



## Short communication

# Participating from homes and offices: Proof-of-concept study of multi-point videoconferencing to deliver group parent training intervention for attention-deficit/hyperactivity disorder



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## ABSTRACT

To find technology-based solution to logistical difficulties in conducting group parent training for ADHD, this pilot study evaluated feasibility and acceptability of multi-point videoconferencing, wherein parents participated from homes or offices. Ten 90-minute weekly sessions were delivered using online videoconferencing platform. Most parents found videoconferencing quite useful, convenient, satisfactory and acceptable; and reported improved self-competency. Compared to face-to-face consultations, they perceived videoconferencing as more cost and time-saving. Clinicians faced occasional problems with internet connectivity at spoke end and audio-video lag. Post-intervention improvement was noted in VADPRS scores. Overall, multi-point videoconferencing for delivering group interventions for ADHD is feasible and acceptable.

## 1. Introduction

Parent training interventions are first line treatment strategies in neuro-developmental disorders such as attention-deficit/hyperactivity disorder (ADHD) (NICE, 2018; Shah et al., 2019). In resource strained settings with a limited number of trained professionals, group interventions may be more suitable. However, since such interventions are usually delivered in weekly sessions ranging over 8–20 weeks, in routine clinical practice parents face practical and financial difficulties in attending these weekly sessions. Such difficulties include travel time, daily wages lost and expenses towards travel. Further, there are logistical difficulties in assembling all the participants regularly for multiple sessions.

Information and communication technology (ICT) renders a technological solution to these practical difficulties. Xie et al. (2013) demonstrated that group parent training conducted through videoconferencing was comparable to face to face groups. Parents were assembled in a single room which was connected through videoconferencing to the therapists. Though this study provides some proof for use of ICT, it still does not solve the issue of parents travelling to a common remote site. New web-based applications such as GoTo-Meeting, Zoom and Webex offer connection of a nodal centre with multiple remote ends simultaneously, also connecting the remote sites

with each other and sets stage for group interactions. Such technology has been recently used to promote virtual learning in medical field, the so-called curbside consultation model (Arora et al., 2011; Mehrotra et al., 2018). Use of this technology facilitates multiple participants to interact with each other, through video conferencing in real time, by remaining at their homes or workplaces. However, this has not been used and evaluated adequately to carry out any kind of group intervention. In this background, this pilot study aimed to evaluate the feasibility and acceptability of multi-point videoconferencing for group parent training intervention for ADHD.

## 2. Material and methods

The study was conducted through Telepsychiatry Centre of the Department of Psychiatry, Postgraduate Institute of Medical Education and Research, Chandigarh, India. Ethical approval was obtained from the Institutional Ethics Committee for the conduct of the study. The study had a non-randomised pre-post intervention design and was conducted from January to June 2018.

Consenting parents/ families having children aged 7–14 years diagnosed with ADHD by a consultant psychiatrist as per the DSM-5 criteria without any co-morbid disorder except for conduct disorder and oppositional defiant disorder were included. Written, informed consent

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was obtained from all the participating parents/family members.

Group parent training intervention for ADHD involved 10 sessions, each of 90 min, held weekly. It covered psycho-education, environmental modifications, effective communication methods, strengthening parent-child relation, behavioural management strategies, anticipating and preparing for unstructured situations, taking care of self and parent skills for liaising with teachers. The intervention incorporates culturally relevant methods and content. Each session has didactic and interactive components; the latter also included problem solving based activities and role playing (Shah et al., 2018). The intervention was aimed at improving awareness, parent-child relations and family environment; and imparting specific skills for effective and confident handling of manifestations and consequences of ADHD.

Sessions were delivered using the online videoconferencing platform Zoom software (Zoom Video Communications Inc.). Parents were asked to download the software on their personal desktop or laptop computers or any hand-held devices such as tablets and smart phones. Parents connected using the login credentials provided by the Investigators. Internet connectivity was through the National Knowledge Network (<http://nkn.gov.in/home>) at the node; while parents used Wi-Fi, 3 G and 4 G mobile networks of different service providers. The information and communication technology modes used were video-conferencing and screen sharing. The latter was used to share Power Point and multi-media files on educational material and specific tasks such as behavioural charts. A messaging group was created using an online platform. Parents were given weekly reminders for homework assignments and upcoming sessions and were also asked to post the home tasks on the group. Routine care continued as usual, with parents visiting the hospital once in 4–8 weeks.

