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EFFECTIVENESS OF POSTURAL CARE PROGRAMME 1

Short title: Effectiveness of a postural care training programme

Descriptive title: A study in to the effectiveness of a postural care training programme aimed at improving knowledge, understanding, and confidence in parents and school staff.

Sarah Hotham, PhD, MSc, BSc

Chartered Psychologist & Research Fellow, Centre for Health Services Studies, University of Kent¹

Kate E Hamilton-West, PhD, MSc, BSc

Chartered Health Psychologist & Senior Research Fellow, Centre for Health Services Studies, University of Kent¹

Eve Hutton, PhD, MA

Therapy Manager & Professional Lead (Occupational Therapy)

Children & Young People's Therapy Service, East Kent Hospitals University NHS Foundation Trust

&

Reader in Children and Young People's Health and Wellbeing. School of Allied Health Professions, Canterbury Christ Church University²

Annette King, MBA, PG Diploma HSCM, BSc

RDS SE Kent Academic Lead, Centre for Health Services Studies, University of Kent¹

Nicola Abbott, PhD, BSc

Lecturer, School of Psychology, Politics and Sociology, Canterbury Christ Church University²

Corresponding author:

S.Hotham@kent.ac.uk (Sarah Hotham).

CHSS, University of Kent, Canterbury, Kent, CT2 7NF.

Telephone: +44 (0)1227 827759

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Abstract

Background: Parents and school staff lack knowledge and confidence when providing postural care to physically disabled children. This can act as a barrier to the successful implementation of therapy. To address this problem, a novel training programme was developed to improve knowledge and confidence in providing postural care and evaluate the impact of the training programme in parents and school staff.

Methods: The postural care training programme included three elements: a 2-hour interactive workshop facilitated by physiotherapists and occupational therapists, a follow-up home/school visit, and a follow-up telephone call. The *UKC-PostCarD* questionnaire (Hotham et al., 2015) was utilised to evaluate the impact and includes subscales assessing knowledge and understanding, concerns, and confidence in providing postural care. The *UKC-PostCarD* questionnaire was completed at baseline and 6 weeks later. The training programme was delivered to $N=75$ parents and school staff. Of these, $N=65$ completed both baseline and follow-up measures and were used in the data analysis. Participants and therapists were also invited to provide further feedback on the overall training programme via interviews and focus groups.

Results: Paired-samples t-tests were used to determine statistically significant differences between baseline and follow-up scores for each of the three subscales. Mean levels of understanding-and-knowledge and confidence improved ($p < .001$), while concerns decreased ($p < .001$). Qualitative data were collected via interviews and group discussions providing an in-depth perspective on *how* participants experienced change.

Discussion: Results suggest improvement in knowledge, understanding and confidence in parents and school staff that care for children with significant physical postural care impairments.

Introduction

We describe the development and evaluation of a novel postural care training programme for 65 parents, teachers and teaching assistants of children with a physical disability. The training programme, developed by a multidisciplinary team focused on *Improving Understanding, Knowledge and Confidence in providing Postural Care for children with Disabilities* (the “UKC PostCarD” programme).

Background

Children with physical disabilities often require a 24-hour therapeutic approach to postural management at home and in school. This typically involves occupational therapy and physiotherapy; provision of assistive equipment (e.g. special seating and standing supports), exercise, orthotics and, in certain instances, surgical interventions (Gericke, 2006; Poutney, 2007). In the absence of strong evidence from randomised control trials (RCTs), postural management has advanced largely based on professional and expert consensus (Gericke 2006), with criticism highlighting the responsibility postural management places on carers and therapists, possibly encouraging a lack of adherence to therapy programmes. (Gough 2009).

Furthermore, research has revealed a lack of understanding, knowledge and confidence among teaching staff and parents about postural care management (Hutton & Coxon, 2008). Lack of confidence among teaching staff has been identified as an issue in UK mainstream schools where teachers and teaching assistants have limited experience of physical disability and lack adequate access to formal training relevant to children with complex physical needs (Coster et al., 2013; Devecchi & Brown 2013; Hutton & Coxon, 2008; 2011; Nash & Norwich 2010).

