

Influence of Smartphones on Teenage Pregnancy in Iringa Municipal, Tanzania. A Socio-Digital Analysis.

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Abstract: *The use of smartphones has become increasingly prevalent among teenagers in Tanzania. This study explores the influence of smartphones on teenage pregnancy in Iringa Municipal. Utilizing a qualitative approach, the study employed semi-structured interviews to gather data from 50 teenage girls who had been pregnant or were currently pregnant. The findings of the study reveal that there is a significant association between smartphone use and teenage pregnancy. Teenagers who used smartphones more frequently were more likely to be pregnant than those who used smartphones less frequently. The study also found that adolescents who used smartphones for social networking and online dating were more likely to be pregnant than those who did not use smartphones for these purposes. The study concludes that smartphones have a significant influence on teenage pregnancy in Iringa Municipal. The study recommends that, parents should talk to their children about the risks of using smartphones, including the risk of early sexual initiation and unprotected sex. Further research is needed to fully understand the complex relationship between smartphones and teenage pregnancy.*

Keywords— Smartphones, Teenage pregnancy, Social media, Risky sexual behaviors, Parental monitoring.

1. INTRODUCTION

In recent years, the rapid proliferation of smartphones has become increasingly prevalent among teenagers in Iringa Municipal, Tanzania. While smartphones offer valuable information and connectivity, there is growing concern that their use may contribute to an increased incidence of teenage pregnancy in the region. This issue warrants a comprehensive investigation into the specific ways in which smartphone usage patterns, online content exposure, and social media interactions influence the sexual behaviors and decision-making processes of teenagers in Iringa Municipal, ultimately contributing to the rise in teenage pregnancy rates. Understanding the multifaceted interplay between smartphone use and its impact on the sexual health practices of teenagers in this region is essential for developing targeted interventions and strategies to promote responsible smartphone usage and mitigate the risk factors associated with teenage pregnancy.

Pregnancy in very young women is usually considered to be a very dangerous event, due to the fact that teenage girls are psychologically and bodily -physically immature for reproduction [1]. Due to the physical, mental growth and changes that takes place during adolescence, teenagers are attentive in discovering the world from one place to another place, from which some develops sexual characteristics [2]. Teenage pregnancy is a major public health problem in Tanzania, with over 27% of girls aged 15-19 giving birth [3]. Teenage pregnancy is a significant problem in Iringa Municipal, Tanzania and understanding the factors contributing to it is crucial for the general public, local and national policy makers for strategic intervention. Certainly, there are several factors that contribute to teenage pregnancy

in Tanzania, but there is no specific information on the factors that contribute to teenage pregnancy in Iringa Municipal. Some of the factors that contribute to teenage pregnancy in Tanzania includes poverty, lack of education, poor access to sexual and reproductive health services, early sexual debut, child marriages, and cultural beliefs [4]. Poverty is a significant contributing factor to teenage pregnancy, as living in poverty makes teenage girls more prone to pregnancy, and teenage mothers are more likely to live in poverty [5]. Lack of education and poor access to sexual and reproductive health services have also been associated with young people's vulnerability to sexual health risks, such as early pregnancies and sexually transmitted diseases [3, 6, 7]. Early sexual debut, child marriage, and cultural beliefs are also factors that contribute to teenage pregnancy in Tanzania [8].

One factor that has gained prominence in recent years is the influence of smartphones on teenage sexual behavior. Smartphones have both positive and negative effects on teenagers. On the positive side, smartphones usually help teenagers to stay connected with family and friends, improve communication and connection, and help with organization [9]. However, excessive use of smartphones sometimes lead to isolation, depression, anxiety, stress, lack of sleep, and other mental health problems [10]. Moreover, smartphones also lead to a decrease in face-to-face interactions, which can affect teenagers' social skills and well-being [11]. Additionally, smartphones every so often expose teenagers to cyberbullying, lower self-esteem, and loss of valuable friends, family, and personal time [12]. Therefore, it is indispensable to balance the use of smartphones and limit their negative effects on teenagers' lives.

A study carried out by [13] found that adolescent girls who spent more time using their smartphones were more likely to experience early sexual initiation and pregnancy. The study

also found that smartphone use was associated with increased risky sexual behaviors, such as unprotected sex. As per [14], girls who used social media were more likely to report having had sex and to have had multiple sexual partners. Another study by [15], found that adolescent girls who used smartphones for more than two hours per day were more likely to have had sex by age 15. The study also found that smartphone use was associated with an increased risk of early pregnancy, even after controlling for other factors such as socioeconomic status and parental involvement. A study by [16], found that girls who used smartphones more frequently were more likely to report having had sex and to be pregnant. Furthermore, the widespread access to smartphones among teenagers has facilitated the consumption of online content related to sex and relationships, shaping their attitudes and behavior [17]. Social media platforms and apps also play a role in disseminating information and establishing sexual norms. The practice of sexting, in particular, has been linked to an increased risk of sex practice at early teenage age [18]. Additionally, the availability of sexual health information apps and smartphone-based sexual education programs were found to have a positive impact on teenagers' knowledge and awareness [19]. However, other studies have not found a significant association between smartphone use and teenage pregnancy. For instance, a study by [20], found that smartphone use was not associated with an increased risk of teenage pregnancy, even after controlling for other factors such as race, ethnicity, and income level. A study by [21], discussed on how smartphones have changed the teenage years for better and worse. This study cites evidence that smartphones have led to fewer car accidents, less alcohol consumption, and less dating, which has resulted in a decrease in teen pregnancy rate. Another study by [22], suggests that the growth in popularity of mobile phones and social media are partly behind a big fall in teenage pregnancy over the past 13 years. While these studies do not directly address the influence of smartphones usage on teenage pregnancy in Iringa Municipal, Tanzania, they do suggest that smartphones can have a significant impact on teenagers' behavior and well-being, which could indirectly affect the rate of teenage pregnancy.

