A Midterm Evaluation of Ghana Medical Help

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Contents

Executive Summary

- Ghana Medical Help (GMH) is a charitable organization that aims to improve healthcare in Northern Ghana by improving the quality of healthcare available in disadvantaged hospitals through donations of front-line medical diagnostic equipment.

- A midterm partnership evaluation following a retrospective historical design was conducted of GMH in June, 2014, to assess program rationale, effectiveness, efficiency, and sustainability. Evaluation methodology included secondary document review, volunteer and beneficiary questionnaires and interviews, and field visits to 9 of the 10 partner hospitals.

- An environmental scan outlines the unique environmental, demographic, economic, political, and regulatory environments in the Upper East and Upper West Regions of Ghana that pose an interesting mix of challenges and opportunities GMH;
    - The main strength of the program is its focused goals and research-oriented approach, while the stability of the political and economic environments in which it operates and from which its funding comes allow for opportunities for long-term partnerships.
    - The major weaknesses of the program include its reliance on North American equipment and donations, while lack of infrastructure and ethnic tensions in the North of Ghana threaten the program's effectiveness and efficiency. Competition with other similar organizations for the same fundraising pool may also pose a threat to the organization, however if managed appropriately this could be a source of mutually beneficial partnerships which could also strengthen the operations of GMH.

Results

- Published Ghana Medical Help impact reports show decreased mortality rates, more effective diagnoses, increased job and patient satisfaction, and decreased waiting times. However, there is little quantitative evidence presented to back up these claims, and there is little consideration given to confounding variables.

- Surveys of hospital staff members and patients show an overall positive trend in healthcare service quality since partnership with GMH, especially in the areas of diagnosis efficiency, accuracy, and treatment quality, followed by job satisfaction. There was no conclusive evidence

to show a reduction in waiting times.

- Most hospital staff members report that a wider range of medical equipment types would allow them to improve their ability to provide adequate care to patients.

- Interviews conducted with hospital administrators and medical superintendents demonstrated an overwhelmingly positive experience with Ghana Medical Help. All individuals interviewed reported being very pleased with the operations and results of the program, especially in the area of diagnosis efficiency and resulting improvements in patient outcomes, although most have only a basic awareness of what GMH does.

- Administrators and medical superintendents did however have criticisms regarding the needs assessment component of program operations, reporting that the lists of priority equipment submitted to GMH were not met in full and were therefore disappointed with the types of equipment delivered.

- Ghana Medical Help Coordinators report overall positive experiences with GMH and with the Equipment Education Programs (EEPs) and all enjoy their volunteer positions, specifically the new skills that they learn through the EEPs and the ability to help their colleagues. However, difficulties with increased work load, responsibility, and communication were also reported.

- Since the inception of the Ghana Medical Help program 4 years ago, strengthened partnerships and increased fundraising efforts have tripled the available budget, leading to the development of more beneficiary hospitals and improved quality and quantity of medical equipment donations. However, this rate of growth may not be sustainable from fundraising efforts and donation partnerships alone.

- A medical student placement pilot project was launched in July, 2014, as a possible solution to the issue of GMH's long-term sustainability. This was not evaluated in detail, however it is noted that there could be some improvements made to project operations in order to increase the feasibility of using this project to generate long-term program sustainability.

- All volunteers surveyed reported finding their time working with GMH as a positive, rewarding experience and most plan to stay with the program well into the future. However, many of them reported receiving little or no training in the tasks assigned to them, and prefer more guidance and structure in the work that they are given, as well as more frequent updates on GMH progress and volunteer opportunities.

Recommendations

- Increasing awareness of what Ghana Medical Help is and what it aims to achieve and how would be a beneficial step for the program, allowing for enhanced hospital staff communication, community awareness, and widening the fundraising pool.

- The methodology of annual needs assessments for each hospital should be reviewed and communications with hospital staff about what is realistic to expect should be a priority to maintain positive relations with all levels of hospital staff.

- Annual training programs are a great success and should be continued, however there may need to be a stronger focus on how to distribute equipment throughout the hospital, and GMH should investigate the possibility of teaching GMH Coordinators basic equipment maintenance.

- A wider range of equipment types, including larger, more expensive pieces of equipment, such as exam screens and ultrasounds, may be more effective at meeting GMH's goals of providing higher quality healthcare to the Upper East and Upper West Regions. GMH should look into increasing its scope in light of its raised budget to include these pieces of equipment; however this should be discussed with hospital administrators and medical superintendents, as it would likely mean a decrease in quantity of basic diagnostic equipment as well.

- GMH should investigate the possibility of expanding their operations to include within-Ghana sources for medical equipment purchasing as well as fundraising in an effort to cut costs and increase revenue.

- All future impact reports should be available without delay on the public website, and should include some quantitative data from each hospital to support the claims made.

- The Ghana Medical Help medical student placement program has the potential to be a sound model for sustainability of operations, however it needs to be operated on a much larger scale to earn the revenue necessary to maintain GMH operations, and requires the development of a sound business plan.

Program Introduction

Ghana Medical Help (GMH) is a young, charitable organization that provides medical equipment for disadvantaged district hospitals in rural Northern Ghana. The organization aims to enhance delivery of basic healthcare, and thus decrease morbidity and mortality, in the regions in which it operates. The long-term goal of GMH is to develop a sustainable model for healthcare delivery in developing nations through the use of education programs and revenue-generating healthcare support plans.

Background Information & Rationale

Ghana Medical Help (GMH) is a charitable organization that aims to improve healthcare in Northern Ghana by improving the quality of patient care available and access to health services in disadvantaged hospitals through donations of front-line medical diagnostic equipment. It began as an acute solution to alleviate the basic medical equipment needs of the Builsa District Hospital in Sandema in July 2010. The enormous impact that having reliable, accurate medical equipment produced led to an increase in scope of the project, and an ever-increasing number of hospitals now partnering with GMH ("Who We Are: Our Roots," 2013).

Executive Director Kelly Hadfield runs the program with the assistance of 22 volunteers throughout Canada, the United States, and Ghana. The core values of the project include sustainability, community involvement, and integrity. The project strategy is to work at the community level to discover and focus on the most essential, highest priority medical equipment needs at each individual hospital, and to deliver equipment accordingly to maximize impact. First, research is conducted in each individual community to discover which equipment is in most immediate need. Next, targets are developed and lists of the top ten priority pieces of equipment for each hospital are created.

Fundraising initiatives in both North America and Ghana are carried out by volunteers, via equipment drives, auctions, events, and markets, among other routes. The equipment that has been donated or bought with fundraised money is then distributed to the hospitals in Ghana each June or July. The executive director and volunteers spend time at each hospital reviewing the lists and educating staff on proper equipment use. GMH coordinators are appointed at each hospital to ensure the other staff members are properly trained in equipment use and management and are responsible for the documentation of any equipment damage or loss, as well as acting as liaison between hospitals and GMH. Lastly, impact reports are written at one, three, six, and twelve months post-distribution of the equipment to monitor the impacts ("What We Do," 2013). To view these reports, please visit the GMH website ("Your Impact: Impact Report," 2013), the link to which can be found in Appendix 1. A narrative summary logic model of the program as a whole can be found in Appendix 2.

The ultimate goal of this project is to establish a sustainable model to enhance the delivery of basic healthcare in developing countries throughout the world ("Your Impact: Future Goals," 2013). The idea is to develop a medical student practicum placement program to host both national and international medical students at various different partner hospitals in the Upper East and Upper West Regions of Ghana. The revenue generated from the program would cover the costs of each student's stay, and any remaining surplus would be used to purchase or maintain modern equipment for the hospitals and thus improve healthcare quality by providing both equipment and human resources. GMH has already completed a pilot medical student practicum project, and is in the process of evaluating its success.

Key Stakeholders

Not surprisingly, the key beneficiaries of GMH include the populations of the regions which the district hospitals serve, the physicians, nurses, and other hospital staff that use the equipment. Ghana Health Services, the public health department of the national government, are also beneficiaries as well as partners of GMH ("Who We Are: Partners," 2013). In return for assisting the charity with operations and mobilization of equipment, they are able to help to provide their district hospitals with necessary equipment and improve patient health outcomes, which they do not have sufficient funds for on their own.

Other partners of GMH include medical equipment partners, corporate product donors, and service/volunteering partners. These partners have no role in designing the project, however are reliable donors (both monetary and equipment donations) and as such are very valuable in its implementation.

Risk Mitigation Strategies

There are a number of assumptions made regarding the project as a whole, which can be found in Table 1. If any of these assumptions are found to be untrue, then they pose a risk to the project, and mitigation strategies are necessary for project persistence. If support and donations from the government (Ghana Health Services) or any of the affiliated partners of GMH are lost, then new volunteers, both local and international, must be recruited and trained, and fundraising efforts must increase. Similarly, if volunteer numbers decline, then recruitment efforts need to intensify. If shipping taxes are increased substantially, a case must be made to affiliated partners to increase funding, or to the government to waive or lower these taxes specifically for equipment transportation. If support of local beneficiaries is lost in the way of updated, accurate records, then these beneficiaries will be trained in the importance of up-to-date information and strategies to make record keeping easier. Lastly, if peace and stability in the region deteriorate, then fundraising and equipment drives will continue, but will be stored until re-entry into the area is safe.

Table 3. Ghana Medical Help – ***Assumptions and Risks***

Inputs	**Activities**	**Outputs**	**Outcomes**		
			Short-Term (1-2 yrs)	Medium-Term (2-5 yrs)	Long-Term (5 or more years)
- Ghanaian national government policy towards GMH will remain supportive and funding will remain constant: low risk - Local peace and stability situation in Ghana does not decline: low risk - Local shipping and product entry taxes in Ghana do not increase: high risk - Local hospitals and other beneficiaries continue to cooperate in providing accurate, updated information and records: low risk - Volunteers continue to provide support and commitment to the project: medium risk					

Evaluation Framework

Purpose of the Evaluation

Since its inception in July 2010, there has never been a mid-term evaluation of the program as a whole. An independent evaluation of the project is needed to aid in decision-making and to promote accountability and transparency. As such, the purpose of the evaluation is to examine the effectiveness and efficiency of the design and the implementation of the project at each hospital, as well as short- and medium-term results and overall sustainability.

Objectives of the Evaluation

The objective of the evaluation is to assess the effectiveness, efficiency, sustainability, and rationale of the GMH project, as well as to provide valuable feedback and recommendations. Specifically, the independent consultant will determine if the project contributes to the overall goal of increased quality of and access to basic medical equipment and care throughout Northern Ghana, as well as, secondarily, the feasibility of the self-sustaining model introduced into the pilot project hospitals in July 2014.

This evaluation will be available to GMH, all associated partners and stakeholders, and the public. This evaluation serves as a source of information and an indication of transparency to both present and future donors and partners. It also serves to inform future decisions regarding fundraising, use of funds, distribution of equipment, and design of the self-sustainability model.

Evaluation Scope

This evaluation was conducted at the program level and took approximately eleven months to complete, due to a five month hiatus between January and June 2014 and part-time availability of the evaluator from July to September 2014. The main emphasis was on measuring outcomes and efficiency, but the evaluation should also cover the feasibility and design of a sustainable medical student placement program and overall program rationale, implementation, and results. It looks specifically at fundraising in both Ghana and North America to date, use of funds, and impacts in nine hospitals in Northern Ghana to date. There are a number of impact reports published to date, the link to which can be found in the Appendix 1. This evaluation builds upon and complements these reports.

Key Evaluation Questions

This evaluation is examining the following specific questions;

- Is Ghana Medical Help effectively meetings its goals of enhanced healthcare quality in Northern Ghana?
- Are Ghana Medical Help funds being used efficiently to meet these goals?
- Are Ghana Medical Help outcomes sustainable?

Evaluation Model and Design

The evaluation of Ghana Medical Help is a partnership evaluation. In this model, the evaluation is based upon collaboration between the independent evaluator and local evaluation partners, in this case the Executive Director, partner representatives, and Ghana Health Services, a government partner. These partners have been consulted in the design and conduction of the evaluation, as well as providing regular feedback on the results.

The evaluation of GMH follows a retrospective, or historical, design. In this design, the effect of the program is described from the perspective of program managers, participants, beneficiaries, and others. It requires a significant amount of qualitative analysis, as people are asked to reflect on the effects of the program, and life before and after its implementation. In effect, this design attempts to determine the social return on investment from the perspective of the intended beneficiaries since the implementation of the project four years ago. This is an appropriate design as much of the intended benefit of the program involves beneficiary perception of quality of healthcare. Moreover, choosing a comparison group is difficult, as all other district hospitals are located in very different demographic, environmental, and economic environments.

Evaluation Methods

This evaluation employs a mixed methods approach. First, an environmental scan was conducted to assess the demographic, economic, political, regulatory, and philanthropic environments that the charity operates in, as well as similar, competing programs across similar regions in order to determine what threats or potential partnership opportunities they may pose to GMH, allowing insight into potential recommendations for GMH's future. Following this was a field visit to each district hospital to conduct key informant interviews and questionnaires, as well as secondary document gathering. Please refer to Appendix 3 for a timeline of these events.

The key informant interviews were conducted with the medical superintendents, administrators, and GMH Coordinators at each hospital, as well as the Executive Director of GMH, Kelly Hadfield, and the Program Leader for the medical student placement pilot project, Hazel Vint. These interviews varied in length from approximately twenty minutes to one hour in length, depending on the time that each informant had available. They involved questions about the interviewees' perspectives on hospital efficiency, diagnosis effectiveness, treatment effectiveness, inventory quality, population health, quality of life, morbidity and mortality rates, community patronage, and, in the cases of hospital staff, job satisfaction before program implementation, in the beginning stages of implementation, and now, three years later, where applicable, along with general comments about program operations and outcomes.

The next method employed was the distribution of questionnaires. These were administered after the interviews to ensure that ideas presented in the former were original and not suggested or skewed by questionnaire questions. The questionnaires were administered to a sample of nurses from various wards within each hospital, as it was unrealistic to survey all hospital staff members in facilities where human resources are lacking. The nurses were given up to one hour to complete the fifteen minute questionnaire to ensure that the answers given were not rushed. Questionnaires were also distributed to the board of directors and a representative, random sample of patients using cross-sectional random sampling techniques. All past and present GMH volunteers were sent an online questionnaire to complete. Questionnaires administered to individuals in North America were administered online to save cost.

The questions involved in these surveys were similar to those asked in interviews, but included likert scales, categorical questions, and other methodologies to ensure simple data analysis. The questions for volunteers and the board of directors were centered around respondents' perspectives on program efficiency, sustainability, and overall program success, in the beginning stages of GMH's implementation and now, four years later. The questions targeted to patients and hospital staff were similar, but also included questions on their perspectives on diagnosis effectiveness, treatment effectiveness, inventory quality, population health, and, in the cases of hospital staff, job satisfaction before program implementation and now, where applicable. Questionnaires for patients originally included questions regarding their trust of the healthcare system, but these were removed based on the assumption that patients visiting the hospitals already have some level of trust in the modern healthcare system, and the results would be influenced by strong response bias.

Finally, a comprehensive review of secondary data available hospital records and GMH impact reports and other internal records was conducted. These documents were reviewed to establish baseline and recent data on morbidity and mortality, as well as to indicate efficiency of GMH activities and how closely program activities actually reflect the plans.

All data collected during interviews, questionnaires, and documents was statistically analyzed using the Statistix® program and Microsoft Excel.

Evaluation Team

The evaluation team was small to keep the budget at a minimum, as Ghana Medical Help is still a young and modest program without much dispensable capital. The team consisted of a cultural interpreter and an independent evaluator who worked with the stakeholders, including the board of directors, in evaluation planning and implementation. This evaluator has the following credentials:

- A Master of Public Health
- Completed training in program evaluation
- Previous international travel experience

The international travel experience is important to minimize the barriers associated with working with the counter-culture; an evaluator who has experience communicating with other cultures is most likely more adept at overcoming these barriers and obtaining more accurate, valuable data. A cultural interpreter was also beneficial in this regard.

Limitations

The evaluation of GMH, although designed to be as robust as possible, has some limitations. There is an inherent bias throughout, as the evaluator is not completely objective. The evaluator herself has been a colleague of the Executive Director, Kelly Hadfield, since before the inception of GMH. Although she has not been involved with GMH until the planning stages of the evaluation, where she took an interest in the program and took on temporary responsibilities as an events coordinator for a large fundraising event, she has been aware of its existence since its inception. Although as a public health professional and a non-volunteer she can observe operations objectively and receive less biased responses from volunteers and beneficiaries, it is impossible to avoid the bias that comes with a previous basic knowledge of the program.

The primary limitation of the methodology of the evaluation stems from the unavailability of human resources at partner hospitals, leading to limited sample sizes of survey respondents and interviewees. Appropriate hospital staff and patient sample sizes were calculated for each district hospital assuming a descriptive study and a 95% confidence interval; however this number was not met in any case. Due to the limited human resources available at each hospital, field visits were scheduled to fall on weekends and quiet afternoons on days where hospital attendance was particularly low, such as days where public markets were out of town. This manner of scheduling allowed for more time to interview medical superintendents and administrators and allowed the hospital staff more time to respond to questionnaires without feeling rushed, which enhances the quality of responses. However, this also meant that there was a shortage of outpatient department patients to survey, as well as a shortage of hospital staff scheduled to work, and the actual sample sizes were smaller than those that would be a statistically representative sample. The evaluation plan also included focus groups with head nurses of each ward in each hospital, however this was impossible given the limited hospital resources as none of the nurses were able to spare more than 10 minutes at a time, and never at the same time. Finally, not all intended interview respondents were available. Dr. Dominic Akaateba, the GMH director of operations, and the medical superintendent of and the administrator of Jirapa District Hospital, the administrator of Lawra District Hospital, and the medical superintendent of Builsa District Hospital in Sandema were unable to take the time to be interviewed.

Another limitation to this evaluation is the lack of available secondary hospital documents, such as health status measures and patient satisfaction surveys. Most hospital administrators indicated that these documents exist, but would not release them for review. Additionally, surveys of patients are subject to response bias, as the surveys are in English and therefore require that respondents can speak and read English. Although English is the official language of Ghana, most Ghanaians speak first and foremost the traditional languages of their regions and tribes, and typically learn English in school. For this reason, the surveys exclude the small proportion of patients that do not speak English as a result of their very low socioeconomic position and inability to attend school.

These limitations do not mean, however, that responses are not valid, and the questionnaire and interview results still represent a large portion of the beneficiary population and bring to light very valuable insight into GMH operations and its effects on the hospitals and surrounding communities.

Environmental Scan

Ghana is a fascinating developing country with unique economic, political, and cultural norms. Situated on the west coast of Africa and bordered by Côte D'Ivoire to the west, Togo to the east, Burkina Faso to the north, and the Gulf of Guinea to the south, its development has been influenced by a wealth of gold, a succession of colonizers, and a long history of slave trading, which brought economic opportunity as well as oppression and suffering to the country. The country in which Ghana Medical Help (GMH) operates therefore poses a unique set of both opportunities and challenges to the program, which will be explored in this chapter.

An environmental scan is an objective review of the current, as well as the anticipated, environmental factors that impact any organization. For the purposes of this evaluation, these factors will include the economic, political, regulatory, demographic, and philanthropic trends of both Ghana and, where applicable, Canada, the country in which GMH is founded and the majority of fundraising activities occur. Other competing organizations, as well the necessity of a medical equipment donation program, will also be reviewed. A SWOT analysis illustration summarizes the strengths, weaknesses, opportunities, and threats to GMH discovered in this environmental scan, and can be found in Appendix 4.

Demographic Environment

Ghana

Ghana has a population of approximately 25.8 million, and is growing at a rate of 2.19% per annum. The median age of the population is 20.7 years, meaning that a large proportion of the population is able to work and contribute to the economy. However, the unemployment rate for youth is 16.6%. According to a 2000 census, the national literacy rate is approximately 58%, with the majority of literate persons in the south (the majority of the population lives in southern urban areas), and much lower literacy rate levels in the northern regions. Nationally, there are 0.9 doctors per 1,000 patients, and the average life expectancy is 65.75 years (CIA, 2014).

Ghana Medical Help operates in district hospitals in the Upper East and Upper West Regions, where the vast majority of patients are from rural areas. In these rural areas, 3 out of every 10 houses have no toilet facility, and of those 3 that do, only 11% of them have an "improved" facility, meaning a flushing toilet and running water. Only 38% of rural households have electricity. Under-five mortality rates are also higher in rural areas, being 90 per 1,000 live births, as opposed to only 75 in urban centres (CIA, 2014).

Health and welfare status indicators are also significantly lower in both the Upper East Region (UER) and the Upper West Region (UWR) as compared to the national averages for urban areas. The percentage of births that are assisted by either a skilled provider or a healthcare facility is almost twice as high in urban areas as in either the UER or the UWR, and the proportion of children under 5 who are underweight and who suffer from anemia is 20% higher in the UER and UWR as compared to urban areas across the rest of the country. The proportion of women with anemia, infant mortality, and under 5 mortality are higher across the board in the UER than the national urban averages, however these rates are even higher in the UWR, being 20-40% higher in the UWR than in the UER (Ghana Statistical Services and Ghana Health Service, 2014).

