

Factors Influencing Preconception Care Services Among Women of Reproductive Age at Jaramogi Oginga Odinga Teaching and Referral Hospital, Kisumu

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Abstract— Preconception care involves the provision of health interventions to women and couples before conception and aims at improving their health status, reducing behaviors, individual and environmental factors that contribute to poor maternal and child health outcomes. It has potential to further reduce global maternal and child mortality and morbidity, especially in low-income countries where the highest burden of pregnancy-related deaths and disability occurs. Most often, preconception care is rarely delivered to women, and it is often ignored or minimized by both the patient and the provider. The factors contributing to the low uptake have not been extensively revealed, especially in the study region. The main objective of this study was to assess the uptake of preconception care services and associated factors among women of reproductive age at Jaramogi Oginga Odinga Teaching and Referral Hospital. A total of 241 women sampled by systematic random methods answered structured questionnaires, while 20 health care providers served as key informants. Quantitative data was summarized using descriptive statistics, and associations detected by chi-square test. Data findings were then presented using tables, graphs and pie charts. Qualitative data was subjected to content analysis, and themes derived, which were used to triangulate the quantitative results. All statistical analysis was done using SPSS v. 22. The uptake of preconception care services was low (65.8%), and majority were unaware of these services being at the facility. There was low level of knowledge on preconception care services (71.8%), although majority (45.4%) preferred the hospital as the source of information. The factors influencing the utilization of preconception care services included patient-related factors like chronic diseases, and cultural beliefs and practices, as well as health care provider-related factors like staff shortage, inadequate supplies and resources. There was a significant association between the level of knowledge on preconception care and the age of the woman ($p=0.0001$), marital status ($p=0.01$), educational level ($p=0.002$), and occupation ($p=0.001$). The uptake of preconception care services was low, with a concomitant low level of knowledge on preconception care services among women. Individual patient and healthcare related factors influence the utilization of preconception care services. The study recommends that the Ministry of Health should ensure the availability of adequate elements of preconception care, while prioritizing public health education

on preconception care, empowering the healthcare providers, and involving stakeholders, so as to achieve a robust uptake.

Index Terms— Preconception care, health interventions.

I. INTRODUCTION

1.1 Background

Poor maternal health is one of the major risk factors related to adverse birth outcomes, especially among women entering pregnancy (Anderson *et al.*, 2006; Annadurai *et al.*, 2017; Barash & Weinstein, 2002; Beckmann *et al.*, 2014). Pre-natal care has been established as the standard prevention paradigm to reduce poor pregnancy outcomes (Atrash *et al.*, 2006; Beckmann *et al.*, 2014). However, public health professionals are realizing that pre-natal care alone is not sufficient to improve perinatal health and birth outcomes, and instead have emphasized the importance of pre-conception care (Bateson & Black, 2018, 2019; Beckmann *et al.*, 2014).

Preconception care (PCC) has been defined as any preventive, promotive or curative health care intervention provided to women of childbearing age in the period before pregnancy (at least 2 years) or between consecutive pregnancies, to improve health related outcomes for women (regardless of their pregnancy status), newborns or children up to 5 years of age (Dean *et al.*, 2014a, 2014b). Accordingly, PCC refers to the provision of biomedical, behavioral and social health interventions to women and couples before the occurrence of conception and aims at improving their health status, reducing behaviors, individual and environmental factors that contribute to poor maternal and child health outcomes. The well-being of women and children is one of the major determinants of the health of any population, and can help predict future public health challenges for families, communities, and the health care system (Waggoner, 2013; Wallace & Hurwitz, 1998; Witters *et al.*, 2010). Thus, one of the ways to achieve this is the embracement of PCC to increase the chances of health outcomes of pregnancy for both mother and child (Bateson & Black, 2018; Beckmann *et al.*, 2014).

Preconception care includes any intervention to optimize a woman's health before pregnancy with the aim to improve maternal, newborn and child health (Bateson & Black, 2019). It bridges the gap in the continuum of care, and addresses pre-pregnancy health risks and health problems that could

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have negative maternal and fetal consequences. It therefore has potential to further reduce global maternal and child mortality and morbidity (Beckmann *et al.*, 2014), especially in low-income countries where the highest burden of pregnancy-related deaths and disability occurs (Ekem *et al.*, 2018; Goossens *et al.*, 2018; Goshu *et al.*, 2018). In most instances, preconception care is rarely delivered to women owing to the fact most women do have unplanned pregnancy outcomes (Arluck & Mayhew, 2018; Barash & Weinstein, 2002; Berghella *et al.*, 2010; Bille & Andersen, 2009; Brundage, 2002; Dorney & Black, 2018; Hall *et al.*, 2018), and it is often ignored or minimized by both the patient and the provider (Konchak, 2001).

Globally, maternal and fetal health are threatened mostly because of lack of knowledge on preconception health care (PCHC) and practices carried out by women of reproductive age like smoking, alcohol consumption and recreational drug use as well as physical condition like obesity (Ayalew *et al.*, 2017; Coonrod *et al.*, 2009; Dunlop *et al.*, 2013). Many women are however, unaware of how their health before conception may influence their risk of having an adverse outcome of pregnancy (Ayalew *et al.*, 2017; Conway *et al.*, 1994; Coonrod *et al.*, 2009; Dunlop *et al.*, 2013). A study carried in Texas, USA revealed that most women often engaged in preconception care only after discovering that they were pregnant (Delissaint & McKyer, 2011).

