

# Exploring learners' perspectives of a Project ECHO palliative care education curriculum in resource-limited settings in light of key learning theories

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## Research article

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## **Abstract**

Background: Project ECHO (Extension of Community Healthcare Outcomes) is a well-established telehealth educational platform developed to improve access to specialist care training in underserved areas. The objective of this study is to explore the learning experiences of participants in a Project ECHO targeting care providers in India and explore considerations for how ECHO programs could be modified to cater to the unique learning needs of individuals in low- and middle-income countries.

Methods : We implemented a one-year Project ECHO on pediatric palliative care (ECHO PPC) targeting healthcare providers in India. The program consisted of 24 bi-weekly sessions (March 2018-February 2019) hosted by the Hyderabad Centre for Palliative Care in Hyderabad, India. Learners who attended at least 20% (5 sessions) were eligible to participate. Data related to demographic characteristics of ECHO PPC participants were collected. Four focus groups were conducted (February-April 2019) either online via videoconference or in person. Focus groups recordings were transcribed, coded and independently verified. The codes were then arranged into overarching themes.

Results : Thirty-six learners were eligible and invited to participate in the study. Seventeen individuals completed the study. Following coding and analysis, two major themes and seven sub-themes were identified. The themes included: (1) Benefits of participation in ECHO PPC (creation of a community of practice; opportunity to exchange cultures, ideas and experiences; supportive role of the facilitator and peers; increased relevant knowledge and skills; and access to additional learning resources) and (2) Barriers to participation (difficulties with time and practice schedule management and language and sociocultural factors).

Conclusion: The key principals of learning theories were incorporated into forming the Project ECHO conceptual model in this study. PPC Project ECHO facilitated community building, stimulated professional interest and additional learning outside of the program. However, addressing the barriers and challenges might likely enhance the success of the program in future.

## **Background**

Pediatric palliative care focuses on improving the quality of life for children with life-threatening or life-limiting conditions and their families, by addressing physical, psychosocial and spiritual concerns (1,2). Globally, an estimated 21 million children require palliative care annually, with 98% of these children living in low- and middle-income countries (LMICs) where access to palliative care is often very limited (3). Developing palliative care programs to relieve the burden of preventable suffering for children with life-threatening or life-limiting illnesses in LMICs has been identified by the World Health Organization (WHO) as a global priority (4,5). In India, an estimated 4.25 million children require palliative care services, yet there are very few pediatric-focused programs to meet that need (6,7).

A recent scoping review of palliative care services for children identified a lack of education for healthcare providers as the most frequent obstacle to palliative care provision in LMICs (8). Addressing the

educational needs of practicing health professionals is an important step to improve access to palliative care for children living in resource limited settings, however, there are very few health professional training programs in LMICs that have incorporated training about pain management or palliative care into their curricula (9). In a previous study of pediatric physicians in South India, 87% strongly believed that more training in pediatric palliative care was required in postgraduate training curricula (10).

Project ECHO (Extension for Community Healthcare Outcomes) is an educational model which focusses on bridging the gap between community-level health care providers in underserviced areas and specialists (11). ECHO teaching sessions are conducted online via videoconferencing, at regular intervals (e.g. weekly or every 2 weeks) and follow a structured format of didactic teaching combined with case discussion involving all participants. Using technology-enabled learning addresses the burden of learners needing to miss work and travel to training, barriers that are particularly relevant in LMICs (8,12,13). Thus, ECHO has been proposed as an effective strategy to address the need for pediatric palliative care education in LMICs, which can address the gap in current medical practice and knowledge in remote and under-resourced locations (14). There have been several studies describing the impacts of ECHO on practitioners' knowledge and self-efficacy and patient outcomes in high income settings (14,15). There are no studies investigating Project ECHO in LMICs, which is especially relevant given the growing interest to implement Project ECHO in these settings.

Several learning theories have previously been used to explain how the design of Project ECHO facilitates participant learning: social cognitive theory, situated learning theory, and community of practice theory (16). To date, only one study has explored the role of learning theories in an ECHO program (17). Understanding the mechanisms that enable health care providers to learn through Project ECHO in LMICs is a critical step towards developing curricula that address the diverse and unique learning needs of individuals in these settings.

