

Village participants' perceptions on the use of the Health Guardian for Longevity Program to sustain health in West Africa?

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Abstract

This case study explored the impact of bringing tailored health care to a village in West Africa using the Health Guardian for Longevity Program (HGFLP). Pemberton [1] points out, "the HGFLP takes in hand assessed data, mobilizing the powerful tools of mobile, interactive, remote, video, virtual technologies, selected learning models, behavioral theories, and humor to treat patients as individuals." The village team leaders led groups of 25-38 individuals (100 participants) through the case study process. A random selection of 100 out of 200 participants in the on-site visit and health promotion program of 2014 was conducted. The population spanned the life cycle from School-Age to Older Adult-Age. The study began in 2014 to explore the impact of the participants' online usage of the HGFLP related to health care status and sustainability following a healthcare crisis.

The participants used the program for 1.5 years, completed in 2016. The questionnaire was administered to the villagers by the team leaders. The study participants responded to the HGFLP Perception Questionnaire, a 10-item Likert-scale Questionnaire Data using excel to tabulate, analyze and prepare graphs of the perceptions of the villagers by the primary investigator in 2016. The results of the study revealed effective outcomes for 7 out of 10 items. In response to three items, it was identified that modifications were needed;

- A. Provide more intensive training for team leaders,
- B. Narratives must be written in the language of the villagers, and
- C. Health partners need to learn the native language. Strategies for sustainability of quality healthcare using telehealth practice, virtual, and mobile devices were supported.

This case study focused on the utilization of the health guardian for longevity program as a tool designed to sustain the health of the Villagers outside of Benin, West Africa.

Introduction

This paper presents a case study that explored the impact of a custom-tailored mobile telehealth program (Health Guardian for Longevity Program) on the delivery and sustainability of quality care to an indigenous population. The case study was developed by applying algorithmic thinking that facilitated the continuance of addressing, at a distance, the health care needs of the villagers living outside of Cotonou Benin, West Africa. The village has a population of approximately 30,000 residents, with no access or very limited access to health care. There were several small clinics, village infirmary, and a hospital 11 miles from the village. The health care services were fee based. The government provided free malaria treatment for pregnant women, women with children, and children younger than age five. In addition, women scheduled for cesarean sections were also provided free health care. Beyond the free government services, access to health care was not available to the residents of the village without payment. The outreach group worked collectively during the health care program with the village health care team leaders to provide health care services that incorporated the Health Guardian for Longevity Program (HGFLP). This paper presents the purpose, background, problem statement, research question, description of case study participants, literature that supports the original development of the HGFLP created in 2012 as a conceptual framework, step-by-step process/method, analysis, conclusions, and recommendations for future studies

Purpose

The study was conducted to explore the impact of the villagers' use of the HGFLP that was created to address the health care needs of those living in indigenous communities with limited or no access to health care. The tailored program centered on the following objectives for successful health stability outcomes for the residents of the villagers outside of Cotonou Benin;

- A. Facilitate restoration and sustain healthy behavioral practices using a tailored health care approach that incorporates modified mobile technology
- B. Enhance the villagers' and team leaders understanding of the disease, treatment, recovery and maintenance process
- C. Empower villagers to be key players in self-care through the input and feedback loop of the team leaders following the onsite visit
- D. Empower villagers and team leaders to become effective managers of their care in an environment of convenience and comfort, the village outside of Cotonou Benin
- E. Enhance coping skills-stress reduction for the villagers and fishermen
- F. Facilitate holistic health behaviors with a touch of humor applicable to the villagers' community health concerns
- G. Facilitate a sense of never being alone-with access to the health care team leader

The study explored the villagers' perceptions of the impact of the online use of the program to address health care needs and the effect of the HGFLP on the participants' outcomes. An identification of the attainability of the program's purposes from the perspective of participants were captured and analyzed to determine potential benefits of the HGFLP toward sustainability achievement following a villager's healthcare crisis. The better the understanding of the "diagnosis, treatment, and recovery" along with a good support system; the better one can cope with an illness and adopt behaviors designed to influence positive outcomes [2].

Background

The report of Global Observatory Statistics [3], 2015 for Benin noted the average life-span for the population was ages 50-53. The average life-span for the villagers in West Africa was 50-60. The average family income was approximately \$70-\$100 USD per month for a 10 hour workday. The villagers with jobs worked as artisans, farmers, fishermen, motorbike taxi drivers, and traders of all kinds of goods. About 10% (3,000) of the population were major fishermen and earned \$800-\$1500 USD during the greatest fish harvest time of Mid-August. Their diet consisted of powder milk, cornmeal porridge, spinach and fish during the fish harvest of every three-four months. The fish cost \$10-\$15 USD per package. Foods high in protein were limited as a result of the population's low socioeconomic status. In the village, Wi-Fi was not an option. The delivery and operation of the virtual component of the health care program was designated to three appointed team leaders who had transportation, lived within city limits of Cotonou Benin, and had access to Wi-Fi (Internet Service Provider).

