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ENCOMPASSING ACCESS TO IMPROVED LIVER CARE – ILBS ECHO, REVOLUTION IN SPECIALITY CARE

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ABSTRACT Project ECHO is aimed at developing capacity for safe and effective treatment of chronic, common and complex diseases in rural and underserved areas while monitoring outcomes to ensure quality of care. ILBS is the first institute to replicate this model in India under the aegis of ILBS-ECHO program with a goal to identify, treat and manage liver related disorders across the country. Using state of the art tele health technology and clinical management tools ILBS-ECHO trains and supports physicians in the community to develop knowledge and self-efficacy on a variety of diseases not usually considered within their scope of practice. As a result, these physicians can deliver best practice care for complex health conditions in community-based sites where this specialty care was previously unavailable. Using the technology developed project ILBS- ECHO aims to build on and successfully implement the ECHO model to the Indian scenario.

KEYWORDS : Capacity building, Extension for Community Healthcare Outcomes (ECHO), Health Care Professionals, Information Technology, Liver Infections,

INTRODUCTION

Pervasiveness of liver disease globally and nationally and the contrasting discrepancies in terms of skilled health care workforce to deliver equitable liver care, were the underlying factors that drive the need to develop a training process to build the treatment capacities in terms of liver diseases. Liver illnesses due to variety of factors are complex entities requiring expert management that includes early diagnosis and appropriate treatment, meeting the highest clinical standards. Hepatitis B and C are global diseases and these two illnesses constitute about 75% of all cases of liver diseases in the world.^[1] It is being realized in the scientific world that HBV, HCV & HDV are emerging as the next silent epidemic the world over ^[2]and thus India cannot escape this epidemic due to socio- demographic reasons.

Prevalence of Hepatitis C varies from 0.3 – 2% in various parts of India ^[3](with an average at 1% in general population). India has intermediate prevalence of Hepatitis B of approximately 4%^[4] (range is 2% to 7%). Both diseases have varied presentations providing challenge to treatment. Considering all above factors, it becomes important to educate the service providers on appropriate management of liver diseases, to overcome this challenge ILBS ECHO- Institute of Liver and biliary sciences, Extension for community healthcare outcomes project was established.

In low- and middle-income countries there exist a vast lacuna in delivering capacity for super-specialist liver care. ILBS being an expert Institute in liver care, recognised the requirement of expert management of complex entities due to liver illnesses, which is difficult to provide in existing healthcare system in India, as health care workforce is unevenly distributed leading to a major public health concern of unequitable availability of health care. WHO's document "Health worker shortage; mentions at present in India, we are hardly able to meet up to half of WHO benchmark of health care workers of 24.5 per 10,000 people^[5]. So, at ILBS, we through our project ECHO utilize telemedicine outreach programs to build capacity and skill of medical fraternity (faculty and students) to overcome constraints of geographic distance and resources. It is extremely vital to address the issue of quality liver care in India considering the high population, out of which nearly 4 crore (40 million) persons in India are HBV carriers while about 1.2 Crore (12 million) are infected with HCV^[6]. The mentioned reasons well justify the need of having in place an intervention like ECHO.

THEORETICAL BASIS OF THE ECHO MODEL

The ECHO model is based on established educational theories about

learning and behaviour change including Bandura's social cognitive theory, Vygotsky's situated learning theory, and communities of practice^[7].

SOCIAL COGNITIVE THEORY

Social cognitive theory identifies influential factors that predispose individuals to believe in their ability to take actions and engage in behaviour that will produce desired results^[8]. Social cognitive theory argues that three factors influence the likelihood of an individual to change his or her behaviour. First, the individual must believe that the benefits of performing the new behaviour will outweigh its costs. Second, the individual must have confidence in his or her ability to perform the specific behaviour in a variety of circumstances, also known as self-efficacy. Third, there must be reinforcement of positive behaviour changes from persons who are seen as important.

Situated Learning Theory

ECHO's training components such as learning loops and co management of patients during telehealth clinics are also based on situated learning theory, which notes that learning requires social interaction and collaboration. Situated learning theory evolved from the work of Vygotsky who defined teaching and instruction as a process of assisting learners in knowledge construction and organization for optimal assimilation and access^[9]. Therefore, teaching requires providing learners with the opportunity to extend their current skills and knowledge, model the idealized version of the task, engage learners' interest, simplify tasks so they are manageable, and motivate learners to pursue the task.

Community of Practice Theory.

Lave and Wenger extend Vygotsky's work in their community of practice theory. In ECHO's one-to-many "knowledge network",^[10] the learning process evolves more profoundly and continuous participation in a community of learners who are "in practice" building technical knowledge and skill associated with the care of patients with complex diseases.

Situated learning and community of practice are supported by collaborative learning, coaching, and mentoring with those more expert than oneself but also with one's peers. Each of these approaches is accomplished in ECHO through iterative practice, feedback, modelling, successive approximation, and mentoring and consultation with interdisciplinary experts and peers. Recent reports on best practices in physician professional development from the Institute of Medicine, Carnegie Foundation, and Macy Foundation support educational approaches in ECHO.

