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# Digital media and maternal healthcare among young women in Kenya: Use, patterns, and perspectives

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**ABSTRACT**

This study aimed to examine the relationship between digital media use and maternal health care utilization among young pregnant mothers in Kenya. Using a mixed methods approach combining questionnaires and focus group discussions (FGDs), data were collected from pregnant women and new mothers aged 19-35 years in Nairobi. Using Microsoft Excel Data Analysis ToolPak Ver. 2016, primary data were statistically analyzed, while FGD data were subjected to thematic analysis and narrative interpretation. Findings revealed that 88% of participants preferred internet searches for information, 92% used different digital media during pregnancy, 56% used pregnancy apps, and 9% abstained from digital media for maternal health information. The study concludes that, in addition to the continued importance of traditional sources of information, digital media have a significant impact on the use of maternal health services. It recommends that health care providers actively use digital media, especially apps, as educational tools to disseminate reliable information to young pregnant women and new mothers in Kenya. It also recommends that planners and policymakers incorporate digital media into maternal health interventions to increase their effectiveness.

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# Introduction

In recent years, new communication technologies have invaded almost every part of the service delivery system, including healthcare. The way health care is delivered, the patient experience, and the cost of health care are all changing because of wireless technology (Udenigwe & Yaya, 2022). Digital health technologies aim to strengthen the healthcare system. The use of ICT in healthcare has increased the efficiency and efficacy of the medical system by tracking and reporting patients, as well as providing crucial health care to disadvantaged communities (Bonnevie et al., 2021). Chronic illness management, disease pandemics, and maternal care can all benefit from Digital Health Innovations (DHIs) (Holst et al., 2020).

Throughout Sub-Saharan Africa (SSA), there are numerous tele-medicine innovations and the usage of social media technologies for health promotion (Feroz et al., 2017). In 2019, there were 495 million mobile users in Sub-Saharan Africa, according to a research by the Global System Mobile Association (GSMA, 2020). The result is an increasing number of new mobile enterprises, generating apps for a populace hungry for innovative mobile technology. Mobile phones have been used to access digital health-financing platforms in Kenya (mTiba), detect bogus pharmaceuticals in Ghana (FD Detector), and get maternal health support in South Africa (MAMA) (Holst et al., 2020). Despite the expanding body of literature on the role of e-technology in health, there is little research on how digital technology is influencing the health literacy of expectant women and new mothers in terms of remote access to health services and self-care mechanisms in maternal care (Galle et al., 2021).

Antenatal care (ANC) is essential for both the mother and the unborn child's health. It enables competent health personnel to monitor her pregnancy situation to assess for potential complications and to monitor their health, as well as to educate her about healthy behaviors throughout the pregnancy to understand warning signals during pregnancy and childbirth (UNICEF, 2021). The nature of the services provided and the type of information provided to women during their visits can be used to evaluate the quality of ANC (KNBS et al., 2015). This type of preventative health care also gives them social, emotional, and psychological assistance at this crucial time in their life.

Various other studies have concluded that early enrolment in ANC centers gives healthcare providers enough time to support and plan for a mother's journey (Aksünger et al., 2022), (Ombere, 2021) (Kisiangani et al., 2020) & (Esamai et al., 2017). Through improved awareness among women, early diagnosis, and emergency readiness, regular ANC visits boost the likelihood of a safe mother journey. SSA and South Asia have the lowest rates of ANC utilization at 81.2% compared to developed countries which recorded a 97% utilization rate for ANC in 2017 (WHO, 2019). Additionally, the utilization of postnatal care in developing countries is also still low. Many mothers after delivery are unaware that they require postpartum care within 24 hours and broadly, they do not have the knowledge on how to utilize postpartum services and where they can receive postnatal care (WHO, 2019).

Africa has experienced a rapid boost in the use of mobile phones and other digital technologies over the past two decades. At least 42 of Africa's 54 countries had adopted national eHealth strategies as of March 2020. Mobile health (mHealth) is an important component of the eHealth package (Esiebo, 2021). Findings from *The State of Media Survey Report 2021* by the Media Council of Kenya (MCK) cited that approximately 3

hours were spent on social media platforms daily and that 91% of social media access was via smartphones in Kenya (MCK, 2022). This report paints a picture of the rising use of digital media in Kenya as an important source of information. Indeed, Kenya is leading the East African Community (EAC) in terms of mobile connections at 59.24 million (108.9%) and internet usage at 21.75 million (40%) according to the *Digital 2021 Kenya Report* (Kemp, 2021).

Pregnant women need information on maternal healthcare and the media (Internet, Television, Radio, and Newspapers) can be important in disseminating information on the various maternal healthcare services. Public health authorities' deliberate attempts to educate about risks, prevention, and cures bear consequences for population health (David & Sommerlad, 2020). The role of maternal education cannot be overemphasized. It is a critical investment that can help increase the use of maternal health services. Recent studies have proposed that digital media can play a vital role in disseminating crucial knowledge and information to pregnant women on maternal healthcare services (Akeju et al., 2022), (Akwala, 2021), (Tripp et al., 2014), and (Techgist Africa, 2017).

Maternal healthcare utilization is an effective way to reduce the risk of maternal morbidity and mortality. In 2017, about 800 women died every day from pregnancy and childbirth-related causes, with 94 percent of maternal mortality occurring in Low and Lower-Middle-income countries (WHO, 2019). As of 2020, Kenya had lowered the MMR from 488 to 362 per 100,000 live births during the last decade (MoH, 2020). Although this is a significant decrease, it is still less than half of the 6.4 percent yearly rate required to meet the UN Sustainable Development Goal of 70 maternal deaths per 100,000 live births (UNICEF, 2021).

Kenya's healthcare system has recently seen a significant increase in private-sector participation. This expansion is significant for healthcare consumers because it expands their options while also educating healthcare professionals about quality indicators that might help them improve their services (MoH, 2020). The ability to obtain interactive and personalized information on a smartphone is changing maternity care experiences in Kenya (MfM, 2021). As mobile technology becomes more common in Kenya, there will certainly be an increase in the number of digital maternal health interventions available (Techgist Africa, 2017).

Digital media is an important medium for conveying health information and can provide a fresh perspective to maternal healthcare, hence increasing uptake (Xie et al., 2021a), (Udenigwe & Yaya, 2022) & (Esiebo, 2021). There is thinking that intricacies surrounding the availability and variety of health information in the digital media environment may affect maternal healthcare services' coherence, resulting in certain risks if compared to traditional maternal health interventions (Hookway et al., 2017), (Lu et al., 2018) & (Goto et al., 2021).

Digital media technologies have the potential to transform maternal health outcomes by providing women with life-saving maternal health information (e.g., messages about antenatal care, safe birth, postnatal care and neonatal care) that they might not otherwise have access to (Holst et al., 2020). In maternal healthcare, apps are becoming increasingly significant (Tripp et al., 2014). The smartphone, in particular, is quickly and quietly transforming maternity care, paving the path for mobile health solutions to improve preventive maternal healthcare (Bonnevie et al., 2021).

## Method

This paper sought to establish patterns in digital media use in maternal healthcare, characteristics that distinguishes digital media as a source of information about maternal healthcare and the challenges that limit access to information on maternal healthcare among young pregnant women in Kenya.

