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COMMUNITY-CENTERED REPRODUCTIVE HEALTH EDUCATION FOR MOTHERS IN RURAL KENYA

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Abstract: In Kilifi County, a coastal region of Kenya, one in five teenage girls begins childbearing. This represents the highest teen pregnancy rate in Kenya. Since 2016, Mtree, a non-profit organization registered in both the U.S. and Kenya, has conducted a multi-year field assessment in Maya village in rural Kilifi. The objective of this assessment was to identify the reproductive health needs of mothers through an explorative study to design a community-centered curriculum that would address the gaps identified from the needs assessment. In partnership with Pwani University, Mtree performed home visits and focused group interviews on interviews on a convenient sample of 69 women from 2016 to 2020. The village elders introduced interviewers and translators to the community and arranged group interviews. Each year the questionnaire varied as the subsequent questionnaire was based on previous findings. Since 2018, the questionnaire for mothers focused on their expectations for teen girls in the community, especially on teen pregnancy and job opportunities. Findings revealed that the primary challenges for Maya women were lack of job opportunities, inability to afford sanitary towels, lack of knowledge around and misunderstanding of reproductive health, and lack of male partner involvement. Mothers reported that the core factors that lead to unwanted early pregnancy included lack of reproductive health knowledge, sexual abuse, peer pressure, and poverty. The mother's primary values and concerns with reproductive health were assessed and integrated into the mother's family planning and teen pregnancy prevention program. In 2021, eight mothers of teen girls in grades 4 and 5 at Maya Primary School were recruited by village leaders and participated in the program and learn about how to communicate with teen girls on the topic of reproductive health, dating, and roles of women in the community and society.

Keywords: teen pregnancy, reproductive health education, maternal health, family planning

Introduction

Teenage pregnancy is a severe public health burden in Kenya. In Kilifi, a coastal region of Kenya, 1 in 5 girls between ages 15-19 years has begun childbearing, contributing to 22% of the cases reported nationally (KDHS, 2014; UNFPA, 2021). These unwanted or unplanned teenage pregnancies may be attributable to unprotected sex or sexual violence. Young adults in Kilifi engage in early unprotected

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sex because of a lack of sexual and reproductive health knowledge, cultural practices, and poverty (Faith of Action Network, 2016).

Studies on teenage sexual and reproductive health suggest that early pregnancy could lead to serious physical, social, and economic consequences. These include school drop-out, birth complications, sexually transmitted diseases (STD), poverty, and unwanted early marriages (KDHS, 2014). Nationally, 13,000 girls drop out of school due to pregnancy every year (KDHS, 2014). Although Kenyan policy allows these young women to go back to school after delivery, most of them fail to go back due to stigma or lack of support for child care. Recent estimates on the HIV situation in Kenya also reveal that over 51% of new HIV infections in Kenya are contributed by young adults aged 15-24 years (National AIDS and STI Control Programme, 2016). Childbearing at an early age also poses a medical risk to the mother and newborn. According to the World Health Organization (WHO), newborns from mothers below 20 years face a 50% higher risk of stillbirths or dying in the first few weeks after birth than mothers aged 20-29 years (WHO, 2014).

Preventing unwanted and unplanned teen pregnancy has been one of the most challenging issues in Kenya, with a strong need for community-centered and culturally specific reproductive health to address rising cases of teen pregnancies. On the other hand, religious leaders argue that comprehensive sex education is a way of sexualizing teenagers and promoting sexual aberration and abortions (Aciafrica, 2020). Although teens would like to learn about reproductive health knowledge and modern contraceptives, teen girls lack guidance. As a result, they face a dilemma regarding preventing unplanned pregnancies and adverse health outcomes (Awusabo-Asare et al., 2017).

Kilifi County has also consistently recorded higher unmet needs with family planning methods for the past five years. More than half (59%) of the married adolescents have unmet needs with modern contraceptives, which is higher by two-folds than the national level of 23% (Ministry of Health Kenya, 2016). With a third (25.7%) of the population being women of reproductive age, Kilifi reports a lower current contraceptive acceptance rate of 32.1% compared to Kenya's national rate of 53.2% (DESIP, 2019). In addition, demand satisfied by modern family planning methods has been reported lowest among women from low socioeconomic backgrounds, rural communities, or those with few years of formal education (Gichangi et al., 2021).

