End Line Survey Report

on

"Facilitating Adolescent Health Education and Human Rights Abuse Reporting through mobile devices in the Rohingya Camps of Bangladesh"

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Acknowledgement

This report presents the endline survey on "Facilitating Adolescent Health Education and Human Rights Abuse Reporting through mobile devices in the Rohingya Camps of Bangladesh". The survey was undertaken to assess the knowledge, attitude and practice of the adolescent about the health issue and to improve adolescent health. We are thankful to a number of dignitary and person who provided enormous support and cooperation to conduct this survey.

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Syed Jaglul Pasha
Executive Director
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List of Acronyms

AIDS	Acquired Immune Deficiency Syndrome
ANC	Antenatal Care
CiC	Camp in Charge
CHW	Community Health Worker
DGHS	Directorate General of Health Services
FGD	Focus Group Discussion
FP	Family Planning
FDMN	Forcibly Displaced Myanmar National
GoB	Government of Bangladesh
GBV	Gender-based Violence
HIV	Human Immunodeficiency Virus Infection
HP	Health Post
IDI	In-depth Interview
ISCG	Inter Sector Coordination Group
IUD	Intra Uterine Device
KII	Key Informant Interview
MOHFW	Ministry of Health and Family Welfare
MHM	Menstrual Hygiene Management
NGO	Non-governmental Organization
NPM	Needs and Population Monitoring
NVD	Normal Vaginal Delivery
PNC	Postnatal Care
PHC	Primary Health Care Center
RH	Reproductive Health
RRRC	Refugee Relief and Repatriation Commissioner
SRH	Sexual and Reproductive Health
SRHR	Sexual and Reproductive Health and Rights
STI	Sexually Transmitted Infections
UNFPA	United Nation Population Fund
UNHCR	United Nations High Commissioner for Refugees
WaSH	Water, Sanitation and Hygiene
WHO	World Health Organization

Executive summary

Introduction

August 2019 will mark two years since the beginning (recent influx in August 2017) of the rohingya refugee crisis in Cox's bazar, Bangladesh. Currently, over one million Rohingya live in two mega camps, Kutupalong and Nayapara, with limited access to basic rights, including freedom of movement, livelihoods, and education. Conditions for safe, dignified, and voluntary return of the rohingya to Myanmar do not exist.

According to UNHCR population factsheet (April 2019), out of all Rohingya population, 55% are children and around 14% are within the age limit of 12-17 years. So we can see there is a large number of an adolescent living inside the camp and their health condition is vulnerable. Adolescent health is neglected for many reasons, such as lack of education, socio-cultural barrier, and religious barrier and such. There is high rate of early marriage which often leads to early and unintended pregnancy.

Study objectives

The specific objectives of this study are to assess the current status of adolescent health and knowledge after the intervention. The objectives are:

- Whether all activities under the interventions are working properly;
- Whether the interventions are helping FHWs to disseminate SRHR information efficiently;
- To assess the level of acceptance of the interventions in Rohingya community;
- To assess the effects of the interventions on knowledge level, practice changes; and active use of solutions by female Rohingya and
- To identify the process of decision making by the NGOs and key stakeholders for effectively implementing the interventions in order to improve SRHR situation in the Rohingya community.

Methodology and technical approach

The endline survey consists of two parts, quantitative and qualitative. In quantitative part 180 adolescent girls from 4 FDMN camps were asked about different adolescent health issues including their marital status, health seeking behavior, knowledge and practice on menstrual health hygiene, sexual reproductive health and rights (SRHR) related services, violence against women adolescents and HIV/AIDS and finally their knowledge and perception on receiving health information and massages through ICT solution or electronic devices. In qualitative part, 12 IDIs were conducted.

This baseline survey consists of two parts; one is quantitative part and another is qualitative. In quantitative part, 180 adolescent girls in 4 FDMN camps were asked about different adolescent health issues including their marital status, health seeking behavior, knowledge and practice on menstrual health hygiene, sexual reproductive health and rights (SRHR) related services, violence against women and adolescents and HIV/AIDS. Moving to qualitative part, 12 In-depth interviews (IDIs) and 30 key informant interviews (KII) are done with NGO staffs/managers, majhi, community health workers (CHW) and their supervisors who work for NGO's. The CHW's visit door to door in various Rohingya camps, talk to rohingya women about their health and also provide information regarding SRHR, ANC, PNC, delivery etc. A

CHW can be both Rohingya and local people, because the intervention hasn't gone as planned, as a contingency plan mPower provided a short training to the CHW's on ICT solution/the software operation through which the Rohingya adolescent supposed to get health massage. The CHW's visited the household and talked to the adolescent and shared the learning they got from training. This supposed to help the adolescent gain some knowledge about ICT solution though the end line started very next week of CHW's training giving CHW's very short time to interpret with the targeted adolescents.

Data analysis and findings

The quantitative survey starts with the demographic information's where we can see 19.4 percent of adolescent respondents were married and out of them, 91.4 percent were below 18 years of age. Around 85 percent respondent knows the right age of marriage for girls and only 42 percent knows the right of marriage for boys. Majority of them have knowledge or somewhat knowledge on the negative impacts of early marriage and negative impacts of early pregnancy.

Menstruation usually starts between the age of 12-14 years (it may vary), and 86 percent (n=180) respondents have the knowledge on menstruation and among those respondents, 99.4 percent have already experienced their first menstruation and 58 percent have the knowledge of using sanitary pad during period and 57 percent are actually using it.

As early marriage and early pregnancy is an important issue in adolescent health, information or knowledge on SRHR related services is much needed. The survey finds out that 58 percent of adolescents have no knowledge of family planning methods. Those who have knowledge regarding it, most of them have knowledge only regarding pill (94 percent) and injectable (83 percent). Among married adolescents, around 34.3 percent is using the methods of contraception where 66.7 percent respondents are using injectable.

The survey finds out that 75 percent of adolescents have knowledge of antenatal checkups and 70 percent of them responded that midwife/nurse/paramedics are providing the ANC checkups. In addition to that, 99 percent said that ANC checkups are available in NGO clinics. Those who have knowledge on ANC, about 71 percent of them know the right number of ANC checkups required during pregnancy. Those who have knowledge on safe delivery, about 85.6 percent of them said that nurse/midwife/paramedics provide safe delivery services. Overall 65 percent of adolescent respondents don't know the time of postnatal checkups, but those who know about PNC, 60 percent of them said Nurse/Paramedic and 31 percent saying NGO clinic as providers.

In many reports it was reported that they face, and have faced, gender based violence, including physical attacks, sexual violence, family violence, forced prostitution, child early and forced marriage, and human trafficking. Regarding gender based violence (GBV), only 43.3 percent respondents have knowledge regarding it and those who have knowledge about GBV, 12.8 percent of them experienced violence within last six months. Those who have experienced violence according to them, in 80 percent time it was psychological type of violence.

In FDMN camps, there is less opportunities of education for the adolescents especially for the girls and that leads to lack of knowledge and information among the adolescent girls regarding health related issues. Survey finds out that only 8.3 percent of respondents heard about HIV/AIDS and out of them,

Not everyone is using mobile phone and only 13 percent respondents said that they are using mobile phones. Out of them, only 1 percent respondents received health related message through mobile phone.

Infectious diseases are high among rohingya children because of inadequate coverage of vaccination, malnutrition, overcrowding, unsanitary conditions, and lack of access to safe water. Skin infection, problems in menstruation, pregnancy complications, general disease are very common disease. Because of the displacement the adolescent had to face risk of poverty, critical illness, violence, sexual exploitation, and abuse. Lack of education also makes them and their family unaware about their health. Though situation is improving comparing to the situation when they first came here but it will take time to bring the expected change as lack of education, knowledge, information on health, superstitions and lack of women rights practice are the major barriers here.

NGOs working in the refugee camps are providing health service and health education to the Rohingya adolescents. They have developed many programs to effectively undertake the challenges and obstacles come in the pathway of providing essential health service and education to these refuge.

NGOs working in refugee camps providing maternal health care service package. NGO focusing on the sexual and reproductive health (SRH) services such as ANC, NVD, and PNC, referral of complicated cases, FP methods and such. There is many learning program, counseling and court yard meetings are arranged by NGO's to improve the health education.
For GBV and violence against adolescents many case workers and GBV supervisor are working and monitoring very closely. Some NGOs provide physiological support through psychosocial councilor and some provide legal support. Though the NGOs are not just providing these services but also keeping record of them and follow specific reporting pattern to report to donors and government.

The CHWs' training on ICT solution helps the adolescent know more about health service through electronic devices. CHW's disseminated the training knowledge with adolescents and they have appreciated the idea of ICT solution.

Conclusion and recommendations

Adolescents living in FDMN camps, majority of them have knowledge about general basic health issue. However the proportion of them who do not have knowledge about the adolescent health issues is also high, although the level of their knowledge is not adequate. Interestingly among the adolescent whether they know or do not know the health issue do not properly use health care and do not have any way to interact with health care providers so as to get advice and support. The findings clearly points to the need for adoption of measures to increase knowledge of the adolescent who are still ignorant to the health issues and create the mechanism for them to get access.

Section 1: Introduction

Rohingya refugees in Bangladesh refer to Forcibly Displaced Myanmar Nationals (FDMNs) from Myanmar who is living in Bangladesh. For decades, the Rohingya have experienced ethnic and religious persecution in Myanmar. Hundreds of thousands have fled to other countries and the majority has escaped to Bangladesh. The first wave of rohingya refugees entered Bangladesh in 1978. An estimated 200,000 rohingyas took shelter in Cox's bazar. After that there were so many times the rohingya waves kept crossing the border of Bangladesh and recently in the year of 2017 the largest wave of rohingya refuges which is about 720000 people penetrated the border of Bangladesh which made it the fastest growing Refugee crisis in the world. A large number of temporary shelters were built in more than 34 camps in the two upazilas. Around 1.2 million people live in the congested huts in the camps. But, given the huge size of the displaced population it has become a difficult task for our govt. to provide these FDMNs with all the services essential for them within such short period of time. Due to their living environment, lack of education and lack of adequate knowledge, they are vulnerable to some serious health risks. Rohingya refugees reside in overcrowded spaces which increases the threat of potential outbreak of communicable diseases. Besides, they are not aware of many critical health issues including family planning, menstrual hygiene management (MHM), adolescent health, puberty etc.

While the rohingya community overall continues to face multiple forms of challenges and insecurity, adolescent girls are affected by this protracted crisis in ways that are different from adolescent boys and men, and in ways that are often overlooked. Rohingya girls traditionally do not go out of their homes after reaching puberty because of either superstition or objection of males.

