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Transforming healthcare through continuing medical education: World Telehealth Initiative at the Central Regional Referral Hospital, Bhutan

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ABSTRACT

Telemedicine supports both patient care and continuing education of healthcare professionals. Medical knowledge is prone to quick obsolescence, requiring healthcare professionals to regularly update with the rapidly evolving medical field. Healthcare professionals can use telemedicine facilities to build capacity and provide evidence-based patient care. Herein, we describe how the Central Regional Referral Hospital and the World Telehealth Initiative established telehealth infrastructure in the hospital that brings together global experts and local healthcare professionals to enhance patient care through Continuing Medical Education and training.

Keywords: *Continuing Medical Education; POCUS; Telemedicine; World Telehealth Initiative.*

INTRODUCTION

The medical field is constantly evolving, making it essential for healthcare professionals to remain updated regularly. Continuing Medical Education (CME) is a means of knowledge upgradation to ensure provision of evidence-based patient care[1]. With technological advancement, telemedicine is a platform to deliver CME remotely. Telemedicine as defined by the World Health Organization as the delivery of services by health professionals, using information and communication technologies for the purposes of diagnosis, treatment, research and evaluation. Furthermore, it is known to facilitate the continuing education of health professionals, when distance is a critical factor[2].

CME is a means of discussing emerging clinical guidelines, treatment protocols and new medical technologies[3]. In-person CME is challenging due to the inflexible schedule of healthcare workers as well as the financial implications associated with travel, accommodation and event fee[4]. CME provided online via telemedicine mitigates these challenges and also has a wider reach[5]. In fact, many health systems now use digital technology to not just provide CME remotely but also to provide healthcare services remotely, helping reduce disparities[6].

Telemedicine is not new to Bhutan. Pilot projects of telemedicine initiated earlier, such as the pilot tele-radiology project linking Bumthang Hospital with the national referral hospital in Thimphu, could not be sustained. The probable factors for failure include slow internet speed, erratic power supply and lack of skilled human resources, limited financial support, inadequate infrastructure, poor communication systems and time constraints amongst clinicians. These challenges have confined telemedicine to an experimental phase in Bhutan. However, telemedicine made a comeback during the COVID-19 pandemic where it was used for both clinical and educational purposes.

We describe the collaboration of the Central Regional Referral Hospital (CRRH) with the World Telehealth Initiative (WTI) in implementing telehealth services at CRRH.

Collaboration with the WTI network

In line with the directives from the National Medical Services (NMS), CRRH collaborated with WTI to establish a telehealth initiative in the hospital. NMS, established on 9 January 2023 as part of the health sector transformation of Bhutan's Ministry of Health, aims to provide stewardship for clinical services in the country. WTI, a global non-profit organization, supports underserved areas by providing telemedicine consultations and continuous professional development via its network of global medical experts[7]. As of October 2024, WTI is operational in 17 countries, supporting over 1,400 healthcare professionals across 50 specialties to deliver advanced medical care[7].

Through this collaboration, CRRH received telehealth equipment, access to a cloud-based network, and implementation and operational support from the WTI. Leveraging WTI's platform, healthcare professionals of CRRH are connected with clinical experts from around the world. As the country's second busiest tertiary hospital, CRRH serves all 20 districts and is the

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referral center for five central districts. Despite offering multiple specialty services, some cases still require consultation with sub-specialists at the National Referral Hospital in Thimphu or outside Bhutan. Using the telemedicine device, doctors at CRRH can consult experts elsewhere and also request for bedside patient consultations. Such initiatives help patients receive timely healthcare services while reducing referral related costs.

Timeline of WTI activities

The first collaborative meeting between CRRH and WTI was held on 20th September, 2023 via Zoom. Areas of collaboration with desired benefits of telemedicine facilities were finalized. In addition, WTI guided CRRH healthcare professionals through registration on the WTI platform and provided a live simulation training from their US-based Technical Innovation Center, using the Provider Access Software application for patient care and professional development.

Training began on 28 November, 2023 and over the subsequent few months, 32 doctors, including medical specialists and medical officers were trained to use the WTI network, each receiving a personalized 30-minute session.

CRRH received the WTI device from California on January 2024 and it was officially launched on 28 March, 2024, with WTI personnel joining virtually. During the launch, WTI reaffirmed their commitment to provide CME trainings and support patient consultations via their network of experts.

The first CME on dialysis guidelines was conducted by a US-based nurse specialist on 24 May, 2024 (Figure 1). A CME series on Point of Care Ultrasound (POCUS) began on 18 September, 2024, led by telehealth specialists from Orlando Health, Florida. Over weekly sessions, doctors in CRRH learnt basic and advanced POCUS techniques, as an adjunct to facilitate diagnosis and management. An Emergency Physician from CRRH assisted participants on-site (Figure 2). Through this project, CRRH received a ButterflyiQ ultrasound probe, enabling Orlando Health experts to view live scans and provide real-time guidance remotely. Two-way video teleconferencing via the WTI device enabled interactive, face-to-face-style training despite the distance.

Fig 1: Healthcare professionals of CRRH attending CME conducted by WTI network, 2024.

The POCUS training concluded on 6 November, 2024 with an Objective structured Clinical Exam (OSCE) conducted amongst participants. During the OSCE, participants performed scans on specific anatomical regions while experts from Orlando Health assessed their technique and image quality. Feedback

Fig 2: Doctors of CRRH practicing POCUS while experts from Orlando Health oversee the session via the WTI device, 2024.

and results were provided at the end of session, with experts approving the adequacy of the scans. Upon completion of the session, the ButterflyiQ ultrasound device was handed over to the Department of Emergency Medicine at CRRH for clinical use. Doctors continue to receive expert feedback and guidance on real patient scans.

