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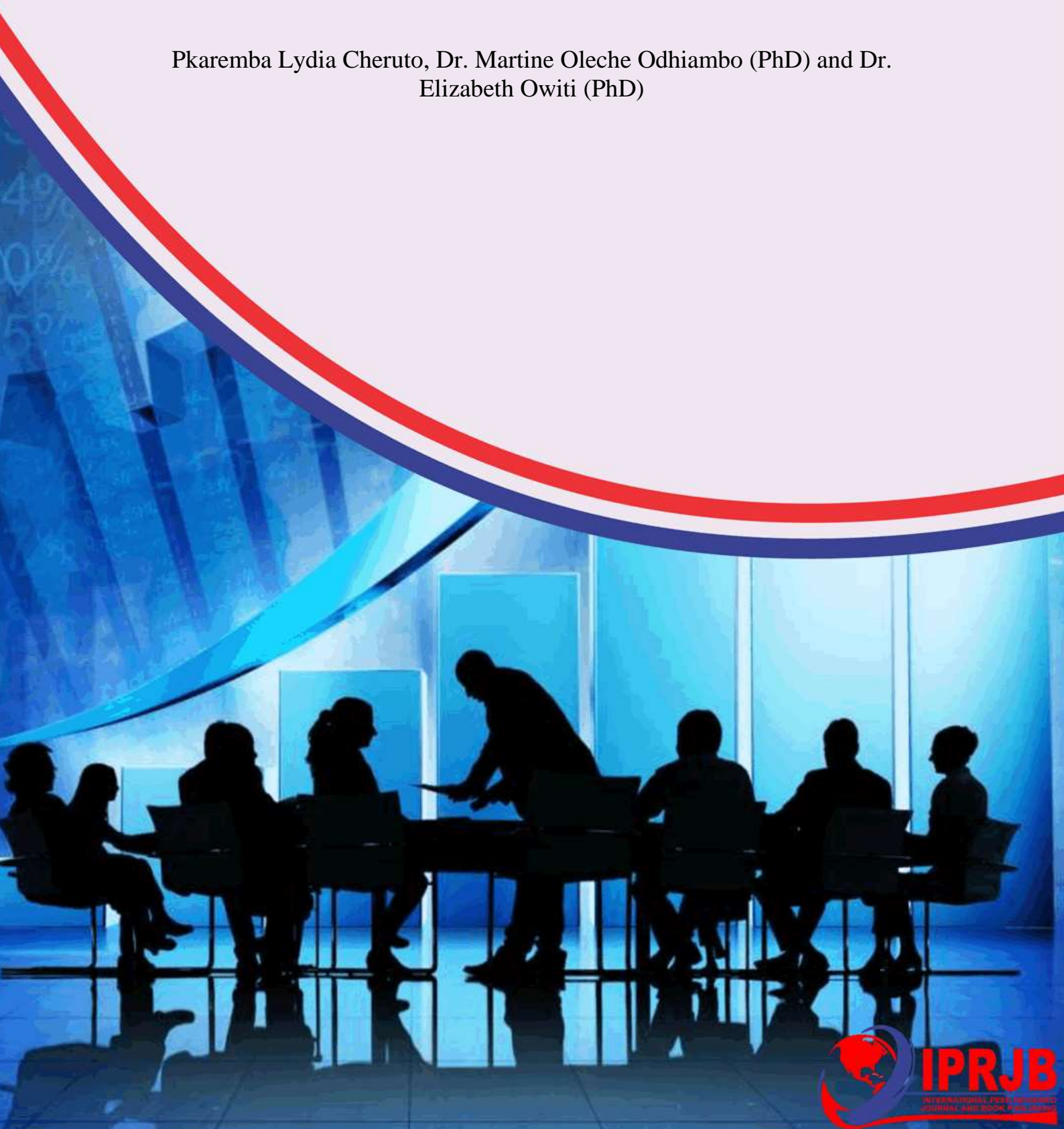
Contraceptive Switching among Homeless Women in Kenya

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Abstract

Purpose: The paper examines contraceptive-switching behaviors among homeless women in Nairobi, Kenya. High mortality and morbidity rates in Kenya are mainly a result of unplanned pregnancies, discontinuation of contraceptives, and switching of contraceptives. These incidences can be reduced through improved access to a wide variety of contraception and counseling services that allow homeless women to make informed decisions. Switching from one contraceptive to the other often lowers contraceptive preventive abilities putting women at risk of unplanned pregnancies

