

## ORIGINAL RESEARCH

# Speech–language pathology telehealth in rural and remote schools: the experience of school executive and therapy assistants

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## ABSTRACT

**Introduction:** Difficulties in accessing allied health services, especially in rural and remote areas, appear to be driving the use of telehealth services to children in schools. The objectives of this study were to investigate the experiences and views of school executive staff and therapy assistants regarding the feasibility and acceptability of a speech–language pathology telehealth program for children attending schools in rural and remote New South Wales, Australia. The program, called Come N See, provided therapy interventions remotely via low-bandwidth videoconferencing, with email follow-up. Over a 12-week period, children were offered therapy blocks of six fortnightly sessions, each lasting a maximum of 30 minutes.

**Methods:** School executives ( $n=5$ ) and therapy assistants ( $n=6$ ) described factors that promoted or threatened the program's feasibility and acceptability, during semistructured interviews. Thematic content analysis with constant comparison was applied to the transcribed interviews to identify relationships in the data.

**Results:** Emergent themes related to (a) unmet speech pathology needs, (b) building relationships, (c) telehealth's advantages, (d) telehealth's disadvantages, (e) anxiety replaced by joy and confidence in growing skills, and (f) supports.

**Conclusions:** School executive staff and therapy assistants verified that the delivery of the school-based telehealth service was feasible and acceptable. However, the participants saw significant opportunities to enhance this acceptability through building into the program stronger working relationships and supports for stakeholders. These findings are important for the future development of allied health telehealth programs that are sustainable as well as effective and fit the needs of all crucial stakeholders. The results



have significant implications for speech pathology clinical practice relating to technology, program planning and teamwork within telehealth programs.

**Key words:** Australia, principal, rural, school, speech–language pathology, telehealth, therapy assistant.

## Introduction

When compared to those in urban centres, populations in rural and remote areas experience significantly greater difficulties in accessing health care. As a consequence, rural and remote schools in several countries are beginning to engage with technology-mediated solutions in their efforts to meet the needs of their students for allied health services. School staff and therapy assistants (TAs) working in school settings are discovering their own needs as they collaborate with government services, non-government organisations and businesses in the rapidly advancing and often unfamiliar area of telehealth.

### *Factors influencing access to adequate allied health services worldwide*

Where face-to-face allied health services are provided in rural and remote areas, barriers of distance, geography, population distribution and culture have historically led to reduced efficiency and effectiveness of healthcare service delivery models compared to less constrained environments<sup>1</sup>. The financial and time costs of travel to, and within, these regions often mean the frequency and intensity of treatment is less than optimal. Transport and attendance is at times impractical, hazardous or impossible, with rural health services being sometimes irregular and inconsistent in timing, and of limited scope in the range of clients and health issues addressed<sup>2</sup>. Worldwide, the building of sustained regional expertise is complicated by difficulties in the recruitment and retention of sufficient allied health professionals (AHPs), including in rural and remote Australia<sup>3</sup>.

### *Rural and remote Australia*

In Australia, allied health services that meet rural and remote communities' needs and expectations have been historically

difficult to deliver<sup>4,6</sup>. Recent research in the context of the state of New South Wales (NSW) provides insights into these challenges<sup>7</sup>, which are consistent with studies of allied health services of other areas of rural and remote Australia<sup>8,9</sup>. New South Wales has a regional AHP workforce disparity. In 2011, NSW had 24 percent fewer AHP positions per head of population in rural and remote areas than the state's average<sup>10</sup>. Rural AHPs in NSW may travel thousands of kilometres in a year<sup>11</sup>, a factor in low retention rates and recruitment difficulties<sup>12,13</sup>. In regional and remote regions of NSW, people with disabilities and their carers were found<sup>11</sup> to greatly value speech pathology and other allied health services while highlighting the levels of unmet need, long waiting lists, lack of continuity and consistency in services, and difficulties in accessing therapy. The major causes of these difficulties were identified<sup>11</sup> as workforce shortages, and distances travelled by the family or the AHP.

### *Therapy assistants and rural and remote allied health services in Australia*

Community-based TA positions can potentially improve access to allied health services in Australia<sup>2,5,11</sup> by optimising treatment, facilitating management, building skills locally and providing continuity across staff changes. Therapy assistants are typically employed, trained and supported to work under the direction of an AHP<sup>14</sup>. While the position of TA is often a paid position for people with appropriate certification, in this study the term is used to describe the role of existing staff in schools and unpaid volunteers when fulfilling TA functions in AHP-directed interventions.

### *Technology as part of a solution to allied health access*

The provision of health services at a distance through technology, often referred to as telehealth, has long been



promoted as providing a range of possible solutions that obviate problematic aspects<sup>15</sup> of face-to-face outreach models. Telehealth is finding increasingly wide application among speech–language pathologists (SLPs)<sup>16</sup>. Its capacity to improve service access, efficiencies and outcomes for an expanding range of difficulties, disorders and populations is well supported by research<sup>17</sup>.

