# The Fate of Obstetric Fistula: Towards Equity, Education, and Policy in the Sylhet Region of Bangladesh

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**Abstract**

This project will describe a review of literature and recommendations for obstetric fistula prevention programming and policy in the Sylhet region of Bangladesh. In order to better understand the social implications that women suffering from obstetric fistula face, an analysis of the interpersonal health communication topics of stigma, disclosure, coping, and identity will be conducted. Obstetric fistulas are an issue of health equity for women in resource-poor settings across the globe. An obstetric fistula is a hole that forms between the vagina and rectum or bladder as a result of prolonged obstructed labor, leaving a woman incontinent of urine, feces, or both. It is estimated that more than two million women currently live with untreated obstetric fistulas in sub-Saharan Africa and Asia (countries with the highest prevalence). The Sylhet region of Bangladesh has been disproportionately impacted in comparison to other regions. There are currently 70,000 women in need of fistula repair surgery and approximately 2,000 new cases of fistula develop every year. Only about 40% of births are attended by skilled personnel and the lifetime risk of maternal death is approximately 1 in 240. Programming recommendations include raising awareness on fistula prevention by training skilled personnel on the signs/symptoms and treatment options. Training community health workers on access, signs, and symptoms of obstructed labor provides an opportunity for depth and breadth of community-based prevention efforts. Training lay individuals to become skilled birth attendants is essential given the lack of midwives and health professionals in rural areas. Health and education policy should focus on training and access for all women at national and regional levels.

*Keywords: obstetric fistula, reproductive health, maternal health and mortality, intervention analysis*

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## I. Introduction

Often deemed as a fate worse than death, obstetric fistulas are much more than just physical injuries to Bengali women. An obstetric fistula occurs during childbirth, when a woman endures days of obstructed labor often due to lack of qualified health professionals, the age of the woman, or lack of infrastructure to travel to clinics (1). During this time, the baby's head constantly pushes on the woman's pelvic bone and causes tissue to tear, or even die, which usually results in the death of the baby as well (2). This prevention of blood flow causes a hole to form between the bladder and vagina, or even the rectum and vagina, which means that the woman will perpetually leak urine, feces, or both from the birth canal if she survives childbirth. It is common for women who suffer from obstetric fistulas to be rejected by their husbands and shunned by their villages due to the foul smell that accompanies this type of fistula as well as her inability to bear more children, a primary concern for the males and families of most Bangladesh communities (2). Women who bear the burden of obstetric fistulas live a life of shame, and are forced to deal with this health issue alone due to the consequences that this birth complication holds.

Every pregnancy has the potential to be a life threatening condition for a woman. In low-resourced countries, such as Bangladesh, obstetric fistula is one of the devastating causes of pregnancy-related morbidity. While the proximate causes of fistula are physical injuries, the distal are systemic/social implications, such as poverty, lack of education, childbearing at too early of an age, and lack of medical care. In many rural areas of Bangladesh, girls are married off just after they experience their first menstrual flow, which typically occurs between the ages of 10-15 (3). Medical facilities are not trusted in many areas due to fabricated beliefs passed on by elders, or may be used only as a last resort when labor has already progressed too long and the fistula has advanced (3). Moreover, there is a severe lack of surgeons who are able to repair such fistulas in the countries with the greatest incidence of fistulas. Greater awareness of this birth complication would help individuals understand how to prevent obstetric fistulas from happening, aid in decreasing the stigma surrounding obstetric fistula, and even allow for greater help assisting in, and finding treatment for females.

This paper aims to analyze the interpersonal health communication (IPHC) topics of stigma, disclosure, concealment, identity, and coping strategies of women suffering from obstetric fistula. These topics have been selected from the framework presented by the Health Communication Capacity Collaborative (4). It is crucial to understand these topics in order to tailor interventions and recommend future policies and health campaigns. After analyzing these IPHC topics, as well as assessing previous policy and interventions, a recommendation is given for a future public health intervention. This proposed intervention will focus on educating women in a rural region of Bangladesh known as Sylhet, as well as training skilled birth attendants. A survey has been developed and created to give to the women in this area in order to better understand the IPHC topics and tailor the educational campaigns of the community health workers.

## II. Public Health Relevance

Isolated almost exclusively to the developing world, obstetric fistulas has not received the international attention they deserve, from a medical or a sociological standpoint. It is estimated that more than two million women currently live with untreated obstetric fistulas in sub-Saharan Africa and Asia, the two places where fistulas are the most prevalent (1). As stated by the Fistula Foundation, fewer than 6 in 10 women in developing countries give birth with any trained professional, such as a midwife or a doctor (5). When obstetric complications arise, as they do in approximately 15% of all births, there is no one available to treat the woman, leading to disabling injuries like fistula, and even death (6). The root causes of fistula are grinding poverty and the low status of women and girls. In developing countries, the poverty and malnutrition in children contributes to the condition of stunting, where the girl's skeleton, and therefore pelvis as well, do not fully mature (7). This stunted condition can contribute to a difficult passage of the baby and thus obstructed labor which can lead to obstetric fistula. Labor is considered obstructed when the presenting part of the fetus cannot progress into the birth canal, despite strong uterine contractions (8).

An obstetric fistula acts as an "abomination of the woman's body", exemplifying the fact that there is something physiological that is not working properly (9). Due to the fact that continuous leakage of urine and/or feces is unacceptable in any society, it constitutes a social disaster. Once a woman is shunned from her village and forced to live on the outskirts alone, the more difficult it becomes to treat the fistula. The longer it takes to treat the fistula, the more difficult it becomes to reintegrate the woman back in to her own community (10). In addition to the physical trauma that obstetric fistula's entail, women who experience prolonged labor often develop social problems such as divorce, exclusion for religious activities, malnutrition, and worsening poverty (11). Not only do women have to deal with their incontinence on their own, they are also forced to live, cook, eat, and do chores by themselves.

As if suffering from obstetric fistula itself is not enough, these woman must also endure the social humiliation and stigma that surrounds the health issue. Having to endure the ramifications of this health issue can take a major mental toll on the women involved. Nigusse & Asnake state that one in four women who are incontinent in Ethiopia have consider taking their own life, with 37% of these women successfully doing so (12). This statistic shows the mental toll that obstetric fistulas can have on a woman, and how serious it is to those suffering with it. Clearly the ramifications are so severe, and the stigma so great, that many women feel that they would rather be dead than to live a life leaking urine or feces.

Obstetric fistulas are easily repairable, with one procedure lasting no longer than an hour, and most taking only between 20-40 minutes. A 30 minute surgery could potentially alleviate a lifetime's worth of social struggles and incontinence. The surgery, including pre-operative and post-operative care, costs between $450-$600 dollars per patient (13). The price varies based on where the fistula developed and the extent of the damage, however, all fistula centers and community hospitals in Bangladesh raise their funds to be able to support the constant influx of women coming into their clinic. The clinics providing these surgeries do not charge the women for the operation, and only leave the woman responsible for getting to the clinic itself. Due to the extreme ratio of patients per clinic that exists in Bangladesh, clinics

are constantly forced to turn down women since they do not have enough beds to support the amount of women needing restorative surgery. According to Browning and Patel, "At the world's current capacity to repair fistula, it would take at least 400 years to clear the backlog of patients, provided that there are no more new cases" (14). By this estimate, the unmet need for surgical treatment could be as high as 99% (14).

## III. Methods

### A. Analysis of Interpersonal Health Communication Topics

Interpersonal health communication is defined as face-to-face verbal or non-verbal exchange of information and feelings between two or people (15). The framework presented in Appendix B has been adapted from the Health Communication Capacity Collaborative, and serves as the foundation for this section of the paper (4). By understanding some of the key concepts in the interpersonal and individual levels of the framework, researchers and public health professionals may be able to make targeted changes on one of the higher levels of the diagram. More specifically, this paper focuses on the interpersonal aspect of the framework since the health issue of obstetric fistula, especially in Bengali society, is significantly rooted in this level.