Good health during pregnancy that includes nutritional counseling, screening for medical conditions, genetic counseling, and psycho-sexual counseling, updating immunizations and optimizing health status is most vital to the development of the baby. Thus, a mother should be healthy and avoid any practice that will endanger the fetus prior to conception (Ekem *et al.*, 2018; Farahi & Zolotor, 2013; Genuis & Genuis, 2017; Hemsing *et al.*, 2017; Hood *et al.*, 2007; Hoyt *et al.*, 2012).

In sub-Saharan Africa, there is poor preconception care practice (Young *et al.*, 2013) and this is due to low economic status, lack of health care providers, being illiterate and poor awareness about maternal health including preconception care (Mason *et al.*, 2014). This is in conformity with another study done which alluded to the fact that among women who become pregnant, health risks experienced in the preconception period often continue during pregnancy, such as the use of alcohol, tobacco and other substances, nutritional deficiencies, and chronic health issues (M'Hamdi H *et al.*, 2017; Mazza *et al.*, 2013; Wax *et al.*, 2014). In addition, the increasing prevalence of obesity and chronic conditions demand attention in the context of preconception care (Begum *et al.*, 2011). Likewise, Patabendige and Goonewardene (2013), conducted studies in Sri Lanka, Nigeria and Sudan and reported that women's preconception care knowledge and practice in developing countries including Africa is very low.

Kenya's implementation plan through the National Reproductive Health Strategy (NRHS) 1999-2003, identified

the goal of safe motherhood and child survival as the reduction of both maternal and prenatal morbidity and mortality. Similarly, the government launched a Maternal and Newborn Health (MNH) Road Map in August 2010 whose goal is to accelerate the reduction of maternal and newborn morbidity and mortality towards the achievement of the Millennium Development Goals (MDGs). The Kenya Demographic Health Survey (KDHS) 2008/09 shows that the neonatal mortality rate only reduced marginally from 33 to 31 per 1000 live births (KNBS & ICF-Macro, 2010). This has remained a challenge because the focus of MDG targets in under-five mortality was (33/1000) and infant mortality was (26/1000) by 2015 which could only be achieved by embracing preconception care. Kisumu County Multiple Indicator Survey done by UNICEF and KNBS in 2011 reported that for the ten years preceding the survey, the neonatal, infant and under-five mortality rates were 23, 75, and 105 deaths per 1000 live births respectively (KNBS, 2011).

1.2 Study Objective

To identify the factors influencing preconception care services among women of reproductive age at Jaramogi Oginga Odinga Teaching and Referral Hospital, Kisumu County

1.3 Research Question

Which factors influence preconception care services among women of reproductive age at Jaramogi Oginga Odinga Teaching and Referral Hospital, Kisumu County?

II. METHODOLOGY

2.1 Research design

This study employed a facility based cross-sectional survey utilizing both quantitative and qualitative research methods to assess the preconception care services and health outcomes among to women of reproductive age at Jaramogi Oginga Odinga Teaching and Referral Hospital, Kisumu County. This is a one-time point study and provides a 'snap shot' and the outcome can be used for strengthening service delivery. The study was limited, however, by the fact that it was carried out at one time point and did not give indication of the previous attempts to improve on service delivery or future. This being so, it is impossible to infer causality and secondly being that it is a snapshot the situation may provide differing results if another time-frame was chosen.

2.2 Study Location

The study took place at Jaramogi Teaching and Referral Hospital in Kisumu County. This health facility is chosen as it has been elevated to a teaching and referral hospital, therefore, increasing the number of patients which can be accessed as far as the study is concerned. Therefore, the hospital is suitable as it has a large number of healthcare providers, therefore, increasing participants and therefore guarantee better results. In Kisumu County, there are 47 health facilities and JOOTRH is one of them with the highest number of about 5 million, seeking health care at the facility. Being that majority of the inhabitants of

surrounding region are of low socio-economic status; health-seeking is generally poor. They are mainly small-scale business people, fish mongers and jua kali artisans with a few white-collar jobs. There are also inadequate personnel in health sector to address some of the health challenges including PCC.

2.3 Target population

The study population was all women of reproductive age and a selected number of health workers doing PCC services. On this note, some healthcare providers giving PCC services to the women in the hospital were also interviewed to facilitate triangulation of data.

2.3.1 Inclusion criteria

To be eligible for inclusion of this study;

A woman of reproductive age seeking health services at JOOTRH

A woman must be residing within Kisumu County and aged between 15-49 years.

A woman must be willing to sign an informed consent document for the study.

2.3.2 Exclusion criteria

This study excluded;

Any woman excluded in 3.3.1 above

All women who are not clinically stable enough to take an interview

Any woman willing to participate but cannot sign the consent documents, and do not have a witness.

2.4 Sampling

2.4.1 Sample size determination

The sample size calculation was done using Cochran formula. PCC prevalence in Kisumu County where the study was carried out is at 18.1%. PCC services in Kenya has not been documented. However, some literature reveals that PCC has a prevalence between 18.1%-45.7%.

$$n = Z^2PQ/d^2$$

where:

n = Desired sample size

Z= Z score at 95% CI (1.96)

P= proportion of eligible women estimated to receive PCC

Q= 1-p

d= margin of error (5%).