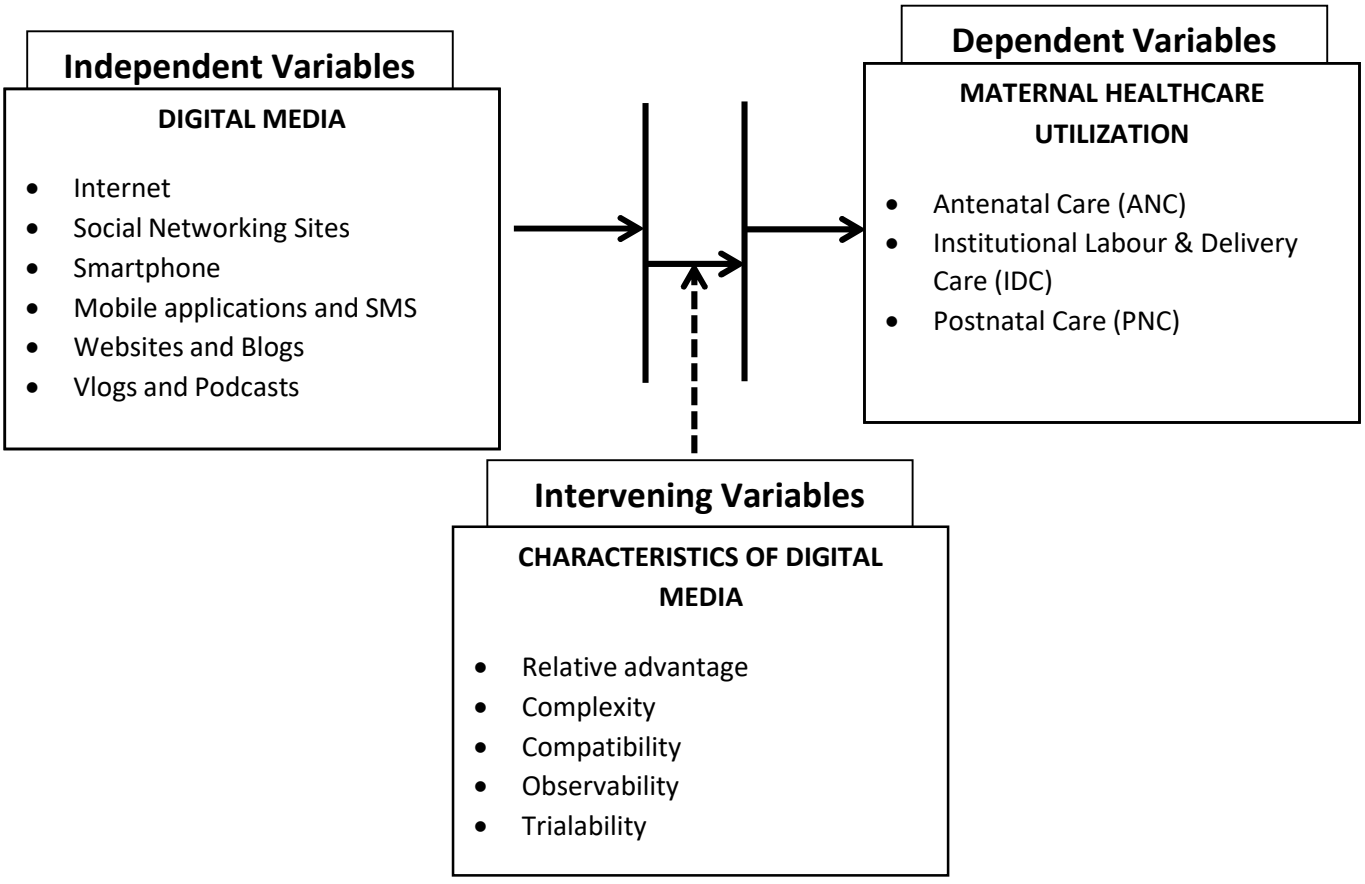
Based on the specific objectives, theoretical and empirical literature review, the study had three variables, independent, dependent, and intervening Variables.

A cross-sectional descriptive study was done among women in Nairobi County women ages (19–35years) who are either expecting or have just given birth between August 2021 and August 2022 (12 months postpartum). This study utilized both quantitative and qualitative methodology.

The goal of the quantitative research design was to ascertain the proportion of people who hold a given belief, behavior, or emotion, while the qualitative research design aims to clarify the causes and mechanisms of the phenomenon being studied (Creswell, 2015). Through the distribution of questionnaires, quantifiable data was analyzed to establish digital media trends as well as target population knowledge and attitudes regarding the characteristics of digital media that make its use desirable in Nairobi's maternal healthcare. The survey was also selected because it would allow the researcher to assess the attitudes and inclinations of a bigger population.

Focus group discussions (FGDs) were employed in the qualitative methodology in this study because it is less structured, encourages a more prolonged and flexible relationship between the researcher and the

**Figure 1**



respondents, and results in the collection of more detailed and deeper data. Given the widespread use of digital media in society, the researcher connected with these users in-depth to examine and understand how their exposure to the medium has been able to alter their opinions of maternal healthcare usage or underutilization thereof.

A cross-sectional descriptive study was done in Nairobi County, Kenya's capital city, among women of childbearing age (19–35 years) who are currently expectant or have given birth between August 2021 and August 2022. Data collection was conducted at a public and a private health facility in urban and peri-urban Nairobi, to enhance validity of the findings. The reliability of a research study's findings in predicting actual outcomes among people who behave similarly outside of the study is referred to as validity (Patino & Ferreira, 2018). The selected facilities were Mukuru Health Centre in Imara Daima Ward and Marie Stopes Clinic in ICEA Building CBD, Nairobi. This ensured a varied sample of the general population was included through recruitment at both public and private healthcare facilities. This will serve to ensure both internal and external validity of the research findings. Both facilities are known to provide a range of services including but not limited to antenatal, delivery, postnatal and child welfare clinics.

A random purposeful sampling strategy was used. Participants from the selected facilities who agreed to participate and meet the inclusion requirements were given the questionnaires and those who agreed scheduled for a focus group interview on days convenient to them. Women between the ages of 19 and 35 years with a history of at least one childbirth in the last 1year prior, from the selected facilities included the sample population. The nursing officer in charge of selected healthcare institutions was included in the FGDs.

In Kenya's urban areas, a skilled birth attendant in a medical facility attends to 98 percent of births (Yuen, 2022) . According to Bailey (1987), the population's characteristics determine the appropriate sample size and the purpose of the study. With this in mind, and limitations in time and finances, the researcher selected Two (2) healthcare facilities in Nairobi. A public facility, Mukuru Health Centre and a private facility, Marie Stopes ICEA Building clinic.

A meeting with the management at both facilities revealed that the facilities each served at least 300 women daily who met the inclusion criteria, hence sample population of 600. Locke et al (2004) state that the sample size should be between 30 and 40% of the population when the population is in the hundreds, in this case 600. In this scenario, 40% of the target population makes up the sample size. A sample size of 120 individuals per facility was established.