The village is an hour drive from the city of Cotonou Benin and a three-hour drive from Lagos, Nigeria. During the on-site health program in 2014 a client traveled overnight on a motor bike to reach our onsite health care service program prior to closure. When the client arrived late that evening, he was diaphoretic, short of breath, and experiencing tachycardia. This is an example of the measures one goes through to get health care. The residents of the village expressed the barriers to receiving health care and the need for more free health care programs that incorporate mobile technology, virtual access to an Internet Service Provider, remote monitoring, and continued follow-up and intervention at a distance/Telehealth. The well-paved road project completion of 2016 will serve as an asset to easing the commute from country-to-country and make our scheduled onsite return visit in 2020 program accessible to a larger population (Figure 1).



Figure 1: Example of the virtual communication with the villagers.

The Problem

We conducted five (2001, 2003, 2005, 2010, and 2014) on-site health care outreach programs, working in collaboration with the village’s health care team leaders. During the onsite health care visits, we provided the following services and programs; holistic health assessments, health screening, wound care, referrals, therapeutic treatments for chronic diseases and behavioral health, health promotion and disease prevention education, life-style change planning, nutrition planning within the social determinants of health obstacles. The major enhancement in the health care service was the incorporation of the Health Guardian for Longevity Program. It provides the mechanism to the continued follow-up of our clients at a distance and continued application of progressive health care interventions. The major contributors to the villagers shorten life-span included; lack of access to health promotion and disease prevention programs, lack of access to health care services, late diagnosis and intervention, poor nutrition, and lack of continued health monitoring. In terms of support systems, they were extremely limited. Referrals and follow-up delays posed serious problems in terms of client outcomes and health stability, generating the necessity to incorporate telecommunications (The

Health Guardian for Longevity Program) being used effectively in the USA.

The implementation of the Health Guardian for longevity Program within the USA resulted in positive outcomes and several requests to develop and implement a tailored program that addressed individual and community-based health care needs. Through the application of algorithmic thinking, the development of the Health Guardian for Longevity Program was operationalized for the residents of the village outside of Cotonou Benin, with a minor modification in the construct and a work-around in the delivery process. It was important to capture the views of the participants in terms of the impact of the HGFLP in meeting their needs as using the prior visits without the technology/virtual program as a base of comparison.

Figure A shows the components of the construct in the development of the program and the “X” next to the remote construct component was the bases for the work-around. Remote monitoring was modified to be done using digital equipment by the team leader and transmitted to the primary health care provider for follow-up and intervention to be captured in the villagers’ progressive updated tailored program (Figure 2).



Figure 2: Interwoven concepts and Technology Constructs for the Villagers’ Program.

The required technological equipment was provided to the health team partners assigned as group leaders of the participants in the study. The program design centered on changing unhealthy to healthy life-style behaviors while working through obstacles with the support of the virtual program. Supplies of medications, medical resources, Glucometers, digital vital sign monitoring devices, and other technological equipment were provided for the health care team leaders taking part in the study. The problem over time was the reoccurring instability of the health status of the residents. During the outreach onsite health care program visit in 2014 we identified that 60% of the population continued to have re-occurring health problems in terms of hypoglycemia, hyperglycemia, Hypotension, Hypertension, Bradycardia, Tachycardia, complaints of chest pain,

joint pain, post Cerebral Vascular Accident (CVA) and impaired oxygenation. The problems warranted an urgent need to change our practice methodologies.

The problem statement: There is a deficiency in sustainability of the health restoration for residents of the village outside of Cotonou Benin. To address health care challenges and achieve sustainable health outcomes for the Villagers, a different approach to health care practice was required. The Health Guardian for Longevity Program, used successfully in the USA, was activated with technological modifications. The program had the potential to effectively address the ongoing challenges seen in the Village, as successfully done for clients in the USA.

Gustafson et al. [2] in a random trial study, concluded supportive individualized computer-based systems can lead to a better life experience and effective use of health care services for a population of 184 HIV-positive patients. Jenny & Fai [4] in a descriptive study of a population of 48 cardiac patients using CAI vs. 48 using traditional education, found the CAI group gained significantly more knowledge. They further noted that the CAI was recommended for preventive health education programs and patient’s self-management of chronic diseases. The research question: What is the impact of the participants’ perceived usage of the Health Guardian for Longevity Program on health care sustainability?