Semi-structured interviews were conducted either telephonically or in person to assess parental experiences and feedback regarding format of intervention (e.g. use of PowerPoint presentation during the session) and experience about use of video-conferencing (e.g. ease or difficulty in setting up sessions and quality of interactions). Parents were asked to rate acceptability, satisfaction with and ease of use of video-conferencing on a 5 point Likert scale and compare their experience of treatment using video-conferencing to face to face hospital visits on a 10 point visual analogue scale. Parents were also interviewed regarding the impact of intervention, i.e., if it was helpful to them and in what aspects. The clinicians also recorded their experiences while conducting the sessions. Preliminary effectiveness was assessed using Vanderbilt ADHD Diagnostic Parent Rating Scale (VADPRS) scores as outcome measure.

### 3. Results

11 families consented for participation in the study; but only 8 families (including 7 mothers and 4 fathers) completed the intervention. The other three families attended less than 30% of the sessions; the timing of the sessions did not suit their work and family schedules. Of the 8 children, 2 had co-morbid oppositional defiant disorder, 4 were not on any medications and the other four were on methylphenidate at stable dose for the 1 month prior to enrollment for the intervention and throughout the study period. All parents had at least 12 years of schooling. Amongst the participating families, 5 were nuclear and 3 were joint families; grandfathers attended some of the sessions in the latter case; and 7 were from urban or semi-urban background. Mother and father joined either together or individually and from either home or office.

#### 3.1. Feasibility and acceptability

##### 3.1.1. Parent accounts

In the semi-structured interviews, all parents reported that they found the use of video-conferencing quite useful and convenient. For example, a parent reported, “It was very convenient for me to attend the

**Table 1**  
Measures of feasibility and acceptability.

Parental perception of videoconferencing (VC) vis-à-vis face-to-face (FTF) consultation			
Variable	VC; Mean (SD); Median	FTF; Mean (SD); Median	t (sig)
Ease of participation	9.37 (1.06); 10.00	6.25 (3.57); 6.00	2.12 (.071)
Cost savings	10.00 (.00); 10.00	5.37(3.92); 5.00	3.33 (.013)*
Saving on time	9.75 (.70); 10.00	4.12 (3.68); 4.50	4.25 (.004)**
Satisfaction	9.62 (1.06); 10.00	9.75 (.70); 10.00	-.261 (.80)
Acceptability	10.00 (.00); 10.00	7.37 (4.30); 10.00	1.72 (.12)
<b>Satisfaction and Acceptance</b>			<b>n (%)</b>
How satisfied were you with video-conferencing?	Completely satisfied		7 (87.5)
	Somewhat satisfied		1 (12.5)
Was this form of intervention acceptable?	Totally / largely acceptable		6 (75)
	Somewhat acceptable		2 (25)
How easy/ difficult it was to participate over VC?	Very easy		5 (62.5)
	Somewhat easy		1 (12.5)
	Neither easy nor difficult		2 (25)

\* p < 0.05, \*\*p < 0.01.

FTF: face-to-face; VC: videoconferencing.

sessions while at work. I just had to set aside that time, otherwise visiting the hospital entails a lot of time and I have to take a leave from work whenever I have to visit the hospital.” They found it easy to plan their day around the session as compared to when visiting the hospital. All parents appreciated the format and found both the interactive and didactic components useful. The Power Point presentations were considered to be helpful. A parent emphasised on the advantage of a group intervention and said, “It was unique that we could interact with the doctors as well as learn from the experiences of other parents. I appreciate that each one of us could participate.” None of the parents thought that there was any difficulty in deciphering the expressions or body language of the clinicians. Though parents had experienced bad internet connection, they did not consider it as a major hurdle and had found ways to handle it (for example, finding a place at home with better connectivity). Table 1 shows results of parent ratings of feasibility and acceptability. In terms of what they gained from the interventions, the common themes (Table 2) suggested that the intervention benefited the participants.