The main objective of this study was to investigate the influence of smartphones on prevalence of teenage pregnancy in Iringa Municipal, Tanzania. This study in part which includes examining the role of technology in shaping adolescent behavior, exploring the impact of smartphones on teenagers' sexual health knowledge, and understanding the influence of social media on teenage pregnancy rates. Through this, the study seeks to contribute to the existing literature on the factors contributing to teenage pregnancy and to inform policy and interventions aimed at addressing this issue.

The significance of the study lies in the exploration of the influence of smartphones on teenage pregnancy in Iringa Municipal, Tanzania. This study is important because it addresses a growing concern in the community and sheds light on the impact of technology on adolescent behavior. By

examining the role of smartphones and social media in shaping sexual attitudes and norms among teenagers, this study aimed to contribute to the

understanding of the factors contributing to high teenage pregnancy rates in the area. The findings of this study have implications for policymakers, educators, parents, and community organizations, as they can inform the development of interventions and support programs to mitigate the negative effects of smartphones use on adolescent sexual behavior. Overall, this study is significant in addressing a pressing issue and providing valuable insights for future research and policy development.

The remaining part of the paper is organized as follows: Methodology is presented in part II, while part III is occupied by results and discussion of the findings and finally conclusion is in part IV.

2. METHODOLOGY

The study was conducted in the following steps:

1. Development of research instruments: The Structured questionnaire and in-depth interview guide were developed by the researcher and the instruments were translated into Swahili and back-translated into English to ensure accuracy.
2. Sampling and Data collection: Questionnaires were administered to a sample size of 50 teenage girls aged 13-19 years old in Iringa Municipal, Tanzania. The sample members were purposively selected basing on the following criteria; smartphone ownership and had experienced teenage pregnancy. Snowball sampling technique was used to identify sample members. Questionnaires were principally used to collect quantitative data while one Focus Group Discussion of ten (10) willing teenage girls was conducted in order to collect qualitative data. Ethical principles were closely observed during entire process of the study. Before collecting data from teenagers below 18 years of age (minors), respondents' informed consent concurrent with parental or guardian consent, approval and monitoring were sought prior to teenage involvement in the study. Parental or guardian presence was sought during the entire process of data collection. The principle of confidentiality was strictly observed as the research topic was highly sensitive and the information sought highly personal and private.
3. Data analysis: Quantitative data was analyzed using descriptive statistics analysis while qualitative data was analyzed using thematic analysis. Data analysis tools used in this study were Statistical Package for Social Sciences version 26.0 (SPSS v26.0) and Microsoft Excel.

3. RESULTS AND DISCUSSION

In this part results and discussion of findings are presented, they begin with simple demographic information of respondents followed by indicating factors in the form of smartphone usage and perception of relationships and sexual behavior.

3.1 DEMOGRAPHIC INFORMATION OF RESPONDENTS

This section presents general information of respondents such as age, residential area, education level, monthly income of parents or guardians and smartphone ownerships.

3.1.1 Age of respondents

Table 1, shows age distribution of teenage girls who were distributed with questionnaires and as shown the majority of the respondents were within 13-16 years of age range which is about 60% of the total respondents. This age range is a crucial period for teenage development and exposure to various influences, including the use of smartphones. This indicates that the age group of population at risk of smartphone-related factors contributing to teenage pregnancy is significant, as this age group is more likely to be actively engaging with smartphones. This age group is often associated with increased exposure to smartphones and online content, which may have implications for their sexual behavior and pregnancy risk. Further analysis shows that teenagers in this age group are more likely to engage in risky behaviors due to smartphone use. The fact that a small percentage (10 per cent) of respondents were below 14 years of age might suggest that smartphone usage could be starting at an early age, which could have implications for their exposure to inappropriate content and online risks.

3.1.2 Residential area of the respondents

Variations in smartphone ownership and usage may differ based on the geographic locations within the municipality. Understanding the prevalence of smartphone usage across different areas usually provide insights into the potential influence of the local environment on teenagers' exposure to smartphone-related content, which could impact their behaviors and decisions. For instance, if teenagers from certain areas have limited access to smartphones, it might impact their exposure to online content related to sexual health and relationships. A comparison of teenage pregnancy rates in different areas can help assess the impact of smartphone ownership. Like in table 1, it can be easily observed that Mlandege was the most common residential area among the respondents, constituting 40% of the sample followed by Kitanzini and Zizi la Ng'ombe wards which had relatively higher representation in the sample compared to Kihesa and Gangilonga wards. The distribution of respondents across various residential areas implies that the study encompassed teenagers from different socio-economic backgrounds within Iringa Municipal. Residents of Iringa municipal reflect variable economic status. In low-income families, if parents can afford to buy their daughters smartphone, recharging bundles or credits is often left to the

daughters themselves. This may in turn push some teenage girls to engage in sexual behaviors for money of which can lead to teenage pregnancy.