From social cognitive and ecological theories, mothers play a significant role in shaping teenage sexual behaviors and perceptions (Evans et al., 2011; Rosa & Tudge, 2013). Supported by the previous reports, teenagers prefer getting information from parents on sexuality and reproductive health (Maina et al., 2020; Muhwezi et al., 2015) together with increased access to contraceptives and reproductive health education as ways to solve teenage pregnancies. However, educating teenagers about sex and reproductive health is not a simple task as parents face challenges communicating with teens about sex and reproductive health topics due to lack of information, ignorance, and fear (Bastien et al., 2011; Maina et al., 2020; Sridawruang et al., 2010). Parents can be afraid of bringing such content, which may lead to early sexual practices among adolescents (Aciafrica, 2020). However, not sharing this information puts adolescents at risk of getting misinformed by the internet, social media, and peers (Muhwezi et al., 2015). Helping mothers communicate effectively with and educate adolescents on reproductive health matters is critical in preventing unwanted and unplanned teen pregnancy. Addressing these challenges of teen pregnancies and unplanned pregnancies among married women in Kilifi requires improving knowledge, attitude, and skills on reproductive health. Therefore, it is

imperative to have a comprehensive understanding of these mothers and design a context-specific reproductive health curriculum that is informed by a thorough needs assessment of the community.

We recognized the urgent need to prevent teen pregnancy and barriers to communication with teen girls; this study aimed to understand rural Kenyan women's roles and values in Maya village and concerns and expectations for their teen girls and themselves regarding reproductive health and teen pregnancy. The findings of this assessment were aimed at designing a community-centered reproductive health curriculum for adolescent girls and women of the Maya village.

Methods

Mtree Africa is a Kenya-based non-profit organization with its transnational affiliate, Mtree Inc., in New York. Mtree launched an ethnographic study in Maya village in rural Kilifi in 2016 to comprehensively understand village people's lives. Kilifi County is ranked top among the poorest counties in Kenya, with high poverty and illiteracy levels, leading to teenage pregnancy and early marriage (Kenya Inter-Agency Rapid Assessment, 2014). Our partnering community, Maya village, opened its first primary school in 2015 and lacked secondary education. The students enrolled in the primary school are Maya residents who are economically disadvantaged.

Mtree conducted a series of field research tools to understand women's daily lives and struggles in Maya village. Between 2016 and 2017, four researchers with backgrounds in public health, applied psychology, and international education conducted home visits and focus group interviews of ten Maya mothers to learn about their daily life and values and expectation for girls from a women's perspective. This initial data collected from 2016 to 2017 was used to develop semi-structured interview questions and interviewed 18 mothers in 2018. These mothers were reached out after the village elders introduced the interviewers to the community members, and mothers welcomed the interviewers for home visiting interviews and focused group discussion at the Maya Primary School. As each household was located by great distance, interviewers had to travel much on foot to visit these mothers. Therefore, mothers who lived within 2 hours' walking distance from the village elder and the primary school were interviewed in 2016 and 2017. In 2018, a motorcycle was available, and we were able to travel to mothers who lived far from the village center. In 2019, 28 mothers were interviewed through home visiting and focused group discussion on the topic of interpersonal relationships, the expectation for their teen girls, and reproductive health knowledge and prevention of teen pregnancy. With this comprehensive understanding of a mother's life and values in Maya village, Mtree published the report on the life of Mayan women (Mtree, 2022).

The concern for teen pregnancy has increased even more during the pandemic in Kilifi County. In 2020, thirteen mothers of teen girls and boys enrolled at the Maya Primary School were recruited by convenient sampling when village elders recruited these mothers for a focused group interview. Based on the findings since 2016 and the literature review for maternal reproductive health program development in resource-limiting communities (Breakthrough Action and Research, 2021; Deutsche Stiftung Weitbevoelukerung, 2014), we were able to develop a set of questions to assess mother's reproductive health knowledge and their readiness to discuss on teen pregnancy with their teen children (Appendix 1). Key staff who developed the reproductive health education program were trained with the U.S. Agency for International Development's (USAID) Global Health Learning Center Certificate Programs (USAID, 2021). Existing reproductive health education curricula were adapted considering the literacy level of the girls and mothers (Breakthrough Action and Research, 2021; Deutsche Stiftung