Applying the formula, $n = 1.96^2 \times 0.181 \times (1-0.181)/0.05^2$

$$n = 227.79$$

A sample size of 228 was used for quantitative data. Additional 22 people which is about 10% of the sample size was added to cater for non-response giving a total of 250 women forming part of sample size. This is necessary.

2.4.2 Sampling procedure

After determining the number of mothers to participate in the study, systematic random sampling technique was used to select the participants. Briefly, on a daily basis, the researcher arrived at the MCH before the start of operations. In collaboration with the in-charge, the researcher picked the 3rd patient, skipped 2 patients,

sampled the 6th, and the same repeated till 250 women were interviewed. On the other hand, purposive sampling was used to collect data from health workers directly working in the section.

2.5 Data collection Instruments

Semi-structured questionnaires were used to gather both quantitative and qualitative data from the selected women. Qualitative data was in addition be collected using observation and key informant interviews with health workers.

2.6 Reliability of the research instruments

Mugenda and Mugenda (2004) defines reliability as a measure of the degree to which a research instrument yields consistent results or data after repeated trial. The researchers pre – tested the instruments at Kisumu County Hospital. The reliability of the instruments was estimated after the pretest study using the Cronbach's reliability coefficient, which is a measure of internal consistency. Reliability test was done through Cronbach's coefficient which if found at 0.6-1.0 was considered since it indicated a high level of internal consistency for the study. George and Mallery (2003) argued that the closer the coefficient is to 1.0, the greater is the internal consistency of the items (variables) in the scale and therefore from the findings above, it indicated an excellent reliability.

2.7 Validity of the research instruments

Validity is the degree to which results obtained from the analysis of the data actually represent the phenomena under study (Mugenda and Mugenda, 2004). In this study, the validity was taken to mean the extent to which the instruments cover the objectives. To determine the validity of the instruments, Expert opinion was sought from the supervisors and other lecturers in the Department of Public Health, who critically examined the items of the instruments and gave professional advice that was helpful in the modification and improvement of the questionnaires. In addition, the items in the questionnaires were made simpler. Finally, the items were arranged from simpler to complex.

2.8 Data Collection Procedures

In this study, the researcher used questionnaires and interview schedules. The semi-structured questionnaires were used to collect both quantitative and qualitative data from the women while KIIGs was used to collect data (mainly qualitative) from the healthcare providers providing direct care to the women during the period of study. The quantitative data addressed the socioeconomic and demographic attributes of the respondents, as well as the uptake of PCC. On the other hand, the qualitative data focused on helping identify the factors that drive or hamper the uptake of PCC, and included views, opinions, and suggestions. The questionnaires was administered in consultation and with the support of nurses, and the respondents were allowed 30-45 minutes to fill in the questionnaires and submit, while the interviews lasted

about 30 minutes each, and was conducted within the health facilities. Data collection was done for a period of about one month.

2.9 Methods of data analysis

Data was analyzed using quantitative and qualitative methods as follows:

2.9.1 Quantitative data analysis

Quantitative data collected was first edited and checked for completeness and then coded and entered into the computer for analysis. The Statistical Package for Social Sciences (SPSS) version 22 was used for data analysis. Both Descriptive and inferential methods of analysis was used to analyze data.

Table 2.1 Quantitative Data analysis matrix

Research Objectives	Independent variable	Dependent variable	Statistical test
To establish risk factors influencing preconception care services	Risk factors	PCC	Descriptive statistics, Inferential statistics (χ^2 , Regression)

III. RESULTS

2.9.2 Qualitative data analysis

Content analysis was used to analyze qualitative data, as it helped identify key themes arising from the data, and enhance the chances of describing the attitudes and psychological states of the respondents (Boreus & Bergstrom, 2017). To achieve this, transcribed data was organized, and grouped according to themes, from which further analyses was conducted, including tests of association.

2.10 Ethical considerations

The study proposal was approved by the Board of Postgraduate Studies, JOOUST. Ethical approval for the study was obtained from JOOTRH Ethical Review Committee. The researcher met prospective respondents to explain intentions of the study and assure the respondents that information to be collected from them will be used only for the sole purpose of the study. Informed consent was administered to potential participants in a language they understand best then they were given time to make a decision to join the study or not. Written informed consent from all the participating participants was obtained. The participants were informed that participation in the research is voluntary and they can opt out at any time even after joining the study. The interviews were conducted in a private room and they were assured that any information they gave to the researcher will be treated with confidentiality. They were also informed that findings of the study will be disseminated to them and to relevant authorities like County Health Management Team, County Medical Officer of Health, local county government and Kenya Ministry of Health. Questionnaires were only administered after signing informed consent.

3.1 Socio-demographic Characteristics of the Respondents

A total of 241 women of reproductive age and 20 healthcare providers participated in the study through researcher-administered questionnaire to obtain data on the uptake of preconception care services among women of reproductive age attending Jaramogi Oginga Odinga Teaching and Referral Hospital (JOOTRH) Kisumu. Nearly all the respondents were Christians (93.3%) with only 6.3% being Muslims. About a third of the study participants were employed (30.3%) with 30.7% self-employed and another 39.1% unemployed. More than half of the women were married (62.9%), 30% single and (6.1%) widowed. On education level, about half of the participants (46%) had attained secondary level, 35.6% tertiary level, 15.9% with primary education and only 2.5% being with no formal education. The age distribution was that about half of the respondents were aged 25-34 years (44.2%), 35-44 years (17.9%), 16-24 years (35%) and those aged 45years and above were 2.9% of the respondents. Table 3.1 shows the socio-demographic characteristics of the participants.