## ***Schools and telehealth***

Schools are logical sites for allied health telehealth services for children, frequently offering rooms with internet access, a choice of computers, software, IT support, security for equipment, staff who might assist, and useful resources. They can be familiar environments for children and their families, with sufficient privacy.

In the USA, schools are the most common setting in which speech–language pathology telehealth services<sup>18</sup> are being delivered. The efficacy and efficiency of telehealth speech pathology in schools, and satisfaction of parent and school staff stakeholders have been investigated<sup>19-22</sup> with encouraging results.

## ***Issues with school-based telehealth***

Several potential barriers to successful implementation of school-based telehealth have been noted, including community buy-in, non-acceptance of the program by professionals/workers on site, concerns with incorporating sessions into daily workloads and the need for on-going collaboration of stakeholders<sup>23-25</sup>.

The most vital element for telehealth-in-school's success has been reported to be the behaviour of personnel, including support from the school administrators, and having organised, cooperative and flexible facilitators<sup>26,27</sup> such as TAs. Therapy assistants, it has been emphasised, must receive training that includes clarification of their role and ongoing training<sup>28</sup> as new issues arise. Techniques and issues around working with TAs in speech–language pathology telehealth

programs in schools have been discussed in a few studies internationally<sup>28-30</sup> and in the Australian context<sup>31,32</sup>.

Studies have attempted to examine in depth the views of stakeholders who have experience of school-based allied health telehealth programs in Australia. Fairweather, Lincoln and Ramsden (2016)<sup>33</sup> studied the views of parents involved in a speech–language pathology telehealth program called Come N See (CNS) for children attending schools and early childcare settings in rural NSW. During semistructured interviews, parents ( $n=5$ ) verified that such a service delivery model was feasible and acceptable and that regular discussion and communication between the various stakeholders would promote increased parental engagement and acceptability. Lincoln et al. (2014)<sup>32</sup> examined views of the feasibility and acceptability of a similar version of the CNS program among parents, school principals and TAs. They found the service delivery model to be highly acceptable to stakeholders despite difficulties with technology and the complexities of the model. Lincoln et al. recommended that service providers pay particular attention to service planning processes and lines of communication between all stakeholders.

## ***Limitations in the research literature***

Further research focusing on regular generalist speech–language pathology telehealth services into Australian schools using desktop computers is necessary for extensive application of this service delivery model in Australia<sup>33</sup>. Internationally, few studies have investigated in depth stakeholder perceptions of school-based telehealth intervention's feasibility and acceptability<sup>32</sup>. The study of Lincoln et al. (2014)<sup>32</sup>, although promising, was limited in scope because the experiences of principals and TAs related to only nine children receiving service from one SLP.

The views of school executives are crucial in the establishment, support and maintenance of school telehealth programs. The views of TAs are important because these influence program cost, feasibility and the acceptability of such programs to SLPs<sup>31</sup>.



## *Purpose*

The objectives of this study were to evaluate the views of school executives and TAs about the feasibility and acceptability of school-based telehealth speech–language pathology services in rural and remote areas of NSW. This study extends and builds on the work of Lincoln et al. (2014)<sup>32</sup> by recruiting stakeholders who:

- have experience with more children: total of  $n=66$  for school executive and  $n=57$  for TAs
- work in more remote areas of NSW, and
- experience treatment delivered via multiple SLPs ( $n=7$ ).

This study addressed the following research questions:

1. What are the perceptions of school executive staff, and TAs, about the feasibility and acceptability of a school-based speech pathology telehealth program for children?
2. What is the nature of satisfaction and dissatisfaction and perceived advantages and disadvantages with telehealth services for these participants?

## Methods

### *Study design*

This study was designed as a post-intervention qualitative study to explore the feasibility and acceptability of CNS for two groups of stakeholders. Interviews were conducted face-to-face with school principals ( $n=4$ ), a deputy principal ( $n=1$ ) and TAs ( $n=6$ ) by the first author, who was not involved in program delivery.

A semistructured interview guide was used to ensure that a range of issues was discussed<sup>34,35</sup> related to the respondents' experiences of telehealth in the school setting. These included their opinions about (a) CNS, (b) the benefits and disadvantages of using technology in the delivery of therapy

services, (c) telehealth implementation processes, (d) barriers to telehealth, (e) facilitators of telehealth and (f) opinions as to whether children's communication skills improved over the course of the program. Additional questions were asked to encourage the respondent to clarify their points, or to expand on their answers.

All participants were interviewed at their workplace within one or two days of the conclusion of the telehealth program.