**Table 2**  
Learning outcomes as reported by the parents.

Themes	Frequency; n (%)
1. Became more aware about symptoms, causes, consequences and course of ADHD	8 (100)
2. Reduction in guilt associated with causation of ADHD	8 (100)
3. Reduction in blaming the child	7 (87.5)
4. Reduction in interpersonal problems at home	6 (75)
5. Improved parent-child relationship	7 (87.5)
6. Improved and effective style of communication and instruction	6 (75)
7. Improved self-competency and reduction in helplessness	7 (87.5)
a) Feeling confident in managing inattention and organisational problems	7 (87.5)
b) Feeling confident in managing hyperactivity	6 (75)
c) Feeling confident in managing behavioural problems	6 (75)
8. Able to convey things more clearly to the teachers and tutors	(75)
9. Reduction in perceived level of stress	(87.5)
10. Were able to learn from the experiences of others	8 (100)

**Table 3**  
Preliminary effectiveness as per the VADPRS scores.

Variable	Pre-PT Mean (SD)	Post-PT Mean (SD)	t (sig)
Child outcomes: VADPRS domain scores			
Inattentive	20.25 (4.30)	15.25 (4.43)	2.63 (.03)*
Hyperactive/ Impulsive	18.25 (6.34)	15.00 (5.42)	2.66 (.03)*
Combined	38.50 (9.60)	30.25 (9.11)	2.87 (.02)*
Oppositional-defiant	16.00 (6.07)	12.87 (4.54)	2.53 (.03)*
Conduct	11.14 (10.43)	5.00 (4.16)	2.26 (.06)
Anxiety or depression	4.50 (4.14)	4.75 (3.77)	-.20 (.84)

\*p < 0.05, \*\*p < 0.01.

VADPRS: Vanderbilt ADHD Diagnostic Parent Rating Scale.

### 3.1.2. Clinician accounts

Clinicians reported that one of the major problems was that of internet connectivity and audio-video quality in case of some participants who had a slow internet connection. Further, they found that sometimes there was a lag between audio and video which they took some time to get used to. Also, there was occasionally disturbance from other family members including the children with ADHD. Body language and expressions were harder to read and frequently parents' faces went out of focus as they moved their gadgets. The clinicians also reported not being able to conduct small group activities like role play amongst parents. On the other hand, they found that parents appeared more comfortable and at ease, which would have facilitated their participation.

### 3.2. Preliminary effectiveness

One family was an outlier, hence the data was analysed for the remaining 7 families. There was a trend of improvement ( $p < 0.05$ ) in VADPRS scores (see Table 3).

## 4. Discussion

With rapid growth of IT industry and use of smart phones and apps, application of newer technologies for healthcare delivery appears to have huge potential. Recently, tele-mentoring of counsellors for integrated mental health and addiction using multi-point videoconferencing has been demonstrated to be effective (Mehrotra et al., 2018). Despite its potential, this technology has not been widely applied to directly deliver healthcare in form of group therapies. Rayner et al. (2016) have demonstrated preliminary feasibility for a five-session group intervention for parents of children who had experienced a life-threatening illness or injury. However, it has not been used to deliver group parent training intervention for ADHD where parental as well as treatment needs are expected to be different. Families having children with ADHD have unique needs such as coping with organizational and

planning difficulties; which can be overcome by optimal use of technology. Our study provides some evidence on feasibility and acceptability; and preliminary effectiveness for multi-point video-conferencing for delivering group interventions. We found that participating parents found it acceptable, easy to use and were satisfied. Also, most parents considered it to be time and cost efficient. Clinicians faced unique challenges as were also described by Rayner et al (2016), which can be overcome at least partially. Overall, this mode of delivering a group intervention appears acceptable and feasible, and may prove beneficial when the intervention has multiple sessions. However, the study had some limitations. It had a small sample size as it was a proof of concept study. There was no control or comparator arm. Hence, quantitative results must be interpreted with caution. A randomized controlled design shall be needed to further confirm results of this proof-of-concept study.

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## Conflict of interest

None of the authors have any conflicts of interest to disclose.

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