

Determinants of Health Facilities Influencing Utilization of Free Maternity Services Among Women of Reproductive Age 15-49 Years Attending Health Facilities in Homa-Bay County



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ABSTRACT: Free maternity services is the offering of medical and obstetric care to pregnant women without any financial cost. Complications related to pregnancy were a major reproductive health problem that lead to disability and increased maternal deaths. Free maternity was introduced in Kenya in 2013 with a focus of achieving 100% utilization of the service and reducing high mortality rate. Homa-Bay County had a low percentage of 54% deliveries taking place in health facilities within the county. The main objective of this study was to establish Determinants of Health facilities Influencing Utilization of Free Maternity Services among Women of Reproductive Age 15-49 Years Attending Health Facilities in Homa-Bay County. Descriptive cross-sectional study design was applied to establish the main objective of this study. A probability and non-probability sampling techniques was used to select 420 respondents. The study utilized quantitative and qualitative methods of data collection. Data analysis was conducted with aid of Statistical Package for Social Scientists (SPSS) version 23. Analysis methods used were; factor analysis and regression analyses methods for quantitative data to determine the relationship and associations among the variables. Qualitative data was analyzed through content analysis by conducting thematic analysis. A total of 396 that was 94% response rate established 54% (213/396) mothers were interviewed and were aged between 20 years and 29years. Results showed that; age of the mothers was insignificant in utilization of free maternity services. Further analysis using logistics regression revealed that the respondents who agreed with the need for a well-equipped health facility with good sanitation system were 63% (OR 0.37, p = 0.03) more likely to reuse FMS. Distance was insignificant in utilization as long as the facility was well-equipped and adequately staffed as 57% (228/396). This study concluded that there was significant association between staff respect, and honesty of the staff with utilization of free maternity service. This study recommended that the County Government of Homa-Bay should increase awareness to women of reproductive age at the community level about FMS through Community health promotion officers in order to improve FMS uptake in Homa-Bay County.

KEY WORDS: Determinants, Homa bay County, Kenya, Maternity services, Reproductive age.

INTRODUCTION

1.1 Introduction

Free maternity services is the offering of medical and obstetric care to pregnant women without any financial cost. Maternity services starts from onset of pregnancy till delivery and include maternal and child health clinic, delivery and postnatal care till six weeks after delivery. The nature and administration of free maternity services has influence on utilization of maternal care. There is disparity in utilization of this health service. According to Washington DC, (2011), health disparity is the differences that exists between one group relative to another in terms of burden of illness, injury, disability, mortality or utilization of health services such as maternal health services. Maternal and childbirth mortality is one of the indicators of health status of any given population globally. It is of interest that most maternal deaths can be prevented, given proper medical attention surveillance and interventions. Using maternal health facility care services is an effective approach in reducing maternal morbidity and mortality in poor women health status (Gage, 2003; WHO, 2017).

Free maternity programme was introduced to all publicly funded health facilities on 1st June 2013. The programme provided free healthcare services, giving pregnant women access to comprehensive maternity care though with some exceptions. This programme was expected would lead to increased access to maternity services at all levels of the Kenya public health

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system. In addition, the programme would release the much-needed finances that can be directly used to improve and expand maternal and new-born services, and thus impact on related outcomes, leading to the attainment of MDG 3, MDG 4 and MDG 5. Under the SDG 2016 - 2030, UHC is also a new target, which provides an overall framework for the implementation of a broad and ambitious agenda in all countries (NHIF, 2018).

The Ministry of Health's Free Maternity Service (FMS) was transferred in April 2017 to the NHIF under the brand name 'Linda Mama: *Boresha Jamii*'. Phase 1 was launched in April 2017 starting with the faith-based and private sectors; from July 2017, under Phase 2, the public sector was added. From March 2018, Linda Mama introduced Phase 3 to include antenatal care (ANC) and post-natal care (PNC). For all Linda Mama services, benefits were 'portable' such as mothers do not need to receive services from the same provider/site. It was estimated that 502 'low cost' private and faith-based facilities were contracted while approximately 4,000 public sector facilities nationally were reported to be accredited as part of the scheme (NHIF, 2018)

NHIF accreditation to offer *Linda Mama* Services was simple for public health facilities and entailed a written request by the County Director of Health to the NHIF branch office, listing the public health facilities to be included. For private providers, they must be registered with the NHIF and comply with various norms and standards. (Appleford *et al.*, 2018)

Table 1. 1: Linda Mama Tariffs

Facility level	Normal delivery	Caesarean section	ANC (per visit)	PNC (per visit)
Level 2 and 3 (private health centres, dispensaries)	Ksh 3,500	N/A	1 st visit = Ksh 1,000 2 nd - 4 th visits = Ksh 500	1 st - 4 th visits = Ksh 250
Level 2 and 3 (public health centres, dispensaries)	Ksh 2,500	N/A	1 st visit = Ksh 600 2 nd - 4 th visits = Ksh 300	1 st - 4 th visits = Ksh 250
Level 4 (private hospitals)	Ksh 6,000	Ksh 17,000	1 st visit = Ksh 1,000 2 nd - 4 th visits = Ksh 500	1 st - 4 th visits = Ksh 250
Level 4 and 5 (public hospitals)	Ksh 5,000	Ksh 5,000	1 st visit = Ksh 600 2 nd - 4 th visits = Ksh 300	1 st - 4 th visits = Ksh 250

The table 1.1 above shows the reimbursement rates for free maternity services in health facilities in Kenya.

Maternal health is a global issue which oversees the prospects of people in life depending on the wellbeing of mothers and women. Many women have died out of pregnancy related causes and this has led to efforts of governments and various institutions taking up initiatives to reduce maternal mortality rates (WHO, 2017). Worldwide more women of reproductive age and children of less than five years die each year from pregnancy complicated related issues and poor services delivery and antenatal care. Globally maternal mortality varies significantly across countries and this makes it unevenly distributed. Approximately 80% of maternal deaths globally are caused by hemorrhage, sepsis, unsafe induced abortion, hypertensive disorder of pregnancy and obstructed labor (WHO, 2005; WHO, 2017). Over 500,000 women die from pregnancy and child birth each year while approximately 1,600 women die every day due to pregnancy related complications (WHO, 2017).

Developing countries contributes to 99% of maternal deaths, with sub-Sahara Africa having the highest ratio 689 per 100000 live births (World Bank, 1994). Due to this high rate maternal, mortality as become focal point of international priority for women right, with estimate of over 585 000 women dying each year from pregnancy related issues. Proper utilization of maternal services may help reduce the figures to up to 50%, as this allows doctors and midwives to manage potential health problems throughout the course of pregnancy (UNICEF, 2017).