### *Recruitment*

Participating school principals and TAs of all children ( $n=134$ ) in the program were invited to participate in the research. Consent to participate in the research was obtained for seven school principals, two assistant principals nominated by principals to be interviewed in their place, and seven TAs, spread across a total of nine schools and seven towns.

### *Attrition*

Two principals could not be interviewed because their towns were not visited for logistical reasons. One principal, one assistant principal and one TA were not available for interviews on the days the interviewer attended their schools to conduct interviews, and one TA declined to be interviewed.

### *Demographic data of respondents*

All interviewees in this study lived in the Western NSW Local Health District, the second most sparsely populated health district in the state<sup>36</sup>, with just over one person per square kilometre (271 000 people across 250 000 km<sup>2</sup> in 2013). As of 2011, the proportion of its population identifying as Aboriginal was 11.1 percent compared to 2.9 percent for the whole of NSW<sup>37</sup>.

**Participant principals and deputy principal (school executive):** Four principals and one assistant principal from government schools were interviewed (Table 1). Two of



their five school sites were in the same town. The towns varied in population size from about 2500 to about 32 500, and varied in driving distance from Sydney, the capital of NSW, from about 360 km to about 700 km.

**Participant therapy assistants:** Six TAs were interviewed (Table 2). They included two Learning and Support teachers, a Learning and Support officer, a School Support officer, an Aboriginal Education officer, a Therapy Aide, and a volunteer from the community. The schools where the TAs worked were the same as those of the school executive respondents, with the addition of a school of 232 enrolled pupils in a town with a population of about 3000.

### *The telehealth program*

The speech–language pathology telehealth program CNS has been described in Fairweather, Lincoln and Ramsden (2016)<sup>33</sup>. Speech–language pathologists in Sydney provided therapy interventions remotely via low-bandwidth videoconferencing, with email follow-up. Over a 12 week period, children were offered therapy blocks of six fortnightly sessions, each lasting a maximum of 30 minutes. The SLPs providing therapy gave instruction in therapy-related school and home practice activities to adults who were supporting the child locally. All sites in this study had a TA, and also frequently a family member, present in the SLP-led sessions.

### *Role of the therapy assistants*

Before each therapy session, the TA ensured that the technology was operational, and usually brought the child to and from the session from class or the playground. Typically, the TA was seated next to the child, participated in the sessions and conducted some practice of therapy activities as demonstrated and recommended by the SLP. These short practice sessions conducted without a SLP were scheduled one or two times over a fortnight. As indicated in Table 2, the number of children each of the TAs worked with on the program varied from 20 children to a single child.

### *Role of the school principals*

The principals or their designated staff approved the time commitment of staff members to be involved and the school's required space, equipment and costs.

### *Qualitative data analysis*

The analytical framework applied to the interview data was thematic content analysis with constant comparison, an iterative process of constantly comparing data, which results in the identification of new categories of data and new relationships between data<sup>38</sup>. The digital recordings of the interviews were transcribed verbatim by a professional transcription service. The first author read the transcripts, checking them against the audio to ensure accuracy. The transcript data from the principals/deputy principal were grouped and analysed separately from the data from the TAs. All of the interview data underwent five stages of analysis<sup>39</sup>, conducted by the first author. Each stage involved constant comparison within and between each of the grouped transcripts. Meaning units (i.e. ideas) within the interview text were identified and marked with an individual alphanumeric identifier. Meaning units were condensed into coding nodes. Coding nodes were interpreted and modified to provide consistent wording. Categories were developed through constant comparison of the coding nodes. Themes and sub-themes were generated through the grouping of similar categories into major content areas. During further analysis, the themes of both groups were compared to identify those common or unique.

### *Rigour*

The second author independently coded transcripts of one principal and one TA and independently generated themes. The first and second author compared and discussed the themes each had generated and agreed on a final set of themes.

### *Ethics approval*

The study was approved by the University of Sydney Human Ethics Committee (ethics clearance 2012/489) on 14 June 2013.



**Table 1: Individual demographic data for participant school principals and deputy principal**

Participant	Age (years)	Gender	School size†	No. of children who commenced program at school site
1	55-65	Male	Large	18
2	35-44	Male	Large	11
3	35-44	Female	Medium	10
4	45-54	Male	Medium	11
5	35-44	Male	Medium	16
Total				66

†A medium-sized school has 200-400 pupils; a large school has over 400 pupils.

**Table 2: Individual demographic data for therapy assistant participants**

Participant	Age (years)	Gender	School size†	No. of children TA assisted in telehealth program
6	≤24	Female	Large	12
7	>64	Female	Large	3
8	45-54	Female	Medium	10
9	45-54	Female	Medium	11
10	35-44	Male	Medium	1
11	45-54	Female	Medium	20
Total				57

TA, therapy assistant.