#### i. Stigma

Women suffering from obstetric fistula's experience extreme stigma due to their incontinence, which could have been prevented by a delay in childbearing age or better healthcare access. Goffman defines stigma as a trait or attribute that is deeply discrediting, and in this example women experience health-related stigma solely based on the presence of an obstetric fistula (16). The visible urine or feces leaked from these women, or the distinctive smell accompanied with it, are what usually let other people know that a woman is suffering from this type of fistula. This is an example of being discredited, a common IPHC term, since the women have been outed in some way without having to tell people specifically (16). The stigma that surrounds obstetric fistulas occurs in multiple ways, including from peers, from oneself,

and being associated with stigmatized individuals. An enacted stigma occurs when other people ordain the stigma against an individual (16). As applied to obstetric fistulas, enacted stigmas arise when a woman's peers and/or family begin to treat a woman differently, or even exclude her socially, because of the presence of her health issue. Women often feel so stigmatized that they exile themselves from their village and family and live alone (13). At this point, the presence of an obstetric fistula has reached "master status", which means that the stigmatizing attribute has become the most defining feature of an individual (16). Yeakey, Chipeta, Taulo, & Tsui interviewed 45 women that have obstetric fistulas and discussed how their health issue effects the way that others view them (17). In her research, many women reported that even after leaving their villages, their friends and peers would act as if the woman did not exist due to her stigmatizing attribute (17). The fact that a woman has this type of fistula is often the first thing that other individuals use to describe that woman, which can be a very heavy thing for a woman to carry around with her. This weight of the stigmatizing attribute could be what leads women to choose to exile themselves from their villages and loved ones. Yeakey et al. discuss how the stigma surrounding obstetric fistulas causes women to feel that the health issue is a direct assault on their ability to fulfil social expectations of them as women, wives, and mothers (17). This research exemplifies the fact that stigma plays an extensive role in the health issue of obstetric fistulas.

The consequences of being incontinent are severe and often extend farther than just social isolation. Charmaz argues that stigmatized individuals experience increasing amounts of guilt, shame, and fear as compared to "normal" individuals (18). The stigma that surrounds fistulas only magnifies the loss that a woman can no longer bear children in addition to the likely loss of the child that lead to the formation of the fistula. The stigma amplifies the situation and can make a woman feel even less valued, shameful, or guilty for being unable to produce living children (2). In addition to the loss of a child and isolation, a woman with an obstetric fistula will also struggle with social status at the same time as having the stigma present. While women are already deemed inferior to men in many Bengali families, being incontinent leads to being at the very bottom of the social system (13). This extreme decline in social status also

contributes to the isolation and discrimination felt by women with obstetric fistulas. Furthermore, women who experience stigma as a result of their health concern engage in extra effort to try and conceal their stigmatizing attribute (7). For example, women who attempt to travel to clinics that provide free surgeries will travel with large sheets of cloth in between their legs and fruit in her bags in an attempt to conceal the hints that her health condition may give away (13). This "passing", or impression management, is done in an attempt to seem normal and blend in (9).

### ii. Disclosure

Disclosing the fact that a woman has an obstetric fistula takes some strategizing, although often time's people know without the woman having to say anything due to the foul smell (7). Lister discusses the conflict that women have when attempting to disclose their health information (19). He mentions that many woman are at odds with themselves about whom to tell, and how to tell, the fact they are incontinent. Lister mentions that woman often do not know if they should address the elephant in the room, or just not talk about it at all (19). No matter the choice, the woman will still suffer the ramifications of having an obstetric fistula. Because of this, it is understandable that women who are dealing with the health issue choose to leave on their own will to try and minimize the social humiliation that Lister talks about in his research.

### iii. Coping

Wenzel, Glanz, and Lerman conducted a study that analyzed whom women with obstetric fistulas disclosed information to, as well as how they coped with the health issue (20). Researchers found that participants in this study made efforts to regulate their emotions through rumination, avoiding family and community members, suffering in isolation, hiding their story and circumstances, accepting the changes associated with obstetric fistula, and positive subjective interpretation. This study found that women felt that the most helpful information they received regarding their health issue came from others in the same situation (20). This finding presents a different viewpoint in whom or how women disclose information to

as told by Lister's research (19). Talking to other women who are experiencing the same ramifications allows for comfort to be provided as well as the ability to better understand and accept obstetric fistulas. Participants in the 2000 Wenzel et al. study also reported attempts to manage the illness by seeking family support, selling property, and orientating to reality. This study provides excellent research and evidence supporting the fact that women who have obstetric fistulas choose to confide in other women in the same situation due to the fact that they understand exactly what they are dealing with, both physically and mentally.

Another coping strategy utilized by many women suffering from obstetric fistulas is religion. A study conducted by Watt et al. (2014) analyzed religious coping among women with obstetric fistulas (21). This study found that participants utilized positive religious coping strategies more frequently than negative strategies. In addition to this, 76% of the women reported at least one form of negative religious coping. When researchers used statistical methods to analyze the results, they found that negative religious coping was associated with stigma, depression and low social support (21). Upon further analysis, only depression remained significant, explaining 42% of the variance in coping. Qualitative data confirmed reliance upon religion to deal with fistula-related distress, and suggested that negative forms of religious coping may be an expression of depressive symptoms. The results suggest that negative religious coping could reflect cognitive distortions and negative emotionality, which are both characteristic of depression. The findings from this study show how much religion, whether positive or negative, plays a role in coping with obstetric fistulas. While this study only surveyed women from Tanzania, it is likely that they can be generalized to other women suffering from the same health issue. This study also provides evidence to support the claim that obstetric fistulas have an extreme toll on the mental health of women.

### iv. Identity

The concept of identity, and identity goals to be more specific, also relate to the health issue of obstetric fistula. Identity goals, also known as self-presentation, are what people want to achieve through

their interaction with others in order to determine what kind of person they are (22). Some questions that accompany this type of goal are, "How do others see me? What kind of person does this other person think I am? How can I change how other people see me?" The study conducted by Wenzel et al. (2000) reported than many women in the study felt a loss of personal identity caused solely by their health issue of obstetric fistulas (20). In a society where the role of a wife is primarily to bear children and take care of household chores, it is mandatory for women to do this if they are to retain their family and social position (13). This is often possible for those who live with their family and relatives, however, for those women who have been socially isolated it is not. Participants in the Wenzel et al. (2000) study reported feeling lonely and extremely isolated due to the fact that they had been shunned from their villages (20). One woman stated, "Because of my illness, I went from being a healthy wife and woman with relatives to an ill, divorced, and lonely person with no one to turn to and nowhere to go." This study shows how much turmoil an obstetric fistula can cause in regards to a woman's identity. Women describe having a "pre-fistula" identity and a "post-fistula" identity, blaming the fistula itself for the identity crisis (20). These girls must learn how to deal with their new life, and what implications the health issue has on this new identity they are trying to form.

### v. Narrative of the Self

Another IPHC concept that comes in to play when discussing obstetric fistulas is the narrative and self. Arthur Frank described a type of narrative that might be part of a person's story relevant to this health issue called the chaos narrative (16). In this narrative, there is a lot of disruption and/or distortion occurring in what appears to be a chaotic story. This type of narrative may even be fragmented, with no clear connections between various pieces of the story (16). A chaos narrative does not have a satisfying ending and usually has ongoing turmoil as the story ends. At this time, majority of women suffering from obstetric fistulas do not have the means to get restorative surgery which would fix the issue (13). With that being said, these women suffer the consequences of having an obstetric fistula leading to turmoil for the rest of their lives. The fistula causes major disruption to their life, making it so they cannot have the

same life they previously enjoyed. This type of narrative may also involve a quest narrative in some cases. In a quest narrative, a person is seeking some sort of answer or meaning (16). Looking for a way to solve the health issue also constitutes a version of the quest narrative. Women suffering from obstetric fistulas are constantly trying to form their own narrative and work through their health issue, trying to work out how their new identity fits into their narrative.