Methodology: The study was carried out in Nairobi, Kenya. The study utilized primary data collected from a sample of 384 households in Nairobi. A Cluster case-control and observational study design was used to sample the population. Off slum settlements were randomly chosen and systematic random sampling was used to select female household members to be interviewed. The study sampled 8 groups of subjects per study area which are the CBD alleys and the off-slum settlements of Kibra, Korogocho, Mathare, Mukuru Kwa Reuben, Majengo, Kawangware, and Huruma Slums. Questionnaire responses were then extracted and analyzed using STATA software. Estimates were then regressed using logistic regression.

Findings: The logistic estimates further reveal that as a homeless woman gets more educated, she will tend to switch contraception less often. The study found the predicted probability of educated women switching contraceptives to be 1.32%. The study also found that women who had lived in the streets had a 0.89% possibility of switching contraceptives. The study further noted that women who experienced miscarriages, stillbirths, or had aborted in the past 12 months were 4 times more likely to switch contraceptives than women who hadn't. Results derived from the regression show further show that immigrating from an urban area and having knowledge of Intra-uterine devices (IUDs), increases the chances that a homeless woman will switch contraceptives.

Unique Contribution to Theory, Practice and Policy: There exists limited research on the reproductive health practices of homeless women in Kenya as more studies are focused on refugees, street children, and slum dwellers. This study therefore adds to knowledge on contraceptive utilization among homeless women. Over the years the government has initiated programs and policies to reduce the population in Kenya. However, these policies have had less impact on population control among street families in Kenya. The government in its efforts to control fertility, can utilize the findings of this study to come up with an optimal contraceptive mix, unique to the needs of homeless women in Kenya. The study is also critical in understanding the role of knowledge on contraceptive utilization among homeless women. Knowledge of contraceptives can also be improved through outdoor reproductive health campaigns and the establishment of mobile clinics to improve homeless women's accessibility to reproductive health services.

Keywords: *Contraceptives, Switching, Homelessness, Mortality*

INTRODUCTION

Contraceptive switching occurs when a contraceptive method is discontinued for an alternative form of contraception. Contraceptive switching often leads to undesirable health outcomes that include method failure or risks of adverse effects. Switching behaviors increase the vulnerability of homeless women to unplanned pregnancies which can lead to miscarriages, abortions, and neonatal and maternal mortality (Gebreselassie *et al.,* 2008; Borda *et al*., 2010; Fotso *et al.*, 2013; Atnafe *et al*., 2016). Utilization of modern contraceptives, therefore, minimizes the risks of unwanted pregnancies, especially for women who often suffer adverse health due to unplanned pregnancies (Curtis, Tepper & Jatlaoui, 2016).

Modern contraceptive switching is often an indicator of a wider spectrum of choice (Steele and Diamond, 1999). Contraceptive switching behaviors are often necessitated by health practitioners who offer counseling services to patients who visit hospitals for antenatal or post-natal care (Jain *et al*., 2013). Women with notorious switching behaviors are often poorly counseled by health professionals (Wiegratz *et al*., 2011). Living close to a health facility allows users to shift from one contraception to another as they enjoy the flexibility of choice and accessibility (Ross, 2001). With tens of private chemists and clinics mushrooming in informal settlements in Kenya, women residing in slums women have developed a keen interest in short-acting contraceptives (Mumah *et al*., 2015). When short-acting contraceptives fail, homeless women residing in slum settlements switch to more effective, long-term methods often administered in public hospitals or private clinics (Corey *et al*., 2020).

Contraceptive switching behaviors are often thought to be from less effective short-acting methods to more effective and longer-acting methods (World Health Organization, 2012), however renowned health economist like Barden O'Fallon (2011) argues that a major shift in reproductive health involves women switching from modern contraceptives to traditional methods for fear of hormone imbalances, husbands' opinions, and cultural pressure. Homeless women tend to prefer certain contraceptives after discontinuing initial methods. Women in off-slum settlements tend to discontinue the use of condoms, pills, and traditional methods in favor of injectables since injectables are highly available and easily administered (Mumah *et al.,* 2015).