Women living in sub-Sahara Africa, have a higher risk of dying than in developed countries (UNFPA, 2015). In Africa most countries took initiative of removing user fee so as to achieve goal 4 and 5 of Millennium Development Goals. That is to reduce child mortality and improve maternal health respectively. In Burundi free maternal services was introduced were for rural districts in 2006, in the same year, Burkina Faso on 80% subsidy for delivery were launched (Witter *et al.*, 2016). Many other countries also introduced user free services (Meessen *et al.*, 2011). According to (GoE., 2010), Ethiopia is one of the sub-Saharan country experiencing high mortality rate of up to 676 deaths per 100,000 live births. About 400,000 suffer long term disabilities due to complications during pregnancy period and lack of utilization of maternity services, despite availability of free maternity services in the country. It was

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found that most of deliveries were assisted by relatives or unskilled personnel. High levels of maternal mortality and morbidity can be prevented in developing countries through the use of skilled birth attendants and resources required for effective implementation of standard maternal health services (Kenneth O, 2014).

Kenya is one of the ten countries comprising 58 percent of global maternal deaths in most areas the services do not exist and where they do exist they are underutilized (WHO, 2017). In Kenya, 39% of women deliver outside hospital facility despite of action taken by the government of Kenya in June, 1, 2013 to address maternal problem by initiating free maternal services in all public hospitals. This could be due to poor referral and linkage system and the quality of the free maternity service as perceived among women on utilization of health facilities, MOH (2015).

Utilization of maternal services in developing countries to be constrained due to various culture and demographic factors. Most women also die due to poor health at conception that is antenatal care delivery and up to postnatal care which are very crucial to both the mother and the child APHRC (2009). Most women were unable to at access these services due to the cost that was being applied at the facilities in any given services. With introduction of free maternity we find that women of child bearing age are not only eligible to delivery service but also entitled to continuous eligibility (KNBS & ICF-International, 2015).

Over the last decade the Maternal Mortality Ratio (MMR) has statistically remained almost the same despite dropping from 590 in the 90s to 488 in 2008/09, and now the latest 362 per 100,000 live births in 2014. While the decline in national average MMR appears impressive, the regional disparities show gaping inequalities. Between 5,000 and 7,000 women die every year due to complications during pregnancy or related to childbirth. In Kenya (2014), 15 out of 47 counties accounted for 98.7 % of the total maternal. The national MMR estimate obscures disparities between counties, with the MMR ranging from 187 deaths per 100,000 live births in Elgeyo Marakwet County to 3,795 deaths per 100,000 live births in Mandera County (UNFPA, 2015). The high MMR in selected counties is a reflection of major supply and demand gaps and challenges in health service coverage, which result in continued disparities among counties, between urban and rural residents, and among different population groups. Coverage and utilization indicators show some more needs to be done to address inequities and to reach universal health care. The 2013 Service Availability and Readiness Assessment Mapping Report established that services defined within the Kenya Essential Package for Health availability status stands at 41%, with only 7% of facilities being able to offer all the services (MOH, 2015).

Problem statement

In Homa-Bay County skilled delivery was at 54% with a maternal mortality rate of 583/100000 (DHIS, 2019). This county was classified among the 15 high burden counties in terms of maternal mortality in Kenya (UNFPA, 2015). Many lives were lost as a result of underutilization of free maternity services. Treatment delays, misdiagnosis, ineffective management and lack of preventive measures for hemorrhage led to more than 90% of preventable maternal morbidity and mortality (Eileen *et al.*, 2019). Homa-bay County had 309 health facilities whereby; all public health facilities were expected to be providing free maternal services and 80% of private health facilities within the county are also providing free maternal services. Skilled deliveries were 44,270 against a target of 141,737 from June to December 2018 which points the underutilization of free maternity services and high maternal and neonatal mortalities, with 46% of births conducted outside the health facilities in Homa-Bay County (DHIS, 2019).

Broad/ Main Objective

To establish Determinants of Health Facilities Capacity Influencing Utilization of Free Maternity Services among Women of Reproductive age 15-49 Years Attending Health Facilities in Homa Bay County

Specific Objectives

1. To identify accessibility determinants of health facility and linkage influencing Utilization of Free Maternity Services among Women of Reproductive age 15-49 Years Attending Health Facilities in Homa Bay County.
2. To establish availability of physical infrastructure determinants influencing Utilization of Free Maternity Services among Women of Reproductive age 15-49 Years Attending Health Facilities in Homa Bay County.
3. To determine availability of medical equipment and supplies influencing Utilization of Free Maternity Services among Women of Reproductive age 15-49 Years Attending Health Facilities in Homa Bay County.
4. To establish privacy and confidentiality determinants influencing Utilization of Free Maternity Services among Women of Reproductive age 15-49 Years Attending Health Facilities in Homa Bay County.

Health facility capacity determinants of utilization of free maternity services

Healthcare financing is considered as a means of improving the accessibility and affordability of healthcare, quality of life and sustaining economic growth in a country. Craigwell *et al.*, (2012), identified that effectiveness of government expenditure on

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health care in the Caribbean identified health expenditure having a significant positive effect on health status and it was reported to reduce maternal mortality rates. Unavailable, inaccessible, unaffordable or poor quality care was primarily accountable for high maternal deaths. Financing households to improve their healthcare service seeking can also improve health of the community and in so doing reduce maternal mortality rates. According to Abekah-Nkrumah *et al.*, (2011), improved access to micro-finance by women, combined with education may enhance maternal health service uptake and hence reduce cases of maternal and infant deaths.

Kenyan public health facilities have long suffered from insufficient infrastructure and equipment (Mokua, 2014). Increasing the budget line for health care is absolutely essential in order to strengthen health systems and ensure there is sufficient infrastructure, equipment, and staff to implement universal free maternal health care effectively (Nicole, 2013). Recent survey data found that only 36% of public health facilities offering delivery services had all the basic delivery room infrastructure and equipment needed; rural areas and lower level facilities were particularly unequipped (Tororei, 2012). Shortage of supplies is cited as one of the challenges of free maternity services utilization. The shortage of supplies was occasioned by underfunding of the free maternity policy (Ride, 2012). The shortage of supplies can adversely undermine the implementation of the policy. Health workers perceived the drastic decline in service utilization after seven months of exemption to be a consequence of the shortages in additional drugs and other supplies (Burnham *et al.*, 2004).

Drugs supply shortages, especially particular types of drugs may be either negatively or positively related to demand for medical care. According to Mwabu *et al.*, (1993), when the drugs are available, the demand increases. On the other hand, increase in income was also found out to affect demand for medical care positively, with a shift from informal health care to formal healthcare where majority of these end up at private or mission health facilities. User fees and distance reduce demand for healthcare though insignificantly.

