

Alice Salomon University of Applied Sciences – Berlin

Department of Social work as a human rights profession

Project Title: The use of Mobile Technology in enhancing Health Services for Mothers and Infants in the Early Diagnosis of HIV and Postnatal Care as a way of Promoting their Human Rights in Zambia

Supervised by: Dr. Elis Borde

Prepared by: Ugochukwu Fortune Agwu.

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The use of Mobile Technology in enhancing Health Services for Mothers and Infants in the Early Diagnosis of HIV and Postnatal Care as a way of Promoting their Human Rights in Zambia.

Abstract

In the face of high prevalence of HIV and AIDS in Zambia, management of the pandemic through the access to adequate and acceptable quality health services has remained the main stay of the Ministry of Health as a requirement and is one of the basic human rights for every infected person in society. Statistics indicate that women in Zambia are among vulnerable groups most affected by HIV epidemic compared to men.

To protect women and children against HIV and AIDS vices, the Ministry of Health partnered with Family Health International (FHI 360) and initiated a project Program Mwana: A Zambia mHealth Initiative, aimed at improving early infant diagnosis of HIV using mobile technology. The main objective of this study was to assess the extent to which the project Program Mwana had assisted in early diagnosis of HIV and timely response in infants and mothers, to establish the extent to which the project has enhanced the human rights of women and babies in accessing acceptable quality healthcare facilities, and in creating a future HIV and AIDS environment where women and other infected people would not be subjected to stigma and discrimination by society.

The outcomes of the study have indicated that Program Mwana project has improved the time for transmitting test results by over 50 per cent. Results have also revealed that the project has contributed positively to the promotion of human rights for mothers and infants in the sense that they have access to acceptable quality health facilities. Finally, results showed that this project also served as a long-term project in terms of creating an HIV and AIDS free environment, hence eradicating issues of stigma and discrimination against women and babies.

Key words: Postnatal, Quality Health Services, Mobile Health Services, Human Rights, Inequalities, and Inequities.

Introduction

Zambia has one of the world's most devastating HIV and AIDS epidemics. According to UNAIDS Country Report¹, more than one in every seven adults in Zambia is living with HIV, and life expectancy at birth has fallen to just 39 years². The first reported AIDS case was in 1984, and since then, the proportion of people living with HIV has been rising at a fast rate. Despite receiving hundreds of millions of dollars for HIV programmes from donor countries and institutions, prevalence rates have not dropped but have remained stable since the 1990's. Urban areas, such as Lusaka and along the line of rail, have recorded a prevalence rate of 25 per cent³.

Apart from providing preventive strategies, government has also embarked on sustaining lives of people living with HIV by providing them with free antiretroviral (ARVs) drugs, has declared HIV/AIDS a national emergency, and provides free ARV drugs to the infected. On top of its agenda is the prevention of mother to child transmission of HIV. Hence, Prevention of Mother-to-Child Treatment (PMTCT) initiative was launched by government in 1999, and under this programme, ARVs are given to expectant mothers and newborn infants. By the end of 2009, 10 years later from the time of its inception, about 69 per cent pregnant women received ARVs for preventing mother to child transmission⁴.

This programme has remained the main stay of the Ministry of Health to strengthen and enhance medical services among pregnant women and newly born babies and has introduced the mobile health initiative in its health institutions. Using mobile technology, the Ministry of Health partnered with Family Health International (FHI 360) and initiated a project *Program Mwana: A Zambia mHealth Initiative*, aimed at improving early infant diagnosis of HIV. This is against the background that statistics have shown that many infants have been victims of HIV and are usually infected whilst in the womb, at delivery or during breast feeding⁵. This project was initiated between 2016 and 2020 and was piloted in four districts across the country of Zambia.