†A medium-sized school has 200-400 pupils; a large school has over 400 pupils.

## Results

In the initial analysis, four themes emerged from the principals' and deputy principal's interview data, and four themes emerged from the TAs' data. During further analysis, the themes of both groups were compared, with two themes found to be common to both groups:

1. unmet speech pathology needs
2. building relationships.

Two themes, however, were unique to school executives:

3. telehealth's advantages
4. telehealth's disadvantages.

Two themes were unique to TAs:

5. anxiety replaced by joy and confidence in growing skills
6. supports.

A description of each theme and illustrative quotes are provided below.

### ***Theme 1: Common theme – unmet speech pathology needs***

All five school executive participants and most of the TAs agreed that they were concerned about the unmet need for speech–language pathology services for a range of pupils at each school, prior to commencement of the telehealth program. They reported that this motivated them to participate in the program. Speech–language pathology service needs were described as affecting both pupils starting school and children of all grades. At one school, the principal described this as the school's greatest need. The program was



acceptable to the principals because other speech–language pathology services were at that time entirely absent at the school, or restricted to a few children.

*Language and speech ... our need is huge in that area.  
(Participant 3)*

*We have children that start at this school with so many deficits in their language ... they just don't come to school with the language skills that they need ... Speech therapy is in extreme demand. (Participant 1)*

All six TAs stated that they were pleased with the improvement in access to a qualified SLP afforded by the telehealth program because SLP access had been limited on site in their schools, and in most cases was not available in their towns.

*These children have been referred back in pre-school, they are now in Year 6 and they had never had any speech (therapy) ... We've never had this before that children can actually get one-on-one therapy from a therapist. (Participant 11)*

Some participants believed many parents at their school did not seek needed SLP support for their children because it meant travelling to other towns or regional centres 1-4 hours away by car. The TAs stated that through CNS, children were receiving therapy that they would not have otherwise received. Telehealth was considered an excellent option for improving access to services when the physical presence of a SLP providing one-on-one therapy face-to-face could not occur.

## **Theme 2: Common theme – building relationships**

A shared theme of both groups of participants was the value of building stronger relationships among all stakeholders through more effective lines of communication and well-supported strategies for increasing engagement with parents and caregivers.

Participant recommendations included joint orientation sessions for the caregivers/parents, and for the children, before therapy began, with a meet-and-greet introduction of the SLP via videoconference or if possible face-to-face.

*Parents understand exactly what's going on, the kids are settled ... That's the relationship build that a lot of people are looking for. (Participant 5)*

TAs reported increased satisfaction from successful collaboration between parent, SLP and TA. The TAs recommended a greater frequency of SLP contact with the family via email and telephone.

TAs believed that they could be more effectively employed in building more extensive stakeholder relationships. They wanted initial training from the SLP on ways of making the TA role more effective, including how to increase rapport with the children, gain their cooperation, and keep the children's attention 'centred' in practice sessions.

TAs expressed that they were underutilised by the SLPs as sources of important information and ideas on improving the interaction between the SLP and the child. They wanted more opportunities to impart their knowledge and views about the children's difficulties, important life events, social background, life experiences, interests, current literacy level, and learning style.

*Each child had a whole set of different difficulties and catering to what that child can do successfully really ... this knowledge needs to be imparted before the therapy session commences. (Participant 9)*

The TAs identified the SLP and TA collaboration and communication with teachers as an area of weakness for the program, as it was overly affected by the TA's degree of initiative, confidence and access to the teachers, and there were insufficient opportunities for the teachers to have input to collaboration and feedback. School executives wanted an increased information flow to themselves through inclusion in emails from the service provider to the school staff member



delegated to be coordinator, and through overall reports on what was being provided and achieved at the school site.

### **Theme 3: School executives – telehealth’s advantages**

All school executive participants reported that there were benefits to having a telehealth service operating at the school. They welcomed the program as a means of fulfilling aspects of their responsibilities as principal such as legislative requirements around disability, showing care for students with difficulties and offering an avenue of assistance to worried parents.

*It enabled me to have a clear plan to actually provide a specific service for a student with the disability, as is the want through the new legislation around disability care. We were able to ensure that we can provide services that we couldn’t do before. (Participant 4)*

Several participants were pleased that they were able to nominate for assessment and intervention many students who would not have been taken by their families to access a speech–language pathology service outside the school even if it were available in the same town.

*They have access to support they wouldn’t otherwise receive and that issue only widens as you go further west with access to speech pathology ... it gives them access that other students that are in more densely populated areas have and they don’t miss out because of their remote location. (Participant 2)*

The telehealth sessions being more frequent and at regular times proved easier for school executives to accommodate than some visiting health services. The school executives felt the comparative frequency of telehealth sessions under the one SLP allowed a more consistent approach that more effectively fostered skills and confidence in school staff, and engagement in parents and caregivers.