Research also highlights negative perceptions about the appearance and use of specialist seating and standing supports among teaching staff. Such views about assistive equipment, combined with a risk averse school culture, can act as a barrier to the child's inclusion and participation at school. For example, limiting the child's opportunities to play outside at break times or participate fully in the schools physical education curriculum (Hutton & Coxon, 2008; 2011; Telfer, Solomonidis, & Spence, 2010). Parents also report feeling unsupported and overwhelmed by aspects of their child's therapeutic regime (Nicholson, Moir, & Millsteed, 2012) and lack easy access to information and on-going training relevant to their child's care (Hutton & Coxon, 2008).

Aims and theoretical framework

In light of these findings, we aimed to develop a novel postural care training programme with the capacity to improve understanding, knowledge and confidence among those responsible for the postural care of children with physical disabilities, attending mainstream schools.

The training programme was based on the content of '*An A-to-Z of Postural Care*' (Hutton et al., 2009), a pocket-sized booklet developed with input from parents, therapists, researchers, and educators. This booklet provides practical information and advice about postural care and is underpinned by the concepts of function and participation in the International Classification of Functioning, Disability and Health – Children & Youth version (ICF) (WHO, 2007).

The postural care training programme was also informed by social cognitive theory (SCT; Bandura, 1977; 1989; 1997) which holds that people are more likely to expend effort to achieve their goals, and to persist in the face of obstacles, if they are high in 'self-efficacy' (confidence in one's ability to carry out specific actions in a specific context). According to

SCT, self-efficacy can be promoted by performing actions successfully, observing others performing actions successfully, receiving encouragement and discussing concerns. The programme was designed to promote self-efficacy via these pathways.

In the context of this study we define ‘postural care’ as the ‘promotion of good posture’ within the child’s environment with the aim of ameliorating the impact of postural impairment on the child’s participation and learning at school and home (Hutton et al., 2009).

Methods

Development of the postural care training programme

Training materials were developed with input from a steering group (comprising occupational therapists, physiotherapists and parents with experience of providing postural care for a child with a disability) and expert advisory group (including experts in education and learning). The training programme took the form of a 2-hour group workshop followed by a one-to-one visit (to the parent’s home, or teacher’s school) and telephone call. The workshop and follow-up visits were delivered by NHS paediatric occupational therapists (OTs) and physiotherapists trained in the intervention approach by the research team. To standardise the intervention across study settings, therapists were provided with a training manual and supporting resources developed as part of the research –for example, PowerPoint slides and prompt questions for the follow-up visits. The workshop combined information about postural care with practical tasks designed to enhance understanding regards the impact of posture on function and learning (e.g. trying to drink while sitting in an unstable position on a therapy ball; trying to read instructions or solve a problem while unstable). An example itinerary for the workshop is provided in Table 1.

(Insert Table 1 about here)

To enhance self-efficacy, the one-to-one visits and follow-up telephone support provided opportunities for participants to observe and perform specific actions (e.g., adjusting equipment) and discuss concerns in a supportive environment. The follow-up visits also provided opportunities to perform these actions and discuss any difficulties in the home/school environment, with support from the therapists.

Participants

We aimed to recruit 88 parents/carers, teachers and teaching assistants of children attending mainstream primary school in the South-East of England who were receiving support from NHS paediatric occupational therapy or physiotherapy teams. Information about the study was sent to parents via the therapy teams, enclosing a reply slip and pre-paid envelope.

The therapy teams also identified mainstream primary schools attended by children receiving support. A member of the research team made contact with the Head Teacher to discuss the study and seek permission to invite staff to participate. In total, 75 parents (n=20) and school staff (Teachers = 4, SENco = 7, TAs = 37) were recruited on to the postural care training programme. Of these, 65 (1 male) aged 19 to 64 years (*Mean age* = 42.8) completed the follow-up questionnaire and were used in the data analysis.

Ethical approval was obtained from the NHS Research Ethics Committee South East Coast-Kent (11/LO/0653). R&D approval was provided by each of the NHS sites.

Participants were treated in accordance with ethical guidelines issued by the British Psychological Society (2009).