The objective of this study is to explore the perspectives and experiences of learners who participated in an ECHO program on pediatric palliative care in India, specifically exploring their experiences related to key learning theories. We hope that this study will guide considerations for how ECHO programs can be developed to meet the unique learning needs of healthcare providers in LMICs.

## Methods

### Setting

We implemented a one-year ECHO program on pediatric palliative care (ECHO PPC) targeting healthcare providers in India. The ECHO PPC included 24 sessions, occurring every 2 weeks, between March 2018 and February 2019 hosted by the Hyderabad Centre for Palliative Care in Hyderabad, India. The curriculum design was informed thorough a literature review, surveys from stakeholders, and consultation with experts in the field of PPC. Each ECHO PPC session was 90 mins in duration and involved a 20 to 30-minute didactic presentation led by an international expert, followed by a clinical case presentation from a learner, and then group discussion of the case. The sessions occurred over Zoom, a multi-point

videoconferencing software and were video-recorded and made available to learners after each session. Additional learning resources (journal articles, presentations, videos) were shared with learners via email and social media after each session.

## Study Participants

Learners who had attended a minimum of five (21%) ECHO PPC sessions were invited by email to participate in a focus group to explore their perspectives and experiences with ECHO PPC. Demographic and professional practice characteristics of study participants was collected. Focus groups occurred between February and April 2019 (after ECHO PPC had finished) and were facilitated by one study author (MD). Each group contained 3-8 participants and were conducted either online (via Zoom) or in person. Participants were assigned to focus groups based on their availability. Prior to conducting the focus groups, the three authors (MD, EE, DA) developed a focus group guide (Table 1) which explored participant experience informed by relevant learning theories. All focus groups were audio-recorded and transcribed verbatim.

**Table 1.** Questions from the focus group guide

- o What was your experience of participating in ECHO PPC?
- o Why did you decide to participate in ECHO PPC?
- o How did you feel while participating in the sessions?
- o What did you envision you would learn from ECHO PPC prior to participating? What are the most valuable things that you learned or achieved through participating in ECHO PPC? Are these two answers the same?
- o What do you see as your role in learning new medical information as a healthcare provider?
- o How would you describe your perceptions of and relationship with other colleagues in ECHO PPC? What have your relationships with other ECHO PPC participants been like outside of the sessions?
- o How did you feel about collaborating with others participating in the sessions?
- o How and why did you use the extra learning resources made available through our program?
- o How did the staff running the program impact your learning?
- o How has ECHO PPC impacted your stress levels?
- o How has this program impacted your job performance at work?
- o What encouraged you to keep attending sessions?
- o What obstacles did you encounter in the course of your participation in the program?
- o What would you change or add to this program to make it better?
- o Do you have any additional feedback or comments?

## **Data Analysis**

Thematic analysis (18) of the focus group data was conducted for this qualitative descriptive study. The original transcripts were first coded by one author (EE) and then verified independently by the principal investigator (MD) and a research assistant (SM) to ensure consistency and accuracy in coding. The initial coding scheme was inductively developed by the team and updated throughout the analysis as the team's familiarity with the data grew. Lastly, concepts of learning theories were used to inform the organization of codes into larger themes and subthemes.

## **Results**

### **Participant Characteristics**

Thirty-six learners were eligible and invited to participate, and seventeen of these individuals completed the study (Figure 1). Participants represented three healthcare professions from a variety of practice setting across India and Bangladesh (see Table 2). Each focus group lasted approximately 60 minutes.

**Figure 1. Study Participants Flow Diagram**

**Table 2: Demographic Data of Focus Group Participants (N=17)**

<b>Sex</b>	<b>n</b>	<b>%</b>
Male	12	70.6%
Female	5	29.4%
<b>Country of Residence</b>	<b>n</b>	<b>%</b>
India	10	58.8%
Bangladesh	7	41.2%
<b>Clinical Role</b>	<b>n</b>	<b>%</b>
Physician	14	82.4%
Pharmacist	1	5.9%
Nurse	1	5.9%
Program Coordinator	1	5.9%
<b>Primary Practice Setting</b>	<b>n</b>	<b>%</b>
Rural Palliative Care Service (combined hospital and home-based service)	8	47.1%
Hospital-based Palliative Care Service	7	41.2%
Hospice	1	5.9%
Community-based Palliative Care Service	1	5.9%

## Themes

Two major themes containing seven sub-themes (Table 3) were identified through analysis of the focus group transcripts.