### B. Intervention Analysis

One of the most successful health intervention organizations that has existed in Bangladesh is the Bangladesh Rural Advancement Committee (BRAC). BRAC's mission is to empower people and communities in situations of poverty, illiteracy, disease, and social injustice (23). Because of this, the interventions that BRAC creates aim to achieve large scale, positive changes through economic and social programs that enable men and women to realize their potential. One of the most well-known interventions produced by BRAC is their tuberculosis program. In this program, community health workers (CHW) known as *shasthya shebikas* play a crucial role in connecting individuals with TB control services during door-to-door visits and health forums. These CHW's disseminate TB-specific messages to the community, identify presumptive TB patients, and refer them for further testing to the government laboratories (23). BRAC's approach towards the diagnosis and treatment of TB focuses community level education and engagement. The program conducts orientation with different stakeholders of the community to engage them in efforts to identify TB patients, ensure treatment adherence, and reduce stigma surrounding TB. Due to the overwhelming success of BRAC's TB program, I would recommend adapting the community engagement and community health worker aspects when creating a new intervention. Not only did these characteristics of the TB program save millions of lives, but the intervention has been proven successful in the same country and regions as the focus of this paper. Knowing this, using the effective framework that BRAC has laid out is likely to be successful given that a "trial run" for a different health issue has already been in place since the 1980's. BRAC's TB program demonstrates the effectiveness of a well-trained, well-utilized community health worker in addition to

facilitating the proper dialogue that would aim to decrease stigma. Both of these aspects should be considered when developing a health intervention for obstetric fistula. Furthermore, I would argue that a partnership with BRAC could benefit future interventions in multiple ways. Not only would the intervention have access to BRAC's resources, but this would also help gain the trust of individuals in Bangladesh.

Another successful health intervention was conducted in Pakistan and utilized a voucher scheme in order to increase the rates of institutional delivery among low income women (24). Voucher recipients made a one-time payment of US $1.25 to the outreach workers who sold them the voucher booklet. The booklet contained coupons for services that clients were entitled to receive upon purchase of the booklet. After providing a particular service, the provider would tear off the relevant coupon and submit it to the leading NGO for reimbursement. The voucher recipients were identified through door-to-door visits by project outreach workers, demonstrating the value in a well-trained, well-utilized community health worker (24). Another intervention, piloted in Uganda and Zambia, gave travel vouchers to women in order to increase access to pre-natal care and properly equipped birth facilities (25). In both countries, the maternal mortality fell by 30-35 percent in the participating districts due to these travel vouchers. The availability of transportation is one key reason the program has shown impressive results in such a short period of time, and this voucher system should be considered when developing future health interventions involving labor and delivery. Both of these health interventions address a key barrier (lack of reliable transportation) that women face when trying to access birthing centers/hospitals. This is critical when attempting to design an intervention focused on obstetric fistula in Bangladesh since the majority of the population lives in rural areas and would need a way to get to a hospital or clinic. Not only does the voucher system address transportation, but this method also covers the cost that women would face when trying to access services. The vouchers cover the majority, if not all, costs associated with safe and recommended birthing practices. Women do not have to worry about affording transportation, perinatal care, antenatal care, or even the birth itself with this system. By covering this common barrier, the

voucher system aims to decrease the amounts of births that take place in the home, which in turn would likely decrease the amounts of maternal morbidity.

In 2008, the United Nations Population Fund (UNFPA) organized a training at the Sylhet medical college hospital as part of a national effort to increase the number of doctors and nurses skilled in treating fistulae and internal wounds suffered during childbirth that cause incontinence (26). This three-day training session involved medical staff from Bangladesh, Nepal, Pakistan, and Timor Leste leading local medical staff and students in related procedures. While small in nature, only treating 29 women, this intervention was a step in the right direction towards training more skilled personnel in a particularly vulnerable region. Similar training sessions in districts throughout Bangladesh have trained multiple doctors and nurses in the past several years, but this was the first to involve medical staff from other Asian countries (26). The UNFPA's partnership with Sylhet's medical college not only validates the need for more skilled birth attendants and personnel in Bangladesh, but also the fact that small steps are being taken to accomplish the goal of eliminating obstetric fistula altogether.

## IV. Results

### A. Practical Recommendations

Based on the successes and failures of past interventions, in addition to knowing the ramifications of various IPHC topics, I would propose an intervention that focuses on obstetric fistula education as well as training skilled birth attendants to aid in home births. Understanding the consequences that stigma holds for Bengali women may persuade more privileged individuals to donate to the cause/restorative surgeries, while also making obstetric fistulas seem less unusual. If community health workers discuss obstetric fistulas, and the associated treatment options, signs/symptoms, and even prevention, with villages around Bangladesh, this will aid in the reduction of labeling women with a health-related stigma.

Although much has been published about the surgical repair of obstetric fistulas, prevention of fistulas has gained relatively little attention. The research conducted by Wall discusses three major

determinants of obstetric fistulas (27). I propose a campaign in rural areas to bring understanding to how fistula's develop and what can be done to prevent them from occurring, which are considered immediate factors in Wall's theory. This campaign would focus on health, reproductive status, and use of health care resources. In addition to this educational campaign, this spreading of awareness should also destigmatize birth control and condom usage. Many Bengali villages do not allow their women to take birth control pills, leaving many girls to hide them from their husbands in order to prevent further bearing of children for a period of time (13). If more facts are communicated to village elders about the positive impact these pills, and other safe sex practices, would have on the health of the individuals in the village, then perhaps there would be a decline in the presence of obstetric fistulas. Raising awareness about the causes, and prevention, of fistulas aims to decrease the stigma surrounding the illness while also decreasing the uncertainty a woman feels during this time. If this campaign also provides information to villages about what to do in the event of an obstetric fistula occurring, this would allow instant action to be taken which would, in turn, reduce social problems and struggles. Having a campaign that focuses on the immediate factors that impact obstetric fistulas will hopefully decrease the prevalence of the illness occurring, and is one step in the right direction toward eradicating them altogether.

I would recommend partnering with Fistula Care Plus and the Ad-din Foundation. Fistula Care Plus currently supports fistula prevention and treatment at 13 different sites around Bangladesh (28). In 2005, Fistula Care project launched, and since then, the organization expanded into what is now known as Fistula Care Plus (FC+). Due to the project's success, the organization was able to expand and is now labeled FC+ since their scale-up. In addition to the four private hospitals supported under the previous project, FC+ now works with seven private hospitals and three public sector institutions. The FC+ project has also established the University Fistula Center at the Bangabandhu Sheikh Mujib Medical University, which is the primary institute for clinical learning in Bangladesh (28). The Ad-din Foundation, founded in 1980, is a non-profit organization that is headquartered in Dhaka, Bangladesh. This organization is dedicated to serving the health needs of women and children and has focused its' efforts in the maternal

health field (29). This organization is responsible for building and funding a chain of Ad-din Hospitals which are recognized as centers of excellence acclaimed for their quality, affordability, and patient friendliness (29). Ad-din's current projects include hospitals in Dhaka, Keranigonj, Jessore, Kushtia, Khulna and Postogola; Medical Colleges in Dhaka, Jessore, Keranigonj and Khulna; Nursing College in Dhaka, Nursing Institutes in Dhaka, Jessore, and Kushtia and a Medical Technology Institute in Jessore (29). By partnering with these two organizations, this project is able to establish connections with the local community and create an intervention in an area that is currently lacking care, such as Sylhet. Having a partner such as the Ad-din Foundation will help establish a legitimate project, as well as improve the views on the program since the Ad-din Foundation is held in such high regards. Furthermore, by partnering with these organizations, the intervention will have access to an already established network of resources and individuals.

### B. Survey Design

I propose creating a survey to analyze the IPHC topics relevant to the health issue of obstetric fistulas and the impact that each has on the women suffering from this health issue. The results from this survey will be used to tailor the educational campaign that I propose. One area of interest in terms of obstetric fistulas is a woman's support system. Knowing how a woman copes with the stigma and health concern, as well as who she chooses to confide in and disclose information to would benefit researchers when trying to establish a stigma-reducing campaign around Africa. Having this information would allow for a more tailored approach when trying to spread information to villages where obstetric fistulas are prevalent. Another area of research that would be beneficial for researchers would be to analyze how a woman's identity changes after she is presented with the stigma that surrounds obstetric fistulas. While we can predict how a woman feels and what she is likely going through, knowing exactly how a woman thinks during this time will allow researchers to use that data to help raise funds that will funnel back to the cause. For example, having hard evidence that fistula stigma greatly impacts a woman's life, both how

she views herself and how others view her, could prompt more people to donate to the fundraising efforts which would go towards funding restorative surgeries.