Weitbevoelukerung, 2014). The curriculum included basic reproductive knowledge, communication tips and tools that lead to open discussion with teen girls, the introduction of menstruation cups as an environmentally friendly and sustainable hygiene product option, and family planning methods (Appendix 2). After the curriculum was developed, eight mothers of teen girls in grades 4 and 5 at the Maya Primary School were recruited to participate in this pilot program. For the communication tools to bridge the conversation between mothers and teen girls, we integrated existing communication tools for health education (Amaze org, 2021; PATH, 2006; U.S. Department of Education, 2021). Lastly, we adapted local health professionals' reproductive health education curriculum (Nyapela et al., 2020) into our curriculum, including a series of role-play scenarios of teen pregnancy stories appropriate to the rural Kilifi context. This curriculum was used to implement the reproductive health pilot program for mothers who have teenage daughters through collaboration with local teachers and a public health nurse.

All interview participants signed for an informed consent once the English informed consent was translated into the local dialect by a translator. Mothers were informed that the interview was entirely voluntary, and they could exit the interview anytime they wanted without any negative impacts.

Results and Discussion

The results section is composed of three parts. Part 1 provides a descriptive narrative analysis of the contradictory role sex may have in the lives of women in Maya, and the values and expectations mothers have for their daughters and sons from data collected from 2016 to 2019. Part 2 explains the pre-program reproductive health knowledge assessment procedures undertaken to understand the specific needs of mothers of teen girls in the Maya village from 2019 to 2020. The field research and reproductive health assessment findings revealed women's values and concerns in the communities, which were integrated into teen reproductive health programs. Part 3 describes the reproductive health curriculum designed in 2021 which addressed the concerns and lack of knowledge that mothers expressed during the field research and group discussion in prior years.

Result 1: Mtree's field research in rural Kenya, 2016-2019

Major themes from the home visit interviews were the daily lives of Maya villagers, the roles of women in the community, and the challenges faced by these mothers. The three primary challenges as a community were lack of general education, lack of water system, and lack of healthcare system. In addition, challenges reported by mothers were; the absence of male partners in daily life as most men worked in fishery, job opportunities for young adults, and teen pregnancy. At the same time, we have let mothers talk about their concerns and struggles freely as topics that we have not thought about before might be brought up.

In the conversation with the mothers, a common thread appeared sporadically in their responses: the disposability of sexual relationships. While the mothers in Maya viewed sex as sacred, there was also a contradiction between their beliefs and actions. Sex seemed to provide opportunities, and at times, it became a short-term solution to basic needs. Funerals were often elaborate festivities that extended for weeks in the Maya village. While these were occasions for mourning, they were also a prime time for women and men, both young and old, from nearby villages to meet each other. Mothers explained that drunk men often raped girls during the funeral. Some mothers encouraged their daughters to attend

these festivities to meet a man to save their family financially. At times, daughters were encouraged to have sex to be more likely to be guaranteed a marriage if she was pregnant.

Mothers also explained the harsh reality girls and women faced in the community. Since husbands were often away from home for a significant amount of time, food and money could run out of the family. As a result, mothers would engage in sexual relationships with piki-piki men in return for quick money. Piki-piki men are motorcycle taxi drivers transporting people and goods across the Maya village. They often provide rides for the husbands in Maya to go to the harbor to fish, and piki-piki men are well-aware of which homes in the neighborhoods are missing their husbands. Some mothers explained that often women were forced to go to piki-piki men by their mothers-in-law when the food supply went low. Mothers-in-law knew that their daughters-in-law could get quick money when they met piki-piki men. Single young girls also became the target for quick sexual encounters. Mothers reported that there were occasions when piki-piki men raped young girls who walked through the village roads to deliver errands for the family or draw water. Thus, sex acted as a currency that girls and women exchanged for opportunities or a solution to feed the hungry mouths at home when husbands were away. However, mothers reported that the interactions with piki-piki men decreased significantly due to fear of HIV infection.