The background to *Program Mwana* project is that mother-to-child transmission accounts for 21% of all new HIV cases here in Zambia⁶. Scientific studies have indicated that in a situation where prevention using antiretroviral therapy (ART) in HIV infected pregnant women fails to prevent mother-to-child transmission, early initiation of ART in HIV infected infants becomes critical and if applied on time, HIV-related morbidity and mortality can be substantially reduced⁷. Statistics have indicated that up to 30% of newborn babies who contract the virus

from their mothers die before the age of one if they do not receive treatment, whereas there is a 75% improvement in survival rates among those diagnosed in time to receive treatment within their 12 weeks of life. However, delays in the sending of blood samples from the point of collection to the often-distant laboratories usually create a significant barrier to the early initiation of ART in infected infants and contribute to the loss of follow-up and to the possible death of 30%⁸. It is for this reason that mobile health technology offers a reliable and sustainable solution to the slow transmission of test results.

Basically, the *Program Mwana* consists of two applications which use what is known as *RapidSMS*, which is a “free , open-source programing framework that allows developers to build their own SMS-based applications...” which enables the use of short message service (SMS) mobile phone technology to customize applications for “data collection, logistics coordination and communications operations, thus strengthening health services for mothers and infants in rural clinics in a simple, scalable and impactful way”⁹. The system speeds up the time it takes from health centres where the blood samples are collected to get the results back from the processing laboratories which are far from the health centres.

The HIV and AIDS pandemic has come along with it the issue of stigma and studies have shown that women in Zambia, especially young ones, are among vulnerable groups most affected by HIV epidemic. Among women aged between 15 and 24 years, HIV prevalence is nearly four times that of men in this age category¹⁰. This is attributed to several factors resulting from gender inequality in Zambian society. For example, traditionally, women are often taught never to refuse their husbands sex or to compel their partners to use condoms when having sex. In a Zambian behavioral survey, about 15 per cent of women reported forced sex, though this may not reflect the true number as many women do not disclose this information¹¹ in addition, young women in Zambia become sexually active earlier than men, and normally, a young woman would get involved with a partner who would be on average five years her age, and who already has had several sexual partners¹²

Objectives of the Project

The main objectives of the Program Mwana were three in fold: to establish the effectiveness of the project Program Mwana in terms of improving early infant HIV diagnostic services, post-natal follow ups, and care, using mobile health technology; to assess how the project has enhanced the rights of mothers and babies in accessing timely or early diagnosis of HIV; and to explore challenges health personnel are facing in the implementation of the project.

Theoretical Framework

According to the Mobile Ecosystem Forum¹³, the world today is experiencing a massive expansion of mobile health with over 100,000 mobile applications available all over the world. The coverage of healthcare systems using mobile technology has enhanced the clinical outcomes, higher quality of care, and cost savings in healthcare delivery. This is supported by Veroff, Marr, and Wennberg who argue that mobile health interventions can share best available evidence, handling patients' values and preferences, as well as promoting continuous cooperation between clinicians and patients to make decisions jointly and remotely¹⁴.

This study applied the *Shared Decision-Making model* as its theoretical framework. According to this model, patients and clinicians jointly make decisions based on best available evidence as well as patients' preferences and values. According to Elwyn and others, patients are engaged in considering their options, benefits, and risks in various healthcare processes such as screening, treatment, or management, and as a result of this involvement, adherence to treatment protocols by patients, and health outcomes are enhanced¹⁵.

As observed by some scholars¹⁶, the benefits of applying a *Shared Decision-Making model* have been long appreciated by the adoption of such practices have been slowed down due to several reasons including time constraints and clinical responsibilities. It is for this reason that mobile technology such as computer-based or web-based systems has been studied to address the challenges.

A *Shared Decision-Making model* was applicable to the *Program Mwana* project. The project is focused on the use of mobile technology to strengthen efficiency in health services for mothers and infants and addresses early infant diagnosis of HIV and postnatal care. For the diagnosis to be successful there is need for cooperation between the mother and the clinician. HIV and AIDS is a condition which is usually associated with social shame, making it difficult for patients to come out in the open for diagnosis to save the unborn infant from infection. Because of social shame, mothers find it hard to freely interact with clinicians and make a jointly based decision. Therefore, *Shared Decision-Making model* would help mothers to navigate through the process of diagnosis to arrive at an informed decision.