Table 3. Study themes and sub-themes

Themes	Sub-themes
<b>Benefits of participation in ECHO PPC</b>	Creation of a community of practice
	Opportunity to exchange cultures, ideas and experiences
	Supportive role of the facilitator and peers
	Increased relevant knowledge and skills
	Access to additional learning resources
<b>Barriers to participation</b>	Difficulties with time and practice schedule management
	Language and sociocultural factors

### Theme 1. Benefits of participation in ECHO PPC

Participants consistently identified several benefits which they derived from participating in ECHO PPC. These benefits fall into five subthemes: creation of a community of practice; opportunity to exchange cultures, ideas and experiences; supportive role of the facilitator and peers; increased relevant knowledge and skills; and access to additional learning resources.

**Creation of a community of practice.** The sense of community and opportunity for networking afforded by ECHO PPC was a salient theme across all four focus groups. Becoming members of a worldwide community of learners was a meaningful aspect of participants' experiences. Participants 16 and 10 mentioned this, "*So, actually, I feel that I am in a community. This is more like a classroom and I can attend or share my knowledge or my experiences with another person or another people that are sitting in a different country. I feel that we are sitting in one room. I do feel that. I think it is good that I feel I am in the community in learning from different countries*", "*I think that all of the regular participants, so when I saw Dr. X for the first time in Bangladesh, I didn't feel like I was a stranger or anything. We knew each other for one year on the ECHO platform and it's kind of helped us to speak easier*". In keeping with the theme of community, Participant 6 added "*I felt like a family. When Dr. X [the ECHO facilitator] calls on me and asks what my name is, we feel very welcome*". Participants reported that they would like to go back to the built community and continue their collaboration, participant 14 stated "*Once the program is done, we feel that we want to go ahead and continue and do something else so that we can keep on having ties*". This also was the case for Participant 10, who revealed that "*We constantly sit together after the ECHO sessions. We discuss ourselves and [watch the video of] that session later and then apply it to the job*".

Moreover, networking with other care providers both within their own country and internationally built opportunities for sharing knowledge and resources outside of the ECHO platform, as described by

Participant 10: “*I feel my network has grown a lot more after the ECHO. I got introduced to a lot more people and that will help me to contact them directly*”.

As members of healthcare teams, participants also considered participating in the community of practice as a form of continuing medical education to be an integral aspect of their professional identity.

Participant 16 summarized this idea, in the following way: “*To treat my patients, I have to gain knowledge... I have to attend ECHO session or from wherever I gain knowledge, I have to attend those things. That is my responsibility, to do my job properly*”.

**Opportunity to exchange cultures, ideas and experiences.** The role of culture, ideas and experiences exchange was emphasized in most participants’ comments. For instance, Participants 2 and 8 mentioned “*We are different people from different culture, and the culture is not matching with everybody or the culture is not the same. Sometimes I definitely feel comfortable to raise issues regarding what we are doing in our country to compare with other countries. I think it's rational and it's helpful*”, “*There are cultural differences and similarities that have yet to be explored, and these ECHO sessions are very helpful for that*”.

In addition, ECHO PPC provided a platform for sharing ideas as summarized by Participant 10 “*What kept us going was that most of the topics were from an international western view. Presenting cases from mostly an Indian and Bangladeshi background kind of brought in the discussion of how we could adapt the same things to our context. That's why ECHO was very good for me*”. The curiosity that participants shared for cultural diversity in psychosocial care were reflected by Participant 14: “*Some of the things we've learned coming from the Western world, how can we apply them in the India or Bangladesh context? It's not true that these are good for the West and not applicable in India... Many people say "but people don't want to remember [their child after their death]", and I'm not sure! There are cultural differences and similarities that have yet to be explored, and these ECHO sessions are very helpful for that*”.