Pretesting was done to check the research tool's effectiveness. In the chosen healthcare facilities, a research assistant distributed 110 questionnaires to each of the facilities. Potential respondents signed the consent section of the survey questionnaire, which described the study's objectives. It included a balance of 18 carefully crafted closed and open-ended questions spread across three main areas. Section A consisted of six questions about the socio-demographic characteristics of the participants. Six questions were included in Section B that is connected to maternal healthcare information. In addition, section C has six questions on digital media patterns regarding pregnancy-related information. This made it easier to collect both qualitative and quantitative data. In order to improve the accuracy of the data, probing method was used throughout the focus group interviews (Lincoln & Guba, 1985). In order to ensure that all data was recorded, transcribed, and included in the study's overall interpretation,

extensive interview discussions were held. There were 2 FGDs, one at each facility with the study's target respondents to ascertain their thoughts and opinions regarding the features of digital media that might influence their use of maternal healthcare information. The FGD interviews each consisted of eight participants including expectant women, new mothers, and a nursing officer from the selected healthcare facility.

Statistical tools were used to assist with data analysis. For quantitative data, the researcher coded the questionnaire to variables. This reduced the margin of error and increased the precision of the results. Descriptive and inferential statistics employed. Inferential statistics aided in determining the relationship of the research variables. The data was then processed and displayed in tables and charts to provide a clear picture of the research findings. All participants signed the consent section to participate in the study before any data was collected. According to their self-reported ages, study participants were between the ages of 19 and 35. The questionnaire was filled out anonymously, and participants in FGDs were guaranteed non-disclosure to ensure maximum inclusion and safeguard their privacy about their medical care and data. Participants did not receive any financial incentives.

## Results and Discussion

This study's sample size was 240 people, comprising young pregnant women and new mothers aged 19 to 35 in two (2) healthcare facilities in Nairobi, Kenya's capital city. The number of respondents who returned their questionnaires was 187 while 16 attended FGDs hence 199 respondents. This response represents 82% percent of the sample size. 41 (18%) of the respondents did not participate in the study. According to Bryman and Bell (2014), a research instrument must receive at least 50% of the intended responses for statistical analysis to be valid. The response rate for this study is shown in Table 1.

**Table 1. Response Rate**

| **Response Rate** | | |
|---|---|---|
| | **No. of respondents** | **Percentage** |
| Yes | 199 | 82% |
| No | 41 | 18% |
| Total Count | 240 | 100% |

### *Participants characteristics*

The study received 199 responses, of which 18 (9%) were eliminated from the analysis due to validity concerns. Table 1 illustrates the participant characteristics where 102 (53% of the women) were up to 12 months postpartum, whereas 84 (42%) were currently pregnant and the remaining 10 (5%) were neither currently pregnant nor had given birth in the previous year. The study analyzed 171 participants in total.

The ability of people to obtain, comprehend, and apply information in ways that promote and preserve good health is known as health literacy. Health literacy has a clear connection to women's health and an inverse association to maternal and infant mortality, according to Batool et al (2020). This section presents the findings and analyses the data relating to sources of information on maternal healthcare among the target population.

Respondents were asked to rate Five (5) common sources of information on maternal healthcare identified during the literature review and depicted in Figure 4.1. The rating scale was from 1 to 5, where 1 = Most important, 2 = Important, 3 = somewhat important, 4 = Not important and 5 = Least important. According to the findings, 131 (76%) of respondents regarded healthcare

**Table 2: Participants Characteristics**

| *Participants Characteristics* | **n (%)** |
|---|---|
| **Age (years)** | |
| • 19-24 years old | **28 (14)** |
| • 25-30 years old | **94 (47)** |
| • 30-35 years old | **59 (30)** |
| • Over 35 years old | **18 (9)** |
| ***Pregnancy status*** | |
| • *Pregnant at present* | **84 (42%)** |
| • *Pregnant within the last 12 months* | **105 (53%)** |
| • *Other* | **10 (5%)** |
| ***Maternal Healthcare Facility Attended at*** | |
| • *Marie Stopes, ICEA Building Clinic/Private Healthcare Facility* | **116 (58%)** |
| • *Mukuru Health Centre/Public Healthcare Facility* | **83 (42%)** |
| ***Education Level*** | |
| • *Secondary Certificate* | **13 (7%)** |
| • *Vocational Training* | **17 (9%)** |
| • *College Diploma* | **56 (27%)** |
| • *Bachelor's Degree* | **101(51%)** |
| • *Postgraduate degree* | **12 (6%)** |
| ***Employment Status*** | |
| • *Employed* | **81 (41%)** |
| • *Unemployed* | **36 (18%)** |
| • *Self-employed* | **57 (29%)** |
| • *Housewife/Stay at Home Mum* | **13 (7%)** |
| • *Students* | **12 (6%)** |
| ***Gravida/No. of Pregnancies*** | |
| • *First Pregnancy/Prim gravida* | **102 (53%)** |
| • *Multigravida/More than 1 pregnancy* | **97 (47%)** |

practitioners as the most important source of maternal healthcare information, whereas 136 (79%) considered books as the least important source. To avoid misinformation and influence uptake, the findings suggest that healthcare providers should constantly be fully informed on authentic, trustworthy information. This confirms that although traditional sources of maternal healthcare information remain relevant, online resources can be an important avenue of disseminating healthcare information to young pregnant women and new mothers in Kenya.

The analysis revealed that 154 (87%) respondents were likely to seek information before an appointment with the doctor/ midwife. Forty-Seven (27%) respondents reported that they looked for information when they experienced a symptom for the first time while in between doctor/midwife visits. 32 (68%) were Prim gravida, while 15 (32%) were multigravida. The most common reason for seeking information prior to a