Adolescent girls experience severe restrictions on their freedom of movement. This limits their access to services and resources. It also denies them the opportunity to develop support networks and friendships – leaving them with little they can do to lift their spirits and help them cope with the current situation. Cultural factors and concerns about security mean that older girls in particular are often confined to their households. Rohingya communities fragmented when they were forced to flee Myanmar: families now live among people they did not know before. This has resulted in increased security concerns and greater restrictions on freedom of movement for adolescent girls.

They feel uneasy to talk about menstruation and other sensitive health problems, and only a few adolescent girls and their families have some knowledge about menstrual hygiene, SRHR, safe delivery, ANC and PNC. Though Many NGO's are working inside the refugee camps to make the situation batter for rohingya community but it will take time to find some remarkable changes.

Adolescent girls are vulnerable to many diseases caused by early marriage or early pregnancy. The rate of occurrence of diseases among them is very high. Besides, the prevalence of violence against women (VAW) is high in their community, which adversely affects the adolescent girls and the children. Fear of violence among girls are very high and this fear impedes there realization of Adolescent girls basic rights, further limiting their freedom of movement and their access to education.

mPower is a social enterprise which is moving the development paradigm into the information age. It designs along with partners to iteratively learn and solve development challenges. It is dedicated to information technology solutions and strategies that maximize impact on people’s

lives. mPower has planned to implement an intervention to increase use of health services and improve the health status of the adolescents in the rohingya population of the refugee camps in Cox's bazar. With this prospective the organization has undertaken an operation research (OR) comprising the three basic events of the OR: a baseline survey, an intervention, and an end line survey. After the completion of baseline survey mPower supposed to do intervention in the selected camps and then the End line would distinguish between the findings of baseline and end line which could help understanding the effectiveness and management decision making of the study. But due to some unwanted and unpredicted situation in the rohingya camps the government put restriction to access inside the camp resulting mPower to retreat from the pre-planned intervention. mPower managed to conduct a training on "e-Learning and Complaint Management System Using ICT for the community health workers of the selected camps who are Myanmar nationality". The routine works of the CHW's are to visit households within their working areas and disseminate different health massages and information with the rohingya adolescent using print media. The training enables them to learn how to disseminate the same information and massages through electronic media and also express their opinions about the new method. The plan was to train the CHW's (CHV) who will visit the household in selected camps and share the learning they got from the training with the adolescent girls of household. This way the adolescent girls may have some learning on the particular subject. Though the training conducted by empower was few days before the end line survey has started which might not bring any major change in outcome.

As mPower has assigned Research, Training, and Management (RTM) International to conduct a baseline and an end line survey on the FDMNs to identify whether the intervention improved the Knowledge and health of rohingya adolescents. RTMI has conducted the baseline survey and provided a baseline survey report during April-July 2019 in four camps in Ukhiya. And this is the End line survey report of the study.

Study objectives

The objectives of the overall study, as set in the ToR, are to assess:

- Whether all activities under the interventions are working properly;
- Whether the interventions are helping FHWs to disseminate SRHR information efficiently;
- To assess the level of acceptance of the interventions in Rohingya community;
- To assess the effects of the interventions on knowledge level, practice changes; and active use of solutions by female Rohingya and
- To identify the process of decision making by the NGOs and key stakeholders for effectively implementing the interventions in order to improve SRHR situation in the Rohingya community.

Besides, the baseline evaluation assessed the situation currently prevailing regarding health of the rohingya population, especially among the adolescents, and identifies the barriers to use of healthcare by the adolescents and end line survey will measure the impact of the intervention. The baseline study has conducted earlier before the interventions were implemented. After implementing the interventions the endline survey has been undertaken. The purpose is to find the effect of endline survey and compare the findings between baseline and endline survey.

Section 2: A brief history of the effects of using mobile phone technology on adolescent health

Rohingya refugees in Bangladesh are defined as Forcibly Displaced Myanmar Nationals (FDMNs) who are displaced and cross international boarder due to complex emergencies and disasters such as ethnic cleansing campaign of rape, killing, and torture by the Myanmar military in mid-2017 (Rushdia Ahmed, 2019), but they have been fleeing from Myanmar's Rakhine State to adjacent districts in Bangladesh for last five decades (Rushdia Ahmed, 2019). The latest influx began in August 2017 and has led to a fourfold increase in the Rohingya population in Bangladesh. On 28 September 2018, at the 73rd United Nations General Assembly, Bangladeshi Prime Minister Sheikh Hasina said there are 1.1 million Rohingya refugees now in Bangladesh. They are living in Rohingya camps located in two upazilas (Ukhia and Teknaf) of Cox's Bazar, Bangladesh. The vast majorities are women and children (ISCG Report 2018) and almost 60 percent of the population is under the age of 18 (Population Council and UNFPA Study, October 2018).

To address this emergency situation, 150 national and international development partners are engaged in provision of health services in the refugee camps in Ukhiya, and Teknaf and in reinforcing existing health facilities for a strengthened public health system more broadly (WHO Report 2018). While some partners are providing a minimal initial package of SRH services, access to essential reproductive, maternal, newborn and adolescent health services remains a major challenge (Population Council and UNFPA Study, October 2018).

August 2019 will mark two years since the beginning of the rohingya refugee crisis in Cox's Bazar, Bangladesh. Currently, over one million rohingya live in two mega camps, Kutupalong and Nayapara, with limited access to basic rights, including freedom of movement, livelihoods, and education. Conditions for safe, dignified, and voluntary return of the rohingya to Myanmar do not exist. Even if repatriation started tomorrow, analysis suggests that many refugees would likely remain in Cox's Bazar for the next 10 years (Huang, Cindy, Kate et al, February 2019).

According to UNHCR population factsheet (April 2019), out of all rohingya population, 55% is children and around 14% is within the age limit of 12-17 years. So we can see there are a large number of adolescent populations living inside the camp and their health condition is vulnerable. Adolescent health is neglected for many reasons, such as lack of education, socio-cultural barrier, religious barrier, limited access to clean water and hygiene facilities, fear of violence and such. There is high rate of early marriage which often leads to early and unintended pregnancy. From the study we have seen adolescents themselves are not really aware about their health related issues and even when they do face health problems they feel shy to share. From the camp experience it has been observed that there is no mechanism of sharing health messages to adolescents via mobile phone messages. Through health/field workers NGOs are providing information to adolescents regarding general hygiene, menstrual hygiene management, risk of early marriage and early pregnancy, vaccination, GBV/SGBV and such.

Text messaging for health can be considered part of the larger strategy of mobile health (mHealth), which is the application of mobile technologies, including phones, tablets, tele-monitoring, and tracking devices, to support and enhance the performance of health care and public health practice. According to Head et al., the first study using text messaging for health was published in 2002, and it has since been followed by dozens of other published studies and hundreds of largely unpublished pilot projects. The first systematic review of texting for health

was published in 2009 and was subsequently followed by more than 20 published systematic reviews and meta-analyses, each one addressing a slightly different aspect of the application of text messaging for improving or protecting health (Amanda, Heather, Jay et al., April 2015).

In one study, it was shown that they endeavored to bring some organization and order to this rapidly growing TMI literature by conducting a systematic review of the highest-quality published systematic reviews and meta-analyses that assessed studies relating primarily to public health research and practice. Therefore, the purpose of our systematic review of reviews is to evaluate the evidence of the effects of TMIs on health outcomes and behavior change in community settings across all countries, based on reviews of published studies that examined health behaviors, health outcomes, and TMI characteristics (i.e. message frequency, personalization and tailoring of messages, interactivity) using various study design characteristics. In doing so, we aimed to capture comprehensively and accurately what can be learned from slightly more than a decade of research on TMIs and to identify areas in the greatest need for additional research over the next decade, to help mobile-based health interventions reach their full public health potential (Amanda, Heather, Jay et al., April 2015).

Although a lack of literature on the use of such technologies in health promotion reflects that technology-based approaches are still in their infancy, Gold, Lim, Hellard, Hocking, and Keogh (2010) anticipate that they will soon become common practice. “As the use of newer communication technologies continues to exponentially increase, health promotion will inevitably expand out from the ‘old’ media (TV, radio, and billboards) and into the ‘new’ (mobile telephones, social networking sites)” (Health Promotion Forum of New Zealand, November 2014).

To date, technology-based health promotion initiatives appear to be taking advantage of various technologies (e.g. computers, internet, mobile phones, tablets) and the several features they offer (Bull and McFarlane, 2011). Given the advancing capabilities of each of these modalities, exactly how they are used to deliver interventions differs significantly between interventions. However, key advantageous features include reach, standardized information, interactivity, privacy, autonomy, portability, and potentially lower costs (Bull and McFarlane, 2011). While interventions are not without their limitations, a rapidly emerging body of literature lends support to the use of technology-based health promotion interventions to address a wide range of health issues, including those targeting smoking cessation, sexual health, physical activity, weight loss, and alcohol use (Health Promotion Forum of New Zealand, November 2014).

Health promotion is particularly pertinent during adolescence. This is because it is important for adolescents to form healthy habits that they can maintain through adulthood, to be aware of symptoms of health issues (e.g. mental illness), and to know how to minimize their risk for preventable health issues (Bailey et al., 2013; Cullen et al., 2013; Rickwood, 2012) (Health Promotion Forum of New Zealand, November 2014).

SMS-based health promotion approaches have been found to be effective in encouraging a wide range of positive health behaviors, including sexual health, smoking cessation, weight-loss, nutrition, and mental health (Blackburn and Blatnik, 2013; Fjeldsoe et al., 2009; Hebden et al., 2013; Hingle, 2011; Lim et al., 2012; Rodgers et al., 2005; Whittaker et al., 2012). Reviews have found that SMS interventions have been delivered through either SMS alone, SMS and internet, or SMS, internet, or one other mode (e.g. paper diary, clinic visits, phone calls. They have ranged from four-weeks to one-year in duration (Buhi et al., 2013; Fjeldsoe et al., 2009). In one review, Fjeldsoe et al. (2009) found that the frequency of text-messages often reflected the expected frequency of targeted behaviour (e.g. smoking text-messages sent

5 times per day, physical activity text messages sent 5 times per week). Surprisingly, only eight of the 34 studies reviewed by Buhi et al. (2013) referred to using a theoretical framework to guide behaviour change (e.g. SCT, behavioural self-regulation theory, health belief model). While both of these reviews have concluded that SMS-based interventions are promising, they stress that more research is needed to draw conclusions (Buhi et al., 2013; Fjeldsoe et al., 2009). The following case studies exemplify how text-message based interventions work with youth, and their potential for leading to positive health behaviour change (Health Promotion Forum of New Zealand, November 2014).