*We used to have speech pathologists but they would come and go and there was no consistency of approach ... so this ensures that there is a consistency of approach ... It’s providing instantaneous feedback to the parents and support to the parents and it strengthens your community bond ... I love seeing the parents in the school ... it has linked a really strong bond with some of our families. (Participant 4)*

School executives viewed the telehealth program as more individualised and more likely to be effectively followed up with therapy practice than the face-to-face speech–language pathology programs they had experienced.

The computer technology utilised was considered an asset because the fun involved would be engaging and motivating for children. Participants reported observing the children having enjoyed their sessions, noting that some of the children appeared pleased that they had a special individualised time on the computer unlike other children in the class.

Participants stated telehealth at school offered the benefit of increased privacy for children and families over taking a child out of school to another site or having a SLP seen with the child at school. This was reported to be important in their small communities. Other advantages noted were that the children were likely to be more comfortable with attending therapy at school and that therapy appointments went ahead even if a family member could not attend sessions. Increased school attendance and improved working relationships between parents and school staff were further reported benefits of the service being on site.

### **Theme 4: School executives – telehealth’s disadvantages**

Although few sessions had been observed by the school executive participants, all stated that they believed there were some disadvantages to using technology to delivery speech pathology therapy remotely, such as children being more engaged and responsive when a SLP was face-to-face: ‘You can’t beat face-to-face intervention ... But I guess





teletherapy is the next best thing.’ (Participant 2). Some noted that only a visiting SLP could observe the child in the classroom.

Technological glitches that interfered with the sessions were noted to occur at times.

*Technology doesn’t always work. The people don’t always know how to work the technology. If either occurs there’s a breakdown, the service can’t be delivered. (Participant 5)*

These included the connectivity difficulties produced by inclement weather, and the non-availability of IT support staff.

Principals noted that when the TA was a school staff member, their flexibility in their other work at the school was reduced.

*The huge disadvantage that we found was the fact that we were using our AO [Aboriginal Officer] and she has other roles and responsibilities within the school that she had to forego for those couple of days. (Participant 3)*

The wage of a staff member while they supervised the sessions in the school and provided therapy between sessions was a significant consideration. Staff time used for management of the program added to the cost to the school.

### ***Theme 5: Therapy assistants – anxiety replaced by joy and confidence in growing skills***

The TAs all mentioned their considerable initial anxiety about using the technology; however, they quickly mastered it. ‘I was thinking I had to be an IT expert and you don’t’ (Participant 11). Personal instruction in the technology was considered very important for confidence in setting up the equipment and restoring settings. The TA’s frustration with occasional barriers to the use of telehealth, such as reduced sound quality and unreliable internet connections, led some TAs to conclude that a face-to-face SLP presence was still preferable provided it was of sufficient frequency.

The TAs commented on the pleasure and motivation that they received from both their own growth in skills, interaction style and confidence and from the reactions of the children in SLP-led and TA-led sessions. ‘It’s really allowed me to grow in my knowledge and skills’ (Participant 9). Those TA’s with experience of other speech–language pathology service delivery models remarked that the telehealth program afforded more demonstration of varied therapy activities than had been possible where a written set of activities had been left with them to complete without elaboration. They attributed their growth in skills to the repeated demonstrations and the relatively frequent sessions of the program. ‘It’s one thing to read it, it’s another to actually see it modelled to you’ (Participant 11). Several TAs commented about benefiting from the SLP’s model of positive encouragement and praise of the child. ‘I got a lot of pleasure out of seeing how they would do it and it was great’ (Participant 7). They appreciated learning from the SLP’s visual demonstrations, and rapport building with the child. Also nominated as motivating for the TAs was their pleasure in the children’s improved skills after the five sessions, especially any apparent increased confidence in speaking or communicating.

### ***Theme 6: Therapy assistants – supports***

While five of the six TAs commented that they planned to continue their participation in the telehealth program, they all reported that it could be improved through added supports for their TA role. Some were of the view that before agreeing to participate, potential TA’s should have detailed discussions with the school executive and the SLP about the necessary and likely time commitments, requirements, the lines of communication and control, work scheduling arrangements, adjustments to duty statements, and infrastructure provided as supports. ‘There were a lot of people involved with it so you didn’t quite know who to go to’ (Participant 10). ‘I’d certainly recommend, just an outline to our principal that we need these particular resources, human and non-human’ (Participant 9). The TAs reported that from their experience the telehealth program was



sufficiently acceptable and feasible that it should be continued and offered elsewhere, with these supports.