**Figure 1. Ranking of Common Sources of Maternal Healthcare Information**

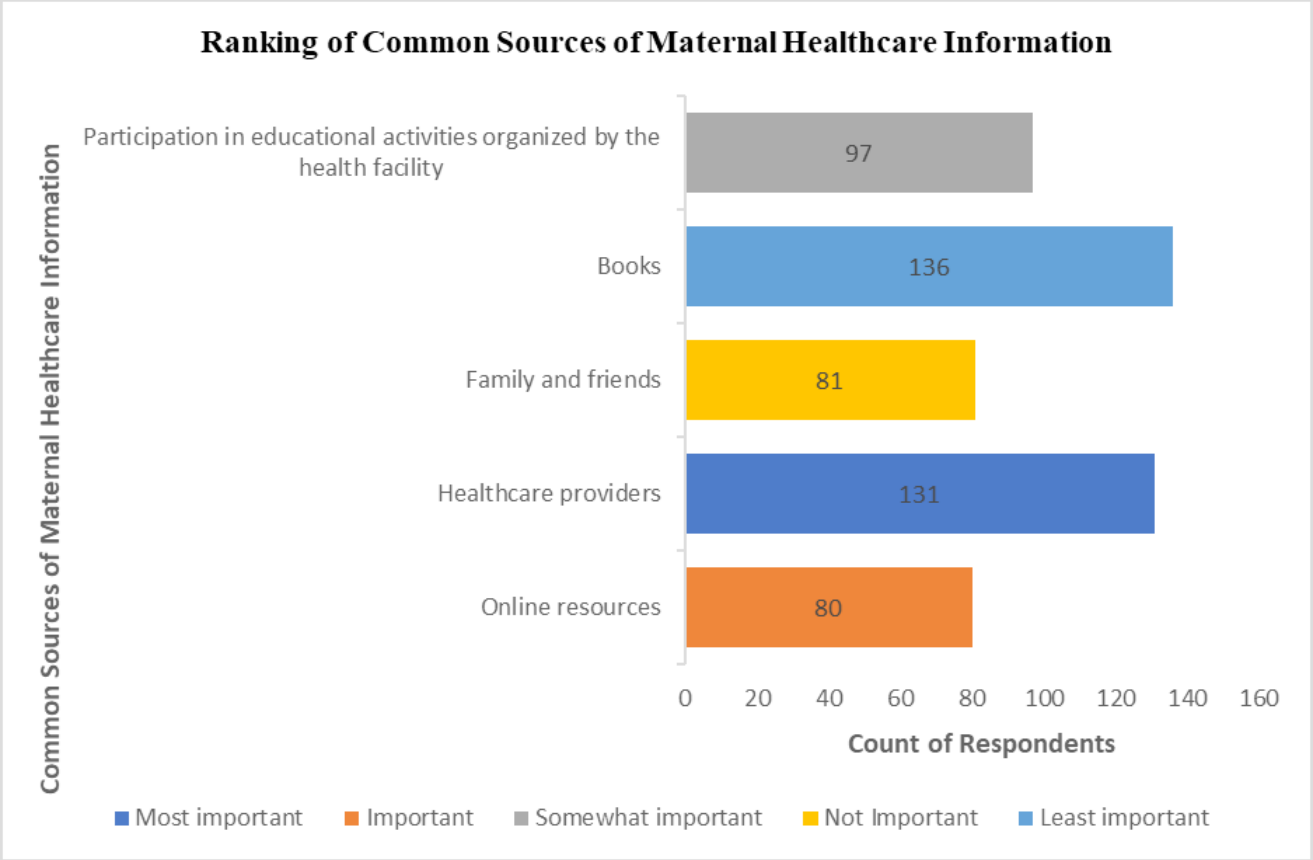
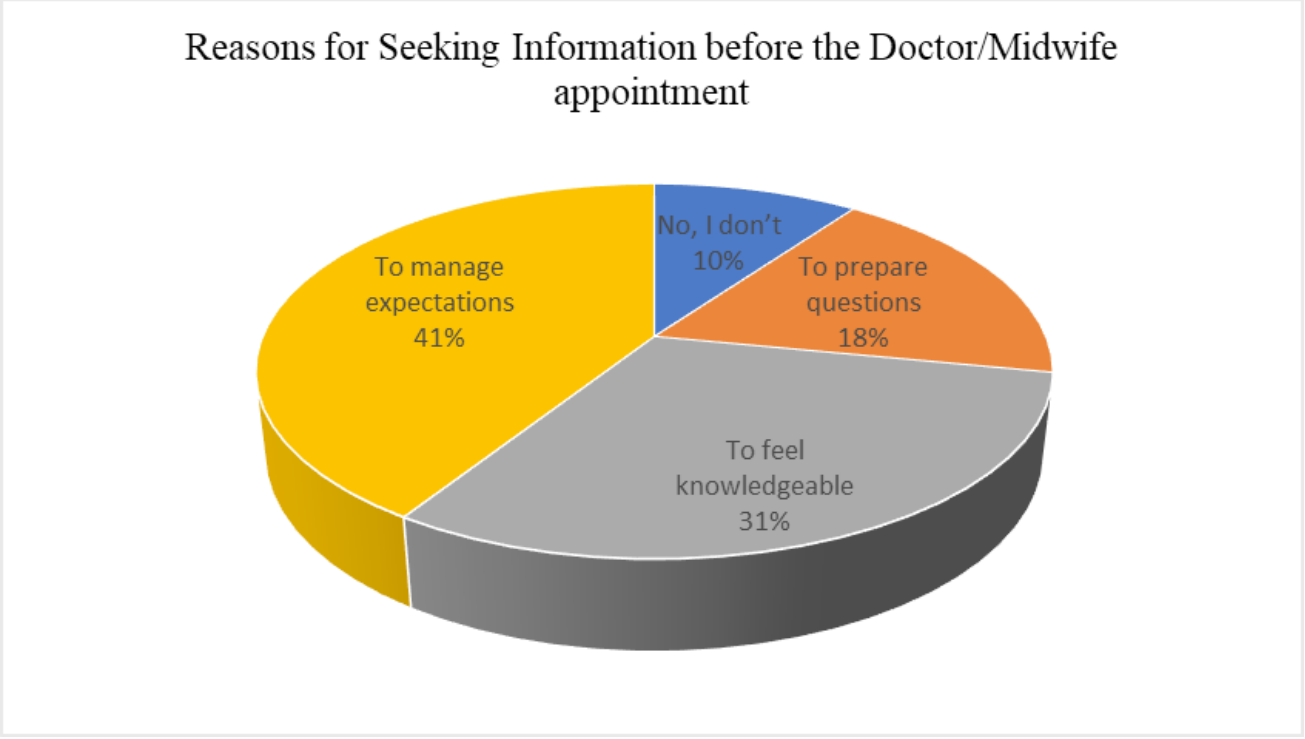



**Figure 2. Reasons for Seeking Information before the Doctor/Midwife Appointment**



doctor's visit was pegged on the need to "manage expectations" at 70 (41%) mentions. The findings are summarized in Figure. 2. Other reasons for seeking information on maternal healthcare before the doctor's appointment included, to prepare questions 32 (18%) and to feel knowledgeable 54 (31%) ahead of the appointment. Only 17 (10%) respondents reported not searching for information prior to the Doctor/Midwife visit). This is in line with the study by Xie et al (2021) which posits that digital media is an important medium for conveying health information and can provide a fresh perspective to maternal healthcare, hence increasing uptake.

One-Hundred and Sixty (93%) respondents cited that they were likely to seek information after an appointment with the doctor/midwife. The most common reason for this was for them to clarify what was discussed which was cited 79 (46%) times. Other reasons for seeking information on maternal healthcare after the doctor's appointment included, for reassurance 64 (37%) and to seek for a second opinion 12 (7%) after the appointment. The findings are summarized in Figure. 3. The confirms that indeed while healthcare providers are the most important source of maternal healthcare information, respondents may seek additional information from other sources available for their personal informational needs. Digital media can be instrumental in providing this information.

Ten (10) topics on maternal healthcare information was identified during the literature review. Figure 4 summarizes frequency of the responses received on the topics. The respondents were asked to select the most common topics of interest on maternal healthcare information were fetal

