

FEASIBILITY OF TELEREHABILITATION TECHNOLOGY IN THE ASSESSMENT OF CHILDREN WITH DEVELOPMENTAL COORDINATION DISORDER- A QUALITATIVE STUDY

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ABSTRACT:

Parents of Children with DCD have difficulty in access to reach the rehabilitation center and they have difficulty in selecting the rehabilitation services. Tele-rehabilitation is a good choice to all the caregivers of children as it is a technology that overcomes all the barriers in getting access to the healthcare. However before providing rehabilitation with the use of telerehabilitation, all the children with DCD needs to be Assessed to explore the domains and where the children needs to be rehabilitated and then to explore the hurdles towards implementing telerehabilitation in children with DCD

KEY WORDS: DEVELOPMENTAL COORDINATION DISORDER, TELEREHABILITATION, ASSESSMENT

I.RESEARCH REPORT- QUALITATIVE ANALYSIS

Since the early 1900s, the scientific community has diagnosed a large group of children with motor difficulties and they have been classified under a general medical condition. Developmental coordination disorder (DCD) is not a new terminology. Over the past years different terminology has been used to describe children with a predominant feature of motor coordination difficulties. It is described based on the symptomatic observation on the failure of the acquisition of skills in both gross and fine motor activities, which is not explicable on the basis of impaired general learning and similar exposure to opportunity to gain motor skills as their peers.

DCD is often an overlooked developmental problem by the clinical practitioners. There is extensive evidence that focuses on the difficulties that these children face to organize ADL, they experience highest trouble to plan and organize themselves in accordance to a new and unfamiliar as well as familiar environment. They commonly affect the child both in school and at home, and when these children compared with the same age peer group they experience difficulty to acquire skills which has been acquired easily by other children with no effort.

In 1925, Dupre referred motor coordination difficulty as *debilite motrice* (motorically deficient). Clumsiness is their major prominent feature and this terminology has been used often by Orton to describe a group of children with motor coordination deficit. In 1940, who have defined the clumsy side as

'... awkward in movements, poor at games, hopeless in dancing and gymnastics, a bad writer and defective in concentration. He is inattentive, cannot sit still, leaves his shoelaces untied, does buttons wrongly, bumps into furniture, breaks glassware, slips off his chair, kicks his legs against the desk, and perhaps reads badly.'

However there has been much debate in establishing telerehabilitation and whether it is possible to implement pediatric assessments and its administrations using Tele-monitoring?

There were several limitations towards implementation of TR. As discussed above regarding the characteristic features of children with DCD, the implemented TR program in school campus or in homes of community dwelling people may result in incidences of failures, where the participated children were distracted even after the

reinforcement of the caregivers to complete the Tele-rehabilitation programme.

Particularly when assessing the balance component in children with DCD during static as well as in dynamic phase all these children causing increased variability in results, particularly while assessing the balance component.

However, when conducting in-person assessment in children with DCD the space used to complete and compare the child’s performance will be a typical state school environment where out-door spaces are also sought for physical education training, and delivering treatment intervention for children with DCD.

Both the in-person and assessments delivered via TR technology have to be conducted in similar environments. The major limitation in implementing TR program is the environmental constrainers which deviate the child from assessment.

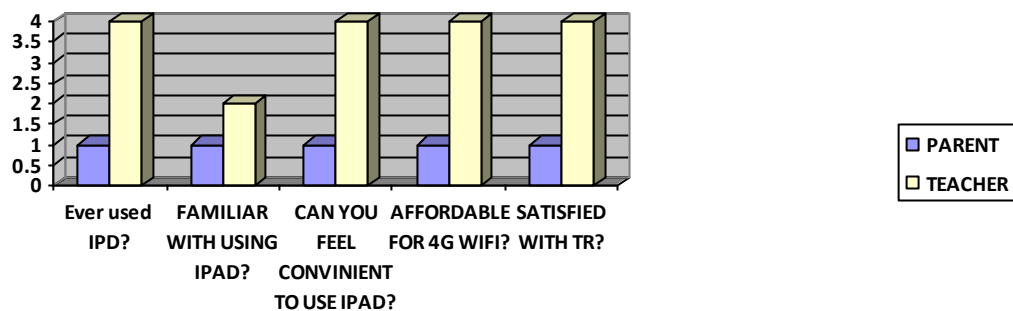
A portable 4G-Wi-fi hotspot or network is needed to establish the online connectivity to establish tele-rehabilitation setup; however, factors such as signal strength and speed of connectivity should be uninterrupted during the rehab and assessment sessions, which can have negative impact on the quality of the video conference. However in the resource free zone and in rural community these facility were not assessable till 2019.

