

Research Paper

A mixed method approach to evaluate the tele-ECHO mentoring model for counselors from rural India in the management of Substance Use Disorders (SUDs)

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ABSTRACT

Substance use disorders (SUDs) are a growing public health problem in India. In addition, a large treatment gap exists between people requiring care for SUD and available human resources. To address this enormous need the National Institute of Mental Health and Neuro Sciences (NIMHANS) adopted the ECHO (Extension of Community Health and Outcome) model. We conducted periodic tele-ECHO clinics with a team of 37 remote counselors from an Indian state, linking them with NIMHANS multidisciplinary addiction experts. We used digital tools like whatsapp and sli.do to engage the participants and evaluate their learning. We collected monthly reports from participants to understand the number of SUD cases seen by them. Pre-tests and post-tests were done to understand if the training program had made any impact on their knowledge and confidence. Finally, we administered a written survey to assess their satisfaction level with the training program. We used a mixed method approach to analyze the program. Findings suggest that the program led to significant improvements in participants' knowledge, treatment practices, and self-confidence in the management of substance use and related disorders. There was a difference in the mean scores from the pre-test ($M=6.94\pm 1.69$) to the final post-test scores ($M=10.03\pm 1.74$). The t-test value for paired means was statistically significant at 7.1017 ($p<0.0001$). 3195 patients (including follow ups) have received treatment from these tele-mentored counselors over the period. All the participants rated themselves as confident in their knowledge. All the participants reported that their skills for handling patients with SUDs have improved through this training program. NIMHANS ECHO tele-mentoring model can be an effective model in providing quality training in substance use and related disorders to counselors working in the rural and underserved areas.

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Substance use disorders (SUDs) are major cause of disability and place a huge burden on the health system at all levels (Gururaj, Issac, Subbakrishna & Ranjani, 2004; Peters, Yazbeck, Ramana, Sharma, Pritchett & Wagstaff, 2001). SUDs are higher in rural areas (24.1%) compared to urban areas (20.3%) (Murthy, 2017); with treatment facilities being poorer in rural than urban areas (Kumar, 2012). A major challenge has been the lack of trained human resources for mental health care (WHO, 2006). The WHO Mental Health Atlas report (2005) reveals that there are just three psychiatrists, and even fewer psychologists for every million people in India, which is 18 times lower than the Commonwealth norm of 5.6 psychiatrists/100,000 people.

In this challenging context, it is important to train non-specialized health counselors, the first point of contact in the community, to meet the growing mental health needs. Hence, building their capacity to an optimal level is crucial to improve delivery of care (Balaji et al., 2012; Mendenhall et al., 2014). One time training has generally not been found to be sufficient in transferring the skills required for optimum health care (Gangadhar, 2019; Manjunatha, Kumar, Math, Thirthalli, 2018) and remotely located counsellors lack time and resources for extended onsite training.

Leveraging low cost, digital technology offers a unique approach to build capacity as well as capabilities of remote healthcare providers (Chand et al., 2014). Since 2014, National Institute of Mental Health and Neuro Sciences (NIMHANS) in collaboration with Project ECHO, UNM, USA, has been using this digitally enabled tele-mentoring model with local adaptation to cater to the community needs for capacity building. The heart of the ECHO model is the “hub and spoke” knowledge sharing network, linking expert multidisciplinary specialist team (hub) with remotely located health care providers (spokes). In our Virtual Knowledge Network (VKN) NIMHANS ECHO tele-mentoring model of training Centre of Addiction Medicine, NIMHANS is the hub and counselors in rural and underserved areas of Bihar are the spokes who connect virtually through tele-ECHO clinics periodically by using internet enabled smartphones. Experts train and mentor the counselors through case-based learning and share their expertise to enhance their ability to treat patients with SUDs in their own communities (Mehrotra et al., 2018). Studies using the ECHO model have found it to be effective in improving care for complex health care conditions like Hepatitis, HIV and SUDs by empowering clinicians in remote areas. (Arora et al., 2007; Sagi et al., 2016; Scott et al., 2012).

In 2016, the Bihar government banned the use of alcohol in the state and approached NIMHANS to train their medical officers in the management of alcohol use disorders. To meet this request, we started an ECHO model-based training program for medical officers but soon realized that the medical officers were overburdened and there was a need to train additional staff and develop an interdisciplinary team. As a result of this observation it was decided to use the ECHO model to train counselors so that patients could receive an intervention in the form of basic counseling. We conducted this study to evaluate the effectiveness of the VKN NIMHANS ECHO model in addressing substance use and related challenges in rural and underserved communities in the Indian context. We also explored the outcome in terms of knowledge, satisfaction and feasibility of the program to train and mentor a group of non-specialized counselors to gain expertise in SUDs and related

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disorders. To the best of our knowledge this is the first mixed method study to assess such outcomes of tele-ECHO training programs in India.

