Training the allied health assistant for the telerehabilitation assessment of dysphagia.

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Summary

The present study examined the impact of knowledge and task specific training provided to a certified allied health assistant (AHA), prior to their involvement in facilitating assessments of dysphagia (swallowing disorders) via telerehabilitation. The AHA received four hours of training which included basic theoretical information regarding dysphagia as well as hands-on training with simulated patients prior to commencing the telerehabilitation trials. A written test examining swallowing function and its evaluation was completed pre- and then immediately post-training and again after the 15th and 30th of 31 consecutive patient assessments to assess theoretical knowledge (n = 4). Additionally after each set of 5 clinical dysphagia assessments completed with patients following the training (n = 6 assessments), two speech pathologists rated the AHA’s competency in relation to performing the tasks and activities required of them during the telerehabilitation swallowing assessment session. The AHA also self rated the perceived level of confidence at these time points. Minimum acceptable standards of at least 80% were achieved on the knowledge tests and the AHA’s performance was rated as competent on each evaluation post-training. The AHA also expressed overall satisfaction with the initial training provided and reported to feel confident after the initial sessions with patients. This study provides insight into the training and preparation needs of AHAs involved in assisting dysphagia assessments via telerehabilitation. Future research should expand on this current work to explore the training needs of individuals who have no prior healthcare training. This evidence is required to fully understand the training needs of assistants who help to facilitate telerehabilitation assessment for dysphagia and to progress towards defining the role and level of professional knowledge and skills required by healthcare personnel involved in this form of service delivery.
Introduction

The role of the health care assistant is relatively new within the health workforce and has emerged as a result of the global shortage of health and allied health professionals.\(^1\) In order to address workforce shortages and provide patients with more timely access to services, healthcare professionals are assigning specific tasks to trained assistants who can facilitate certain assessment and management processes.\(^2, 3\) Although the exact training, professional title and role of the assistant will vary according to the employment setting and the duties performed,\(^4-8\) “health assistants” represent a rapidly growing sector of the health workforce in the UK and USA\(^9\) as well as in Australia.\(^4, 10, 11\)

The Allied Health Assistant (AHA) is an individual within the subgroup of health assistants who, by definition “assists or provides any type of support to the work of a qualified allied health professional”\(^1\) (page 144). The role of the AHA was initially proposed in the late 1990s to support the work of therapists including physiotherapists, occupational therapists and speech pathologists (SPs).\(^12, 13\) The vocational qualifications of the AHA, which combines generic academic core modules and work-based learning, allows the AHA to have a broad spectrum of knowledge and skills necessary to prepare them for work with patients, carers and the relevant professionals or specialists.\(^14\) Published research has highlighted numerous benefits of AHAs that include serving as a link across disciplines within a multi-disciplinary team,\(^15\) the ability to work with patients to provide support, supervision and monitoring of their progress,\(^16\) the ability to provide consistent and goal directed rehabilitation\(^17\) and improvements in patient compliance and patient clinical outcomes.\(^18\)

The rapidly expanding area of telerehabilitation, i.e. the delivery rehabilitation services via telehealth, is one clinical area where the involvement of general assistants as well as trained health care assistants has been found to be particularly beneficial.\(^4, 19-23\) Some
aspects of clinical speech pathology (e.g. dysphagia management) involve hands-on interaction between the patient and the clinician. Hence within a telerehabilitation model, where the clinician is located at a distance to the patients and unable to conduct hands-on activities, an AHA may be used to assist the patient and facilitate tasks at the patients’ end under the direction of the online clinician.

Specific to the field of speech pathology, assistants have been incorporated into models of adult and paediatric speech pathology telerehabilitation services. Jessiman reported using minimally trained individuals at the remote patients’ site, in combination with the parents of the children, to assist with speech and language assessments and treatment sessions for two school aged children in Alberta, Canada. The role of the assistant in the study was primarily technical in nature, and included controlling the telehealth equipment at the remote patient site, adjusting volume and camera settings, and instructing the family of the children on the appropriate set up and use of the telehealth equipment. Myers also reported using an assistant to deliver telehealth services for speech rehabilitation and psychosocial support for individuals who had undergone a total laryngectomy. Again the role of the telehealth assistant in that study was limited to providing technical support and ensuring adequate audio-visual quality during the telehealth sessions. In comparison, Lalor et al. used an assistant for more than technical assistance in a telehealth assessment of the speech, language and swallowing deficits of a single aphasic patient. In that study, the assistant was described as an “allied health team member” (p. 54) who facilitated aspects of the session for the online clinician and assisted with feeling and describing the movement of the patient’s larynx during the swallowing assessment, relaying this information for clinical decision making.