MATERIALS and METHODS

ILBS-ECHO utilizes tele-audio-video learning principles to deliver trainings to the targeted groups through available IT infrastructure, supported by ILBS team in rendering technical support to the participating colleges and individuals registered under this program.

Different courses were drawn for doctors, nurses and paramedics after due deliberations with the in-house faculty and experts at the ILBS and is currently delivered through interactive lectures and case presentations, followed by discussions so that faculty's participatory deliberations, clinical difficulties of the course enrolled participating doctors get to solved to the ultimate advantage of the patients. A duly designed objective format for capturing the clinical details of a patient was prepared by experts at ILBS and is being used to capture the required details. A provision of certificate of participation to successful participants at the end of course is also there.

OUR INTERVENTION

ILBS-ECHO is an innovative healthcare program to develop capacity in physicians to effectively identify, treat and manage cases of acute & chronic liver related diseases, resulting in, and improved access of patients to a level of care equivalent to that provided in tertiary care health facility.

Collaboration between specialists at tertiary care health facility and Health care workers in rural / semi urban areas enables patients to receive state of the art healthcare from the professionals they know and trust in their own communities.

For clinicians, co-management of the complicated cases through discussing the same in this learning platform helps them in modifying and improving their own treatment protocols and practices in line with the latest advanced and standardized protocols to the ultimate benefit of their patients in clinical practice⁽¹⁾. This teaching learning program brings added depth and technical competencies amongst the doctors and reduces their professional isolation. With continued involvement clinicians become highly skilled in the treatment of liver disease which have varied presentations and complicated treatment decisions, thus help themselves in creating a sort of centre of excellence in their own community of practitioners. The end result is better quality and greater access to health care for all.

Connecting One to Many:

Project ILBS-ECHO is not a traditional tele-health model that facilitates a one-to-one connection between a doctor and a patient using technology. Rather, Project ILBS-ECHO builds altogether new and permanent capacities by developing specialist expertise where it previously did not exist. It is not one to one, but one to many. In addition to improving access to specialty care in remote locations, Project ILBS-ECHO connects isolated physicians with colleagues, including specialists at academic medical centres. It delivers continuing education and improves remote partner's satisfaction and retention in areas where it is often hardest to keep them. What's more, participating physicians can earn continuing education credits at no cost, as well as certification in treating diseases such as hepatitis C. They also gain access to specialty consultation in a range of areas relevant to their practice that they did not have before.

Project ILBS-ECHO faculty is comprised of the subject experts who are specialists treating cases of liver diseases at ILBS and the participants discuss patient cases in these learning session and appropriate guidance is provided by the subject Expert regarding the most appropriate treatment plan in a given case. Cases are mandated to be reviewed on a regular basis to discuss the progress of treatment, side effect management, or any other concerns or questions. This becomes the yardstick of measuring the ultimate impact of the e-learning program

TRAININGS THROUGH ILBS ECHO FOR DOCTORS

ILBS is conducting a synchronous (live) tele-medicine program titled ILBS-ECHO for doctors, faculty and residents since 2016. More than 100 colleges from 17 states have been part of the program with more than 700 individual registrations from various medical colleges.

Each participant could receive a certificate issued by the ILBS (Institute of Liver and Biliary Sciences) acknowledging their capacity to treat these patients. The details of all the participating physicians

will be maintained by ILBS for later evaluation for consideration of certificates. The certificate will be provided on the basis of a fixed number of interactive case discussions, cumulative percentage score in various MCQs answered at the end of an exit exam and attendance in various sessions by the participant.

Weekly lectures on a fixed day of two hours each were conducted by ILBS Hepatology Faculty, Clinical Case Discussions by participating institute and interactive sessions on 24- 38 topics related to liver and biliary diseases. Each session was didactic in nature and were conducted fortnightly, attendance was marked at the completion of each scientific session. Participants with 75% and above attendance were eligible to give online exit exam. Participants scoring more than 50% were provided with certificate of course completion.

Course is completely free of cost and without any financial implications to the individual participant or the participating institution through the web based application. Additionally, participants get access to the website including all video lectures along with ppt's for ready reference material, also key learning points were prepared for each topic and shared with the participants through emails and in form of WhatsApp messages.

NURSES PROGRAM

Nurses play an integral part in treatment of a patient. Hence, up to date knowledge of nursing professionals in managing patients with Liver Diseases and Viral Hepatitis is equally important. Apart from the knowledge for managing the patient, self-protection of the nursing community from viral infections like Hepatitis is equally important at the start of their career.

Thus, ILBS came up with a training program for nursing students and faculty in nursing management of viral hepatitis and liver diseases and self-protection protocols to be followed from virus like viral hepatitis. The program is conducted via telemedicine set-up which will reduce the burden of travelling for the participating institute.

For nursing professionals one-day training program on viral hepatitis and other complications through didactic lectures was conducted by experts. All the eligible participants were entitled to receive the certificate of participation after successfully completing the designed pre and post-test. A total of 5974, nursing professionals have been so far trained under ILBS ECHO program.