In one study, the way text messages were perceived varied depending on the age of the participants. Cornelius et al found that age was a primary factor in change in outcome variables. They found greater increases in knowledge, attitudes toward condom use and perceived HIV risk, and more reduction in HIV risk behaviors among older participants (16–18 years of age) than younger participants (13–15 years of age). The reason why text messages did not resonant among younger participants was unclear. However, the younger participants did report less sexual activity than the older teens, which could explain why the messages did not resonate with them (Judith, Josephine et al., April 2016).In two studies, adolescents identified issues of privacy and lack of anonymity as possible challenges in delivering text messages/mobile cell phone interventions. In one study, no participants said that they would feel embarrassed if someone viewed their messages and 90% were unconcerned if their parents saw their messages. However, they did say that privacy could be compromised, which could make a situation uncomfortable for a teen. In another study, privacy was a consideration with the use of a mobile cell phone safe sex app since participants felt that the research team could see what they were doing with the phones (Judith, Josephine et al., April 2016).In one study it was shown that, to generate the most effective educational messages for adolescents, it is essential to involve the adolescents themselves in the development of their interventions. Previous work has demonstrated that acknowledging adolescents as experts on their issues and enlisting them in active evaluation and development of clinical programs results in more relevant content and optimized delivery (Seth, Chris et al., June, 2016).Furthermore, interventions that have been refined based on feedback from adolescents have improved patient engagement. They involved adolescents in each step of the pilot intervention development process. They did not set up a process for comparing participant engagement with intervention material developed with and without adolescent help, but they did note that adolescents commented very positively on aspects of the intervention suggested by their peers (e.g., the question and-answer format, the text message length, etc.), and this suggests that adolescents should play a prominent role in the development of future projects (Seth, Chris et al., June, 2016).In one study which was done in Bangladesh shown that, the intention to use mHealth or mobile phone for health services in the future is another indication of the future demand that the use of mobile phone and mHealth has. The findings showed that nearly 70% of the respondents prefer calling a doctor by using a mobile phone for either low cost or time-saving or instant advice. These heavily weigh in favor of future large demand for this technology for healthcare. The major reasons cited by the respondents for not intending to use mHealth services for health care was their belief that direct visits were better than consulting remotely; they comprised only 40% of the respondents (Fatema, Hanifi, Iqbal, Sabrina et al, November, 2014).

Section 3: Methodology and technical approach

For the endline survey data has been collected from rohingya adolescent girls, field community health workers (CHW), their supervisors and related stakeholders and the study has conducted in the rohingya camps (camp 2w, camp 3, camp 5, and camp 6).

3.1 Study Design

The study has used pretest-posttest design of survey which is one of the strong designs under the broad category of exploratory design. In view of certain constraints, the survey had to be conducted very rapidly within two weeks. In view of this, we decided to select 180 households, which is one-fourth of the baseline sample size.

3.2 Method of Investigation

This endline evaluation is based on the primary data. Primary data were collected from the rohingya adolescent girls and the data collection was based on the mixed-method approach consisting of quantitative and qualitative research methods.

Pr**imary data collection**

- Quantitative method: to conduct face to face interview with adolescent girls using household survey
- Qualitative method: to conduct in-depth interview with CHWs, Supervisors, and KII with related stakeholders, Observation of CHWs training and Observation on proper documentation by the NGO staffs.

Selection of camps for survey

There are a large number of camps in Cox's bazar district. Camp area were divided into two equal sub- areas, the selected camps were camp 2w, camp 3, camp 5, and camp 6. The intervention will be implemented on the selected camps.

Sampling technique

We followed a multi-stage sampling technique.

- At the first stage, 4 camps which were selected for baseline also have been selected purposively for endline.
- At the second stage, 45 households were selected from each selected camps.

Strategy for Survey

a. Listing of households in each camp

Listing of households was done to prepare a sampling frame for selecting individual household/ respondents in each camp to be interviewed in the survey. For this purpose, a listing format was developed and conducted the listing of all households. Listing of households was started from north-east of the camp. After completing the listing, selected the households with adolescent girls and prepared another listing.

b. Selection of households for interview

For each camp a random sample of 45 households were selected from the available household lists by using simple random sampling without replacement approach. In case the respondent is not available or refuses to give interview, the next household could be selected and the eligible person would be selected for interview.

In each sample point the interviewer identified and located the sample household, introducing herself to the residents/respondents, explained the objective of his/her visit, take informed consent, assured confidentiality and conducted the interview in a suitable environment. Any difficulty encountered by the interviewer has been immediately communicated to the respective team supervisors. After each interview s/he carefully checked whether all applicable questions were properly recorded.

3.3 Method for qualitative study

Qualitative method included in-depth interview (IDI) and key informants interview (KII).
In-depth Interview (IDI): In-depth interviews were conducted with the CHWs to assess the effectiveness of existing interventions on adolescent health education and identify the gap, to know whether the interventions were useful for CHWs to disseminate SRHR and adolescent health information efficiently, level of acceptance of the interventions in rohingya community. Thirty (30) IDIs were conducted with CHWs and their supervisors from the selected area.

Key Informant Interview (KII): Key informant interview were conducted with the related stakeholders (NGO staff, project manager and majhi (rohingya leader)), to identify the method of existing interventions and process of decision making by the NGOs and key stakeholders for effectively implementing the interventions in order to improve SRHR situation in the rohingya community. A total of 10 KIIs were conducted with the related stakeholders.

3.4 Data collection instruments

In order to achieve the objectives of the study, the following data collection tools were developed and used for data collection:

- Questionnaire for Rohingya adolescent girls;
- Guideline for IDI with CHW; and
- Guideline for KII with key stakeholders.

The data collection tools and checklists were finalized in consultation with mPower. Data collection tools are attached in **Annex A**.

3.5 Data collection, processing and analysis

The data collection activities including listing activities were conducted during April -May 2019. The respondents of this study were interviewed through pre-designed data collection tools and guidelines. During data collection, the interviewers introduced themselves to the respondents, explained the objective of their visit and obtained informed consent. The data collection staff conducted the interviews in a suitable environment. After each interview, the field supervisor carefully checked whether all questions were asked and responses to all applicable questions were properly recorded. All the interviews were conducted in a congenial atmosphere and the respondents were given assurance of confidentiality of their responses.

Data collected through quantitative approach were entered into the computer by using software for data entry. Electronic datasets in SPSS 20.0 format were developed and labeled with variable names and value labels. Both univariate and bi-variate analyses were performed for the study indicators. The qualitative information gathered was also compiled and summarized for analysis. The responses to open-ended questions in the data collection guidelines were reviewed and the key points identified by the respondents were summed-up and sorted into the analysis framework for descriptive analysis. Qualitative data analysis involved the identification, examination and interpretation of views and insights of the respondents and determined how these responses help answering the research questions of the baseline study.

Section 4: Findings

In this section, the collected quantitative and qualitative data of the endline survey were analyzed and the findings were discussed to highlight the effectiveness of the intervention according to the study objectives. The quantitative data were handled through SPSS analytical software. This section contains two parts where the background characteristics of the interviewed adolescents were summarized in part-A and the collected data were analyzed and summarized according to the study objectives in part-B.

Part-A: Background characteristics of the rohingya adolescents and CHWs

In the baseline survey, a total of 720 rohingya adolescents were interviewed but in the endline survey, a total of 180 rohingya adolescents were taken under consideration because of time limitation. The background characteristics of the respondents (rohingya adolescents) were summarized and discussed below:

Age, educational qualification, and marital status of the respondent

The important objective of the survey was to assess the knowledge of rohingya adolescent girls (age of 10-19) about their health education and perception of getting health education through ICT solution/electronic device in four selected camps of Ukhiya. The table represents percentage of different age group of adolescent girls interviewed. Most of the respondents belong to the age group 16-19 both in end line and baseline. The proportion of adolescent girls in the age group 10-12 is very low in endline, although it was high in the baseline survey. The general expectation is the age group 16-19 might have more profound knowledge on adolescent health as they are more senior, educated and have more life experience than the other two groups.

Table 1: Frequency (%) of the adolescents according to their demographic characteristics

	Camp 2w	Camp 3	Camp 5	Camp 6	Baseline	End line
Age of the adolescents						
10-12	2.2	15.6	28.9	13.3	32.3	15.0
13-15	53.3	37.8	20.0	35.6	28.0	36.7
16-19	44.4	46.7	51.1	51.1	39.8	48.3
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Mean age	**14**	**15**	**15**	**14**	**15**	**15.24**
Educational qualification of the adolescents						
Illiterate/no schooling	42.2	53.3	40.0	53.3	50.6	47.2
Completed class I-IV	51.1	44.4	53.3	42.2	44.5	47.8
Completed class primary	2.2	2.2	2.2	2.2	2.8	2.2
Completed VI-VIII	4.4	-	4.4	2.2	2.2	2.8
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Marital status						
Unmarried	73.3	88.9	73.3	86.7	81.3	80.6
Married	26.7	11.1	26.7	13.3	18.1	19.4
Widow/separated/ divorced	-	-	-	-	0.6	-
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100**
Age of Marriage						
Below 18	100.0	100.0	83.3	83.3	84.4	91.4
18 and above	-	-	16.7	16.7	11.1	8.6
Don't know/ can't remember	-	-	-	-	4.4	-
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100**

The endline survey reveals that almost half of the respondents have no education what so ever. The rest of the respondents have some education as 45 percent of them have studied class I-IV. In camp 5 and camp 2W showing the most adolescent who have some education (53.3% in camp 5 and 51% in camp 2W). A slender change is being visualizing in the end line survey as the percentage of illiterate has decreased (endline 47% and baseline 50.6%) comparing to baseline. Adding to that the proportions of students who have completed class I-IV are also increased (endline 48% and baseline 44.5%). Showing the table as reference we can say the access of education is improving among rohingya adolescent.

This table describes the proportion of the respondents who are married, unmarried or other marital status. Among the adolescent respondents about 19.4 percent were married comparing to baseline where it was 18 percent. The age of marriage in end line also increased (91.4%) comparing to baseline (84.4%). Though it seems the practice or early marriage has increased over months but we also have to consider the fact that in end line survey 48.3 percent of respondents were between age group 16-19 where it was 40 present in baseline.