An interesting research aspect would be to analyze the social structure in various Bengali villages and the woman's role in each. The family is central to one's social life in Bangladesh, forming the basis of individuals' support networks (30). The typical household in Bangladesh, especially in villages, often includes several generations, with men being the primary earners and workers (29). Women tend to be in charge of household affairs, with most of their economic and social lives revolving around the home, children, and family. Over time, women may have considerable authority within the household, but ultimately it is the patriarch who makes most decisions (30). Knowing how others view women, especially in a patriarchal society like Bangladesh, in addition to what their responsibilities are, etc. would allow researchers to assess clinic access, fistula prevalence, and other factors that come from this sociological information. For instance, if a woman is not valued in a village, the male elder's will not spend money to send her to a clinic hundred's of miles away in order to receive the restorative surgery (13). By understanding this, researchers and campaigners can attempt to build clinics in more rural areas, or even try to train more midwives who will live or travel to villages all around Bangladesh. Furthermore, learning the importance and relevance of the males in this society, an intervention can be created to utilize these individuals to decrease stigma surrounding obstetric fistulas. If men are able to understand this health issue and learn of its' importance, treatment rates or even preventive measures have the potential to increase.

I have created an example survey addressing the above concepts that can be found in Appendix C. Some survey questions have been adapted from the Brief COPE survey and a survey used in a study conducted by Santos et al. (31, 32). Additionally, questions regarding treatment seeking behavior have been adapted from a survey used in Iran by Siamian, Hassanzadeh, Nooshinfard, and Hariri (33). Ideally, community health workers would be able to distribute these surveys to women who currently have an obstetric fistula, or have had one in the past. The sampling method would be convenience sampling, and

perhaps snowball sampling if women are able to recruit other women whom have experienced the same health issue as well. The survey will be translated to Bengali and Arabic prior to printing, so that it is in the two most common local languages. Additionally, community health workers will sit with the women while they are filling out the survey in order to answer any questions that arise as well as to lead them through the survey if women are not fully literate.

## V. Discussion

### A. Potential Intervention: Program Overview

#### i. Needs Assessment

Based on the locations listed by Fistula Care Plus, the Ad-din Foundation, and Hope Foundation, this project has identified a lack of fistula services and interventions in the northeastern area of Bangladesh in a city called Sylhet. While there are published statistics for obstetric fistula prevalence for all of Bangladesh available, as mentioned above, there is no evidence for the prevalence rates in Sylhet. This city was selected based on the fact that majority of obstetric fistula efforts are concentrated in the southern region of the country. The Sylhet region currently only has one known intervention that targets obstetric fistula in that area. This intervention focuses on fistula prevention and catheterization services and is partnered with the government district hospital, Habiganj District Hospital (278. After conducting a literature review, it became clear that the Sylhet region of Bangladesh is significantly lacking fistula resources in comparison to the other areas of the country.

In 2015 alone, approximately 3,100,000 babies were born in Bangladesh, which is around 8,600 every day (33). UNICEF states that among young women, defined as those ages 20-24, 36% of Bengali girls in this age group gave birth before the age of 18 (35). This demonstrates the fact that being a younger woman exacerbates obstetric fistula health issues. Moreover, the region with the highest coverage of skilled birth attendance is Khulna with approximately 58%, whereas the region with the lowest coverage is Sylhet with 27%. This is a difference of approximately 2.1times (35). The Sylhet region also has the lowest rates of institutional delivery and deliveries by caesarean section, about 22.6%

and 10.9% respectively. This data can be compared to other regions in the country using the table provided in Appendix D. These statistics demonstrate the fact that many women, especially in rural areas, do not seek out professional care, however, it is unknown whether they do not try to seek care or if they do not have access to care. Furthermore, this shows that not many women go to institutions give birth and many remain in the presence of their own home, which is why an increase the number of skilled birth attendants is so important. Other reasons for not traveling to institutions for delivery may include religious beliefs associated with hospital births, cost, transportation, male views regarding hospital births, and even stigma associated with institutionalized birthing. The proposed intervention aims to address a few of these proposed barriers.

Knowing the consequences that a woman endures as a result of fistula, this intervention recommendation aims to raise awareness about prevention, signs/symptoms, and treatment options. By providing this knowledge to women in Sylhet, Bangladesh, and surrounding areas, decreasing the stigma that surrounds this health issue will also be accomplished. In Bangladesh specifically, the number of women living with an obstetric fistula is estimated to be 1.69 per 1000 ever married women, however, this number has been argued to be on the low side of actual prevalence rates, so a more comprehensive study needs to be conducted (5). Each year in Bangladesh, approximately 2,000 new cases of fistula develop and there are currently 70,000 women in need of fistula repair surgery (36). A barrier to accessing surgery is that there are only 3.6 doctors per 10,000 people in Bangladesh, and fistula repair is not often a physician's primary concern compared to the other wide range of cases they typically see (5). Moreover, it is likely that the physicians women do seek care from are not specifically trained in obstetric fistula repair, which is why it is not high on their list of priorities. Surgical closure is considered to be the operational solution for the immediate physical symptoms of obstetric fistula, and most surgeries result in a full closure of the fistula. However, many women still remain unaware of the treatment possibilities and where to receive care, which is why this project aims to create an educational campaign.

This intervention also focuses on training individuals to become skilled birth attendants. This is because a lack of midwives and other health professionals in rural areas leads women to give birth at home attended to by a traditional birth attendant, if anyone at all, who often engages in life-threatening practices leading to obstructed labor (5). In Bangladesh, only about 40% of births are attended by skilled personnel and the lifetime risk of maternal death is approximately 1 in 240 (5). On the other hand, the maternal mortality rate in Bangladesh is 176 deaths per 100,000 live births (37). Since approx. 71.1% of the country's population lives in rural areas, it is crucial to train more individual's to supervise the births in this area (5). By doing so, the rates of obstetric fistula should decrease and therefor also decrease maternal mortality rates in the long run. Furthermore, approximately 43.3% of the population in Bangladesh lives in poverty, which is defined as making less than $1.25 per day (5). The goal of this project is to increase the prevention of obstetric fistula by raising awareness of obstetric fistula signs, symptoms, and treatment, while simultaneously decreasing stigma, and increasing the amount of skilled birth attendants in rural areas so that these women do not have to suffer for years to come, especially since it is highly unlikely that they can afford the surgical repair. Currently, women have to pay out-of-pocket for surgical fistula repair, unless they are able to get into one of the specialized fistula clinics in Bangladesh, which has an extensive waiting list. Additionally, there are no clinics in the Sylhet region that specialize in fistula repair, so women have to travel long distances, often by foot, if they choose to try one of the other clinics. At the specialty clinics, repairs are covered by donations and physicians volunteering their time abroad to conduct the surgeries (28).

### ii. Causal Hypothesis

This project will partner with Fistula Care Plus and the Ad-din Foundation to address obstetric fistula in Sylhet, Bangladesh. We will develop an educational curriculum for community health worker's to follow in conjunction with a clinical training program to increase the number of skilled birth attendants in Sylhet, Bangladesh. Community health workers will run a traveling educational campaign in Sylhet which will increase knowledge about when to seek care, resources available, and prevention techniques.

Together, these efforts will contribute to reduced stigma associated with obstetric fistula, decreased prevalence of obstetric fistula, and decreased maternal mortality rates in Sylhet.

The causal pathway is attached in Appendix E.

### iii. Rationale

Not only have I chosen to focus on this region of Bangladesh due to the lack of services and interventions surrounding the issue of obstetric fistula, but this project also has a personal connection to it. I am half-Bengali and have visited the country many times. This family connection, although not spawning from the Sylhet region, is what initially led me to take a deeper look into this specific health issue in Bangladesh.