Some TAs raised the subject of Indigenous families, highlighting the proportion of Indigenous children attending the school (nominated as 50 percent in one case) and the advantages of having Indigenous staff interacting with Indigenous families. The participants' general discussion of the importance of supportive processes seeking parent and caregiver approval for children's participation, engagement in the telehealth process, and improving the provider's awareness of the child's experiences suggests that the adaptation of paediatric SLP telehealth to the cultural differences of rural Indigenous communities is an important area for future research.

## Discussion

This study provides valuable insights into the experiences and motivations of school executive and TAs around a school-based speech pathology telehealth program. The authors found that both these groups developed extensive ideas about strengthening stakeholder relationships. School executives concluded that the CNS telehealth program had advantages of greater accessibility, individualised intervention, consistency of approach, reliability, flexibility for class timetabling, privacy, confidence-building for stakeholders, and enjoyment for the children, when compared to past face-to-face programs. The same group weighed these against the perceived disadvantages of difficulties with engagement, observation, technology and staff allocation. The TAs experienced initial anxieties about the skills required for their role but these were supplanted by pleasure in rapid mastery of the technology and gradual development of new abilities in therapy interactions with the children. They proposed greater supports for their role through a more structured system for information sharing and collaboration. These findings are important for the future development of allied health telehealth programs that are sustainable as well as effective, as must fit the needs of all crucial stakeholders<sup>15</sup>.

The study findings support the view that telehealth solutions can be perceived as acceptable and feasible means for accessing speech–language pathology services by school executive and school staff or by volunteers involved as TAs. The study demonstrates that thematic analysis of interviews has utility in identifying contributing factors in stakeholders' perceptions of telehealth programs, allowing a more nuanced understanding than most previous studies, which have used limited rating scales. It makes an important contribution to the literature in the analysis of key stakeholders' ideas for program improvement and their concerns. A strength of this study is that it has examined the views of rural participants with experience of greater numbers of children in such a program and serviced by greater numbers of SLPs (seven) than any other study that uses thematic analysis of interviews, as far as the authors are aware. This adds to the greater robustness of the results for developing programs with multiple clinicians servicing large numbers of children compared to any similar study.

The results are consistent with other relevant evidence available that school-based speech–language pathology telehealth can be a satisfactory solution in underserved rural areas. However, a collaborative effort to support a telehealth program from school administrators, staff, parents, students and healthcare providers is critical for its success<sup>26</sup>. This current study's themes are consistent with previous studies' findings regarding barriers that need to be addressed in school settings<sup>23,24</sup>.

The implications for speech pathology clinical practice relate to technology, program planning and teamwork. Before the first therapy sessions, there should be sufficient instruction of TAs on the technology, with practice and discussion, and orientation to therapy activities. The systematic building of rapport between stakeholders to establish effective working relationships should be commenced as early as possible.

Program planning should maximise the acceptability of all aspects of the service to individual stakeholders. Engagement with the children's parents/caregivers and teachers, with the assistance of the TAs, should also commence well before the



first sessions. Regular collaboration with the TAs should include discussion of the child's strengths and weaknesses, interests and choices in intervention methods, and outcomes.

SLPs should collaboratively plan the development of the TA's role, skills and motivation. The telehealth program should have sufficient mechanisms for delegation, collaboration, teamwork and feedback for maximising an effective TA and SLP partnership. This is consistent with the literature<sup>31,40</sup>.

There are implications for government policy in schools' use or hosting of telehealth programs. Provider reimbursement has long been described as the most frequent barrier to greater telehealth use<sup>26</sup>. Funding from government and non-government sources of programs shown to have improved access to efficacious, efficient allied health services should be considered. Schools will also have to examine issues around telehealth privacy and liability.

This study should provide an impetus for further research into how school-based telehealth programs might better meet the needs of vital stakeholders. Given the promising results of this study, useful research questions include the modifications to standard face-to-face speech pathology interventions needed in telehealth practice; facilitation of TA participation, learning, collaboration, satisfaction and role development; adequate collaboration with class teachers; and engagement with parents/caregivers. This should include investigation of cultural adaptations for Indigenous families.

Limitations of this study include its small sample size and that the views and experiences of teachers and children involved in the program were not examined.

## Conclusions

The study has identified key aspects of school executives' and TAs' views regarding a school-based speech-language pathology telehealth program. While finding the program feasible, acceptable and generally a positive experience, they also saw significant opportunities to build stronger working

relationships and supports into the program. The findings have implications for technological solutions in ending the inequity of access to allied health services in rural and remote communities.