In Uganda, Zimmerman *et al*. (2021) noted that the majority of Ugandan women switched from injectibles to pills, IUDs, and implants citing excessive bleeding as a major concern. Many elements may be considered individually by women when choosing an appropriate method of contraception. Women choose contraception for safety purposes, effectiveness, acceptability, and availability (Kabra *et al*., 2022). Women with high socioeconomic standing switch contraceptives more than poor women since they have the resources to switch compared to the poor (Steel and Curtis, 2003; Mumah *et al*., 2015). Contraceptive switching can also be due to method failure, especially in women who have had abortions or miscarriages (Modey *et al*., 2014).

Statement of the Problem

Global organizations like the UN, have developed programs and policies on universal health coverage with its main focus being health and well-being among other agendas (United Nations, 2015). Homeless women have over the years been socioeconomically and demographically excluded from the provision of reproductive health services (Mahlangu &Kgadima, 2021). Studies on women in Kenya showed that 38.6% of women who previously used a form of contraception switched from one method to another (Aloo, 2013). It was further noted that 48%

of women who switched contraception switched to short-acting, less effective methods while 31.9% switched to long-acting, more effective methods. Aloo (2013) further noted that switching behaviors lead to incidences of unwanted pregnancies when a woman switches to less effective contraceptive methods. While homeless women cite inaccessibility to long-acting as reasons for contraceptive switching to less active methods, a universal health coverage plan where one is to be left out will not be achieved unless all women including the homeless women have access to a wide range of affordable contraception. Persistent mortality and morbidity issues among mothers and infants have been an issue of great concern in Kenya. Davanzo *et al*. (2004) noted that women who had short intervals between pregnancies caused by method failure or unwanted pregnancies often have a greater risk of pre-eclampsia, premature rupture of membranes, and high blood pressure. With proper child spacing, more than 2 million newborn babies around the globe can be saved each year (Collumbien *et al*., 2004). Mortality and morbidity rates in Kenya resulting from unplanned pregnancies can be reduced through improved access and utilization of contraception by all women including homeless women. Homeless women like any woman desire to have children and plan their families. Homeless women should have the freedom to choose the spacing and number of children they desire. Access to affordable and effective contraceptives has been found to enhance maternal and child health for women leading to happier and healthier families (Zewude *et al*., 2019).

The majority of street children in Kenya are born to homeless parents who may have been unable to prevent pregnancies by consistently using a form of contraception. Such unplanned births lead to an increase in street population resulting in low human capital investment increased criminal activities, and heightened poverty (Embleton *et al*., 2020). Contraceptive utilization by homeless women will decrease the number of children raised on the streets. Studies on street families in Africa have been widely carried out on topics related to socio-economic challenges, psycho-social behaviors, human development, social mobility, etc (Zewude *et al*., 2019; Heckman and Mosso, 2014) However, limited studies have been done on contraceptive use, discontinuity, and switching among homeless women in Kenya. There is a need to examine trends in contraceptive utilization among homeless women to inform healthcare providers about the contraceptive mix preferred by homeless women. This study is useful in exploring barriers to contraceptive utilization, switching, and discontinuity among homeless women. These barriers can thereafter be addressed to improve intake and sustain contraceptive use among homeless women.

Research Objectives

The study aims to:

i.   Identify factors that influence contraceptive switching among homeless women in Kenya.

ii.   Determine the impact of literacy on contraceptive switching among homeless women in Kenya.

iii. Outline policy recommendations to minimize the switching of contraceptives among homeless women.

The study is organized such that the first chapter discusses the background in relation to contraceptive switching in the world and sub-Saharan Africa and the challenges faced by homeless women. The second chapter highlights the literature reviewed on contraceptive utilization in Africa and Kenya. The chapter also highlights the socio-economic challenges

experienced by homeless women and pre-existing contraceptive choices by homeless women around the world. The third chapter discusses the methodology used in the study while the fourth chapter shall present the findings of the study. The final chapter will thereafter discuss the conclusions and policy recommendations to stakeholders.