3.1.3 Education Level of respondents

The education level of the teenagers indicates their level of awareness and understanding of the consequences of early pregnancy. As indicated in table 1 a significant portion of respondents (50%) had completed primary education but did not join or progress to secondary education. This suggests that a considerable proportion of the respondents might have limited understanding of the potential risks associated with smartphone usage, such as accessing inappropriate content or interacting with strangers online through social media such as Facebook, WhatsApp or Instagram. This lack of awareness could potentially contribute to increased vulnerability to risky behaviors, including early sexual activity leading to teenage pregnancy. Furthermore, as shown in Table 1, (22%) of the teenagers were at the secondary education level. This implies that they were likely to know how to use and interact using smartphones. This observation also means that they are likely aware with the usage of popular applications found on their smartphones such as Facebook, WhatsApp or Instagram. A smaller portion (12%) of the respondents had not received any formal education this means that they could be very easily exposed to the risky behavior caused by the use of smartphone because of lack of awareness and understanding on potential risks associated with use of smartphones. The largest proportion (72%) of the respondents had at least finished primary education. It is important to note how education level of a girl teenager might influence the use of smartphone and, subsequently, impact teenager girls' sexual behavior and early pregnancy.

3.1.4 Monthly income of parents/guardians of the respondents

The income level of parents or guardians can affect the type of guidance and supervision teenagers receive. Lower income levels might indicate a lack of resources for proper supervision and education, which could lead to reduced monitoring of smartphone usage and potentially less awareness about the risks associated with early pregnancies. Furthermore, higher income levels might imply greater access to smartphones and the internet, which could increase exposure to potentially harmful content. Conversely, lower-income families may have limited access to digital devices, but if smartphones are accessible, teenagers from these families might be more susceptible to unsafe online activities due to less parental supervision. Table 1, shows the monthly income levels of parents or guardians of the teenage girls. As indicated, the majority of parents or guardians (50%) had a monthly income between 100,000 and 300,000 Tanzanian Shillings, 20% of parents or guardians had a monthly income of less than 100,000, 16% of parents or guardians had an income between 300,000 and 500,000, and 14% of parents or guardians had an income above 500,000. This information suggests that financial constraints faced by these families might influence the accessibility and monitoring of smartphones use for teenage girls thus potentially affecting

the exposure of teenagers to inappropriate content and online activities that could contribute to teenage pregnancy.

finding strongly suggests a strong correlation between smartphone ownership and the incidence of teenage

Table 1: Demographic information of respondents (N = 50)

Variable	Attribute	Frequency	Percent (%)
Age	Below 14	1	10
	14- 16	28	60
	16 - 18	19	16
	Above 18	2	14
	Total	50	100
Residential Area	Kitanzini	12	24
	Kihesa	5	10
	Zizi la Ng'ombe	6	12
	Gangilonga	2	4
	Mlandege	20	40
	Total	50	100
Education level of teenagers	No formal education	6	12
	In Primary school	8	16
	Completed Primary level	25	50
	In Secondary school	11	22
	Total	50	
Average Monthly Income of parents/guardians	< 100,000/=	10	22
	100,000-300,000/=	25	50
	300,000-500,000/=	8	16
	> 500,000/=	7	14
	Total	50	100
Smartphone Ownership	Yes	38	76
	No	12	24

3.1.5 Smartphone Ownership of the respondents

The status of smartphone ownership among the teenagers always suggests a high level of exposure to digital media and online content, potentially influencing their access to information, social interactions, and exposure to content that may contribute to risky behaviors, early engagement in sexual activity and early pregnancy.

In this study as indicated in table 1, majority of the respondents (76%) reported owning a smartphone, while 24% did not. This suggests a high prevalence of smartphone usage among the teenage population in Iringa Municipal, which may contribute to the potential influence of smartphones on teenage pregnancy. The fact that 76% of respondents own smartphones suggests that they have easy access to information, social media, and potential sources of influence. This could contribute significantly to the issue of teenage pregnancy, given the potential access to social media platforms and the internet, where teenagers are exposed to inappropriate content and potentially harmful influences. This

pregnancy, indicating the need for effective digital literacy and awareness programs to equip teenagers with the necessary skills to navigate the digital landscape responsibly.

These demographic findings lay the foundation for understanding the context in which the influence of smartphones on teenage pregnancy occurs in Iringa Municipal. The interplay between age, residential area, education level, monthly income of parents or guardians, and smartphone ownership was crucial in comprehending the potential risk factors associated with teenage pregnancy in the context of smartphone usage.

3.2 Smartphone Usage among Teenagers

Smartphone usage among teenagers can have a significant influence on teenage pregnancy rates. The widespread availability and use of smartphones among this age group provide access to various information and opportunities, both positive and negative that can impact their behavior and decision-making regarding to sexual activity. While the link between smartphone usage among teenagers and teenage

pregnancy might not be direct, it is crucial to consider the impact of technology on the behavior and lifestyle of adolescents.

3.3.1 Smartphone Usage Frequency

Figure 1 shows the frequency of smartphone use by teenagers. The majority number of respondents which is 22 (44%) strongly agreed they use smartphones for more than two hours per day. Five respondents (10%) agreed to using smartphones for more than two hours per day, while only 8 (16%) respondents disagreed (8) that they spend more than 2 hours in a day on their smartphone. Five respondents, that is 10% strongly disagreed that they spend more than 2 hours in a day on their smartphone and 10 respondents making 20% did not know if they spend this amount of time on their smartphone because they are not aware of how much time they spend on their smartphones. On further probing During Focus Group Discussion (FDG) one participant revealed that they did not understand the nature of the question, whether they use their smartphone for the internet or for other purposes, one participant said that:

"...I own smartphone which I use for receiving and making calls or send and receive short messages service. At times I use it for browsing internet but not frequently. Sometimes it may take up to three days without using internet that is why I don't know..."

