia. Hence ongoing practice and skill development may be hampered by limited opportunity to practice and maintain new skills. Another challenge noted was the lack of availability of expert clinicians to consult for more complex clinical cases. This highlights the need for the establishment of a broader mentoring network, which may involve SLPs from Malaysian private agencies or even clinicians from international settings in order to provide access to expert clinical support.

It was positive to observe that the benefits of training using the current professional development model were maintained across all parameters to one month post-training. It has been reported in prior research that skills can rapidly decline from as early as two weeks post-training (Berden et al. 1993; McKenna & Glendon 1985). Hence the results observed in the current group would suggest that the learning strategies implemented in the training workshop facilitated deeper learning, rather than superficial short term learning. However it is acknowledged that the one month post-training evaluations provided insight into relatively short term maintenance and the sustainability of the changes in the long term remains uncertain.

This study faced a number of methodological challenges, many of which were influenced by the setting in which the training was conducted. It is acknowledged that utilization of a control group of clinicians who did not undertake training as comparison could have provided a greater value in the findings. While this was considered prior to beginning data collection, it could not feasibly be implemented due to limited number of clinicians available within the study location. Furthermore, the issue of potential bias created by having the same assessor completed the clinical assessments of each participant pre- and post-training is acknowledged. However, the lack of available and suitably experienced clinicians to perform this role in the study setting meant that this issue was unavoidable. While steps were taken to control for this, the potential for some bias influencing the current data set cannot be completely discounted.

Overall the current model of a 4-week structured professional development series was found to be effective in enhancing SLPs knowledge and skills of dysphagia management and improving their perceptions and confidence. With increased competency among the clinicians, it is the expectation that dysphagia services in Malaysia will improve as more patients receive services,

appropriate and adequate swallowing assessments and treatments will be provided and networking opportunities within and between health professionals will be expanded. Recent research reported that there was a total of 43 clinicians working in Malaysian government hospitals at the time their study was conducted and of the 30 clinicians they surveyed the majority reported reduced confidence and skills managing patients with dysphagia (Mustaffa Kamal et al. 2012). Hence although only nine clinicians underwent the current training, it is the expectation that these clinicians will take the initiative to provide clinical support to other SLPs in Malaysia who are also in need of support and training opportunities. By doing this they will not only extend their knowledge and skills to others, but it may also act as a mean to establish and maintain their own knowledge and skills (Elmendorf 2006). Furthermore, on the basis of the positive evidence demonstrated in the current study, similar workshops need to be offered each year as part of ongoing professional development for Malaysian clinicians. The current study highlights the importance of having a well designed training model available for professional development to address identified clinical skill deficits particularly for countries with limited services, training and access to expert clinicians. However, to determine the effectiveness of professional development through various delivery training methods, the current training model of delivery should be compared with other models in future studies.

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REFERENCES

American Speech-Language-Hearing Association. 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. 2007. *Graduate curriculum on swallowing and swallowing disorders (adult and pediatric dysphagia)*. Rockville, MD: Author.

Berden, H.J.J.M., Willems, F.F., Hendrick, J.M.A., Pijls, N.H.J. & Knape, J.T.A. 1993. How frequently should basic cardiopulmonary resuscitation training be repeated to maintain adequate skills? *British Medical Journal* 306: 1576-1577.

Berk, R. 1990. Importance of expert judgment in content-related validity evidence. *Western Journal of Nursing Research* 12: 659-671.

Biggs, J.B. 1993. What do inventories of student's learning processes really measure? A theoretical review and clarification. *British Journal of Educational Psychology* 63: 3-19.

Brookfield, S.D. 1991. *Understanding and Facilitating Adult Learning: A Comprehensive Analysis of Principles and Effective Practices* (2nd ed). San Francisco: Jossey-Bass.

Dewing, J. 1990. Reflective practice. *Senior Nurse* 10: 26-28.

Elmendorf, H.G. 2006. Learning through teaching: A new perspective on entering a discipline. *Change: The Magazine of Higher Learning* 38: 36-41.

Fleming, N.D. 2006. *Teaching and Learning Styles: VARK Strategies.* 2nd ed. Christchurch: Microfilm Ltd.

Gibbs, G. 1988. *Learning by Doing: A Guide to Teaching and Learning Methods*. Oxford Centre for Staff and Learning Development, Oxford Polytechnic. London: Further Education Unit.