MATERIALS AND METHODS

Participants

The majority of participants (spokes) were working in various health programs such as HIV, family planning and general health education under state health society, Bihar. Only three of the thirty-seven counselors had received any prior formal training in the area of addiction. We launched the program with 4-days onsite training by experts from NIMHANS who travelled to Bihar (table 1). This was done to introduce the participants to the program.

Table 1: Topics covered in onsite training

Onsite Workshop (4 days)

Day 1

Types of Drugs
Assessment workshop
Home work for groups

Day 2

Understanding Addiction
Patterns of Use
Counselling skills Workshop
Home work

Day 3:

Relapse prevention
Motivation enhancement therapy
Brief intervention

Day 4:

Group therapy
A demo with VKN NIMHANS and E-learning for Course Certificate requirements:
NIMHANS team

Following this, we did an ongoing training online using Zoom (a multipoint video conferencing app).

Our multidisciplinary hub team at the Center for Addiction Medicine, NIMHANS consisted of one clinical psychologist, two psychiatrists and one psychiatric social worker who had expertise in addiction and mental health. The study was approved by the Institutional Ethics Committee.

Digital Curriculum

We developed a curriculum based on the needs of the participants after an online needs assessment (table 2). We asked the participants about the kind of cases they get in their settings, interventions they provide and what they would like to learn from the program.

Table 2: Curriculum

Module 1: Screening and Drug Types

Interview for history taking

Alcohol & Cannabis (screening and assessment)

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| Opioids (screening and assessment) |
| Solvents & Sleeping pills (screening and assessment) |
| Street names and harmful impact of drugs |
| Withdrawal symptoms of drugs |
| Module 2: Co-occurring Disorder |
| Mood disorder (depression) |
| BPAD |
| Schizophrenia |
| Self-harm/Suicide |
| Anxiety |
| HIV/TB |
| Healthy lifestyle including Nutrition |
| Expressed emotions |

Tele ECHO clinics & training

About ECHO model:

The ECHO model links multidisciplinary expert specialist teams at an academic center (hub) with primary care providers in local communities (spokes). Together, they participate in fortnightly tele-ECHO clinics and healthcare providers receive mentoring from hub experts by connecting with them using a multipoint video conference technology (Zoom). During tele-ECHO clinics, participants (spokes) present patient cases to the hub and other participants, discuss new developments relating to their patients, and collectively determine treatment strategies. Specialists serve as mentors and colleagues, sharing their knowledge and expertise with the spokes. Essentially, ECHO creates ongoing learning communities where primary care providers receive support and develop the skills they need to treat a particular condition, such as hepatitis C, chronic pain or other health conditions. As a result, they can provide comprehensive, best-practice care to patients with complex health conditions, right where they live (Arora et al., 2017). In the current study this model was extended to the area of substance use disorders.

All the experts (hub) were fluent in Hindi (national language of India). Every fortnight live tele-ECHO clinics of two and a half to three hours each were held and an e-learning module of 20 hours was provided. The total duration of training was around 50 hours. To gather baseline data on knowledge and skills we administered a pre-test at the beginning of the program. In order to enhance learning using case based discussion, we asked the participants to send cases at least a week prior to the scheduled day of tele-ECHO clinic. We (experts) would review the cases, suggest improvement in case history taking, or request additional information when required.

The case presentation format included basic demographic information, history of substance use, mental status examination, diagnosis and treatment provided (both pharmacological and non-pharmacological). We would send an agenda for each tele-ECHO clinic across to all the participants 3 days prior, through Whatsapp and email, so that they would be prepared with their cases.

Tele ECHO clinic would begin with the introduction of the hub and spokes team, case presentation by spokes followed by a brief didactic (20 minutes) on a topic related to SUDs .

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In addition to this, we provided the participants with a toll free number where they could call in case of poor internet connectivity during video conferencing to attend the program. A dedicated IT support staff and distant learning coordinator were always present to coordinate the session and trouble-shoot any technology related problems.

We also made E-consultation (super friday) facility available to the participants where one-to-one mentoring was provided for complex cases seen by the participants in their districts.