Respondents who agreed and strongly agreed that they use their smartphone regularly, said they use them for the purpose of communication especially in WhatsApp groups formed by their fellow peers. During Focus Group Discussion (FDG) one participant said:

"...my smartphone is always on as we have WhatsApp groups where we use to give information about what is going on with my friends who also have access to internet..."

For those respondents who disagreed also had their reasons for doing that. One participant said that:

"...I own smartphone, but I am not able to recharge the internet bundle as frequently as I want to due to shortage of money. Thus, I am unable to access internet frequently. I barely use my smartphone on internet. I access internet only when I can afford the internet bundle..."

The frequency of smartphone use among teenagers may have an impact on teenage pregnancy rates. While smartphones offer numerous benefits and opportunities for communication, education and entertainment, excessive or unrestricted use may contribute to an increased sexual practices among teenage girls and risk of teenage pregnancy. One potential concern is that excessive smartphone use can lead to fewer face-to-face interactions and social isolation. When teens spend an excessive amount of time on their smartphones, they may have less opportunity to socialize in person and maintain healthy relationships. This lack of interpersonal relationships can lead them to seek validation and intimacy online, increasing the likelihood that they will engage in risky sexual behavior. In addition, frequent use of smartphones can lead to a lack of supervision and control, especially during unsupervised times such as evenings or weekends. This can give teens the opportunity to engage in

sexual activity without proper guidance or protection, increasing the risk of unintended pregnancies. The frequency of smartphone use can also affect the level of exposure to explicit content and peer pressure. When teenagers spend a significant amount of time on their smartphones, they may come across explicit material more frequently, which can normalize and desensitize them to sexual content.

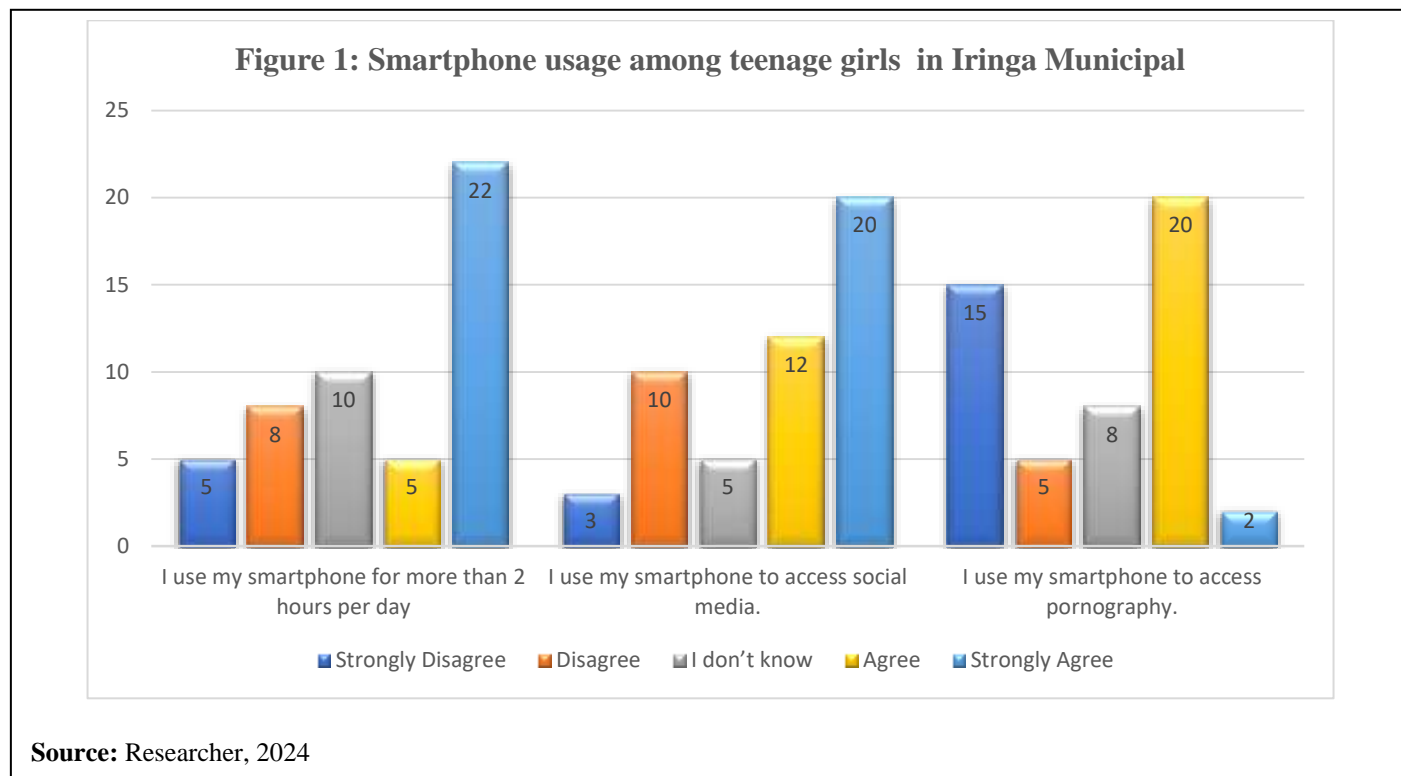
Similarly, constant access to social media platforms can expose teens to peer pressure and the influence of their online networks, potentially leading to risky behavior and unintended pregnancies. It is important that parents, educators and caregivers promote responsible smartphone use among teens. Setting limits and boundaries on screen time, encouraging offline activities and open communication about healthy relationships and sex education are important strategies to mitigate the potential negative impact of excessive smartphone use on teenage pregnancy rates.