Violation of Women's Human Rights

Human Rights activists have noted with great concern that continued prevalence of gender inequality has precipitated the spread of HIV in the Zambian context, women and children being the most affected. This is attributed to several factors resulting from gender inequality in Zambian society. Despite significant progress made towards realizing women's rights in Zambia, many women and girls still face significant unfulfilled rights and discrimination. Most women have been subjected to sexual violence perpetuated by men such as forced sex, early marriages, rape and many other evil practices such as physical violence. Traditionally, females are expected to be homemakers, mothers, and wives with little say when it comes to issue of having sex, making them more vulnerable to the contraction of HIV.

The causes of these inequalities are usually attributed to poverty and patriarchal social systems and attitudes which are common not only in Zambia but throughout the African continent. Inequality is underpinned by cultural and economic norms; the common male breadwinners and female housewife stereotypes and patriarchal dominance appears to have emerged from religious and traditional principles and an economic climate that largely enables men to financially provide for their families. Compliance with customary laws around premarital traditional initiation embeds gender status inequalities promoted. This means that women stand little chance of breaking through and think gender transformation is unattainable. This has caused women to have little bargaining power over their sexual reproductive health, economic and even political rights as they rely upon husbands for status and economic support.

Women infected by HIV have been stigmatized by society since HIV in most cases is associated with sexual immorality, hence violating their human rights. Because of shame, some women get into denial and end up committing suicide. Others are denied of access to employment since they are HIV positive. It is for this reason that Human Rights activists in Zambia have welcomed the initiative taken by the Ministry of Health through the *Program Mwana* as this would reduce Mother-to-Child infections. The long-term effect of this programme is that eventually, the number of infections will be reduced, and HIV be contained and managed, leading to eradication of stigma in society.

Furthermore, access to adequate and acceptable quality health services is one of the basic human rights for every person in the world especially the vulnerable. Therefore, to allow this trend to continue is an infringement on the rights of infants. Just like every other human

being, mothers and infants have a basic right to access quality healthcare facilities including mobile health technology regardless of their status in life. Therefore, it is the duty of governments, through their health institutions, to provide latest mobile health technologies to save the lives of their citizens. For example, failure by health institutions to provide mobile healthcare due to poor mobile network is unacceptable, disregard, and abuse of mothers and infants' basic human rights. Access to adequate health services that are of acceptable quality is important in the move towards universal health coverage.

Researcher's Participation and Contribution

Therefore, it is from the above reasons that as a social worker and human rights activists, I fully support *Program Mwana project*. I have partnered with the local people, traditional leaders as well as churches and other faith-based organization in condemning and sensitizing the local community on the evils of gender inequality in society, to create a fair playing ground for women and men, boys, and girls.

Using largely a mixed method and case study design, the main aim of my study with the community is to assess the prevalence of forced and early marriages in *Kabamba Chieftdom* in Serenje district, Central Province of Zambia. *Kabamba Chieftdom* has been deliberately picked due to the high prevalence of forced and early marriages among young girls, a practice which has contributed to the high prevalence of HIV and AIDS in the area. The main objective of this assessment is to come up with strategies of curbing the practice which has disadvantaged the girls and women in terms of attainment of education and economic freedom.

The population of my study is mainly that of four (4) villages within *Kabamba Chieftdom*, and these will be sampled at random to give chance to each village to participate in the study. Then using purposive strategy, 20 girls will be picked from each village giving a total sample of girls of eighty (80). Eighty (80) parents of the girls will be picked using purposive sampling. Four (4) village headmen, four (4) church leaders, one from each village will be picked. Data will be collected mainly using interviews conducted through voice messages on WhatsApp, Zoom, and direct cell phone calls, due to Covid 19 health guidelines which discourages movements and contact. Questionnaires will also be administered through email where applicable, but mainly text sms on cell phones. Collected data will be analyzed using excel and presented in form of tables and graphs.