Table 3.1 Socio-demographic Characteristics of Respondents (N=241)

Variable	Frequency (%)	Variable	Frequency (%)
Age Category(years)		Occupation	
16-24	84(35)	Unemployed	93(39.1)
25-34	106(44.2)	Self employed	73(30.7)
35-44	43(17.9)	Employed	72(30.3)
45-49	7(2.9)		

Marital Status		Religion	
Single	72(30)	Christian	222(93.3)
Married	151(62.9)	Muslim	15(6.3)
Widowed	16(6.7)	None	1(0.4)
Divorced	1(0.4)		
Education Level		Chronic disease	
None	6(2.5)	No	193(81.8)
Primary	38(15.9)	Yes	43(18.2)
Secondary	110(46)		
Tertiary	85(35.6)		

3.2 Health System Factors Influencing Preconception Care Services

The health system factors that could influence utilization of preconception care services were looked at.

3.2.1 Preconception care availability in the facilities

The respondents were asked if PCC services are offered in the facilities. About fifty percent (49.3%) said no and around a third of respondents (34.7%) agreed that the PCC

Table 3.2 Preconception care services availability in the facility

Argument	Respondents		Healthcare Providers	
	n	%	n	%
<i>PCC service Availability</i>				
Yes	50	34.70	15	75
No	71	49.30	5	25
I don't know	23	16	0	0

services are available in the facilities. Health care providers were also asked the same question and 25% said the services are not offered in the facility. (Table 4.4) The respondents and healthcare providers stated that the PCC services are offered in MCH/FP, Gynecology ward, Obstetric ward, OPD and PSC departments. The persons responsible for offering the services are consultants, doctors, clinical nurses, qualified nurses, midwives, clinical officers and trainee nurses.

3.2.2 Preconception care medical supplies

The respondents were asked the availability of medical supplies. Majority of respondents (71%) did not know whether medical supplies for services are available or not.

Table 3.3 Availability of medical supplies for preconception care services

Argument	Respondents		Healthcare Providers	
	n	%	n	%
<i>Availability of medical supplies</i>				
Never	11	5.70	0	0
Somehow	20	10.40	8	40
Always	25	13	10	50
I don't know	137	71	2	10

The percentage of respondents and healthcare providers who acknowledged that the medical supplies are always available was 13% and 50% respectively. Table 3.3 summarizes the findings.

3.2.3 Information on common risk factors of pregnancy

Argument	Respondents		Healthcare providers	
	n	%	n	%
<i>Relevant information on risks during pregnancy given to women</i>				
Yes	32	20.30	6	30
No	126	79.70	14	70

Majority of respondents and healthcare providers (79.7% and 70%, respectively) acknowledged that relevant information concerning common risk factors for pregnancy is not given to women who are eligible for services. The respondents were asked tools used to assess the women for common risk factors for pregnancy. A few mentioned blood pressure machine, tape measure, thermometer and

clinic book. However, majority stated that they have no idea of the tools used to assess them. The healthcare providers mentioned laboratory test screening, blood pressure measurement, use of pictures, counseling and pregnancy tests. Pre conception care checklist/pregnancy injection assessment ANC booklet, patients medical file, outpatient registers charts, questionnaires, calendar and

uterine pictorial models as tools used to assess them for common risk factors for pregnancy. Table 3.4 summarizes the findings.

Table 3.4 Information on common risk factors for pregnancy

3.2.4 PCC related services offered to women of reproductive age who visit the hospital

About 30% of the respondents had no idea of the PCC related services offered to women of reproductive age. 32% similarly to 30% approximately equated the ante natal services to PCC related services. Some of their responses included:

“Most services offered to women are done in MCH department on pregnant mothers and children (5 years)”

“I just know services offered to pregnant mothers e.g checking weight and pressure”

“Checking if the baby is breathing well, taking weight, pressure”

“I have pregnant mothers checked blood pressure, weight and height”

“Checking the level of blood in the body. They test urine of the mother, checking if you have any other disease like

TB”

It was revealed that about 30% of the respondents to issues related to family planning and talked of methods of FP, counseling and health talks. Less than 10% of the respondents had varied responses, most of them included ARVs, cancer screening, monitoring of viral load. These services are mostly offered to HIV positive clients routinely. Health care workers responses on PCC related services included: family planning, cervical cancer screening, breast cancer screening, HIV counseling and testing, ANC profile, counseling, blood group plus workup, provision of prevention services, STI screening, teachings, health education on planned pregnancy, advise them before conception, advise them with their spouses if possible about the risks during pregnancy, they should know what precautions to take in case of any danger signs, nutritional counseling, birth plan, gender based violence services, identify the facility where she will deliver.

3.3 Access of related services at the facility

Around 7.3% of respondents stated that all eligible women always access the services all times they visit the health facility. Majority of respondents (65.8%) did not know whether women access services at health facility visit. Majority of healthcare providers (60%) stated that women sometimes access these services upon facility visit (Table 3.5).