In addition, comprehensive education programs that address the impact of smartphones on sexual behavior may help teens make informed decisions and reduce the risks associated with teen pregnancy.

3.3.2 Social media and communication on teenage

interaction among young people, potentially impacting their social behavior and peer relationships. Seeing sexually suggestive images and videos on social media may shape teenagers' attitudes and perceptions about sex, leading to increased likelihood of engaging in sexual activities at a young age. Furthermore, these platforms can also perpetuate unrealistic ideals of relationships and sexuality, promoting unhealthy behaviors and norms, like one respondent who strongly agreed that she used smartphone to access social media reported that:

"...I owned my first smartphone when I joined form one. In the beginning, I used it for voice calls, sending text messages and WhatsApp only. Later I discovered Instagram and Facebook and got attracted to contents posted and released by celebrities and female stars and their lifestyles. I thought



pregnancy

Social media has a significant impact on the way teenagers perceive and engage with various issues, including teenage sexual behavior and early pregnancy. While it can serve as a platform for disseminating accurate information, it can also perpetuate myths, stigmas and stereotypes, and communication needs to be done with sensitivity and factual accuracy, taking into account the potential impact on young people's mental health and wellbeing. As shown in Figure 1, the majority of respondents making 40 per cent strongly agree that they use smartphone to access social media. 24 percent of respondent agreed that they use their smartphone to access social media. Thus, at least more than two third (64 per cent) of all respondents were using their smartphones to access social media applications. This highlights the significant role of smartphones in facilitating communication and social

could imitate them. I started to wearing half naked and tempting clothes like those celebrities. Finally, I found myself engaging in sexual relations and got pregnant..."

On another hand 3 respondents (6 percent) strongly disagreed and 10 respondents (20 percent) simply disagreed that they used their smartphone to access social, as most of them said they used their smartphone only for calls and text messages. The urge to engage in online social behaviors and peer pressure among teenagers may lead to an increased risk of early sexual activity and teenage pregnancy.

Therefore, it is important to educate teens about the risks and consequences of curiosity on indecent content on various social media platforms. The girls should be aware of and promote responsible and safe social media behavior. To

combat misinformation, effective prevention methods should include comprehensive sex education and critical thinking training. In addition, promoting responsible use of social media and communication platforms might be beneficial.

3.3.3 Access to Pornography and Sexual Content influence on teenage pregnancy

Exposure to unrealistic sexual expectations might have a significant impact on teenage pregnancy rates. With relaxed access to pornography and sexual material, adolescents are often exposed to distorted depictions of sex and relationships [23]. These depictions often promote unrealistic ideals and behaviors, leading teenagers to develop skewed expectations about sex. This may lead to young people displaying unsafe sexual behavior or feeling forced into sexual acts at a young age.

This may contribute to an increased likelihood of teenage pregnancy. As shown in Figure 1, 20 respondents (40 percent) agreed to and 2 respondents (4 percent) strongly agree that they use their smartphones to access pornography. This is a notable proportion, that is 44 per cent of all respondents at least agreed to using their smartphones to access pornographic content. This concerning trend suggests that unrestricted access to explicit content through smartphones may contribute to the normalization of sexual content among teenagers, potentially influencing their perceptions of relationships and sexual behavior as was also observed by [23]. For instance, during discussion, one teenager from Kitanzini residential area pointed out that she got engaged into early sexual behavior because of the high frequency and easy access of sexually explicit content through her smartphone. she said:

“...Before I owned a smartphone, I used a normal handset with no access to internet services. During that time, I was less tempted into sexual relations. But once I owned a smartphone, I started accessing social medias and sexual content through telegram, WhatsApp, Instagram and other social media apps. Finally, I was tempted into sexual activity that resulted into pregnancy.”

As indicated in Figure 1, 8 respondents making 16 percent of all respondents didn't know whether they used their smartphone to access pornography or not. They pointed out that they used their smartphone to access valuable information not related to sexual content such as school subjects. However, these teenagers highlighted that sometimes suddenly unexpectedly explicit sexual content appears in their WhatsApp groups and Instagram as someone unfortunately send it without knowing. During further discussion one of the girls said that:

“...it happens sometimes one of our group members in our WhatsApp group unintentionally sends such content. But it is neither my intention nor willingness to access or open it...”

In summary, exposure to pornography and sexually explicit material may have a significant impact on teenage pregnancy rates. The findings from this study resembles the results obtained from the study by [23] who found that exposure to pornography is associated with earlier age of first sex, condomless sex, past-year multiple partners, lifetime multiple partners, group sex, sexual aggression including forced sex, paid sex, teenage pregnancy, and history of sexually transmitted infection. The same to the study by [24], whose findings concluded that exposure to pornographic content led to risky sexual behavior and increased reproductive health problems such as early pregnancy rates, illegal abortions, and sexually transmitted infections. Finally the findings of our study are also similar with the results of the study conducted by [25] and found that frequent exposure to pornography was significantly associated with pre-marital teenage pregnancy. Therefore, it is essential to address the issue of access to pornography and sexually explicit material among teenagers to reduce the risk of teenage pregnancy.

The analysis suggests that smartphone usage, particularly for prolonged periods, accessing social media, and communicating with the opposite gender, is prevalent among the surveyed teenagers in Iringa Municipal. Additionally, the data hints at the potential exposure to explicit content and the use of smartphones for arranging sexual encounters. These factors collectively raise concerns about the influence of smartphone usage on teenage pregnancy in the area, indicating a need for further investigation and potential intervention strategies to address these issues.

