Impact of place of residence and household wealth on contraceptive use patterns among urban women in Kenya

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Abstract

Urban Kenyan women have a 20.2% unmet contraceptive need. Discontinuation is a potentially significant factor. 36% of Kenyan women discontinue within a year, contributing to unwanted pregnancies and higher maternal morbidity and mortality. Furthermore, the urban poor population is also growing faster than other areas. They often live in informal settlements with few basic healthcare services and have a high unmet need. Hence we investigate the effect of residence and household wealth on contraceptive use patterns. We conducted a weighted population-based survey in five cities that included 7,728 women with contraceptive knowledge and ≥1 sexual encounter. Contraceptive use was categorized into current/former/never use, and current and former groups were further sub-classified into “only one method”, ”switched: less to more effective” and vice versa. Our results reveal that the urban poor and informal settlement dwellers discontinue contraception rather than having never used. Greater attention needs to be directed to this population.

Introduction

From the late 1970s to the early 1990s, fertility rates declined rapidly in sub-Saharan Africa (Kirk and Pillet, 1998, Ezeh *et al.*, 2009). This decline in fertility rates has been largely attributed to successes in providing an increased availability of contraception (Kirk and Pillet, 1998, Ezeh *et al.*, 2009). However, compared to other major regions of the world, fertility rates remain among the highest in Sub-Saharan Africa. A lack of use of reproductive health services is a large part of this problem. As a result of this and other problems, 80 million women in this region have unintended pregnancies yearly, of which 45 million end in abortion that is often illegal (Glasier *et al.*, 2006). It is clear that much more needs to be done, for among other problems, maternal morbidity and mortality remain high (Friberg *et al.*, Kinney *et al.*, Glasier *et al.*, 2006). Health care services must be expanded if we are to get closer to the Millennium Development Goals (MDGs) (Friberg *et al.*, Kinney *et al.*).

In Kenya, 25.7% of currently married women aged 15-49 have an unmet need for contraception, 12.9% for spacing purposes and 12.8% for limiting. Further, one-fifth (20.2%) of urban women aged 15-49 have an unmet need for contraception, about half for spacing (10.7%) childbearing and the other half for limiting (9.5%) (Kenya National Bureau of Statistics (KNBS) and ICF Macro, 2010). Discontinuation of contraceptive methods contributes to unwanted pregnancies (Bradley *et al.*, 2009). Recent data suggest that 36% of all women who begin using a contraceptive method discontinue within twelve months of starting its use (Kenya National Bureau of Statistics (KNBS) and ICF Macro, 2010). Reasons for why women discontinue a particular method remain less understood within the Kenyan context. Further, whether women switch contraceptive methods, what methods they switch to and why they switched from one method to another has not been studied.

According to the 2009 census, Kenya's population was 38.6 million people with an annual population growth rate of 2.5% (Kenya National Bureau of Statistics (KNBS), 2010, Central Intelligence Agency (CIA), 2011). The total urban population is 32.2%, with an annual rate of urbanization at 4.2%. Hence, the urban population is growing at an enormous rate every year. The startling phenomenon is that the urban poor population is growing at a much faster rate; for example, in Nairobi, Kenya, the population doubled in just 5 years (Central Bureau of Statistics (CBS) Ministry of Planning and National Development, 2000). According to the latest Kenya Demographic and Health Survey (DHS), the total fertility rate (TFR) in urban areas is 2.9 children per woman. The fertility rate has remained the same for the past two years (Kenya National Bureau of Statistics (KNBS) and ICF Macro, 2010). In addition, the contraceptive prevalence rate (CPR) did not change much from the late 1990s for over a decade and only rose a little in 2008 (Kenya National Bureau of Statistics (KNBS) and ICF Macro, 2010). Currently, the CPR among urban women is 53.1% and the CPR of modern methods is 46.6%, with great variation across regions (Kenya National Bureau of Statistics (KNBS) and ICF Macro, 2010). However, the poorest urban women have a very high fertility rate and high unmet need compared to the urban or national average. Despite residing in urban areas where basic health facilities exist, the urban poor tend to live in informal housing/slums which often lack basic healthcare services. Hence, much remains to be known about the FP needs of the urban poor.