Digital Engagement by Social media

After taking informed consent from all the participants, we created a whatsapp group. This platform was used for announcements, sharing doubts and concerns, sharing reading materials, discussion about patients, sending case recommendations and monthly reports, and sharing didactic topic documents among all the participants. Whatsapp is the most used and free mobile communication application. It is easy to use and is end to end encrypted. This instant messaging service has previously been used to improve on the existing framework and disseminate medical knowledge (Mazzuocolo, Esposito, Luna, Seiref, Dominguez & Echeverria, 2018).

Along with this we used sli.do app where we recapped questions to evaluate the learning of the participants. The questions were put on the app and the participants had to mark the answers during the online session.

Accreditation

The training and tele-mentoring program led to certification for those who attended a minimum of 60% video tele-ECHO clinics, presented at least four cases and completed one pre-test and two post-tests. Pre-tests assessed knowledge, skills and confidence in the area of substance use and administered online before the start of the training program. We used the same questionnaire after completion of the training program to evaluate their knowledge, skills and confidence post training. We also required participants to score 80% or above in three e-learning assignments and send across monthly reports of patients with substance use disorders seen at their respective centers.

Evaluation

We used both quantitative and qualitative methods to analyze the data. Moore's evaluation framework for continuing medical education (CME) was used to assess the outcome of the VKN NIMHANS ECHO for counselors (Moore et al., 2015). While Moore enumerates seven levels for evaluation, the present study focuses on the first four levels. Similar methods of evaluation have been used in a previous study (Mehrotra et al., 2018).

- I. Participation: Attendance was taken in every session to assess participation by healthcare professionals (in this case non- specialist counselors).
- II. Satisfaction: The degree to which participants were satisfied with the setting and delivery of the training activity was assessed using a feedback form administered at the end of the training program.
- III. Learning (declarative and procedural): The degree to which participants could demonstrate knowledge of what the program intended them to be able to do (declarative and procedural knowledge) was assessed using pre and post-tests.

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- IV. Competence: The degree to which participants felt confident about managing patients with SUD and related disorders was assessed using pre and post-tests of self-efficacy and a feedback form.

We circulated an online feedback form (google form) to the participants where they were asked to rate their satisfaction with the quality of the program and resource persons, its relevance to their clinical practice, feasibility of the program and quality of topics covered and their self-efficacy using a five-point likert scale and open ended questions (table 3). We circulated the feedback form to the participants by whatsapp and email.

Table 3: Feedback form (questionnaires)

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|---|
| How satisfied were you with our Digital/Virtual training program? How easy was it for you to access the materials from www.sli.do? Questions 1 and 2 were based on likert scale (0-5 rating) where 0 means not satisfied or not easy at all to 5 meaning very satisfied or very easy. |
| 3) What challenges did you face while being part of the program? 4) How was the program different from other traditional training program? Questions 3 and 4 are open ended questions. |

The pre and post-tests included separate sections on knowledge and self-efficacy based on different patient situations relevant to their clinical practice. The program included one pre-test and three post-tests given at an interval of two months. 13 multiple choice questions were designed to test their knowledge and 8 questions were modeled on a 5-point likert scale to evaluate self-efficacy.

Paired t-test was used to analyze the difference in their knowledge between the pre and post-test. Qualitative analysis (thematic analysis) was done and themes were identified.

To assess performance of participants, monthly reports of each month (from November, 2017 to May, 2018) were requested from the participants (spokes). Each monthly report enumerated the number of patients seen with different types of substance use disorder (alcohol, nicotine, cannabis, benzodiazepines, inhalants, & opioids), number of follow ups done, and number of patients who received psychosocial intervention in that month.

RESULTS

Statistical analysis

We analyzed the data obtained using Statistical Package for the Social Sciences (SPSS 21). We used both descriptive and inferential statistics. The relationship between continuous variables was examined using t-tests for dependent or independent means as required. The socio-demographic data was analyzed using standard deviations, means and percentages.

Demographic details and participation

68 counselors from 38 districts were nominated by the state health society to get trained in the program. Of them, 31 counselors (45.5%) never participated. Thus, the total number of counselors who participated in the tele-ECHO clinics was 37 (54.5%). Entire group comprised of HIV/STD counselors (N=10), family planning counselors (N=9), de-addiction counselors (N=10), reproductive, maternal and newborn child health (RMNCH) counselors (N=10), health educators (N=3), clinical psychologists (N=2), NCD counselor (N=1) and

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Nurse (N=1). Most of the participants had 2 or more designations. 94.6% participants (N=35) had no prior experience in the area of mental health.