Table 3.5 Access of preconception care services at the health facility visit

Argument	Respondents		Healthcare Providers	
	n	%	n	%
All eligible women access services all times at the health facility				
Never	19	9.80	0	0
Sometimes	33	17.10	12	60
Always	14	7.30	8	40
I don't know	127	65.80	0	0

3.3.1 Preconception care feedback

Majority of respondents and healthcare providers (82.4% and 95%, respectively) stated that suggestion box for feedback is available in the facilities. However, when it comes to feedback almost all of respondents (90%) and about seventy percent of healthcare providers (68%) stated that women do not give feedback concerning services. Table 4.8 summarizes the findings. The participants were also asked their concerns from the feedback given. Their major concerns were inadequate resources, poor understanding of services, long waiting time to get the services and need to establish a preconception clinic to enable them get more information concerning the services. This is as explained by some of their responses below:

Table 3.6 Preconception care Feedback

Argument	Respondents		Healthcare Providers	
	Yes (%)	No (%)	Yes (%)	No (%)
Suggestion box available in department	173(82.4)	37(17.6)	19(95)	1(5)

“There be a special day for gathering and health workers teach the women on this matter.”(Participant 95, 29 years, Chulaimbo)

“There are many challenges like the items used in hospital are not always available.” (Participant 158, 25 years, Holo)

“Waiting time is long and time consuming due to shortage of staff.” (53 years, female healthcare provider)

“Improper communication, the use of oral contraceptives, disagreement between a woman and husband.” (26 years, female healthcare provider)

WRA give feedback concerning services	18(28.8)	155(90)	4(23.5)	13(68)
There are other forums where women give feedback on services	59(24.3)	107(44)	8(44.4)	10(55.6)

3.3.2 Preconception care data

The study looked at PCC data availability and access among the respondents and healthcare providers. Majority of respondents stated that the data on pregnancy history and outcomes is available (71.4%). Majority of healthcare providers stated that the data is not available (64.7%).

The respondents and healthcare providers were further asked to name the type of information in the data. Some respondents mentioned the number of visits to the clinic and the vaccinations the child gets, viral load results as

Table 3.7 Preconception care data

Argument	Respondents		Healthcare providers	
	Yes (%)	No (%)	Yes (%)	No (%)
Data available on pregnancy history and outcomes	142(71.4)	57(28.6)	6(35.3)	11(64.7)
Women or community members have access to the data	2(11.6)	79(97.5)	5(41.7)	7(58.3)
Respondent has you accessed/used the data	22(9.1)	87(79.8)	5(41.7)	7(58.3)

3.3.3 Pregnancy Intention

The respondents were asked whether it's advisable for a woman to discuss about the intention to become pregnant, in advance. Around 13% and 24.7% of the respondents strongly disagreed and agreed respectively that women need to discuss their pregnancy intention in advance. The

Table 3.8 Pregnancy Intention

Argument	Respondents		Healthcare Providers	
	n	%	n	%
<i>Women discuss become pregnancy intention</i>				
Strongly disagree	30	13	2	10
Disagree	43	18.60	1	5
Neutral	65	28.10	7	35
Agree	57	24.70	9	45
Strongly agree	36	15.60	1	5

3.3.4 Pregnancy information prevention

The respondents were asked to state based on their tradition what may prevent a woman from getting information about the outcome of pregnancy before she gets pregnant. Majority mentioned lack of awareness/education on the availability of the services, witchcraft, ignorance and myths surrounding pregnancy. It is believed that pregnancy is sacred, it is always considered as a taboo to talk about it before it happens. Culture and religion also play a role. Some respondents who were Muslims stated that according to their religion they don't talk about pregnancy before it happens. Below are some of their views:

"Muslims we don't talk of pregnancy before it happens"
(Participant 6, 19 years, Obunga)

type of information found in the data. The information in data mentioned by healthcare providers included the number of women who became pregnant, comorbidities e.g. puerperal sepsis, mortality, PPH or other comorbidity like SCD, duration before conception, risk factors during pregnancy, or how to go about the risk factors. Also included were name, age, parity, gravida, mode of delivery, outcome - alive/dead, discharge notes, discharge advice, LMP, EDD, Apgar scores of baby and sex of baby. Table 3.7 summarizes the findings.

healthcare providers were also asked whether in their practice, women discuss about the intention to become pregnant in advance? About 45% agreed and 20% strongly disagreed that women discuss about their pregnancy intention in advance. Table 3.8 summarizes the findings

"We Luos believe that someone should not talk about a baby while still in. You don't even buy clothes" (Participant 42, 28 years, Nyalenda)

Some also believe that before marriage a lady should not be pregnant. This may prevent those who plan to get pregnant outside marriage from getting information. Some participants said they had no restrictions; in their culture they just give birth. Some participants said that most women come to facilities when they are already pregnant hence this prevents them from getting the whole package of services.

Another respondent stated that If the lady is not ready to become pregnant, she can't be taught about pregnancy. Some of these views were as explained by the respondents below:

"Most of women come to the health facilities when they are

already pregnant to attend clinic” (Participant 57, 30 years, Tom mboya resident)

“In most cases, women seek for advice in the hospital when already pregnant at times nothing much can be done” (Participant 241 30, Nyamware resident)

“If she is not ready to become pregnant, she can't be taught about pregnancy” (Participant 106 22 years, Manyatta resident)

The healthcare providers were also asked to give their opinion on what may prevent a woman from getting

information about the outcome of pregnancy before she gets pregnant. Majority mentioned lack of information (ignorance) on the importance and availability of services. Other reasons given that may prevent a woman from getting services were that most facilities do not offer services, inadequate staffing and lack of training on provision of services.