Participants also noted that their involvement in ECHO PPC could impact their broader local professional network, as they identified opportunities in practice to share their newly acquired knowledge with colleagues who were not part of ECHO PPC. Participant 16 summarized: “*there are lots of physicians that are not aware enough to use opioids... So I take this opportunity as my responsibility to make aware all of the physicians that it's a good drug and you can prescribe it and how to prescribe it... Like this, when I get some shots of knowledge, this is my responsibility to aware other physicians who are not very familiar with these types of knowledge*”.

**Supportive role of the facilitator and peers.** Having supportive facilitators and peers who are from the same culture and speak the same language emerged as an important theme. As Participant 5 stated “*We could understand her (the facilitator), she directs everybody, after finishing session, she summarizes the whole session if anyone didn't catch sometimes*”, and Participant 11 continued “*She connects people. She introduces the other people who join in the ECHO, ... (the facilitator) is from India, so there is*

*coordination and English translation. It's helpful for us to understand".* Participants also highlighted the significant role of other peers to encourage them to participant in their training sessions.

**Increased relevant knowledge and skills.** Participants highlighted the importance of gaining new knowledge and skills relevant to pediatric palliative care. Participant 11 mentioned "*I think I choose this ECHO session to learn about more and increase my skills and knowledge regarding pediatric patient management*". In addition, Participants 6 and 8 added respectively, "*we can learn from the different people's perspectives. The worldwide teachers that teach us through these ECHO sessions*", and "*the sessions give me the floor to learn new things in pediatric palliative care. After the case presentation there is a group discussion which is helpful. These have helped me a lot to learn new cases. I am so happy because pediatric palliative care is new for me.*"

Improved communication skills were regarded as a particularly valuable. Participant 1 commented: "*Before the ECHO session, I have a fear and feeling that I could not communicate with children... By the ECHO session, now I know how to communicate with children and how to talk with their parents about death and the prognosis. This is the most important thing that I learned from the ECHO*". Similarly, Participant 5 added "*The most important thing that helps us a lot is building relationships with the children and the family..., from my perspective, it really helps us a lot to get in touch with the kids because kids are not always like adults. So, to get near to the kids and reduce their symptoms, the ECHO sessions really helped*".

Many participants had some experience with adult palliative care and recognized the fundamental differences in the knowledge and skills which are needed to manage children with life-limiting illnesses. As participant 17 noted, "*It's really very important for us because at a centre like in Bangladesh, we started to do pediatric palliative care very recently. We have a separate ward for that but unfortunately, we were not very focused with the pediatric palliative patients before. So, when we got attached with ECHO, it became very easy for us to relate with the patients at the centre*".

**Access to additional learning resources.** Participants reported that access to additional educational resources which were provided after ECHO sessions lead to increased confidence, reduced feelings of burnout and stress, and improved health outcomes for patients. Participant 12 stated, "*Working in palliative care, there is a thing called burn out, and working with pediatrics patient is the big thing... When I deal with pediatric patients, I feel stress more because there is a need to handle the pediatric patient and also the parents and there is more stressful work... If I don't know about pediatric palliative care, how do I give support? I feel more stressed. But now, when I see my patients, I know how I can help them and the parents, how I can remove their anxiety and some of my fears. Now I feel that my stress is reduced*".

## **Theme 2: Barriers to participation**

Analysis of the focus group data revealed that some participants encountered barriers to participation in ECHO PPC sessions. These barriers fell into two subthemes: difficulties with time and practice schedule management and language and sociocultural factors.

**Difficulties with time and practice schedule management.** The most common challenges noted by participants revolved around time constraints and managing hectic practice schedules to attend ECHO PPC sessions. For example, Participant 4 summarized “*From 9-5 we have to cover our patients, home care we have to attend, we have to go for lunch also and we have to attend ECHO Sessions, and team meetings, and case presentations....We have to go here and there and we have to update everything, there are a lot of people suffering*”. Similarly, Participants 11 stated “*coming to a monthly session is okay, but with 2 meetings each week on our side, and of course locally we have to attend so many meetings, sometimes from health commissioner, so we have to do all of those things*”.