EQUIPMENT REQUIREMENT

ILBS ECHO uses state-of-the-art IT infrastructure including high bandwidth connectivity, high definition video/audio conferencing units, and software tools to capture clinical details of patient with the provision of capturing the follow-ups. For the purpose the institute has deployed multiple modes of video conferencing, webinar, webcast, live stream, audio/video conferencing units etc.

To connect ILBS ECHO session from a desktop/ laptop / smart phone the ZOOM platform is utilized. Zoom is a web conferencing solution. Zoom has a plethora of features to host online meetings and video conferences, scheduling webinars, questionnaires within meetings.

Using state of the art tele health technology and clinical management tools ILBS-ECHO trains and supports physicians in the community to develop knowledge and self-efficacy on a variety of diseases not usually considered within their scope of practice. As a result, these physicians can deliver best practice care for complex health conditions in community-based sites where this specialty care was previously unavailable. Using the technology developed project ILBS-ECHO aims to build on and successfully implement the ECHO model to the Indian scenario.

Web based disease management tools facilitate consults, and specialist and remote partners jointly manage complex chronic liver illness for patients, who are treated right in their home communities. A secure and centralized database monitors patient outcomes.

ECHO model is its hub and spoke knowledge sharing networks, led by experts' teams who use multi point videoconferencing to conduct virtual clinics with primary care physicians and nurses.

To train large number of medical specialists and paramedics to provide excellent specialty care to patients in their own communities.

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Video conferencing MCU with Video conferencing unit will be set at main centre (ILBS). Team of IT managers and clinic managers will coordinate with medical and nursing colleges for setting up connections.

SUSTAINABILITY

Create human force to train and fight against hepatitis B, C, alcohol related liver diseases, liver cancer and other liver diseases by training medical and paramedical staff in medical and nursing colleges. The HCWs that will be trained and mentored by faculty from ILBS will help to provide better liver disease management. Specialists in the medical colleges can subsequently become trainers and the chain could thus extend to districts. Patients on the other hand, are likely to have greater comfort in their community and with local physicians may have greater adherence to treatments. In case, the project is found to be beneficial to the community, the same can be extended for one more year on the existing terms and conditions, upon mutual consent.

The ECHO Model of learning incorporates each of these three components, with a particular emphasis on enhancing provider self-efficacy. Community providers learn the cost and benefits of delivering best practice care in contrast to their prior practices by seeing the impact on their patients. This is reinforced through clinics in which providers collaborate on patient management with interdisciplinary specialists, who are seen as trusted experts. Most importantly, community providers develop self-efficacy as they assume increasing role in delivering best practice care, with the expert specialists gradually shifting to a smaller consultative role to ensure patient safety and support provider confidence on an ongoing basis.

DISCUSSION

ILBS ECHO has the potential to be a significant disruptive innovation in three major areas: access to speciality health care, expanded delivery of evidence-based best practice care, and a new paradigm for team-based interdisciplinary professional development. It contributes to these three areas by using its model of case-based, iterative learning in an environment employing technology to support inter-disciplinary community providers in provision of quality care for patients with chronic, complex diseases.

ILBS ECHO provides attention to other needs of community providers as well. Providers develop confidence in their ability to provide safe and effective care, value being part of a community of practitioners dedicated to improved care for complex patients, and appreciate being valued by their peers. Ongoing learning and development contribute to a feeling of professional satisfaction that can promote retention in rural and underserved communities that otherwise offer limited opportunities for professional engagement^[12].

The project also demonstrates that technology and inter-disciplinary collaboration can be used to leverage scarce health care resources. Many telemedicine projects link specialists with remotely located patients^[13]. ECHO inverts that process and uses technology to build knowledge and skills among remotely located providers who in turn care for patients with chronic disease within their home communities^[14].

ILBS ECHO can streamline and enhance health care coordination, with medical colleges, primary and specialty care providers. As a result of the success of the ECHO model for liver diseases there has been significant demand to treat other complex and chronic diseases.

In summary, ILBS ECHO enhances chronic liver disease management in a number of ways, not just through its innovative use of new technology. Collaboration among specialty and primary care providers is an inexpensive way to increase the capacity to provide complex, chronic care even in communities not considered geographically remote. ILBS ECHO links these collaborative teams with medical students and existing community clinicians and gives them the expertise and confidence to be able to treat these diseases.

The technology used in ILBS ECHO has demonstrated its utility in educating clinicians through co-managed care of underserved patients. The geographic isolation of many communities in India precludes ongoing on-site professional education or consultation^[15]. While there are a variety of educational programs and media available at this time, most online venues do not involve face-to-face interactions with colleagues and do not address their professional isolation. In contrast to typical "telemedicine" services where specialists directly see patients using similar technology, ILBS ECHO uses technology to link these specialists with community-based clinicians. Therefore, it empowers and educates these providers through iterative to become equivalent to academic specialists in the quality of patient care they provide, a disruptive and innovative healthcare outcome^[14].

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