Despite the disposability of sexual relationships to often help women and families economically, delaying sexual relationships was a homogeneous expectation that mothers had for both daughters and sons. Mothers across Maya voiced how early pregnancy, especially before marriage, impeded educational advancement for both their daughters and sons, although this concern was heavily weighted on daughters than sons. Early pregnancy and unplanned pregnancy were thus linked to educational disadvantage. Christianity was the major religion in Maya, and the Christian teachings, such as preserving one's virginity before marriage and the sacred meaning held in sex, also seemed to influence mothers' beliefs around premarital sex. While some mothers had explicit conversations about sex, body, and reproduction with their children, they lacked guidance on how to make the conversations effective.

The field research revealed the complex and contradictory relation women in Maya had towards sex; yet, mothers valued delaying sexual relationships for both their daughters and sons. The mothers' overarching concerns for their daughters' sexual safety and prevention were addressed in the research conducted in Part 2.

Result 2: Pre-program reproductive health knowledge assessment among mothers of teens in Maya village, 2019-2020

The teenage stage of development is always a critical stage where girls undergo a series of physical, mental, social, and emotional changes as they transition from childhood to adulthood. Some of the changes they experience include the need to be independent, interest in building relationships with members outside the family, and the developmental tasks related to physical and emotional changes. Because of these, parents need to be more attentive and build good relationships with their children during this stage of development.

With a plan to develop a reproductive health program for mothers of teen girls, focusing on communicating with teen girls and family planning, we performed focus group interviews and surveys among 13 mothers of teens in grades 4 and 5 in 2020. With our Phase 1 ethnographic research findings,

we built up our assessment questions themed on reproductive knowledge, attitude towards teen pregnancy, and communication with teen children on such topics. Mothers understood that young women might have less power, status, and prestige than young men and are less able to access or advocate for what they need. Therefore, we emphasized the importance of reproductive health knowledge for their teen girls and early communication and knowledge in contraceptives as integral pieces in preventing unwanted or unplanned teen pregnancy.

Participating mothers shared their own experiences with the first menstruation (menarche). Most mothers reported limited information about menstruation, the timing, physiology, and handling of menstruation. For example, a mother reported that “I had no idea what this blood was about, I didn't know who to tell because I was afraid of what they would say about me so I went to my room and cried.” Another mother shared that “I also had no idea what it was but I went to talk to my aunt although I was worried when my aunt told me that I am ready for marriage, I didn't stay long then a man came for her hand in marriage.” Mothers agreed that the onset of menarche could be described as a critical time for the growing girls regarding the risks involved. We explained to mothers that based on our assessment of teen girls, they experienced much pressure in coming to terms with the changes happening in their bodies as their mothers did. Mothers learned that teen girls could experience a lot of fear and uncertainty as most may not understand what was happening to their bodies.

Mothers understood that girls could attend school during menstruation with sanitary pads, but the sanitary pads were not accessible or affordable for all girls in the community. They heard that girls skipped school due to pain or lack of sanitary pads during menstruation, and they were also fully aware that this kind of absence could affect school performance among teen girls. Most women in the community used sanitary pads, cotton, or cotton with dry leaves inside. They usually burned used sanitary pads. None of the mothers had heard of menstrual cups as an alternative option and were willing to try them as they seemed like a sustainable and eco-friendly option for menstruation.

Mothers thought early sexual relationships could lead to a serious burden to teen girls as they might get pregnant and need to stop studying and get married. Mothers also presented a strong desire for their teen daughters to receive higher education and get financial independence before marriage. Respect was the primary value that mothers raised in interpersonal relationships and in the community.

For most of the mothers in Maya, reproduction health education was a sensitive yet important issue for them to speak with their teen girls. However, one of the mother's explained that "when you talk to girls about reproductive health, you might give them ideas to start sexual intercourse at a young age." Other mothers reported that they avoided direct discussion on this topic: “We tell our daughters not to play with boys" as a way to convey the message that her daughter should not have unprotected sex with boys since she might get pregnant. As not all mothers completed primary education, most reproductive health education was based on information passed from generation to generation. Mothers were aware of physical changes in the body during adolescence, but they were not aware of emotional or psychological changes.

In sum, these findings revealed the importance of implementing an empirically-based reproductive health education program that involves the mothers as the integral channel of communication to teen girls on issues related to reproductive health. The reproductive health curriculum will be addressed in detail in Part 3.