The purpose of this study is to examine the role of the place of residence and household wealth on contraceptive use patterns in urban Kenya. In particular, we are interested in determining whether place of residence and household wealth are associated with method use, switching and continuation. We are testing the following hypotheses:

1) Women living in informal settlements or those from the poorest households are more likely than women in formal settlements and richer women to be never users when compared to current/former users.
2) Among current/former users, those living in informal settlements or from the poorest households are more likely to continue using a contraceptive method rather than switch to a different method.
3) Among those who switch methods, the informal settlement dwellers and the poor are less likely to switch from a less effective to a more effective contraceptive method than from a more effective to a less effective method as compared to those living in formal settlements and in rich households.

Methods

This study utilizes recently collected population-based survey data collected as part of the baseline evaluation of the Kenya Urban Reproductive Health Initiative (Tupange). The data were collected by the Kenya National Bureau of Statistics with technical assistance from the Measurement, Learning and Evaluation (MLE) Project. The aim of the MLE Project is to identify the interventions that increase contraceptive prevalence among urban populations, especially the urban poor, and to improve the quality of and access to reproductive health services in urban centers of four countries, namely India, Kenya, Nigeria and Senegal. The MLE study uses rigorous study designs and multiple data collection approaches. In each country, data are collected from four intervention (three in Kenya) and two comparison cities (delayed intervention) at three time-points, i.e., baseline, two-year and four-year follow-up. The longitudinal study design (for women and facilities) is used to measure the causal impact of the program by each program objective/activity. Population-based surveys of men and women along with facility-level data are collected at each time-point. The study uses a quasi-experimental design.

For the purpose of this study, baseline data from Kenya were used. In Kenya, data were collected from the five urban cities of Kakamega, Kisumu, Machakos, Mombasa and Nairobi. Nairobi, Mombasa and Kisumu are the initial intervention sites while Machakos and Kakamega are control/delayed intervention sites. Each intervention city was divided into formal and informal areas, as defined on the census frame. Cluster sampling was conducted, and formal and informal areas were randomly selected where the survey would be conducted. Next, households were randomly selected from within each of the pre-identified formal and informal areas. In the control/delayed intervention cities of Machakos and Kakamega, only clusters from formal settlements were included in the survey. A household questionnaire was also administered for each household, with one of the household members. In addition, all women, aged 15-49, within a selected household were also interviewed.

Sample size for the survey in each Kenyan city was determined using information from prior studies based on their ability to establish impact at reasonable confidence levels for each component of the intervention. A representative sample of women was selected at the city level, with an oversampling of women living in informal settlements/slums in the three intervention cities. In Nairobi, 2,706 women and 1,271 men were surveyed. 1,465 women were surveyed in Mombasa, 1,603 in Kisumu, 1,834 in Machakos and 1,324 in Kakamega. Hence, a total of 8,932 women were interviewed in Kenya at baseline. Prior to conducting the analysis, population weights were applied to the sample to enable the results to be representative of the urban population of the five cities of Kenya. This project is unique because it provides rich city-level data not previously available to inform city-level program strategies.

Results

The study includes women aged 15-49 years old, who had knowledge of at least one contraceptive method, and have had sexual intercourse at least once in their life. The weighted sample includes 7,728 women representing the urban women from five cities in Kenya.

The dependent variable of interest is contraceptive use. Women were categorized into current users, former users and never users. Current users were further categorized into those who have only used one method their entire life, those who had switched from a previous less effective to a more effective method and those who had switched from a more effective to a less effective method. Switching from a less effective to a more effective method includes switching from a traditional method to a modern method, any method to sterilization, barrier/LAM to hormonal, pills to injectables/IUD/implant, injectables to IUD/implant, and IUD to implant (Bradley *et al.*, 2009). On the other hand, switching from a more effective to a less effective method include a modern method to a traditional method, hormonal to barrier, implants to pills/injectables/IUD, IUD to pills/injectables, and injectables to pills (Bradley *et al.*, 2009). Further, former users were also categorized into those who had used only one method in the past, those who had switched from a less to a more effective method before discontinuing the more effective method and those who had switched from a more to a less effective former method.