In the event that participants could not attend all ECHO PPC sessions, some participants reported that missing sessions created negative emotions including stress and guilt. Participant 8 recalled “*I wanted to make that time, but it was very difficult for me. I would get caught up in so many things*” and Participant 10 summarized the notion by “*A couple of times, those days were really critical, and I couldn't make it for the session. It was just not possible. Then you would feel bad that you missed this. That would really bring stress because you missed out. That reminds me of the session where I were supposed to have a Zoom call and I slept, I got up in the middle of the night and started messaging [the facilitator] and didn't fall asleep the whole night because I was so panicky*”.

**Language and sociocultural factors.** Participants highlighted that there were some barriers related to language and socio-cultural differences that made it challenging to communicate their PPC knowledge to others or to take the most from the sessions. Participant 5 stated that “*English is a barrier. So, I can translate some slides in Bangla (Bengali language) and I can also share some videos. The videos are in English, but I can translate for them*”. Participant 3 added: “*When we are talking with each other, it is easier to understand. During the actual session when we are participating in ECHO, it is somehow difficult to understand, due to rapport or fluency, the language, the way you are talking... maybe that is the only difficult part*”.

A reluctance to speak in the group setting due to shyness emerged as another challenge participants faced. Participant 11 recalled “*I was feeling shy because we didn't know each other*” and Participant 15 added that her preference was to “*type [questions] out because sometimes you aren't looking nice on the screen; sometimes it's actually a good idea so that everyone can catch your question*”. The reluctance to standing-out during the sessions was described in further detail by Participant 12: “*Sometimes we are not comfortable and wonder if we should ask the question or not. In our culture, sometimes there are some barriers. Sociocultural things [are] an important part of our centre and culture, but sometimes it is uncomfortable for us*”.

## Discussion

We describe the key findings from our ECHO project describing the experiences of learners who participated in a one-year series of online series of learning sessions on pediatric palliative care focused on healthcare providers in India and Bangladesh. Participants identified benefits and barriers to

participation, which support key principles from learning theories including Social Cognitive Theory, Communities of Practice, and Situated Learning Theory, which have previously been used to explain how the design of Project ECHO facilitates participant learning (17).

## **Social Cognitive Theory**

In Social Cognitive Theory, learners must believe in the benefits of a new knowledge or skill for the learning exercise to be effective (19). In line with this theory, learners in our study identified a number of benefits to participation in ECHO PPC, including: (1) creation of a community of practice, (2) opportunities for networking, (3) increased knowledge and skills, and (4) access to educational resources. Despite the barriers to participating, participants found the program helpful and consistently stated a strong desire to learn as their primary reason for enrolling in ECHO PPC and for continuing to participate. In Social Cognitive Theory, learners gradually develop confidence to apply the new behavior or practice, and are more likely to engage in new behaviours if they are confident in their ability to carry out the new behaviour and are positively reinforced by influential individuals (19). We found that the benefits of the ECHO educational experience were not restricted to individual learning during the sessions; as participants reported that ECHO stimulated additional team learning outside of the sessions, with multiple participants mentioning instances when they relied on team discussions after the ECHO sessions to consolidate their learning. These additional learning activities may lead to enhanced learner confidence and provided positive reinforcement of new behaviours. Applying knowledge from our lessons to patient care in the workplace was more direct than we had initially assumed. Participants also reported downloading the additional resources and directly referencing them when making clinical decisions. In this way, ECHO PPC resources became essential tools in participants' clinic practices. Participants also identified the benefits they derived from the supportive role of the ECHO facilitator. Highlighting how the facilitator would summarize each session's key messages and this improved their understanding during ECHO sessions. This key support may also contribute to participants' confidence and feelings of support in performing new behaviours.