LITERATURE REVIEW

Theoretical Review

The Fertility Decline Theory

Modeled by renowned researcher Caldwell (1982), the Theory of Fertility Decline models sexual behaviors on fertility, nature, and, type of economy. In his theory, Caldwell noted that African and Asian families modeled decisions on fertility and intergenerational flow on lineages based on reproduction and descent (Caldwell, 1982). Caldwell stated that African families often have weak economic and conjugal bonds resulting in patterns of polygamy. According to Caldwell, Africans view sex as a form of reward to the males for providing for the family or financial support (Heald, 1995). In Eurasian society, family bonds are built on theology and morality rather than financial assistance. Caldwell argues that since sex is not set on any moral or theological concept in African societies, total fertility increases (Mc Devitt, 1999). Heald (1995) corroborates Caldwell when he noted that women in African societies expanded family sizes to increase their share of inheritance. Caldwell also argues that fertility will decline if economic development is necessitated by a decline in fertility rates. Caldwell concluded by adding that the choice of the number of children a woman gets depends on the cost of living and the opportunity cost of an additional child (Holzer, 2003). Based on the Fertility Decline Theory, homeless women in Kenya, engage in sex for security and as a reward for provision. Such behaviors are important in determining the role of male partners in the reproductive health decisions of homeless women.

Diffusion of Innovation Theory

The Theory of Diffusion of Innovation was first developed by E.M Rogers in the early 1960s. The theory explains the flow of information from one person to the other and how this flow impacts those near the source of the information. Rogers explains that people adopt ideas from hearsay or by observing behaviors in people embracing new ways of doing things. E.M Rogers observed that early adopters had different mannerisms from late adopters. Rosero-Bixby and Casterline (1993) support Rogers's theory when they suggest that interpersonal relations and frequent socialization necessitate the flow of knowledge on reproductive health. Furthermore, Rodgers noted that for an idea to be adopted, it has to go through the knowledge stage, decision-making, implementation, and later through the confirmation stage. For new ideas, Rodgers argued that recipients first discuss it with close friends and family and based on their opinions, choose to adopt or abandon an idea. This theory can be used to explain why homeless women choose to switch or consistently use contraceptives based on the experiences of others women. The theory will give insights into contraceptive switching behaviors of homeless women and the impact of proximity to information sources like health facilities on the flow of knowledge from one user to the next.

Easterlin Theory on Fertility

The theory was adopted to give insights into regional fertility differentials (Easterlin, 1961, 1975). Easterlin argued that fertility was higher before the Industrial Revolution and declined in the post-industrial phase. Easterlin further noted that fertility in a country is based on the

size of the youthful population, their financial potential as well as the aspiration for wealth creation (Easterlin, 1961). Easterlin (1975) argued that the younger generation aspires to improve their standards of living and will disregard having more children. Easterlin argues that over time, the population will decline and wages will increase. The theory however suggests that poverty and growth in population affect fertility (Kurkiewicz, 1998). The foundations of the Easterlin Theory are on the hypothesis that fertility is dependent on individuals' income and previous fertility is independent of prevailing fertility choices (Waldorf and Franklin, 2002). This theory can be used to explain the impact of poverty on the fertility decisions of homeless women.

Empirical Review

Contraceptive choices are individual-based choices pegged on the desire to get pregnant, medical conditions, side effects, or a partner's opinion (Kennedy *et al*., 2022). Women switching contraceptives are often informed and can access a wide variety of contraception from clinics or chemists (Jain et al., 2013). Over 60% of women in off-slum settlements of Kenya's slums switch to contraception less than 3 months after use (Ali *et al*., 2012). Women in developing economies are believed to exhibit contraceptive switch contraceptives than women in developed nations. A study on fourteen developing nations revealed that over 70% of women in Peru and 69.8% of women in Morocco switched contraceptives in the past 12 months. In Asia, over 70% of Vietnamese women who were using Intra Uterine Devices (IUD), switched to other long-acting methods (Atnafe *et al*., 2016). Research has also shown that educated women who were much younger switched contraception more than older, uneducated women. In Honduras a researcher, Barden O'Fallon. (2011) noted that over 90% of women who switched contraception were either in a union, educated, or younger. Barden further noted that over 85% of contraceptive users abandoned IUDs for injectibles on advice from their partners.