3.4 Perception of smartphone use and risky sexual behavior among teenagers

Attitudes towards sex play a significant role in shaping the perception of relationships and sexual behavior, which in turn influence the prevalence of teenage pregnancy. The way young people view and approach sex may impact their decision-making regarding sexual activity, protective sex and contraception. Understanding these attitudes is crucial in addressing the issue of teenage pregnancy effectively. Factors such as cultural and religious beliefs, gender roles and expectations, and societal norms all contribute to shaping individuals' attitudes towards sex. In terms of technology, there is evidence that smartphone use can contribute to an increase in risky sexual behavior among teenagers, exposure to smartphone content can also have a significant impact on teenagers' attitudes towards sexual relationships and lead to an increase in risky sexual behavior and also smartphones can make it easier for teenagers to access sexually explicit content and arrange sexual encounters, leading to an increase in sexual activity and unprotected sex.

3.4.1 Smartphone use and risky sexual behavior

The relationship between smartphone use and risky sexual behavior among teenagers is a complex and evolving area of research. However, there is evidence that smartphone use can

contribute to an increase in risky sexual behavior among teenagers, which can indirectly affect the rate of teenage pregnancy. Exposure to pornography and sexually explicit material through smartphones has been associated with earlier age of first sex, unprotected sex, multiple sexual partners, and sexual aggression, including forced sex, paid sex, and teenage pregnancy. Moreover, smartphones make it easier for teenagers to arrange sexual encounters, leading to an increase in sexual activity and unprotected sex. Sexting, sending or receiving sexually explicit texts and images via cell phone, has also been associated with sexual risk-taking and risky sexual behaviors among adolescents. As shown in Table 2,

the majority of respondents (30 strongly agree + 20 agree = 50) believe that smartphone use has contributed to an increase in risky sexual behavior among teenagers. This finding suggests a perceived correlation between smartphone use and risky sexual behaviors, which could potentially contribute to teenage pregnancies. It is essential to consider the specific types of risky behaviors associated with smartphone use and their impact on the overall sexual health of teenagers.

“...Before starting using smartphone, I used normal cellphone for texting and calling. I rarely engaged in any risky sexual behavior. But when I started using smartphones, I found myself highly interested in online sexual content. This has somehow influenced me to engage in sexual activity that led to pregnancy while I am still a teenager...”

Furthermore, as indicted in Table 2 above, there are seven (7) respondents who disagreed and ten (10) respondents who strongly disagreed that the use of smartphones contributes to the increased risky sexual behavior among teenage girls by citing that sexual promiscuity is a personal behavior and is not a device behavior. Thus, whatever type of mobile phone device one use, she may end up engaging in promiscuous behavior or not. During discussion one girl member strongly

commented that;

“...I started dating before having any kind of mobile phone, whether smartphone or button type phone. Boys used to come to our home or send someone to call me. Even now, though I own a smartphone I cannot say smartphone influenced me into sexual risky behavior as I started getting involved before even owning a smartphone...”

Source: Researcher, 2024

Table 2: Perception of Smartphone use and risky sexual behavior among teenagers (N =50)

	Strongly Disagree	Disagree	I don't know	Agree	Strongly Agree
Smartphone use has contributed to an increase in risky sexual behavior among teenagers	10 (20%)	7 (14%)	3 (6%)	20 (40%)	10 (20%)
Teenagers' attitudes towards sexual relationships have changed due to exposure to smartphone content	5 (10%)	7 (14%)	10 (20%)	8 (16%)	20 (40%)
Access to social media platforms through smartphones has influenced teenagers to engage in unprotected sexual activities	8 (16%)	9 (18%)	8 (16%)	20 (40%)	5 (10%)
Smart phones make it harder for parents to monitor their teenagers' sexual activity	10 (20%)	5 (10%)	10 (20%)	10 (20%)	15 (30%)

While smartphones have undoubtedly changed the way people access information and communicate, their specific influence on risky sexual behavior is complex and multifaceted. During Focus Group Discussion one member argued that:

Based on the aforementioned narration, adolescents who possess smartphones are more inclined to engage in sexual activities and behaviors that carry risks compared to those who do not have smartphones. Smartphones facilitate the arrangement of sexual encounters for teenagers, resulting in an escalation of sexual activity and instances of unprotected sex. In addition, the act of sexting, which involves the

exchange of sexually explicit messages and images via cell phones, is closely linked to adolescent sexual risk-taking and risky behaviors. Consequently, it is crucial to address the accessibility of pornography and sexually explicit content among teenagers, while also promoting safe sexual practices to mitigate the risk of teenage pregnancy.