Measures

The UKC-PostCarD questionnaire (Hotham, Hutton & Hamilton-West, 2015) was used to assess understanding, knowledge and confidence in relation to providing care for a child with a disability, alongside concerns about providing postural care. This 51-item questionnaire comprises three subscales: 21 items measuring *understanding-and-knowledge* (e.g. I am able to select the best equipment to use in different situations); 23 items *measuring confidence* (e.g. I am confident that I will be able to provide good postural care, even if I am in a different environment/setting than usual); and 7 items measuring *concerns* (e.g., I am concerned I might not be providing appropriate postural care). Within each of the three subscales, questions were also clustered by minor themes- for example, regards confidence, questions were groups around ‘confidence overcoming barriers’ and ‘about the use of equipment’. Responses were scored using a Likert-type scale ranging from 1 (strongly disagree) to 4 (strongly agree). The questionnaire has previously demonstrated adequate reliability and validity (Hotham et al., 2015). For the current study, Cronbach’s alpha $>.70$ was obtained for the total scale and for all three subscales, indicating adequate internal consistency (Nunnally & Bernstein, 1994). Further information about the structure and reliability of the questionnaire is in Table 2.

(Insert Table 2 about here)

Procedure

Following informed consent, participants were invited to attend a postural care training workshop. In total, 11 workshops were held at accessible locations (e.g. schools and NHS child health centres) across South-East England.

Participants completed *The UKC PostCarD* Questionnaire before the workshop. Follow-up visits and telephone calls were conducted during the six-week period following the workshop at a time convenient to the participant. At the end of this period, participants were sent a second copy of *The UKC PostCarD* Questionnaire to complete and return by post¹

Participants were also invited to provide further feedback on the training programme via qualitative interviews. Two researchers who were not involved in delivering the training programme (NA and AK) led these interviews. Fifty workshop participants attended, via 12 group (38 participants) and 12 individual interviews. Interviews and group discussions were conducted using a semi-structured interview schedule. The guide explored participants' views on what they had found useful, what they had learned, whether and how their confidence about postural care had changed. All interviews were recorded and transcribed verbatim.

Analysis

The evaluation of the postural care training programme utilised a mixed-method approach. Quantitative data were collected via *The UKC PostCarD* questionnaire and qualitative data from the interviews with participants.

Data generated from the questionnaire were analysed using paired samples t-tests to compare levels of knowledge, understanding, confidence, and concerns before and after the training programme.

Data from the interviews and focus groups were transcribed and analysed using Framework approach (Ritchie & Lewis, 2003) through the NVivo qualitative analysis programme. Two researchers read all interviews and agreed a thematic coding frame; researchers then coded interviews they had conducted. A number of interviews were swapped

¹ Completed T2 questionnaires were returned to the researcher at different time points after the issue at 6-weeks.

and coded by the other researcher to test the inter coder-reliability. Any discrepancies were discussed and where appropriate resolved or accommodated through further refinement of the coding framework.

Results

Correlation analyses

At both T1 and T2 correlations between the three subscales formed a logical pattern such that *understanding-and-knowledge* correlated positively with *confidence* (T1: $r_s = .79$; T2: $r_s = .71$, both $p < .001$); *concerns* correlated negatively with both *understanding-and-knowledge* (T1: $r_s = -.43$; T2: $r_s = -.61$, both $p < .001$) and *confidence* (T1: $r_s = -.55$; T2: $r_s = -.48$, both $p < .001$).

Quantitative evaluation of the training programme

Paired-samples t-tests were used to determine whether six-week follow-up (T2) scores for each of the three subscales differed from baseline (T1). Results suggest mean levels of *understanding-and-knowledge* improved from T1 ($M = 2.37$, $SD = .39$) to T2 ($M = 2.93$, $SD = .36$), $t(64) = -11.83$, $p < .001$, while *concerns* decreased from T1 ($M = 2.58$, $SD = .53$) to T2 ($M = 2.05$, $SD = .44$), $t(64) = 7.52$, $p < .001$. *Confidence* in providing postural care also demonstrated a statistically significant increase after the training programme ($M = 3.02$, $SD = .43$), relative to baseline ($M = 2.51$, $SD = .52$), $t(65) = -9.17$, $p < .001$.

Each of the three main subscales had a number of subscales within them, allowing for a more detailed investigation of the changes. Regarding *understanding-and-knowledge*, this subscale included questions clustered around three areas: knowledge about equipment; knowledge about Health and Safety; knowledge about benefits of postural care to the child. For *confidence*, the subscale also included questions clustered around three areas: general

confidence; confidence about overcoming barriers; confidence about using equipment.

Finally, the concerns subscale included questions clustered around two areas: concerns about the child; concerns about oneself.