Community participation is core component in Primary Health Care as it involves community to attain a sustainable and effective health programs with maternity and child health being one of the elements of PHC. CHWs improve access to and increase utilization of PHC, reduce cost of care, improve quality of care and reduce health disparities. They achieve this goals by serving as bridge between clients in need and needed health care and human services. In North India neonatal mortality rate reduced by 25% after 2 years of introducing CHWs and trained in newborn care, identification and special care of at risk infants and referral to health facilities when appropriate, (Prasad and Mureleedhoran, 2010). In Guatemala, the infant mortality rate declined with 85% when an immediate evidence based treatment of infants began in the community with accompanied referral to a nearby hospital (Wangalwa *et al.*, 2012)

Behavioral Model on Health care service utilization

Behavioral model majorly focuses on non-cognitive factors motivating or leading to health-seeking (Phillips *et al.*, 1998). The process of health care service utilization is put into a contextual situation, such as in the context of socioeconomic aspects. The model was proposed by Anderson, (1968) and used in the works of Pokhrel and Sauerborn, (2004). The model has three aspects which include: predisposing factors (such as age, sex occupation, education); enabling factors (such as income, household materials); and need factors (such as perception of illness and service indicators). Pokhrel and Sauerborn, (2004) states that this behavioral model is based on determinants that affect decision-making and take into account economic circumstance, distances to travel, level of education, individual satisfaction based on previous services utilized and perceived quality of services. Other factors such as cultural, social, organizational, environmental, geographic and economic aspects that appear to affect peoples' health and at times are seen as the prerogative of the studies, Prosser (2007). Decisions regarding healthcare utilization should consider individual level, household level and health systems level characteristics (Pokhrel and Sauerborn, 2004).

According to Solomon, (2005), prompts for health seeking and health service use are determined by social, cultural, political and economic factors as seen by the individual and as defined by the community. Free maternal health care services utilization by pregnant women involve a kind of analysis of health care use, leading to recognition of the importance of the social determinants of health.

Pathway Theories on utilization of free maternity services

These are theories that seek to explain various steps taken by people in relation to their health and the determinants or factors that affect these pathways and lead to actual service use of health care services. According to Mackian *et al.*, (2004) psychological theory considers motivating forces by focusing on the idea of decision-making in seeking for health or utilizing of a particular health care service say Antenatal care or hospital delivery through perceptions and evaluating the cost-benefit of actions in relation to these services. Kroeger, (1983) states that explanatory theory is aligned on the labelling of particular signs and

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symptoms of an illness and the interpretation of these in a decision-making process based upon experience. According to Olenja (2003), utilization of healthcare services such as free maternity services can be concluded to be linked to household behaviors. Other studies align these theories to a resolution of the problem through recommended and accepted remedies and treatment (Oberlander and Elverdan, 2000; Olenja, 2003).

Conceptual framework model

The conceptual framework model was used to guide the entire development of this the study. Figure 2.1. is conceptual framework that elaborates maternal knowledge and experience as regard utilization of free maternity, sociodemographic factors, parity, cognitive support, perceived good care; service providers experience such as work environment, level of qualification/designation, workload, motivation, remuneration and health facility readiness and capacity determinants such as infrastructure, medical equipment/supplies, accessibility, referral and linkage system are the independent variables for this study. The dependent variable for this study was utilization of free maternity services by mothers within health facilities in Homa-Bay County.

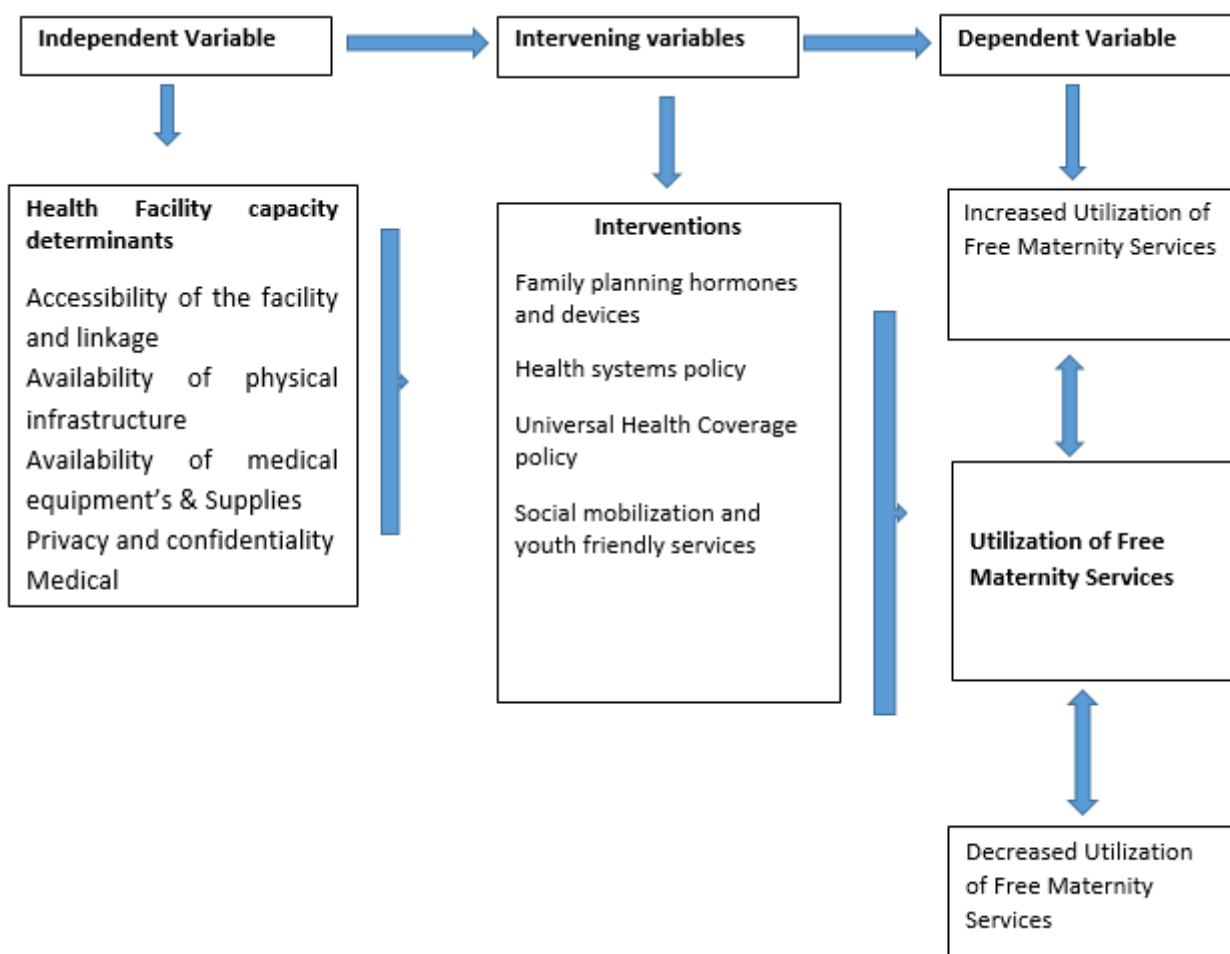


Figure 2.1. Conceptual framework model. Source: (Researcher, 2021)