Upper East Region

The Upper East Region covers slightly more than 3% of the total land area of Ghana, and lies in the Sudan savanna belt. As a result, the environment is dominated by short grasses and shrubs, with a few scattered trees (Ghana High Commission, 2014). Soil and vegetation quality are best along water courses, where the otherwise dry earth has access to water year-round.

By far the main occupation in the UER is agriculture and agriculture-related labour (65.9% of the population), followed by production and transport equipment work (14.5%), sales work (9.5%), and service work (3.9%), with professional and technical-related occupations, which require further education, being the least common (3.8%) (Government of Ghana, 2014).

Upper West Region

The Upper West Region of Ghana is slightly friendlier to vegetation than its neighbour to the east. It is a grassland region with two main drainage systems offering more luxurious soils. As a result, agriculture is slightly more successful in this part of the country (Ghana High Commission, 2014).

Not surprising, then, is the fact that the vast majority, 72%, of the population, is engaged in agriculture and agriculture-related work as an occupation. Similarly to the UER, this is followed by production and transport equipment work (12.1%), sales work (5.2%), service work (4%), and finally professional and technical work (4%).

Canada

The population of Canada is approximately 34.8 million, with a growth rate of 0.76%, significantly lower than that of Ghana. The median age is 41.7 years, but youth unemployment is only 14.3%, and this is expected to decrease as the middle-aged majority of the population moves into retirement, leaving

positions open for the younger generations. 80.7% of Canada's population lives in urban areas, compared to Ghana's 51.9%, and the literacy rate is 99%. There are 2.07 physicians per 1,000 patients, and the average life expectancy is 81.67 years, both significantly higher than Ghana's averages (CIA, 2014).

The majority of financial and medical equipment donors to GMH are middle-aged private individuals, rotary clubs, and medical equipment donation agencies, whereas the majority of GMH volunteers are students in their late twenties. This is good news for GMH, as the majority of Canada's population meets the demographic of their most common monetary and equipment donation supporters, which means that there is still a wide fundraising pool to explore. Moreover, as the organization ages, its current volunteers will age as well and enter into the middle-aged demographic which is most likely to support charitable organizations given their higher income bracket, and they will have the opportunity to potentially support the organization while maintaining their volunteer status.

Economic Environment

Ghana

Ghana enjoys one of the most successful economies in all of Africa, growing steadily over the last 25 years as globalization and trade liberalization expose it to promising international export opportunities (Ackah and Aryeetey, 2012). According to Ghana Statistical Services (2013), the revised Gross Domestic Product (GDP) for 2013 showed a growth of 7.1% since 2012. The largest contributor to this growth was the services sector, followed by industry, with agriculture recording the lowest growth rate. In fact, the contribution of the agricultural sector to the economy declines annually (Ghana Statistical Services, 2013).

This economic structure plays an important role in explaining the extreme dichotomy between the North and the South in terms of economic conditions. The majority of service enterprises, as well as industry, are situated in the southern regions of Ghana, where larger populations and access to major global trade routes facilitate successful enterprise in these sectors. In the more rural northern regions of Ghana, which include the Northern Region, the Upper East Region (UER), and the Upper West Region (UWR), agriculture is the primary economic activity, despite the dry savannah climate and unreliable rainfall (Ackah and Aryeetey, 2012).

At the country's present rate of growth, experts believe that the country can halve its poverty rate, currently 28.5% (World Bank, 2014), by 2015. However, regional inequality will be worsened. In fact, in one study (2007) Al-Hassan and Diao projected that by 2015, 70% of the population of the UER and 67% of the population in the UWR will remain poor, which is far above the national poverty rate of 28.5% (World Bank, 2014). Between 1991 and 2006, the percentage of the national population living in poverty was reduced by nearly 30%, however the same trend was not observed in either the Upper East or the Upper West Regions, resulting in an even wider economic dichotomy between the North and the South (Ackah and Aryeetey, 2012).

Ghana's economic growth can be largely attributed to trade liberalization and a flourishing integration into the global economy (Ackah and Aryeetey, 2012). However, with an increased dependence on the global market comes increased vulnerability to fluctuating food prices, which have been seen to have a net negative effect on those living in poverty (Ackah and Aryeetey, 2012). Food crop farmers in Ghana, who make up the largest portion of the northern savannah economy, not only experience endemic poverty, but are excluded from minimum wage policies, leaving them unprotected and highly susceptible to global market competition and food price shocks (Ackah and Aryeetey, 2012). The result is a predominantly rural, agricultural subpopulation living and working in unstable economic and environmental conditions.

The result of this lowered welfare in the northern regions is the migration of many working-age youth to the southern regions, predominantly the crop producing middle belt, the cocoa producing southwest, and the cities of Kumasi and Accra. The majority of migrants originate from regions with the highest poverty rates (Van der Geest, 2011), quoting fertile land scarcity, food security problems, and financial problems as the chief reasons for migration (Van der Geest, 2011).

Funding sources for hospitals in the Upper West and Upper East Regions are, not surprisingly, few and far between. As most of the economic wealth is situated in the southern regions, so is the money available for healthcare support. Ghana Health Services, a division of the government, provides funding for regional and district healthcare, however their budgets are small, and the primary funding source is the National Health Insurance Scheme (NHIS) (Ghana Health Service, 2014).

Canada

Canada, as a developed North American country, has a far stronger economy than Ghana. The economic system is market-driven, meaning that consumers make up the largest share of the economy (Al-Hassan

and Diao, 2007). This system allows competitive market prices and private investment to help to drive the economy forwards. Next to consumers, manufacturing and oil share the next largest share of the national economy, with the United States of America as the number one trade partner. Despite an economic recession beginning in 2008, Canada experienced a GDP growth rate of 1.8% between 2011 and 2012, and only 9.4% of the population lives below the low-income cut-off point, Canada's version of a poverty line. This is a much smaller proportion of the population than that in Ghana. Canada's strong, market-driven economy provides Ghana Medical Help with a relatively large pool of potential funding sources.

Political Environment

Both Canada and Ghana are regulated by democratic governments, with citizens of 18 years of age or older eligible to vote for the party of their choice, with an executive president who is able to maintain the position for a maximum of two four-year terms (Friedrich et al., 2006). In Ghana, the national council delegates regional responsibilities to the Regional Coordinating Council (RCC), who passes district responsibilities on to the district assemblies. These assemblies are then followed by urban councils, who are the planning authorities for urban areas with fewer than 15,000 people. Finally, small, rural areas are presided over by zonal and town councils, with the Chiefs of villages playing an important local decision-making role (Friedrich et al., 2006). RCCs and district assemblies have the closest administrative relationships with the district hospitals with which GMH operates, however they are unable to provide substantial funding for the institutions.

Local chiefs also play an important role in the functions of the hospitals, as in most small rural communities (which make up most of the UER and UWR) they are the final decision-makers for everyday life, including, among other things, whether or not hospitals are safe to visit, and whether a charity organization has permission to operate in the area. This has an impact on GMH as it creates a somewhat complex network of stakeholders and beneficiaries to deal with.

Political Stability in Ghana

Over the last two decades, Ghana has become the 'poster child' for stability and good governance among the African nations. It is democratic, the economy is relatively well managed, and crime rates are low. In comparison to other countries in the region and across Africa, Ghana is relatively unlikely to relapse into civil war or extensive ethnic strife (Throup, 2011). That being said, these prospects for peace and stability are undermined by structural weaknesses in the country, particularly the highly centralized

political system and the excessively powerful executive which together create a recipe for potential corruption (Throup, 2011). Social pressures are also building slowly, especially in the northern regions, due to the decline of the agricultural sector of the economy, and the inability of the government to provide employment for its growing workforce.

Additionally, religious and ethnic tensions do exist, particularly in rural areas of the north, where GMH operates, which have been experiencing episodes of unrest for the past 30 years (Throup, 2011). Bawku, a district in the UER, in particular has been experiencing tribal unrest for years and there is still a very strong military presence in the area. There is a military camp stationed on the Bawku district hospital grounds, which may influence GMH operations at that hospital.

Although these relatively small-scale ethnic conflicts do impact the stability of small regions of the north, they do not have a significant effect on the stability of the country at the national level. Countering these negative influences on stability are mitigating features of the country. First, Ghana has a very proud civil society, with educated and well-respected elite who value democracy (Throup, 2011). A 2008 study found that approximately 80% of Ghanaians expressed confidence in their political system, with 55% of them claiming to live in a full democracy, which is the highest proportion in all of Africa to claim such a thing (Throup, 2011). Finally, the economic institutions in Ghana are internationally respected, putting them in a good position to continue to grow with the global market and strengthen their economy in the years to come. Overall, the future of Ghana looks peaceful and promising, with instability more likely to come in the form of economic strikes, rise in urban crime, and perhaps food riots if inflation and food prices continue to rise (Throup, 2011). This is good news for GMH operations as they rely on Ghana Health Services and an overall safe environment to facilitate the mobilization of donations and of volunteers.

Regulatory Environment

Ghana Health Service is the public service body established by the national government that is responsible for the implementation of national policies, and is under the control of the Minister for Health. In this, the public health system in Ghana is very similar to Canada's. Similarly, both countries' health service agencies are administered and function at the national, regional, and district levels (national, provincial, and municipal in the case of Canada). In Ghana, the service also functions at the sub-district and community level. In both countries, these service agencies receive public funds, however in Ghana the staff are not considered to be civil service staff (Ghana Health Service, 2014).

The mandate of the Ghana Health Service is to provide and manage comprehensive and accessible health service for the public with special emphasis on primary health care at regional, district, and sub-district levels in accordance with national policies (Ghana Health Service, 2014). To achieve this, they implement approved national health delivery policies and manage resources for the provision of health services (Ghana Health Service, 2014), and are only involved in the administration of public hospitals (excludes private, teaching, and mission hospitals).

Ghana Health Service created the National Health Insurance Authority, whose mandate it is to attain universal health care for Ghanaians. To do this, the National Health Insurance Act (Act 650, 2003) was created to provide financial access to basic health services for residents of the country. This gave rise to the National Health Insurance Scheme (NHIS) (NHIS, 2014). The scheme provides the funding for basic healthcare to all members by reimbursing accredited hospitals for the costs of care. It is currently operating in 155 district offices nation-wide, and has an active membership base of 35% of the population (NHIS, 2014).

The day to day activities that the NHIS is involved in primarily include the management of membership registration, accreditation, quality assurance, and claims management and provider payments. This is supplemented by research, monitoring, infrastructure and data management, communication, and of course financing. To date, 3,575 health care facilities across the country have been accredited to provide health care services to those who are insured under the NHIS.

Although this insurance scheme in theory seems an effective way to ensure access to quality health care for the population, in practice it is proving to be somewhat ineffective. As awareness of the scheme grows and an increasing proportion of the population becomes members, claims and other costs rise. According to interviews with hospital administrators in the UER and UWR, district hospitals have waited for more than 6 months to be reimbursed for claims made in January, 2014. As a result, resources in the hospitals are minimal, and some doctors have been treating patients out of their own pockets.

In January 2014, the Ministry of Health launched a medical equipment replacement program to retool all of the hospitals in the southern regions of the country. However, the Upper East and Upper West Regions have been excluded from this project. There are no other apparent national or regional programs that allocate equipment to hospitals in the northern regions, but rather national health governing bodies are focused on public health initiatives, such as infection control and universal access to health services. Although these are incredibly important initiatives, the day-to-day operations of the

hospitals fall between the cracks. There is a fundamental deficiency in the health care infrastructure available to the northern regions of Ghana, in particular the UER and the UWR. As there is no governmental support for this infrastructure, support must be found elsewhere. Ghana Medical Help fills this niche and meets some of these needs by attempting to strengthen the quality of basic front-line diagnostic equipment in UER and UWR district hospitals, upgrading equipment quality and quantity, and reducing the burden on existing equipment.

Competing Organizations

There are a number of organizations involved in similar operations to Ghana Medical Help around the world. These are known as competing organizations, as they are working towards similar goals and therefore competing for the same support and funding sources. This does not, however, have to be negative competition. Competing organizations provide valuable insight into what may work and what does not, and their experiences can help to inform GMH decisions. They can also be potential partners in operations. This environmental scan will focus on those based in North America, as they are more likely to compete for funding with the same audience as GMH.

MedWish International is one such competing organization that doubles as a partner. MedWish International is a not-for-profit organization that repurposes discarded medical supplies and equipment to provide humanitarian aid in developing countries. Otherwise discarded, usable medical surplus is separated into different donations based on the beneficiaries' needs, as reported in their online applications. This organization competes for funding and support from the same pool as Ghana Medical Help, however they have entered into a partnership where GMH is the beneficiary, and receives equipment donations that it forwards to GMH-partnered hospitals.

Doc2Dock is another competing organization that delivers unused hospital supplies to South Sudan, Myanmar, Malawi, Kenya, and Sierra Leone. Although the nature of the equipment is similar to that delivered by GMH, this organization differs from GMH in that it does not purchase specific pieces of equipment for each beneficiary and does not focus on one aspect of healthcare, such as diagnosis, in the case of GMH, but rather it gathers any equipment that is discarded for regulatory reasons. It also does not deliver any equipment to Ghana.

Medisend International is another competing organization. The charity distributes medical supplies to in-need hospitals, however it also tests and repairs laboratories and provides certified training and education in biomedical equipment technology to the beneficiaries. This organization does not limit their

beneficiaries to as narrow a list as GMH, and focuses more on laboratory equipment and training than diagnosis, which is GMH's specialty. In this way, the organizations are very different. However, they do both deliver equipment and run equipment training programs, and the lessons learned from Medisend International could be invaluable in informing future GMH improvements (Charity Navigator, 2014).

SWOT Analysis

The SWOT analysis is useful in understanding the internal and external factors of the program and target beneficiaries. The SWOT analysis was helpful in determining that GMH should use the existing strengths of the target beneficiary and partner populations to mitigate the weaknesses by making use of local resources. This analysis also allows for an appreciation of the environmental context by evaluating the threats to the program as well as the opportunities. Accounting for both the threats and opportunities, GMH can ensure that opportunities are sought and that disadvantages do not hinder the overall effort.

Please refer to Appendix 4 to view a completed diagram of the SWOT Analysis.

Summary

To summarize, Ghana Medical Help is a unique charitable organization in that it operates in a very focused region of the world, and with a very focused set of goals in a very socioeconomically distinctive country. This focus allows it to maintain an organized structure and a streamlined set of goals, reducing the risk of spreading its resources too thin and of losing sight of its mandate, while standing out from the competition. The country in which it operates poses an interesting set of opportunities and threats for the organization. Financial support from Canada is relatively reliable; however ethnic and environmental uncertainty and underdeveloped infrastructure in northern Ghana pose potential problems for GMH even as political and regulatory stability and a strong economy to the south provide operational support and potential new fundraising opportunities.

Results

Impact Reports

Review of previously published impact reports by Ghana Medical Help show overwhelmingly positive results, both within partner hospitals and among the surrounding communities. Impact reports from the 2011-2012 operating year are qualitative, whereas 2012-2013 impact reports provide more quantitative material. Impact reports from 2014 are unavailable. All documents report decreased waiting times for

outpatients, increased patient satisfaction, increased job satisfaction among hospital staff, more effective diagnoses, and decreased mortality rates.

The reports indicate that the rise in patient satisfaction is evident in hospital-conducted patient satisfaction surveys; however these surveys are unavailable to the evaluator. The reason cited for enhanced effectivity of diagnoses is the higher accuracy of equipment donated. The reasons given for the rise in job satisfaction are enhanced equipment efficiency and a wider range of skills for staff to learn, both direct results of the equipment that GMH donates each year. According to the impact reports, mortality rates have decreased as a direct result of the improved equipment accuracy as it allows faster, more appropriate treatments to be conducted, which in turn improves patient outcomes and lowers mortality rates. However, it is unclear from the reports exactly where this decreased mortality rate is seen, and whether it is simply a decreased mortality rate among all hospital patients, or within the surrounding communities, or for the district as a whole. The 2012-2013 annual report states that community relations are improving, but does not detail how this is occurring or with which communities.

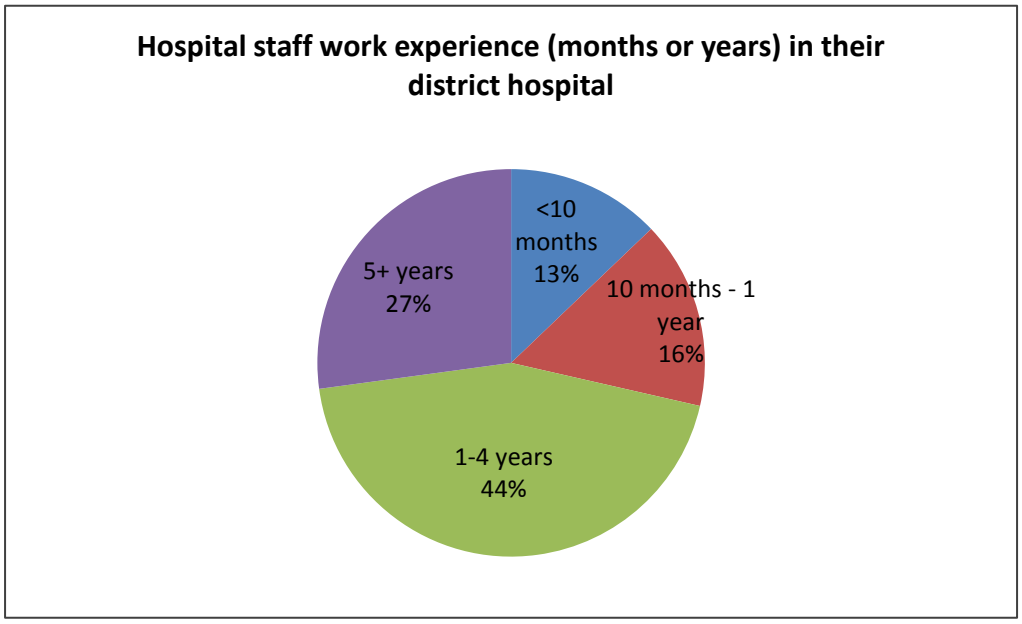
Although the impact reports attempt to balance the positive effects of the program with updates on the challenges, such as the break-down of certain pieces of equipment, there is far more emphasis on positive effects, without much quantitative evidence to support them. Additionally, the results of the impact report analysis are not completely aligned with evaluation survey and interview results. This is likely due to response bias during data gathering for the impact reports; program beneficiaries are less likely to report negative or neutral effects directly to program executives for fear of losing support for their hospitals. Additionally, certain reported effects, such as an increase in hospital attendance, may be influenced by confounding variables, such as the implementation of NHIS, which may skew the results and decrease certainty that certain positive effects are a direct result of GMH operations and activities.

Questionnaires Administered to Hospital Staff

The results from the surveys administered to staff members of the district hospitals that are partnered with Ghana Medical Help show some interesting trends. As mentioned in the limitations section of this report, the sample of staff members surveyed is not a completely representative sample of all hospital staff members partnered with Ghana Medical Help, as the sample size is too small. It is, however, a random, cross-sectional sample of staff members in all hospitals and wards, excluding Tumu District Hospital, which has not yet received any donations. The results of these questionnaires provide valuable

insight into the views of the majority of hospital staff members across the regions. Of those who responded to the survey, 50% were male and 50% were female, with most having worked as a nurse for approximately 1-4 years, although some (13%) were recent nursing school graduates on rotation through various hospitals and with less than 10 months of work experience (Fig. 1).

Fig. 1



Most survey respondents reported noticing improvements in hospital operations since their hospitals partnered with GMH (Fig. 2). As seen in Figure 3A, 78% of all respondents reported improved efficiency of diagnoses since their hospitals partnered with GMH (75% in the UER and 85% in the UWR), with 38% of those perceiving the level of this improvement to be a 3 on a scale of 1 to 5, with 5 being the highest level of improvement. 30% of those who reported improvements in diagnostic efficiency rated the improvement level as 5 out of 5 (Fig. 3B). 67% of all questionnaire respondents reported improved diagnosis accuracy (Fig. 4A) (71% in the UER and 62% in the UWR), with 48% of those rating the level of improvement as a 3 on the same scale, followed by 19% rating the improvement level as 5 out of 5 (Fig. 4B). The majority, 76%, of all respondents also reported improvements in treatment quality (Fig. 5A). 44% of those perceived the level of improvement in treatment quality to be a 3 out of 5, which was followed by 27% who perceived it to be a 5 out of 5 (Fig. 5B).

