

# Floating Mobile Hospitals: an innovation to improve the health of rural populations

Research Article

Sabnam Mahmuda, BHSc, MSc Global Health, McMaster University  
Hasan Merali, BA, MD, MPH, McMaster University

## Abstract

Technological innovations in healthcare delivery can improve accessibility to primary healthcare services, especially for rural populations in low and middle income countries (LMICs). This paper examines available research and data on services provided by three Floating Mobile Hospitals (FMHs) in rural Bangladesh, Cambodia and India to assess their impact on the health of rural populations they serve. Findings show that FMHs provide a significant number of preventive and curative services which have important short and long term health benefits for rural populations. Sustainability of these services results from training local health workers, however, continuity of services provided by FMHs often relies on financial support from foreign donors. Overall, FMHs have substantial capacity to reach marginalized rural populations and as such have remarkable potential for improving health outcomes of rural populations.

## Introduction

In 1978, the Declaration of Alma-Ata called to attention the importance of primary health care in achieving health for all and emphasized the role of good health in allowing people to contribute to the economy and society effectively.<sup>1</sup> With comprehensive guidelines, the declaration urged world leaders, and stakeholders from health, social and economic sectors to collaboratively provide health care.<sup>1</sup> Nearly 40 years later, however, many countries have not achieved this goal.

According to a WHO report, in 2015, 400 million people worldwide lacked access to essential health services.<sup>2</sup> Poor access to timely, essential and affordable health services can lead to harmful health outcomes such as long term disabilities associated with treatable health conditions. These detrimental health outcomes can have rippling effects on all aspects of life, thereby contributing to the continuation of poverty leading to poor health.<sup>3</sup> This in turn, leads to a cycle of poor health and low productivity.<sup>3</sup> In LMICs, rural populations comprise the majority of the total population but suffer from significant imbalance in distribution of healthcare resources.<sup>4</sup> Globally, rural areas are

characterized by high burden of disease, poverty and lack of sufficient healthcare resources.<sup>3</sup> As a result, rural populations tend to suffer from poorer health outcomes than urban populations.<sup>4</sup>

## Methodology

A scoping review was performed to identify sources of primary and secondary research related to FMHs. In addition, evidence was gathered from reports and data logs on the preventive, curative and rehabilitative services provided by FMHs to improve the health of rural populations. The evidence was assessed according to the 7<sup>th</sup> principle under the Declaration of Alma-Ata which provides guideline on how accessibility to primary healthcare services can be improved through provision of preventive, curative and rehabilitative services in a timely manner, and health promotion initiatives.<sup>1</sup>

## Results

According to the most recent annual reports, Friendship Hospitals, TLC and BCBs were able to provide a significant number of health services. In particular, Friendship Hospitals provided

250-000 general health consultations, supported 5000 surgeries on board and delivered health education to 450 000 women on cervical cancer.<sup>5</sup> Through their services, Friendship Hospitals have helped 4.2 million rural Bangladeshis since beginning in 2001.<sup>5</sup> TLC provided 4796 pediatric services, 2101 immunizations and reached 8826 people through health promotion and education initiatives (Dr. Hasan Merali, May 28, 2017). Tonle Sap Lake is home to 1.7 million people who live in floating villages.<sup>6</sup> Through its two floating clinics, TLC provides care to 8 floating villages on the Tonle Sap Lake and a village on the Stung Sen River which is a tributary of the Tonle Sap Lake.<sup>7</sup> BCBs conducted 246 684 general health consultations, provided 28 521 routine immunizations and 17 954 antenatal consultations (Bhaswati Goswami, June 2, 2017). BCBs serve over 2.5 million people with essential health services who live on remote islands of Assam.<sup>8</sup> The data on services provided illustrate how the FMHs are improving access to care for rural populations by providing many preventive, curative and rehabilitative services as emphasized in the Declaration of Alma-Ata.

The declaration also outlines that primary care is influenced by other sectors such as agriculture, education, housing etc. The organizations behind Friendship Hospitals, TLC and BCBs attempt to coordinate with other sectors in their efforts. For instance, TLC works with local schools to carry out health checks and to deliver education on topics such as nutrition and hygiene practices.<sup>9</sup> Friendship Hospital works with rural farmers to provide financial assistance and education on effective farming techniques.<sup>5</sup> BCBs have worked with the communications sector to initiate a radio program in local dialect to provide a platform for discussion and education on topics relevant to the communities they serve.<sup>10</sup>

### Discussion

Beyond the number of people served and the services provided, it is the development of local context dependent initiatives to educate

communities that reflects the success of these FMHs. For instance, the Friendship Hospitals hosts community theatres and BCBs host Radio Brahmaputra to provide platforms for community education.<sup>5, 10</sup> Such initiatives showcase how the FMHs support the guidelines set by the Declaration of Alma-Ata in developing holistic programs. These initiatives address factors such as the role living conditions and socio-economic environment on health. Addressing these factors empowers people to take charge of their lives to maintain good health by improving their physical and socioeconomic environments. As a result, the impact of these initiatives are highly likely to be sustainable since they are brought about by the people of these communities themselves and they are the most important stakeholder in helping improve their own health and wellbeing.

### Conclusion

Overall, the FMHs provide a significant number of preventive and curative services to rural populations. Sustainability of these services results from training of local health workers and community members. However, continuity of services provided by FMHs often relies on financial support from foreign donors. The scope of services and number of people reached by the Friendship Hospitals, TLC and BCBs showcase that FMHs have substantial capacity to improve health outcomes of marginalized rural populations. This is of great value as it helps reduce the disparity in health outcomes between urban and rural areas of these countries. The link between poverty and poor health is well established and it has been and it has been observed that improving health can increase productivity of people and allow them to contribute to the economy.<sup>11</sup> Therefore, by improving health of the people, in the long term, FMHs can help alleviate the socio-economic challenges faced by rural populations and support them to help themselves out of poverty. With their knowledge and understanding of the realities of in which rural populations live, FMHs can also support

government investments to build infrastructure and allocate resources in rural areas. This can bring about sustainable changes, and continue to provide a unique solution to the challenges of accessing healthcare experienced by rural populations of LMICs.

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## Video Game Interventions for Children with Autism Spectrum Disorder:

### a systematic review

Research Article

Hsin Yun Yang, BHSc, MSc Global Health, Faculty of Medicine, University of Ottawa  
Ling-Yi Lin, ScD, OTR

#### Introduction

There have been a growing number of children identified with neurodevelopmental disorders, including autism spectrum disorder (ASD). Around 1 in 68 children have been diagnosed with ASD in USA alone, along with the rising prevalence globally, thereby making ASD a relevant global mental health issue.<sup>1</sup> ASD is characterized by deficits in verbal and non-verbal social interactions.<sup>2,3</sup> Treatments at an early age may assist in improving these symptoms for better social development; however, individuals may continue to face difficulties that extend into adulthood.<sup>3</sup> Despite the increasing number of diagnosed cases, there

is no cure for ASD currently, with medications that only help to manage attention and other atypical states.<sup>1</sup>

Consequently, there have been studies in recent years investigating the use of video games for neurodevelopmental rehabilitation, such as virtual reality simulations, video modelling, and neurofeedback approaches.<sup>4,5</sup> Nevertheless, there is still a lack of high-quality study trials on these types of interventions.<sup>6,7</sup> Greater assessments on their effectiveness are necessary to further their development.

This systematic review aims to investigate the effectiveness of video game interventions on the