**Figure 3. Reasons for Seeking Information after Doctor/Midwife Appointment/Visit**

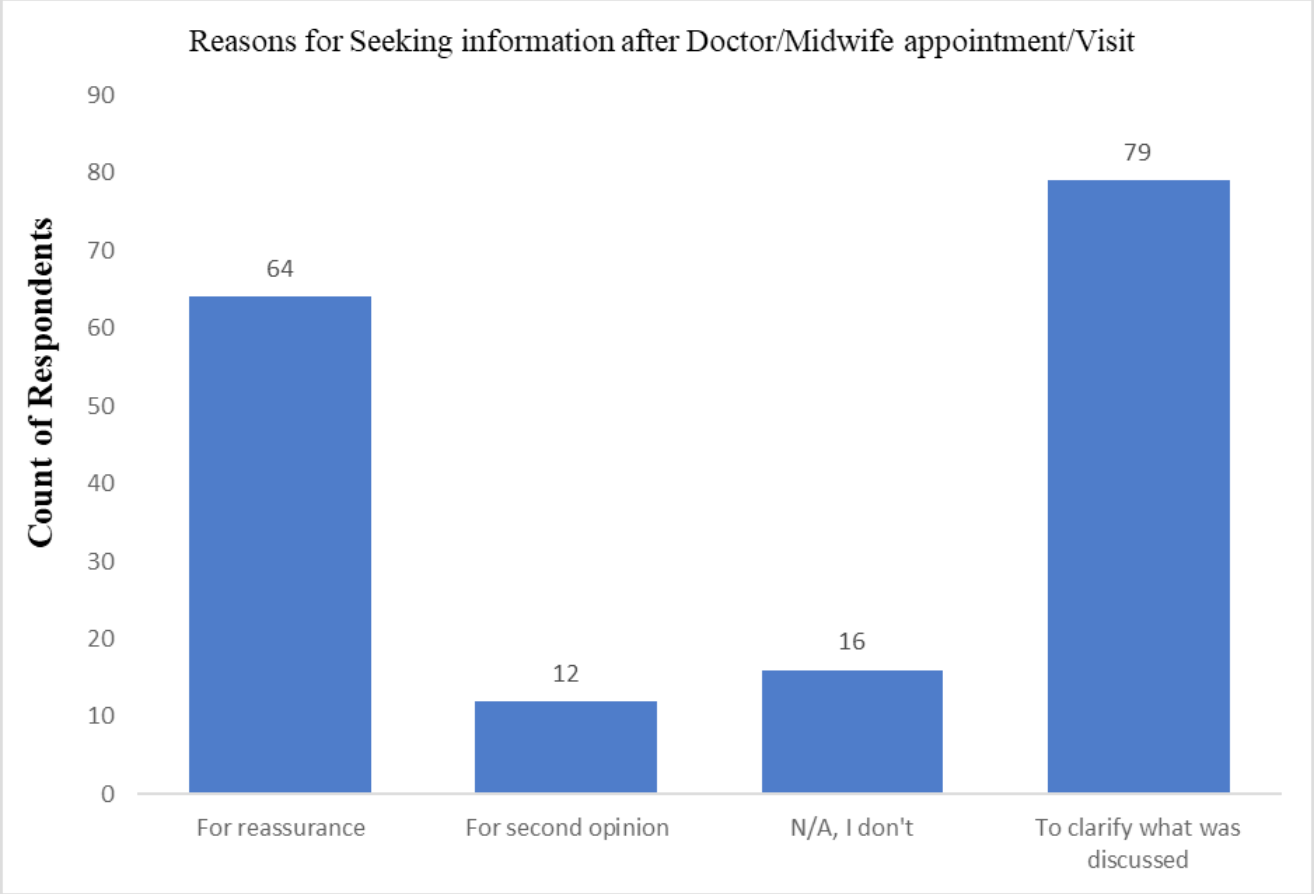
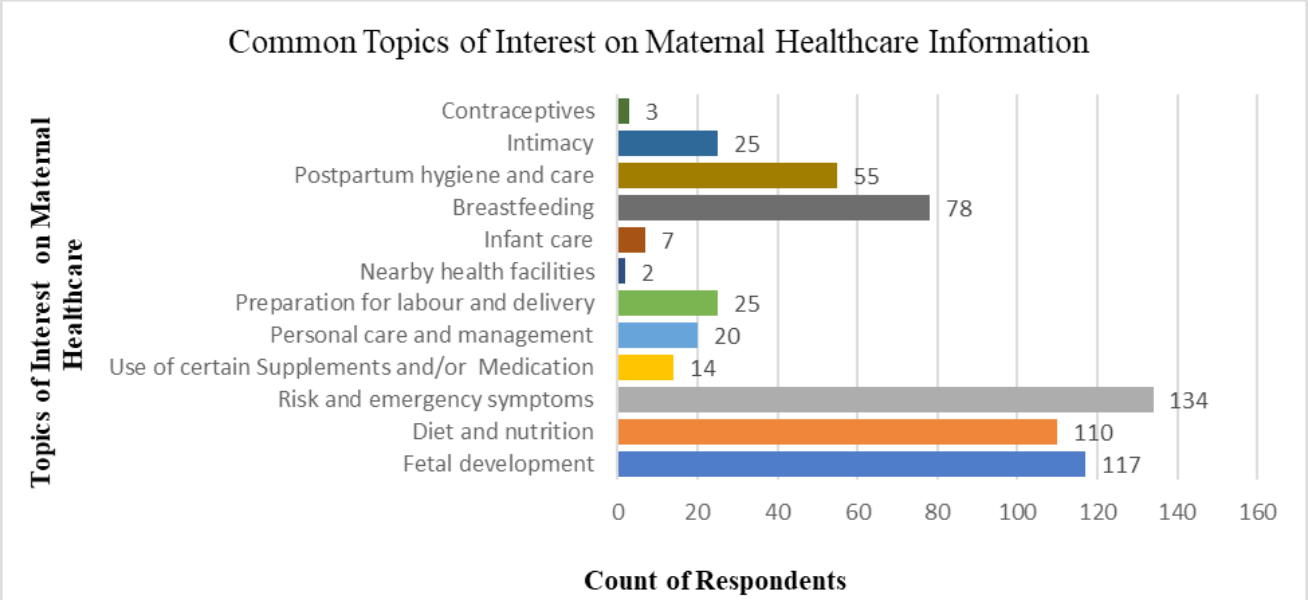


**Figure 4. Common Topics of Interest on Maternal Healthcare Information**




development risk & emergency symptoms, which was cited by 134 (78%) respondents. This was particularly prevalent among women experiencing their first pregnancy (Prim gravida) and first-time mothers, 88 (65%) reported looking up information on risky and emergency symptoms during pregnancy. One-Hundred and Seventeen 117 (67%) respondents also mentioned fetal development as a topic of interest. The topic generated interest across both Prim gravida as 63 (54%) and Multigravida 54 (46%) respondents citing interest in the topic. Diet and nutrition also generated interest across both divides with 110 (64%) in total citing interest in this topic. This implies there is a constant need for maternal healthcare information, hence there is need to ensure that accurate and reliable information are readily accessible to all young pregnant women and new mothers in Kenya.

Despite the listing of books and magazines as the least important sources of information on maternal healthcare, seven (25%) of the women in the 19–24 age quantile reported that the cost of accessing parenting books was too high, and 3 (10%) cited the high cost of the internet as a barrier to using digital information sources. The factors limiting access to maternal healthcare information were analyzed against the ages of the respondents. Table3 illustrates the top three factors against the ages of the respondents. Concerns about privacy invasion and quality assurance 59 (35%), inadequate information resources 53 (31%) and a lack of awareness 40 (23%) received the highest mention among the respondents. Concerns about privacy invasion and quality assurance were highest among the age group 25-30 at 35 (59%), and lowest among age group 19-24 at 3 (5%).

The study investigated how young pregnant women and new mothers use digital media in relation to maternal healthcare. Collectively, the participants 80 (46%) ranked online sources Two (2), i.e. an important source of information on maternal healthcare.