Replicating the main analysis, paired-samples t-tests were used to determine differences in these scores from baseline. Results indicate, a statistically significant improvement across all three areas of knowledge (all $ps < .001$), all three areas of confidence (all $ps < .001$), and both areas of concerns (both $ps < .001$). Mean values for all these comparisons are displayed in Figure 1.

(Insert Figure 1 about here)

Qualitative evaluation of training programme

The following section focuses on amplifying and contextualising the quantitative results, with interviews and group discussions providing perspective on *how* participants experienced change in their understanding, knowledge, confidence, and concerns.

Impact on understanding and knowledge about postural care

Overall participants highlighted that the workshop helped to bridge a ‘gap’ between the everyday practices of postural care management and the ideas and theories that inform it. Specifically, TAs and teachers reported the workshops improved knowledge and understanding about the impact of posture on learning and the child’s learning. For example,

(Teacher): I think I gained more of an understanding of how important it is for children to have good posture in order to learn. It’s something I hadn’t really given a great deal of thought to before. I’ve never really looked and thought ‘hang on a minute’ that child...can’t put their feet on the floor, or the way they’re trying to write, they haven’t got a good eye line. So that was something that came across quite strongly and I think I learnt a great deal from that.

In addition, parents indicated the workshop improved understanding as to why aspects of postural care were important for their child.

(Parent): *Well I didn't really think about Carl's² postural balance or anything until I went onto the course...and now I sit and think it might be comfortable for you but it's doing you no good.*

Reaffirming existing knowledge. Most workshop participants highlighted areas where their existing understanding-and-knowledge were renewed in the workshop. They felt reassured what they were doing on a daily basis was appropriate. Some participants also valued the opportunity to be reminded about approaches and activities from previous training.

Kent (TA): *It was like having an update...I think it's important not to become complacent and just nice to have the reminder.*

Surrey (TA): *It's reassured me a lot, because before I was thinking "oh is this right?" but now I know that I am doing the right thing.*

However, a selection teachers and TAs thought that the training had only limited value for either learning new things or reaffirming knowledge.

Sussex (Teacher): *...we know, how to do the equipment quite well ...occasionally we do, like, refresher courses about how to hoist and we've all hoisted each other.*

Sussex (TA): *A lot of the content...were things that we already knew and we have a good back up at this school.*

Increased awareness through improved knowledge. Most participants made mention of the practical activities included in the workshop, providing them insights into how children with physical disabilities experience learning at school

Surrey (Parent): *The one that stuck in my mind 'hold this [MELON] this is the weight of a child's head'. And I will never forget that now someone saying 'that's the weight of your child's head, he's got to try and support that' taught me a lot more.*

² All names used are pseudonyms.

Sussex (TA): ... *the practical was the one thing that makes you think and remember and reflect on...[what they're [sic] like really and how they feel].*

A number of workshop participants stressed that as a result of the workshop they could now empathise better with the child's experiences and challenges. Gaining insight into what it feels like from the child's perspective seemed to help participants adjust their own expectations and recognise the need for greater patience and flexibility in the day-to day care.

Surrey (TA): *You actually felt it for yourselves. So you could understand what they might be feeling, that they might not vocalise to you.*

Sussex (TA): *Just having that understanding of how difficult from standing on the wobble board and trying to think ... She's having to do that all day, every day. Um, so I suppose it's more of an understanding of why things are going to take her longer, why she needs additional kind of processing time to be able to do other things.*

Impact on confidence about providing postural care

Supporting the quantitative results, workshop participants reported an improvement in confidence. For example:

Surrey (TA) *You are just doing it[postural care management] all the time now, making sure that everyone's sitting as they should be... you are becoming more confident because you are more aware of what's going on.*

Participants highlighted improved confidence in contributing to and making decisions about what was, and what was not, useful for the circumstances of the child. Furthermore, confidence to convey this viewpoint to colleagues was seen as one of the key benefits of the training:

Surrey (TA No.1): *We've needed quite a few bits of equipment this year. But it's having the confidence to say: 'that isn't it', 'I don't think that's right'. Whereas before, ... we'd not have had the confidence to say 'that's not right', 'that needs to be changed' .*

Surrey (TA No.2): *"I feel more confident if something is not working for a child, to go up to one of the teachers and say 'you know, this is not working for so-and-so'. and put my idea across. '*

Some participants found the training empowered them to make suggestions about how to improve postural care management, finding solutions to challenges as they arose to the positioning of a child for an activity.