Fig. 2

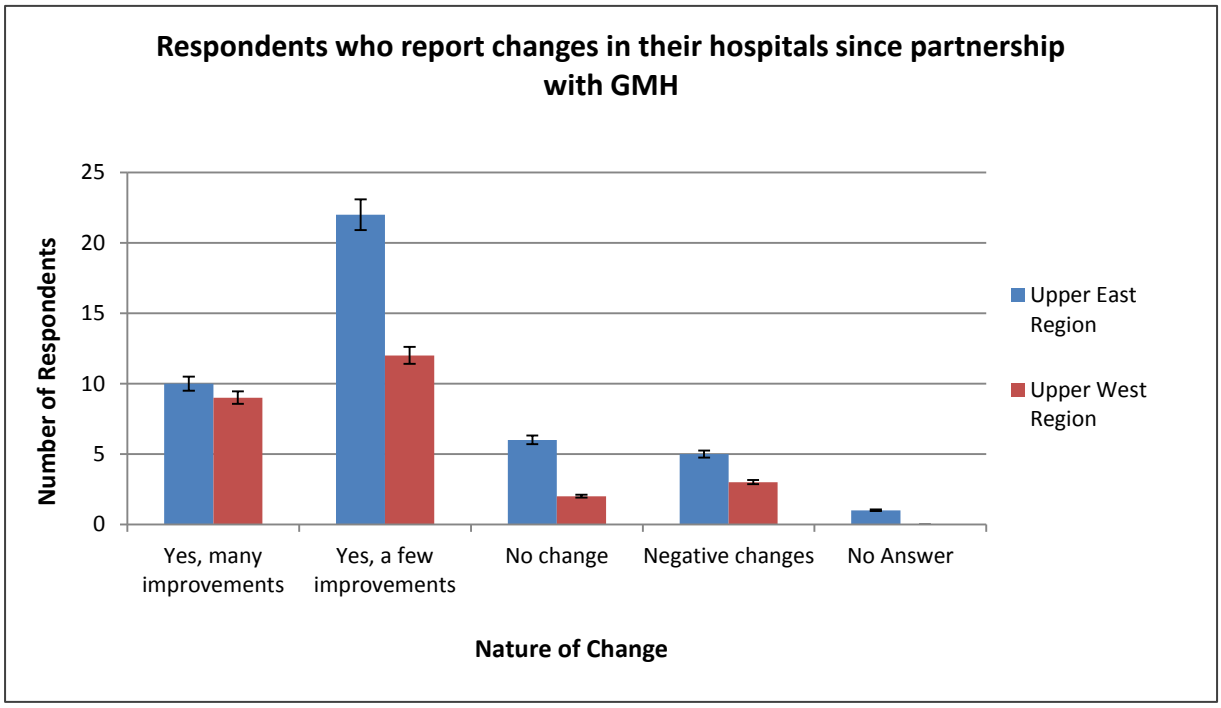

Respondents who report changes in their hospitals since partnership with GMH
Number of Respondents
25
20
15
10
5
0
Yes, many improvements
Yes, a few improvements
No change
Negative changes
No Answer
Nature of Change
Upper East Region
Upper West Region

Fig. 3A

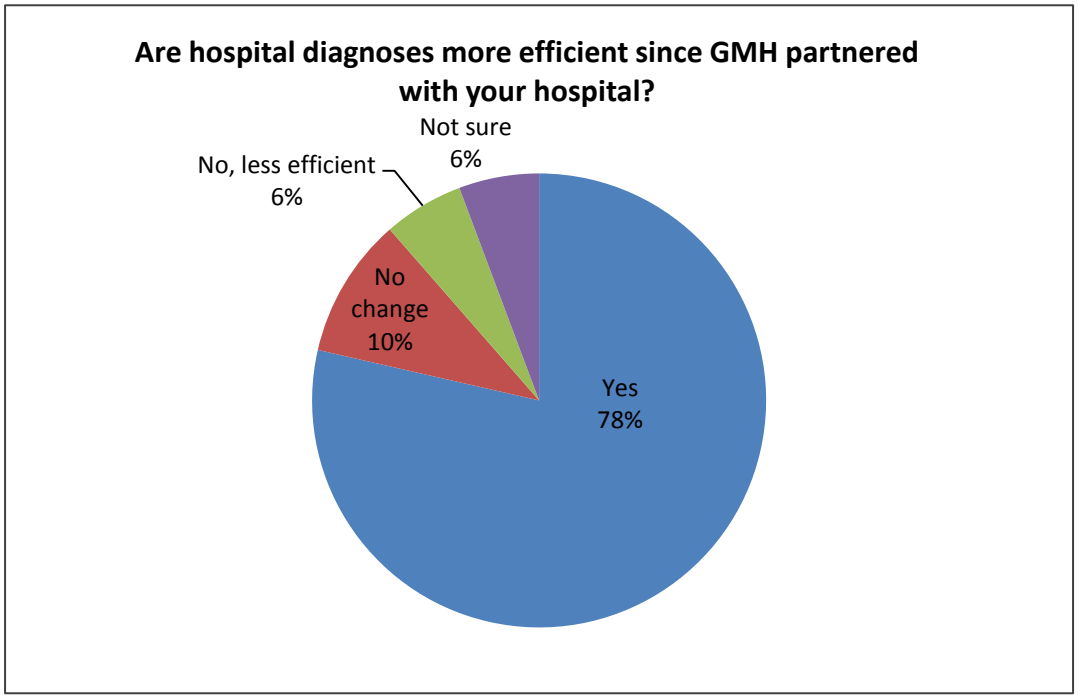

Are hospital diagnoses more efficient since GMH partnered with your hospital?
Not sure 6%
No, less efficient 6%
No change 10%
Yes 78%

Fig. 3B

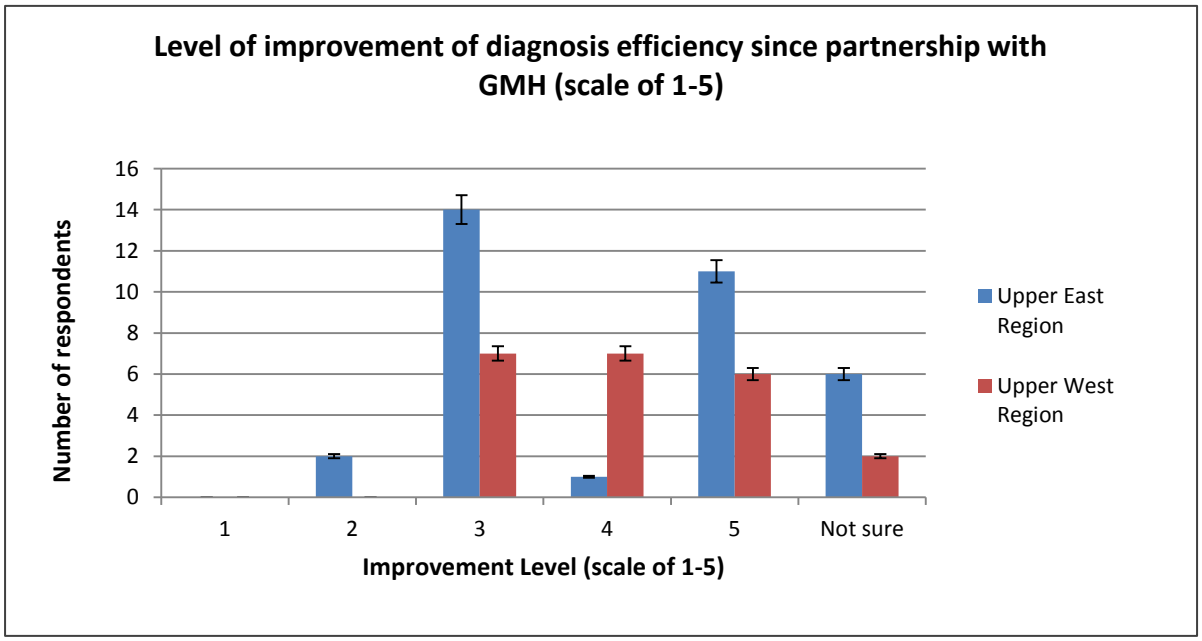

Level of improvement of diagnosis efficiency since partnership with GMH (scale of 1-5)
Number of respondents
16
14
12
10
8
6
4
2
0
1
2
3
4
5
Not sure
Improvement Level (scale of 1-5)
Upper East Region
Upper West Region

Fig. 4A

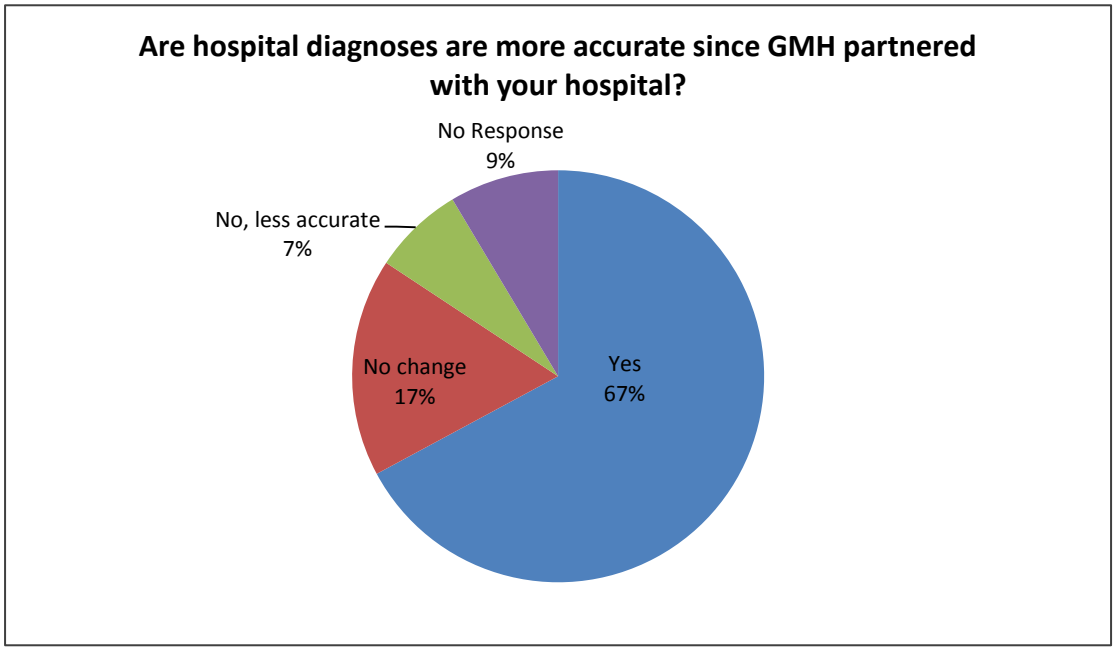

Are hospital diagnoses are more accurate since GMH partnered with your hospital?
No Response 9%
No, less accurate 7%
No change 17%
Yes 67%

Fig. 4B

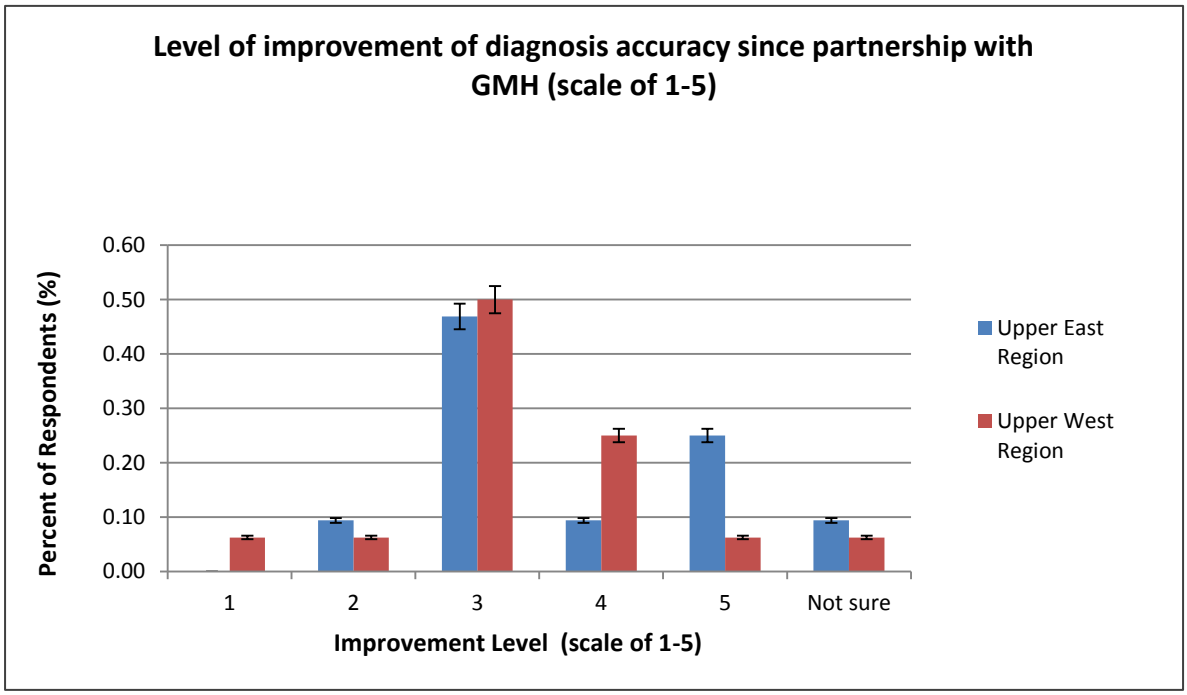

Level of improvement of diagnosis accuracy since partnership with GMH (scale of 1-5)
Percent of Respondents (%)
0.60
0.50
0.40
0.30
0.20
0.10
0.00
1
2
3
4
5
Not sure
Improvement Level (scale of 1-5)
Upper East Region
Upper West Region

Fig. 5A

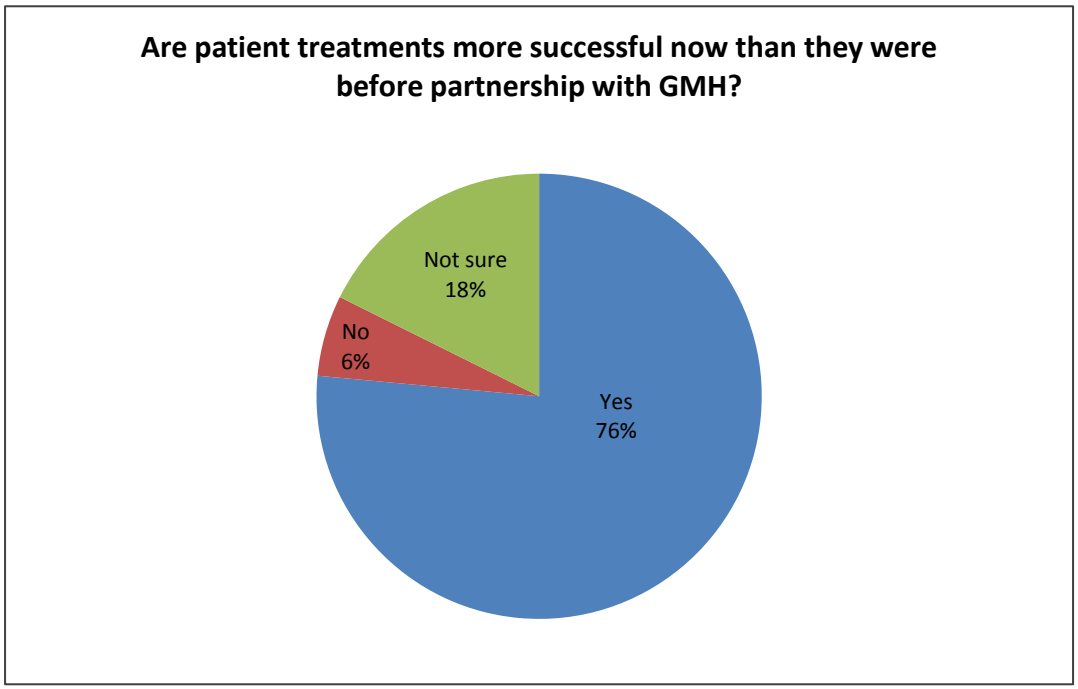
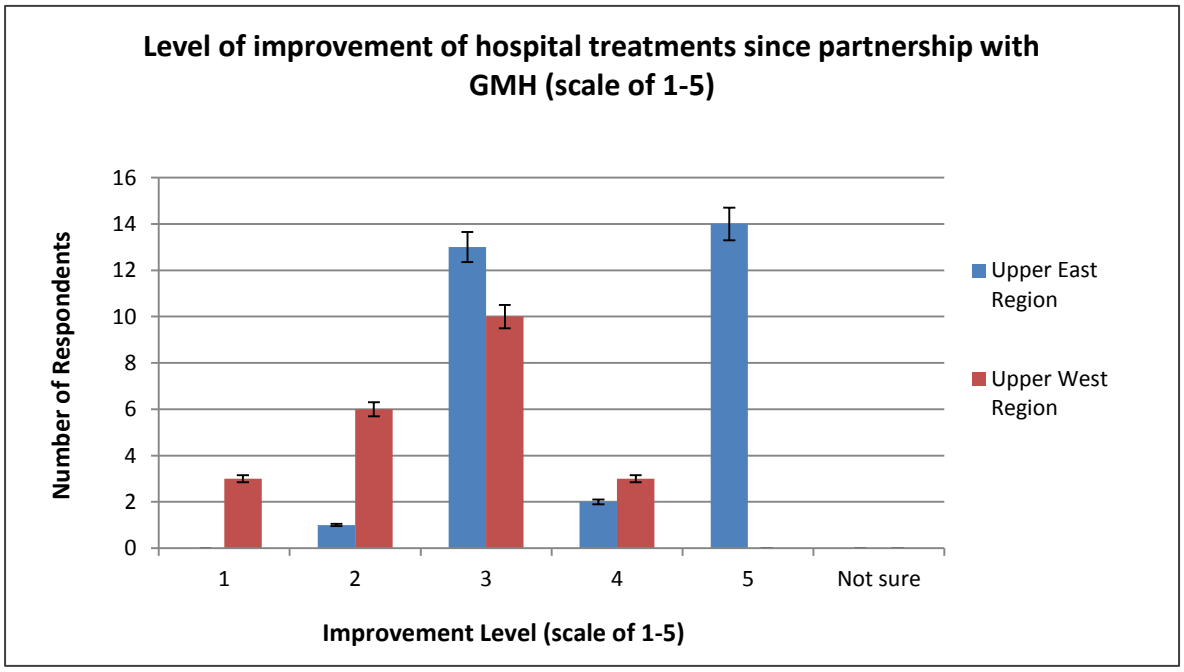

Are patient treatments more successful now than they were before partnership with GMH?
Not sure 18%
No 6%
Yes 76%

Fig. 5B



On average, the majority of survey respondents (50%) report a slight increase in job satisfaction (Fig. 6A), although this proportion differs slightly between the two regions, as can be seen in Figure 6B.

Fig. 6A

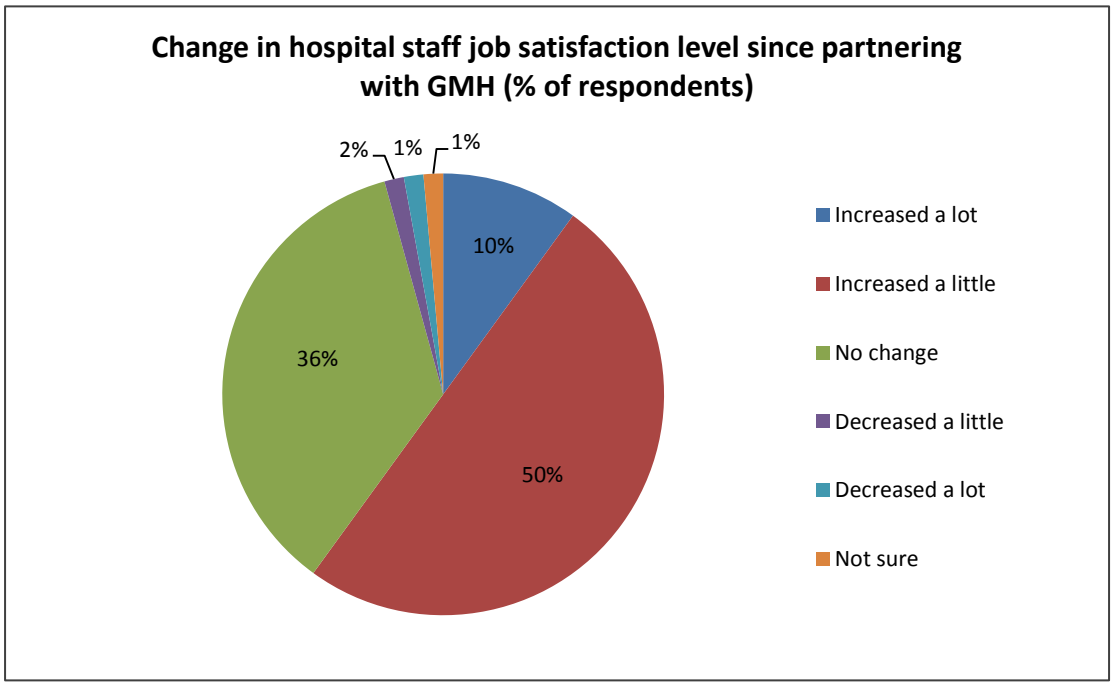
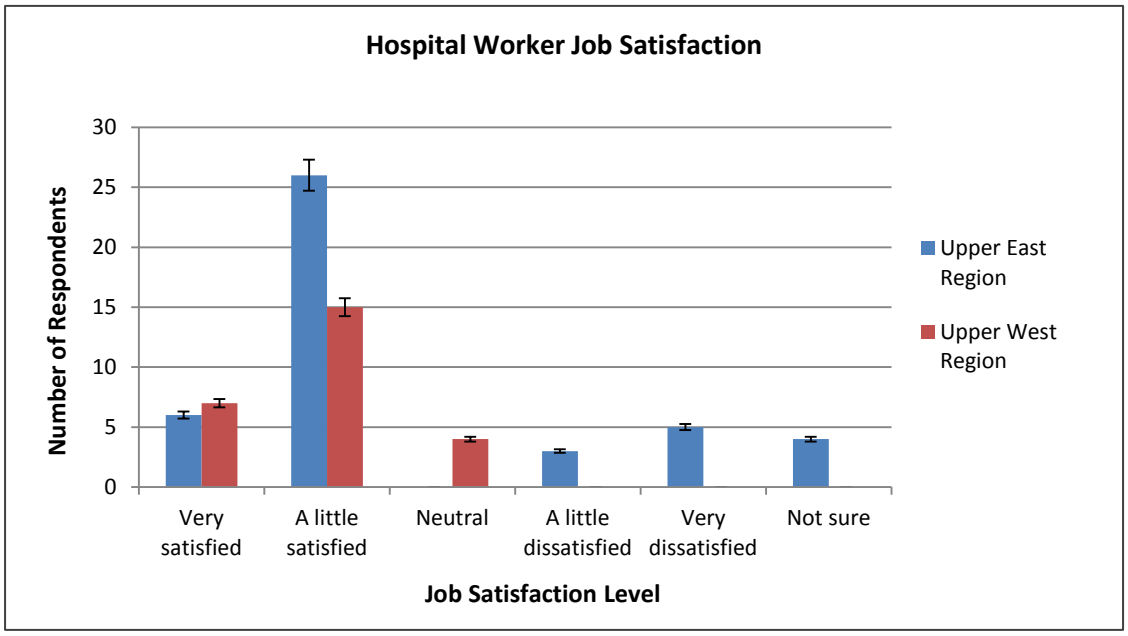


Fig. 6B



In the Upper East Region, many hospital staff reported an increase in their occupational skill set, with 50% of these believing this increase to be a direct result of GMH activities, as can be seen in figures 7A and 7B. However, this trend is less apparent in the Upper West Region, where GMH has not been operating for as long and has not delivered as much equipment, also apparent in the same figures.