Result 3. Mother's reproductive health program and communicating with teen girls, 2021

The mother's reproductive health curriculum was designed to address the mother's concerns about teen pregnancy and the lack of reproductive health knowledge that the mother expressed during the field research and group discussions. In addition, internationally known reproductive health tools were reviewed and integrated into the curriculum. (Breakthrough Action and Research, 2021; Deutsche Stiftung Weitbevoelukerung, 2014; UNFPA, 2021). The curriculum had three parts: Basic reproductive health knowledge, teen pregnancy and communication with teen daughters, and family planning. The curriculum was developed by public health professionals and teachers from Kenya and the U.S. The following sub-sections will address the three parts in detail.

Teen pregnancy and communicating with teens

During the group discussion among eight mothers of teen daughters, mothers expressed concerns about raising teen girls. They reported that, unlike boys, teen girls were vulnerable to becoming pregnant. Mothers thought age 18 and older was the appropriate age to become pregnant, but it could be later if a girl wants to pursue higher education. Mothers responded that they wanted a mature, educated, and respectful man to be the potential partner for their daughters.

Perceived skin-ship ranged from holding hands to having sex, and all mothers stated that sexual relationships should be allowed only after marriage. When mothers were asked how they communicated with their daughters in case a boy approached the teen girl and touched her body without her permission, mothers responded, "I will tell my daughter to say no and stay away from the boy," and "I will tell my daughter to tell the boy to stop and report him." and "the girl should refuse and not meet the boy when they are alone." Mothers agreed on the potential consequences of unplanned teen pregnancy as risks for STDs, withdrawal from school, early marriage, and poverty.

After the group discussion, the instructor, both a public health educator and nurse, delivered an educational seminar on factors that might lead young adolescents to engage in sexual activities and how to communicate with teen daughters. The potential factors that may lead to early sexual activities include lack of knowledge on the possible consequences of sexual activity, sexual abuse, including rape, peer pressure, misinformation or myths on male/female sexuality, lack of ability to negotiate contraceptive use or safer sex, and poverty or financial insecurity. The session also informed mothers regarding the physical, psychological, emotional, and social consequences of unwanted and unplanned teen pregnancy.

The second part of the session guided mothers on communicating about reproductive health with their teen daughters. The session focused on both physical and psychological/emotional changes that needed to be understood by caretakers to empower them to make better choices and not be swayed by peers. The session emphasized that a healthy and open relationship with teen daughters at this stage of life was critical as they started exploring their bodies and interpersonal relationships. Mothers learned that a healthy relationship with teen daughters could create a strong rapport with parents, and healthy relationships could make it easy for teen girls to tell parents what was happening in their lives. Several critical elements in building a healthy relationship with teen daughters were discussed. As a parent, we recommend they spend more time listening to rather than talking to their teen girls. It could be stories of schools or friends. Listening may help reveal some of the serious problems that their teen daughters

may be facing. Active listening should be without judgment or giving advice. Mothers were also encouraged to find time and space to talk with their teen daughters. It can be at dinner or after school or when mothers and daughters collect firewood or walk for water. Parents should avoid yelling, shouting, or shutting down teens when they do wrong or say something different during a conversation. Instead, they were encouraged to ask their teen daughters, "what do you think about what you did" to allow their children to express themselves or share their perspectives. We acknowledged that issues with sexuality and reproductive health could be sensitive but should not be avoided. If teen girls cannot get the correct information or genuine support from family or school, they might turn to social media or friends for information, which can misguide them. Lastly, mothers were encouraged to find 'gems' in their daughters using kind words. Parents should encourage teens for their strengths without comparing them to other teens or students and find constructive ways to improve their weaknesses together. Beyond academic performance, parents should be able to commend their children for their acts of kindness or respect.

Family planning

Most mothers reported past or current experiences in using modern contraceptives. They believed that the best time to start using family planning was immediately after delivery. However, some reported the possibility of delaying until the end of lactation amenorrhea: "I would suggest having it after resuming your period. Because there are some who don't get their period when the baby is young and breastfeeding". The most commonly preferred family planning methods were injectables and implants. They were familiar with modern contraceptives, but they did not know the detailed mechanisms of contraceptives. One mother reported that lack of awareness could be rooted in individual ignorance: "the problem is us; we don't ask for information from the right source. Every time we go to the hospital to ask for an injection when we don't have full information about it or any other better method. When we come home, we listen to rumors and stop using them again".