Sussex (TA): *'I feel now more confident if I have to work out a timetable for a child's postural care. Now on my own, whereas perhaps before we'd asked for lots and lots of advice.'*

Surrey (TA): *'It's kind of empowered us, I suppose, to make small changes and adjustments, ourselves. Without just relying on the experts to come and sort it out.'*

However, there were also a number of parents and experienced teaching staff, who felt their confidence had not improved as a result of the workshop. One of the TA expressed this as follows:

Sussex (TA): *'I went in fairly confident and you know probably no real, real change in terms of confidence.'*

Discussion

This paper describes the development and mixed-methods evaluation of a postural care training programme for parents and school staff of primary school children with a physical disability. The training programme, based on the key principles of self-efficacy theory, included an interactive workshop facilitated by experience physiotherapists and occupational therapists, and accompanied by follow-up one-to-one visits and telephone calls.

In summary, initial results suggest knowledge and understanding about postural care, alongside confidence in the provision of postural care, can be improved by a brief postural care training programme. Qualitative analysis of interviews and focus groups with the participants offer further insight as to why these improvements occurred- for example, by reaffirming existing knowledge or improving knowledge and understanding of how the physical disability impacts the child's ability to learn. Accordingly, the postural care training programme offered

a novel way of addressing collectively the concerns of school staff and parents. The training programme provided an alternative response to supporting carers at school where it is often difficult to identify sufficient time to share information and address the concerns or anxieties of staff.

Working in a more facilitative way by adopting group interventions appears to be well suited to this area of therapeutic practice. It allowed therapists to work in partnership with those responsible for therapy regimes that require 'effortful co-operation' from carers (Parry, 2009). This group training encouraged school staff and parents' to become adept and autonomous in their decisions about the everyday aspects of the child's care. This was particularly welcomed as earlier research had identified that teacher concerns about causing harm to the child resulted in an over strict adherence to therapy regimes that limited the child's inclusion at school (Hutton & Coxon 2011).

Regarding the design of the postural care training programme, self-efficacy based training is a widely used approach to underpin self-management in chronic conditions (Jones & Riazi, 2011); however, this approach has yet to be systematically applied in training designed to support non-specialist care providers such as teachers and parents who manage complex therapy regimes for children with physical disability. This study provides preliminary evidence, using a valid and reliable measure, that self-efficacy in providing such care can be improved in this population, with improvements in confidence achieved through a comparatively short training programme.

Limitations and future research

Although the findings of the study suggest positive changes across knowledge, understanding, confidence and concerns, the research does have some important limitations to

consider. First, the design of the study did not allow for comparisons with a control group (i.e., participants receiving usual levels of support). Accordingly, although we observe within-participant improvements from baseline, it is not possible to infer strong conclusions about the effectiveness of the postural care training programme compared to other types of available support.

Second, impact of the training programme was measured over a relatively short period of time (6-8 weeks); hence, we are unable to conclude whether changes observed are sustained long-term. Future evaluations would benefit from additional measurement of outcomes – ideally at 6 and 12 months- to establish long-term impact for this type of low intensity training.

Focus of this study was solely on carers of primary school aged children attending a mainstream school. Accordingly, assumptions about the applicability and impact in other cohorts- for example, secondary schools, and schools with specialist provision - should be tempered. The school environment and the age of the children may present unique challenges with the potential to affect impact- accordingly future research should consider implementing and evaluating the training programme in these environments to further understanding. In addition, broadening the scope of the training- beyond postural management- would also be a useful advancement of this type of expert-led training programme. This training could be inspired by previous packages designed and run by The Council for Disabled Children who focus on empowering parents on a broader range of issues- for example, navigating the complexities of the healthcare system.

Finally, the study recruited a small sample of parents compared to teaching staff and it would be important to explore the reasons for this in any future research. The complex demands on parents may make it difficult for them to attend formal training opportunities of this type.

Conclusion

This study developed and evaluated a short training programme on postural care management with the specific aim of improving knowledge, understanding and confidence in parents and teachers for children with physical disabilities. The results provide preliminary evidence that short-term improvements in these areas can be achieved through this type of training programme.