Demographic characteristics of CHWs

The demographic characteristics of the trained CHWs were presented in the following table 2, where we see that all of them have no previous experience on electronic devices.

Table 2: Frequency of demographic characteristics of the trained CHWs

Response		**Camps**			
		Camp 2w	**Camp 3**	**Camp 5**	**Camp 6**
No. of CHWs (N=24)		6	6	6	6
Mean age		25	24	24.5	25.5
Sex	**Male**	0%	0%	0%	0%
	Female	100%	100%	100%	100%
Average Years of work experience		1	1	1	1
Have previous Experience of Electronic device					
Yes		0%	0%	0%	0%
No		100%	100%	100%	100%

Part-B: Findings according to the study objectives

Herein, both of the quantitative and qualitative data were analyzed and the findings were described sequentially according to the study objective-by-objective.

4B-1: Current status of the intervention

The CHWs and supervisors were trained on using electronic devices under intervention because they are the one who have received information about adolescent health through electronic devices and then shared and disseminated that knowledge with the adolescent and their parents. The training has been conducted for only one day. At first, the CHWs and supervisors were introduced to each other and also with resource person. Next, the background and objectives of the study were discussed shortly and they were guided and trained on electronic devices under the intervention. Thereafter, role play has been conducted by grouping them and finally their performance has been evaluated through question-answer system.

In the selected 4 camps, out of 75 CHWs and 4 supervisors, only 24 CHWs and 4 supervisors were trained. After finishing training periods, the CHWs and supervisors visited 360 households in the selected camps within 2 days (table 3) and shared the adolescent health related information with rohingya adolescents and their parents through counseling. So, it is apparent that the trained CHWs and supervisors will be able to visit a large number of households by 6 months or more and it can be assumed that, in long-run process the intervention under study will effectively work in the rohingya community.

Table 3: Distribution of visited households, CHWs, and supervisors

Supervisor	CHWs	Camps			
		Camp 2w	Camp 3	Camp 5	Camp 6
Supervisor-1	CHW-1	15	-	-	-
	CHW-2	15	-	-	-
	CHW-3	15	-	-	-
	CHW-4	15	-	-	-
	CHW-5	15	-	-	-
	CHW-6	15	-	-	-
Supervisor-2	CHW-7	-	15	-	-
	CHW-8	-	15	-	-
	CHW-9	-	15	-	-
	CHW-10	-	15	-	-
	CHW-11	-	15	-	-
	CHW-12	-	15	-	-
Supervisor-3	CHW-13	-	-	15	-
	CHW-14	-	-	15	-
	CHW-15	-	-	15	-
	CHW-16	-	-	15	-
	CHW-17	-	-	15	-
	CHW-18	-	-	15	-
Supervisor-4	CHW-19	-	-	-	15
	CHW-20	-	-	-	15
	CHW-21	-	-	-	15
	CHW-22	-	-	-	15
	CHW-23	-	-	-	15
	CHW-24	-	-	-	15

4B-2: CHW's efficiency gain to disseminate SRHR information

The trained CHWs and supervisors were considered for a qualitative study to identify the helpfulness of the intervention for them. They were asked about the training topic and their learning from it. We observed that about 97% of the 28 participants (CHWs & supervisors) said that they learned more about the software, how to operate it, how to use it to share information and what kind of information they get to share using the software. They feel it is very useful as the software contains more information than a dozen of flipcharts and other modules. The endline survey started just few days after the software training so the CHW's got very few time to visit households and share their learning. From the household visit experience they said, the household showed interest in this regard and are able to understand how the software will help them learn different health issues and the preventive solutions. There was some difference between communicating with the usual training module and the ICT solution. One CHW (CHW-16, camp5) said,

"The modules are heavy and inconvenient to carry or use. ICT solution instead of use these modules will be more effective and the software contains clear images and videos which delivers more clear massages"

Another CHW (CHW-11, camp3) stated that, *"Introducing new technology will encourage the rohingya people to learn and the amount of information the software will take lots of module to carry the same amount of information."*

The supervisors of these CHW's think that the new ICT solution will ease the work for the CHW's and will be easily accessible and understandable by anyone. The effectiveness of the intervention was also visualized in the following objectives by quantitative analysis. One of the supervisors stated,

"I observed that the CHWs were very attracted and interested to learn through electronic devices and hence I think if they gathered knowledge about adolescents health through electronic devices and operating those devices then they can easily disseminate their knowledge in the rohingya community" (Supervisor, Camp-5)

One of CHW stated,

"The current ICT solution can solve many of the problems faced in the present manual process such as communication, allow of access, carrying of huge documentation etc." (CHW from camp- 2w)

4B-3: Acceptance of the intervention by the community

After the training on e-learning and complaint management, CHW's got only about a week to visit the household and share the learning they got from training. The CHW's tried to cover as many household as possible before endline survey. The effect is clearly seen in the table 4. About 33% of the respondents have gained some knowledge from the CHW's about different health issues and ICT solution whereas that in the baseline survey 1.1% of the respondents said that they received health related information from CHWs. We can see most of the respondents got the messages from CHW's where maternal health, child health and FP were the main issues of discussion. Majority of respondent got the message thinks this medium is more helpful and easy. It is apparent that, a short time training and intervention implementation resulted an increment of 31.7% of the adolescents who received messages through the intervention under study. So, it is assumed that, the continuation of providing training and intervention implementation increases the level of acceptance of the intervention under study in rohingya community.

Table 4: Information about health massage through electronic devices

Responses	End line (%)				Overall (%)	
	Camp 2w	Camp 3	Camp 5	Camp 6	Baseline	End line
Knowledge gained from CHW about receiving massage through electronic device.						
Yes	31.1	33.3	33.3	33.3	1.1	32.8
No	68.9	66.7	66.7	66.7	98.9	67.2
Receiving before days						
1	-	26.7	40.0	-	-	16.9
2	-	33.3	33.3	13.3	-	20.3
3	14.3	40.0	13.3	60.0	-	32.2
4	85.7	-	13.3	26.7	-	30.5
Source of health related information						
CHW	100.0	93.3	100.0	86.7	-	94.9
Nurse/Paramedic	7.1	6.7	26.7	13.3	-	13.6
Radio	-	6.7	26.7	-	-	8.5
Types of information						
Maternal health	100.0	13.3	86.7	66.7	-	66.1
Child health	92.9	60.0	93.3	60.0	-	76.3
Family planning	100.0	60.0	93.3	60.0	-	78.0
Adolescent health	-	-	-	26.7	-	6.8
Various disease	-	26.7	-	-	-	6.8
Whether respondent receive these types of information						
Yes	100.0	100.0	100.0	100.0	-	100.0
No	-	-	-	-	-	-
Other information for better						
VAW	-	50.0	-	14.3	-	22.2
Education related	-	50.0	-	-	-	11.1
Good virtue	-	-	-	85.7	-	66.7
Whether the existing medium of information are helpful						
Yes	100.0	93.3	100.0	93.3	-	96.6
No	-	6.7	-	6.7	-	3.4
Whether any other medium for better						
Yes	85.7	28.6	13.3	8.3	-	34.5
No	14.3	71.4	86.7	91.7	-	65.5
Other medium for better						
court yard	-	-	-	100.0	-	100.0
Respondent satisfaction with existing medium						
More helpful	66.7	100.0	66.7	50.0	-	71.4
happiness of life	25.0	-	33.3	-	-	19.0
Decrease of disease offering	16.7	-	-	50.0	-	14.3
Decrease of quarreling	16.7	-	-	-	-	9.5

A qualitative study was also conducted and it is observed that, most of the adolescents and their parents were very interested to receive health related and others information through videos, images etc. One mother said,

"As our children were interested to see images, videos, playing games, hearing music, so if it is possible to show the adolescent's health related information through images, videos, music in the yard meeting discussion then our children will learn more about their health easily.(Camp-5)

Also the Majhi of a particular block stated,

"If the rohingya peoples get access of mobile phones then it will be really easy to provide health related information to the rohingya adolescents through messages via mobile phones because they have more curiosity about electronic devices." (Camp-3)

4B-4: Effectiveness of the intervention on knowledge level, practice changes, and active use of solutions

Herein, the data related to adolescent's knowledge level, practice changes, and active use of solutions by female rohingya was analyzed to assess the effects of the intervention on adolescents.

Knowledge about reproductive health

Right age of marriage for boys and girls

Even though 91 percent respondent got married below 18, but when it comes to knowing about the right age of marriage 85 percent respondent know 18 is the right age of marriage for girls where this knowledge was found in 70.5 percent of respondent in baseline survey. The adolescent girls have less knowledge about right age of marriage for boys as 42 percent saying below 21 and 42 percent saying 21 is the right age in end line survey. These are significant change noticed because 67.7 percent respondent in baseline survey said below 2 is the right age of marriage for boys.

Table 5: Knowledge about right age of marriage for boys and girls

Responses	End line (%)				Overall (%)	
	Camp 2w	Camp 3	Camp 5	Camp 6	Baseline	End line
Knowledge about right age of marriage for girls						
Below 18	-	13.3	17.8	4.4	21.5	8.9
18	95.6	80.0	80.0	84.4	70.5	85.0
Above 18	4.4	2.2	-	4.4	2.1	2.8
Don't know	-	4.4	2.2	6.7	6.0	3.3
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Knowledge about right age of marriage for boys						
Below 21	22.2	35.6	46.7	64.4	67.7	42.2
21	57.8	48.9	51.1	11.1	7.6	42.2
Above 21	20.0	6.7	-	11.1	14.8	9.4
Don't know	-	8.9	2.2	13.3	9.8	6.1
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Negative impact of early pregnancy on girls

Early pregnancy leads to many health complications to both mother and child. According to the respondent in end line the major negative impact was weak and ill motherhood (54.4%), difficulty in raising children (52.8%) and in base line it was 47.6 percent and 50.4 percent respectively so, both in end line and baseline there is little change on the major negative impact. Other than that, significant changes has been noticed in 'pregnancy related complicacy', 'Giving birth to undeveloped child and Anemia as the responds was 44.4 percent 38.3 percent and 53.3 percent in end line respectively comparing to 23.4 percent, 19.7 percent and 32.7 percent in base line respectively.