## **Community of Practice Theory**

Community of Practice Theory suggests that collaborating with peer learners and experts in a community is an effective learning strategy (20). Communities of practice emphasizes the importance of learning in a group, as the learning capacity of individuals increases when learning happens in a community (21). This theory emphasizes the importance of collaborative learning through mentoring and encouragement by peers and experts (17). Participants noted the importance of the support and empathy that they received from other peers through discussing challenges they have similarly encountered, noting that this was especially helpful when approaching difficult cases in their personal practice. Participants in our study described a sense of community had emerged among learners which helped them remain engaged and motivated throughout the program. Even after completing the program, participants felt connected to other group members and expressed a desire to maintain connections and continue collaborating with one another. Participants noted that the support and encouragement received from the ECHO PPC

facilitator was helpful in reducing their stress and shyness and enhancing their participation. Participants described the barriers to participation in the learning community including shyness during the sessions, cultural differences in communication styles and not wanted to be perceived as outspoken or interruptive by the group. The facilitator's role was noted as central in building the sense of community and overcoming participants' barriers to participation, by connecting people during the sessions and ensuring that all participants felt they had an important role in ECHO sessions. The fact that the facilitator was from India was identified as positive since this allowed learners to feel more at ease asking questions. Facilitators were important in easing participants into discussions when natural conversation cues were difficult to identify.

### **Situated Learning Theory**

In Situated Learning Theory, teachers provide learners with opportunities to improve their skills and knowledge and to simplify tasks to be more manageable. Learners must have the opportunity to engage their own interests which motivate them to learn (22). We found that participants were motivated to participate in ECHO PPC as they believed that the program improved their confidence in providing pediatric palliative care for their own patients. Learners' were positive about the learning, as they noted that their learning needs were incorporated into ECHO PPC through clinical case presentations and discussions with peers and experts. Learners highlighted the value of ECHO PPC sessions in exploring differences and similarities between Western approaches and those solutions which are suitable for India and Bangladesh.

## **Conclusions**

The key benefits which healthcare providers participating in a technology-enabled learning program on pediatric palliative care (Project ECHO) identified include creation of a community of practice, opportunities to exchange ideas, support from other participants, increased knowledge and skills as well as access to additional learning resources. Key barriers to participation included difficulties with time and practice schedules and language and sociocultural factors. Additional barriers including access to technology and poor internet connectivity were also identified and should be considered when implementing technology enabled learning. Understanding the experiences of ECHO participants may allow educators to better understand the key drivers of learning and thus improve the design and implementation of ECHO projects focused on the learning needs of health care providers in resource-limited settings.

## **Abbreviations**

ECHO- Extension of Community Healthcare Outcomes

LMICs- Low- and middle-income countries

PPC- Pediatric Palliative Care

WHO- World Health Organization

## Declarations

### Ethics approval and consent to participate

This study approved by Children's Hospital of Eastern Ontario's ethics board, approval number of 17/201X. Written informed consent was obtained from all study participants. For participants contacted remotely, consent discussions occurred over videoconference with the investigators. Participants' signed consent forms were sent to the investigators electronically. Participants consented to focus groups being audio recorded and transcribed and this information being published in such a manner that it would not be possible to identify any individual participants.

### Consent for publication

Not applicable

### Availability of data and materials

The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

### Competing interests

The authors declare that they have no competing interests.

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This study was not funded by any funding bodies.

### Authors' contributions

Conception/Design of work: MD

Data acquisition, analysis, and interpretation: MD, SM

Drafting/Revision of Manuscript: SM, EE, DA, DN

All authors read and approved the final manuscript.