Other mothers have experienced side effects related to contraceptives that made them stop or opt for alternative methods. "I use the natural method of counting safe days. I previously used the injections, but they gave me problems. My blood pressure spiked, which became a serious concern for me." Apart from the fear of side effects, other challenges that hindered adequate utilization of modern contraceptives in the Maya community included inadequate knowledge, partner influence, and cost and system-related barriers like health worker strikes. Some women were not consistent with the utilization of contraceptives because of hesitancy from their spouses. A mother reported that "our husbands are the problem; they don't want you to use them. I can't get implants because if he touches me and feels it, I will be in trouble, same with pills and IUD." With the challenge of accessing hospital facilities, mothers from within the community have to travel long distances searching for these services. This situation is often worsened by constant health worker strikes when they have to spend more money at the private health facilities for services obtained free of charge in a government facility. "During this time of COVID-19 and strikes by doctors, we had to look for services from private hospitals; the problem with this is that they don't give it free like in public hospitals. Now when they charge 100 shillings, and you also have to spend a lot on fare, at least stay at home."

During the discussion, mothers unanimously agreed that a more effective way to address the above issues would involve outreaches to educate both mothers and fathers on teen pregnancy, family

planning, and contraceptive options. In addition, mothers emphasized that their spouses should also be involved in the reproductive programs to improve their support to their partners and teen girls and build individual confidence with modern contraceptives to promote family planning uptake.

Discussion

Teen pregnancy is becoming a serious concern in the Kenyan population. Early pregnancy in adolescents has a potential negative impact on the adolescent's health, social, emotional, and educational outcomes. From the current assessment, we found that teen pregnancy has been reported to be contributed by knowledge gaps, cultural practices, and parents' communication skills. The knowledge gap occurs when mothers and teens lack adequate information on delaying or preventing early pregnancy. According to a previous report by Population Council (2015), only 3 in 10 women in Kilifi are reported to be using modern methods of contraceptives, which is lower compared to areas like Kiambu, where the number is double. This low rate in Kilifi is caused lack of information and misunderstanding. From our study, fathers were often absent in the family's life due to work engagement, and therefore, the responsibility of raising children was left to the mother. This is typical in most Kenyan rural settings where mothers struggle to raise their daughters with a lack of support from male partners (Kumar et al., 2018).

Poverty is reported to be a great contributor to parents' lack of time and attention to their teens (Crichton et al., 2012). Raising teenage girls requires much attention to their physical, emotional, social, and mental health needs. In the case of the Maya community, raising a daughter was a challenging task, especially in low-income families or those who lack support from their other spouses. A previous study done in the slums of Nairobi confirmed that the presence of fathers in the life of adolescents reduced their chances of getting by 42% (Ngom et al., 2003). Similarly, in Malaysia, the absence of fathers in teen life was associated with early marriage and childbirth (Sheppard et al., 2014). Poverty itself is also reported to put the girls at risk of engaging in short term sexual practices for financial gains or basic needs, and this resonates with a report by Faith of Action Network and other studies (Faith of Action Network, 2016; Kumar et al., 2018; Mohr et al., 2019; Musyoki & Kisimbii, 2019)

Communication skills with teenage girls on reproductive health and teen pregnancy are the critical success factors that need to be emphasized. Previous studies have shown that effective communication between a parent and teen is associated with adolescents' positive development and behavioral outcomes (Ackard et al., 2006; Crichton et al., 2012). From our assessment, most mothers reported their experience with the first period was negative because the participants reported being scared and unsure of what was going on and how to take care of themselves. Mothers also reported that shyness, illiteracy, and ignorance contributed to the challenges of having a direct conversation around topics of maturity, skin-ship, and friendship with daughters (Maina et al., 2020; Noone & Young, 2010; Poulsen et al., 2010). Previous research shows that most adolescents are already sexually active and would like to have open discussions on reproductive health to guide them in making informed decisions (Awusabo-Asare et al., 2017). Based on these findings, the reproductive health curriculum was designed to guide mothers on how to engage in conversation with their teens on reproductive health topics, how to listen actively, and how to identify the appropriate time to engage in these conversations.