3.4.2 Change of teenagers' attitudes towards sexual relationships upon exposure to smartphone content

The rise of smartphones and the increasing accessibility of online content have undoubtedly had a significant impact on teenagers' attitudes towards sexual relationships. While smartphones have provided teens with a platform for connection and information, they have also exposed them to a vast array of sexual content, both explicit and implicit. This exposure, coupled with the social pressures and norms often portrayed in online media, has contributed to a complex and evolving landscape of teenage sexuality. One of the most notable changes observed in teenagers' attitudes towards sexual relationships is the increased acceptance of casual sex. Exposure to online pornography and social media platforms that normalize casual hookups has led some teens to view sex as a more casual and recreational activity, rather than a component of a committed romantic relationship. This shift in perception has potentially contributed to a rise in unprotected sex and unplanned pregnancies among teenagers. Another significant change is the earlier onset of sexual activity. The easy accessibility of online pornography has blurred the lines of sexual exploration and experimentation, leading some teens to engage in sexual activity at younger ages. This early exposure can have both positive and negative consequences. On the one hand, it can empower teens to make informed decisions about their sexuality. On the other hand, it can lead to unrealistic expectations and peer pressure to engage in sexual activity before they are emotionally or physically ready. The portrayal of sexual relationships in online media have also a detrimental impact on teenagers' perceptions of healthy relationships. The romanticization of unrealistic expectations and the emphasis on physical appearance can lead to feelings of inadequacy, insecurity, and body dissatisfaction among teens. This can hinder their ability to develop healthy and fulfilling relationships. Like data on table 2 indicates that a considerable proportion of the respondents agreed or strongly agreed that teenagers' attitudes towards sexual relationships have changed due to exposure to smartphone content (28). This trend suggests that the pervasive nature of smartphone use, particularly with access to various forms of media and information, might be shaping the perceptions and attitudes of teenagers toward sexual relationships, potentially normalizing certain behaviors that contribute to an increased risk of teenage pregnancies. This suggests that smartphone content plays a great role in shaping the perceptions of sexual relationships among teenagers.

In summary, the data from Table 2 suggests that there is a general consensus among the respondents in Iringa Municipal regarding the influence of smartphones on teenage sexual

behavior, with many acknowledging the role of smartphones in shaping teenagers' attitudes towards sexual relationships and contributing to risky sexual behavior and teenage pregnancies.

Ultimately, the impact of smartphone content on teenagers' attitudes towards sexual relationships vary depending on the individual teenager. Some teenagers may be able to use online resources to their advantage, while others may be more susceptible to the negative effects of exposure to harmful content. It is important for parents and educators to talk to teenagers about their online habits and to help them to develop healthy online relationships.

3.4.3 Influence of social media toward unprotected sex among teenagers

The relationship between access to social media platforms through smartphones and the engagement of teenagers in unprotected sexual activities is a complex issue that has been the subject of much discussion and research. While some studies suggest that increased access to social media is correlated with certain risky behaviors, it is essential to understand that correlation does not necessarily imply causation. There are a number of possible explanations for why social media use are associated with unprotected sex. One possibility is that social media always expose teenagers to sexual content that usually normalize unprotected sex [25]. Another possibility is that social media makes it easier for teenagers to meet and connect with potential partners, which may increase the likelihood of unplanned sex [25]. Additionally, social media provides a platform for teenagers to communicate with each other about sex, which may not always be accurate or helpful. It is also important to consider the role of other factors that may be associated with both social media use and unprotected sex, such as risk-taking behaviors, peer pressure, and access to contraception. For example, teenagers who are more likely to engage in risky behaviors may also be more likely to use social media and engage in unprotected sex. Additionally, teenagers who live in areas with high rates of unplanned pregnancy may also be more likely to use social media. The data on table 2 shows that a considerable number of respondents (25) agreed (20) or strongly agreed (5) that access to social media platforms through smartphones has influenced teenagers to engage in unprotected sexual activities. This finding highlights the potential role of social media in shaping teenagers' behaviors and decisions related to sexual activities. It also suggests a need for effective interventions to promote safe sexual practices and education about the risks associated with unprotected sex.

But other respondents strongly disagreed (8) that access to social media has potential to influence teenage pregnancy by citing that some unplanned pregnancy happened because they had contact with GSM phone which involved sexting and calling rather than through social media accessibility.

While there is evidence to suggest a potential link between social media use and teenage sexual behavior, it is important to approach the issue with caution. Correlation does not equal causation, and other factors may play a role in influencing teenage sexual behavior. Parents and educators must play a crucial role in protecting teenagers by fostering open communication, establishing clear expectations, actively monitoring social media activity, promoting healthy relationships, and modeling positive behaviors.

3.4.4 Challenges for parental monitoring

While smartphones can make it difficult for parents to monitor their teens' activities, it's important to remember that open communication and trust are essential to a healthy parent-child relationship. The impact of smartphones on parental monitoring of teen sexual activity is a complex issue with multi-layered considerations. On the one hand, smartphones make it more difficult for parents to stay informed about their teens' private lives, including their sexual behavior. This is because smartphones offer teens unprecedented access to private communication channels, such as social media messaging apps and encrypted messaging services. In addition, smartphones can make it easier for teens to access pornography and other sexually explicit content, often without their parents' knowledge. On the other hand, smartphones can also be used as a tool for parental monitoring. There are several parental control apps that allow parents to track their teens' smartphone activity, including their online browsing history, social media interactions and even their location.

As data indicate in table 2 above, ten (10) respondents agreed and fifteen (15) respondents strongly agreed (which altogether made up 40 percent of the total respondents), with the perception that smartphones make it challenging for parents to monitor their teenagers' sexual activities. This suggests that the increased accessibility to smartphones might create challenges for parents in overseeing their teenagers' online activities and potentially limit their ability to guide and educate their children about responsible sexual behaviors. Like one respondent was quoted saying that:

"...I first owned my smartphone when I was 14 years old. I was in form two. My parents never knew that I owned a smartphone. because I used to switch it off and hide it whenever I returned home. I used it only when I am away from home. I am free to use it only when I am away from home, because no one monitors me. However, after getting pregnant, my parents, for the first time discovered that I had a smartphone..."