Household wealth and place of residence are the independent variables of interest. They are indicators of poverty, where household wealth is an indicator of asset-based poverty and place of residence captures place-based poverty. The place of residence is classified as informal/slum and formal housing. Data from Table 1 show that 80% of the women were living in formal settlements while the rest were in informal settlements. Household wealth is created by constructing a linear index from asset ownership indicators, using principal components analysis. Information from these indicators is retrieved from the household questionnaire (Filmer and Pritchett, 2001). In Kenya, 21 household assets were used to generate the wealth index variable, combined for all cities. The wealth index variable is measured in quintiles and 20% of the entire population is categorized into each quintile. For this study, the top two quintiles and the bottom two quintiles were merged to create three categories of rich, medium wealth and poor. As expected, about two-fifths (37.7%) of the population were poor, while 20% had medium wealth and 42% were richer than the rest in the population.

Other independent variables were added to the model based on existing literature. The women were divided at the time of the interview into ages 15-24 and those 25 and older. One-third of the population were 24 years and younger, as is shown in Table 1. Marital status is grouped as never married, married/cohabiting and separated/divorced/widowed. About a quarter of the population had never married, while the majority of the women were married/cohabiting (63.7%). Twelve percent of the women interviewed had either separated/divorced/were widowed. The education level of the participants was categorized as having received none/some primary, completed primary, some/completed secondary, and post-secondary. Less than one-fifth of the population had received no education or some primary education while about a quarter had finished primary school. Another 38% had received at least some secondary education and almost one-fifth of the women interviewed had gone on to receive post-secondary education. The religion of the participants was categorized as Catholic, Protestant/Other Christian and Muslim/Other/None. Almost one-quarter of the women were Catholic and two-thirds were Protestant/Other Christian denominations. The Muslim, other and no religions took up the remaining 10% of the population. About two-thirds (63.9%) of the women stated that they had worked at some point in the last 12 months for cash. Almost three-quarters (72.9%) of the weighted population was represented by Nairobi, while almost another one-fifth (18.6%) of the population came from Mombasa.

Contraceptive prevalence among the urban women is described in Table 2. Among the 7,728 women who had knowledge of at least one contraceptive method and had ever had a sexual encounter, over half (52.1%) were current users, while 31.5% were former users and 16.4% were never users. Among the 4,027 women who were current users, over half had ever used only one contraceptive method while the rest had used more than one method. Over a quarter (28.8%) of the women had switched from a less effective previous method to a more effective current method while the remaining 18% had switched from a more effective previous method to a less effective current method. Of the 2,437 former users, 64.8% had discontinued their first contraceptive method. Another 22.2% had switched from a previous less effective to a more effective method before discontinuing the more effective method. Further, the remaining 13% of former users had switched from a more effective to a less effective method prior to discontinuing the less effective method.

Tables 3 and 4 present results of multivariate analyses. The models all controlled for religion, having been employed in the last 12 months and the city of residence. Since the first dependent variable, current contraceptive use, is comprised of three categories (current/former/never users), a multinomial logistic regression model was used. The results shown in Table 3 demonstrate that women living in informal settlements are more likely to be current contraceptive users rather than never users when compared to women living in formal housing. Further, in the comparison between former contraceptive users and never users, women from informal housing are more likely to be former users as compared to women in formal housing. This signifies that informal housing dwellers are more likely to discontinue contraception than dwellers of formal housing. In addition, informal housing dwellers are more likely to be former users than current users when compared to their formal housing residents. On the other hand,

women from poor households are less likely to be current contraceptive users than never users when compared to women from rich households. Further, women younger than 25 years of age are 53% less likely to be current/former users than never users as compared to older women. On the other hand, women with more years of schooling are more likely to be current/former users than never users when compared to those with none/incomplete primary education. Also, single women are less likely to be current/former users of contraception rather than never users when compared to those who are married/cohabiting. In addition, women who are separated/divorced/widowed are less likely to be current users and more likely to be former users rather than non-users when compared to never users. When current contraceptive users are compared to former contraceptive users, we see that women with higher education are more likely to be current users than those with no education. Women who are married/cohabiting are more likely to be current contraceptive users than women who are single/ separated/ divorced/ widowed when rather than former users.