## References

- 1 Batty KM, McTaggart K. Development of a model for sustainable delivery of outreach allied health services to remote north-west Queensland, Australia. *Rural and Remote Health* 2003; **3(3)**: 194. Available: [www.rrh.org.au](http://www.rrh.org.au) (Accessed 8 March 2017).
- 2 Goodale B, Lin I. Therapy assistants – a model in rural/remote Western Australia. In: *Walking together – side by side. Proceedings, The National SARRAH Conference*. 26-28 August 2004. Alice Springs, NT: Services for Australian Rural and Remote Allied Health, 2004.
- 3 Campbell N, McAllister L, Eley D. The influence of motivation in recruitment and retention of rural and remote allied health professionals: a literature review. *Rural and Remote Health* 2012; **12**: 1900. Available: [www.rrh.org.au](http://www.rrh.org.au) (Accessed 8 March 2017).
- 4 Veitch C, Lincoln M, Bundy A, Gallego G, Dew A, Bulkeley K, et al. Integrating evidence into policy and sustainable disability services delivery in western New South Wales, Australia: the 'wobbly hub and double spokes' project. *BMC Health Services Research* 2012; **12**: 70.
- 5 Dew A, Veitch C, Lincoln M, Brentnall J, Bulkeley K, Gallego G, et al. The need for new models for delivery of therapy intervention to people with a disability in rural and remote areas of Australia. *Journal of Intellectual & Developmental Disability* 2012; **37(1)**: 50-53.
- 6 Keane S, Smith TN, Lincoln M, Wagner SR, Lowe SE. The rural allied health workforce study (RAHWS): background, rationale and questionnaire development. *Rural and Remote Health* 2008; **8(4)**: 1132. Available: [www.rrh.org.au](http://www.rrh.org.au) (Accessed 8 March 2017).
- 7 Keane S, Smith T, Lincoln M, Fisher K. Survey of the rural allied health workforce in New South Wales to inform recruitment and retention. *Australian Journal of Rural Health* 2011; **19(1)**: 38-44.



- 8 Chisholm M, Russell D, Humphreys J. Measuring rural allied health workforce turnover and retention: what are the patterns, determinants and costs?. *Australian Journal of Rural Health* 2011; **19(2)**: 81-88.
- 9 Department of Health and Ageing. Report on the audit of health workforce in rural and regional Australia. Canberra: Commonwealth of Australia, 2008.
- 10 Lincoln M, Hines M. *Submission to the Senate Inquiry into the prevalence of different types of speech, language and communication disorders and speech pathology services in Australia*. Submission 53. 2014. Available: <http://www.aph.gov.au/DocumentStore.ashx?id=f7657ac-44a5-4b78-905c-2b44a5eae36e&subld=32810> (Accessed 19 October 2015).
- 11 Dew A, Bulkeley K, Veitch C, Bundy A, Gallego G, Lincoln M, et al. Addressing the barriers to accessing therapy services in rural and remote areas. *Disability & Rehabilitation* 2013; **35(18)**: 1564-1570.
- 12 Keane S, Lincoln M, Smith T. Retention of allied health professionals in rural New South Wales: a thematic analysis of focus group discussions. *BMC Health Services Research* 2012; **12**: 175.
- 13 Lincoln M, Gallego G, Dew A, Bulkeley K, Veitch C, Bundy A, et al. Recruitment and retention of allied health professional in the disability sector in rural and remote NSW, Australia. *Journal of Intellectual & Developmental Disability* 2014; **39(1)**: 86-97.
- 14 Lin I, Goodale B, Villanueva K, Spitz S. Supporting an emerging workforce: characteristics of rural and remote therapy assistants in Western Australia. *Australian Journal of Rural Health* 2007; **15(5)**: 334-339.
- 15 Bradford NK, Caffery LJ, Smith AC. Telehealth services in rural and remote Australia: a systematic review of models of care and factors influencing success and sustainability. *Rural and Remote Health* 2016; **16**: 3808. Available: [www.rrh.org.au](http://www.rrh.org.au) (Accessed 8 March 2017).
- 16 Molini-Avejonas DR, Rondon-Melo S, Albuquerque de La Higuera Amato C, Samelli AG. A systematic review of the use of telehealth in speech, language and hearing sciences. *Journal of Telemedicine and Telecare* 2015; **21(7)**: 367-376.
- 17 Mashima PA, Doarn CR. Overview of telehealth activities in speech-language pathology. *Telemedicine and e-Health* 2008; **14(10)**: 1101-1117.
- 18 American Speech-Language-Hearing Association. *Issues: telepractice*. 2012. Available: <http://www.asha.org/Practice-Portal/Professional-Issues/Telepractice/Key-Issues> (Accessed 8 March 2017).
- 19 Scheideman-Millar C, Clark P, Smeltzer S, Cloud A, Carpenter J, Hodge B, et al. Two year results of a pilot study delivering speech therapy to students in a rural Oklahoma school via telemedicine. In: *Science Systems, 2002. HICSS. Proceedings of the 35th Annual Hawaii International Conference on System Sciences; 7-10 January 2002*. Big Island: HICSS, 2002; 1-9.
- 20 Grogan-Johnson S, Alvares R, Rowan L, Creaghead N. A pilot study comparing the effectiveness of speech language therapy provided by telemedicine with conventional on-site therapy. *Journal of Telemedicine and Telecare* 2010; **16(3)**: 134-139.
- 21 Gabel R, Grogan-Johnson S, Alvares R, Bechstein L, Taylor J. A field study of telepractice for school intervention using the ASHA NOMS K-12 Database. *Communication Disorders Quarterly* 2013; **35(1)**: 44-54.
- 22 Brown J. Telepractice, ethics, licensure, and reimbursement. Paper presented at Annual Convention of the American Speech-Language-Hearing Association; 19-21 November 2009. 2009. Available: [www.asha.org/Events/convention/handouts/2009/1445\\_Brown\\_Janet.htm](http://www.asha.org/Events/convention/handouts/2009/1445_Brown_Janet.htm) (Accessed 8 March 2017).
- 23 Reynolds CA, Maughan ED. Telehealth in the school setting: an integrative review. *The Journal of School Nursing* 2015; **31(1)**: 44-53.