In family planning, knowledge assessments, knowledge of family planning options and mechanisms, access to family planning options, and spouse support were found to be critical. These findings were similar to other studies in African countries (Kitui et al., 2013). Based on these findings, we recognized

the importance of reproductive health education for fathers as well as teen boys for both teen pregnancy prevention programs and family planning programs. These findings and previous findings from the individual interview and group discussion refined our reproductive health questionnaires and educational program curriculum. We plan to conduct a study on the impact of reproductive health education intervention on mothers, fathers, teen girls, and boys.

It is important to note that this study had some limitations. Being a qualitative study, the prevalence of teen pregnancy could not be ascertained. Therefore, we could not compare the teen pregnancy prevalence to other regions in Kilifi County. Secondly, the study involved only teen girls and mothers, leaving out male parents and boys. Most of the fathers were often away fishing, which made it difficult to reach out to fathers. For the assessment in 2020, we have included mothers of both teen girls and boys, but for the pilot program in 2021, only mothers with teen boys were included. In the future, we plan to expand our program to mothers of teen boys, fathers, and teen boys as the reproductive health and awareness of teen pregnancy can be influenced by fathers, other men, and boys in the community. Future research should investigate the ways in which male partners and community groups could be involved in implementing reproductive health education. We also suggest utilizing both qualitative and quantitative methods to evaluate post-curriculum impact.

Conclusion

Supporting a community-centered reproductive health education is a significant approach to improving women and adolescent health, especially in rural Kenya. The customs, roles, and values of women vary in rural communities, and thus, it is imperative to conduct a thorough assessment before designing and implementing the community projects. From the findings of this assessment, women in the Maya community live a poor-quality life owing to the challenges of poverty, absence of male partners and lack of jobs, and inability to afford basic needs, such as sanitary towels, clothes, and sometimes food. In addition, the challenge of limited access to educational and health institutions contributes to the knowledge gap regarding reproductive health. Most mothers did not clearly understand their teenagers' psychological and social needs, while some showed a gap in communicating with teens.

Additionally, mothers from this community confirmed their lack of understanding of the modern contraceptives' mode of action and their side effects, which significantly contributed to underutilization and withdrawal from contraceptive use. Guided by these gaps, we were able to design and implement a reproductive health education curriculum that focused on teen pregnancy, communication with teens, and family planning to address the community's reproductive health needs. In the future, we plan to expand our program to teen boys and fathers, who are key stakeholders in achieving the health of mothers and girls in this community.

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Appendix 1. Reproductive Health Assessment for Mothers in Rural Kilifi

Aim: learning what it means to be a woman

Opening: Hi, everyone- thank you for gathering here today. Mtree has been working with Maya village for 6 years now and want to continue to work with you and think how we can make the lives in Maya better. Mtree plans to start reproductive health education program for girls and boys in grade 4 and above. We would like to ask you about your perception on this topic so that we can better serve girls to be knowledgeable about this issue. We want to listen your thoughts on becoming a woman and living as a woman in this community. There is no right or wrong answer for these questions, but these are guided questions to help us to think through. Let's get started.

Parenting

1. What is like to having a girl? How is it different from boys?
2. What kinds of women do you want your girl to grow up?
3. What kinds of men do you want your boy to grow up?
4. What do you worry the most about your girl growing up as girl?
5. What do you worry the most about your boy growing up as boy?
6. What does beauty of women mean to you?
7. What do you wish to see in the leaders leading your community especially for your children?
8. What do you wish to see in the leaders leading your community especially for your girls and women in the community?

Reproductive Health Knowledge

Young women may have less power, status, and prestige than young men and are therefore less able to access or advocate for what they need. So, it is important to have knowledge about reproductive health and empowered as a young woman. Here are some questions that I would like to ask.