With training, numerous aspects of speech pathology services have been identified as skills or roles which can be conducted by AHAs, including handling and positioning patients,
and using observational skills and communication skills should the patients have difficulties understanding specific instructions.\textsuperscript{24} In a paper on the current structure of the Australian healthcare workforce and possible substitution models for healthcare professionals and para-professionals, Ducket\textsuperscript{25} highlighted the importance of training, and cautioned that any development of an expanded AHA role requires healthcare providers to identify precisely the tasks to be performed, provide the specific training, as well as address the nature and extent of the supervision needs. Research in other fields also supports this, demonstrating that depending on the nature of the tasks required, training is needed to adequately prepare telehealth assistants to perform advanced or extended scope roles.\textsuperscript{21} Unfortunately in speech pathology specific research conducted to date, minimal to no detail has been provided regarding the specific roles and tasks required of the telerehabilitation assistant, or of the nature and extent of any training provided for the role.

Furthermore, research suggests that training alone may not be the only important aspect to consider when preparing an assistant. Woolfolk\textsuperscript{26} investigated the competence of 126 nursing assistants/aides who had varied levels of training in nursing assistant training programmes. All participants were assessed on a written test and their ability to accurately perform specific basic nursing procedures by nursing supervisors. Results revealed that despite having completed nursing assistant programmes, the nursing aides who had an average of 3.1 years of relevant job experience, were not able to perform the tasks to a standard that was acceptable to their nursing supervisors. While the researcher acknowledged that each of the participants had had different training backgrounds and work experience, it was concluded that the length of training-related employment did not ensure competency in skills or knowledge. Further to this, research by van der Gaag and Davies\textsuperscript{27} has suggested that in addition to training, an individual’s attitudes, behaviour and interaction with a patient may
evoke an overall “positive attitude” to the activity in question and may therefore be identified as additional pre-requisites for professional competence.

There is little discussion in the literature regarding the training, preparation or skill set of AHA’s assisting within a speech pathology telerehabilitation service. Hence the following is an exploratory study of the impact of specific training provided to a certified AHA prior to the implementation of the clinical trial of the telerehabilitation model for assessing swallowing disorders\textsuperscript{28}. The training combined elements of knowledge and skill specific to performing a telerehabilitation assessment of dysphagia, and built on the assistant’s existing experience working with patients in a cognate therapy field. The objective of the current study was to explore the impact of training and determine if it was sufficient to prepare an experienced AHA, with existing basic skills in patient management and care, for a role assisting telerehabilitation assessments of dysphagia.

**Methodology**

**Participants**

The participants in the current study included one telerehabilitation assistant (the AHA), and two SPs as detailed below. Prior to participation, all participants received individual explanation of the project and provided formal written consent. The study was granted ethical clearance from the Human Research Ethics Committee of Queensland Health and The University of Queensland’s Human Research Committee.

**The telerehabilitation assistant**

The assistant’s role in the telerehabilitation assessment of dysphagia has been described in detail in Ward et al.\textsuperscript{28} and is based on the model used in the pilot research by Sharma et al.\textsuperscript{29} In the clinical trial (detailed elsewhere\textsuperscript{28}) forty dysphagic patients underwent
an assessment of dysphagia via telerehabilitation which was conducted by an online clinician via live videoconference. To explore accuracy of online clinical decisions, a second clinician simultaneously assessed the patient via the traditional face-to-face method. A third staff member – the Assistant - was present for all assessments and was located in the room with the patient to help them complete the assessments tasks as directed by the online clinician (eg., assist patient to complete oromotor movements; assist with food/fluid trials). All telerehabilitation assessment sessions were lead by the telerehabilitation speech pathologist who assessed the patient in real time during the videoconference. Store and forward technology was incorporated into the system allowing the online clinician to record the session and review this at a later time to confirm decisions. A Clinical Swallowing Examination proforma detailed in Ward et al.\textsuperscript{28} was used to structure the session and the parameters assessed for each participant.