3.3.5 Pregnancy information source

Hospital set up was the most preferred source of information on pregnancy (82%) while church was the least preferred source of information (1%) concerning pregnancy (Figure 3.1).

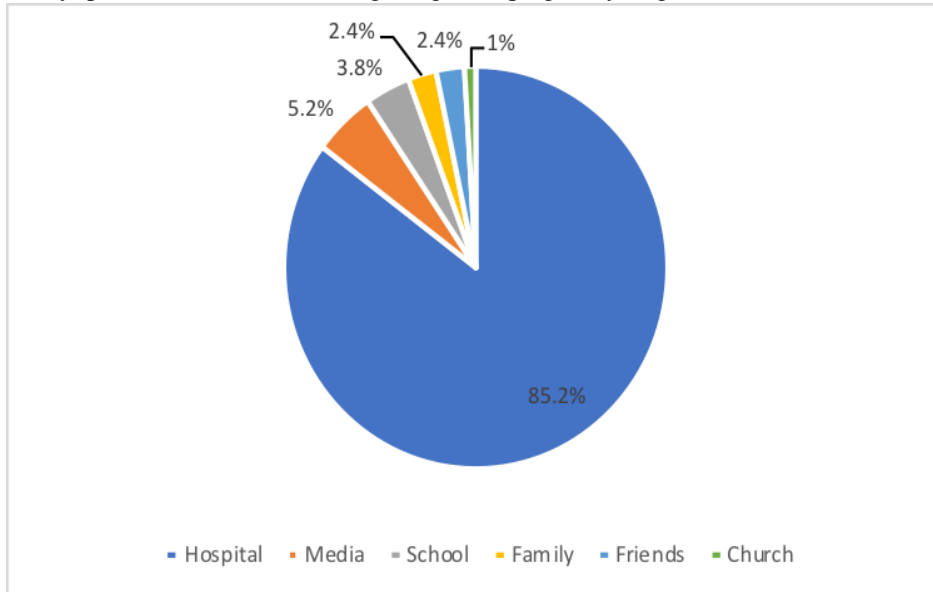


Figure 3.1: Pregnancy information source

3.3.6 Preferred hospital worker

The respondents were asked their preferred healthcare

worker to handle services. Doctors were the most preferred at 40% followed closely by nurses at 39.1%. CHVs were the least preferred to handle related services.

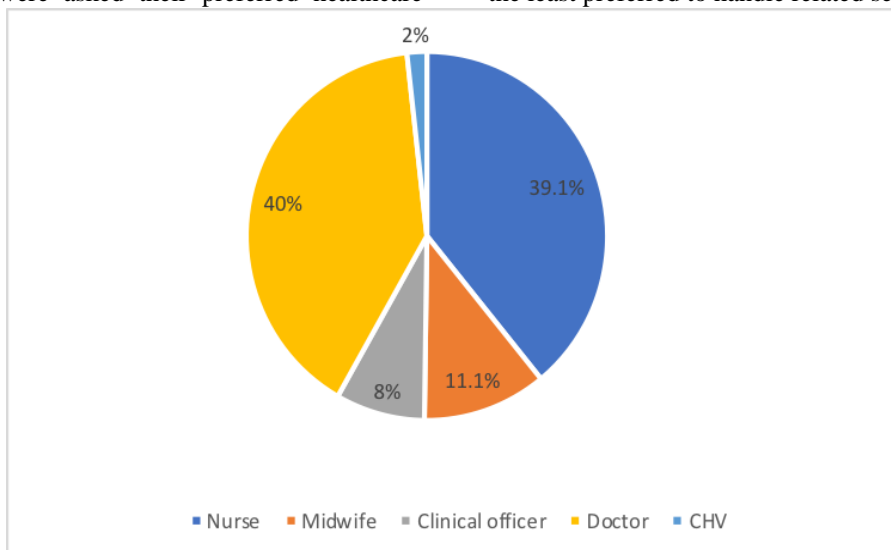


Figure 3.2 Preferred hospital worker

3.3.7 Reason for the preferred individual

Majority of respondents (40.1%) would prefer doctors to give them information about issues regarding a woman who intends to become pregnant in a hospital set up. Some of their major reasons are that Doctors are very educated hence they know more about the issue. They have the knowledge and good understanding about pregnant women

and can help in case of emergency. Some sentiments were:

“They are more experienced on health matters” (Participant 32, 31 years, Seme resident)

“They are the ones who know more about pregnancy and the pregnant woman” (Participant 131, 21 years, Seme

resident)

Majority of respondents (39.1%) also chose nurses as the most preferred regarding issues to deal with intention to become pregnant. There major reasons were that nurses are always available, deal with women mostly hence know more concerning women's health. They are more conversant with pregnant women and can address such issues comprehensively. They work together in MCH. Another respondent preferred a nurse because she feels more comfortable when addressed by a nurse, as reported verbatim below:

"It could be a nurse because he/she is educated more about pregnancy and she/he can give more information before see a doctor" (Participant 82, 25 years, Russia quarters resident)

"Nurses are easily available whenever they are needed and quite approachable and quite a number have the patience to address such issues comprehensively." (Participant 233, 35 years Migingo village)