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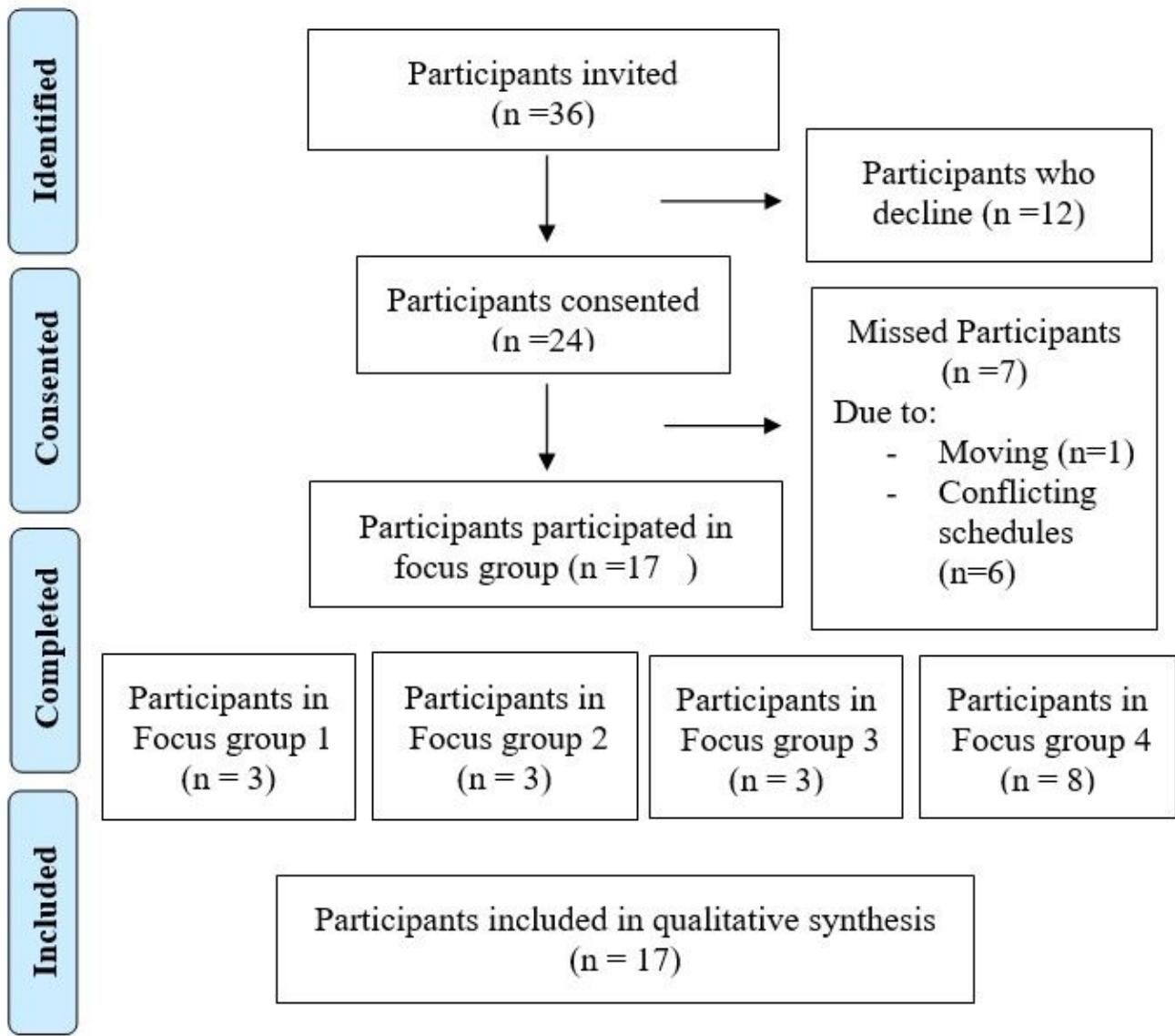
## References