The AHA recruited to serve as the Assistant in this telerehabilitation service model was a female aged in her 50’s who held a Technical and Further Education (TAFE) Certificate IV in Allied Health Assistance (HLT424507) completed in 2009. At the time of the clinical trials, she had had one year of experience working in the physiotherapy department of a large tertiary hospital in Queensland, Australia. In the health service (Queensland Health) in which this research was set, an AHA is required to hold a TAFE Certificate III or IV that sees the completion of core units that include assisting allied health professionals, supporting the care of various patient populations (i.e. general, aged care, disability and mental health), basic medical terminology and healthy body systems. Coursework comprises theory and work book assessments as well as hands-on training and site or job-specific experience. Prospective AHAs also have the option of undertaking elective courses, which include basic knowledge regarding dysphagia.\textsuperscript{30} The AHA in this study however, had had no formal training in dysphagia or its management.
The assessors

Two SPs who served as either the online or the face to face assessing clinician as part of the larger clinical trial reported elsewhere\textsuperscript{28} served as the assessors. Both clinicians were able to observe the AHAs ability to complete tasks during all sessions and each assessor completed an independent assessment if her performance. Neither assessor was blinded to the intent of the study and both are authors on the current manuscript (Sharma and Burns). Both were highly skilled in dysphagia management and had extensive experience conducting clinical observations and assessing personnel completing clinically related tasks. The first SP had over 15 years of experience in clinical speech pathology, over 10 years of experience in clinical supervision of undergraduate students in a speech sciences programme, and more than five years of experience supervising and assessing the performance of junior clinicians. The second assessor was an advanced clinician with over 13 years of experience in clinical speech pathology, and over ten years experience supervising both undergraduate students and junior staff.

Procedure

Prior to undergoing training, a baseline test of the AHA’s knowledge of dysphagia and its clinical assessment was conducted. After training, the AHA underwent periodic re-assessment of both knowledge (after every 15 patients) and practical skills (after every 5 patients) over the course of 31 successive telerehabilitation assessments. Details of the training provided and the assessment tasks and processes are outlined further below, and a schematic diagram of the procedure is presented in Figure 1.
Figure 1: A schematic diagram showing the procedure used in training the AHA for the assistant’s role.

Pre-training test of knowledge
(Written test immediately pre-training, baseline)

4-hour pre-session training
(Theory & practical)

Written test of knowledge (immediately post-training) & Interview

Clinical assessment sessions with patients (n=31)

Written test of knowledge (after every 15 patients) and interviews with assessors (every five patients)
Training

The task specific didactic training took four hours to complete and involved both content learning and clinical observations. The information was supplemented with printed material that pertained to normal swallowing and the structures involved, simplified diagrams and figures of the mechanisms of swallowing, descriptions of the disorders of swallowing and the possible causes, signs and symptoms of dysphagia and the available treatment options for individuals with dysphagia. In order to consolidate the written information, a video component was included. A compilation of short videos supplemented the learning of positioning the patient, correct feeding techniques and the general do’s and don’ts while carrying out the feeding tasks.

Hands-on training was also provided by using standardised patients i.e. actors who portrayed real patients. The two SPs took turns as the standardised patients to portray different clinical patients. The hands-on training component involved practising positioning the “patient” and setting up for the session including the setting and start up of the telerehabilitation system; placement of the marker tape across the patient’s thyroid notch; and placement of the lapel microphone and pulse oximeter on the “patient”. Sessions also included training for the AHA on how to assist a patient to perform tasks during the oromotor assessment and how to rate oral musculature strength (Figure 2 and Figure 3). For the strength ratings the AHA received training on how to use the five point severity scale (1 = normal function, task performance within normal limits; 2 = slight or mild reduction in function or task performance, 3 = moderate reduction in task performance, can complete tasks but with some difficulty, 4 = moderate to severe reduction in ability to complete tasks, attempts tasks but with difficulty, 5 = severe impairment) used in the study to score patient function and practiced relaying this information clearly to the online clinician for their consideration. They were also shown demonstrations and allowed opportunities to practice
feeding the patient under instruction of the telerehabilitation SP (Figure 4) as per the protocol set out in Sharma et al.\textsuperscript{29}

Figure 2: The assistant demonstrating the correct placement of the strip of white tape on the thyroid notch of the patient. The figure also shows the assistant rating the patient’s jaw strength to relay to the telerehabilitation speech pathologist.
Figure 3: The assistant demonstrates the assessment of tongue strength in the oromotor and laryngeal function examination of the Clinical Swallowing Examination protocol as the patient pushes his tongue against his inner cheek.