Over the 15 sessions, 59.4% participants (N=22) attended over 60% of tele-ECHO clinics. An average of 70.2% participants (N=26) would connect during each session.

Learning

Over the span of 7 months, 37 counselors participated in the ECHO training of whom 83.7% (N=31) sent in both pre and post-tests. There was a significant difference in the mean scores from the pre-test (M=6.94±1.69) to the final post-test scores (M=10.03±1.74, $t=7.1017$, $p<0.0001$).

3195 patients (including follow ups) received care like psychoeducation, relaxation, relapse prevention, brief intervention from these tele-mentored counselors over a period of seven months. There was an increase in the number of the patients evaluated by these tele-mentored counselors over the time. This finding is based on the monthly reports provided by 26 counselors from different districts of Bihar.

Satisfaction and competence

A quantitative and qualitative analysis was performed to assess participation satisfaction and competence. Questions were generated by brain-storming, done by the team lead and a clinical psychologist and the final questionnaire comprised 14 multiple choice and 8 open ended questions. An online form was developed and circulated to all the counselors of which 64.8% participants (N=24) filled the form.

Findings from the study indicate that the vast majority of the participants (88.9%) were highly **satisfied with the program, resource persons involved and the discussions in the training program**. Also, most of them (77.8%) were highly **satisfied with the method of training program and a majority of the participants (81.5%) were highly satisfied with the curriculum developed**.

With regards to ease of technology used, 96.3% participants reported that using google assignment to do their assignments and downloading materials from sli.do app were smooth and easy. Majority of the participants (88.9%) could join the **program regularly** with ease.

Almost all the participants (98.3%) felt that the program was relevant to their clinical practice and they were seeing similar patients as were discussed in the session. They were also applying the case recommendations sent to them through whatsapp and email after the session. Participants also felt that the assignments were adequate in terms of testing their knowledge and skills.

When asked to rate themselves on **self-efficacy related to knowledge, 66.7% felt** very confident **and 33.3% participants felt confident** in their knowledge after the program. **All the participants rated the improvement in their skills in handling patients with SUDs**.

Qualitative analysis of the outcome

We did thematic analysis to understand program outcomes from the perspective of the participants. An inductive approach was used to identify the themes (Thomas, 2006). The themes generated were impact of the program, satisfaction from the program, uniqueness of

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the program, challenges faced while being part of the program, and future suggestions. Each theme has been elaborated on below.

Impact of the program: Majority participants (94.5%) reported that the program helped in improving their knowledge in terms of diagnosis, and patient management. Participant 16 reported *“It gave me knowledge and taught me proper technique to deal with patients with substance use disorders”*. Apart from these other sub-themes that came up include increase in their confidence, improvement in counseling skills and techniques, increase in client satisfaction, receiving telephonic supervision whenever required. Participant 2 reported *“Yes. It helped me in diagnosis and treatment of the patient. It also improved my confidence on how to tackle the patients”*.

Satisfaction with the program: Most of the participants (86.48%) said that this program was time saving. They also felt that more sessions are required to further enhance their therapeutic skills. Participant 12 said *“The duration of the program should be longer so that we have more intensive discussions on the cases presented by us.”*

Uniqueness of this program: Majority of the participants (97.29%) felt that the program was quite unique and differed from other traditional program in terms of constant supervision and availability of the mentor, easy connectivity since it was digital, and ability to connect from any place. Participant 4 mentioned *“The program connected us virtually and hence it was very easy to participate”*. Participant 6 mentioned *“Getting direct feedback from the experts and colleagues was very useful. Also case based learning helped us to deal with our patients. All these happened in this program”*. They also felt that the program focused on psychological intervention which was useful in their clinical practice. They also felt that the reading materials were easily accessible through apps. In addition to the above mentioned, participants also felt that case based learning was very helpful as it helped them gain practical knowledge.

Challenges faced while being part of the program: Quite a few participants (54.05%) reported that they had difficulty getting cases. Some participants (67.56%) also felt that language was a barrier as the presentations were made in English even though it was explained in Hindi. Other challenges included poor internet connectivity (67.56%), or competing priorities such as engagement in other programs (59.45%) or out-patient department (OPD) duty. Participant 17 said *“The timing of the program clashed with my OPD timing. Because of this I had difficulty participating in the program. It would be good if the sessions start after 2pm when we are done with our OPD duties”*.