Based on the literature review and in-depth look at the public health initiatives focusing on obstetric fistula currently in place, there is a clear need for increased efforts in the Sylhet region of Bangladesh. Of all the regions in Bangladesh, the Sylhet region has the lowest rate of having a skilled attendant present at birth, at approximately 27% (35). One of the goals of this project is to train volunteers to become skilled birth attendants as a direct response to this statistic. By increasing skilled birth attendants, the prevalence of obstetric fistula will decrease. Knowing the social implications that follow the diagnosis of obstetric fistula, this intervention aims to prevent the problem from occurring altogether.

### iv. Objectives

A chart outlining the key objectives can be found in Appendix G.

### v. Budget

A cost-specific budget can be found in Appendix H.

### vi. Program Activities

a) Conduct needs assessment

This allows the project team and staff to gain a better understanding of obstetric fistula prevalence resulting from lack of access to care, poor knowledge of treatment options and resources, stigma, and the need for intervention in Sylhet. Since there is no published prevalence rate of obstetric fistula in this region, the needs assessment will be crucial to understanding the scope of this health issue.

b) Recruit community health workers (CHW's)

The outreach coordinator will be responsible for recruiting volunteers to become community health workers for this project. All CHW's will be women, and ideally, will have suffered from obstetric fistula at one point in their lifetime or know of someone who has, or is currently, suffering from this birth complication (sister, friend, extended relative, etc.). By having these women become community health workers, it will make the educational campaign much more relatable for the women that attend from the local communities.

c) Recruit volunteers wanting to become skilled birth attendants (SBA's)

The outreach coordinator will be responsible for recruiting individuals interested in becoming skilled birth attendants. These individuals may already be traditional birth attendants, but lack any formal training, or they may come from other backgrounds such as nursing or traditional healing. It is also possible that the volunteers be women who are simply interested in the field or have witnessed a birth but felt helpless as they lacked the skills/resources to help.

WHO defines a skilled birth attendant as someone "trained to proficiency in the skills needed to manage normal (uncomplicated) pregnancies, childbirth and the immediate postnatal period, and in the identification, management, and referral of complications in women and newborns" (33). Midwives are not a common term used in Bangladesh, but they often hold the same classifications and responsibilities.

For this project, it is thought that SBA's will attend births and if complications arise, these trained individuals will refer the women to a treatment center. This is where a voucher system would come into place. By providing women with a transportation voucher, women can give the voucher to local *riksha*

drivers or taxi services and be certain that they will be taken to the closest hospital or birthing center. The drivers would redeem the vouchers for cash with the participating sponsoring body, requiring the women to pay nothing for their service.

d) Develop culturally relevant educational campaign curriculum

This campaign will be led by the CHW's. It is important to ensure that the educational campaign is culturally relevant/conscious as it is a highly stigmatized health issue in a setting where women are not often encouraged to discuss their health problems. This educational campaign focuses on the following topics: treatment options, prevention, signs/symptoms, and how to access care. The CHW's will each be responsible for different areas in the Sylhet region. During their travels, the CHW's will conduct short survey/questionnaires to obtain a better understanding of the obstetric fistula prevalence rates in that area as well as the prevalence of having a skilled attendant at birth. Furthermore, these questionnaires will act a baseline to see the knowledge that females currently possess in regards to the topics covered in the campaign.

e) Train CHW's

This 2-day training will be led by the outreach coordinator and 10 project volunteers. During this training, CHW's will understand their roles, what is expected of them, and why it is important to conduct this type of data collection and information dissemination. The training materials will be developed by the program coordinator, and will have a special focus on obstetric fistula signs, symptoms, causes, prevention, and treatment. Moreover, it is the goal of the CHW educational campaigns to reduce stigma and increase awareness, so part of the training will teach these individuals how to facilitate conversation as well as techniques to keep engaging, and meaningful, conversation flowing. Community health workers will get assigned certain areas of the Sylhet region during this training in addition to learning how to distribute and collect the questionnaires. There will be two training sessions in order to accommodate the high volume of volunteers and ensure that they can attend 1 of the 2 trainings.

f) Train SBA's

The training that will be conducted for the skilled birth attendants will be created by Dr. Melissa Simon, who currently works for Northwestern University and specializes in female reconstructive surgery and has done mission work for obstetric fistula repairs. A physician in Bangladesh, who has not yet been recruited, will co-develop with Dr. Simon to ensure relevance, trust, and acceptability of the training/program. The training given in Bangladesh will focus on recognizing the signs/symptoms of obstructed labor as well as what to do should this situation arise. Furthermore, techniques will be taught to combat certain complications that arise during birth, such as high blood pressure, breached labor, and breathing tips. Direct observation hours will be required, which will be determined at a later date.

g) Bi-weekly CHW meetings

At these meetings, CHW's will turn over all completed surveys to the project staff and receive blank copies to give out in the future. CHW's will also receive their stipends during this meeting. The outreach coordinator will give out any additional relevant information at this meeting prior to dismissal as well as set the date for the next meeting. These meetings provide a space where CHW's can talk freely about any problems or questions they have had along their educational campaign. Furthermore, these meetings have the ability to serve as a forum to talk about complicated issues, challenges that CHW's have faced, and how to sort out such problems/overcome them.

h) Measure confidence of SBA's skillset

This is important because it acts as a measure of the effectiveness of the training. Not only this, but by assessing the SBA's confidence the project staff is able to assess the confidence that SBA's have in attending to births and recognizing the sings of obstructed labor. This will be measured using a pre-test and post-test at the training. It is hypothesized that the confidence levels will dramatically increase immediately following the training.

i) Random skills assessment of SBA's

By conducting these skills assessments, the project staff ensures that the SBA's are continuously practicing the methods and techniques learned at the training as well as identifying the areas that need additional practice. These assessments will happen every 3-4 months from the time of the training. There will be no repercussions for an SBA that does not obtain at least 75% mastery, but they will be retaught the areas where they struggle.

Additionally, there will be field observations conducted by the program director, on-site director, and outreach coordinator to witness SBA's attending births. This will allow for direct observation of the skilled birth attendants to assess confidence, knowledge, and retention of the training material.

j) CHW's conduct educational campaign

On this campaign, CHW's will dispense information about treatment options, prevention, signs/symptoms of obstructed labor, and where to access care if an obstetric fistula develops. By conducting this campaign, CHW's will also aid in decreasing the stigma that surrounds this health issue. While conducting this campaign, CHW's will distribute a short questionnaire during this campaign as well which aims to assess the knowledge females already possess regarding campaign topics as well as the prevalence of obstetric fistula. Ideally, the campaign will be structured using schools and local markets. Although, the location will be subject to the results of the on-site needs assessment. CHW's will come back to the same school and/or market a few weeks later to give a follow-up survey/interview which examines if the knowledge gained from the campaign was obtained by the females that attended.

This educational campaign will also be reducing the stigma surrounding obstetric fistula while it is in action. This can be further exemplified by incorporating important male figures from various communities in the area. Since Bengali culture is a patriarchal society, involving men in the obstetric fistula discussion would help decrease the stigma surround obstetric fistulas while also making women more comfortable to speak up and talk about their health issue. Additionally, education campaigns should aim to garner support from the community in order to decrease stigma. By gaining community buy-in, the

intervention would facilitate more fistula discussion and make women feel more comfortable disclosing their health status as well as reach out for support.

### B. Limitations

One limitation of this intervention recommendation is the survey itself. While many of the questions have been adapted from validated surveys, the combined components have not been tested for reliability or validity, especially in the Bengali context. Furthermore, since I do not speak Bengali, it is unclear how the questions will translate and if they will obtain the same information as when the questions are presented in English. Even though the survey is intended to be translated into the most common languages spoken in the Sylhet region, it is entirely possible that the women intended to complete the survey cannot read. While we have tried to accommodate this information by requiring community health worker's to be present at the time of survey completion, this could result in potential response bias since women may not be as honest or truthful when giving response face-to-face as opposed to the more anonymous option of writing responses down. Another limitation that may occur in the proposed intervention is the sampling design. The survey is intended to be out of convenience, since it specifically targets women who are currently suffering from an obstetric fistula or those that have had one in the past. Convenience sampling can result in a non-representative sample due to the lack of randomness when selecting participants.

Additionally, the programming recommendation given has limitations in the budget suggestion. While this is a capstone project, and just a proposal, I have no professional experience designing any health interventions. Furthermore, the MPH program at Northwestern university does not have any formal courses regarding financial planning and budgeting, making this aspect of my proposal the weakest due to a lack of adequate training in this domain.