Figure 4: The assistant demonstrating the correct method of feeding the patient on instruction from the telerehabilitation speech pathologist.
Test of Knowledge

Specific knowledge on dysphagia was assessed using a purpose built 15-minute written test comprising 35 items and using multiple question types. This test assessed the assistant’s pre-training (and thereafter post-training) knowledge of dysphagia and provided baseline scores for theoretical knowledge regarding dysphagia. As there was no standardised dysphagia test available for use for this purpose, the content of the test was developed by the principal researcher and designed to explore the assistant’s basic anatomical knowledge and awareness of dysphagia. The test items were peer reviewed by two experienced SPs for their relevance to the AHA role in the telerehabilitation assessment process. The test was also designed to require only a short period of time to complete. Section one of the test comprised five open-ended questions regarding the signs/symptoms and causes of dysphagia, the role of the SP in dysphagia assessment and management and how dysphagia is managed. Section two consisted of ten multiple choice questions regarding basic dysphagia knowledge. In section three, there were eight true/false questions regarding feeding and positioning the patient for the swallowing assessment whereas the final section required labelling of 12 anatomical structures that are associated with swallowing function. To determine a baseline of knowledge, the assistant completed the written test immediately prior to training. The same test was then re-administered on three further occasions i.e. immediately after the four hour training and then on two other occasions after the 15th and 30th patients. A level of 80% accuracy was set as the minimally acceptable standard for the study. To minimise test learning effect, the assistant was blinded to the results of prior tests other than to know if the minimum 80% set pass mark had been reached.
Competency Ratings

The two assessing SPs carried out 20-30 minute semi-structured interviews with the assistant after every five patients (total of six evaluations) to discuss the assistant’s competence performing tasks during the assessments and overall performance to that point. The discussions addressed problems, provided feedback on the assistant’s performance and also provided the opportunity to express any concerns regarding patient management. Based on these discussions and observed performance of the assistant over five clinical swallowing assessments, a rating was given by each SP that related to competence/skill in performing tasks and overall session performance. The ratings were dichotomous and indicated whether the assistant was perceived to be competent or not competent in performing tasks as required/instructed by the online clinician.

During these feedback sessions, the assistant also provided a self rating of her performance. The AHA was specifically asked to reflect upon her own perceived levels of comfort carrying out the tasks during the telerehabilitation sessions and her interactions with the patients, and to provide a rating that reflected her overall perception of her performance across the last five assessments. This was rated by the AHA using a visual analogue scale (VAS) of 10 centimeters in length which corresponded to a rating of zero indicating “not comfortable performing the tasks during the assessment” and 10 indicating “very comfortable performing the tasks during the assessment”.

Results

Knowledge test

The knowledge test scores (out of 35 marks) were converted to percentage and are presented in Figure 5. Pre training, the assistant’s knowledge was at 40% (14/35) however post training all subsequent tests reached above the 80% criterion (Figure 5). Items which
continued to be marked incorrectly (Test point 2 and Test point 3) related to errors in labelling of anatomical structures such as the oesophagus, trachea, pharynx, epiglottis and salivary gland. The anatomical structures were either labelled incorrectly or left unlabelled, or incorrectly substituted with associated words (e.g. mouth for lips, palate for hard palate, jaw for dentition).

![Figure 5: Results of the knowledge test which were scored by the speech pathologists.](image-url)
Interviews

Speech pathologists’ ratings of competence and overall performance

The assistant’s competence and overall performance as judged by the two SPs showed that she was competent in carrying out the specific tasks required of her position immediately following the first five patient trials. The assistant was rated by both SPs as being competent throughout the remaining five evaluations.

Assistant’s self rating of comfort

The assistant’s self rating of comfort on the VAS scale with the sessions was found to be high (8/10) after completing the first five patients. This level of perceived comfort and ability to perform the session tasks continued to be high throughout the following five re-tests, with further increases in comfort levels noted at the 5th and 6th tests (Figure 6).
Figure 6: Assistant’s self-rating of comfort after every five patients where 0=not comfortable, 10=very comfortable.

Discussion

The aim of this study was to explore the impact of four hours of training comprising elements of knowledge and hands-on training specific to the telerehabilitation assessment of dysphagia and determine if it was sufficient to prepare an assistant for the role in a telerehabilitation assessment of dysphagia. The results indicate that: the assistant’s knowledge regarding dysphagia doubled after completion of the training session; she was rated as competent after the first five patients assessed and; her own perceived level of comfort performing the session tasks and managing patients was high. Overall these findings
indicated that the four hours of didactic and hands-on training provided to the AHA for the purpose of assessment of dysphagia via telerehabilitation had been beneficial and was sufficient for the successful completion of the clinical telerehabilitation trials. In no telerehabilitation assessment was there any significant difficulty experienced, and all patients were successfully managed.