Method/Process

Using a step-by-step process, Figure 2 illustrates that 100 out of 200 participants from the 2014 onsite health promotion program was randomly selected. 68 were females and 32 were males, with the ages ranging from 6 to 93. In step one the participants were

grouped by age; school age, adolescent, young adult, middle adult, and older adult. In step two group-sets were established, resulting in Group Set A: comprised of nine school ages children (6-10), six adolescent ages (13-18) and ten older adult ages (66-93) , for a total of 25 participants. Group set B: encompassed young adult ages (19-40) for a total of 38 participants and Group Set C composed of the middle adult ages (42-65) for a total of 37 participants. Step three encompassed the assignment of the three team leaders taken from the administrators of the village, and each was assigned to one of the group sets. In step four, a comprehensive training session was enacted for all participants, four days per week with return demonstrations. In Step five, the assessment of the participants was completed and data captured once every two weeks for a normal assessment result and twice a week for abnormal results (Figure 3). In the final step six, the team leaders of group-sets A, B, and C, were given, on a flash drive the series of programs tailored to their group’s needs, to be presented to the appropriate assigned groups and to obtain feedback (Table 1).

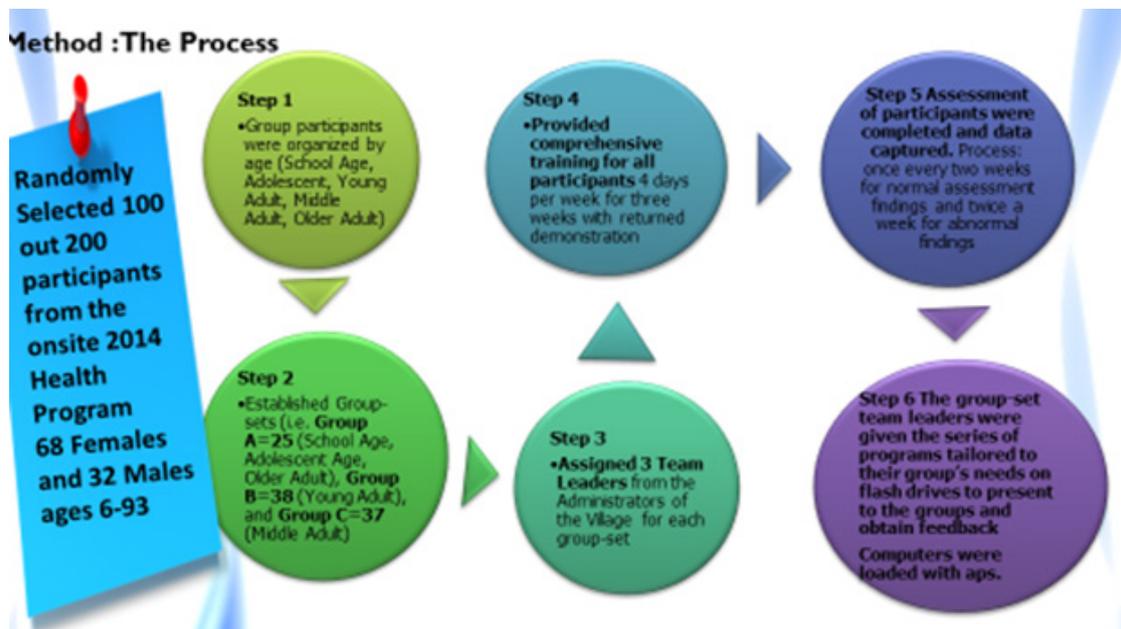


Figure 3: Method/Process.

Table 1: Perception of Participants: Survey Questions.

Survey Questions	Extremely well	Very well	Moderately well	Slightly well	Not at all well
Q1-How well did this program meet its objectives?					
Q2-How well did you understand the information about your health condition?					
Q3-How well were you able to work in groups with the interactive health learning modules?					
Q4-How completely were your health care needs addressed with the implementation of tailored fit educational strategies within the program?					
Q5-How well did the humor video put a smile on your face?					
Q6-How well did the video conference call answer your question (s) and provide direction?					

Q7-How well do you prefer the inclusion of the HGFLP to prior onsite programs?				
Q8-How well did the website design: background, graphics and music remind you of home?				
Q9-How well did you have a sense of security with access to care 24/7 using the HGFP?				
Q10-How well did you function as a manager of your care with the inclusion of the HGFLP?				

Brug et al. [5] reported on eight studies that identified the benefit of tired nutrition education as having a greater chance of being reviewed, retained, and accepted as relevant when compared to views related to the use of standard materials and standard methods of health nutrition education. Lewis [6] conducted a

review of literature related to computer-based patient education studies and found that for short-term knowledge acquisition the technology consistently revealed positive outcomes. However, for long-term achievement, further study was required (Figure 4).