Table 6: Knowledge about negative impact of early pregnancy on girls

Responses	End line (%)				Overall (%)	
	Camp 2w	Camp 3	Camp 5	Camp 6	Baseline	End line
Pregnancy related complicacy	48.9	37.8	62.2	28.9	23.4	44.4
Weak and ill motherhood	68.9	13.3	80.0	55.6	47.6	54.4
Increases risk of maternal and new born health	22.2	11.1	37.8	42.2	20.6	28.3
Gives birth to undeveloped child	35.6	37.8	48.9	31.1	19.7	38.3
Difficulty in raising children	80.0	46.7	24.4	60.0	50.4	52.8
The number of children is likely to be higher	-	42.2	11.1	6.7	22.9	15.0
Mother suffers from malnutrition	40.0	40.0	64.4	28.9	38.6	43.3
Anemia	33.3	68.9	73.3	37.8	32.7	53.3
Others	2.2	-	-	-	0.4	0.6
Don't know	6.7	-	-	4.4	13.6	2.8

*Multiple responses recorded
**Others include (may die, loss of appetite, vomiting)

Physical and psychological changes during adolescence and puberty

Puberty is a time where an adolescent go through different types of physical and mental changes. The study is adolescent focused and it is conducted to know the knowledge level of adolescent. The adolescents of rohingya camps were asked about the changes occur during puberty and majority answered start menstruation, growth of breasts and growth of pubic and underarm hair. When they asked about psychological changes conscious about dress, makeup, behavior etc. and increase shyness was answered by majority in both baseline and end line.

Table 7 shows that adolescent responding to more option than baseline proving they know more about different changes occurs during puberty.

Table 7: Knowledge about physical and psychological changes during adolescence and puberty

Responses	End line (%)				Overall (%)	
	Camp 2w	Camp 3	Camp 5	Camp 6	Baseline	End line
Physical changes during adolescence						
Start menstruation	97.8	37.8	77.8	95.6	67.7	77.2
Widen buttock	17.8	57.8	57.8	44.4	30.5	44.4
Growth of breasts and pain may occur	60.0	33.3	100.0	66.7	60.5	65.0
Growth of pubic hair	31.1	48.9	28.9	24.4	19.9	33.3
Growth of underarm hair	33.3	37.8	40.0	44.4	28.7	38.9
Other *Other includes become tall, voice change etc.	-	-	2.2	-	0.8	0.6
Psychological changes during adolescence						
Feel uncomfortable with the physical changes	20.0	28.9	80.0	48.9	25.8	44.4
Increase shyness	62.2	57.8	84.4	86.7	77.1	72.8
Increase attraction to opposite sex.	0.0	0.0	15.6	24.4	10.4	10.0
Become more emotional	46.7	33.3	55.6	17.8	25.9	38.3
Grows interest on sexuality	8.9	22.2	2.2	6.7	14.0	10.0

Responses	End line (%)				Overall (%)	
	Camp 2w	Camp 3	Camp 5	Camp 6	Baseline	End line
Conscious about dress, makeup, behavior etc	100.0	55.6	97.8	82.2	77.4	83.9
Others *Other includes wish to know many things, feel shy etc.	-	-	-	-	0.4	-

*Multiple responses recorded

Experience of first menstruation

The end line study showing adolescent has more knowledge and experience of menstruation than baseline. Knowledge about menstruation differs from 86 percent to 78 percent and experience on menstruation differs from 99.4 percent to 97.2 percent. We can say the knowledge has increased though the majority of respondents in the endline are between age group of 16-19.

Table 8: Knowledge and experience of first menstruation

Responses	End line (%)				Overall (%)	
	Camp 2w	Camp 3	Camp 5	Camp 6	Baseline	End line
Knowledge on menstruation						
Yes	97.8	77.8	75.6	93.3	78.1	86.1
No	2.2	22.2	24.4	6.7	21.9	13.9
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Experience of menstruation						
Yes	100.0	100.0	100.0	97.6	97.2	99.4
No	-	-	-	2.4	2.8	0.6
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Response on first menstruation						
Yes	13.6	31.4	20.6	61.0	42.0	31.8
No	86.4	68.6	79.4	39.0	58.0	68.2
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Knowledge of things to do during menstruation

Adolescent girls affected so profoundly by the ongoing rohingya crisis that their health condition is at stake. Menstruation hygiene is one of the concerns as it causes numerous health diseases if not practiced properly. The families also paying less attention to their children' menstrual issues as ensuring the basic needs is their main concern in this crisis. The study helps us digging deep to find out the knowledge of rohingya adolescent girls on menstruation. They were asked about the measures they take during menstruation, some major changes found in their answer in baseline and end line. 68.4 percent respondent in end line survey said they inform the elders if menstruation starts where this answer was given by only 23 percent of respondent in the baseline survey. An unexpected change has seen in the use of sanitary napkin/cloth during period because 81 percent respondent in the baseline survey had responded they use sanitary napkin/cloth where this response has given by 58 percent respondent in the endline. It can be happen because the respondents who were interviewed in the endline survey were not identical with the respondents interviewed in the baseline survey and in addition; the sample size is another fact. Furthermore, probably the respondents who use the sanitary napkin/cloth and interviewed in the baseline survey were not selected in the endline survey. Other than these two, not many changes have seen in baseline and end line responds.

Table 9: Knowledge of things to do during menstruation

Responses	End line (%)				Overall (%)	
	Camp 2w	Camp 3	Camp 5	Camp 6	Baseline	End line
If menstruation starts inform elders	47.7	51.4	94.1	83.3	23.0	68.4
Use of sanitary napkin/cloth during period	50.0	40.0	97.1	50.0	80.9	58.1
Change sanitary napkin every 4-6 hours	22.7	25.7	58.8	45.2	30.0	37.4
Dispose sanitary napkin in safe place	43.2	25.7	76.5	23.8	49.5	41.3
Properly taking care of reproductive organ and keep clean	52.3	68.6	73.5	71.4	63.5	65.8
Don't know/Can't say	-	-	-	-	0.4	-

*Multiple responses recorded

Mental condition during first menstruation

The culture of rohingya community have built up in a way that menstruation, sex, pregnancy, HIV are very uncomfortable topic to discuss. Superstition and religious dogmatism is very high among them which kept them away from discussing and learning about these important health issues. If we evaluate the table and findings of the baseline and end line we can see the scared/horrified felling is decreasing among adolescent as 75.4 percent was scared/horrified in baseline and now only 57 percent are in the end line. Feeling shy about menstruation has also decreases from 76.6 percent in baseline to 67.5 percent in end line. Even in the baseline 3.5 percent shared no respond but we can see everybody's respond in endline.

Table 10: Mental condition during first menstruation

Responses	End line (%)				Overall (%)	
	Camp 2w	Camp 3	Camp 5	Camp 6	Baseline	End line
Scared/horrified	47.7	48.6	61.8	70.7	75.4	57.1
Was worried too much so went to see the doctor	2.3	8.6	38.2	51.2	18.1	24.7
Was shy and didn't go out of the house	84.1	48.6	52.9	78.0	76.6	67.5
Didn't have any feeling, took it normally	9.1	28.6	35.3	26.8	14.1	24.0
Don't know/Can't tell	-	-	-	-	3.5	-

*Multiple responses recorded

Knowledge and practice of materials usage during menstruation

To be safe from different kinds of infections the adolescent who have experienced menstruation needs to use some safe materials. As different NGO's are working to build up their knowledge of menstrual hygiene management (MHM) adolescent are now gaining knowledge on MHM. They can specify what they need to use during their menstruation. some thinks sanitary pads are safe and suits them best, others think cotton and clean clothes are appropriate but what we have seen in baseline is more multiple answer by respondent which means they knew the materials they need to use but cannot decide the particular material for their comfort. They use of sanitary pads over clean clothes have increased in end line. Most common methods for cleaning and preserving the clothes are soap, normal water, hot water, Dettol etc. No significant differences are seen between baseline and endline in the way of cleaning and preserving the old clothes.

Table 11: Knowledge and practice of materials usage during menstruation

	End line (%)				Overall (%)	
Responses	**Camp 2w**	**Camp 3**	**Camp 5**	**Camp 6**	**Baseline**	**End line**
Knowledge of use of materials during menstruation						
Cotton	4.5	8.6	14.7	36.6	49.1	16.2
Sanitary Pad (Those available in market)	61.4	40.0	97.1	34.1	61.7	57.1
Toilet tissue	-	2.9	38.2	2.4	6.4	9.7
Clean Clothes/Old clothes	93.2	94.3	88.2	70.7	92.5	86.4
Responses on particular usage						
Clean cloth/ old cloth	93.2	25.7	20.6	41.5	90.3	48.1
Sanitary pad (those available in market)	20.5	25.7	97.1	31.7	9.7	41.6
Way of cleaning and preserving cloth used during menstruation						
Soap/Detergent Powder	82.9	100.0	71.4	88.2	94.7	85.1
Normal water	39.0	-	71.4	35.3	23.8	36.5
Hot water	39.0	55.6	14.3	41.2	29.1	39.2
Dettol	100.0	22.2	57.1	64.7	70.1	78.4
Dry it in the sun	65.9	66.7	71.4	41.2	74.1	60.8
Dry it in the corner of the house/fence/behind anything	24.4	11.1	-	52.9	32.1	27.0
Preserve it in a clean place	34.1	22.2	14.3	23.5	26.9	28.4
Preserve it in a corner of the house or behind anything	7.3	-	14.3	29.4	52.7	12.2
Use new cloth each time	-	-	-	-	2.8	-

*Multiple responses recorded

Restriction on food habit during menstruation

Food intake during menstruation has a major impact on adolescent health. The superstitions among rohingya's are so high that they forbid their children to have particular healthy food during menstruation which is totally incorrect. The NGO's trying to reach to the minds of rohingya people through counseling, household visiting and court yard meetings so that they can understand how important some healthy foods are during menstruation which they should let their children to have. We can see that their perception on avoiding food during menstruation has changed a lot as more adolescent now do not avoid any food or change their food habit during menstruation. The parents are being aware about it time to time but the senior most members of the household sometimes forbids the adolescent to have some food during menstruation.