One-Hundred and Fifty-Eight (92%) of the respondents reported using digital media to access information regarding maternal healthcare. The 13 (8%) who cited not using digital media attributed this to an overload of information which they found confusing 6 (46%) and to a fear of misinformation 5 (38%) as summarized in Figure 5. This implies that

**Table 3. Distribution of the Top Three (3) Factors Limiting Access to Maternal HealthcareInformation by Age**

| | Count of Responses based on Age bracket n(%) | | |
|---|---|---|---|
| Factors limiting Access to Information on Maternal Healthcare | 19-24 | 25-30 | 31-35 |
| Lack of awareness | 12 (43%) | 17 (18%) | 11 (19%) |
| Inadequate information resources | 7 (25%) | 32 (34%) | 14 (24%) |
| Concerns about privacy invasion and quality assurance | 3 (11%) | 35 (37%) | 21 (36%) |

although the cost of access through digital media remains affordable to most; there is need to put in place measures to help young pregnant women and new mothers to navigate the wide and increasing cyberspace and the variety of available pregnancy related information by showing them where to go and how to find reliable information when needed. The widespread usage of digital media platforms demonstrates that digital media does in fact offer fulfilment of audience demands in line with the Uses and Gratification Theory by Katz et al (1973) adopted herein. The theory describes how receivers use media to get their desired satisfaction, it emphasizes that audiences actively incorporate mass media into their lives.

When analyzing the reasons for participants who used digital media to obtain maternal healthcare information, 73 (46%) cited the convenience that comes with it and 65 (41%) the wide array of information available as the main reasons why they chose it as illustrated in Table 4. The findings also established that portable devices such as smartphones 149 (94%) and laptop computers 9 (6%) were the most commonly used devices when looking for maternity related information. Figure 7 displays the proportions of users and their preferred devices. The implication is that using portable devices such as smartphones and laptop computers makes it possible to get information about maternal healthcare on a regular basis.

Diffusion of Innovation theory as proposed by Rogers (2010) holds the usability of the device and the computer skills of the user have all been identified as factors that influence a user's willingness to accept or reject digital health information.

**Figure 5. Reasons for not Using Digital Media to Access Maternal Healthcare Information**

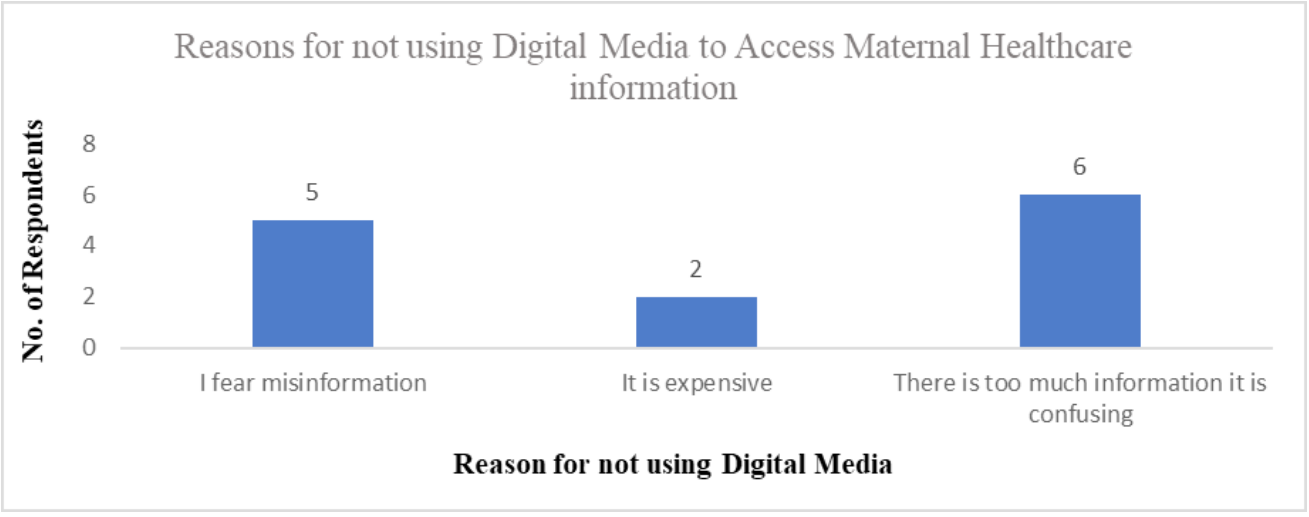
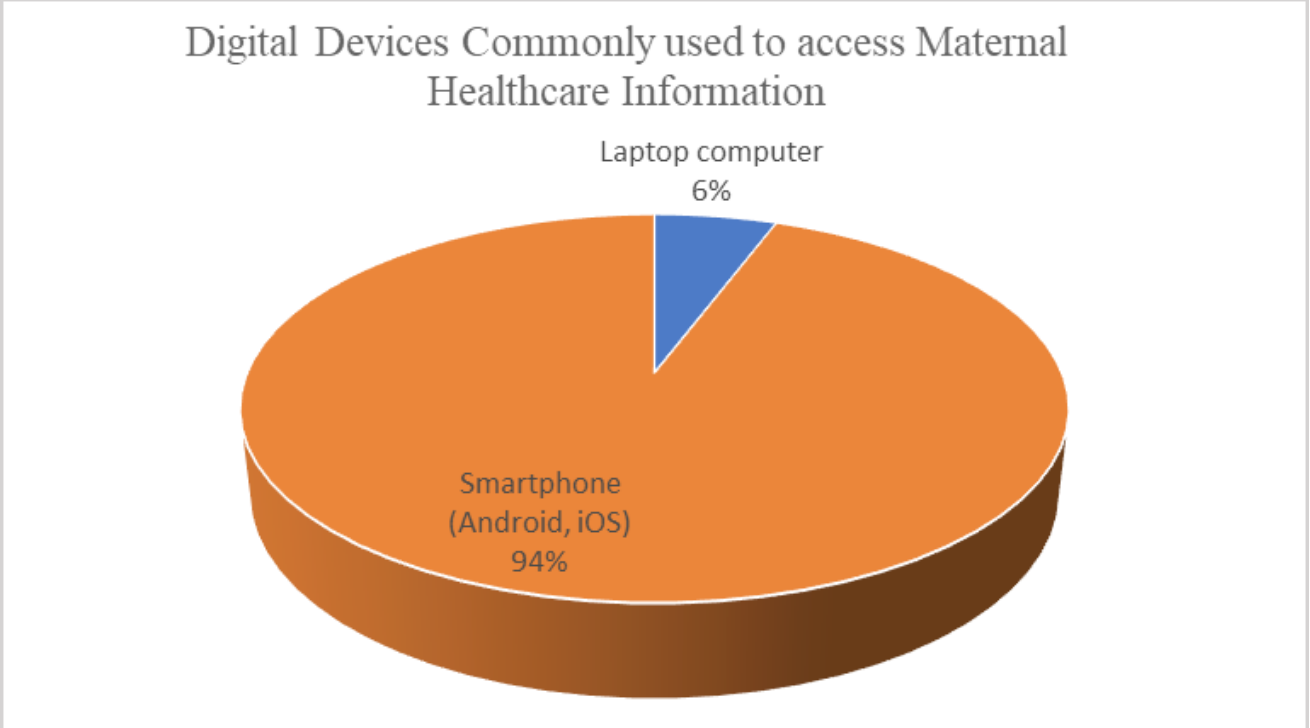