Future suggestion: Majority participants (86.48%) want audio/visual/reading material to be made available. They also wanted more regular classes or increase in duration of the course program. One participant reported that increasing the duration of the course and providing them with a diploma degree would be very useful. Some of the participants (24.32%) suggested for greater opportunity to visit NIMHANS so that they get more contact and in-depth case based learning, and learn from the experiences of experts.

Reasons for not being able to join the program: Out of 68 counselors appointed for the program by State Health Society (Bihar), **31 counselors never joined the program**. Hence, a telephonic contact was made to understand the difficulties and challenges faced by them. Out of 31 counselors contacted 24 of them responded. Their responses were recorded

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verbatim and were later coded. Themes generated include poor awareness about addiction and mental health, unavailability of android phone/laptop/desktop (83.33%), poor technical know-how (62.5%), poor internet connectivity (41.66%), involvement in other healthcare programs and cases (95.83%), session scheduled during the duty hours (83.33%), and the course not being relevant in their clinical practice. Few participants (33.33%) reported that they did not see any cases in the area of addiction and mental health.

DISCUSSION

The current study highlights the usefulness of project ECHO model in training counselors in rural underserved areas, thereby strengthening the workforce in the area of addiction and mental health. To our knowledge this study is one of the first studies in the Indian context in the area of addiction and mental health to highlight outcomes of the ECHO model from the counselors' (participants) perspective using a mixed method approach.

The project ECHO model has helped in enhancing participant's knowledge and confidence in the area of addiction and mental health. A majority of the participants reported that it was easy to connect virtually to the experts and get regular mentoring from a multidisciplinary team of experts. The program helped them to enhance their knowledge (Ní Cheallaigh et al., 2017) and confidence in the area of mental health for which they had not received any formal training. These findings are similar to the study done by Arora et al. (2010) in which they evaluated the ECHO program and found that participants showed a significant improvement in provider knowledge, self-efficacy, and professional satisfaction through participation in ECHO clinics for HCV (Hepatitis C). Similar findings were seen in the study by Marciano et al. (2017) where they found that the knowledge and interest of the participants increased over the 6 months training in hepatitis C. Participants also felt that constant supervision has been very useful in their learning process. Another advantage of this model is that it is a low cost, time saving model and allows efficient connectivity between hub and spokes. It also improves access to care for patients in local healthcare facilities (Rafiq & Merrell, 2005; Arora et al., 2007; Scott et al., 2012). Findings from our study and others suggest that the ECHO model can be an efficient way to build skills and capacity to deliver specialized quality care to patients in their home districts.

In terms of further improvement of the program, participants in the current study felt that this can be done by focusing on other psychological interventions and making video of the session accessible. Few participants reported that they had difficulty connecting to NIMHANS ECHO due to unavailability of an android phone/laptop/desktop or, poor internet connectivity. This suggests that the state government initiatives to provide equipment and internet connectivity would enhance participation and strengthen the capacity at the district level. Also another important reason cited by the participants for not being able to join was their engagement in competing programs or other duty commitments at the same time as the tele-ECHO program. If participants could allocate a dedicated time slot without any competing priority would also help overcome this limitation. Another difficulty that was highlighted was the irrelevance of the program for a few participants. Few counselors reported that they were not working in the area of addiction and mental health and were unlikely to benefit from the program since they were not seeing any mental health related cases. These point to the need for better selection criteria of the participants. It would be more effective to include only participants in the program that will be working in the area of addiction and mental health.

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The main weakness of the study is the small number of participants and lack of availability of final patient outcomes. More research is required to verify that ECHO model is an effective way of training counselors to provide effective treatments in the area of addiction and mental health.

In the future, it will be worthwhile to explore the long-term and sustained effects of the ECHO program on both learner and patient outcomes. To understand the changes in patient outcomes, regular follow up over a significant period of time. This could be done by engaging with the Asha workers (community health workers) or non-government organizations (NGOs) in respective districts to follow patients in their local districts. To assess learning outcomes for participants it would be useful to conduct a booster session with training, assessment of knowledge and re-certification.

CONCLUSION

In order to provide quality training in substance use and related disorders to counselors working in the rural and underserved areas, NIMHANS ECHO tele-mentoring model can be an effective model. With increased access to the internet facility in rural parts of India these programs will be feasible to conduct. It will not only empower the counselors but also benefit the patients as they wouldn't have to travel long distances to get treatment. This will help to meet the treatment gap that exists in our country, thereby providing quality care to all.

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Conflict of Interest

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