Fig. 7A

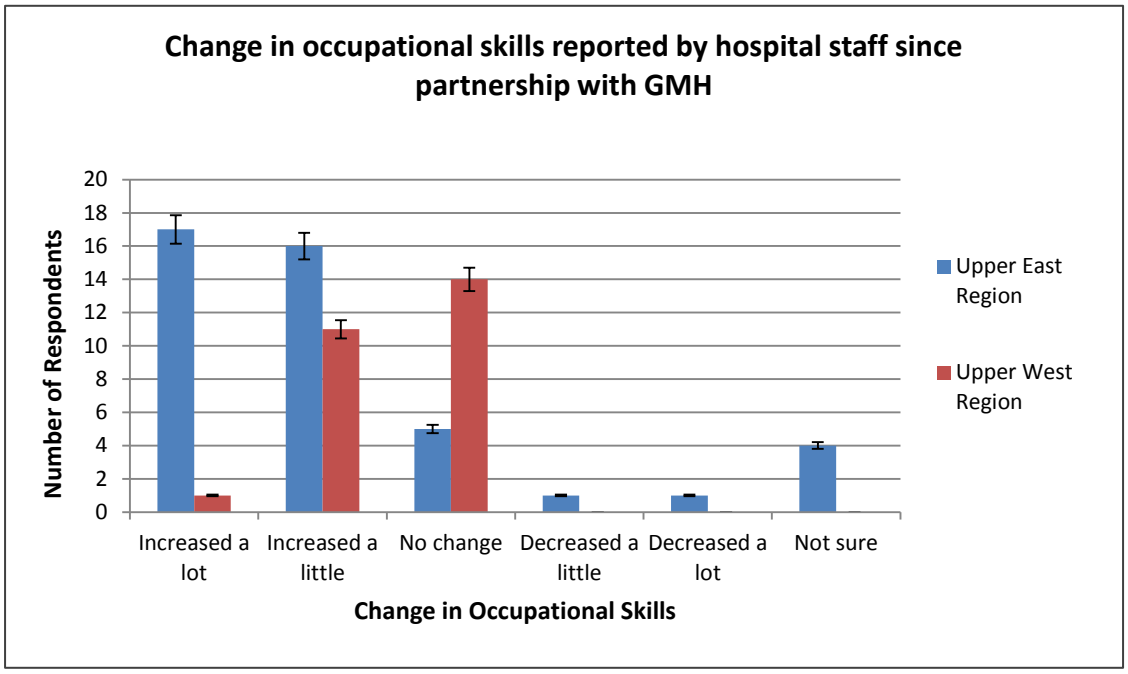
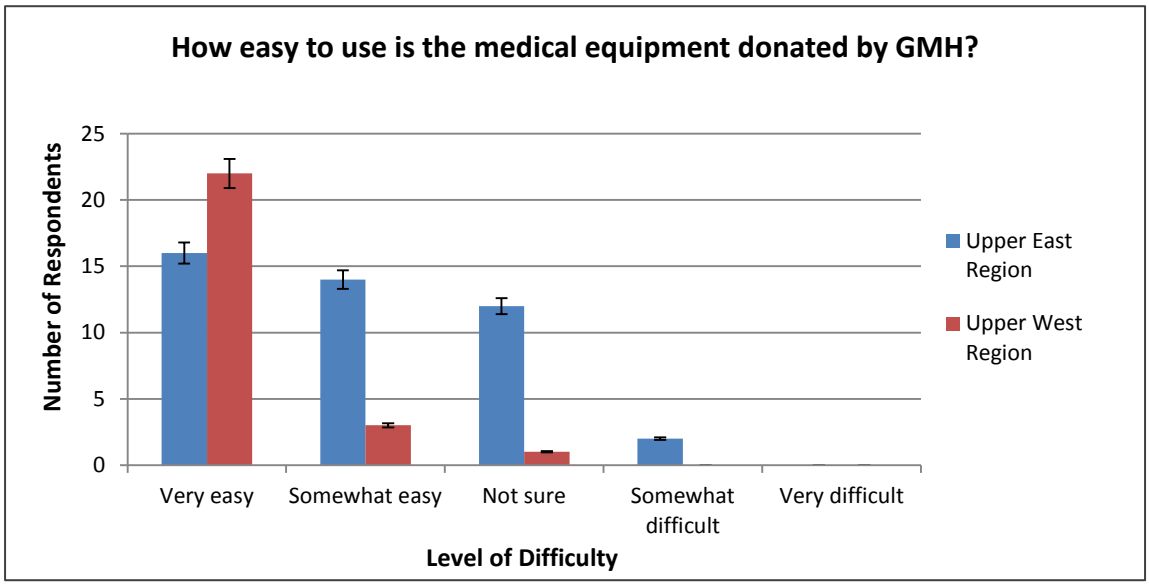


Fig. 7B

54% of hospital staff members say that the equipment donated by GMH is very easy to use, while 24% say that it is somewhat easy to use, and 19% were not sure (Fig. 8). Of those who responded that they were not sure, many explained that it was because they did not know which equipment had been donated by GMH. The majority of those who reported difficulty using the equipment were those respondents who have been working for 10 months or less and therefore may not have had the same training opportunities as staff that have been at the hospital longer.

Fig. 8



Of all donated equipment, blood pressure (BP) apparatuses, trolleys, and drop stands were used the most in an average day, in both regions (Fig. 9A and 9B). This is not surprising, as these pieces of equipment are used in the majority of wards, whereas some pieces of donated equipment are used only in specific wards, such as pediatric scales. On average, 50% of respondents believe that they rely more heavily on medical equipment to perform their jobs than they did before GMH partnered with their district hospitals (Fig. 10A). However, as illustrated in Figure 10B, the majority of respondents in the Upper East Region believe this, whereas the majority of respondents in the Upper West Region do not believe that they rely more heavily on medical equipment now.

Fig. 9A

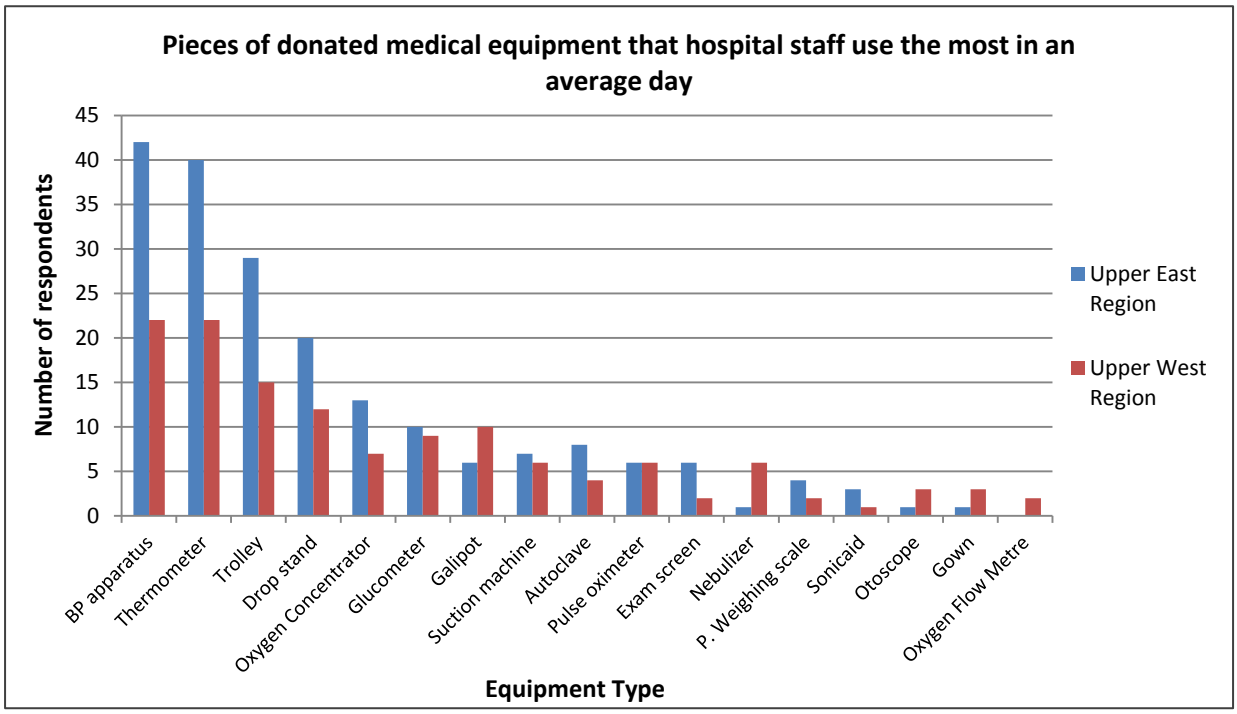


Fig. 9B

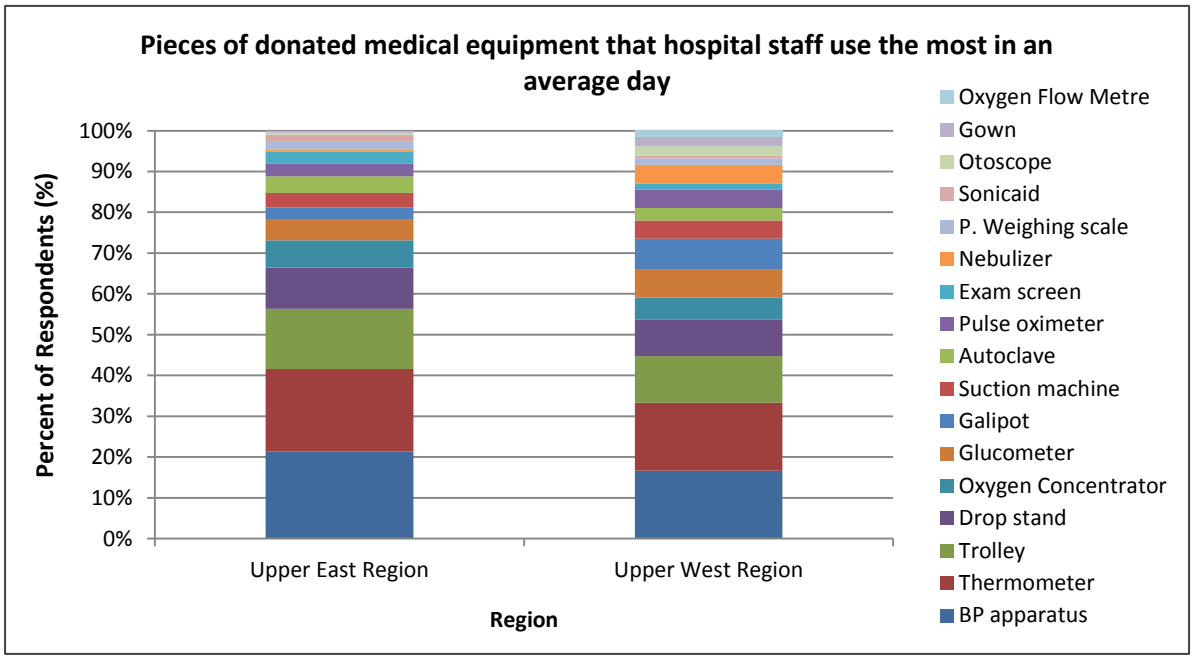


Fig. 10A

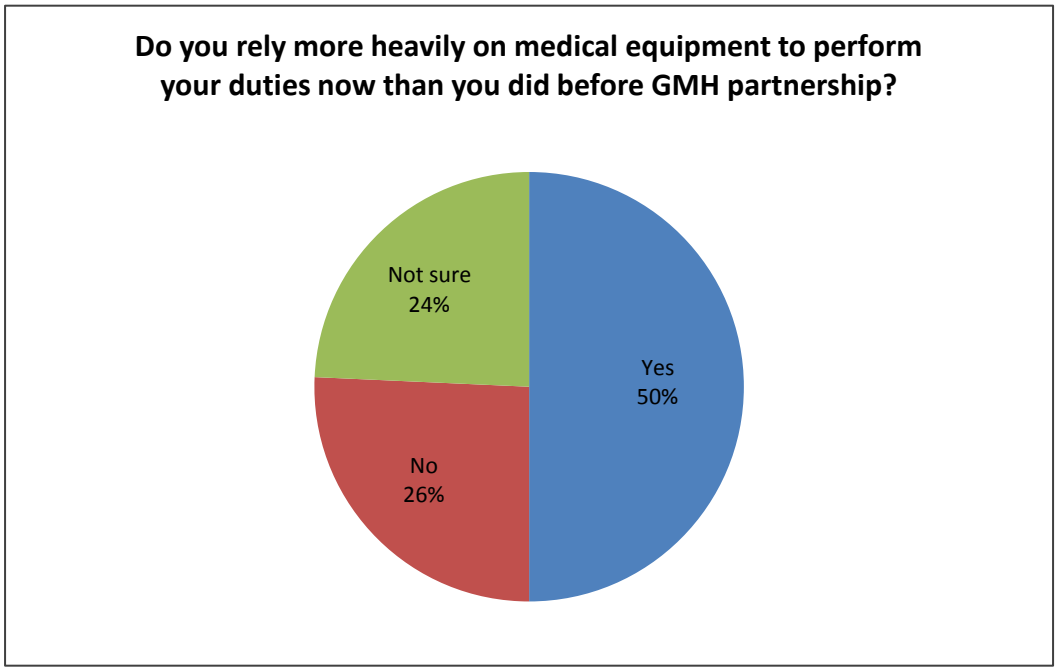
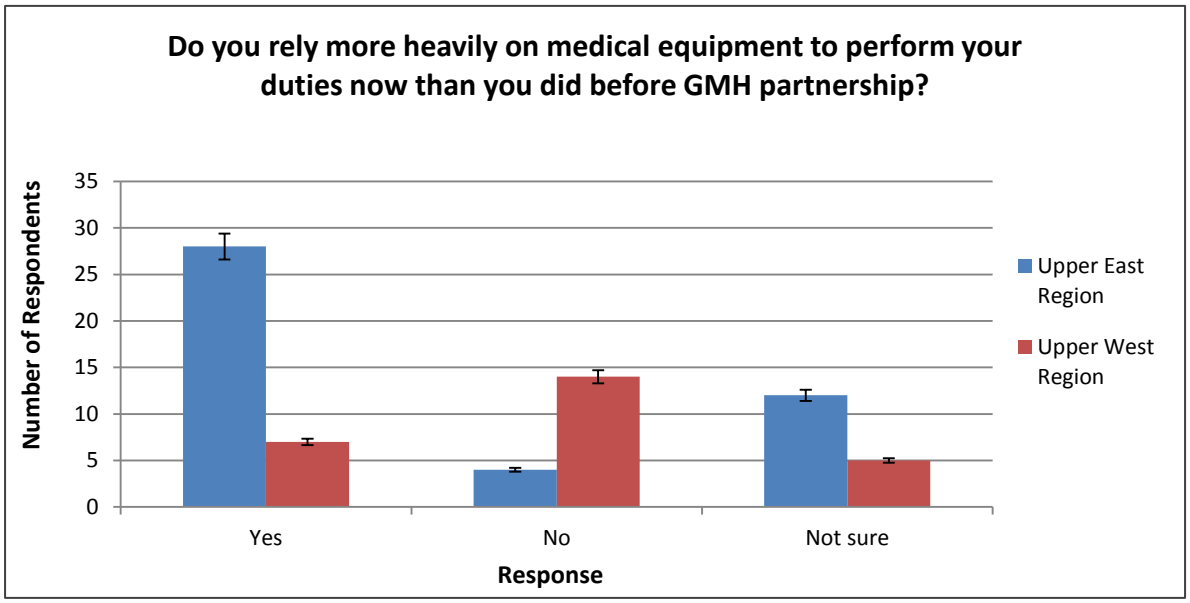


Fig. 10B



When asked how hospital waiting times have changed since GMH has partnered with their hospitals, 41% of staff members responded that waiting times have decreased, while 23% say there has been no change, and 20% say that waiting times have somewhat increased, with similar trends seen in both the UER and the UWR (Fig. 11A and 11B). There is no statistical evidence to suggest that there has been a decrease in outpatient waiting times (p=0.18).

Fig. 11A

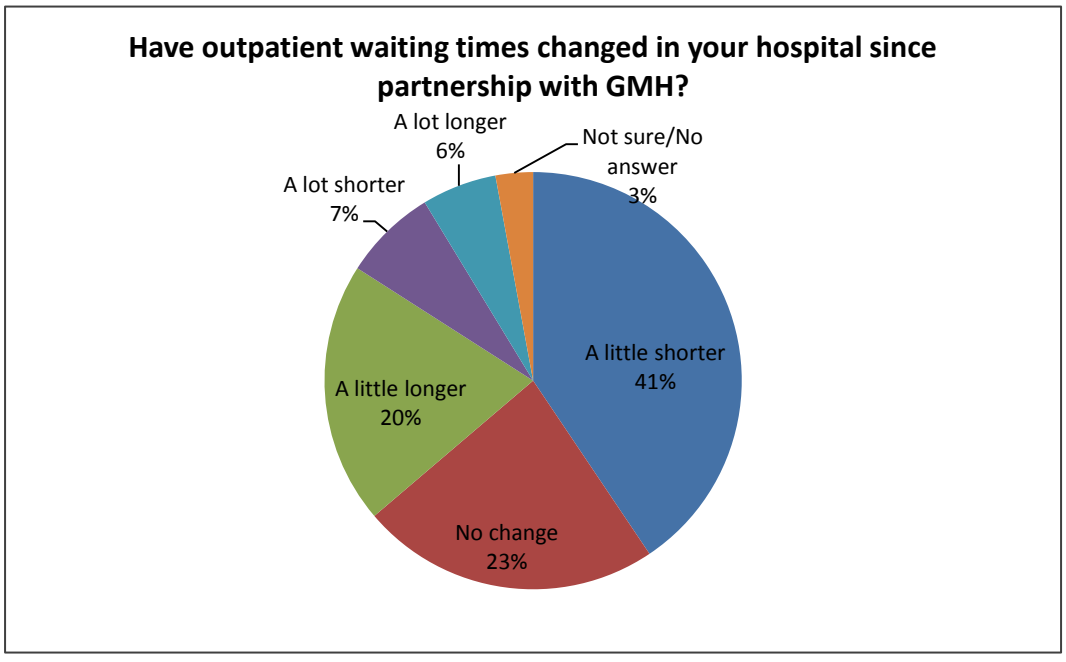
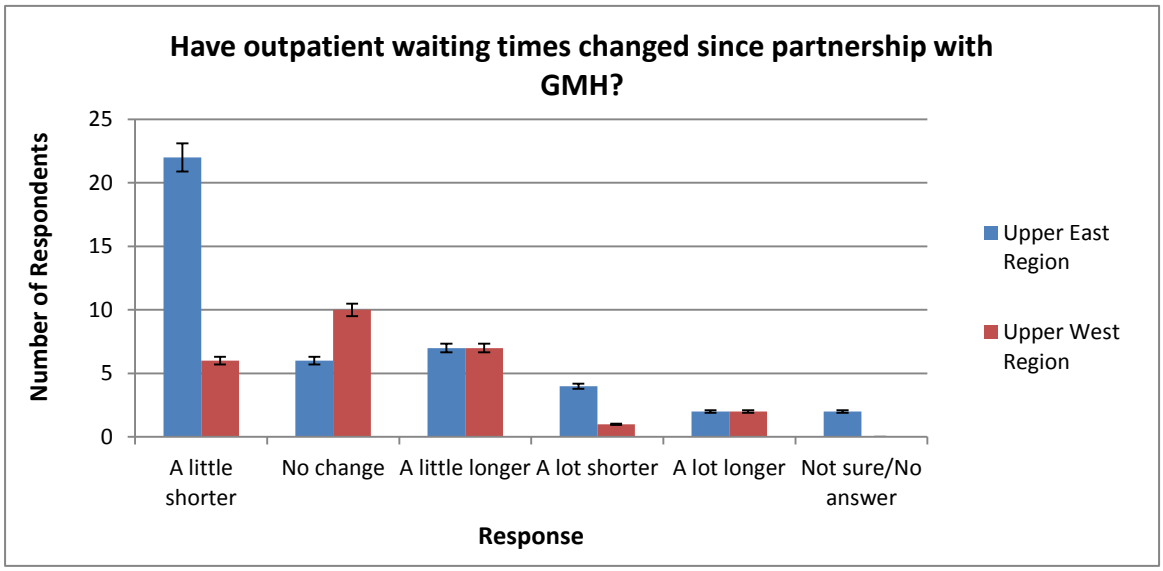


Fig. 11B



77% of hospital staff stated that more community members are visiting their hospitals than were before partnership with GMH, with this trend apparent in both regions (Fig. 12A and 12B). Of these, as can be seen in Figure 12C, 44% are not sure if this is a direct result of GMH activities or not, 33% believe that it is, and 22% believe that it is not a result of GMH. Statistically, there is no evidence to support a hypothesis that GMH has had any effect on the influx of patients visiting the hospital each day (p=0.06).