Table 12: Restriction on food habit during menstruation

	End line (%)				Overall (%)	
Responses	**Camp 2w**	**Camp 3**	**Camp 5**	**Camp 6**	**Baseline**	**End line**
Whether avoid any food during menstruation						
Yes	4.5	-	-	2.4	36.7	1.9
No	95.5	100.0	100.0	97.6	63.3	98.1
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Reasons for avoiding food habit						
Mother forbids	-	-	-	-	1.0	-
Grandmother/Aunt forbid	-	-	-	100.0	0.5	33.3
Forbidden in religion	-	-	-	-	2.0	-
Problem arises if these foods are eaten	-	-	-	-	1.0	-

Responses	End line (%)				Overall (%)	
	Camp 2w	Camp 3	Camp 5	Camp 6	Baseline	End line
Don't feel like eating	100.0	-	-	-	98.5	66.7

*Multiple responses recorded

Knowledge about maternal health

Family planning method

Preference for large families among the rohingya is a practice that has been carrying out from past generations. Their childbearing norms and practices indicate that limiting the number of children by using family planning methods is not prevalent among the rohingya so changes cannot be expected overnight. Through the NGO's working in rohingya camps the rohingya people learning about family planning and the usefulness of it. Our study focused on knowledge the rohingya adolescent have about family planning and different methods of it. Their increase in knowledge is noticeable in the following fable which showing more respondent in End line survey know about FP and its methods than the baseline survey. The table also illustrates that most common FP methods like pills and condoms are more frequently answered in end line survey than base line survey.

Table 13: Knowledge of family planning method

Response	End line (%)				Overall (%)	
	Camp 2w	Camp 3	Camp 5	Camp 6	Baseline	End line
Knowledge of methods to delay or avoid pregnancy						
Yes	75.6	48.9	53.3	53.3	47.8	57.8
No	24.4	51.1	46.7	46.7	52.2	42.2
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Knowledge on various methods						
Female sterilization	-	-	-	-	0.3	-
Male sterilization	-	-	-	-	0.6	-
IUD	26.5	4.5	29.2	-	5.2	16.3
Injectables	100.0	100.0	70.8	54.2	89.6	82.7
Implants	79.4	27.3	12.5	12.5	17.1	37.5
Pill	97.1	90.9	100.0	87.5	87.2	94.2
Condom	14.7	13.6	45.8	16.7	12.2	22.1

*Multiple responses recorded

Antenatal care

Antenatal care service is very crucial for women during pregnancy. The following table 14 shows the knowledge level of adolescent in end line increased than it was in baseline. More adolescent knows about ANC checkup, the service providers who provide ANC services and the place where ANC service is provided. When they were asked about the number of ANC checkup is needed during pregnancy more correct respond came from end line then baseline survey, adding to that the percentage of respondent who don't know anything about numbers of checkups or ANC providers or Place for ANC has decreased comparing to base line survey.

Table 14: Knowledge of antenatal care

Response	End line (%)				Overall (%)	
	Camp 2w	Camp 3	Camp 5	Camp 6	Baseline	End line
Knowledge of ANC checkup						
Yes	97.8	66.7	68.9	66.7	70.6	75.0
No	2.2	33.3	31.1	33.3	29.4	25.0
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Knowledge of provider of ANC						

Response	End line (%)				Overall (%)	
	Camp 2w	Camp 3	Camp 5	Camp 6	Baseline	End line
Qualified Doctor	27.3	60.0	-	13.3	33.1	25.2
Nurse/midwife/ paramedic	79.5	43.3	90.3	60.0	81.8	69.6
TBA	-	13.3	19.4	10.0	15.3	9.6
Unqualified doctor	-	3.3	-	3.3	0.4	1.5
Health worker	-	13.3	9.7	-	9.2	5.2
NGO worker	-	16.7	77.4	36.7	12.9	29.6
Don't know	-	-	-	-	0.8	-
Knowledge of place of ANC checkup						
Govt. hospital	-	3.3	9.7	10.0	26.1	5.2
Pvt. hospital/clinic (specify)	-	6.7	3.2	13.3	8.6	5.2
NGO clinic	100.0	93.3	100.0	100.0	95.1	98.5
Others	-	3.3	-	-	-	0.7
Don't know/Can't tell	-	-	-	-	0.6	-
Knowledge of number of ANC checkup needed during pregnancy						
1	-	-	-	10.0	0.6	2.2
2	-	-	-	10.0	3.3	2.2
3	6.8	13.3	6.5	16.7	13.9	10.4
4+	84.1	63.3	93.5	36.7	51.4	71.1
Don't know/Can't tell	9.1	23.3		26.7	30.8	14.1

Safe delivery

To ensure safe health for both mother and new born safe delivery is very important. After the rohingya influx is Bangladesh they are being taught about pregnancy and safe delivery as they have large family and child marriage is common among them. The Table illustrates the knowledge level of rohingya adolescent in both End line and baseline study. More adolescent now know about safe delivery than the baseline study. In the base line survey we have seen more respondent saying Doctors and Nurse/midwife/ paramedic are the providers of Safe delivery but most of the respondents in end line survey saying NGO worker provides safe delivery because only NGO's are providing service in rohingya camps and those doctors and Nurse/midwife/ paramedic mentioned by respondent in base line survey are actually appointed by NGO. Also the percentage of respondent saying NGO clinic as the place for Safe delivery is higher in end line than the base line study. It indicates that, more adolescents know about the safe delivery service and the actual provider of it inside the camps.

Table 15: Knowledge of safe delivery

Response					Overall (%)	
	Camp 2w	Camp 3	Camp 5	Camp 6	Baseline	End line
Knowledge of safe delivery						
Yes	88.9	86.7	91.1	75.6	81.9	85.6
No	11.1	13.3	8.9	24.4	18.1	14.4
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Knowledge of provider of safe delivery						
Qualified Doctor	27.5	51.3	2.4	20.6	40.8	25.3

Response					Overall (%)	
	Camp 2w	Camp 3	Camp 5	Camp 6	Baseline	End line
Nurse/midwife/ paramedic	82.5	15.4	92.7	61.8	74.1	63.6
TBA	-	10.3	4.9	5.9	29.8	5.2
Unqualified doctor	-	-	-	2.9	0.7	0.6
health worker	-	12.8	4.9	-	9.5	4.5
NGO worker	-	35.9	85.4	44.1	11.8	41.6
Knowledge of place of safe delivery						
Govt. hospital	-	2.6	7.3	11.8	28.4	5.2
Pvt. hospital/clinic (specify)	2.5	5.1	9.8	5.9	9.5	5.8
NGO clinic	100.0	97.4	100.0	97.1	92.4	98.7
Don't know/Can't tell	-	-	-	-	2.0	-

Postnatal care

The end line study illustrates the knowledge of adolescent about PNC and also shows how the knowledge differs from baseline to end line. In the baseline study we can see most participants don't know about the PNC or the time of PNC but the percentage slightly changed in end line study. Most of the respondent among those who know about PNC, saying it needs to be taken immediately after birth or 7-41 days in both end line and base line study.

Table 16: Knowledge of PNC

Response	End line (%)				Overall (%)	
	Camp 2w	Camp 3	Camp 5	Camp 6	Baseline	End line
Knowledge of no. of PNC						
Immediately after birth	4.4	6.7	44.4	8.9	20.1	16.1
2 days	-	-	4.4	4.4	0.8	2.2
3-6 days	4.4	-	-	8.9	3.9	3.3
7-41 days	40.0	35.6	11.1	51.1	25.5	34.4
More than 41 days	-	11.1	-	-	2.8	2.8
Don't know	51.1	46.7	40.0	26.7	47.0	41.1
Knowledge of provider of PNC						
Qualified Doctor	15.6	42.2	2.2	11.1	25.2	17.8
Nurse/midwife/ paramedic	77.8	17.8	86.7	57.8	64.7	60.0
TBA	-	4.4	13.3	-	13.9	4.4
Unqualified doctor	-	-	-	-	0.8	-
health worker	-	13.3	13.3	2.2	9.6	7.2
NGO worker	-	24.4	64.4	35.6	13.6	31.1
Don't know	13.3	15.6	2.2	11.1	16.2	10.6
Knowledge of place of PNC checkup						
Govt. hospital	-	4.4	2.2	11.1	23.5	4.4
Pvt. hospital/clinic (specify)	2.2	4.4	11.1	6.7	7.1	6.1
NGO clinic	86.7	84.4	97.8	91.1	79.5	90.0
Don't know/Can't tell	13.3	15.6	2.2	4.4	15.9	8.9

Health seeking behavior

Use of contraception

As a result of superstitions and religious dogmatism the use of contraception was not prevalent among the rohingya people. The table 17 showing two third of the married respondent don't use contraception and the situation didn't get better than the baseline. As the respondents in the endline survey were not identical with the respondents in the baseline survey and also the sample size were not same, so it can be happen. In addition, the rohingya peoples are very godly; hence it is not prodigious that they did not use the contraceptive methods. The husbands don't use any of the methods as no respondents said condom as method but among the respondents who use methods saying injection, implant and pills as contraception are the methods they use. The table 17 also shows us that respondents now know more about NGO clinic as a provider of service than base line.

Table 17: Use of contraception

Response	End line (%)				Overall (%)	
	Camp 2w	Camp 3	Camp 5	Camp 6	Baseline	End line
Use of methods to avoid or delay pregnancy						
Yes	16.7	40.0	58.3	16.7	39.7	34.3
No	83.3	60.0	41.7	83.3	60.3	65.7
Type of method						
Injectables	50.0	100.0	71.4	-	75.0	66.7
Implant	50.0	-	-	100.0	1.9	16.7
Pill	-	-	28.6	-	21.2	16.7
Condom	-	-	-	-	1.9	-
Place from where respondent get the method						
Govt. hospital	-	-	14.3	-	-	8.3
Pvt. hospital/clinic	-	-	-	-	1.9	-
NGO clinic	100.0	100.0	100.0	100.0	96.2	100.0
Pharmacy	-	-		-	9.6	-

Suffered from any sickness within last six months

The analyzed results of the endline survey data on illness of the rohingya adolescents were presented in table 18. The results concluded that most of the adolescents were sick within last six months and the percentage of sickness is slightly decreased from baseline to end line. All of the diseases listed in table 18 were occurred but fever, running nose, headache, and diarrhea are most frequent in both of the baseline and end line survey. There is no significant change of occurrence from baseline to end line for particular disease.

Table 18: Suffered from any sickness within last six months

Response	End line (%)				Overall (%)	
	Camp 2w	Camp 3	Camp 5	Camp 6	Baseline	End line
Tendency of getting sick within last six months						
Yes	51.1	93.3	75.6	31.1	67.2	62.8
No	48.9	6.7	24.4	68.9	32.8	37.2
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Kind of disease respondent suffered from						
Fever	78.3	88.1	91.2	78.6	85.2	85.8
Running nose	56.5	78.6	67.6	64.3	70.5	69.0
Headache	34.8	52.4	58.8	28.6	58.1	47.8
Malaria	4.3	7.1	17.6	-	5.6	8.8
Diarrhea	26.1	38.1	44.1	7.1	31.3	33.6
Anemia	-	7.1	8.8	-	2.5	5.3

Response	End line (%)				Overall (%)	
	Camp 2w	Camp 3	Camp 5	Camp 6	Baseline	End line
Typhoid	-	19.0	-	7.1	2.3	8.0
Jaundice	4.3	7.1	2.9	7.1	2.3	5.3
Gastric/ulcer	-	23.8	-	-	8.2	8.8
Others**	-	-	-	7.1	2.3	0.9

*Multiple responses recorded;
**Others include measles, TT, eye problem etc.