In regards to the interpersonal health communication aspect of this paper, a limitation lies in the fact that there are many topics that can apply to the health issue of obstetric fistula, but this paper only had the

ability to analyze a few. Due to paper constraints, and personal interests, it was decided to focus only on four-five topics as opposed to mentioning many more. Additionally, the framework presented is a very broad overview on the levels of communication, and is not specific to interpersonal health alone. Instead, this particular framework shows how interpersonal communication plays a role in other types of communication as well as the hierarchy that exists between these levels. It is possible that a different framework could have been used, one that only examines interpersonal health alone.

### C. Future Directions

By better understanding the two innermost layers of the IPHC framework presented in Appendix B, the individual and interpersonal levels, public health professionals are able to not only gain a more in depth perspective regarding a specific health issue, but may also use the information gained to inform one of the higher levels of the framework. Additionally, the survey presented in this paper was the only survey found during the literature review that combines multiple IPHC topics into a single survey. Because of this, the survey should be tested for reliability and validity so that it can potentially be used in future studies. Not only that, but if it is proven valid then it has the potential to be adapted to multiple languages, which would enable the survey to be used in numerous countries.

While the recommendations are simply a suggestion built upon analyzing health interventions, the various components of the proposed intervention have been proven successful and should be considered when designing an obstetric fistula intervention, even if it is outside of the Sylhet region. In the future, the programming recommendation presented in this paper could be used as baseline or brainstorming network when designing interventions for obstetric fistula in developing nations.

## VI. Conclusion

As discussed in this paper, obstetric fistulas effects both the physical and emotional well-being of the women suffering from them. While it may be an easy fix, restorative surgery is not an option for many women, forcing them to live with social isolation, public shame, and physical leakage that accompanies

this health issue. Raising awareness about the causes of obstetric fistulas, as well as how to prevent them, using an educational campaign should bring down the rates of fistula prevalence in developing countries. In addition to this, spreading knowledge about this issue should decrease the stigma surrounding it, which is the ultimate goal in an awareness campaign. If doctors are brought to developing countries to train other individuals in aiding obstructed labor, the primary cause of obstetric fistula, than we should see a decline in the prevalence as well. Knowing how communication concepts, such as stigma, identity, disclosure, and narratives play a role in obstetric fistulas will aid healthcare professionals in future research and recommendations.

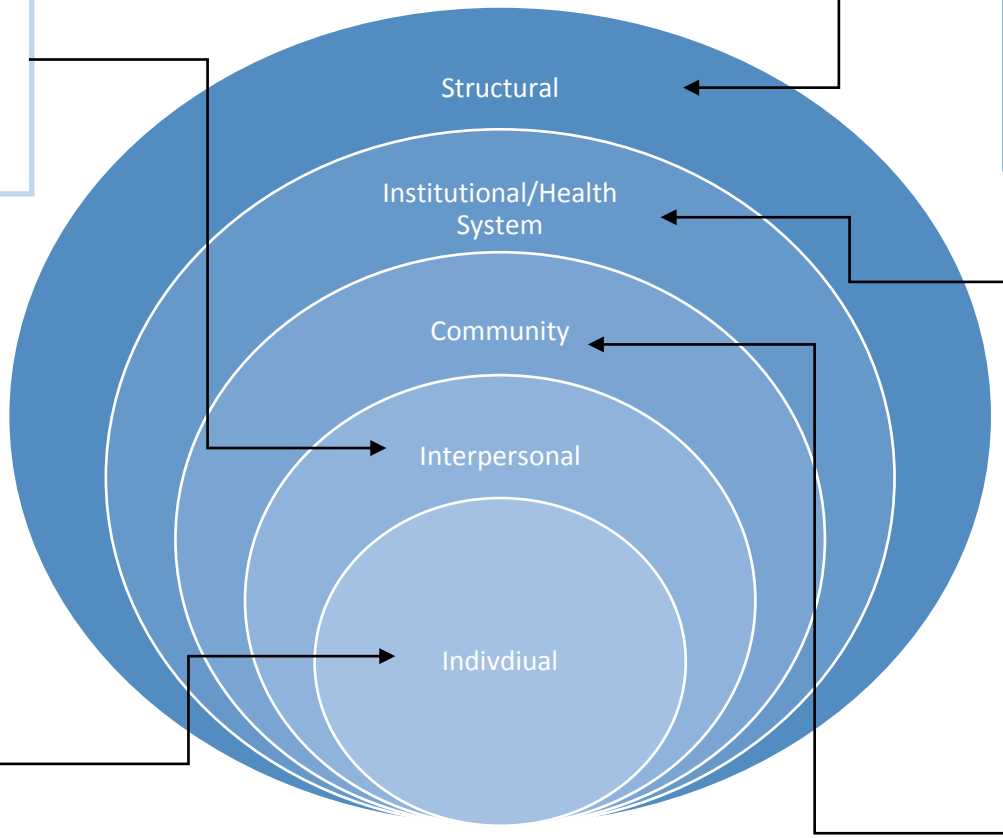
**Appendix A**

Map of Bangladesh- Regional Outline


Bangladesh map vector image on VectorStock [Internet]. VectorStock. [cited 2018May11]. Available from: https://www.vectorstock.com/royalty-free-vector/bangladesh-map-vector-1608043

**Appendix B**

Interpersonal Health Communication Topics Framework: *(attached as a separate document on Canvas due to landscape orientation)*




**Interpersonal/Network**

- Relationship power and equity
- Social Support and trust
- Stigma
- Relationship Satisfaction
- Communication Level
- Social networks/coalitions/capital
- Relationship health/intimacy/interpersonal violence

**Structural**

- Poverty
- Access to services
- Cost of services
- Political context and priorities
- Education curriculum
- Public policy & laws
- Gender equity
- Enforcement of laws

**Individual**

- Knowledge/information
- Risk perception
- Skills
- Motivation
- Emotions
- Substance use
- Physical health
- Denial of status
- Socioeconomic status
- Fear of stigma
- Distrust of healthcare
- Mental health status
- Attitudes
- Empowerment
- Perceived control
- Perceived social norms
- Personal beliefs
- Outcome expectancies

**Institutional/Health System**

- Provision of appropriate services
- Competent, supportive providers
- Peer navigators/advisors
- Friendly, culturally competent environment
- Confidentiality/privacy
- Support tools
- Convenient, responsive

**Community**

- Stigma
- Peer pressure/social norms
- Community organization/mobilization
- Position of religious, cultural, opinion leaders
- Cultural norms
- -isms (sexism, racism, hetersexism, etc.)

**Appendix C**

Question 7- Scales are computed as follows (with no reversals of coding):

Self-distraction, items 1 and 19
Active coping, items 2 and 7
Denial, items 3 and 8
Substance use, items 4 and 11
Use of emotional support, items 5 and 15
Use of instrumental support, items 10 and 23
Behavioral disengagement, items 6 and 16
Venting, items 9 and 21
Positive reframing, items 12 and 17
Planning, items 14 and 25
Humor, items 18 and 28
Acceptance, items 20 and 24
Religion, items 22 and 27
Self-blame, items 13 and 26

**Obstetric Fistula Survey**

1. How long have you been experiencing this health issue?
    - Less than 1 year
    - 1-3 years
    - 3-5 years
    - More than 5 years

2. In your opinion, what is the biggest barrier you face (or have faced) when trying to seek treatment?
    - Cost
    - Transportation
    - Religion
    - Spousal conflict
    - Time
    - I cannot take off of work
    - I do not know where to go

3. Have you attempted to treat your illness?
    - Yes
    - No ⟶ **Go to Question 6**

4. How many days after you developed the illness did you seek care from a health provider?
    - The same day
    - The next day
    - Two days later
    - 3-7 days later
    - More than 7 days

5. At what stage of your illness did you **first** see a health provider?

- Start of disease and its symptoms
- In early stages with mild symptoms
- In serious stage with severe symptoms

6. Where did you **first** go to seek treatment?
    - Emergency room
    - Clinic, health center, of general doctor's office
    - Private or governmental hospital
    - Pharmacy to consult with the pharmacist
    - Traditional healer
    - Self-treatment with herbal and chemical medicines in the home
    - None of the above
        i. Please describe where you went: _____

7. The following list refers to actions that you may have experiences as a result of your health issue. I am interested in learning if you have experienced any of the following items. Use these response choices:
    1. Never experience
    2. Rarely experience
    3. Sometimes experience
    4. Frequently experience

    Please answer each of the following with only ONE response option.