77% of staff members reported that since GMH partnered with their hospitals, they are able to see more patients per day (Fig. 13A). Of these, 54% said that it was a direct result of GMH activities (Fig. 13B).

Fig. 12A

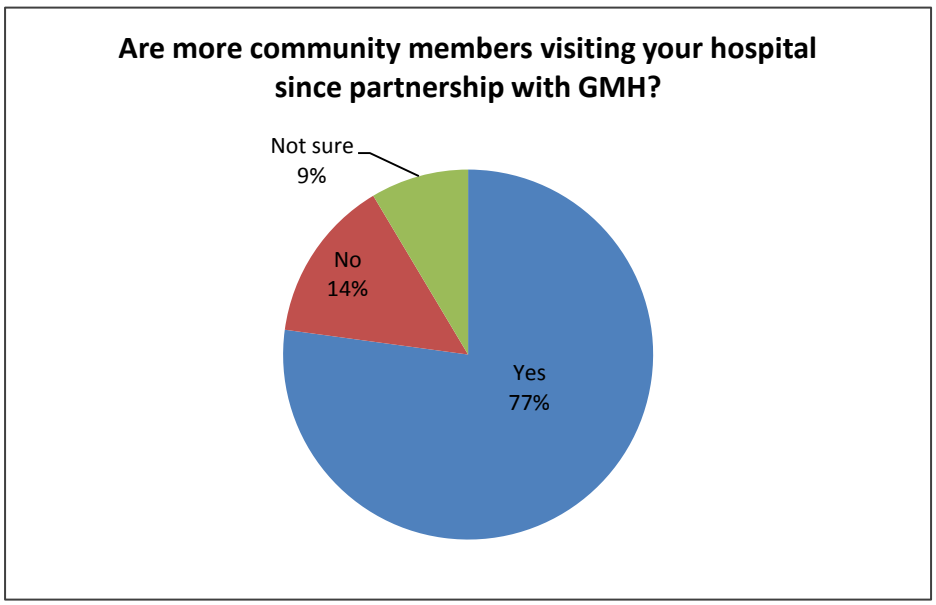


Fig. 12B

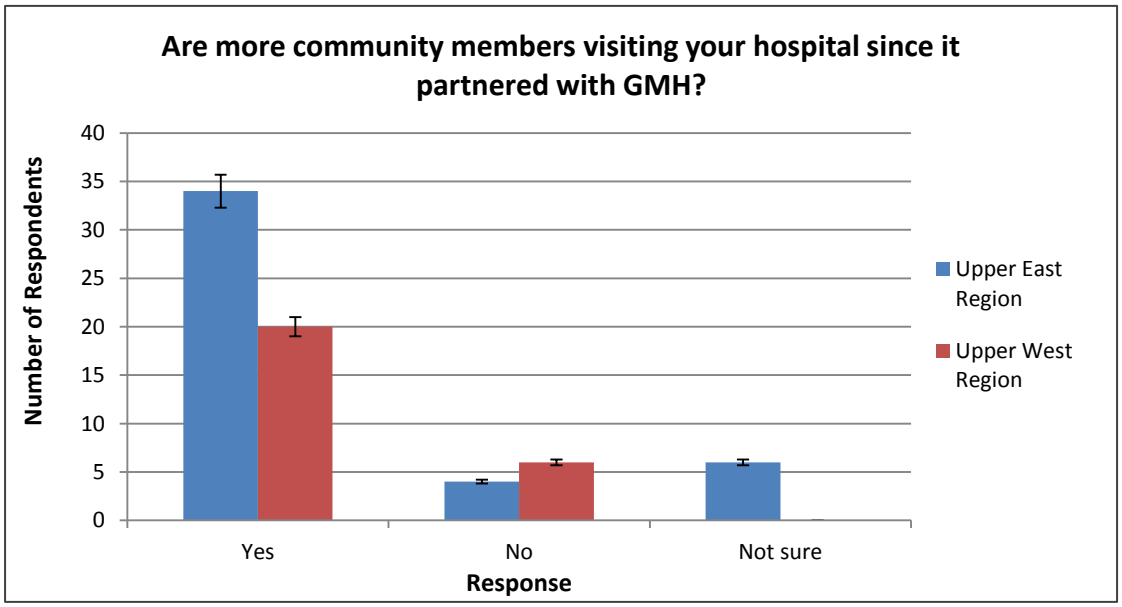


Fig. 12C

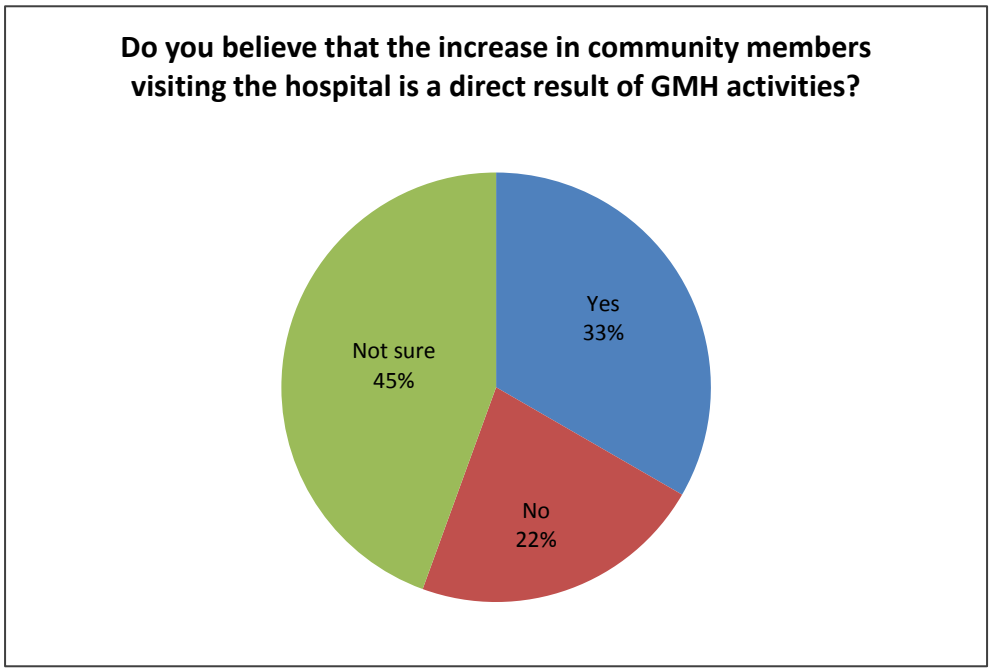


Fig. 13A

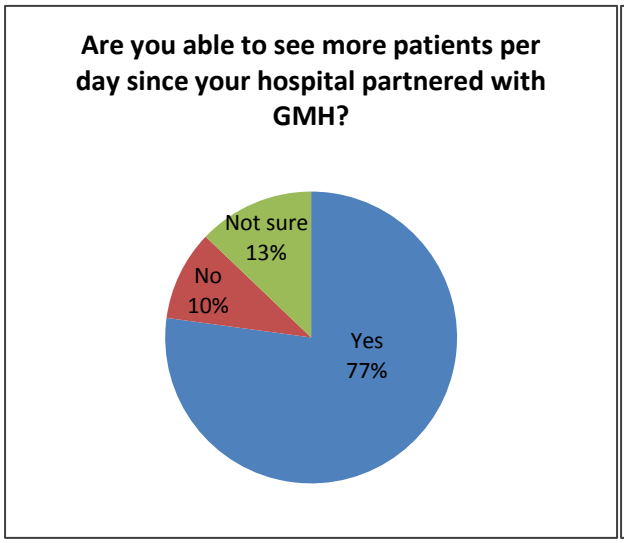
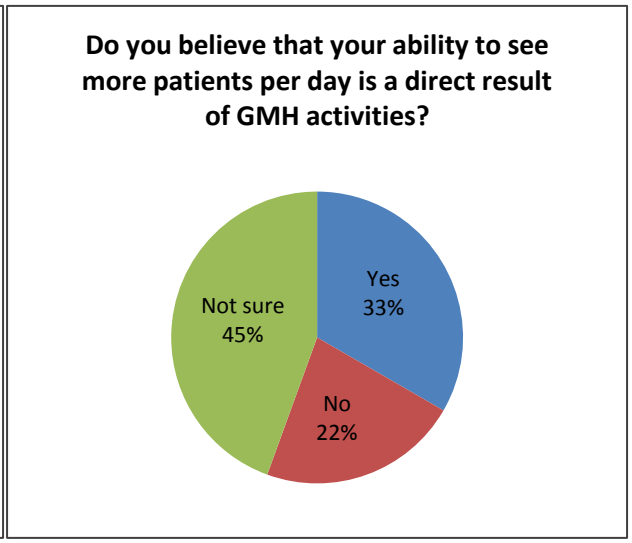
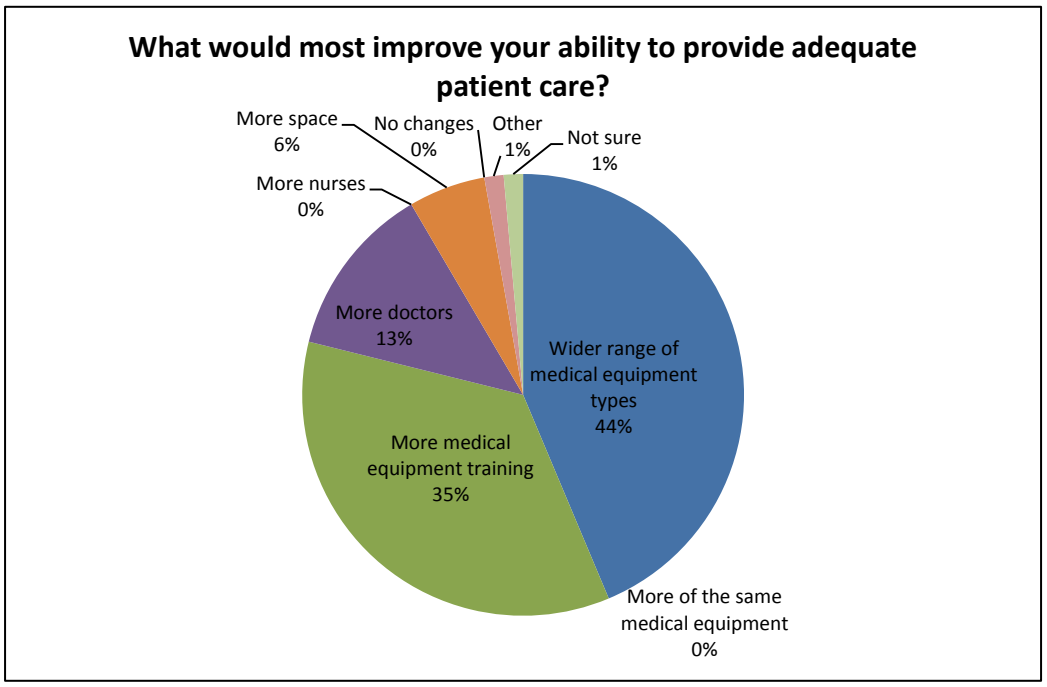


Fig. 13B



When asked what would most improve their ability to provide adequate patient care, 44% of staff members said that a wider range of medical equipment would be the most effective, followed by more medical equipment use and maintenance training (35%), and more doctors (13%). This is illustrated in Figure 14.

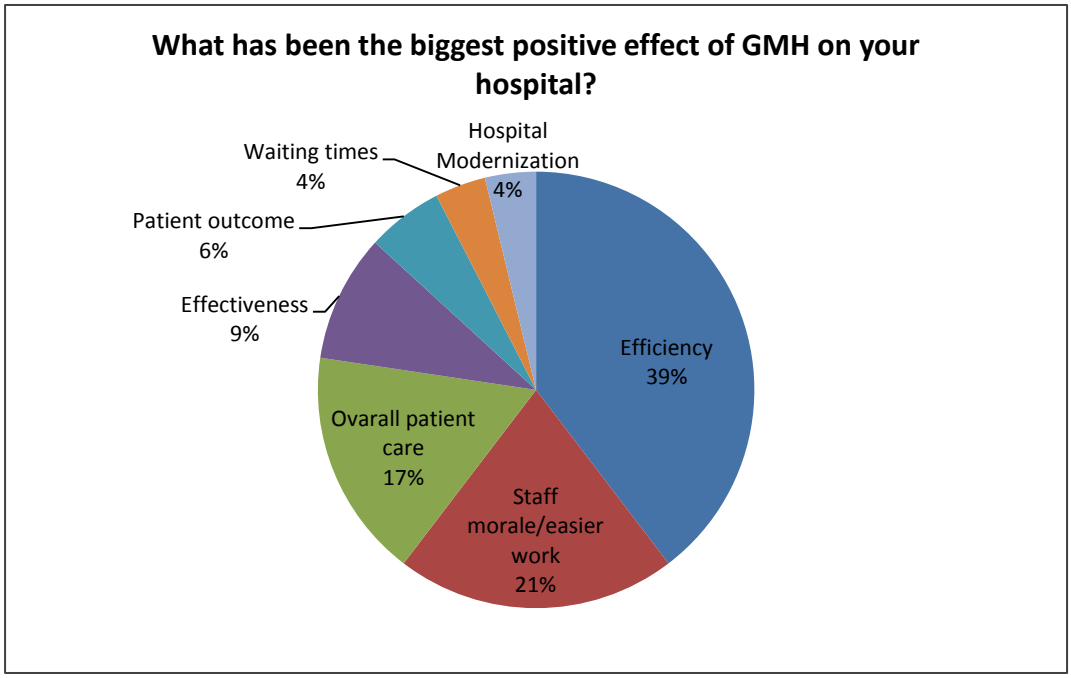
Fig. 14



39% of staff members reported that the greatest positive impact of GMH on their hospital is increased efficiency, 21% responded increased staff morale / easier work, and 17% responded increased quality of

overall patient care. As illustrated in Figure 15, these were followed by effectiveness, patient outcomes, waiting times, and hospital modernization.

Fig. 15



All responses from both regions for the remainder of the questionnaire have been excluded from this report, as the non-response rate for all questions was less than 50% and are therefore the sampling bias is too high to include these responses.

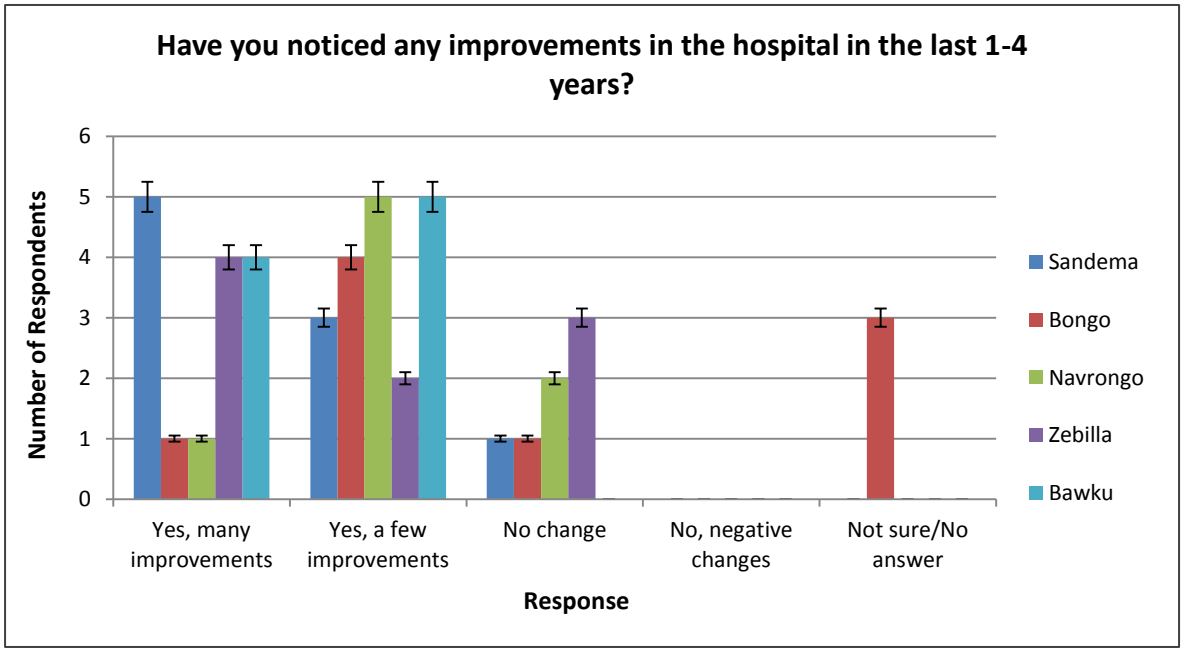
Questionnaires Administered to Hospital Patients

Outpatient questionnaires were administered only to patients in the Upper East Region, as GMH has only been operating in the Upper West Region for one year, which does not allow the surrounding community and patients enough time to perceive any changes in hospital operations.

Of those outpatients surveyed in Upper East Region district hospitals, 41% were male and 59% were female, with the majority (56.8%) of them falling between 18 and 34 years of age. All respondents have been previously treated at the hospital, or else they were excluded, as they would not be able to answer any questions regarding perceived changes in the hospital. 70.5% of the patients did now know what GMH is, and 82% did not know what GMH does, indicating that word may be spreading through the communities about the GMH program, although not in detail. However, it is still a significant proportion of the population that has never heard of the program.

The majority of patients surveyed have noticed improvements in the hospitals which they were visiting. As seen in Figure 16, 34% noticed many improvements, and 43% noticed a few improvements.

Fig. 16



The majority of patients surveyed (68%) believe that diagnosis accuracy has increased in their district hospital since it partnered with GMH, as illustrated in Figure 17A. This trend is seen throughout all hospitals with the exception of Bongo District Hospital (Fig. 17B).