1. How did you manage your first period? Share you story.
2. What is menstruation?
    a. When do you think menstruation starts in girls?
    b. What does it mean if a girl started menstruation?
    c. When does the menstruation stop?
3. What's your thought about menstruation?
    a. How do keep yourself clean during menstruation?
    b. How do you manage pain?
    c. Can a girl go to school during menstruation?
    d. Have you heard any girl could not go to school due to menstruation?
    e. How would it affect her school performance?
4. What do you use for menstruation, how about other people?
    a. Have you heard about menstrual cup? If so, what is your thought about?
    b. How do you dispose of the cloth, pad, cotton or tissue?
    c. Have you heard about menstrual cups? What is your thought about it?
5. In your opinion, at which age is the best time to engage in sex?
    a. How do you think a person is affected when sex is engaged too early? (physically, emotionally, spiritually, culturally)
    b. Do you think that early engagement in sex has an impact on one's future relationships?

   c. Do you know of anyone got pregnant while still in school? What are the some of challenges that she faced?
   d. Is it possible to get pregnant if it is first time having sex?
   e. What is your expectation for your girls to become married and pregnant?
6. Do you know how not to become pregnant for a woman who started menstruation?

Appendix 2. 2021 Mtree Reproductive Health Education Training Manual and Curriculum for Mothers in Rural Kilifi

This is a modified text-only version from the original curriculum. All copyrights reserved with Mtree.

Coach: Head coach (Health care worker) and Sub-coach (teacher/staff)
Audience: Mothers of teen girls
Topic: Reproductive health knowledge for mothers
AIM: Understand the consequence of unintended teen pregnancy, learn how to communicate with their teen child regarding reproductive health, and explore family planning options
Materials: Notes for the lesson, visual aids (PPT slides from the notebook), a recorder, paints, papers

OPENING
Time: 10 minutes | Lead: Sub-coach (Head coach needs to record responses from mothers)
SAY: As you are bringing up a teen girl, what challenges do you face? (Discuss thoughts and ideas) Today, we are going to talk about teen pregnancy, how to communicate with teen children, especially girls, and family planning.

BASIC REPRODUCTIVE HEALTH KNOWLEDGE
Time: 20 minutes | Lead: Head-coach (Sub-coach needs to record responses from mothers)

Open discussion
When do you think is the best age for your teen daughter to have a boyfriend?

- What kind of person do you want to have as her boyfriend?
- In your opinion, what is skin-ship? Which skin-ship is allowed during dating?
- What would you tell your daughters to say when a boy wants to touch your body (holding hand, kiss on your face) but she does not feel comfortable or scared?
- What kinds of skin-ship can lead to pregnancy?
- What would be the consequences of teen pregnancy?

Teen Pregnancy / Early Pregnancy
While having a baby is a wonderful event of life, there are things that we need to learn about unplanned teen pregnancy. Kilifi has the highest teen marriage rate in East Kenya. 1 in 5 teenage girls have begun childbearing, which possibly cut them short from chances for an education and an opportunity to be in charge of their future.

There are factors leading to young adolescents engaging in sex

- Lack of knowledge on the possible consequences of sexual activity
- Sexual abuse: rape, unwanted sex (You could not say 'No' to unwanted sex, or the person does not respect that your will)
- Lack of life skills: assertiveness, self-awareness, negotiation skills, self-esteem and decision-making
- Peer pressure
- Misinformation or myths on male/female sexuality
- Lack of ability to negotiate contraceptive use or safer sex - Contraception is way to prevent pregnancy
- Poverty of insecurity

So, here are some of possible consequences of young adolescents' engaging in sex

- Early or unwanted pregnancy
    - Early pregnancy poses a serious health risk to both mother and baby.
        - Medical complications as the body of teen girls are still growing between age of 12-16 (post-delivery complications include premature birth, fistula, excessive bleeding, prolong labor, death)
        - Children born to adolescent mothers are more likely to die during their first year of life than those born to women in their twenties.
- However, there are also social, psychological and economic consequences of early pregnancy.
    - Withdrawal from school: Early marriage can hinder girls from completing education: Every year that a girl marries before 18 is related to a reduction in the likelihood of completing secondary school of typically 4-10%. By delaying teen pregnancy, we may be able to keep girls in school longer.
    - Early and possibly forced marriages
    - Lack of job (failure to complete school)
    - Emotional trauma (stress of raising a child, no job…)
    - Becoming a single parent
    - Emotional consequences: fear or shame
- Sexually transmitted infection (STI) - diseases that transferred during sexual intercourse.

NOTE: The full curriculum can be shared upon request.