From the qualitative data we obtained that, prevalence of infectious diseases is high among rohingya children because of inadequate coverage of vaccination, malnutrition, overcrowding, unsanitary conditions, and lack of access to safe water. Children are suffering the traumatic loss of loved ones and anxiety due to acute fear and the unknown whereabouts of their parents and siblings (UNICEF & BITA 2019).Many children and adolescents are separated from their parents, families, and communities during the displacement process and facing increased risk of poverty, critical illness, violence, sexual exploitation, and abuse (UNFPA & Save the Children 2009). Because of lack of education and knowledge not only the adolescents but also the adults are being suffering from many severe health issues. The project manager (NGO) said,

"We have observed that adolescents are not really aware of their health problems. Even though some of them might have some knowledge, but they often face cultural and religious barriers to access services and information. Here I think, education and language also plays a bigger role."

Also when majhi's sharing their opinion on present situation of adolescent they said the situation is improving comparing to the situation when they first came here. Taking with NGO staffs, Majhi's and others it was found that it will take time to bring the expected change as lack of education, knowledge, information on health, superstitions and lack of women rights practice are the major barrier here.

The Majhi of a particular block inside the selected camps said,

"Often the girls or women facing SRHR related problem share them with their husbands and parents but they don't take it seriously due to the lack of knowledge or not knowing the important of SRHR service." (Camp-6)

Rohingya adolescent who are living in the refugee camps have to face numerous health problems. The rohingya leaders of each block who are called Majhi, they shared their knowledge about health problems faced by adolescents in their areas and the major problems stated are skin infection, problems in menstruation, Pregnancy complications, General disease etc. They also said, some women ignore their health problems or go to the traditional quack healer, Some go to health centers if their family permits but most women are shy to share their physical problems with husbands or other family members instead they suffer from it.

One of the NGO staff said,

"The adolescents usually face problems such as menstrual health & hygiene, personal health & hygiene, early marriage, early pregnancy and related complications, physical and mental abuse."

Unawareness and negligence about these health problems will make them suffer in the long run and also might affect their next generation unless they are being taught and make aware about these health issues.

Reproductive health care

The end line survey results show that, the number of health centers to provide reproductive health services for adolescents in rohingya camps is increasing day by day and their tendency to receive reproductive health services is sounds good same as baseline survey. Most of the respondents who are not receiving reproductive health services told that there is communication gap between them and service providers.

Table 19: Reproductive health care seeking behavior

Responses	End line (%)				Overall (%)	
	Camp 2w	Camp 3	Camp 5	Camp 6	Baseline	End line
Availability of health centers to provide reproductive health for adolescents						
Yes	13.3	77.8	53.3	8.9	12.0	38.3
No	86.7	22.2	46.7	91.1	88.0	61.7
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Any health center near to home						
Yes	100.0	64.4	88.9	66.7	76.6	80.0
No	-	33.3	11.1	28.9	22.6	18.3
Don't know	-	2.2	-	4.4	0.8	1.7
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Tendency to go seeking health service which is near to home						
Yes	100.0	100.0	100.0	86.7	97.6	97.2
No	-	-	-	13.3	2.4	2.8
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Reason for not going to health centers near home						
Didn't get sick	-	-	-	25.0	30.8	25.0
Communication problem	-	-	-	25.0	69.2	25.0
Brings medicine at home	-	-	-	50.0	-	50.0

Knowledge about violence against adolescent

Both of the baseline and end line survey revealed that largest portion of the rohingya adolescents have no knowledge about violence against them but the percent of adolescents who know about violence is increasing from baseline to end line by about 11% (table 20). According to both of the baseline and end line survey results, all of the violence listed in table 20 have been frequently occurred in the rohingya camps till now but the rate of occurrence of physical, sexual, and financial violence were decreased from baseline to end line (table 20).

Table 20: Knowledge about violence against adolescent

Responses	End line (%)				Overall (%)	
	Camp 2w	Camp 3	Camp 5	Camp 6	Baseline	End line
Knowledge of violence against women						
Yes	62.2	57.8	40.0	13.3	32.4	43.3
No	37.8	42.2	60.0	86.7	67.6	56.7
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Types of violence against women						
Psychological violence	96.4	46.2	50.0	66.7	54.7	66.7
Physical violence	78.6	80.8	83.3	16.7	65.8	75.6
Sexual violence	-	57.7	100.0	16.7	73.1	43.6
Financial violence	3.6	30.8	22.2	83.3	35.0	23.1

Responses	End line (%)				Overall (%)	
	Camp 2w	Camp 3	Camp 5	Camp 6	Baseline	End line
Others	-	3.8	-	-	-	1.3

*Multiple responses recorded

Experience of violence against adolescent

The table 21 shows that, in the baseline survey, about 28% of the rohingya adolescents are experienced with violence against them but gradually it is decreasing and at the end line survey it is about only 13%. Interestingly, no one in the camp 6 has faced with violence. The psychological and physical violence are the most frequent types of violence occurred in the rohingya camps and the rest of the violence were also occurred but slightly.

Table 21: Experience of violence against adolescent

Responses	End line (%)				Overall (%)	
	Camp 2w	Camp 3	Camp 5	Camp 6	Baseline	End line
Experiencing violence against women within last six months						
Yes	10.7	19.2	11.1	-	27.4	12.8
No	89.3	80.8	88.9	100.0	72.6	87.2
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Types of violence against women experienced by respondent within last six months						
Psychological violence	100.0	100.0	-	-	75.0	80.0
Physical violence	-	20.0	100.0	-	29.7	30.0
Sexual violence	-	20.0	-	-	7.8	10.0
Financial violence	-	20.0	-	-	21.9	10.0
Eve teasing	-	20.0	-	-	3.1	10.0
Don't know/Can't tell	-	-	-	-	1.6	-

*Multiple responses recorded

Also in the qualitative survey, some rohingya peoples said, *"before the very beginning of our migration we were the victims of abuse and torture and also forced to watch torture of our family member"*. Even now, the adolescent girls living in the refugee camps are regularly dealing with mental and physical violence. Most of the time it's their husband or mother in law who are being abusive towards the adolescent girls and in some cases the other family members of husband also get involved in it. Talking to the rohingya CHW reveals that these adolescents tolerating the violence rather than raising voice because they are afraid to talk about it.

According to the majhis, the adolescent are restricted to go out from house after a certain age. They don't get to have schooling and education. They don't get to choose for themselves. Their own parents grow them that way and it became even harder for them when they move to their husband's house.In one of the Program manager's opinion, Cases of physical & mental violence is happening, but not reflecting in reportsdue to different socio-cultural barriers. The victims are not also interested in sharing their problems with the service providers as they are afraid to do so and also they thinks it's their personal problem.To stop those unaddressed physical and psychosocial distress immediate mental health and psychosocial support, Counseling, health and GBV knowledge are crucial to help those adolescent girls.

Complain about violence against adolescent

Herein, we observed from both the baseline and end line survey that, about only 20% of the rohingya adolescents did complain for violence against them (table 22) and the end line survey shown that all of them are living in camp 3. It is because of either they are not encouraged to

complain against violence or limited source to complain. On the other hand, the end line survey shown that all of them who complained got positive feedback.

Table 22: Complain about violence against adolescent

Responses	End line (%)				Overall (%)	
	Camp 2w	Camp 3	Camp 5	Camp 6	Baseline	End line
Whether respondent complain against violence						
Yes	-	40.0	-	-	20.3	20.0
No	100.0	60.0	100.0	-	79.7	80.0
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Whether any action taken against complain						
Yes	-	100.0	-	-	69.2	100.0
No	-	-	-	-	30.8	-
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Negative impacts on adolescent due to violence against women

The end line survey data were studied and the summary results of consequences of violence against rohingya adolescent were presented in table 23. Herein, it is seen that the percent of adolescents who are familiar with consequences of violence against adolescent is increasing. Although there are various bad impacts, the end line survey shown that most of the adolescents are familiar with physical trauma, on the other hand, the fraud in family was reported in baseline survey. It is really true that, in the present society, both of physical trauma and fraud in family are most frequently occurred consequences of violence against adolescent. However, the rohingya adolescents are familiar with all of the consequences listed in table 23 with a significant percentage.

Table 23: Negative impacts on adolescent due to violence against women

Responses	End line (%)				Overall (%)	
	Camp 2w	Camp 3	Camp 5	Camp 6	Baseline	End line
Violation of basic rights	7.1	23.1	5.6	-	9.4	11.5
Physical Trauma	78.6	30.8	83.3	33.3	29.1	60.3
Psychological Trauma	75.0	26.9	5.6	16.7	38.5	38.5
Social disgrace	3.6	26.9	77.8	33.3	46.6	30.8
Fraud in family	35.7	53.8	38.9	50.0	68.8	43.6
Don't know/Can't tell	3.6	30.8	-	-	15.0	11.5

*Multiple responses recorded

Knowledge about HIV/AIDS

This study was conducted by two surveys (baseline survey and end line survey) to evaluate the baseline knowledge about HIV of the adolescents who are living at rohingya camps in Ukhiya and also their tendency to know about HIV. The baseline survey has already done and has findings about baseline knowledge about HIV and after a certain time period the end line survey was done through asking some basic questions about HIV same as baseline survey. Now the end line survey results were shown in the following table 24 compared to the baseline survey results. It is clearly exhibited that the percent of rohingya adolescents who know about HIV is increasing day by day but still lacking knowledge about how HIV spreads individual to individual. Interestingly, the adolescents living in camp 5 have sound knowledge about spreading of HIV.