Model 1 of Table 4 includes only the subpopulation of current contraceptive users. The data show that women from medium wealth and poor households are more likely to be currently using their first method than to have switched from a less to a more effective method as compared to women from rich households. The results further show that among women who switched methods, those living in informal settlements are less likely to have switched from a more to a less effective method rather than switched from a less to a more effective method when compared to women living in formal settlements. Further, younger women are more likely to be using their first method than to have switched to either a less or more effective method as compared to older women. Among those who switched, they are more likely to have switched to a better contraceptive method than their older counterparts. With regards to the effect of education, women with a higher level of education are less likely to switch from a more to a less effective method rather than be first method users are compared to those with none/ incomplete primary education. When we examine the impact of marital status on current contraceptive use, we note that the single/never married women are more likely to be using their first method of contraception rather than having switched from a less to a more effective method as compared to married/cohabiting women.

Model 2 of Table 4 includes the sub-population of former contraceptive users. The results show that former users living in informal settlements are more likely to have used only one method rather than having switched from less to more effective methods when compared to formal housing dwellers. Furthermore, former users from poor households are less likely to have used only one method or to have switched from more to less effective methods rather than switched from less effective to more effective methods as compared to their richer counterparts. However, these findings are not statistically significant.

Multivariate analysis was also done on a sub-sample of the population by only including women from the three intervention cities. There was no change in the findings. Further analysis in this paper will involve identifying reasons for switching contraceptive methods among those who switched methods, reasons for discontinuing use among the former users, and the challenges in

obtaining and using contraceptives affecting current users. Fertility-related and non-fertility related reasons will be identified. The authors are currently working on this analysis.

Conclusion

With a burgeoning urban poor population in Kenya, that often lives in informal housing/slums, much attention needs to be directed to their basic healthcare needs. Providing adequate FP services would help address the unmet need and improve the quality of life overall. The evidence shows that couples living in slums have a much higher need for FP despite living in cities where services are available (Fotso *et al.*, 2008). With the aid of this carefully designed survey, our preliminary findings suggest that informal settlement dwellers are more likely to be former users than current users or even never users. This suggests that slum dwellers are exposed to contraceptive use. However, they are not able to sustain use over time and eventually discontinue. At the same time, the poorest women are more likely to be former users than never users and are least likely to be current users as compared to their richer counterparts. Among current users, those using their first method or those who have switched from a more to a less effective method are less likely to live in informal housing compared to those who switched from a less to a more effective use. Furthermore, the poor current users are most likely to be first method users than having switched methods when compared to the rich. Hence, it appears that the poor current contraceptive users have had fewer opportunities for switching contraceptive methods. When they do switch, they tend to follow the general trend of switching from a less effective to a more effective method. Age, education, and marital status have significant effects on contraceptive use. Younger and less educated women are more likely to be never users than ever users. And among the users, the more educated women are more likely to be current users than former users. Hence, greater efforts need to be made to increase contraceptive uptake among the poor and those living in informal settlements as well as ensure that women are able to continue use until the desired time when they wish to have more children. This will eventually lead to a decline in mistimed and unwanted pregnancies, thus saving lives and ultimately fulfilling the goal of the UN International Conference on Population and Development (ICPD) which is to respect and assist couples' fertility desires (United Nations (UN), 1994).