Fig. 17A

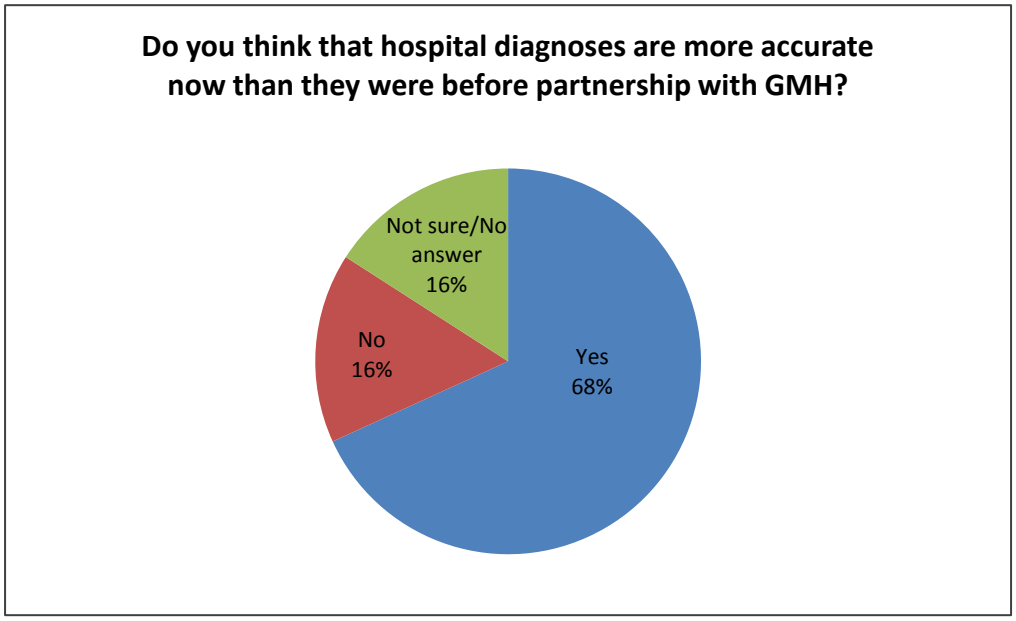
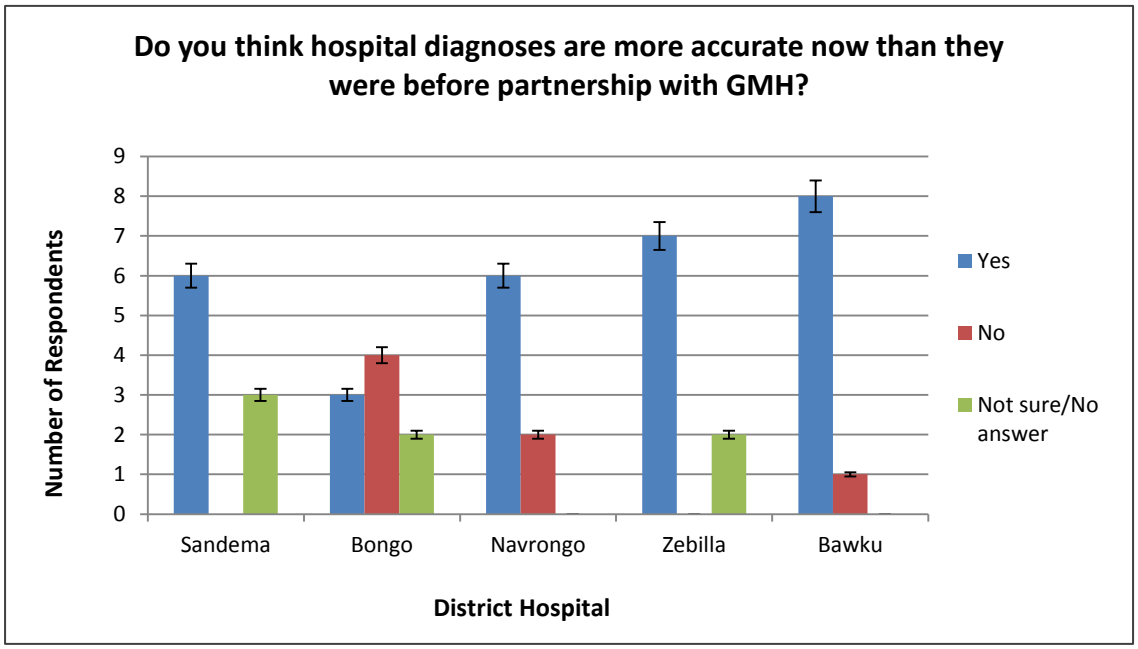


Fig. 17B



The majority (80%) of survey respondents believe that hospital diagnostic processes are more efficient now than they were before partnership with GMH (Fig. 18A and 18B). Overall, there has been an increase in treatment quality since partnership with GMH, according to patient respondents (Fig. 19). Patients in all UER districts believe that treatments have been more successful since partnership with GMH, with the exception of Bongo, which has a higher proportion of respondents choosing the "not sure" option (Fig. 20A). Of those who report more successful treatments, 27.3% report an improvement level of 3 out of 5, and 21% rate the improvement level as a 5 out of 5 (Fig. 20B).

Fig. 18

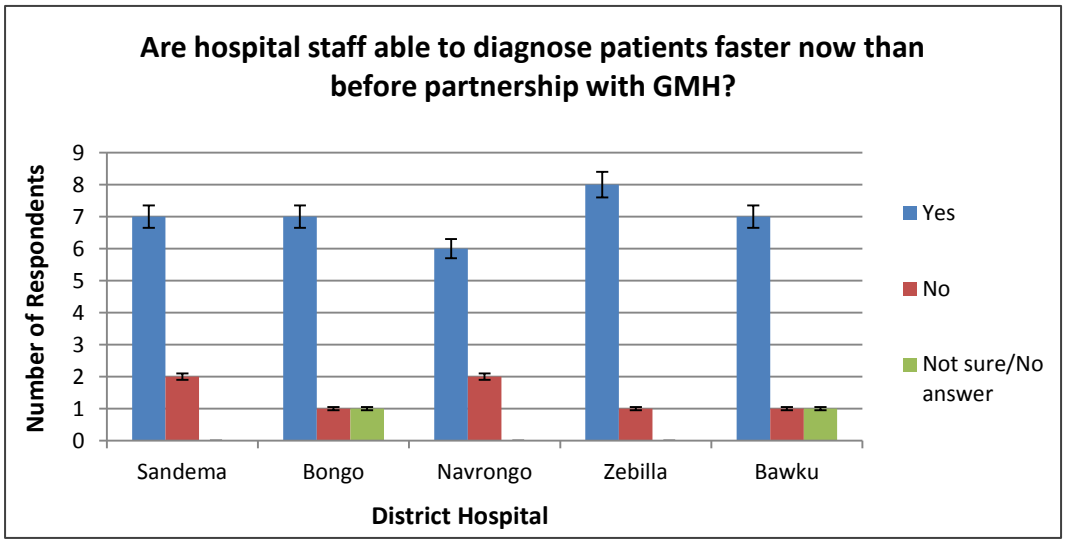


Fig. 18B

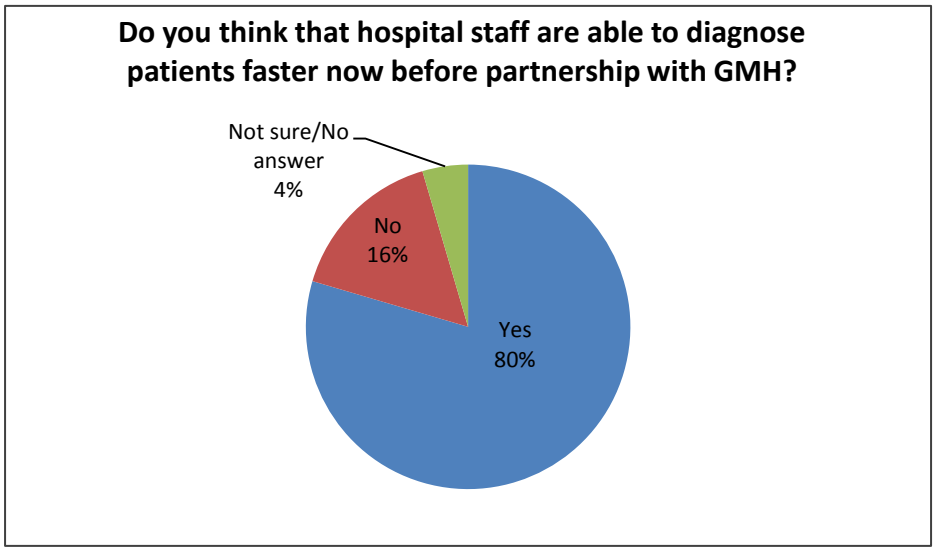


Fig. 19

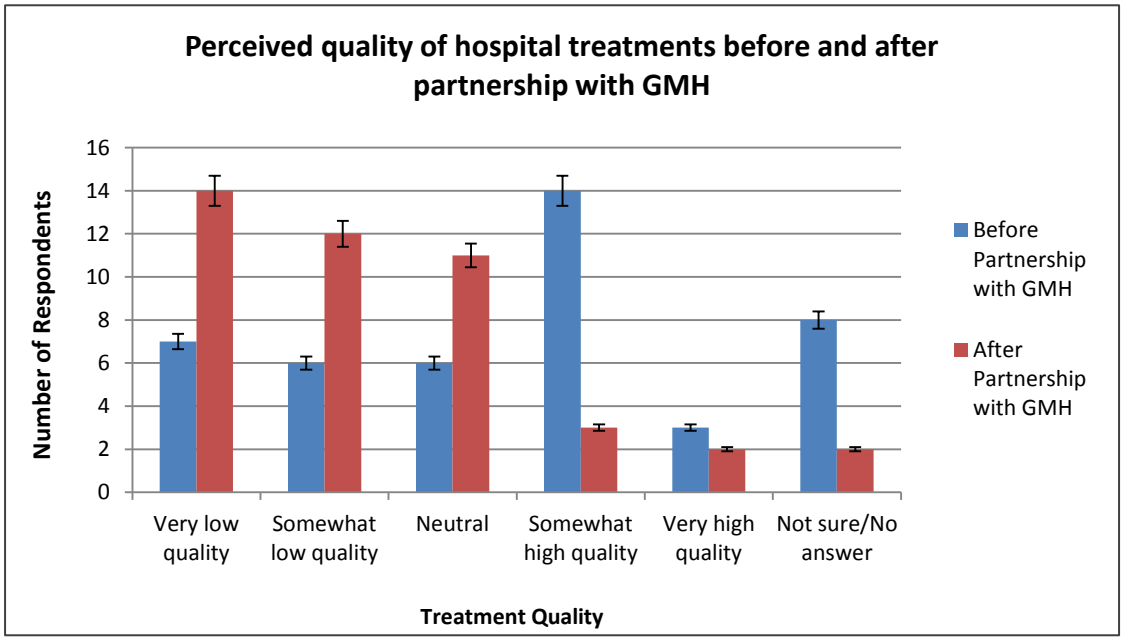


Fig. 20A

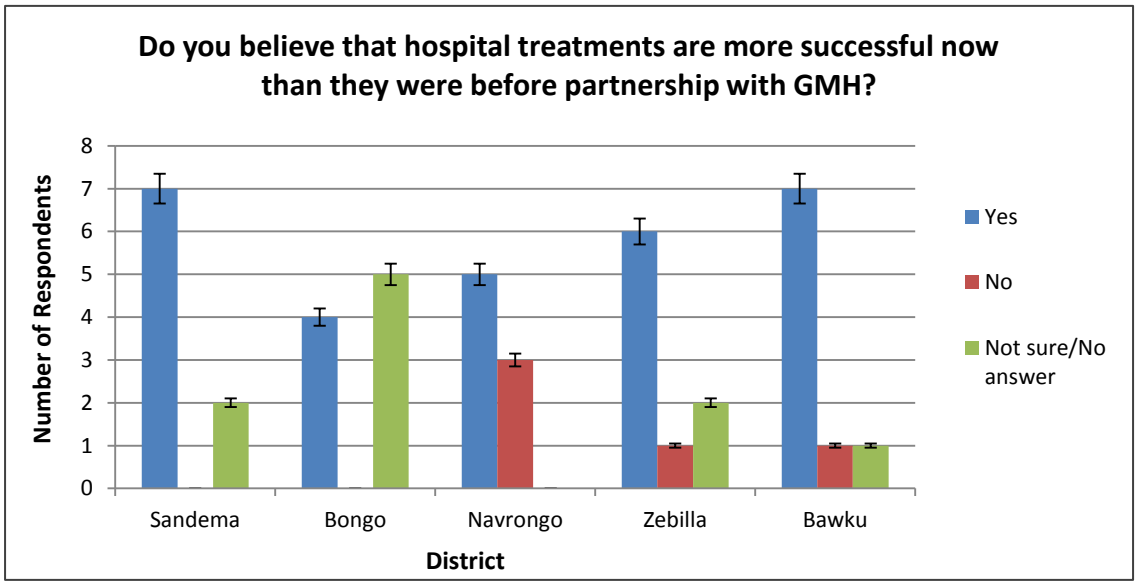
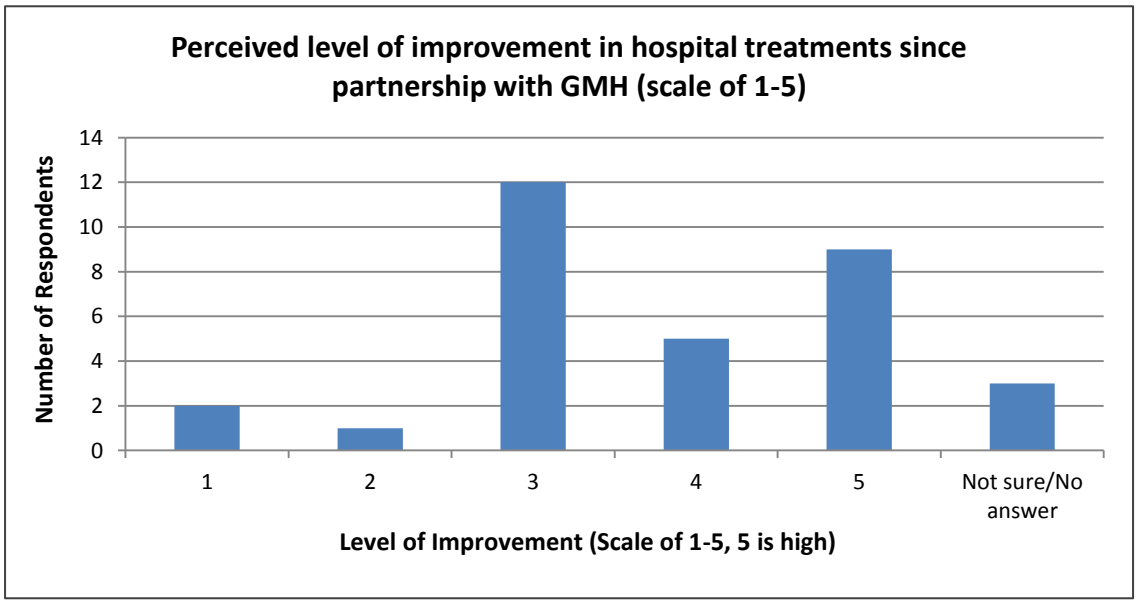


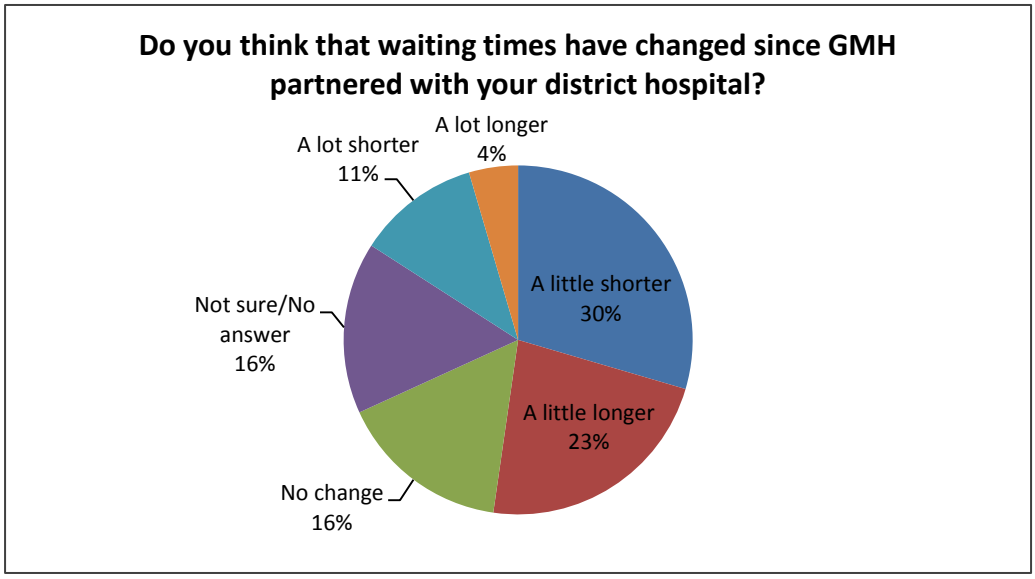
Fig. 20B



There is no consensus among patients as to whether or not outpatient waiting times have changed in hospitals since they partnered with GMH. As illustrated in Figure 21, 30% of respondents state that waiting times have gotten somewhat shorter, although 23% report that they have gotten somewhat longer. 16% of respondents answered that there have been no changes in wait times, and 16% answered that they were not sure. This lack of consensus may have to do with the timing of their previous visits,

whether it was in the busy mornings or somewhat calmer afternoons, and whether they last visited the hospital in high or low season.

Fig. 21



Questionnaires Administered to Volunteers

Questionnaires were sent to both current and previous volunteers regarding their experiences volunteering with GMH. The sample size of 12 is quite small, however there are currently only 21 volunteers with GMH, of which 12 responded, giving an active volunteer response rate of 57%. According to the surveys, the average GMH volunteer is a female student, between the ages of 25 and 34. Of those who responded, the majority, 67%, were female, while 33% were male. The average volunteer is between 25 to 34 years of age (58%), followed by 18 to 24 year olds (42%), and most (58%) are students. 17% of respondents are entrepreneurs, 8% are health care professionals, and 8% are involved in the financial industry, and 8% are public health associates. Most volunteers (67%) have been involved with GMH for between 1 and 3 years, while 25% have been volunteering for less than 1 year, and only 8% have been involved for more than 3 years. As can be seen in Figure 22, 50% of volunteers are involved primarily with fundraising, while 33% are most active with coordination, 8% are on the board of directors, and 8% are involved with research. Figure 23 illustrates the amount of time spent per month on GMH activities by volunteers, with 1-20 hours per month being the most common amount of time spent by volunteers (67%).

Fig. 22

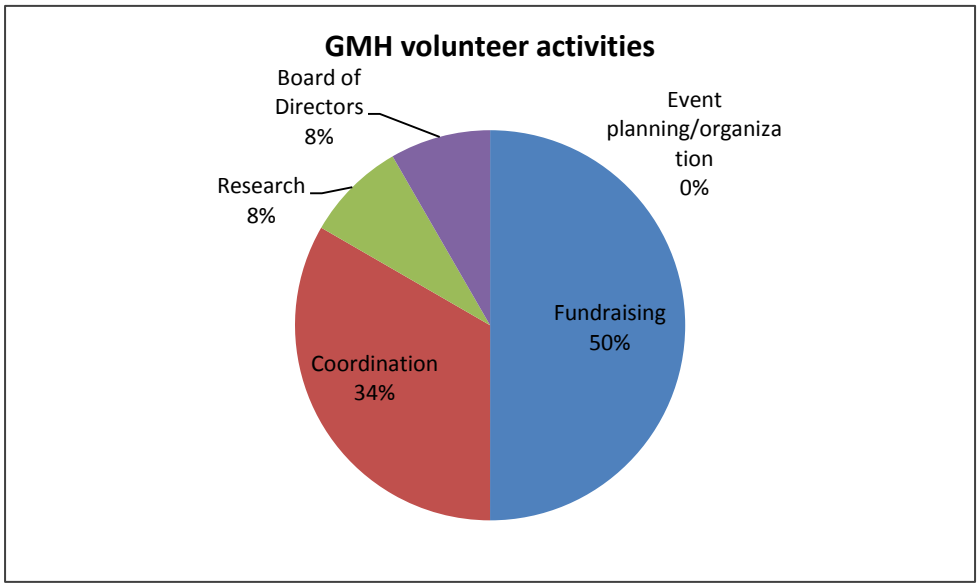
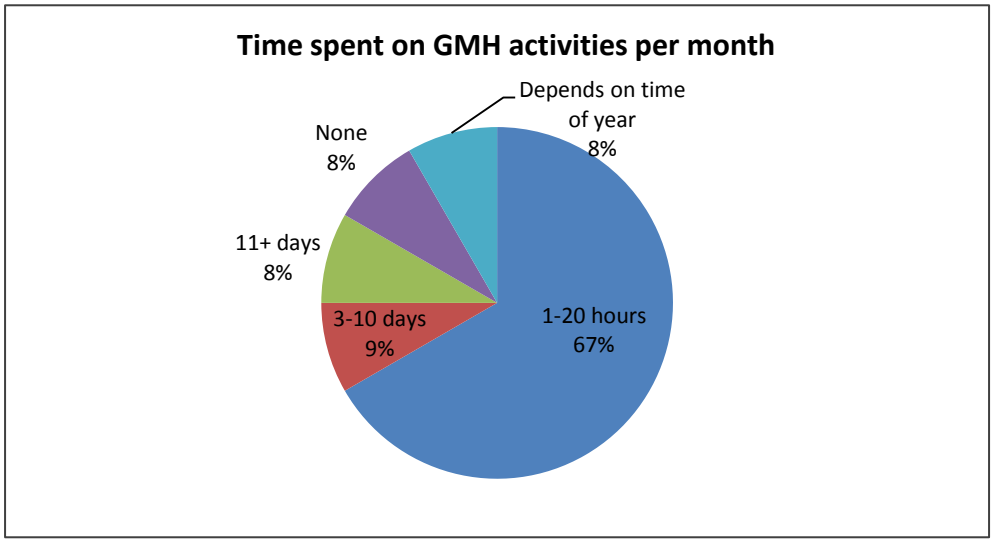


Fig. 23

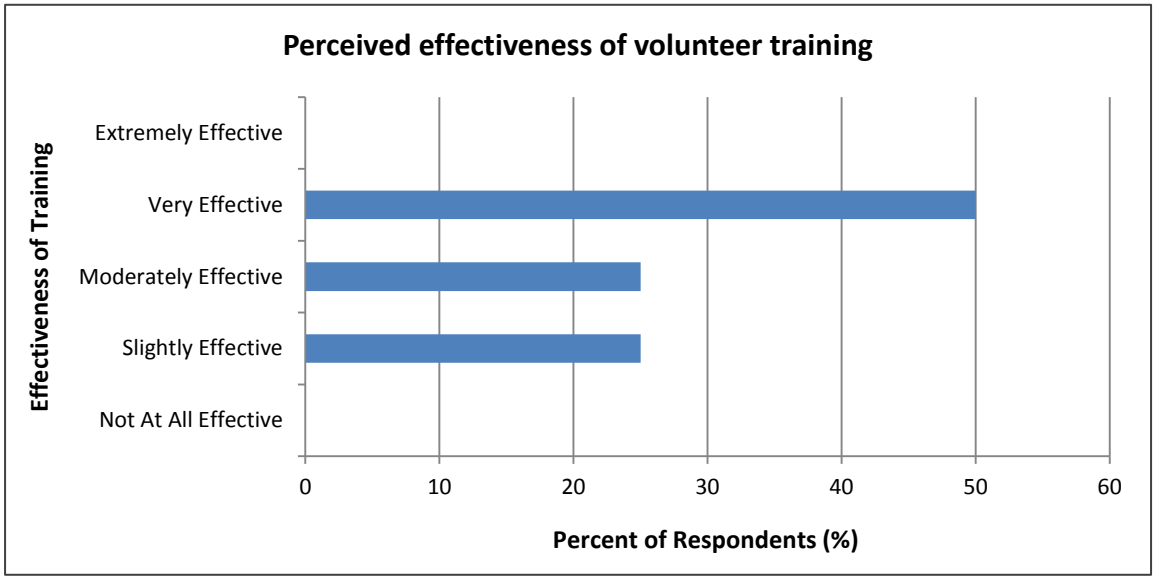


When asked to describe their reasons for volunteering with GMH, 5 respondents listed respect for GMH as an organization as their primary reason for joining. Of those 5, 2 named the goals of GMH as what they respected the most, 1 named the organization's transparency, and 1 named the management of the organization. 2 respondents stated that they are volunteering to do something nice for the Executive Director, 2 answered that they are involved simply to be charitable, and 1 listed their personal interest in the health of developing countries as their primary reason for volunteering their time. 58% of survey respondents report that their activities with GMH involve volunteering only, 33% report that they donate

money as well as volunteer, and 8% report that they are only involved on donating money and/or equipment.