1. Connor SR, Bermedo MCS, Worldwide Palliative Care Alliance, World Health Organization. Global Atlas of Palliative Care at the End of Life. 2014.
2. WHO | WHO Definition of Palliative Care [Internet]. WHO. [cited 2016 Jun 26]. Available from: <http://www.who.int/cancer/palliative/definition/en/>
3. Connor SR, Downing J, Marston J. Estimating the Global Need for Palliative Care for Children: A Cross-sectional Analysis. *J Pain Symptom Manage*. 2017 Feb;53(2):171–7.
4. Knaul FM, Farmer PE, Krakauer EL, Lima LD, Bhadelia A, Kwete XJ, et al. Alleviating the access abyss in palliative care and pain relief—an imperative of universal health coverage: the Lancet Commission report. *The Lancet* [Internet]. 2017 Oct 12 [cited 2017 Nov 9];0(0). Available from: [http://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(17\)32513-8/abstract](http://www.thelancet.com/journals/lancet/article/PIIS0140-6736(17)32513-8/abstract)
5. WHA67.19 - Strengthening of Palliative Care as a Component of Comprehensive Care Throughout the Life Course. WHA Resolution; Sixty-seventh World Health Assembly, 2014 (Arabic version) [Internet]. [cited 2017 Sep 29]. Available from: <http://apps.who.int/medicinedocs/en/d/Js21454ar/>
6. Connor SR, Downing J, Marston J. Estimating the global need for palliative care for children: a cross-sectional analysis. *J Pain Symptom Manage*. 2017;53(2):171–7.
7. Mathews L, Kumar KS. Pediatric Palliative Care in India. In: Knapp C, Madden V, Fowler-Kerry S, editors. *Pediatric Palliative Care: Global Perspectives* [Internet]. Dordrecht: Springer Netherlands; 2012 [cited 2019 Jun 27]. p. 91–108. Available from: [https://doi.org/10.1007/978-94-007-2570-6\\_7](https://doi.org/10.1007/978-94-007-2570-6_7)
8. Sasaki H, Bouesseau M-C, Marston J, Mori R. A scoping review of palliative care for children in low- and middle-income countries. *BMC Palliat Care*. 2017 Nov 25;16(1):60.
9. Saini S, Bhatnagar S. Cancer Pain Management in Developing Countries. *Indian J Palliat Care*. 2016;22(4):373–7.
10. Latha MS, Thirugnanasambandam RP, Balakrishnan N, Meghanathan HS, Moorthy A, Venkatraman P, et al. The need of pediatric palliative care education among pediatric postgraduates in south india. *Indian J Pediatr*. 2014;81(5):455–9.
11. Arora S, Geppert CMA, Kalishman S, Dion D, Pullara F, Bjeletich B, et al. Academic health center management of chronic diseases through knowledge networks: Project ECHO. *Acad Med J Assoc Am Med Coll*. 2007 Feb;82(2):154–60.
12. Bagayoko CO, Traoré D, Thevoz L, Diabaté S, Pecoul D, Niang M, et al. Medical and economic benefits of telehealth in low- and middle-income countries: results of a study in four district hospitals in Mali.

BMC Health Serv Res. 2014 May 12;14(Suppl 1):S9.

13. Lewis T, Synowiec C, Lagomarsino G, Schweitzer J. E-health in low- and middle-income countries: findings from the Center for Health Market Innovations. Bull World Health Organ. 2012 May 1;90(5):332–40.
14. Zhou C, Crawford A, Serhal E, Kurdyak P, Sockalingam S. The impact of project ECHO on participant and patient outcomes: a systematic review. Acad Med. 2016;91(10):1439–61.
15. Dearing JW, Cruz S, Kee K, Larson RS, Rahm AK. PROJECT ECHO.
16. Arora S, Kalishman S, Thornton K, Dion D, Murata G, Deming P, et al. Expanding access to hepatitis C virus treatment—Extension for Community Healthcare Outcomes (ECHO) project: disruptive innovation in specialty care. Hepatology. 2010;52(3):1124–33.
17. Socolovsky C, Masi C, Hamlish T, Aduana G, Arora S, Bakris G, et al. Evaluating the role of key learning theories in ECHO: a telehealth educational program for primary care providers. Prog Community Health Partnersh Res Educ Action. 2013;7(4):361–8.
18. Braun V, Clarke V. Using thematic analysis in psychology. Qual Res Psychol. 2006;3(2):77–101.
19. Bandura A. Social cognitive theory of self-regulation. Organ Behav Hum Decis Process. 1991;50(2):248–87.
20. Vygotsky LS. Mind in society: The development of higher psychological processes. Harvard university press; 1980.
21. Lave J, Wenger E. Situated learning: Legitimate peripheral participation. Cambridge university press; 1991.
22. Matusov E, Bell N, Rogoff B. Situated Learning: Legitimate Peripheral Participation. JEAN LAVE and ETIENNE WENGER. Am Ethnol. 1994;21(4):918–9.

## Figures



**Figure 1**

Study Participants Flow Diagram