About 11.1% of respondents preferred to be seen by midwives regarding pregnancy issues because they felt that they know how to take care of pregnant women hence they

Table 3.9 Participants general comments on preconception care services

Respondents	Healthcare Providers
<i>"I think it is high time PCC be introduced in both public and private hospitals. This area seems to have been neglected"</i> (Participant 44, 37 years, Okana resident)	<i>"Most women do come for PCC too late while they have infertility. Sensitization to be done for them to be attending clinic early"</i> (53 years, male)
<i>" saved my life and I would highly recommend it in all health facilities especially to women with chronic diseases. Better not give birth but be alive."</i> (Participant 45, 38 years, Masogo resident)	<i>"Proper collaboration between health facility and the community through CHEW to strengthen ."</i> (53 years, female)
<i>" should be widely embraced and maximum attention given to it as it turns out to be most effective in preventing health maternal related issues"</i> (Participant 58, 37 years, Manyatta resident)	<i>" PCC should be provided to all women of reproductive ages not only to those who are need after desperation or a bad outcome such as many miscarriages and abortion."</i> (28 years, female)
<i>"I have never heard of these services of PCC."</i> (Participant 222, 32 years, Paramount resident)	<i>"PCC information to be included in reproductive health services, so that every woman of reproductive age will have access to it"</i> (26 years, female)
<i>"Employ more male doctors in the clinic because they do not harass"</i> (Participant 227, 35 years, Whitehouse resident)	<i>"This hospital should provide routine PCC services to all legible mothers /clients"</i> (56 year old female)

3.8 Other information to be included in PCC

Respondents had mixed opinions on information which should be included in PCC. Most of them gave irrelevant answers not related to PCC. A few however suggested the relevant areas including *"Nutrition, Screening for other diseases, Male involvement- to include family planning services to men, Involving teenage girls/adolescents, Infertility, Smoking and alcoholism, Genetic counseling(Pre- marital counseling), Disability among*

trust them more. There other reasons were that midwifery is a long-term career so they know and understand better. Another major reason given was that midwives have enough understanding and education on pregnancy and child birth since they mostly deal with maternal and child health issues. Some sentiments included:

"I trust her a lot even when I am pregnant" (Participant 95, 29 years, Chulaimbo resident)

"It is a long-term career so they know and understand better" (Participant 18, 30 years, seme resident)

"They deal directly with women" (Participant 153, 21 years, Gesoko resident)

Clinical officers were preferred by 8% of respondents who mostly stated that they are professionally trained and skilled; as their reason for preference. Community health volunteers were the least preferred (2%) to give information regarding matters to deal with pregnancy. Those who preferred them stated that they know them well, as stated by one respondent:

"We know them and meet them every day" (Participant 13, 20 years, Manyatta resident)

others.

Most of these responses came from participants who had some knowledge on PCC and most of them were those who had experienced reproductive health problems/issues at one point in time.

IV. DISCUSSION

This study focused on uptake of preconception care services and the factors influencing preconception care services among women of reproductive age at Jaramogi

Oginga Odinga Teaching and Referral Hospital, Kisumu County, Kenya. The study involved 241 participants who were women of reproductive age between 15 and 49 years of which more than 90% were Christians owing to the fact that the region is Christian dominated. About 40% of the women were unemployed and more than half of them (62.9%) were married. Over two thirds of the women were aged between 16 to 34 years (79.2%) to symbolize that they were still young and among the childbearing age. The study also involved 20 healthcare workers from respective related departments.

Most of the healthcare providers stated that preconception care data is not available in the facility although some mentioned puerperal sepsis, mortality, postpartum hemorrhage (PPH), sickle cell disease (SCD) and risk factors during pregnancy. This could be an indication that even the healthcare providers are not very much aware of PCC services. This is supported by a study done by [Sijpkens et al., in 2019](#) which deduced that while PCC has been acknowledged as an intervention to reduce perinatal mortality and morbidity, it remains underutilized, because of low awareness of availability and benefits of the service. Moreover, Allan *et al.* (2018) in their study done in the United Kingdom and Spain also concluded that by providing preconception care, nurses and midwives have an opportunity to deliver important advice to infertile couples at different levels of care to these individuals.

The study found out that majority of participants mentioned lack of awareness/education on availability of PCC services, culture or tradition and religion (especially the Islamic religion) as some of the issues that may prevent a woman from getting information about the outcome of pregnancy before getting pregnant. This is contrary to a study done in Iran on barriers of preconception health relating women where almost half of the women, 47.7%, had received PCC service and the factors that influenced the uptake of the services included their levels of education, income and the number of wanted pregnancies. This is in spite of the fact that almost all participants had attained at least formal education.

The study revealed that almost all the participants preferred the hospital mostly as the source of information on pregnancy with doctors and nurses as the most preferred to convey the information since they are knowledgeable, approachable and always available in the health facility. This could be a reflection that respondents had confidence in the healthcare providers, thus with correct information, seemingly they would comply.

The study found out that more than half of the healthcare providers at JOOTRH, which is a public health facility, acknowledged that relevant information concerning common risk factors for pregnancy is not given to women who are eligible for PCC services. At the same time, most of them were not aware of the tools used to assess common risk factors of pregnancy as some echoed *ANC booklets*,

pregnancy tests, name, gravida, EDD, risk factors during pregnancy among others. This concurs with studies done by Kassa *et al.* (2018) and Umar *et al.* (2019) which showed that there was low level of knowledge about PCC among a large proportion of the healthcare providers in public health facilities in Ethiopia.