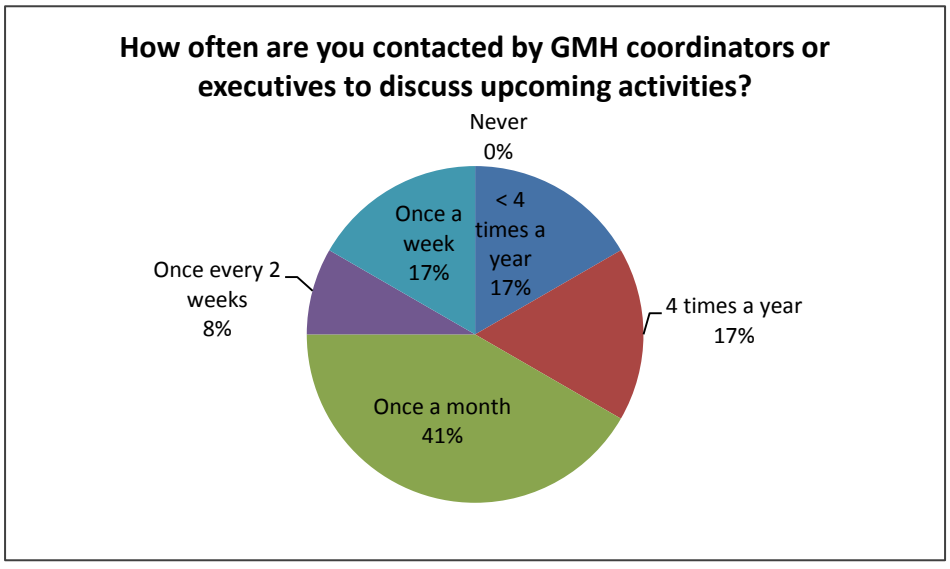
The majority of survey respondents (67%) reported never receiving any training at all, while 17% have had a moderate amount of training, and 17% have had a little. Of those who were trained, only 50% believe that it was very effective, as can be seen in Figure 24.

Fig. 24



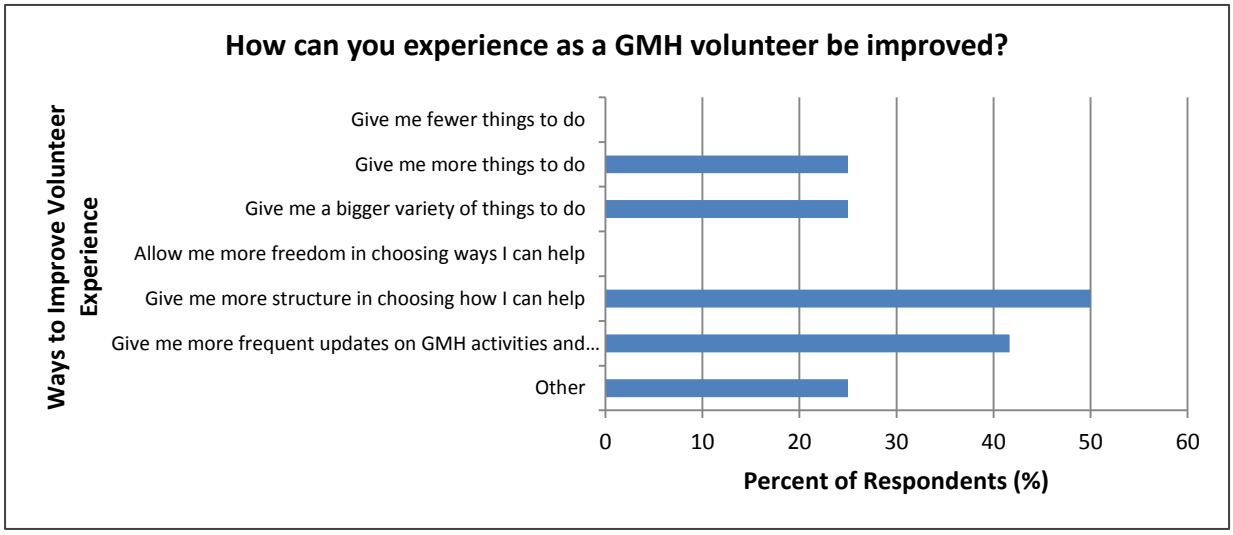
Most GMH volunteers (42%) are only contacted once a month by GMH coordinators or directors to discuss upcoming activities, as illustrated in Figure 25.

Fig. 25



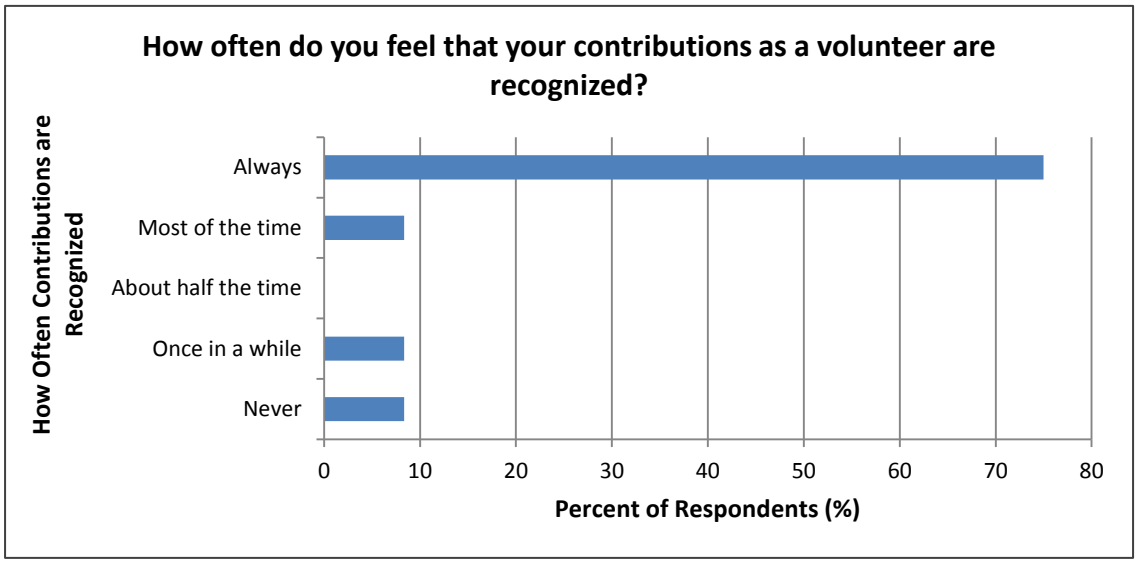
Most volunteers (58%) are fairly satisfied with their GMH workload and 33% are very satisfied, however 8% are a little unsatisfied. Volunteers were asked how GMH could improve their experiences as volunteers, and 50% of volunteers reported that they would like to have more structure in choosing how they can help the organization, 41% want more frequent updates on GMH activities and progress, 25% would like the opportunity to do more, and 25% want more variety in the options of things they can do to help (Fig. 26). Those respondents who chose "other" explained that they wanted to be able to choose different options of level of involvement, and that they would prefer to be given ideas for fundraising to make their jobs easier. One respondent described that they would like to be given more ideas on how to help out without having to dedicate so much time.

Fig. 26



50% of volunteers reported feeling very comfortable approaching GMH executives and coordinators with problems or questions, 25% felt somewhat comfortable, and 25% reported never having had to approach them at all. 75% of volunteers felt that their contributions to GMH are always recognized, while 8% felt that they were recognized most of the time, 8% once in a while, and 8% felt that their contributions were never recognized (Fig. 27).

Fig. 27



GMH volunteers were also asked what they felt Ghana Medical Help's greatest weaknesses as an organization are, and there was a wide range of responses. The most common response was organization and work delegation and coordination; volunteers felt that the way in which the organization is run lacks a clear plan and could use more organization and foresight, and that the delegation of work among the volunteers could be more structured, and more work could be delegated to decrease the burden on the Executive Director. Related to this organizational aspect was the response that the organization should develop a business plan, as it lacks focus and a clear vision for the future in regards to how it can grow and facilitate growth both within Ghana and within Canada. A number of volunteers responded that the organization is lacking in communication, and that volunteers are not contacted often enough regarding GMH activities and progress, especially for those without Facebook and other web-based social media groups, which diminishes volunteer motivation. Another weakness pointed out was that there is an outside perception of youth-based organizations as unreliable and unstable.

All volunteers surveyed reported overall very positive experiences with GMH, 33% of volunteers report that they have no plans of ever discontinuing their support for GMH, while 25% are not sure whether or not they plan to continue volunteering, 25% plan to continue until they become too busy, 17% plan to continue as long as GMH continues to run, and 8% plan to continue for a few more years. 17% of respondents stated that they plan to continue volunteering, however the extent to which they do so is dependent upon the needs of GMH, and they hope to be contacted as opportunities to help arise.

Interviews with Hospital Administrators and Medical Superintendents

According to interviews, the majority of partner hospital administrators and medical superintendents name the lack of resources, or mobilization thereof, as the most difficult or least pleasant aspect of their job. This is followed closely by negative patient outcomes. All of the individuals interviewed have a basic awareness of what GMH is but do not understand what the program does in detail, in most cases with the administrators demonstrating a fuller understanding of the program than the medical superintendents.

When asked how GMH could improve their operations, 100% of the subjects interviewed communicated the need for more equipment, as well as larger, more expensive pieces of equipment, such as exam screens, ultrasounds, and operating theatre devices. Another common denominator among interview results is that most (47.7%) interviewees answered that they would like to see medical equipment donations that more closely match the needs lists provided to them during the needs assessment. This trend was more apparent in the UWR, where the percentage of all interviewees in all positions was 62.5%, as opposed to the UER where it was 36.4%. Many subjects noted that although incredibly helpful, the equipment delivered did not match the priority needs lists provided to GMH closely enough. Two of the subjects also described the mode of packaging of the equipment as something to be improved upon, stating that they would prefer the equipment was labelled with which ward each piece was going to, as the lack of these labels resulted in inter-ward fighting over equipment.

Upon analysis of interview results, it became clear that two hospitals, Bawku and Lawra District Hospitals, are still “hoarding” equipment, a term used to describe the storage of excess equipment until pieces in use break down or spoil. GMH has a no-hoarding policy that they attempt to teach to GMH coordinators during equipment education programs to ensure that all donated equipment is used for maximum effects on healthcare quality. However, according to these interviews, two hospitals have not learned or are not following these directions. It has also come to the attention of the evaluator during the interviews that the calibration of equipment is a problem at all hospitals. It is recommended that digital blood pressure apparatuses be calibrated annually for best results, however according to interview subjects this is difficult to do as they have not learned how or need to hire technicians to come in, which is not only expensive but next to impossible in northern Ghana as the equipment is manufactured in North America and there may not be any people in the region who are trained in these particular medical equipment brands. GMH should consider entering into partnership with a medical

equipment technician who can be trained in specific GMH-donated equipment care and be on-call to visit hospitals and fix basic equipment problems.

When asked to describe the more impactful effects of GMH on their hospital, a common theme among responses was the domino effect of enhanced diagnostic efficiency and accuracy due to faster, more accurate equipment leading to improved patient outcomes through faster and more appropriate treatment being the biggest effect of GMH. Overall, the largest impacts tend to be seen in the pediatric wards, as this is where the majority of donated equipment is put to use. The administrator of Bongo District Hospital reported that mortality rates have decreased since GMH started supporting their hospital, especially in the maternity and pediatric wards; however a number was not given. 100% of the interviewed subjects believe that the donations from GMH support their operations, but do not change the way that they operate, and hence believe that their hospitals would not be any worse off from the baseline prior to GMH involvement if GMH were to withdraw their support.

Interviews with Ghana Medical Help Coordinators

100% of Ghana Medical Help Coordinators that were interviewed enjoy their new positions within the organization, and the responsibilities that they consequently take on in the hospital. When asked what they enjoyed the most about their volunteer positions, the most common responses were the increased learning, feeling as if they are helping the hospital, and having a part in bringing improvements to their hospitals and their colleagues. However, the respondents did name some difficulties associated with their new volunteer roles. The majority of subjects listed the amount of time required for learning about and teaching the new equipment to colleagues, recording inventory lists, and hosting visits from other volunteers as the most challenging part of their coordinator position. It was also brought up in 3 of the 9 interviews that communication with GMH directors can a source of difficulty despite the approachability of Dr. Dominic Akaateba, the Director of Operations. Cell phone reception is not reliable in all districts, especially surrounding the Lawra District Hospital, and access to computers and internet is not necessarily possible for every volunteer, or even every hospital. Laptops and iPads were suggested by Nandom District Hospital volunteers as a possible solution to this problem, however this is not a feasible solution given the prices of the equipment and the network issues in the region. Training colleagues in equipment use and maintenance was also reported to be a challenge by the majority of coordinators due to the staggered shifts that are worked.

100% of the GMH Coordinators believed the Equipment Education Programs to be a positive and rewarding experience. Although the GMH Coordinators from each hospital were all trained together, with the exception of Nandom District Hospital, due to their unavailability at the time of the program, there was some variation in which skills the coordinators reported learning. 100% of the coordinators said that they learned about the use, preservation, and storage of medical equipment, however only 75% report being trained in how to teach their peers what they have learned, and not to hoard equipment. Only 50% of coordinators report being taught basic equipment maintenance skills.

Throughout the GMH Coordinator interviews, there were 2 criticisms of GMH that were brought up across the districts. 47.7% of all volunteers and staff interviewed reported feeling frustrated that the equipment that was listed on the priority needs lists during the needs assessment was not all delivered. Mostly these undelivered pieces of equipment were the larger, more expensive pieces, such as ultrasound machines. GMH Coordinators in 3 of the district hospitals in the UWR also mentioned during the interviews that they have seen problems with post-delivery fighting among the wards as they argue over which ward deserves which pieces of equipment the most. This did not appear to be a problem in the UER, however.

Budget

The annual budget reports for Ghana Medical Help that were reviewed for the purpose of this evaluation include 3 operational years; 2011-2012, 2012-2013, and the preliminary report for 2013-2014. The year 2010-2011 is unavailable, as GMH was in its beginning stages and records of costs and revenues were not kept.

In 2011-2012, GMH successfully raised $30,022.86 CAD. Of these funds, 71% was spent on equipment purchasing, 17% was spent on shipping, 11% on in-country and contingency costs, such as volunteer transportation and accommodation, transport toll fees, temporary cell phone SIM-cards for easier in-country communication, and 1% on fundraising initiatives. In the 2012-2013 year there was a 3% decrease in revenue and $29,224.28 CAD. Of this, 59% was spent on equipment purchasing, 26% was spent on shipping, 5% was spent on fundraising efforts, 4% on administration, and 3% on contingencies and in-country costs, and 2% on research. As of August, 2014, GMH was able to raise their revenue for the 2013-2014 year by approximately 3 times, reaching a preliminary total of $89,149.49 CAD. Of this new budget, 54% has been spent on equipment purchasing, 19% on fundraising efforts, 12% on shipping, 9% on administration, and 6% on in-country and contingencies.

Overall, the available budget has been increasing with time, however so has the percentage of the budget that goes towards administration and fundraising costs, as the percentage that goes towards equipment purchasing has decreased slightly, although the total funds spent is higher. However, the question remains if this level of fundraising is sustainable. There is no available information regarding the costs of equipment that may be available from Ghanaian manufacturers or retailers.

Interview with Medical Student Placement Program Leader

Ghana Medical Help has recently completed a pilot project of a medical student placement program as a means to generate sustainable revenue for the organization. An interview with the pilot project's program leader provided some valuable insight into ways in which the project can be improved. This is not a full evaluation of the pilot project, as that is outside the scope of this evaluation. However, it is a brief, high-level overview of the program's general successes and drawbacks, and aims to provide some recommendations on how the program can improve the overall sustainability of GMH into the future.

Overall, the program leader believed the project to be a wonderful idea with the potential to turn GMH from a fundraising-dependent organization into a sustainable, self-reliant organization. However, she also stated that this transformation would not be possible if placement program operations continue as they are. It was reported that the program would benefit from more structure, such as a set curriculum that reconciles both what the medical students want from such a program, as well as the host hospitals. She also named the need for a business plan as a priority improvement to the program.

The interview also shed some light on some more small-scale improvements that could be made to the program. First, the program should be operated on a larger scale, with longer placements, to ensure that the students receive more time to learn, and to generate more revenue to support GMH equipment donation monetary needs. Second, the screening of potential medical student candidates could enhance both the student as well as the hospital experience, as chosen candidates may be more suitable to the experience of living and working in northern Ghana. Related to this is the idea that the program may be too inexpensive. According to the program leader, similar programs are being operated around the globe for much higher prices, and the program could maintain its competitive cost while still increasing the price. Finally, the program leader also mentioned that it seemed as if hospital staff were slightly unsure how to handle the medical students in terms of how to behave around them and what jobs to give them, and that to improve the program all of the hospital staff, not just the administrators and medical superintendents, should be better prepared regarding how to handle the students.

General Observations

During field visits to partner hospitals in Ghana, interviews, and secondary document and website review, a few general observations were noted by the evaluator. First, problems with donated medical equipment occur throughout the districts and are often common problems among the hospitals, such as digital blood pressure apparatus battery failures. This in itself is not surprising; however there do not seem to be any remediation protocols in place for these common problems. Moreover, some of these problems seem to be difficult to solve due to the location of the equipment. For example, the digital blood pressure apparatus failures would be easily fixed in North America through the purchasing of replacement batteries from the same manufacturer, however this is not ideal in this situation as new batteries would have to be shipped from North America to Ghana. GMH is currently searching for a solution to this problem by seeking out Ghanaian manufacturers who produce the same or a similar battery. A number of hospitals are now short on blood pressure apparatuses as they wait for replacement batteries, which would have been avoided had a pre-emptive list of Ghanaian parts manufacturers been prepared.

During the evaluation it also became apparent that GMH is behind in publishing their quarterly impact reports and updating their website. It is advertised that there are 3 quarterly reports and one annual report written each year, and yet only one impact report, produced in 2012 from the Bongo District Hospital, and the 2012 annual impact report summaries are published on the organization's website. Furthermore, the volunteers of the month are not published regularly; there are many months that are missing.

Regarding the medical student placement program, it was noted by the evaluator that the program was not well organized and the hosting hospitals were given little notice about the arrival of the students. It was left up to the hospitals to decide how hands-on the students would be in their activities at each hospital, although it may have been more appropriate to come to a decision on details such as these prior to the arrival of the students.

Discussion of Key Findings

In this section of the report, only unexpected and significant findings that lead to recommendations (described in the recommendations section) for the organization will be discussed, and the reasoning behind these recommendations will be addressed. An explanation of all document review, observation,

survey, and interview results are considered unnecessary. Answers to evaluation questions will also be addressed.

Rationale

According to the results of the environmental scan, it appears as if the rationale behind Ghana Medical Help as a charitable organization is quite strong. There appears to be a need for medical equipment in all districts, and the political and structural environments in which these districts exist are stable and well organized, facilitating GMH operations rather than hindering them, as discussed in the environmental scan portion of this report.

Key Evaluation Questions

Effectiveness

According to the results of the evaluation, Ghana Medical Help is effectively meeting its goals of enhanced healthcare quality in rural Northern Ghana. According to interviews, surveys, and document review, hospital efficiency is increasing, patient health outcomes are improving, and mortality rates are declining as a result of GMH activities.