Table 24: Knowledge about HIV/AIDS

Responses	End line (%)				Overall (%)	
	Camp 2w	Camp 3	Camp 5	Camp 6	Baseline	End line
Heard about HIV/AIDS						
Yes	6.7	13.3	2.2	11.1	5.8	8.3
No	88.9	84.4	95.6	86.7	89.1	88.9
Don't know	4.4	2.2	2.2	2.2	5.1	2.8
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Knowledge on spreading of HIV/AIDS						
Having sexual intercourse with sex workers	-	50.0	100.0	60.0	61.9	46.7
Unsafe sexual intercourse with HIV/AIDs infected person	-	16.7	100.0	40.0	38.1	26.7
Receiving blood from HIV infected person	-	16.7	-	20.0	23.8	13.3
Not using condom during sexual intercourse	-	50.0	-	40.0	57.1	33.3
Sharing utensils with HIV/AIDs infected person	-	16.7	100.0	-	38.1	13.3
Touching HIV/AIDS infected person	-	33.3	-	-	9.5	13.3
From HIV infected mother	-	16.7	100.0	60.0	26.2	33.3
Mosquito bites	-	66.7	-	-	21.4	26.7
More than one sexual partner	-	16.7	100.0	-	26.2	13.3
Using syringe or needle used by anyone else	-	-	-	40.0	42.9	13.3
Having food with HIV/AIDS infected person	66.7	16.7	-	-	14.3	20.0
Touching HIV/AIDS infected person	-	-	-	-	28.6	-
Don't know	33.3	-	-	-	7.1	6.7

*Multiple responses recorded

In addition to that, when majhis are asked about their opinion about how to improve adolescent health, they mentioned about more counseling, court yard meetings, access to advance health service and access to education will help. According to a majhi,

"If the Parents become supportive about their education and there is quality child specialist doctor available for providing service, things will improve" (Camp-5)

4B-5: Enhancement of decision making in information dissemination by NGOs and key stakeholders

The present digital system can store large amount of data of different category in a database which can be easily retrieved, rearranged, and analyzed to identify the lacking of proper services and which peoples need what type of services etc. Hence, it can help stakeholder's decision making for designing an appropriate intervention or revising the intervention for improving the adolescent's health in the rohingya community.

Key stakeholders

There are number of NGOs providing SRHR service in the four selected camps and they are shown in table 25.

Table 25: SRHR and GBV service providers in different rohingya camps

Variable/Indicators	Camp 2W	Camp 3	Camp 5	Camp 6
Name of NGO's operating SRHR services	IOM, UNHCR/GK, UNFPA/IRC, UNFPA/RTMI	HI, IOM, RI, FRIENDSHIP, UNHCR/RTMI, ORBIS, UNICEF/PHD	HI, UNICEF/RTMI, FH/MTI	HI, UNHCR/GK, UNFPA/RTMI, FH/MTI
Name of NGO's operating GBV services	UNFPA/MUKTI, UNHCR/RI, UNHCR/TAI, IRC	OXFAM, UNHCR/BRAC, UNHCR/RI, UNHCR/TAI, BNWLA, UNHCR/RTMI	UNHCR/BRAC, UNHCR/RI, UNHCR/TAI	UNHCR/BRAC, UNHCR/BNWLA, IRC

As demonstrated in table 25, a number of national and international NGOs and development organizations including IOM, UNICEF, UNFPA, IRC and RTMI are working in different camps regarding SRHR and GBV related service and their respective camp areas. Almost all of them are working in more than one camp, if not all. NGOs operating with SRHR services are involved in ANC, PNC, NVD, NNC, initial management and referral of complicated cases. Other related services include family planning services, PAC, health response to GBV, vaccination and such on.

Service provision process

They have developed many programs to effectively undertake the challenges and obstacles come in the pathway of providing essential health service and education to these refuge. The program manager of (UNICEF project) an NGO was asked about the adolescent health services they provide through their NGO and he replied,

"NGOs provides general treatment and GBV counseling, nutritional counseling & support against domestic violence and depression to adolescents. We are also working to enable the environment for adolescents; psycho-social support & proper counseling; exposure to educational and vocational activities as per potentiality and interest."

The adolescents are unaware about their health issues so before proving service it's important to provide them with health related information and knowledge. RTM international has been effectively doing it with the help of the community health workers (CHW) who are rohingya nationality. There are some CHW's working for RTM international who are trained on adolescent health and GBV related issues. Their job is to visit every rohingya household in their designated camp, talk with them about their health and other issues, provide them guidance and knowledge on these health and mental issues and follow them up regularly. The CHW's also suggest the rohingya adolescent to participate in different health campaign and training. The CHW carry different health education materials through which they disseminate the knowledge more effectively.

RTM conducts household visit, information dissemination and counseling RTM provides the health services to adolescents through doctors, medical assistants, midwives, paramedics, lab technologist/technician. For the adolescent girl NGOs has female service providers. In refugee and other crisis contexts, women and girls are disproportionately affected by limited access to essential services, including health care. There is a clear need for provision and access to consistent, reliable, and effective sexual and reproductive health (SRH) services, which save lives and promote resilience in humanitarian contexts.

On the other hand, NGOs working against GVB related services provide GBV response services for GBV survivors, case management, psychosocial counseling, maintaining coordination with the health facilities to ensure health services to the GBV survivors, awareness sessions with the rohingya women and as well as in the community, GBV prevention and risk mitigation in related issues.

Reporting

The NGO's working in different areas of rohingya camp and providing SRHR services also maintain a reporting format through which not only there activities and service effectiveness can be monitored but also the current situation in those area can be measured. One of the NGO program managers said,

"We provide reports to Govt. agencies (DGHS, DGFP, RRRC) as advised. As funded by UNFPA, we provide necessary reports to UNFPA Dhaka office and field office. We also maintain internal reporting mechanism."

Another program manager stated,

"In this context, the organizations who are providing SRHR related services reports to SRH sub sector. SRH sub sector maintain coordination with the respective agencies and provide them necessary supports. We also have internal reporting/tracking system through which we minimize any service duplication."

The research team of RTM also observed the documentation process and how it is preserved.

One NGO manager stated, *"We faced problem of lack of access in the rohingya camps that means we cannot communicate with them at any time and that's why it is not possible to teach them about their health. In addition, the rohingya peoples are able to read & understand only their mother language and they are strictly Godly. Hence, if it is possible to translate the health related information into their language and send it to them through messages via mobile phones then it will be very easy to aware them about their sex-reproductive health".*

ICT intervention can help stakeholder's decision making as all the revenant information will be digitized routinely through this system. This digital information can be categorized, analyzed and presented in such a manner that all layer of relevant stakeholder can access those information and take necessary decision for designing an appropriate intervention or revising the intervention.

Suggestions to improve adolescent health

The Program Managers were asked about necessary steps they could develop to ensure more effective SRHR services. One of them stated,

"It's always necessary to work on capacity development of the health workers and service providers and better mechanism to monitor their level of effort. Also as we are supported by different donor countries/agencies, we need to be cost-effective and reduce the wastage of resources. We shouldn't stay happy with our performance as there's always a chance or opportunities of improvement."

The lack of crucial sexual and reproductive health services entails widespread violations of the sexual and reproductive rights of rohingya women. It's high time for the Government and Non-government bodies to work together to build up knowledge and awareness on sexual and reproductive rights of rohingya women.

Though many NGOs are working within the camps to support and improve the adolescent knowledge by disseminating and sharing health related information and providing counseling and guidance through the CHW's and other assigned field staffs but the proper dissemination of health related information can only be effective when the adolescent have academic knowledge. One of the program managers narrated that,

"Awareness sessions for both adolescents and their parents, continuous follow up by CHW, dedicated and trained field workers who can effectively provide the information. An effective method of communication and developing materials in common language these can be ensured by NGO's to help the adolescent improving their knowledge and regular practice"

A large number of adolescent in rohingya camps are still underprivileged in terms of education and other vocational learning. If they get the opportunity of education and other vocational learning, it will help them understand better about their health issues and the preventive measures. To improve adolescent health and knowledge, proper education of the adolescent needs to be ensured.

In a nutshell, following recommendations came out from the NGO stakeholder:

- Awareness sessions for both adolescents and for their parents
- Continuous follow up mechanism
- Dedicated and trained field workers who can effectively provide the information's.
- Method of communication (different visual representation of information will be more effective than the verbal or text messaging)
- Messages can be generated in native rohingya language so that the community can understand easily.
- Involving community into the program (community participation) can increase the community acceptance level.
- Adolescent friendly corners where adolescent can freely speak and share their problems without hampering their privacy.

Section 5: Limitation of the study

The whole study and its findings may be influenced by the curse of the following limitations faced during study periods:

- As the sample size has been decreased from 720 to 180 in the endline survey because of short-time, there is a chance of inconsistency of the findings.
- As the CHWs and supervisors could not visit more households because of time problem, the effectiveness of the intervention has been poorly visible by the endline findings.
- As there is lack of access of mobiles in the rohingya camps, it will not be easy to provide the adolescent health related information through electronic devices.
- The CHWs and supervisors faced communication problem because the rohingya peoples are able to read and understand only their mother language.
- The CHWs and supervisors faced the problem to arrange yard meeting because the rohingya peoples are strictly Godly.

Section 6: Conclusion and recommendations

The prime objective of the entire study was to assess the effect of the intervention for improving adolescent health through e-learning. The baseline survey was conducted earlier. This report presents the finding of the endline survey and compares the finding with that of the baseline survey so as to assess the effect of intervention. Comparison of these two surveys has revealed that the intervention has positive impacts on adolescent health. One caveat is in order; however

the total effect on knowledge and behavior of the adolescents cannot be attributed entirely to the intervention under study because the NGO itself has been implementing several health programs to improve knowledge, attitude, and behavior of the rohingya adolescents. Nevertheless, it is very likely that the intervention provided by the project has affected the results of our study. The findings clearly indicate that intervention will be useful and effective in changing knowledge and attitude of the adolescents and increasing the use of essential health care. The use of electronic devices to disseminate the health messages will be more acceptable to the adolescents and will create positive impact.

The recommendations for increasing of effectiveness of the intervention are put forward below:

- The project management should disseminate the usefulness of the electronic devices to improve adolescent health.
- The officers and managers in-charge of the camps should be properly persuaded to allow and encourage the use of electronic devices.
- The coordination between the project management (mPower) and the NGOs providing healthcare in the camps should be enhanced, facilitating each to participate in other's activities related to the intervention. The NGOs are already providing some interventions and the intervention under study should be properly added to the stock so that the addition creates higher effects and synergy.
- More training for CHWs and some orientation meetings with majhis and project staff should be organized.
- CHWs should discuss with the parents of the adolescents about the benefits of using the technology and motivate them to convince their children to use the technology.
- CHWs should convey the messages categorically to the adolescents and discuss how they will properly use the message and information.

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