METHODOLOGY

Introduction

This chapter three described the methodology that was used in this study to establish the determinants that influence utilization of free maternity services in health facilities. It describes study design, study area, study population, sampling techniques, sample size determination, data collection tools, data collection process, pre testing ,validity and reliability, data analysis and ethical considerations.

Study area

The research study was conducted in Homa-Bay County which is one of the 47 counties in Kenya which borders Migori to the western side, Kisii to the southern, Kisumu to the East and Lake Victoria on the East. Homa-Bay County covers an area of 3,154.7

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square Km with a total population of 1,131,950 (GoK, 2019). Lake Victoria is a major source of livelihood for Homa-Bay County residents with poverty rate at 44.1, urbanization at 14.3 and literacy rate is at 73.3. The County has 8 sub counties, 40 wards with 309 health facilities and an annual skilled delivery target of 141,737. There is one level five hospital at the County headquarter with 8 sub county hospitals and the rest of the facilities are level II and III health facilities.

Study design

This study employed a descriptive study design which was cross-sectional in nature using structured and semi structured questionnaire for quantitative data collection and interview guides for qualitative data collection to determine determinants that were influencing utilization of free maternity services among women of reproductive age 15-49 years attending health facilities in Homa-Bay County.

Target Population

This study population included all women of reproductive age between 15-49 years, who were residents of Homa-Bay County who consented for the study. Homa-Bay County had 592,367 females as per population (GoK, 2019).

Study Population

The target population of the study was mothers of reproductive age between 15-49 years who were attending maternity services at various health facilities in Homa-Bay County. Homa-Bay County had an average annual skilled delivery target of 141,737 and the monthly skilled delivery target was 11,812 which translates to approximately 400 daily skilled deliveries on average.

Sample size determination

The sample size was determined using formula, (Fishers *et.al*, 1998), re-cited by (Mugenda Mugenda, 2003) for study population greater than 10000. Homa-Bay County had an average annual skilled delivery target of 141,737 and the monthly skilled delivery target was 11,812 which was above 10,000 populations.

$$n = \frac{Z^2 pq}{d^2}$$

Where: n= the desired sample size (if target population is greater than 10000); Z=standard normal deviate corresponding to 95% confidence level (1.96); p=estimated proportion of target population of mothers attending delivery and PNC services = 0.54 (derived from 54% of skilled delivery of Homa-Bay County as per KDHS, 2014); q=1-p hence (1-0.54) =0.46 and d = the margin of error based on 95% confidence level = (0.05) as shown below.

$$n = \frac{1.96^2 \times 0.54 \times 0.46}{0.05^2} = \frac{0.095425344}{0.0025} = 382 \text{ mothers}$$

Therefore,

There was a 10% adjustment upward of 382 participants to cater for those who could decline to participate and incompletely filled questionnaires thus the total number of issued questionnaires to maternal mothers were 420.

Sampling Procedure

The study was conducted in 12 health facilities in Homa-Bay County whereby; 4 health facilities were identified using simple random sampling method for selecting health centers involved in this study representing the 8 Sub-Counties of Homa-Bay County. Using purposive sampling all of the 8 Sub-County Hospitals in Homa-Bay County were involved in this study, a total 12 health facilities were included in this study. A total of 420 mothers attending postnatal clinics were involved in this study. Respondents for quantitative data collection was done using structured and semi-structured questionnaires. These questionnaires were proportionately allocated according to the volume of each of the 12 health facilities in Homa-Bay County. The respondents from every facility was identified and selected using convenient sampling method whereby first come first interviewed basis till when the required sample size for the specific facility was achieved. In qualitative research, purposive sampling was used to identify 4 focus group discussion session participants from the identified four health facilities. The participants were mothers who did not participate in the quantitative data collection process and each session comprised of between 7-13 participants/ discussants led by; researcher leading questioning and research assistant taking notes. Eight Key Informant Interviews (KII) were conducted whereby; the each Sub-County Hospital in-charge (MOH) was purposively identified and involved in the interview and the process was led by researcher and research assistant was taking notes of the interview.

Data collection tools

A structured and semi-structured questionnaire were used to collect quantitative data, Focused Group Discussion guide was used to collect qualitative data from mothers of reproductive age who did not participate in quantitative data collection and a key

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informant interview guide was used to collect qualitative data from Sub-County health facility in-charges who had key important information regarding this study.

Validity

To ensure validity of the questionnaires, research supervisors went through the data collection tools to ensure errors were eliminated. The researcher also went through the questionnaires to assess if the questions capture the expected aspects of the study. The questions were also checked to ensure there was no ambiguity.

Reliability

Reliability was ensured by computing the Cronbach's Alpha reliability index of the data used, the most popular numerical coefficient of reliability (showing how closely related a set of items are as a group), based on the reliability of a test relative to other tests with the same number of items, and measuring the same construct of interest, was used in this study.

Table 3. 1: Cronbach's Alpha Case Processing Summary

		N	%
Cases	Valid	396	94.3
	Excluded ^a	24	5.7
	Total	420	100.0

a. List wise deletion based on all variables in the procedure.

Source: Researcher, 2022

The rule of thumb, as suggested by George and Mallery (2003), classified Cronbach's alpha coefficient values as: >0.8=Excellent; >0.7=Good; >0.6=Acceptable; >0.5=fair; >0.4=Poor and <0.3=Unacceptable. In the interpretation of the reliability results, it was observed that the closer Cronbach's alpha coefficient is to 1.0, the greater the internal consistency of the items in the scale. It was imperative to calculate and report Cronbach's alpha coefficient for internal consistency reliability for the sub scales used in the study.

Table 3. 2: Cronbach's Reliability Index

Cronbach's Alpha	Cronbach's Alpha Based on N of Items	Standardized Items
.660	.748	5

Source: Researcher, 2022

From Table 3.2, the Cronbach's Alpha reliability index, based on five variables, was 0.66. This value, according to George and Mallery (2003), indicated the reliability of the data used in this study was acceptable.