Another respondent who strongly agreed that parental monitoring was difficult in smartphones usage for their teenage daughters, was quoted:

"...My mother bought me a smartphone for communication purpose when I went to attend boarding secondary school. The use of cellphones at school was strictly prohibited and we

were required to hand over our phones to school matron at least. The matron would only giveback us the phones only when we were living school for holidays. However, that was sufficient time for me to communicate with my boyfriend without any reservation, as no one was now monitoring me. In addition, during holidays I was free to use my smartphone without any fear. My mother thought that I had no one to communicate with apart from herself. But she was totally wrong and that was the reason she was neither monitoring nor suspecting me..."

Furthermore, as data indicate in table 2 above, ten (10) respondents strongly disagreed that parents have any difficult challenge in monitoring their daughter's smartphone activities. During Focus Group Discussion some members reveled that parents can install smartphone applications or features to monitor and control their teenage daughter's smartphones usage and activities. One teenage shared that:

"...my father gave me a smartphone without telling me anything about controlling its usage. Nonetheless he was aware of everything about my phone usage, and was monitoring everything I was doing with my phone; like tracking my location, monitoring texts and calls, and some content was not accessible on my smartphone. When I asked my father what he had done with my phone, he said that he had installed some parental control features. This made me very fearful and also made me not to use my phone on things which may anger my dad. As a result, I started using my friend's smartphone to communicate with my boyfriends and eventually I fell into the trap of sexual activities through the use of my friend's phone..."

In the context mentioned earlier, the absence of direct monitoring through smartphone usage presents a significant hurdle for parents in monitoring their teenagers' sexual activities. The use of smartphones enables teenagers to engage in private communication and potentially risky behaviors without their parents' physical oversight, thereby compromising their safety. This lack of direct supervision creates a challenge for parents in identifying potential warning signs or intervening when necessary. Consequently, parents are confronted with the difficult task of striking a balance between their child's privacy and safety in the digital era.

Based on the available data from participants in the Iringa Municipality, it is evident that smartphones play a significant role in shaping the sexual behavior of teenagers. These devices are associated with various consequences such as increased engagement in risky sexual activities, altered attitudes towards sexual relationships, higher rates of unprotected sexual encounters, a rise in teenage pregnancy, and challenges in parental monitoring. Considering these findings, there is a clear necessity for comprehensive interventions and measures to address the impact of smartphones on teenage pregnancy in Iringa Municipal.

4.0 Conclusion

This study aimed to investigate the influence of smartphones on teenage pregnancy in Iringa Municipal, Tanzania. The study employed a quantitative approach, using a cross-sectional survey design. Data were collected from 50 randomly selected female adolescents aged 13-19 years in Iringa Municipal. The findings of the study revealed that a significant proportion of the respondents (76%) owned smartphones. The study also found that there was a significant positive correlation between smartphone usage and teenage pregnancy, suggesting that smartphone usage may increase the risk of teenage pregnancy. The study further found that the use of smartphones for social media, watching videos, and chatting with friends was significantly associated with teenage pregnancy in which these activities may increase the risk of teenage pregnancy by exposing adolescents to sexual content and risky behaviors. These findings suggest that smartphone use may be a contributing factor to teenage pregnancy in Iringa Municipal, Tanzania. However, it is important to note that the study cannot prove that smartphone use causes teenage pregnancy as it is possible that other factors, such as poverty, lack of education, and social norms, may also be contributing to the problem.

The study has a number of limitations. First, the study was conducted in a small sample of teenagers in Iringa Municipal, Tanzania. Second, the study was cross-sectional, which means that it cannot establish a cause-and-effect relationship between smartphone use and teenage pregnancy. Third, the study did not collect data on other factors that may contribute to teenage pregnancy, such as poverty, lack of education, and lack of access to contraception. Despite these limitations, the study provides valuable insights into the influence of smartphones on teenage pregnancy in Iringa Municipal, Tanzania. The findings suggest that smartphone usage may increase the risk of teenage pregnancy, particularly when used for social media, watching videos, and chatting with friends.

5.0 Recommendations

Based on the findings of this study, the following recommendations are made:

- ❖ Parents and educators should talk to teenagers about the risks of using smartphones excessively.
- ❖ Parents should monitor their teenagers' smartphone use and set limits on the amount of time they can spend online.
- ❖ Schools should implement policies that restrict smartphone use during school hours.
- ❖ Public health programs should be developed to educate teenagers about the risks of using smartphones and to promote healthy sexual and reproductive behaviors

Future research

In the future, research must be conducted on:

- Evaluation of the effectiveness of interventions aimed at reducing the negative effects of smartphones on teenage pregnancy.
- Examination of the impact of different smartphone usage patterns on teenage pregnancy risk.
- Exploring the role of peer influence in mediating the relationship between smartphones and teenage pregnancy.
- Exploring the role of parental involvement and smartphone monitoring in preventing teenage pregnancy.
- Investigation on the impact of smartphone-based parental control apps on teenage pregnancy prevention.
- Investigation of the role of social media in teenage pregnancy.

6. ACKNOWLEDGMENT

The author would like to extend heartfelt appreciations and gratitude to the leadership and management of Iringa Municipal Council for their support and cooperation during the undertaking of this study. The author is also deeply grateful to all respondents who took their time to fill the questionnaires and also participated in Focus Group Discussions during data collection. Lastly, but not least, the author is especially thankful to the leadership and management of University of Iringa for their support and encouragement of which was particularly helpful for accomplishment of this tasking endeavor.

Conflict of Interest

The author declares no conflict of interest.

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