Homeless women all over the world switch from one contraception for various reasons. Ali *et al*. (2012) noted that 30% of women switch to modern contraceptives less than 3 months after using and abandoning traditional methods (Ali *et al.,* 2012). Research by Barden O' Fallon (2011), on women in Honduras revealed that over 90% of women who switch contraception did so because of side effects. In his research, Barden noted that 37% of women switched from the pill while 14% and 13% switched from injectibles and IUDs respectively. In his study, Barden further found that 55% of women who switched contraceptives complained that side effects affected their daily routine and over 50% of the women discussed this issue with at least 2 people. In Pakistan, 57% of women who discontinued IUD discontinued completely while 43% shifted to an alternative method of contraception (Ali *et al*., 2018). Contraceptive switching behaviors can also be from short-acting to long-acting or vice versa based on the pressing need. In his research on women in Dire Dawa region of Ethiopia, Atnafe *et al.* (2016), found over 40% of Ethiopian women switched from long-acting methods to short-acting methods. The research found that over 28% of women switched from IUDs while 10% of women switched from implants. Reasons for switching vary from weight loss, and side effects to excessive bleeding. In Brazil, a study found the probability of women switching from injectibles to be 0.38 and condoms to be 0.37. The study found the probability of switching to the pill to be 0.16 (Leite et al., 2004). Leite et al. 2004 noted that 23% of women in Brazil switched contraception with the desire to get children. While 20% switched to limit births (Leite et al., 2004). A woman's level of education is thought to influence contraceptive switching behaviors (Barden- O'Fallon, 2018). In his research in Senegal, Barden found that

over 50% of Senegalese women with formal education switched contraception more than illiterate women. Of the proportion of women who discontinued contraception, 17% switched to another method. In Honduras, women in urban settlements were 2.6 times more likely to switch contraception than rural women. Women who had used contraception for less than 12 months were also found to be 3.5 times more likely to switch contraceptives. (Barden O'Fallon, 2011).

In Kenya, over 60% of women discontinued the use of the pill while 40% discontinued injectibles less than 12 months after use. The study also noted that 29% of women living in Kenyan slums switched to the pill (Ali *et al.*, 2012). Ali *et al.* (2012) further noted that over 40% of slum women who discontinued injectibles failed to switch contraceptives and 4% of these women were more likely to fall pregnant.

METHODOLOGY

Theoretical Model

The study adopted the Grossman model of 1972 that seeks to maximize household utility subject to a budget constraint as follows; (Grossman, 1972)

The household utility maximization function is given as

$$U = f(F_h, C) \qquad (1)$$

Where:

U: Household utility

F_h: Family Health

C: Consumption of other market goods

Utilizing the following budget constraint:

$$Y = P_F F + P_J J + P_C C \qquad (2)$$

Where:

Y: Household income

P_F: Cost associated with utilizing family planning

P_J: Cost of inputs e.g. knowledge of modern contraceptives

P_C: Cost of other consumption goods

Using the equation, 1 and 2 a langrage function is formulated and solved to provide a health demand function as follows:

$$L(F, C) = U(F_h, C) + K(M - P_f F - P_J J - P_C C) \qquad (3)$$

Solving equation '3' we shall have the following reduced demand function for the use of family planning:

$$D = f(P_f, P_j, P_C, V, Y) \qquad (4)$$

Where:

V: other variables

P_f : Cost of utilizing family planning

P_j: Cost of other inputs e.g., contraceptive knowledge

P_C: Cost of other goods consumed by the household

Y: Income for the respective household

Empirical Model

Logistic Regression Model

The logistic model was used to analyze the determinants of contraceptive switching among homeless women in Nairobi. The study utilized logistic regression since the dependent variable was binary and linear.

The linear probability regression model expresses the dependent variable Y as a non-linear function of the explanatory variable X.

$$y = f(x) \qquad (5)$$

The general linear regression model was expressed as:

$$Y_i = \beta_0 + \beta_i X_{1i} + \beta_2 X_{2i} + \cdots + \beta_k X_{ki} + \varepsilon_i \quad (6)$$

Where;

β_0 is the intercept

β_i 's is the slope

ε is the error term

The logistic regression was modeled for Y such that Y= 1 for those who switched contraceptives and 0 for those who did not. The linear equation Eq 6 was interpreted as the probability that a homeless woman switches contraceptives or not given the independent variables in the model. The model was simplified as:

$$Log\left(\frac{P_i}{1-P_i}\right) = Logit(P_i) = \beta_0 + \beta_i x + \varepsilon \quad (7)$$