3.10. Data collection process

Data was collected at the health facility as the unit of analysis; the first step was reported to the health facility in-charge for permission after which proceeded to MCH/FP clinic for further permission. After that the researcher was stationed at an office for confidentiality and privacy purposes within the reception for identification and interview of specific respondents. This quantitative data collection process was conducted through face-to-face interview and filling in the questionnaire. This was done after the consent was sought and granted by the respondent by the respondent. Qualitative data was collected from respondents by conducting four different Focus Group Discussions (FGDs) of each comprising a group of between 7-13 mothers of reproductive age who did not participate in qualitative data collection process. This process was led by the researcher leading the session and asking and moderating the session with the help of interview guide as the research assistant was writing notes of discussions. Another set of qualitative data that was collected was Key Informant Interviews (KII); this was conducted by interviewing the 8 health facility in-charges who were Medical officers of Health (MoH). The interview process was led researcher while the research assistant was writing notes of the interview as the process was guided by KII Guide.

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3.11. Data analysis and presentation

Data that had been collected was cleaned through physical assessment for inconsistencies, then manually coded on the questionnaires, and then entered into Statistical Package for Social Sciences (SPSS) version 23 spread sheet for analysis. The quantitative data was analyzed using descriptive statistical analysis methods which included count, percent, frequency and were tested using the measures of central tendency such as mean, mode and median as statistical tests. Inferential statistical analysis methods including correlations and regressions were also used for further analysis for deeper meanings of the findings and the Chi-square and Odds Ratio statistical tests of the analysis were used to establish the relationships and associations among variables. Qualitative data was analyzed thematically after cleaning and transcriptions the findings were arranged thematically according to responses from individual respondents and sessions. The key findings of qualitative research were used to reinforce the findings of the quantitative research. The findings of this study were presented in the form of tables, figures and narrative form for ease of understanding by the reader.

RESULTS

Introduction

The findings of this study were processed by applying descriptive statistics, factor analysis and inferential statistics. The findings were presented according to demographic information of the respondents and Determinants of Health facilities Influencing Utilization of Free Maternity Services among Women of Reproductive Age 15-49 Years Attending Health Facilities in Homa-Bay County. The response rate of this study was at 94% (396) of the respondents for qualitative research.

Demographics

This section presents data on socio-demographic characteristics of the study respondents as presented in Table 2.

Table 2. Shows respondents' demographics

	N=396	n	%
Clients Age Category			
	less Than 20yrs	60	15.2
	20-24yrs	104	26.3
	25-29yrs	109	27.5
	30-34yrs	82	20.7
	35+yrs	41	10.4
What is your source of income?			
	Farming	99	25
	Business	147	37.1
	Employment	52	13.1
	Others	98	24.7
Level of Education			
	No formal Education	10	2.5
	Primary Level	171	43.2
	Secondary Level	143	36.1
	Tertiary Level	72	18.2
Distance to the nearest Facility			
	Less than 30 Minute	66	16.7
	30-1hr walk	102	25.8
	1hr+ walk	228	57.6
Willing to reuse FMS in future			
	Yes	320	80.8
	No	36	9.1
	Undecided/do not know	40	10.1
How did you hear of free maternity service			
	Health talk at hospitals/health facility	258	65.2
	Radio	62	15.7

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Television (Tv)	15	3.8
Community Health Worker	61	15.4
Total	396	100

Source: (Researcher, 2022)

This study established that a total of 396 mothers were interviewed of whom 27.5% (109/396) of the respondents were women between 19-29 years of age. About 43.2% (171/396) of the respondents had attained primary level of education at while 36.1% (143/396) of them had secondary level of education and this study also revealed that 2.5% (10%) of them had no formal education. This study identified that 37.1% (147/396) of the respondents were engaged in business as their major source of income while (13.1% (53/396) of them were engaged in employment as their main source of income.

Concerning knowledge on free maternity services this study established 65.2% (258/396) of the respondents had heard about free maternity services from health talks at facilities/ hospitals. A total of 48.7% (193/396) of respondents received free maternal services when they visited health facility while some 37.6% (149/396) of them paid for some maternal services. This study also determined that (57.6% (228/396) of the mothers walked more than one hour to reach the nearest health facility. A total of 80% (320/396) of the respondents were still willing to reuse the facility while 10% (40/396) of them were still undecided.

5 Health facilities capacity determinants influencing utilization of free maternity services

This section presents the findings of objective three which were obtained after conducting facility assessments for the twelve facilities identified within Homabay County. Factor analysis was also conducted to show the relationships among the variables by concentrating those inter-related variables into fewer factors. The findings were as follows;

Table 3. Facility capacity assessment results

	Characteristics	Yes	%	No	%
Availability of referral System	Ambulance	6	50.0	6	50.0
	Telephone	3	25.0	9	75.0
	Emergency Hotline	1	8.3	11	91.7
Medical supply	Gloves	11	91.7	1	8.3
	Linen	11	91.7	1	8.3
	Cotton wool	11	91.7	1	8.3
	Oxytocin	10	83.3	2	16.7
	Magnesium Sulphate Injection	9	75.0	3	25.0
	Ampicillin Powder for Injection	7	58.3	5	41.7
	Gentamycin Injection	10	83.3	2	16.7
	Metronidazole Injection	11	91.7	1	8.3
Maternity equipment	Maternity Furniture	9	75.0	3	25.0
	Sharing bed	4	33.3	8	66.7
	Baby Cot	5	41.7	7	58.3
Essential newborn commodities	Nursery	12	100.0	0	0.0
	Resuscitaire	6	50.0	6	50.0
	Incubators	3	25.0	9	75.0
	Heat source	12	100.0	0	0.0
	Disposable Code ties	12	100.0	0	0.0
	Towel/blanket	3	25.0	9	75.0
	Oxygen	5	41.7	7	58.3
	Delivery Pack	11	91.7	1	8.3
	Operating Theater	5	41.7	7	58.3

Source: (Researcher, 2022)

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Half the facilities had a functional ambulance with only a quarter having a functional phone. Medical supply was on average available in 80% of the facilities and most of the supplies with Ampicillin Powder for Injection (58.3%) and Magnesium Sulphate Injection (75%) being the least supplied medical supplies. Nine out of the twelve facilities had adequate maternity furniture. About a third of the facilities had clients sharing bed with only five facilities having a baby cot.

Some of the inadequately available essential newborn commodities included Incubators (25%), Towel/blanket (25%), Oxygen (41.7%), Operating Theater (41.7%) and Resuscitaire (50%).