Considering that the assistant’s background and work experience as an AHA was not in speech pathology, but in a cognate field, the low initial score on the knowledge test was not unexpected. However the marked improvement in the knowledge between the pre and post training tests indicated that training had been successful in improving the AHA’s awareness of content specific knowledge relating to the tasks she was required to perform. Competence in carrying out the specific tasks during the clinical telerehabilitation assessment sessions was also achieved rapidly post training. Davies and van der Gaag emphasized the importance of including both observations and video recordings of the clinical sessions for the training of assistants for specific skills. The multimodal nature of the current training program, in which key theory training was supplemented with video and hands on practical in the present study was potentially a key factor in ensuring the AHA had both knowledge and skills necessary for their role in the telerehabilitation sessions. It is acknowledged though, that changes in knowledge scores observed may be influenced in part by a test re-test bias. The knowledge component the written test was repeated three times within a period of 25 weeks, and only contained a limited number of questions. However, as the content of the exam examined knowledge central to the job required of the AHA in the telerehabilitation assessment, any additional learning effect created by re-testing the same items, in this instance, was not necessarily a negative outcome. In the future, issues of test re-test bias could be further minimised by having alternate versions of the same test, where each version
of the test examines similar content areas but the question wording, format (short answer versus multiple choice) and order of presentation differs slightly.

As prior research has noted, training alone does not ensure clinical competence.\textsuperscript{26} In the current study, it was observed that both competence and comfort performing the required tasks was high even after the first few patients. While this finding can in part be attributed to training, it is possible that the prior years of experience, and attitude of this particular AHA may have contributed to this result. The assistant in the present study had completed a TAFE certification, and also a year of experience managing patients and performing duties under the direction of allied health professionals. Hence this prior experience and exposure managing patients may have contributed to her perceived comfort and overall competency during the clinical trials. The positive attitude of the AHA in the current study to learn the tasks may also have been a strong contributing factor to her rapid uptake of skills and early comfort performing the tasks required, as suggested by van der Gaag and Davies.\textsuperscript{27}

While overall this pattern of results suggest a positive outcome was achieved with only a minimal amount of task specific training, it is important to note that the present training model assumed that the assistant had achieved basic patient skills derived from her work experience as an AHA. Whether or not the same level of training would be equally sufficient in the instance of a novice AHA or individuals without any experience with healthcare cannot be determined from the present research. As the use of telerehabilitation in the assessment of dysphagia may be implemented in a range of clinical and home care settings in the future, further research is needed to examine the training needs of assistants who do not have prior health care experience, such as caregivers or family members.

Furthermore, although the current training model was found to be beneficial in preparing the AHA for her role in the telerehabilitation assessment of dysphagic patients,
several areas of skills development were noted to need further training. Whilst the online clinician made all judgments regarding voice quality and the presence of coughs and clearings of throat, occasionally the online SP asked the assistant for a second opinion. In those cases, it became clear that the assistant was not comfortable in making these decisions. One solution may be to address those behaviours by using recorded examples of the same in various combinations during the hands-on training sessions. It must be emphasized that this training would be to aid the assistant in providing a more accurate second opinion, and is in no way meant to constitute training for clinical diagnostic decisions. There were no adverse patient reactions/incidences encountered during the present research. However, it would be beneficial to provide training which include examples of various complex patient scenarios during training to better prepare a novice assistant to provide non-medical support in complex situations, should the need arise.

It is acknowledged that the use of the assistant has emerged in response to the challenges associated with a shortage of qualified SPs and therefore the role requires a broad spectrum of knowledge and skill that cover both the health and social needs of patients. One of the main challenges of introducing the role of an assistant into clinical telerehabilitation is to determine how the required assessment tasks can be modified to achieve the necessary outcome without compromising the professional boundaries of the assistant and SP. Therefore it is critical that the role of the assistant is clearly defined, as a lack of clarity could lead to unethical and unsafe practises such as making diagnostic decisions, which falls outside of an assistant’s scope of practice.

**Conclusion**

The introduction of a new mode of delivery of healthcare, such as telerehabilitation, is undoubtedly complex and involves not only forming a new model of care but also the
formation of new professional roles, such as a telerehabilitation assistant. Such new roles need careful consideration and adequate training in the breadth, depth and complexity of the skills needed to provide safe and competent practice. The present research showed that for an AHA with prior clinical experience, competence to assist in the sessions was achieved with just a few hours of task specific training. However further research is needed to explore training needs of individuals with no prior experience working with patients. It is important that future research is conducted to determine the core knowledge and skills required to practise as a telerehabilitation assistant and educational programmes are established incorporating theoretical and practical skills training to ensure necessary competency levels are achieved.

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