Data Source

The study utilized data collected from unsheltered women between 13 and 50 years residing in Nairobi, county. The survey involved random sampling of 7 off-slum settlements around Nairobi city as well as Nairobi's central business district (CBD). Thereafter households with women between 13 and 50 years old were systematically selected for the interview phase. Data collection took place between the 21st of November 2019 to 3rd of December 2020. Respondents' views were collected using questionnaires and respondents were grouped into smaller groups for convenient management by the research assistants. The sample size determination was done using Gill *et al.* (2010) formula where a sample size is selected based on desired accuracy with a confidence level of 95% that corresponds to a Z value of 1.96. The following sample was determined:

$$n = \frac{P(100-P)Z^2}{\varepsilon^2} \qquad (8)$$

Where:

n= Sample size

z = standard normal deviation

p = heterogeneity of the population.

ε = error term

Therefore: $(1.962 \times 0.5(0.5)/0.052 = 0.9604/0.0025$ (9)

= 384.16. Rounding off to the nearest figure =384

The study used a budget of $6498 where 8 researchers were hired at a daily fee of $35 for 10 days and 5 community health volunteers (CHVs) came in handy at $100 a day for 10 days. The study further employed 2 policemen at $100. Materials used for the study were printed and a $2 incentive was given to each homeless woman interviewed. Data processing, licensing, and approvals from the KNH-UoN Ethics Committee and the National Commission for Science, Technology and Innovation (NACOSTI) were done at a cost of $100. Written consents, parental consents, conflict of interest forms and minor consent were issued to adults, researchers and minors respectively.

FINDINGS AND DISCUSSION

Descriptive Statistics

The study conducted on contraceptive switching behaviors among the homeless found that more homeless women switched from short-acting contraceptives to long-acting and reversible contraceptives. Simmons et al. (2019) noted from their study that 36.9% of women switched to a long-acting method, 31.17% to short-acting contraceptives and the highest percentage of switchers was (39.2%) and was between ages 20 and 24. The study further found that more homeless women switched to injectibles with almost 20% switching from the pill and only 3% switching from emergency contraception. The study also noted that over 80% of homeless women had at least some level of education with only 4.13% having attained tertiary level of education. The study also noted medical reasons to be the main cause of switching with over 60% of homeless women switching from one contraceptive to the other due to medical reasons. With data on the living conditions of the homeless being limited, the study revealed credible information on the organizational structure of the homeless. The study noted that 19.4% of homeless women who switched contraceptives have been actively dating and 13.3% were single. The study found over 55% of women living with partners switched contraceptives more often. Findings also show that over 35% of homeless women in Nairobi were born to homeless parents within Nairobi county. Over 70% of homeless women had immigrated from Kakamega, Makueni, Busia, and Machakos counties.

Table 1: Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Age	363	27.7382	8.6819	13	50
Number of children	363	2.26170	1.8147	0	9
Age at first birth	295	19.1288	4.0945	1	29
Living with a partner	363	0.6611	0.4739	0	1
Drug use by respondents Partner	240	1.4541	0.5694	1	3
Drug use by the respondent	361	1.2520	0.5677	1	3
MSA Incidence	360	0.1777	0.3828	0	1
Child planned	326	0.5766	0.4948	0	1
Health facility delivery	320	0.7937	0.4052	0	1
Neonatal death incidences	328	0.1700	0.3768	0	1
Knowledge of male sterilization	363	0.5068	0.5006	0	1
Knowledge in withdrawals	363	0.7906	0.4074	0	1
Knowledge of female condoms	363	0.7024	0.4577	0	1
Knowledge of IUD	363	0.8099	0.3929	0	1
Previous locality	363	0.4600	0.4990	0	1
Street Years	356	10.3314	8.0838	0	45
Education respondent	363	8.1818	4.1358	0	14
Unemployed	339	0.3392	0.4741	0	1
Casual	339	0.1032	0.3047	0	1

Source: Author's Own Computation

Contraceptive Switching Regression: Determinants of Contraceptive Switching

The marginal effects analysis and logistic regression were used to estimate contraceptive discontinuity among homeless women in Nairobi, Kenya. Table 2 below illustrates how different exogenous variables influence contraceptive switching among the homeless in Kenya. The estimates in (Table 2) suggest that factors that include immigration from an urban setup, incidences of miscarriages, abortions, stillbirths, and knowledge of intrauterine devices increased the probability that a homeless woman will switch contraceptives. The results also show that an additional year in the streets and education improved a woman's knowledge of contraceptive mix and minimized incidences of contraceptive switching. With knowledge on contraceptive switching behaviors among the homeless in Nairobi coming to light, stakeholders must note that if miscarriages, abortions, and stillbirths encourage contraceptive switching, women should be well educated on contraceptive mix that will protect them from unplanned pregnancies and these contraceptive methods should be made available at subsidized costs. Homeless women need to be well educated through organized campaigns by the Ministry of Health and 'door to door' visits by extension workers.