**Table 4. Reasons for Choosing Digital Media as a Source of Maternal HealthcareInformation**

| Reasons for Choosing Digital media as a Source of Maternal Healthcare Information | No. of Responses |
|---|---|
| Wide range of information | 73 |
| It is convenient | 65 |
| It easily fits into my lifestyle | 11 |
| Easy to use | 2 |
| Peer influence | 2 |
| Doctor/Midwife recommendation | 2 |
| **Grand Total** | **158** |

**Figure 6. Digital Devices Commonly used to Access Maternal Healthcare Information**

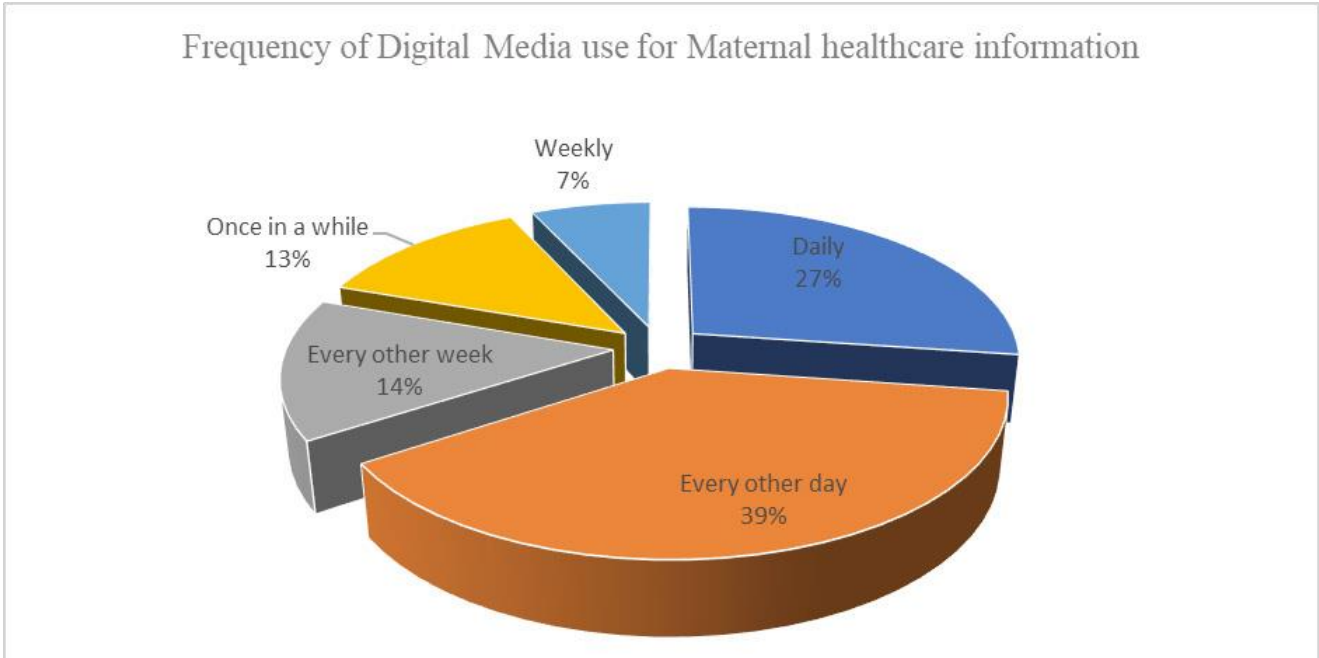



Respondents were requested to describe all applicable uses for digital sources for maternity information. The findings summarized in Table 4.4 show that 137 (86%) cited using it to generally seek out information, while 99 (62%) used digital media to track fetal development. Other significant uses included to share experiences with other pregnant women 66 (42%) and for social and emotional support 65 (41%). Other mentioned uses were online shopping 4 (3%). These findings are in line with Severin & Tankard (1992) who cite that the existence of expectations is a crucial component of the Uses and Gratification Theory as applied in the study's theoretical review. Williams & Grant (1998) provide more support for this viewpoint adding that ongoing usage is discouraged if expectations are not met. They also go further and argue that social circumstances might also increase a demand for media. In addition, as evidenced from the findings above they anticipated that new mothers would use social media platforms to

**Table 5. Frequency and Percentages of How Digital Media is Used for Maternal Healthcare Information**

| How do you use Digital Media | Responses Frequency and Percentages | |
|---|---|---|
| For information seeking | 137 | 87% |
| To keep track of fetal development | 99 | 63% |
| To share experiences with other pregnant women | 66 | 42% |
| For social and emotional support | 65 | 41% |
| For reassurance | 61 | 39% |
| For medical advise | 37 | 23% |
| Other (Online shopping for Baby items) | 4 | 3% |

**Figure 7. Frequency of Digital Media use for Maternal Healthcare Information**




connect with other new mothers, learn about infant care, and get emotional support.

The respondents were also asked how often they engaged with digital information on maternal healthcare. "Every other day" was the most recorded response with 61 (39%), only 43 (27%) reported using it daily for the purpose of maternal healthcare information. Details are summarized in Figure 8. Further analysis of those who used it daily on basis on pregnancy status indicated that majority were Prim gravida women 26 (60%), who were currently pregnant 23 (53%) and in age group 31-35 years 24 (56%). All of them reported using an online search engine e.g. Google and had some form of pregnancy app using a smartphone. These findings are consistent with a study by Tripp et al (2014) which concluded that in maternal healthcare, apps are becoming increasingly significant and that the smartphone in particular was swiftly and subtly transforming maternity care, paving the way for mobile health solutions to enhance preventive maternal healthcare.

Google was the most popular internet search engine with 151 (88%) respondents citing usage, followed by social media sites