Key messages

1. The postural care training package evaluated in this study conforms to recommendations in the National Institute of Care Excellence (NICE) guidance for Children and Young People with Spasticity (NICE 2012). Group training of this type enables therapists to work in partnership with parents and teachers to address collectively concerns and anxieties when delivering postural care management at home and school.
2. Therapists may need support in delivering this type of group training.
3. The content of the training package is based on the International Classification of Functioning, Disability and Health (ICF) and enables therapists to address environmental barriers to participation at school while focusing on enhancing the functional skills of the child and promoting participation.

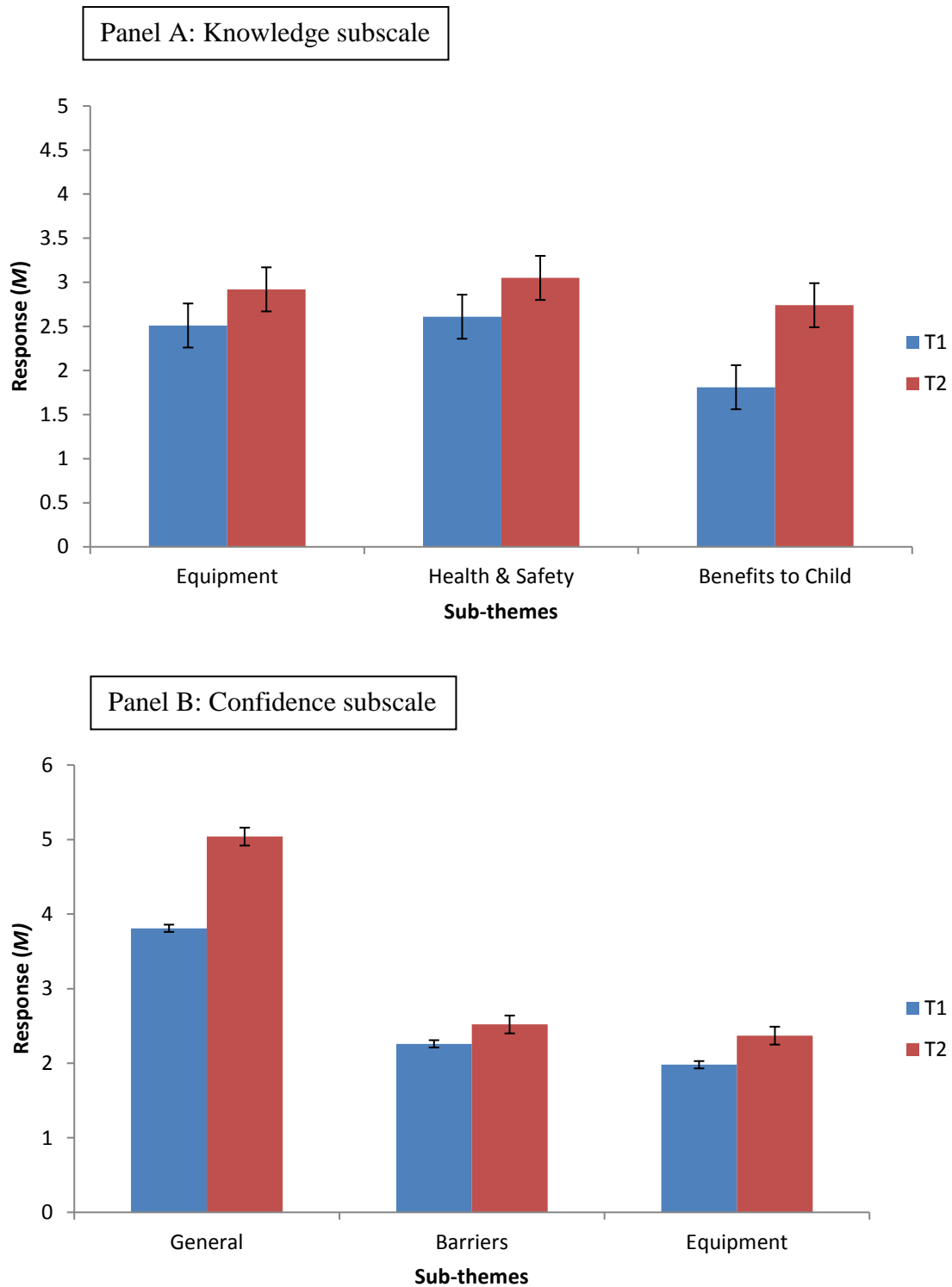
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Figure 1. Mean and SE values for responses at T1 and T2 for sub-themes.