Factor Analysis

Factor analysis due to Principal Component Analysis (PCA) was used to analyze health facility and health care delivery as factors influencing the use of free maternity care services. Factor analysis shows the relationships among the variables by concentrating those inter-related variables into fewer factors. PCA is a mathematical procedure that transforms a number of (possibly) correlated variables into a (smaller) number of uncorrelated variables known as principal components.

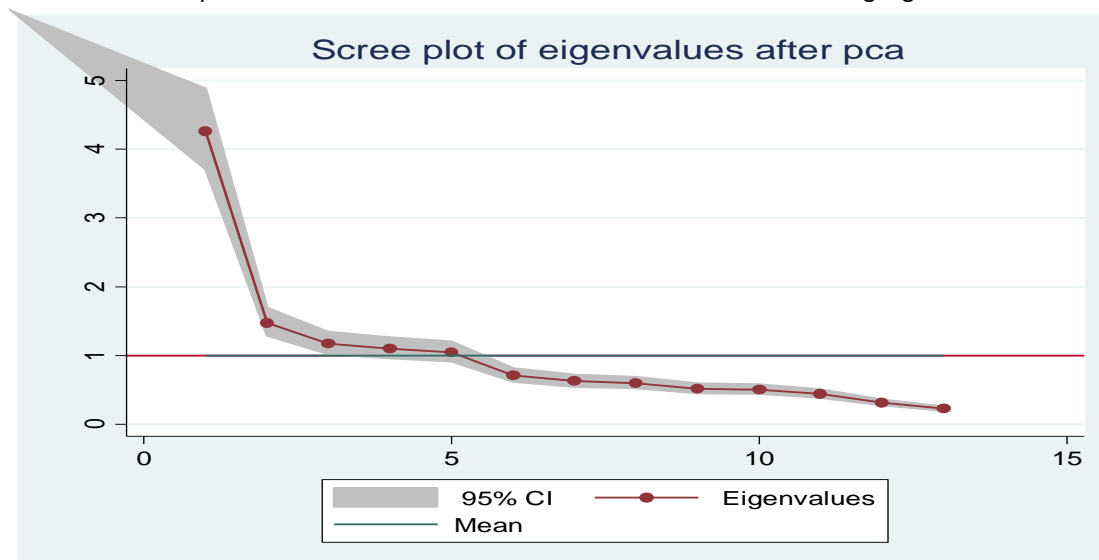
Table 4: Principal Component Analysis Table

Factor	Eigenvalue	Difference	Proportion	Cumulative
Factor1	4.264	2.787	0.328	0.328
Factor2	1.477	0.304	0.114	0.442
Factor3	1.173	0.074	0.090	0.532
Factor4	1.099	0.050	0.085	0.616
Factor5	1.049	0.338	0.081	0.697
Factor6	0.711	0.084	0.055	0.752
Factor7	0.627	0.028	0.048	0.800
Factor8	0.599	0.080	0.046	0.846
Factor9	0.519	0.013	0.040	0.886
Factor10	0.505	0.064	0.039	0.925
Factor11	0.441	0.129	0.034	0.959
Factor12	0.312	0.087	0.024	0.983
Factor13	0.225	.	0.017	1.000

$X^2 = 1557.14$ $df= 78$ $p\text{-value}= 0.0000$

Source :(Researcher, 2022)

Health Facility PCA obtained a total of 13 components and only 5 components were significant to Kaiser-Meyer-Olkin (KMO) Criterion of Eigen values greater than one (Table 4). KMO is an index used to examine the appropriateness of factor analysis. The total variance of these 5 components was 70%; the first component explaining 33%, the second component 11%, the third component 9% the fourth component 9% while the fifth 8% of the total variance .Table 4. highlights the results.



Source: (Researcher, 2022)

Figure 1: Scree plot pictorially presents the five loading components (health facility factors)

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Using factor loadings greater than 0.5 and cross-loading (loadings with negative value) less than -0.4 to explain the relationship between the covariates and factors, the first extracted factor that explains the highest variation revealed that the clients preferred clean environment including drinking water, bathing facility, toilet facility and hand washing facility. The second factor confirmed that they were concerned with staff suitability, availability of clean drinking water and the confidentiality level at the facility. The third factor adequacy in staffing, service rooms and equipment suitability. The fourth factor illustrated the effect accessibility in terms of distance to the facility and registration into the Linda mama service. Finally, the last factor revealed confidentiality and staff strike as related concerns. Figure highlights the results.

Table 5. Factor Analysis table

Variable	Factor1	Factor2	Factor3	Factor4	Factor5	Uniqueness
The number of health staff in the health facility is <u>adequate</u> .	0.2289	0.0411	0.7921	-0.0113	0.0863	0.3109
The health staff in the health facility are <u>well suited</u> to treat women's health problems	0.0619	0.7597	0.3047	-0.0615	-0.1014	0.3121
The waiting rooms, examination rooms and other rooms of the health facility are <u>adequate</u> for women's health problems.	0.3311	0.1780	0.6014	-0.3610	-0.0870	0.3591
The provision of clean drinking water for women in the facility is <u>adequate</u> .	0.5492	0.6804	0.0194	0.1286	-0.0309	0.2175
Hand washing facilities for women in the facility are <u>adequate</u> .	0.7768	0.3443	0.1201	0.0107	0.0829	0.2566
Bathing facilities for women in the facility are <u>adequate</u> .	0.7975	0.1269	0.0334	0.1188	0.2230	0.2830
Toilets for women in the facility are <u>adequate</u> .	0.7331	0.0921	0.3332	0.1268	0.0679	0.3224
The overall environment of the health facility is <u>very clean</u> .	0.5645	0.4302	0.1913	0.0848	0.2066	0.4098
The equipment in the health facility is <u>well suited</u> for detecting women's health problems.	-	0.0399	0.3114	0.6648	0.2880	0.2636
The distance from your home to the health facility is <u>very far</u> .	0.0750	0.1939	0.0247	0.8099	-0.2303	0.2472
Registration for Linda mama Service is tedious	0.2274	-0.1554	0.0792	0.7085	0.2707	0.3426
Confidentiality is very important in free maternity provision	0.2062	0.6167	0.0070	0.1161	0.4773	0.3359
Health workers strike affect free maternity	0.1117	0.0083	0.1141	-0.0650	0.8578	0.2343

Source: (Researcher, 2022)

From the above factor analysis, well-equipped health facility with good sanitation system, competent health staff with good sanitation facility, adequate staff and well equipped health facility, distance to the facility and registration for *Linda Mama* service and health workers strikes emerged as a combined factors which are significant in positively influencing the utilization of free maternity services. Table 5 highlights the results