**Figure 8. Digital Media Sources of Information on Maternal Healthcare**

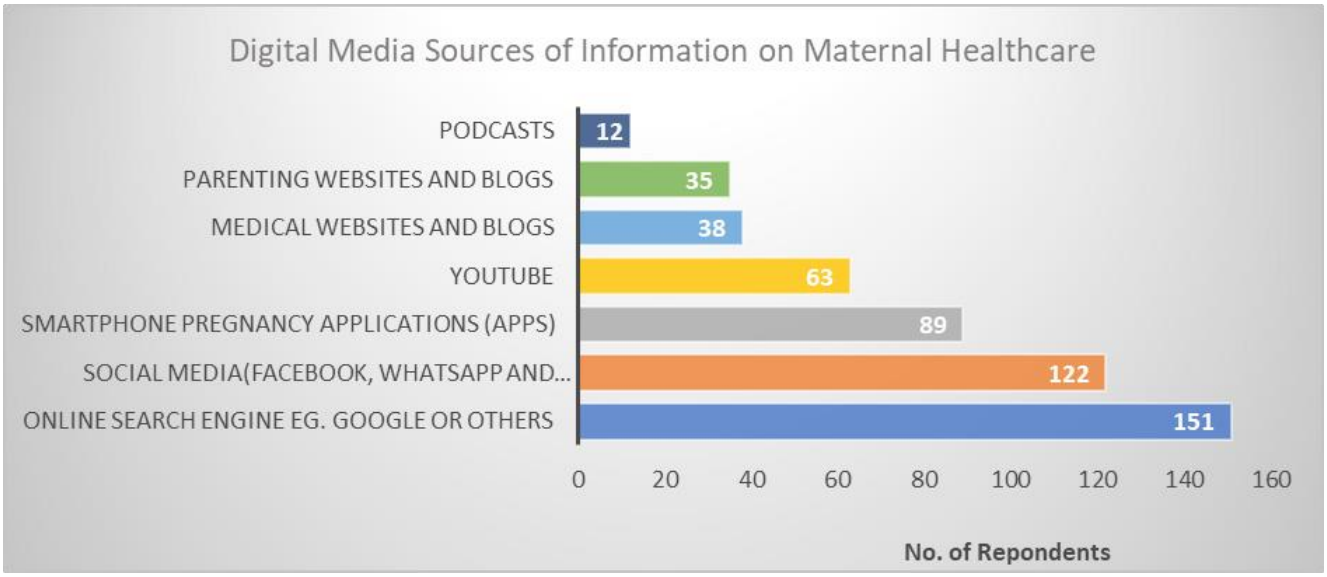



**Table 5. Variable Definition and Measurement**

| | Common Information Topics on Maternal Healthcare | Theme Assigned | Definition |
|---|---|---|---|
| 1 | Medicine use during pregnancy<br>Fetal development<br>Personal care and management during pregnancy<br>Diet and Nutrition in pregnancy | Antenatal Care (ANC) | ANC=1 if mother looks up digital information in topic under theme and =0 if otherwise |
| 2 | Preparation for labor and delivery<br>Health facilities nearby<br>Risk and emergency symptoms | Labour and Delivery Care (LDC) | LDC=1 if mother looks up digital information in topic under theme and =0 if otherwise |
| 3 | Postpartum hygiene and care<br>Infant care<br>Breastfeeding<br>Intimacy after childbirth | Postnatal Care (PNC) | PNC=1 if mother looks up digital information in topic under theme and =0 if otherwise |

122 (71%), and smartphone pregnancy apps (89, or 52%). Only 12 (7%) participants said they listened to podcasts to learn about maternal healthcare. Although 63 (37%) of the respondents used video services like YouTube. This is illustrated in Figure 4.8.

Using the Microsoft Excel PivotTable the study attempted to establish a relationship between digital media use and maternal healthcare. The commonly sought topics on maternal healthcare as identified in section B of the questionnaire were grouped into Three (3) themes under maternal healthcare services as summarized in Table 5. The relationship between the participants' characteristics and their use of digital media was then examined and findings summarized in Table 4.6. It was determined that women age group 25-30 years old 52 (30%), had any tertiary education (100%), had a source of income 41 (23%), currently pregnant 33 (39%) and were Prim gravida

58 (33%) were more likely to act on maternal healthcare information from digital sources. These findings dispel a study conducted by Lien & Jiang (2017) which concluded that there were still some doubts about whether patients will accept and use digital media technologies, despite the fact that they have the potential to influence how patients choose to use healthcare services. However, they are in line with a study by Dearing & Cox (2018) which posits that socio-demographic factors influence a patient's willingness to accept or reject digital health information.

Online resources were ranked second regarding their importance as source of maternal healthcare information by 80 (46%) of the respondents. Further to this only 13 (7%) of the respondents reported not using digital media to as a source of maternity healthcare information. Digital media was mostly used for information searching 137 (80%), monitoring fetal development 99 (57%), and for social and emotional support 65 (38%). Smartphones were the most used device to access digital media on information on maternal healthcare 149 (94%) only 9 (6%) of the respondents used a laptop computer. Internet search via engines such as google 151 (95%), Social media platforms such as Facebook, WhatsApp, and Instagram 122 (77%), as well as smartphone pregnancy applications 99 (62%) were the most popular digital sources of information on maternal healthcare. With 12 (7%), podcasts were the least used digital media for maternal healthcare. Most respondents in focus group 9 (60%) asked about "what is a podcast?" during the talks confirmed this. "Every other day" and "daily" were the most recorded responses at 39% and 27% respectively regarding frequency of use of digital media for information relating to maternal healthcare.

Digital media usage analyzed against the No. of pregnancy/gravida revealed that more first-time mothers (Primigravida) used digital media compared to women who had had more than one pregnancy (multigravida) at 83 (52%) and 75 (48%) respectively. In perspective with respondents ages, 83 (52%) in age group 25-30 years used digital media than those in age group 19-24 years at 26 (16%). However, this was attributed to the fact that most of the respondents who participated in the study were from the age group 25-30 years. 160 (93%) looked for information on maternal healthcare after doctor's visit while 154 (90%) reported looking for information prior to the doctor's visit. More women in the 25-30 years bracket looked for information prior to the visit, compared to those from the other age brackets. Majority of the women reported seeking information when they experienced a symptom for the first time 32 (68%) Prim gravida and 15 (32%) multigravida.

The convenience digital media offers and the variety of information available were identified as the key characteristics for choosing it with 73 (46%) and 65 (41%) respectively by the participants who used digital media to seek information about maternal healthcare. The research also revealed that mobile devices, such as cellphones 149 (94%) and laptop computers 9 (6%), were most frequently used to look for information on pregnancies, this was inferred to their portable nature which allowed maximum privacy. An analysis on qualitative data on why the participants preferred the selected forms of digital media, the most notable terms were; easy to use which can be inferred to imply they are not complex: Cost was only cited twice (1%) implying digital media sources are cost effective hence offering some sort of relative advantage to users. This is consistent with Rogers' findings from 2003 regarding the diffusion of innovation theory, which states that a patient's willingness to accept or reject

digital health information is influenced by a variety of factors, including the device's usability, their knowledge of technological advancements in the field of health care, and their computer skills.

Accessing information on maternal healthcare was not difficult for most participants. However, those who encountered difficulties cited concerns about privacy invasion and quality assurance 59 (35%), limited information resources 53 (31%) and a lack of awareness 40 (23%) as the main reasons. Participants in the interviews who stated they were unaware that specific maternal healthcare information might be found on YouTube explicitly emphasized this difficulty. Compared to women who are multigravida, mothers who are first time mothers/Primigravida shared this problem. The 13 (8%) respondents who mentioned not utilizing digital media ascribed this to an overwhelming amount of data that they found confusing 6 (46%) and a fear of false information 5 (38%). Despite being ranked as the least important source of information on maternal healthcare, 7 (25%) of the women in the 19–24 age quantile reported that the cost of accessing parenting books was too high, and 2 (7%) cited the high cost of the internet as a barrier to using digital information sources.

## Conclusion

The introduction of the digital media in Kenya has changed how users search for, get access to, and share an infinite quantity of information. Overall, social media and pregnancy-related smartphone applications are popular places to seek for health information, but Google is the most often used search engine among young pregnant women and new mothers who are looking for quick answers on their health in Kenya. Digital media complemented maternal healthcare by providing required information for self-education of the user and awareness creation. It recommends that healthcare professionals enhance their teaching resources because adept patients are increasingly using their smartphones to search for information. User-friendly platforms, websites, and smartphone applications that cater to the informational needs of young pregnant women and new mothers are critically elements of personal healthcare. It is imperative that physicians evaluate the widely used digital media for health education and guide patients adequately.

## Declaration of Ownership

This article is our original work.

## Conflict of Interest

There is no conflict of interest to declare in this article.

## Ethical Clearance

This study was approved by the institution.

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