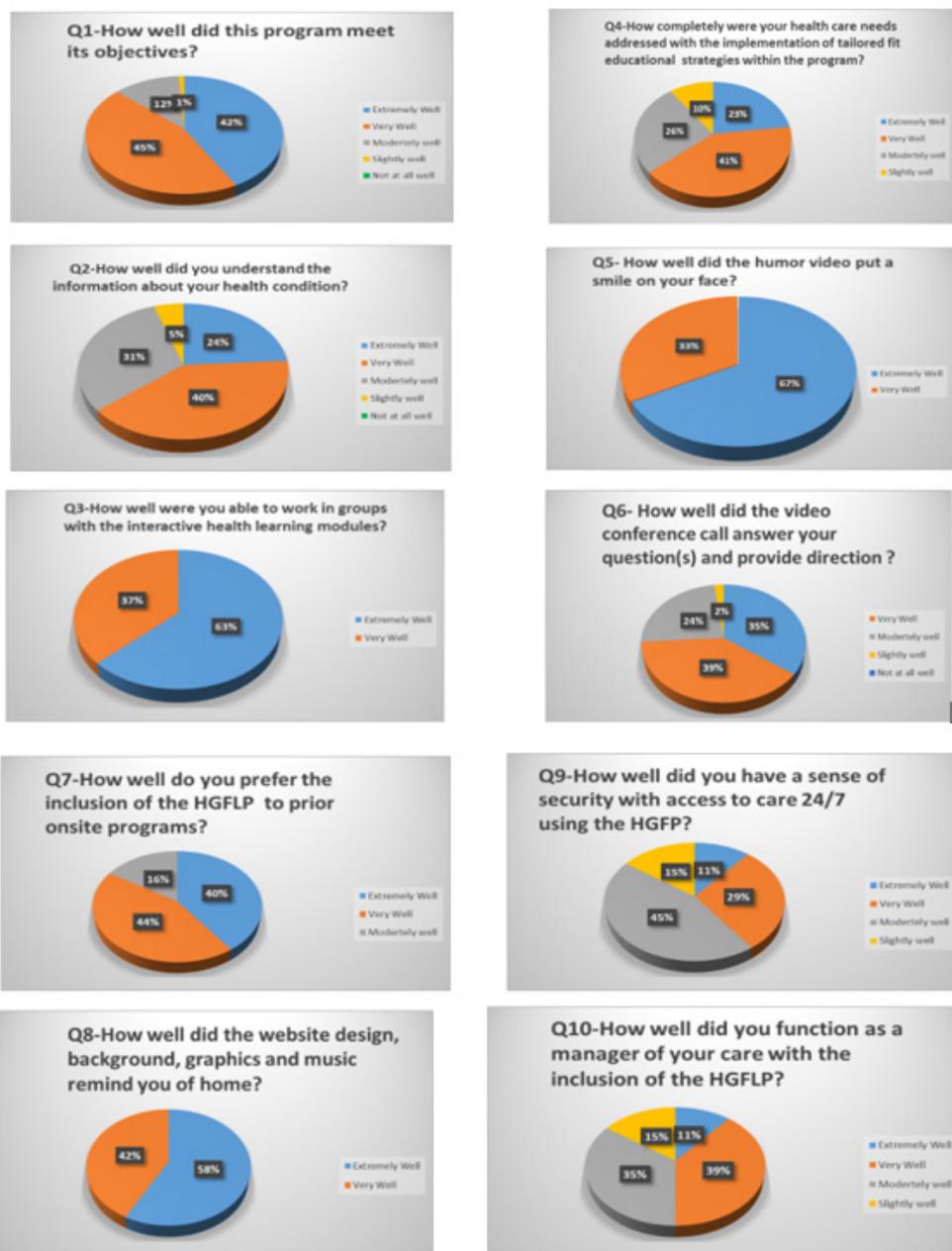


Figure 4

Result and Conclusion

The questions with a combined total rating of less than 80% for extremely well and very well will be studied after further modifications are made to the program. The results of the study revealed effective outcomes for 7 out of 10 items. In response to three items, it was identified that modifications were needed:

- a. Provide more intensive training for team leaders,
- b. Narratives must be written in the language of the villagers, and
- c. Health partners need to learn the native language.

Strategies for sustainability of quality healthcare using telehealth practice, virtual, and mobile devices were supported. The follow-up visit scheduled 2020 to continue the quantitative component of the intended mixed study was interrupted as a result of the pandemic. The researcher recommends the continuation for future studies to examine whether a correlation exist between the HGFLP and the clinical assessed data captured over time once the pandemic is resolved.

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