Impact of Immigration on Contraceptive Switching

The research found that 63% of homeless women who had immigrated from other urban areas switched contraceptives within the first three months after initiation. The majority of these women were socioeconomically disadvantaged and the majority had received information from healthcare providers (48. 10%) and health extension workers (13.10%) in their previous urban settlements. These findings corroborate with findings by Atnafe *et al*. (2016) who found that

women residing in urban settlements were two times more likely to switch contraceptives than women from rural settlements.

Impact of Incidences of Miscarriages / Abortions and Stillbirths on Contraceptive Switching

Incidences of miscarriages, stillbirths, and abortions were noted to highly influence a homeless woman's contraceptive decisions. The study found that an additional child aborted, born still, or miscarried by a homeless woman increased the predicted probability of a homeless woman switching contraceptives by over 400%. These findings corroborate studies by Roe et al. (2020) who argued that pregnancy outcomes highly contribute to contraceptive switching behaviors of women such that over 46.8% of pregnant women who either gave birth, miscarried, or aborted, switched contraceptives after getting pregnant.

Impact Knowledge on Intrauterine Devices on Contraceptive Switching

The study further found that having some knowledge of contraceptive methods like intrauterine devices encouraged contraceptive switching by over 30%. This finding corroborates research by Bereku *et al.* (2022) who found that the majority of women using contraceptives who knew intrauterine devices (IUDs) switched from IUDs to other forms of contraception.

Impact of Years Lived on the Streets on Contraceptive Switching

The study further found that an additional year spent on the streets by a homeless woman reduced the predicted probability of switching contraceptives by 0.89%. These findings corroborate with qualitative responses from homeless women in Majengo off-slum settlements who noted that; (*Urban women like us who have been here long enough don't jump from one contraceptive to another. We know implants work better than emergency pills, Nyakothie, 31, Majengo*). Another respondent from the CBD alleys noted; (*I came here from my village where condoms were the only contraceptives available, when I came here I tried 3 months injections, then pills then lastly, I am using implants. Katheu, 17, CBD Alleys*)

Impact of Education on Contraceptive Switching

Education has over the years influenced a woman's family planning decisions (Liu and Raftery, 2020). Academic literacy skills were also found to influence contraceptive switching behaviors of homeless women. The study noted that an additional year of education by a homeless woman reduced the predicted probability of contraceptive switching by 1.32%. These findings corroborate research by Kelbore *et al.* (2020) who found that educated women of Ethiopia rarely switched contraceptives. In their research, Ethiopian women with primary education were 3.65 times more likely to switch contraceptives than women who never attended school. The study further found that women with a secondary level of education were 0.956 times more likely to switch contraceptives than women with a primary level of education.