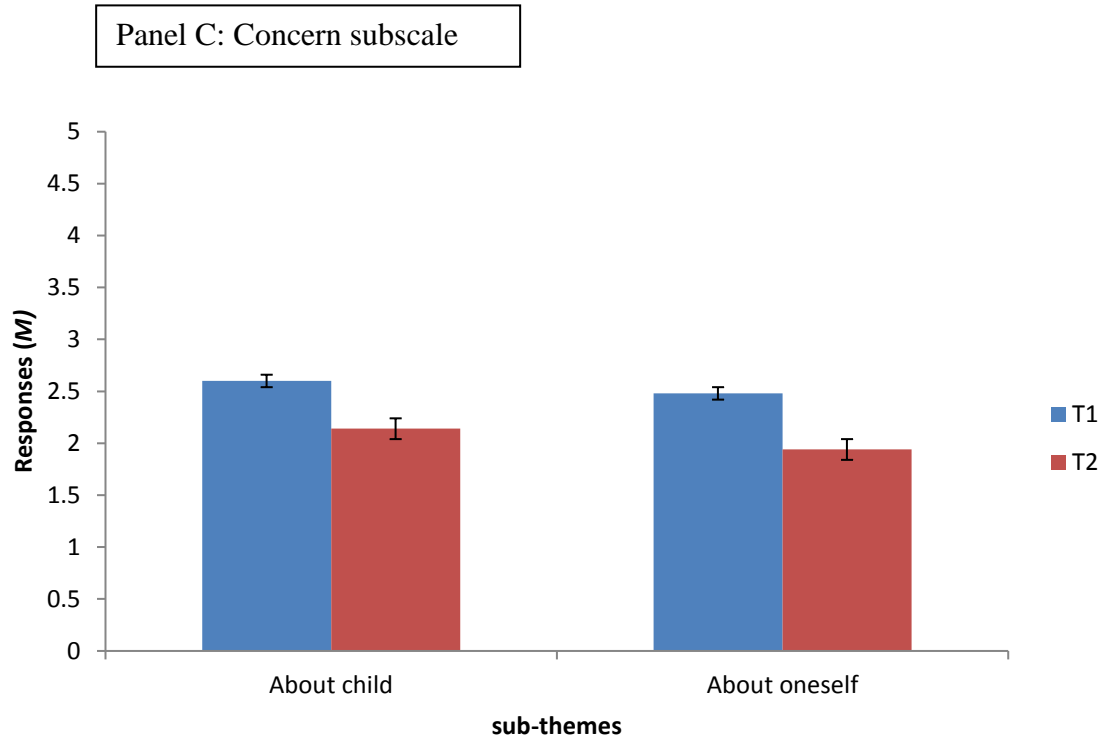


Table 1. Sample itinerary for postural care workshop

Workshop Itinerary
Welcome by therapists
PowerPoint Presentation: What can you expect? Explain all 3 elements of the postural care training programme
PowerPoint Presentation: Background: What is postural care? Why is postural care important?
Video interviews provided by a child's, parents and teachers discussing their views of postural care.
Discussion: Opportunity to reflect and for participants to discuss personal concerns, challenges, barriers to providing postural care
PowerPoint Presentation: Therapists describe equipment and its main functions
Practical activities to demonstrate impact on learning and concentration: <ol style="list-style-type: none"> 1. Learning new information will in unstable position 2. Reading while in an unstable position 3. Writing while in an unstable position 4. Eating and/or drinking in an unstable position

Table 2. Reliability for the Understanding Knowledge and Confidence in providing POSTural CARE for children with Disabilities (UKC PostCarD) questionnaire at T1 and T2.

Subscale label	T1 α	T2 α	No. of items
Knowledge and understanding	.87	.86	21
- Equipment	.80	.76	8
- Health and safety	.82	.82	7
- Benefits for the child	.91	.90	5
Confidence	.85	.79	23
- General confidence	.84	.75	5
- Overcoming barriers	.78	.77	11
- Use of equipment	.81	.80	7
Concerns	.84	.87	7
- About the Child	.82	.90	4
- About Self	.78	.80	3
			51