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Table 1: Background characteristics of urban women with knowledge of FP, aged 15-49 in Kenya

Background Characteristics	Percentage*
Residence	(n=7728)
Formal	79.5
Informal	20.5
Wealth	(n=7725)
Poor	37.7
Medium	20.3
Rich	42.0
Age	(n=7728)
15-24	33.7
25-49	66.3
Marital status	(n=7707)
Never married	24.3
Married/cohabiting	63.7
Separated/divorced/Widowed	12.0
Education	(n=7726)
None/Primary incomplete	17.1
Primary complete	27.1
Secondary: incomplete/complete	38.2
Post-secondary	17.6
Religion	(n=7722)
Catholic	23.7
Protestant/Other Christian	66.1
Muslim/Other/None	10.2
Employed for cash, in the last 12 months	(n=7728)
Yes	63.9
No	36.1
City	(n=7728)
Nairobi	72.9
Mombasa	18.6
Kisumu	5.3
Machakos	1.4
Kakamega	1.8

* Percentage of women are weighted to represent the population across the five cities

Table 2: Contraceptive use among urban women with knowledge of FP, aged 15-49 in Kenya

Contraceptive use	Percentage*
Ever users	(n=7728)
Current users	52.1
Former users	31.5
Never users	16.4
Current users	(n=4027)
First method	53.2
Switched from less→ more effective	28.8
Switched from more→ less effective	18.0
Former users	(n=2437)
First method	64.8
Switched from less→ more effective	22.2
Switched from more→ less effective	13.0

* Percentage of women are weighted to represent the population across the five cities

Table 3: Multinomial logistic regression coefficients for current contraceptive use among women who are ever users in urban Kenya, N=7696

Independent variables	Current contraceptive use		
	Current users	**Former users**	**Current users**
	Ref. group: never users	Ref. group: never users	Ref. group: former users
Place of residence; ref: formal residence			
Informal	0.19	0.29*	-0.094
Wealth; ref: rich			
Medium	0.40*	0.14	0.26
Poor	-0.012	0.021	-0.035
Age; ref: ≥25 years old			
≤24 years old	-0.53**	-0.53**	-0.0063
Education; ref: none/primary incomplete			
Primary complete	0.22	0.10	0.12
Secondary: some/all	0.75**	0.48**	0.27*
Post-secondary	1.19**	0.84**	0.35*
Marital status; ref: married/ cohabiting			
Never married	-1.30**	-0.68**	-0.62**
Separated/ Divorced/ Widowed	-0.83**	0.48**	-1.31**

Note: Model includes women who have ever been sexually active and who have knowledge of at least one contraceptive method; Model also adjusted for religion, employed for cash within the last 12 months and city of residence.

p-value: *<0.10, **<0.05

Table 4: Multinomial logistic regression coefficients for current contraceptive use among women who are current or former users of contraception in urban Kenya

Independent variables	Model 1: Among current contraceptive users, N=4009			Model 2: Among former contraceptive users, N=2433		
	First method users	Switched from more→less effective		First method users	Switched from more→less effective	
Reference group →	less→more effective switch	1st method users	less→more effective switch	less→more effective switch	1st method users	less→more effective switch
Place of residence; ref: formal residence						
Informal	-0.70	-0.23	-0.30*	0.11	0.12	0.23
Wealth; ref: rich						
Medium	0.38*	-0.46*	-0.080	-0.046	-0.071	-0.12
Poor	0.46**	-0.54**	-0.092	-0.074	-0.17	-0.24
Age; ref: ≥25 years old						
≤24 years old	0.43**	-0.59**	-0.16	0.31	-0.27	0.040
Education; ref: none/primary incomplete						
Primary complete	0.19	-0.72**	-0.54	-0.092	-0.23	-0.32
Secondary: some/all	0.32	-0.55*	-0.23	-0.22	-0.22	-0.44
Post-secondary	0.044	-0.59*	-0.54	-0.35	0.65	0.30
Marital status; ref: married/ cohabiting						
Never married	0.36*	-0.10	0.26	0.77**	-0.11	0.65*
Separated/ Divorced/ Widowed	-0.63**	0.67*	0.042	-0.08	0.47	0.40

Note: Model includes women who have ever been sexually active and who have knowledge of at least one contraceptive method;
Model also adjusted for religion, employed for cash within the last 12 months and city of residence
p-value: *<0.10, **<0.05