It is hoped that by the end of June 2022, recommendations from the study will be presented to both the government and local authorities, with the view of enacting laws that protect the rights and interests of girls and women in terms of attainment of education and economic freedom. The cost of the study is estimated at 200 Euros mainly for data bundles and talk time used during the interviews. Other lined up activities are the review of traditional initiation schools for girls and boys where they are exposed to sexual activities before marriage hence exposed to HIV, and the review of the inheritance practice where for example in an event of the death of a man, a brother to the deceased must marry the widow with the view of taking care of the family left by his dead brother. This practice has also led to the inhuman treatment of women who have no say but to comply with the practice and has also contributed to the spread of HIV and AIDS. Statistics have shown that many infants have been victims of HIV and are usually infected whilst in the womb, at delivery or during breast feeding, leading to about 30% infant mortality before the age of one and 50 per cent before the age of two.

Methodology

The project employed quantitative approach, and its main aims were to two:

1. Strengthen early infant diagnosis in order increase the number of mothers receiving results, and to reach mothers in a faster and more efficient manner using the *Results160* SMS application,
2. Improve the rate of postnatal follow up, increasing the number of birth registrations for clinic and community births, while also raising the number of clinic visits for mothers through community health worker tracing using the *RemindMi* application.

The project was initiated between 2016 and 2020 and was piloted in thirteen clinics in six provinces of Zambia, which were randomly sampled across the country. Below is the sample of the table used to record results at one of the sampled clinics in Serenje district of Central Province of Zambia, in March 2016:

	Cumulative	Month
Results delivered by Results 160	29	March
Births Registered through RemindMi	43	March

The government of the Republic of Zambia partnered with other stakeholders such as UNICEF, Family Health International and the US Agency for International Development funded by the President's Emergency Plan for AIDS Relief (PERFAR). To monitor and evaluate the effectiveness and impact of the project, UNICEF engaged the Zambia Centre for Applied Health Research and Development (ZCAHRD), a local NGO affiliated with Boston University. In collaboration with the university, ZCAHRD conducted a study of 10 rural health centres over the period of almost eight (8) months of implementation, providing the evidence needed to demonstrate the success of the pilot project and advocate for its scaling up¹⁸. Further, the UNICEF underwrote the cost of mobile services provided by Airtel, MTN and Zamtel, the three large mobile operators in Zambia.

Outcomes of the Project

Quick health service delivery was the main project outcome; a tremendous improvement in the transmission of blood samples from distant rural health centres to urban health laboratories was recorded such that Zambia is now in a process of scaling up the project to all parts of the country, hence, contribute to reducing infant and maternal mortality and delivery services especially to the marginalize and excluded of society. As revealed by the results, the project improved the time for transmitting test results by over 50 percent.

Conclusion

This study looked at the application of mobile health technology in health institution in order to strengthen and enhance medical services especially in the area of early HIV diagnosis and postnatal care in pregnant mothers and infants.

The results of the study have indicated that *Program Mwana* project has improved the time for transmitting test results by over 50 per cent. This is a tremendous positive impact on rural health facilities that previously depended on results to be transported by road. Mobile phones are now so cheap to the extent that they are commonly used even in remote areas of Zambia. Therefore, to a large extent, it can be concluded that the project succeeded in terms of its initial objectives. The project has also contributed positively to the promotion of human rights for mothers and infants in the sense that they have access to acceptable quality health facilities. As a result, they are now being attended to on time in terms of diagnosis and prevention of HIV hence reducing issues of stigma and discrimination. The experience gained from the project serves as the basis for future mobile health projects in the prevention of mother-to-child transmission of HIV and could be extended to broader maternal and child health areas such as nutrition. This project also serves as a long-term project in terms of creating an HIV and AIDS free environment, hence eradicating issues of stigma and discrimination against women and babies.

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