Glanz, K. & Rimer, B.K. 2005. *Theory at a Glance: A Guide for Health Promotion Practice.* 2nd ed. Washington, DC: National Institutes of Health.

Higgs, J. 1997. Learning to make clinical decisions. In *Facilitating Learning in Clinical Settings*, edited by McAllister, L., Lincoln, M., McLeod, S. & Maloney, D. Cheltenham, England: Stanley Thornes Ltd.

Jasper, M. 2003. *Beginning Reflective Practice: Foundations in Nursing and Health Care*. Cheltenham: Nelson Thomas Ltd.

Johns, C. 1995. Framing learning through reflection within Carper's fundamental ways of knowing in nursing. *Journal of Advanced Nursing* 22: 226-234.

Kolb, D.A. 1984. *Experiential Learning: Experience as the Source of Learning and Development*. New Jersey: Prentice Hall.

Mamede, S. & Schmidt, H.G. 2004. The structure of reflective practice in medicine. *Medical Education* 38: 1302-1308.

Magnus, V. 2001. Dysphagia training for nurses in acute hospital setting: A pragmatic approach. *International Journal of Language and Communication Disorders* 36: 375-378.

Manley, S., Frank, E. & Melvin, C. 1999. Preparation of SLP to provide services to patients with a tracheostomy tube: A survey. *American Journal of Speech-Language Pathology* 8: 171-181.

McKenna, S.P. & Glendon, A.I. 1985. Occupational first aid training: Decay in cardiopulmonary resuscitation (CPR) skills. *Journal of Occupational Psychology* 58: 109-117.

Merriam, S.B., Caffarella, R.S. & Baumgartner, L.M. 2007. *Learning in Adulthood.* 3rd ed. San Francisco: Jossey-Bass.

Mihall, J. & Belletti, H. 1999. Adult learning styles and training methods: Forget those 13,000 hours. FDIC ADR. Available at: www.justice.gov/adr/workplace/pdf/ learstyl .pdf. Accessed on April 4, 2011.

Mustaffa Kamal, R., Ward, C.E. & Cornwell, P. 2012. Dysphagia training for speech-language pathologists: Implications for clinical practice. *International Journal of Speech-Language Pathology* 14: 569-576.

O'Loughlin, G. & Shanley, C. 1998. Swallowing problems in the nursing home: A novel training response. *Dysphagia* 13: 172-183.

Royal College of Speech and Language Therapist. 2005. *Royal College of Speech and Language Therapists clinical guidelines*. London: Speechmark.

Scholten, I. 2001. Teachers' conception of their role in improving students' preparation for clinical work in dysphagia. *American Journal of Speech-Language Pathology* 10: 343-357.

Schon, D. 1987. *Educating the Reflective Practitioner: Towards a New Design for Teaching and Learning in the Professions*. London: Josey Bass.

Senarath, U., Fernando, D.N. & Rodrigo, I. 2007. Effect of training for care providers on practice of essential newborn care in hospitals in Sri Lanka. *Journal of Obstetric, Gynaecologic and Neonatal Nursing* 36: 531-541.

Sharma, S., Harun, H., Mustaffa Kamal, R. & Noerdin, S. 2006. Pengendalian disfagia oleh patologis pertuturan-bahasa di Malaysia. *Jurnal Sains Kesihatan Malaysia* 4: 39-51.

Sharma, S., Ward, E.C., Burns, C., Theodoros, D.G. & Russell, T.G. 2010. *Telerehabilitation: Attitudes and perceptions of the Malaysian speech-language pathologist*. Asia Pacific Conference on Speech, Language & Hearing Sciences 2010, Kuala Lumpur: Malaysia; 3rd-4th May, 2010.

Speech Pathology Australia. 2001. *Competency-based occupational standards (CBOS) for speech pathologists: Entry level*. Melbourne: The Speech Pathology Association of Australia Limited.

Speech Pathology Australia. 2004. *Dysphagia: General position paper.* Melbourne: The Speech Pathology Association of Australia Limited.

StataCorp. 2007. *Stata statistical software: release 10*. College Station, TX: StataCorp LP.

Trigwell, K. & Prosser, M. 1991. Learning approaches to study and quality of learning outcomes at the course level. *British Journal of Educational Psychology* 61: 265-275.

Walker, S. 1996. Reflective practice in the accident and emergency setting. *Accident and Emergency Nursing* 4: 27-30.

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