Table 2: Logistic and Marginal Estimates of Contraceptive Switching

VARIABLE	LOGIT Coefficient	LOGISTIC Odd ratios	MARGINS dy/dx
Age	0.0390 (0.0444)	1.0398 (0.0462)	0.0062 (0.0073)
Number of children	0.0393 (0.2191)	1.0401 (0.2279)	0.0063 (0.0350)
Age at first birth	0.0321 (0.0590)	1.0326 (0.0609)	0.0051 (0.0093)
Living with partner	1.3969 (0.8814)	4.0427 (3.5635)	0.2248 (0.1371)
Drug use by respondents' partner	0.1677 (0.4488)	1.1826 (0.5309)	0.0270 (0.0722)
Drug use by the respondent	-0.5140 (0.3700)	0.5980 (0.2213)	-0.0827 (0.0573)
MSA incidence	1.3070** (0.5711)	3.6953** (2.1104)	0.2103** (0.0834)
Child planned	-0.5080 (0.3914)	0.6016 (0.2355)	-0.0817 (0.0619)
Health facility delivery	0.3090 (0.4902)	1.3621 (0.6678)	0.0497 (0.0785)
Neonatal death incidence	-0.5400 (0.5882)	0.5827 (0.3427)	-0.0869 (0.0954)
Knowledge of male sterilization	-0.3817 (0.5269)	0.6826 (0.3597)	-0.0614 3(0.0840)
Knowledge of withdrawals	-0.5056 (0.9775)	0.6031 (0.5895)	-0.0813 (0.1545)
Knowledge of female condoms	0.3972 (0.5373)	1.4877 (0.7994)	0.0639 (0.0855)
Knowledge of IUD	1.8747*** (0.6831)	6.5193*** (4.4537)	0.3017*** (0.1028)
Previous locality	1.2025*** (0.3690)	3.3286*** (1.2284)	0.1935*** (0.0573)
Street years	-0.0556** (0.0273)	0.9455** (0.0258)	-0.0089** (0.0042)
Education of respondent	-0.0817* (0.0484)	0.9214* (0.04467)	-0.01316* (0.0075)
Unemployed	0.1458 (0.5270)	1.1570 (0.6098)	0.0234 (0.0852)
Casual	-0.9047 (0.6357)	0.4046 (0.2572)	-0.1456 (0.1000)
_cons	-2.6567 (1.9002)	0.0701 (0.1333)	
The overall fit of the model	*No of observations=197*	*Number of obs = 197* *Wald chi2(17)= 47.83* *Prob > chi2 = 0.0003* *Pseudo R2 = 0.2091*	*Number of obs = 197* *Wald chi2(17) = 47.83* *Prob > chi2 = 0.0003* Pseudo R2 = 0.2091
		Source: Authors computation	

Diagnostic Check

The goodness of fit of the model was tested using the receiver operating characteristic curve. The area under the curve was used to determine the predictive power of the model. The model at the 45-degree line indicated no predictive power, while the upward curve indicated higher

predictive power. The model used in the study had an area under the curve fitting of 0.801 which indicates a higher predictive power.

A measure of correlation using the Pearson correlation was done to determine the dependence between variables used in the study. Results from the Pearson tests of 0.8 or higher are a sign of multicollinearity. However, the study found a low correlation with the overall level of correlation between variables to be below 0.600.

The heteroskedasticity problem can be a serious problem in the analysis of estimates as it causes diverse heterogeneity which sometimes are unobserved. Such unobserved characteristics like mental health issues, habits, and beliefs can result in heteroskedasticity. The study therefore minimized the problem by introducing the use of the command *vce (robust)* in its regression to minimize the standard errors.

The model also utilized the Shapiro-Wilk test and tests of Kurtosis and Skewness to test for normality in the model. The null hypothesis stated that the distribution was normally distributed while the alternative hypothesis stated that the distribution was not normally distributed. A Shapiro-Wilk test of over 0.050 was considered a normal distribution and a skewed distribution of between -3 and +3 was considered a normal distribution. A kurtosis of between -10 and +10 was considered for normal distribution. The tests done showed the population of homeless women in Nairobi to be a normal distribution.

CONCLUSIONS

This paper analyses the determinants of contraceptive switching among homeless women in Kenya. The study found that street women who had miscarried, aborted, or delivered a still child in the past year, switched contraceptives more than women who had not miscarried, aborted, or had a stillbirth. The study further found that homeless women rarely visit health facilities, and were at risk of unsafe pregnancies. To discourage unplanned and unsafe pregnancies, the government through the Ministry of Health can set aside funds to hire and train more reproductive healthcare workers to offer street-based care for homeless women. These health workers coupled with the introduction of mobile clinics can ensure access to medical facilities for homeless mothers regardless of where they live.

The study also found that street women with knowledge on intrauterine devices switched contraceptives more that women without knowledge on IUDs. Findings on this behavioral pattern by street women reveal a preference of IUDs over other forms of contraception. Knowledge of this behavior is essential to the Ministry of Health since the ministry can reduce incidences of unused stock by providing contraceptives of choice to street women in high volumes.

The research also noted that more educated women rarely switched contraception. Despite the homeless situation faced by street women, free adult education can be availed at primary and secondary school levels for women willing to acquire formal education.

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