    1. Being talked about by others
    2. Verbally insulted/harassed
    3. My life has been threatened
    4. Husband/spouse/other household member have been discriminated against by others
    5. Sexual rejection
    6. Manipulation by partner
    7. Excluded from social gatherings
    8. Physically assaulted
    9. Excluded from family activities
    10. Physically harassed
    11. Discriminated against by other women
    12. Excluded from religious activities

8. The following statements deal with ways you have been coping with the stress in your life since you found out you were dealing with urine and/or feces leakage. There are many ways to deal with problems. Different people deal with things in different ways, but I am interested in how you have tried to deal with it. Each item says something about a particular way of coping. I want to know to what extent you have been doing what the item says: how much or how frequently. Do not answer on the basis of whether it seems to be working or not- just whether or not you are doing it. Use these response choices:
    1. I have not been doing this at all
    2. I have been doing this a little bit
    3. I have been doing this a medium amount
    4. I have been doing this a lot

Try to rate each item separately in your mind from the others. Make your answers as true **FOR YOU** as you can.

1. I have been turning to work or other activities to take my mind off things.
2. I have been concentrating my efforts on doing something about the situation I am in.
3. I have been saying to myself "this is not real".
4. I have been using alcohol or other drugs to make myself feel better.
5. I have been getting emotional support from others.
    a. If so, from who? _____
6. I have been giving up trying to deal with it.
7. I have been taking action to try and make the situation better.
8. I have been refusing to believe that it has happened to me.
9. I have been saying things to let my unpleasant feelings escape.
10. I have been getting help and advice from other people.
11. I have been using alcohol or other drugs to help me get through it.
12. I have been trying to see it in a different light, to make it seem more positive.
13. I have been criticizing myself.
14. I have been trying to come up with a strategy about what to do.
15. I have been getting comfort and understanding from at least one person.
16. I have been giving up the attempt to deal with the situation.
17. I have been looking for something good in what is happening.
18. I have been making jokes about it.
19. I have been doing something to think about it less.
    a. If so, what have you been doing? _____
20. I have been accepting the reality of the fact that it has happened.
21. I have been expressing my negative feelings.
    a. If so, how? _____
22. I have been trying to find comfort in my religion or spiritual beliefs.
23. I have been trying to get advice or help from other people about what to do.
24. I have been learning to live with it.
25. I have been thinking hard about what steps to take.
26. I have been blaming myself for things that happened.
27. I have been praying or meditating.
28. I have been making fun of the situation.

9. Please describe the **most d**ramatic change in your life that has happened since your fistula developed?

10. How did you develop the obstetric fistula?

11. What is your marital status at this time?
    - Single
    - Married, but separated
    - Married, and living together
    - Divorced
    - Widowed

12. How old were you when you first realized you had this health issue? _____

13. What is your current age? _____

## Appendix D

Disparities in key maternal and newborn health interventions, Bangladesh, 2014

| | | Coverage – care for mothers | | | | | |
|---|---|---|---|---|---|---|---|
| | | Demand for family planning satisfied by modern methods (%) | Antenatal care coverage at least 4 times (%) [a,^] | Skilled attendant at birth (%)[§] | Institutional delivery (%)[§] | Delivered by caesarean section (%)[§] | Postnatal care of mothers within 2 days (%) |
| | National estimate | 72.6 | 23.8 | 42.1 | 37.4 | 22.9 | 58.1 |
| Region | Barisal | 73.2 | 24.7 | 36.7 | 29.9 | 17.7 | 56.3 |
| Region | Chittagong | 65.3 | 18.7 | 43.9 | 35.2 | 18.3 | 61.7 |
| Region | Dhaka | 72.3 | 25.6 | 43.5 | 40.5 | 29.1 | 58.4 |
| Region | Khulna | 73.7 | 28.4 | 58.2 | 54.6 | 33.0 | 64.2 |
| Region | Rajshahi | 78.8 | 21.0 | 41.6 | 39.2 | 22.3 | 63.4 |
| Region | Rangpur | 82.4 | 33.4 | 37.9 | 34.3 | 17.5 | 51.8 |
| Region | Sylhet | 62.4 | 15.7 | 27.1 | 22.6 | 10.9 | 44.6 |
| Regional performance | Highest value | Rangpur | Rangpur | Khulna | Khulna | Khulna | Khulna |
| Regional performance | Highest value | 82.4 | 33.4 | 58.2 | 54.6 | 33.0 | 64.2 |
| Regional performance | Lowest value | Sylhet | Sylhet | Sylhet | Sylhet | Sylhet | Sylhet |
| Regional performance | Lowest value | 62.4 | 15.7 | 27.1 | 22.6 | 10.9 | 44.6 |
| Regional performance | Ratio (highest to lowest) | 1.3 | 2.1 | 2.1 | 2.4 | 3.0 | 1.4 |

**Key for tables:** 0-24 % | 25-49 % | 50-74 % | 75-100% | Data not available

Disparities Bangladesh [Internet]. UNICEF; [cited 2017Dec15]. Available from: https://data.unicef.org/wp-content/uploads/country_profiles/Bangladesh/country profile_BGD.pdf

## Appendix E

Logic Model: *(attached as a separate document on Canvas due to landscape orientation)*

| INPUTS | ACTIVITIES | OUTPUTS | ACTIVITIES | OUTPUTS | ACTIVITIES | EFFECTS | IMPACT |
|---|---|---|---|---|---|---|---|
| Volunteer physicians who will lead SBA training | Conduct needs assessment | Good understanding of obstetric fistula prevalence resulting from lack of access to care, poor knowledge of options and resources, and need for intervention in Bangladesh | Develop SBA training for obstructed labor detection | SBA training developed | Train SBAs | Increased awareness about presence, causes, treatment options and resources surrounding obstetric fistulas | Reduce prevalence of obstetric fistula in Sylhet |
| Money | Recruit volunteers to become SBAs | | Develop CHW training for raising fistula awareness | CHW training developed | SBAs implement clinical training techniques to aid women in Sylhet | Increased skillset among SBAs | Decrease proportion of maternal mortality in Sylhet due to obstructed labor |
| Teaching space for trainings | Recruit CHW's for education campaign | | Develop education curriculum for CHWs to teach women about access t care, fistula causes, and treatment options | Curriculum developed | Train CHWs | Increased knowledge of OF prevention and treatment and how to access it | Decrease stigma for obstetric fistula |
| Trust of locals/community health workers | | | Create education campaign to reduce stigma and provide information surrounding obstetric fistula | Education campaign developed | CHWs travel around Sylhet conducting information sessions and raising awareness of obstetric fistula | Decreased stigma for OF | |
| Focus groups to assess stigma | | | | | | | |
| Binders & printable learning material | | | | | | | |
| Women in Sylhet, Bangladesh between the ages of 12-49 | | | | | | | |
| Partner with FC+ and Ad-din Foundatino | | | | | | | |