The study revealed that one third of the participants equated ante-natal services to PCC related services as recorded by statements such as: *“Most services offered to women are done in MCH department on pregnant mothers and children below 5 years, “I just know services offered to pregnant mothers e.g checking weight and pressure”, ... “Checking if the baby is breathing well, taking weight, pressure”, ... “I have an idea that pregnant mothers are checked blood pressure, weight and height”* among others. Similarly, some healthcare workers responses on PCC related services were: *ANC profile, precautions on danger signs, identification of the facility where she will deliver*, among others. These responses are related prenatal/antenatal care but not PCC. Such inaccurate information may have no impact as far as PCC is concerned. Although prenatal care has been established as the standard prevention measure to reduce poor pregnancy outcomes, public health professionals however, have found that prenatal care alone is not sufficient to improve perinatal health and birth outcomes, and instead have emphasized the importance of preconception care as is supported by several previous studies (Barash & Weinstein, 2002; Landeen *et al.*, 2015; Power *et al.*, 2013; Wada *et al.*, 2016; Wally *et al.*, 2018).

More than half of the healthcare workers acknowledged PCC related services like HIV counseling and testing, health education on planned pregnancy, nutritional counseling, adolescence counseling and STI screening. This is contrary to a study done by [Kukreja et al., 2012](#) in Delaware which demonstrated that physicians were found to frequently discuss only some aspects of preconception care, including diabetes and weight management, while less frequently discussing other topics like reproductive life plans, vaccinations, and HIV screening. JOOTRH being a centre of excellence in western Kenya region in matters relating to HIV care, could be a reason that HIV counseling and testing remain a key component under PCC because any person whether a client, a patient or not who visits the facility is legible for routine screening irrespective of gender, and age.

The study found out that patient risk factors like chronic diseases and abortion is a factor influencing PCC. This can be supported by Masogo village resident participant who commented that: *“It saved my life and I would highly recommend it in all health facilities especially to women with chronic diseases. Better not give birth but be alive.”* Respectively, a female healthcare provider gave her general comments that: *“PCC should be provided to all women of reproductive ages not only to those who are need after desperation or a bad outcome such as many*

miscarriages and abortions." This is similar to a study done by Zhao *et al.* (2014) which stated that some risk factors that have a significant effect on the outcome of pregnancy can be detected and controlled before pregnancy, and improving preconception health can result in improved reproductive health outcomes.

Individual barriers like cultural beliefs may influence the uptake of PCC, according to this study. An example is a response from a young participant 28 years old from Nyalenda estate who said: "*We Luos believe that someone should not talk about a baby while still in. You don't even buy clothes*". The other participant said "*before marriage a lady should not be pregnant. This may prevent those who plan to get pregnant outside marriage from getting information.*" A section of participants especially from the Muslim community believed that children came from God hence no need to seek health services. One participant from Obunga estate added to this by saying: "*Muslims we don't talk of pregnancy before it happens*". This is similar to a study done by [Abedini et al., 2018](#) which stated that individual barriers can affect the provision of preconception care, just like with any other aspect of health care service.

On preconception care feedback, almost all participants and health care providers accepted the fact that a suggestion box is available in the facility but women do not receive feedback concerning PCC services. Their main reason was poor understanding of services and lack of laid down protocols including counseling. This is similar to a survey done among individuals of reproductive age in Central Pennsylvania (USA), which showed that only half of women at risk of pregnancy reported receiving little or no counseling (Weisman *et al.*, 2008).

A number of healthcare providers' factors, like shortage of staff leading to long waiting time to be attended to, constitute factors influencing PCC uptake. This was confirmed from an observation made by a female healthcare provider who stated that "*waiting time is long and time consuming due to shortage of staff.*" They also attributed the low uptake to shortage of supplies/resources. This concurs with a study done by Goossens *et al.* (2018), which found out that healthcare providers play an important role in providing preconception care to women and men of childbearing age, yet, the provision of preconception care by healthcare providers remains low, likely due to barriers, which can be related to both the provider and client, and limited resources.

The study revealed that there was significant association of the factors like age category, marital status and educational level and occupation and having heard of PCC ($p < 0.05$). This concurs with a study done in Uganda by Homsey *et al.* (2009) which found out that poor lifestyle and low education have been linked to greater risks for preconception care.

V. CONCLUSION

The uptake of various PCC services among women of reproductive age was low, and majority of participants had no idea of the availability of PCC services at JOOTRH. There was a low level of knowledge on PCC on the reproductive health services among the women of reproductive age who visited the facility, with most of them equating PCC services with Ante Natal Care (ANC) services. The health care providers claimed that PCC services are not rendered to women of reproductive age effectively in the facility due to shortage of staff and lack of resources. Individual barriers like cultural and religious beliefs about pregnancy also played a role in the utilization of PCC services at JOOTRH.

VI. RECOMMENDATIONS

The Ministry of Health should consider integrating PCC services with other related programs, in order to improve access and uptake. Such should target factors at the personal, community and health care system levels. It should in addition ensure capacity building of the health workers on PCC, and involve the engagement of key stakeholders, such as professional physicians, gynecologists, pediatricians, midwives and nurses, to raise the profile of PCC.

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