Efficiency

Ghana Medical Help is using funds fairly efficiently to meet their goals of improving healthcare quality. This evaluation has found that although administration and fundraising costs are rising, so is fundraising and donation revenue. With the expansion of GMH to include more district hospitals, operational costs have to rise in order to meet the new fundraising requirements. There is very little wasting of money within the organization, and costs are cut wherever possible without affecting the quality of the equipment being donated. However, GMH should seriously consider researching potential equipment or equipment parts manufacturers in Ghana and the surrounding region as a way to cut costs on equipment purchasing, transport, and repair or parts replacement. It may also decrease the need for adapters and voltage converters, which are quite costly to purchase and inefficient time-wise, as equipment must be charged one at a time in a designated space.

GMH operations are also quite time- and energy-efficient. There are no unnecessary trips to visit the hospitals and there are no so-called “make-work” projects for volunteers; volunteers donate their time and energy to reach goals as opportunities arise, such as assisting with fundraising events or specific research projects. Most communication with on-site volunteers and partners occur through web-based

media such as email and video conversations, which reduces the time and effort required to communicate. However, a more structured volunteer network with additional guidance regarding possible volunteer activities could assist volunteers and reduce mistakes and increase volunteer efficiency through training and motivation.

Sustainability

Currently, GMH operations are heavily reliant on fundraising efforts and are not self-reliant. Fundraising is dynamic and unreliable from year-to-year, meaning that GMH is currently not a sustainable organization, especially as the number of hospitals that it supports, and hence the amount of money required to support them, continues to increase. There is therefore a strong need for a revenue-generating program to provide funds that can be fed back into GMH for equipment purchasing and other operational costs. GMH is aware of this need and has developed a pilot medical student placement project, implemented in July, 2014. This project shows great potential to ensure the financial sustainability of GMH into the future, if certain improvements are made, discussed in the results section of this report.

Medical Equipment

The donated equipment itself is well chosen for biggest impact and for feasibility of use; front-line diagnostic equipment has a domino-effect on treatment quality and health outcomes, and many of the digital pieces are battery operated. Battery operated equipment is ideal for the frequent power outages that occur throughout the regions of Northern Ghana. However, the equipment is designed and manufactured for North American hospitals, causing issues with voltage conversion and making it necessary to purchase adapters, as well as providing some difficulties in procuring replacement pieces for the equipment locally. Questionnaire and interview results also suggest that hospital staff would prefer to receive more treatment-oriented equipment as well, a possibility which GMH should discuss among its board of directors and with Ghana Health Service and hospital partners.

Unique Trends in the Upper West Region

The results of the evaluation showed some trends that are unique to the Upper West Region. This is not surprising, as the district hospitals in the UWR have not been partnered with GMH for as many years and subsequently do not receive as much equipment as the hospitals in the UER do. GMH utilizes a phasing-in technique with their beneficiaries; hospitals receive smaller amounts of the most basic equipment in their first year to ensure that operations run smoothly and that hospital staff know how to distribute,

use, and maintain equipment appropriately so that no donations are wasted. Hospitals in the UWR have only received one donation from GMH at the time of this evaluation, compared to hospitals in the UER who have been partnered with GMH for 2-4 years, depending on the district. Consequently, there are some evaluation findings that are unique to the UWR.

The results of the surveys and interviews suggest that hospital staff in the UWR do not seem to have an understanding of GMH's phasing-in technique, and many have expressed disappointment in the amount of equipment that was donated, wishing that it was more and that it was more expensive equipment types. This leads to the question of whether their dissatisfaction is because they do not believe that the donations that were made are impactful, or whether it is because they are simply unaware that GMH plans to deliver more and are attempting to increase the amount that hospitals can receive in the future through the evaluation process. Either way, it is apparent that communication between the hospitals in the UWR and GMH regarding GMH operations and future plans are lacking. Survey results also show that hospital staff chose "more doctors" as the best way to improve the hospital far more often than their counterparts in the UER, which may indicate that they have not yet seen the extent to which equipment can enhance hospital operations and patient outcomes due to their relatively small donation sizes, or that staff in the UER are more knowledgeable about GMH and are therefore more likely to choose more equipment or more equipment types as an answer in hopes of ensuring GMH's continued support.

The UWR reported inter-ward fighting over equipment upon donation deliveries, which was not at all mentioned in the UER. The reasons stated for this fighting was that the equipment was not listed as belonging to any particular ward, and each ward believed themselves to be the most in need. This type of fighting can provide more work for hospital administrators and GMH volunteers, and can foster unhealthy rivalries between wards that can in turn hinder teamwork and, if allowed to continue, have negative effects on patient experiences and health outcomes. For this reason, equipment should be clearly labelled with not only the hospital to which it is to be delivered, but also with which ward it shall be distributed to.

Wait Times

Despite GMH reports that medical equipment donations have decreased outpatient department waiting times, there is no statistically significant evidence to support this. Moreover, GMH impact reports do not make mention of the National Health Insurance Scheme (NHIS), whose membership base continues to grow annually in the northern regions of Ghana. The NHIS may have an effect on outpatient waiting

times, as the number of patients visiting each hospital increases as more people become members of the NHIS and healthcare becomes more affordable. For this reason, any potential positive effects that GMH may have on decreasing wait times may be counteracted by the NHIS, making the direct effects of GMH on wait times impossible to evaluate.

Community Awareness

According to interview and patient surveys, the vast majority of the communities surrounding partner district hospitals have never heard of GMH. This in itself is not a bad thing for GMH, as the aim of the organization is to increase the quality of healthcare that is available, and this is still being achieved regardless of whether the surrounding communities know that it is happening or not. However, the lack of knowledge limits the fundraising and operational opportunities for GMH. The majority of the population in the UER and the UWR do not have much disposable income, according to the environmental scan portion of this report. However, there are some that do, and some that have friends and relatives who live in the south of Ghana who may be better off economically. The more the local people know about what GMH is and what they are trying to achieve, the better the chance that word spreads throughout the communities and into the south, to people who have close ties to the regions in which GMH works and may want to support the organization. This support could come in the form of either financial donations or through assisting with transportation, research, or other means, such as hosting medical placement students. By limiting the number of people who are aware of the organization, GMH is limiting their potential for future opportunities. Furthermore, enhanced communication with community leaders such as village and tribal chiefs could help to increase access to healthcare in the UER and the UWR, as their endorsements could increase trust in the hospitals among the communities. Positive relationships with community leaders would also increase acceptance of GMH volunteers and medical placement students by the community.

Volunteers in Ghana

Volunteers reported, both in surveys and in interviews, feeling frustrated that the equipment that was listed on the priority needs lists during the needs assessment was not all delivered. It is unrealistic to assume that GMH will be able to purchase all equipment that each hospital requests, however results of the evaluation show that many hospital staff and GMH coordinators expected exactly that. It may therefore be prudent to ensure more honest and open lines of communication regarding what to expect from donations in order to ensure continued positive relations with on-site beneficiaries and partners, and continued motivation of on-site volunteers.

Equipment Education Programs

All GMH Coordinators had positive experiences with the equipment education programs and hope for them to continue. For the most part, the coordinators from each hospital reported learning all the same skills, indicating the success of the EEPs. However, there were two skills which not all GMH Coordinators reported learning. Only 50% of coordinators who attended the EEP reported being taught basic equipment maintenance skills. Only 75% reported being trained on how to teach their peers what they have learned, and 75% reported learning not to hoard equipment once it is donated. These numbers suggest that not all volunteers actually remembered all of the skills that they were taught. Some review questions at the end of each of each program may be an effective way to monitor how much information the volunteers are retaining, and which information and training needs to be focused on most. One of these priority topics should be the hoarding of equipment, as it is evident from survey and interview results that some hospitals are still doing so, despite being trained not to during the EEP.

Furthermore, survey results show that hospital staff who have worked at hospitals for less than a year are less comfortable using donated equipment. This indicates that as they missed the staff training sessions that GMH Coordinators conducted when they returned from the EEP, they have not been trained in proper medical equipment use. It would be prudent to build into the EEP curriculum a section on the best ways to go about training hospital staff members, given the difficulties with rotating shifts and high turnover of nurses.

Volunteers in North America

The majority of survey respondents reported never having received any training. Although most volunteers contribute in a fundraising capacity in their free time and it is not feasible to hold any formal training sessions due to the varied locations and schedules of volunteers, it is possible to provide basic training or guidance on an individual level. When volunteers decide to support GMH, they should be given guidance on how to perform their specific duties, such as fundraising or event planning tips. This may help to increase efficiency of volunteer activities and maximize the outcomes, and help volunteers to feel more confident while carrying out their respective duties. This individualized training could be combined with a set of options of how they can help the organization, as quite a large proportion of volunteers also reported wishing that GMH provided them with a more structured set of options regarding how they can support the organization. A number of GMH volunteers also stated that they wish that they were kept more informed on GMH activities and progress. Enhanced communication with volunteers may help to keep them motivated.

Recommendations

Overall, Ghana Medical Help is an organization that has been successful in effectively and efficiently meeting their goals of increasing healthcare quality among district hospitals in the Upper East and Upper West Regions of Ghana. Both beneficiaries and volunteers have had overwhelmingly positive responses regarding their experiences with GMH. However, this evaluation has found some areas in which GMH can improve even further and continue to grow into the future.

The following is a list of recommendations for Ghana Medical Help based on the results of this evaluation. The aim of these recommendations is to enhance the effectiveness and the efficiency of the program through improvements in communication and coordination, research prioritization, and logistics optimization. They also aim to provide a framework within which to continue development of a sustainable revenue-generating program to reduce fundraising dependency.

- Increasing awareness both within hospitals and among surrounding communities of what Ghana Medical Help is and what it aims to achieve and how would be a beneficial step for the program. This would allow for enhanced hospital staff communication, community awareness, heightened local support for the organization, and widening the fundraising pool.

- Improvements should be made to communication with hospitals and on-site volunteers regarding GMH operations and goals in an effort to manage expectations and ensure positive relations.
    - This is particularly important in the UWR, as GMH Coordinators appeared to expect more than what they received and were frustrated, believing that their needs were not being taken into consideration and not understanding that the budget of GMH is limited. If not addressed, this can cause resentment towards GMH and lead to negative working relations between the organization and the beneficiaries.
    - GMH Executive Director Kelly Hadfield should make a field visit to each hospital to meet hospital administrators, medical superintendents, and GMH Coordinators to discuss GMH operations and open the lines of communication.

- The methodology of annual needs assessments for each hospital should be reviewed and communications with hospital staff about what is realistic to expect should be a priority to maintain positive relations with all levels of hospital staff.

- Annual training programs are a great success and should be continued into the future, however there may need to be a stronger focus on certain topics, such as the following:
    - How to distribute equipment throughout the hospital, including further focus on ensuring that all equipment is distributed throughout the hospital at once and that none is "hoarded".
    - Greater focus on how to teach colleagues effectively and in a timely manner, especially given challenges with rotating shift schedules and high staff turnover.
    - Investigate the possibility of teaching GMH Coordinators basic equipment maintenance.
    - Review questions at the end of each training program would help GMH to see which topics are being learnt and which require further focus for future years.

- GMH should consider entering into partnership with a medical equipment technician who can be trained in specific equipment care and be on-call to visit hospitals and fix basic equipment problems.

- A wider range of equipment types, including larger, more expensive pieces of equipment such as exam screens and ultrasounds, may be more effective at meeting GMH's goals of providing higher quality healthcare to the Upper East and Upper West Regions. GMH should look into increasing its scope in light of its raised budget to include these pieces of equipment; however this should be discussed with the board of directors, hospital administrators, and medical superintendents, as it would likely mean a decrease in quantity of basic diagnostic equipment as well.

- Medical equipment should be donated at a consistent time of year to allow hospitals to better prepare for its arrival.

- GMH should investigate the possibility of expanding their operations to include within-Ghana sources for medical equipment purchasing as well as fundraising in an effort to cut costs and increase revenue.
    - A list of regional manufacturers making parts for equipment should be compiled prior to equipment donation. This would decrease the time that it takes to repair equipment and prevent hospitals from having to wait until the next year's shipment to bring North-American manufactured replacement parts. This would also decrease shipment prices.

- When equipment spoils, the reasons why, such as battery failures, stripped wires, etc, should be recorded for surveillance purposes. This would allow common issues with certain pieces of equipment can be addressed faster and possibly even prevented in other districts.

- All future impact reports should be available without delay on the public website, and should include some quantitative data from each hospital to support the claims made.

- Volunteer coordination should be more structured and organized, and include individual volunteer training.
    - Volunteers should have a list of ways in which they can support the organization that vary in time, money, and effort required, and should be given guidance, support, and basic training in whichever option they choose.
    - Communication with volunteers regarding GMH activities and progress should be more frequent and more organized, and involve methods of communication that does not require social media membership.

- The Ghana Medical Help medical student placement program has the potential to be a sound model for sustainability of operations, however it needs to be operated on a much larger scale to earn the revenue necessary to maintain GMH operations, and requires the development of a sound business plan.

- Ghana Medical Help's board of directors should create a publically-available, transparent five-year plan to implement the medical student placement program and to reach fundraising and impact goals. This would help to focus GMH's goals, organize the operational aspects of the program, and help to dispel the common outside perception of youth-based organizations as short-term and unreliable.

- Future evaluations of Ghana Medical Help could be improved upon through the hiring of an evaluator who has never before been involved in any capacity with GMH. Additionally, GMH should work with beneficiary hospitals to procure access to hospital patient satisfaction surveys as well as quantitative records to be shared with GMH at impact report time. These quantitative

records would include the number of patients seen and released per day, average waiting times, and mortality rates, etc. These documents would provide more quantitative evidence to support evaluation findings and reduce risk of bias.

- Consider future partnerships with competing organizations, such as Doc2Dock, to decrease costs and widen the fundraising network.

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Appendix 1

Link to GMH Impact Reports published online: <http://www.ghanamedicalhelp.com/your-impact>

Appendix 2

Ghana Medical Help narrative summary.

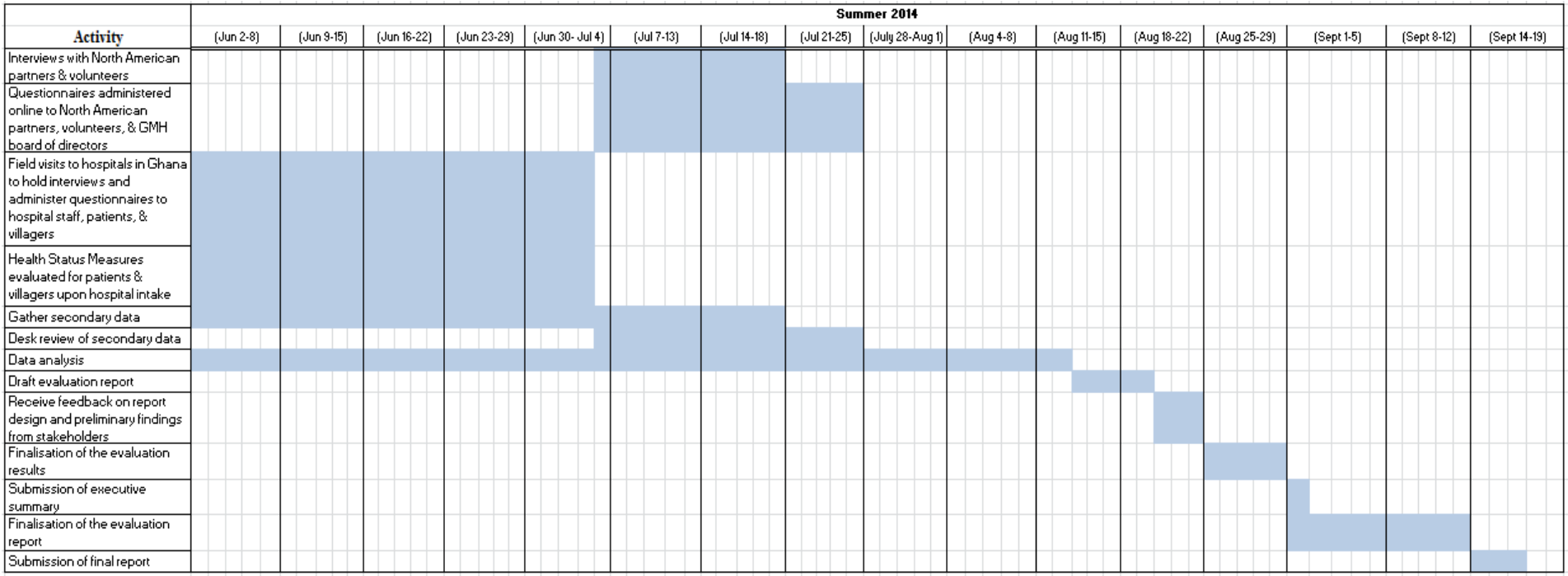
Inputs	Activities	Outputs	Outcomes		
			Short-Term (1-2yrs)	**Medium-Term (2-5 yrs)**	**Long-Term (5 or more yrs)**
Operation Groundswell	1) Director & board member recruitment, training, & field visits to Ghana	1) Trained director, board members, and volunteers working on the project	Increase awareness of healthcare issues in Ghana, donations, and recruiting new volunteers	Increase in the number of hospitals and communities that are beneficiaries of GMH	Communities served by hospitals affiliated with GMH enjoy a longer life-expectancy, higher quality of life, lower morbidity, lower infant-mortality, and a higher confidence in the health care system
GMH Executive Director	2) Director and board members engaged in project administration and program implementation	2) The Executive Director is informed, organized, and prepared to obtain the top 10 most needed pieces of equipment for each hospital	Hospitals receive their most-needed pieces of equipment for the maximum impact on health care quality and service	Patients and communities have enhanced health care quality and services, lower wait times, faster and more accurate diagnoses, and more effective treatments	Hospitals associated with GMH will have semi-autonomous units attached, earning enough profit to support self-sustainability through the funding of medical equipment research and purchase for the continued improvement to health care service quality
GMH Board Members	3) Local support volunteer recruitment and training	3) Local volunteer recruitment and training takes place as needed	Hospital stays for patients are shorter	Increase in the number of local and international partners and stakeholders affiliated with and contributing to GMH	Project objectives are reached
Local GMH Volunteer (project leader)	4) International support volunteer recruitment and training	4) International volunteer recruitment and training takes place as needed		Patients and communities are more likely to seek medical help	Hospitals associated with GMH will have semi-autonomous units attached, earning enough profit to support self-sustainability through the funding of medical equipment research and purchase for the continued improvement to health care service

					quality
GMH International Volunteers	5) GMH collaborating with local authorities/ hospitals/ partners/ patients/ stakeholders	5) Local physicians, nurses, and other hospital staff have full training in and use of the equipment		Meetings and consultations with new and existing partners, beneficiaries, and stakeholders	
Ghana Health Services (a government partner)	6) Medical equipment inventory counts	6) Medical equipment counts take place at each hospital			
Patients/ Physicians/ Nurses/ Caregivers/ Other Community Members	7) Identifying equipment priority lists for each hospital based on inventory counts and interviews	7) Equipment needs assessment performed at each hospital			
Norfolk Medical (a partner)	8) Purchase of local crafts for raffles and fundraising sales	8) Local crafts purchased, raffles and fundraising take place			
MedWish International (a partner)	9) Charity events and other fundraising initiatives	9) Fundraising events take place			
Heart to Heart International (a partner)	10) Initiate deals with partners for regular pick-up of extra, unused medical equipment	10) Contracts made with partners for regular donation			
World Scopes (a partner)	11) Purchase, pick-up, cateloguing, and delivering of donated and purchased medical equipment	11) Infrastructure and equipment inventory of each hospital is enhanced by delivery of equipment			
Rotary International (a partner)	12) Identification of potential new beneficiaries	12) Potential new participating hospitals are located and evaluated			
University of Guelph Health Clinic (a partner)	13) Negotiations with hospitals, government and retailers regarding semi-autonomous units for each hospital	13) Semi-autonomous units designed for eligible hospitals			

Welch Allyn (a partner) Stevens Company (a partner) Phoenix Medical (a partner) Ninety-Nine's Flying Club (a partner) Serengetee (a partner) University of Guelph (a partner) Medical Equipment Recovery Initiative at Dalhousie (a partner) Am Shalom (a partner) National Optics Institute (a partner)	14) Impact reports following equipment delivery 15) Physicians and nurses using the new equipment to diagnose and treat patients 16) Field visits/feedback sessions by GMH Executive Director and local volunteers 17) Education programs to train hospital staff in equipment use 18) Evaluation of the GMH project	14) Field visits, interviews, and focus groups are carried out and records are kept to keep informed on hospital business and evaluate impact 15) New equipment is used to enhance patient diagnosis and treatment 16) Beneficiaries, stakeholders, and volunteers are kept up-to-date on GMH activities and progress 17) Hospital staff are trained in the use and maintenance of equipment. One GMH coordinators in each hospital ensures proper care of equipment and documents any loss or damage. 18) The relevance, efficiency, effectiveness, and results in relation to project goals of the GMH project are assessed			

Appendix 3

Timeline of evaluation report.



Appendix 4

SWOT analysis.