**Appendix F**

Monitoring & Evaluation Plan: *(attached as separate document on Canvas due to landscape orientation)*

| Project Monitoring and Evaluation Plan | | | | |
|---|---|---|---|---|
| **Objectives** | **Indicator** | **Source of data/Data collection method** | **Frequency of collection** | **Comments** |
| To develop 50 CHW's who regularly teach women about prevention, signs, symptoms, and treatment options that are associated with obstetric fistulas within 3 months of program startup and throughout entire 12 month initiative | Number of volunteers who attended the CHW training | Sign-in sheets | 1x at the training | |
| To develop 50 skilled birth attendants who are able to recognize the signs and symptoms of obstructed labor, feel confident enough, and possess the skills needed to assist when needed to women in rural areas of Sylhet, Bangladesh within 3 months post-training | Number of volunteers who attend the skilled birth attendant training | Sing-in sheets | 1x at the training | |
| To increase the number of births that have a skilled attendant present in the Sylhet region from 27.1% to 50% | Percent of births that had a skilled attendant present during labor and delivery at baseline compared to post-intervention phase | CHW asks during edu campaign<br><br>Self-report | 1x during edu campaign | |

| | | | | |
|---|---|---|---|---|
| To increase the knowledge that women in Sylhet, Bangladesh have regarding fistula care, prevention, and treatment from by 30% within 6 months of the educational campaign | Percentage of women in Sylhet, Bangladesh that know the signs, symptoms, prevention methods, and treatment options for obstetric fistulas | Survey that is distributed by CHW's | 2x/woman → time 1 is prior to educational campaign; time 2 is after | Does not measure long-term knowledge/ if the info given on the educational campaign has been retained long-term |
| To increase the confidence and skill that birth attendants possess from their baseline level to 90% or greater by the end of the training | Percentage of skilled birth attendants who can accurately detect signs and symptoms of obstetric labor and know how to proceed/where to go from there | Pre-test given at the start of the training compared to post-test at the end | 1x at the training | |
| To increase the clinical and birthing skills among SBA's from their baseline to at least 75% mastered by the end of the training | Number of SBA's who have obtained at least 75% mastery of the skills taught during the training | Skills test following the training | Every 3 months following the training | Done by Jessyca Turner and 3 other volunteer physicians to ensure SBA's continue to use and remember important skills; consultation with local physician to ensure training standards |
| To reduce the prevalence of obstetric fistula in the Sylhet region by 10% | The number of women living with OF per 1,000 women aged 12-49 years old<br><br>(adapted from Serbanescu & Berg, n.d.)) | Surveys with OF questions<br><br>Census data on the number of women aged 12-49 | 1x→ women answer during survey given by CHW's | Very little information on fistula anywhere in the world in regards to incidence, prevalence, treatment, etc. The questions will be included in the same survey as the one mentioned above that will be given by CHW's on the edu campaign |

| | | | | |
|---|---|---|---|---|
| To decrease the overall maternal mortality in Bangladesh by 5% from the previous years rate. | Maternal mortality rate (number of female deaths per 100,000 live births from any cause related to or aggravated by pregnancy or its management) | Population data obtained from CDC database | 1x | MMR rates take two years to develop, so to get the MMR rate for 2018, will need to wait until 2020. For 2019 rates, they will be posted in 2021. |
| To reduce the stigma surrounding obstetric fistula | Percentage of people willing to talk about obstetric fistula | Conversations held with community members during edu campaign | Continuous | Stigma is an effect and impact of this project, but will have an effect indicator to help measure progress |
| To reduce the proportion of maternal deaths due to obstructed labor during project initiative | Proportion of maternal deaths due to obstructed labor | Death certificates | Continuous | This is a sub-impact of reducing overall maternal mortality |

**Appendix G**

Intervention Objectives

| Output Objectives | Effect Objectives | Impact Objectives |
|---|---|---|
| To develop 50 CHW's who regularly teach women about prevention, signs, symptoms, and treatment options that are associated with obstetric fistulas within 3 months of program startup and throughout entire 12 month initiative | To increase the knowledge that women in Sylhet, Bangladesh have regarding fistula care, prevention, and treatment from by 30% within 6 months of the educational campaign | To reduce the prevalence of obstetric fistula in the Sylhet region by 10% |
| To develop 50 skilled birth attendants who are able to recognize the signs and symptoms of obstructed labor, feel confident enough, and possess the skills needed to assist when needed to women in rural areas of Sylhet, Bangladesh within 3 months post-training | To increase the confidence and skill that skilled birth attendants possess from their baseline level to 90% or greater by the end of the training | To decrease the overall maternal mortality in Bangladesh by 5%. (long-term impact) |
| To increase the number of births that have a skilled attendant present in the Sylhet region from 27.1% to 50% | To increase the clinical and birthing skills among SBA's from their baseline to 75% mastery by the end of the training | To reduce the stigma surrounding obstetric fistula |
| To increase the number of health facility births in the areas surround Sylhet from 22.6% to 45% from mid-program to one year following program completion | | To reduce the proportion of maternal deaths due to obstructed labor |

**Appendix H**

Project Budget

| Program Item | Amount | Quantity | Total |
|---|---|---|---|
| **Volunteer Skilled Birth Attendent Training and Recruitment** (includes physician recruitment, volunteer recruitment, training, training materials including training binders, transportation, food, and room rental associated with 2 days of training for 100 people) | $ 10,000.00 | 1 | $ 10,000.00 |
| **Volunteer CHW Training and Recruitment** (includes volunteer recruitment, training, room rental, training materials including t-shirts, worksheets, and food associated with 1 day of training for 100 people) | $ 10,000.00 | 2 | $ 20,000.00 |
| **Travel** (includes flights to and from Bangladesh for project staff and physcians who volunteer to train SBA's, and lodging during visit) | $ 30,000.00 | 1 | $ 30,000.00 |
| **CHW Educational Campaign** (Includes weekly stipends for CHW's which covers lunch, aid in cell phone costs, and travel expense to attend biweekly meetings) | $ 10,000.00 | 1 | $ 10,000.00 |
| **Personnel** (includes salaries for program coordinator, on-site operations manager, and outreach coordinator) | $ 40,000.00 | 1 | $ 40,000.00 |
| **Contract Services** (includes drivers for staff and physicians during stay and catered food services for trainings) | $ 5,000.00 | 1 | $ 5,000.00 |
| **Supplies** (includes general offices supplies such as pens, pencils, paper, stapler, and organizational materials + medical supplies for SBA's) | $ 5,000.00 | 1 | $ 5,000.00 |
| **Indirect Costs** (@5%) | $ 6,000.00 | 1 | $ 6,000.00 |
| | | | |
| TOTAL | | | $ 126,000.00 |

**Appendix I**

Implementation Plan

| Obstetric Fistula Intervention in Sylhet, Bangladesh | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Activity** | **Person Responsible** | **Jan** | **Feb** | **Mar** | **April** | **May** | **June** | **July** | **Aug** | **Sept** | **Oct** | **Nov** | **Dec** |
| Conduct Needs & Resources Assessment | Jessyca Turner & On-site Director | X | | | | | | | | | | | |
| Develop Skilled Birth Attendant Training | Jessyca Turner & Dr. Melissa Simon | X | | | | | | | | | | | |
| Develop Community Health Worker Training | Outreach Coordinator | X | | | | | | | | | | | |
| Recruit CHW's | Outreach Coordinator | X | | | | | | | | | | | |
| Recruit volunteers wanting to become SBA's | On-site Director & Outreach Coordinator | X | | | | | | | | | | | |
| Conduct a 2-day intensive training for SBA's | 3 volunteer physicians, Jessyca Turner, and On-site Director | | X | | | | | | | | | | |
| Conduct a 2-day training for CHW's | Outreach Coordinator and 10 project volunteers | | X | | | | | | | | | | |
| Develop educational campaign curriculum | Jessyca Turner, Dr. Melissa Simon, & Outreach Coordinator | X | X | | | | | | | | | | |
| Pilot educational campaign curriculum | 15 CHW's & Outreach Coordinator | | | X | | | | | | | | | |
| Revise curriculum | Jessyca Turner & Outreach Coordinator | | | X | X | | | | | | | | |
| Lead bi-weekly CHW meetings | Outreach Coordinator | | | X | X | X | X | X | X | X | X | X | X |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Disseminate educational campaign | 100 CHW's with point contact being Outreach Coordinator | | | | X | X | X | X | X | X | X | X | X |
| Conduct skills-check up for SBA's | Jessyca Turner & 2 volunteer physicians | | | | X | | | | X | | | | X |
| Hire contract services | Jessyca Turner | X | | | | | | | | | | | |
| Monitoring & Evaluation | Jessyca Turner, On-site Director, FC+ Staff | X | X | X | X | X | X | X | X | X | X | X | X |
| SBA's attend births | Skilled birth attendants + program directors when monitoring | | | X | X | X | X | X | X | X | X | X | X |

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