Table 6. Principal Component Analysis Table

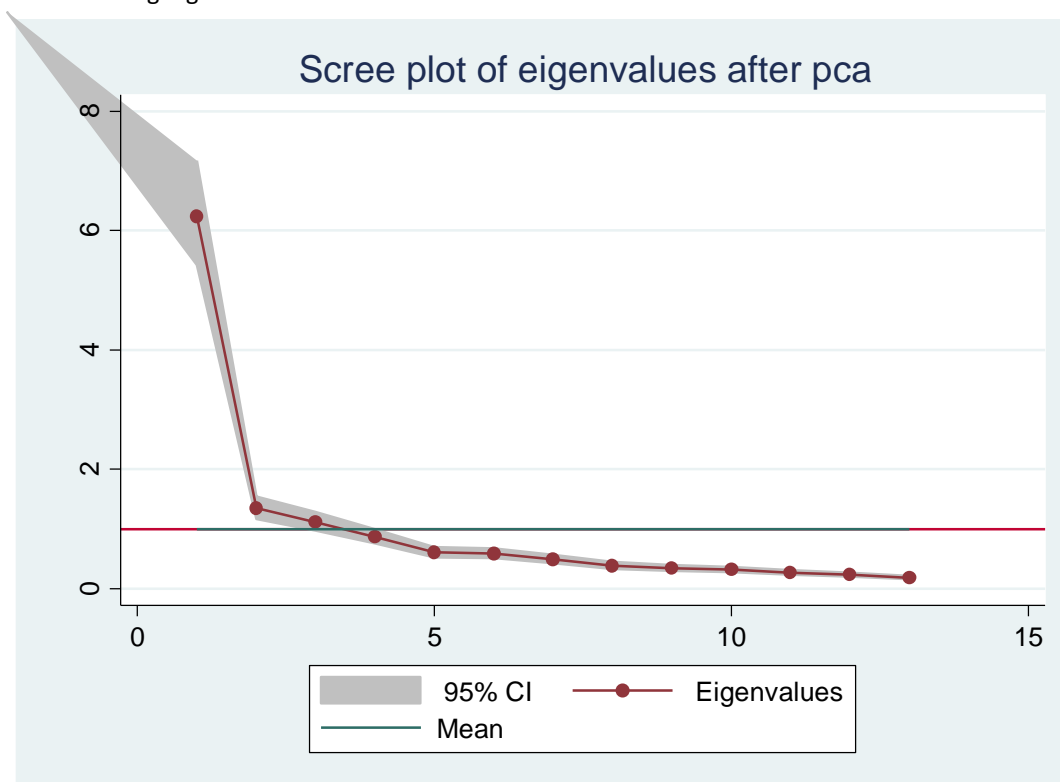
Factor	Eigenvalue	Difference	Proportion	Cumulative
Factor1	6.242	4.895	0.480	0.480
Factor2	1.347	0.229	0.104	0.584
Factor3	1.118	0.249	0.086	0.670
Factor4	0.869	0.264	0.067	0.737
Factor5	0.605	0.019	0.047	0.783
Factor6	0.587	0.097	0.045	0.828
Factor7	0.490	0.103	0.038	0.866
Factor8	0.387	0.040	0.030	0.896

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Factor9	0.347	0.030	0.027	0.922
Factor10	0.317	0.045	0.024	0.947
Factor11	0.272	0.035	0.021	0.968
Factor12	0.237	0.053	0.018	0.986
Factor13	0.184	.	0.014	1.000
$\chi^2 = 2831.53$ df= 78 p-value= 0.0000				

Source: (Researcher, 2022)

Health Care Delivery PCA obtained a total of 13 components and only 3 components were significant to Kaiser-Meyer-Olkin (KMO) Criterion of Eigen values greater than one (Table 5). KMO is an index used to examine the appropriateness of factor analysis. The total variance of these 3 components 66.7%; the first component explaining 48%, the second component 10.2%, the third component 8.5%. Table 6 highlights the results.



Source: (Researcher, 2022)

Figure 2: Scree plot pictorially presents the five loading components (health facility factors)

Using factor loadings greater than 0.5 and cross-loading (loadings with negative value) less than -0.4 to explain the relationship between the covariates and factors, the first extracted factor that explains the highest variation revealed that the clients were concerned with availability of the required drugs and how the health care workers treated them during service provision. The second factor confirmed that they were pleased with the procedure and time taken when examining the expectant mother if done well. While the last factor though concerned with the humiliating procedures admitted that the drugs were easily obtained and danger signs were well explained the patient. Figure 2 highlights the results

Table 7. Factor analysis table

Variable	Factor1	Factor2	Factor3	Uniqueness
The health staff in the health facility examines pregnant and postpartum women well.	0.133	0.845	0.138	0.250
The health staff in the health facility is very capable of finding out what is wrong with the patients.	0.298	0.814	0.140	0.229

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The health staff in the health facility prescribe the drugs that are needed.	0.747	0.309	0.173	0.316
The drugs supplied by this health facility are good.	0.674	0.481	0.082	0.307
Patients can obtain drugs from this health facility easily.	0.239	0.365	0.720	0.292
The health facility provided very much privacy during vaginal examination and delivery.	0.492	0.449	0.303	0.465
You felt very much of unnecessary and humiliating procedures during antenatal and delivery care.	0.091	0.002	0.905	0.173
The information of danger signs of delivery and postpartum provided by health staff is adequate.	0.266	0.412	0.568	0.437
The health staff in the health centre are very open with the patients.	0.798	0.150	0.069	0.336
The health staff in the health facility are very compassionate towards the patients.	0.808	0.097	0.201	0.297
The health staff are respectful towards the patients	0.711	0.324	0.043	0.387
The time that the health staff devote to their patients is adequate.	0.309	0.611	0.118	0.517
The health staff in the health facility are very honest.	0.762	0.186	0.310	0.288

Source: (Researcher, 2022)

From the above factor analysis, good supplies, respectful and diligent healthcare staff emerged as a combined factor which is significant in positively influencing the utilization of free maternity services. Table 7 highlights the findings.