- 24 Wu YP, Steele RG, Connelly MA, Palermo TM, Ritterband LM. Pediatric ehealth interventions: common challenges during development, implementation, and dissemination (Eds). [commentary]. *Journal of Pediatric Psychology* 2014; **39(6)**: 612-623.
- 25 McConnochie KM, Wood NE, Kitzman, HJ, Herendeen NE, Roy J, Roghmann KJ. Telemedicine reduces absence resulting from illness in urban child care: evaluation of an innovation. *Pediatrics* 2005; **115(5)**: 1273-1282.
- 26 Crutchley S, Campbell M, Christiana D. Implementing a school-based telepractice program. *SIG 18 Perspectives on Telepractice* 2012; **2(1)**: 31-41.
- 27 Burke B Jr, Bynum A, Hall-Barrow J, Ott R, Albright M. Rural school-based telehealth: how to make it happen. *Clinical Pediatrics* 2008; **47(9)**: 926-929.
- 28 Alvares R. Working with facilitators to provide school-based speech and language intervention via telepractice. *SIG 18 Perspectives on Telepractice* 2013; **3**: 44-48.
- 29 Grogan-Johnson S. Providing school-based speech-language therapy services by telepractice: a brief tutorial. *SIG 18 Perspectives on Telepractice* 2012; **2**: 42-48.
- 30 Grogan-Johnson S. Take the tele-plunge at your school: an Ohio group shares five key steps to setting up remote speech-language treatment in schools. *The ASHA Leader* 2012; **17**: 10-13.
- 31 Hines M, Lincoln M, Ramsden R, Martinovich J, Fairweather C. Speech pathologists' perspectives on transitioning to telepractice: what factors promote acceptance?. *Journal of Telemedicine and Telecare* 2015; **21(8)**: 469-473.
- 32 Lincoln M, Hines M, Fairweather C, Ramsden R, Martinovich J. Multiple stakeholder perspectives on teletherapy delivery of speech pathology services in rural schools: A preliminary, qualitative investigation. *International Journal of Telerehabilitation* 2014; **6(2)**: 65-74.
- 33 Fairweather GC, Lincoln MA, Ramsden R. Speech-language pathology in rural and remote educational settings: Decreasing service inequities. *International Journal of Speech-Language Pathology* 2016; **18(6)**: 592-602.
- 34 Bryman A. *Social research methods*. 3rd edn. Oxford: Oxford University Press, 2008; 529-533.
- 35 Creswell J. *Qualitative inquiry and research design: choosing among five approaches*. 2nd edn. Thousand Oaks: Sage, 2007.
- 36 NSW Ministry of Health. *Western NSW*. Available: <http://www.health.nsw.gov.au/lhd/pages/wnswlhd.aspx> (Accessed 1 July 2016).
- 37 NSW Health. *Western New South Wales Local Health District Aboriginal Health Plan 2014-2016 Closing the Gap*. Available: [https://wnswlhd.health.nsw.gov.au/Downloads/WNSWLHD\\_final\\_AboriginalHealthplan\\_signed.pdf](https://wnswlhd.health.nsw.gov.au/Downloads/WNSWLHD_final_AboriginalHealthplan_signed.pdf) (Accessed 27 February 2017).
- 38 Braun V, Clarke V. Using thematic analysis in psychology. *Qualitative Research Psychology* 2006; **3(2)**: 77-101.
- 39 Graneheim UH, Lundman B. Qualitative content analysis in nursing research: Concepts, procedures and measures to achieve trustworthiness. *Nurse Education Today* 2004; **24(2)**: 105-112.
- 40 The Speech Pathology Association of Australia. Working with Support Workers. Position Statement Melbourne, Vic.: The Speech Pathology Association of Australia, 2014.