As of 9 February 2025, WTI has conducted eleven CME trainings across various specialties (Table 1). CRRH has not yet used telemedicine for patient consultations. Efforts are currently underway to expand telemedicine activities to include case consultations with experts both in-country and worldwide.

Impact of WTI Network

Although there is no objective assessment of the impact of CME through WTI, anecdotal reports suggest significant benefits in enhancing knowledge and skills of healthcare providers, on evidence-based medical and surgical care.

The most impactful initiative to date has been the CME series on POCUS. Covering topics such as basic and organ specific ultrasonography, protocols for shock and hypotension, focused assessment with sonography for HIV associated tuberculosis (FASH), and ultrasound guided nerve blocks and vascular access, doctors at CRRH now apply POCUS in routine diagnostics. The ButterflyiQ ultrasound device provided by WTI is actively utilized in the emergency department.

Telehealth enabled CME across various specialties has connected CRRH healthcare professionals with the global experts, fostering skill development and promoting best practices, which ultimately enhances patient care. As a teaching hospital under the Khesar Gyalpo University of Medical Sciences of Bhutan, CRRH also trains nurses, technicians, interns and residents. The WTI telemedicine network helps faculty stay updated with current clinical practices, improving the quality of both patient care and student training during clinical attachments.

Telemedicine has the potential to help the country achieve the Sustainable Development Goal of Universal Health Coverage by enhancing access to effective, safe and affordable healthcare services8. Telemedicine can enable patients to receive quality healthcare without having to travel to far-flung centers.

Initiatives of WTI also helped the healthcare professionals in the hospital to explore the use of WTI device,

Table 1: List of CME activities conducted by the WTI network, 2024 – February, 2025

Date	Topic	Resource
24/5/2024	Caring for Patients Receiving Dialysis	Leanna Ross, RN Medical/Surgical Professional Development Specialist, USA.
17/7/2024	Osteoporosis	Dr. Abishek Raut, MD Medical Director, Apple Tree Medical Group, Canada
24/7/2024	Neonatal Life Support	Dr. Irwin Reiss, MD Neonatologist, Erasmus University Medical Center, Netherlands
31/7/2024	Kawasaki Disease	Dr. Deepti P Bhat, MD Medical Director Echocardiography, Phoenix Children Hospital, USA
29/8/2024	Update on Multiple Myeloma	Dr. Natasha Edwin MBBS, MD Hematologist and Medical Oncologist, Providence St Vincent's Hospital, Portland Medical Center, USA
4/12/2024	Cervical Dysplasia, Colposcopy and Prevention of Cervical Cancer	Dr. Suzanne Burlone, MD Orlando Health Center, USA
27/11/2024	Status Epilepticus	Dr. Radhames Ramos De Oleo, MD Intensivist, Orlando Regional Medical center, USA
29/11/2024	Approach to Anemia	Dr. Natasha Edwin, MD Hematologist and Medical Oncologist, Providence St Vincent's Hospital, Portland Medical Center, USA.
12/12/2024	Common ENT Emergencies	Dr. David Mendelson, MD Otolaryngologist, President of ENT specialists Arizona, USA
07/02/2025	Breast Cancer	Dr. Sarah Walcott Sapp, MD Breast Surgical Oncologist, USA
07/03/2025	Benign Breast Disease	Dr. Sarah Walcott Sapp, MD Breast Surgical Oncologist, USA

which is a new and advanced technology for patient care. Telemedicine facilities are powerful tools in healthcare system that allow healthcare professionals to connect and learn from global experts within the click of buttons. Such practice is cost-effective, help healthcare professionals learn at their convenience and leverage technological advancement for patient care[5,6,9,10].

Limitations

The time difference between Bhutan and USA created challenges in scheduling clinical case consultations, CME sessions and training. Conducting CME early in the morning or late in the evening was one of the solutions, however it has disrupted delivery of regular services in the hospital when the sessions prolonged beyond the scheduled time. Likewise, odd hour training sessions has discouraged healthcare professionals to avail trainings and CME.

Although the WTI device can be used for remote patient consultations for specialized care, it hasn't been used for this purpose yet. This is due to the lack of availability of the WTI device in district hospitals, which is a pre requisite to connect to specialists for real time consultations. Such model of skills development via CME has many advantages but technology alone cannot substitute in-person guidance and training is something to be considered

Recommendations

WTI devices and networks, like those at CRRH, could benefit other healthcare centers across Bhutan. They provide access to CME, keeping healthcare professionals updated and improving patient care. This also reduces unnecessary referrals for cases manageable at the local level. A hub-and-spoke network linking referral and district hospitals would support training and CME for doctors, nurses, technicians, interns and residents.

To avoid past failures, it is pivotal to improve information technology literacy among healthcare professionals, invest in infrastructure and ensure reliable internet. CRRH and WTI should also explore real-time patient consultations to maximize the benefits of the telemedicine.

CONCLUSION

WTI has provided an opportunity to the healthcare professionals of CRRH to update knowledge and skills through CME and trainings provided by WTI network of global experts. Although this project faced inevitable challenges like time difference between Bhutan and USA, expansion of telemedicine infrastructure and services to peripheral hospitals in the country could benefit both patients and healthcare professionals.

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AUTHORS CONTRIBUTION

Following authors have made substantial contributions to the manuscript as under:

NP: Concept, design, data collection, manuscript writing, editing and review.

MT: Concept, design, Manuscript writing, editing and review.

JK: Concept, manuscript editing and review

KON: Concept, manuscript editing and review

CG: Concept, data collection, manuscript editing and review

Authors agree to be accountable for all respects of the work in ensuring that questions related to the accuracy and integrity of any part of the work are appropriately investigated and resolved.

CONFLICT OF INTEREST

None

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