Table 8. Regression analysis

	Factor	Odds Ratio	Std. Err.	z	P-value	[95% CI]
F_1_1CAT	Completely Disagree	Ref				
	Disagree	0.92	0.31	-0.23	0.82	(0.48 1.8)
	Agree	0.37	0.17	-2.17	0.03	(0.15 0.91)
	Completely Agree	1.53	0.92	0.7	0.48	(0.47 4.99)
	Do not know	1.48	0.91	0.63	0.53	(0.44 4.94)
F_1_2CAT	Completely Disagree	Ref				
	Disagree	0.61	0.22	-1.39	0.16	(0.31 1.22)
	Completely Agree	0.41	0.21	-1.78	0.08	(0.15 1.09)
	Do not know	0.43	0.29	-1.23	0.22	(0.11 1.64)
F_1_3CAT	Completely Disagree	Ref				
	Disagree	0.96	0.32	-0.14	0.89	(0.49 1.85)
	Agree	1.50	0.50	1.22	0.22	(0.78 2.88)
	Do not know	1.42	0.65	0.77	0.44	(0.58 3.5)
F_1_4CAT	Completely Disagree	Ref				
	Agree	0.78	0.24	-0.81	0.42	(0.43 1.42)
	Completely Agree	0.84	0.28	-0.52	0.60	(0.44 1.60)
	Do not know	0.79	0.33	-0.56	0.57	(0.34 1.81)
F_1_5CAT	Completely Disagree	Ref				
	Disagree	1.28	1.28	0.25	0.81	(0.18 9.06)
	Agree	1.71	1.50	0.61	0.54	(0.31 9.52)
	Completely Agree	0.71	0.63	-0.38	0.70	(0.12 4.06)
	Do not know	0.51	0.66	-0.52	0.60	(0.04 6.5)
F_2_1CAT	Completely Disagree	Ref				
	Completely Agree	1.39	0.67	0.68	0.50	(0.54 3.55)

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	Do not know	2.83	1.83	1.61	0.11	(0.80 10.02)
F_2_2CAT	Completely Disagree	Ref				
	Completely Agree	0.99	0.65	-0.01	0.99	(0.28 3.55)
	Do not know	0.50	0.22	-1.55	0.12	(0.21 1.20)
F_2_3CAT	Completely Disagree	Ref				
	Disagree	2.52	0.90	2.57	0.01	(1.25 5.09)
	Agree	1.23	0.45	0.57	0.57	(0.60 2.50)
	Do not know	1.55	0.82	0.83	0.41	(0.55 4.36)
	_cons	0.91	0.82	-0.1	0.92	(0.15 5.36)

Source: (Researcher, 2022)

Further analysis using logistics regression revealed that the respondents who agreed with the need for a well-equipped health facility with good sanitation system were 63% (OR 0.37, $p = 0.03$) more likely to reuse FMS than those who completely disagreed. While those who completely agreed and those did not know need for a well-equipped health facility with good sanitation system were 1.53, 1.48 times respectively likely to take up FMS than those who completely disagreed. The respondents who completely agreed to the need of competent staff with good sanitation facility were 41% (OR 0.41, $p=0.08$) more likely to uptake FMS than those who completely disagreed.

Those who disagreed with receiving quality service and supplies but being exposed perceived humiliating procedures were 2.52 times likely to uptake FMS than those who completely disagreed. Table 8 highlights the results.

DISCUSSIONS

Introduction

This chapter presents the discussions on the findings of this study and is organized as per the Determinants of Health facilities Influencing Utilization of Free Maternity Services among Women of Reproductive Age 15-49 Years Attending Health Facilities in Homa-Bay County.

Health facilities capacity determinants in FMS utilization

Availability of adequate toilets was a significant factor which influenced maternal mothers' utilization of free maternity services. Analysis using logistics regression revealed that the respondents who agreed with the need for a well-equipped health facility with good sanitation system were 63% (OR 0.37, $p = 0.03$) more likely to reuse FMS than those who completely disagreed. The direction of influence of the variable was positive and this concurs with study carried out by Nicole *et al.*, (2013) who found that increasing the budget line for health care is absolutely essential in order to strengthen health systems and ensure there is sufficient infrastructure, equipment, and staff to implement universal free maternal health care effectively this also was similar with the study done by Tororei, (2012) who found that only 36% of public health facilities offering delivery services had all the basic delivery room infrastructure and equipment needed; rural areas and lower level facilities were particularly unequipped. The study also revealed that 75% (9/12) health facilities are successfully implementing Free Maternity Services while quite a number of health facilities have challenges with printers, computers and electricity which are key components in the registration process. Mothers also perceived registration for Linda Mama Service as tedious since teenage mothers who were younger than 18 years did not have the requisite documents for registration. Some facilities were charging some small fees especially for non-pharmaceuticals such as syringes, needles and gloves used during delivery process while most facilities were able to give free service to mothers.

Distance to the health facility was not considered by the participants for utilization since (57.6% (228/396) of the mothers walked more than one hour to reach the nearest health facility. A total of 80% (320/396) of the respondents were still willing to reuse the facility regardless of the distance. The major factor considered by most mothers were overall well-equipped health facility with good sanitation system, competent, adequate, respectful and diligent healthcare staff. Registration process for *Linda Mama* service and good supplies also emerged as a combined factors that would determine utilization of FMS. This revealed the utilization determinant is as a result of complex amalgamation of service related factors each contributing to the final decision on utilization.

Using factor analysis followed by logistic regression the mothers were concerned about sanitation and quality of service with those who knew the need for well-equipped facility having higher odds of reusing FMS. This is a clear pointer that women have dignity

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and perceived quality of service that if not met they are likely not to take up service even if offered free. However some of them persevered to take up the services despite exposure to what they perceived as humiliating. This can be explained by the either education level and or economic level of some of the mothers which subjected them to a level of vulnerability. The study also revealed that mothers' utilization of free maternity services challenges were registration for *Linda mama* services, stock outs of drugs, availability of handwashing facility and bathing facilities. Stock outs of drugs, availability of handwashing facility and bathing facilities also revealed positive association with mothers' utilization of free maternity services in Homa-Bay County this was concurring with study done by Mwabu *et al.*, (1993), who found that ,when the drugs are available, the demand increases. On the other hand, increase in income was also found out to affect demand for medical care positively, with a shift from informal health care to formal healthcare where majority of these end up at private or mission health facilities. User fees and distance to the health facility did not affect the demand for free maternity services significantly since some 37.6% (149/396) mothers still paid for some maternal services with the knowledge that the service should be offered free.

CONCLUSION

This study concluded that utilization determinant was as a result of complex amalgamation of service related factors each contributing to the final decision on utilization. The study also concluded that, privacy during vaginal examinations strongly influenced re-use of free maternity services while staff capability of finding women problems, staff prescription of needed drugs, humiliation of maternal mothers during deliveries, information on danger signs, staff openness, and staff compassion fairly influenced utilization of free maternity. Finally, it concluded that there was significant association between staff respect, and honesty of the staff with utilization of free maternity service.

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