The qualitative feedback was conducted using a 5-point Likert response scale among the parents and teaches involved during the Telerehabilitation sessions. Both of them preferred in-person assessment and rehabilitation measures.

A semi-structured interview questions were enquired with the caregivers and parents involved in the rehabilitation of children with DCD.

1. Questions like Did you ever used the iPad, video-calling?
2. Could you familiar in communicating with the person on the iPad?
3. Could you follow and demonstrate the instructions which have been delivered by the therapist on the iPad?
4. Could you pay 4G Net work connectivity to establish TR?
5. Are you satisfied with this tele-rehabilitation method of assessment and treatment delivered to your child?Their interest towards participation in TR program should also be questioned.

GRAPH 1: RESPONSE FROM PARENTS AND TEACHERS OF CHILDREN WITH DCD FOR THE SEMI-STRUCTURED INTERVIEW QUESTIONS REGARDING TELE-REHABILITATION



Conducting TR assessment sessions needs eHAB TR technology system, which requires videoconferencing with ipad. There is a need for a remote assessment and consultation system (NeoRehab, Brisbane).

Off-site examiner involved here should access the TR Service in a quiet environment. Therefore there is a need of portable 4G-Wi-fi hotspot was used to establish an internet connection.

A teacher involved in TR method is with no previous physiotherapy experience but was the only adult present with the child participant at the school.

The teacher will initiate and responsible for setting up the videoconference on the iPad. During the initiation and at completion of the assessment the teacher should be present by the side of the child with DCD and windup the treatment method by removing the iPad, or replace it back into box after loosing its attachment to a desk. However No prior training was provided to the teacher aide and all instructions were provided to both the child and teacher aide via the TR system.

Further, the teacher have to perform all these work instead of her daily school hours and during her teaching hour, this might affect her regular schedule provided by school authorities. She have to play an assistant role to the remote physiotherapist by setting up/packing away equipment, sometimes reiterating instructions and/or demonstrations and keeping the child on task when required.

TR in contrast to In-person assessment sessions were conducted at a location on the same school grounds but at a different area from the TR session. In this case, an examiner travelled to the school to complete the assessment with the child. No teacher aide was present for this assessment. Once a child had completed both a TR and in-person assessment, he/she was given the survey questionnaire to complete. It contains basic questions related to their familiarity and satisfaction method of using TR and asking the participant to score on a 5 point Likert response scale.

This study should be repeated in a population of children with known motor impairment to investigate if the TR method remains robust with different cohorts of children.

REFERENCES

1. American Telemedicine Association (2010). A blueprint for telerehabilitation guidelines. <http://www.americantelemed.org/docs/default-source/standards/a-blueprintfor-telerehabilitation-guidelines.pdf?>
2. Barton, R., Robinson, T., Llewellyn, G., Thorncraft, K., & Smidt, A. (2015). Rural and remote perspectives on disability and mental health research in Australia: 2000-2013. *Advances in Mental Health*, 13(1), 1–13. <http://dx.doi.org/10.1080/18374905.2015.1023417>.
3. Benham, S., & Gibbs, V. (2017). Exploration of the effects of telerehabilitation in a school-based setting for at-risk youth. *International Journal of Telerehabilitation*, 9(1),
4. Bland, J., & Altman, D. (1999). Measuring agreement in method comparison studies. *Statistical Methods in Medical Research*, 8(2), 135–160. <http://dx.doi.org/10.1191/096228099673819272>.
5. Blank, R., Smits-Englesman, B., Polatajko, H., & Wilson, P. (2012). European Academy for Childhood Disability (EACD): Recommendations on the definition, diagnosis and intervention of developmental coordination disorder (long version). *Developmental Medicine & Child Neurology*, 54(1), 54–93. <http://dx.doi.org/10.1111/j.1469-8749.2011.04171.x>.
6. Bruder, M. B. (2010). Early Childhood Intervention: A Promise to Children and Families for Their Future. *Exceptional Children*, 76(3), 339–355.
7. Cairney, J., Hay, J. A., Faught, B. E., Wade, T. J., Corna, L., & Flouris, A. (2005). Developmental coordination disorder, generalized self-efficacy toward physical activity, and participation in organized and free play activities. *The Journal of Pediatrics*, 147(4), 515–520. <http://dx.doi.org/10.1016/j.jpeds.2005.05.013>.
8. Cantell, M., Crawford, S. G., & Doyle-Baker, P. K. (2008). Physical fitness and health indices in children, adolescents and adults with high or low motor competence. *Human Movement Science*, 27(2), 344–362. <http://dx.doi.org/10.1016/j.humov.2008.02.007>.