



Insights on Population Issues in Kenya

Non-Communicable Diseases, Migration and Family Planning

A Further Analysis of the 2014 Kenya Demographic and Health Survey

WORKING PAPERS

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and Development

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List of Acronyms and Abbreviations

ASR	Age Standardized Incidence Rate
CPR	Contraceptive Prevalence Rate
DALYs	Disability Adjusted Life Years
DHS	Demographic and Health Surveys
FABMs	Fertility Awareness-Based Methods
KNBS	Kenya National Bureau of Statistics
KDHS	Kenya Demographic and Health Survey
LMIC	Low-and Middle-Income Countries
MoH	Ministry of Health
NFP	Natural Family Planning
NCPD	National Council for Population and Development
SPSS	Statistical Package for Social Science
UN	United Nations
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNFPA	United Nations Population Fund
WHO	World Health Organisation

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Factors Associated with Kenyan Men's Awareness of Prostate Cancer

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1.1 Introduction

Cancer is a major public health problem. In 2015 it accounted for 22 percent of deaths from non-communicable diseases (WHO, 2017). Most of the cancers (about 70%) are now found in low-and middle-income countries (LMICs) (WHO, 2017). Prostate cancer is the second most common cancer in men worldwide. In 2012, an estimated 1.1 million people were diagnosed with prostate cancer which accounted for 15 percent of all cancers diagnosed in men. Prostate cancer thus is an important men's health issue. It is most common among elderly male population all over the world, with a slight preponderance in blacks compared to other races (Adeloye, *et al.* 2016; MoH, 2013). It is estimated that in just over a decade, prostate cancer will overtake lung cancer as the most common form of cancer in men around the globe due to the large number of cases being detected by screening (American Cancer Society, 2014). Incidence rates are high in North America, Canada, Australia, New Zealand, North and Western Europe where screening and testing is also higher (Health Service Executive *et al.*, 2015).

In Africa, Nigeria is ranked first among countries with the highest prevalence rates (Lopez *et al.*, 2006). The report suggest that for disease attitude expressed as Disability Adjusted Life Years (DALYs) lost to prostate cancer recorded for Nigeria for the year (2004) was 86,000, with the United States and India having 240,000 and 110,000 respectively. In sub-Sahara Africa, Nigeria ranked first, with Democratic Republic of Congo and Uganda occupying the second and third places with 22,000 and 15,000 respectively (Lopez *et al.*, 2006). Furthermore the report estimates that the age from which prostate cancer becomes significantly manifested is 45 years and that there is 45.3-fold increase in prostate cancer reported between the age groups of 30-44 and 45-50 for age-specific total deaths for 2005. According to the Global Burden of Cancer report 2013, the Age-standardized DALY rate (per 100,000) and absolute DALYs in Kenya in 1990 was 59.47 and 4.19 respectively. The report says that by 2003 the figures were 69.4 and 9.3 respectively. These represented 16.7 percent and 122.7 percent change (The Global Burden of Disease Cancer Collaboration, 2013).

In Kenya, the Nairobi cancer registry places prostate cancer as the commonest cancer in males at 17.3 percent which compares well with 15 percent reported in developed countries (MoH, 2013). A review of information from cancer registry from one major governmental hospital (Kenyatta National Hospital) and more than 15 private hospitals, some of which are large hospitals with specialist oncology services, established that during the period 2004–2008 a total of 8,982 cancer cases were registered comprising 3,889 men (an age standardized incidence rate (ASR) of 161 per 100,000 and prostate cancer was the most common cancer in men (ASR 40.6 per 100,000) (Korir *et al.*, 2015).

Although incidence rates cannot be calculated for the early years of the registry, the increase in relative frequency of prostate cancer may indicate underlying trends in the risk of these cancers. Researchers have identified several factors that raise a man's risk of the disease. These include age, race or ethnicity, family history and lifestyle. Older men are far more likely to develop prostate cancer than younger men; black men are more likely to get prostate cancer than men of other races; a man whose father or brother has been diagnosed with prostate cancer is two to three times more likely to develop prostate cancer than a man who does not have family members with the disease while men who eat a lot of red meat or high-fat dairy products seem to have a higher risk of prostate cancer (World Cancer Research Fund International, 2014).

1.2 Awareness on Prostate Cancer

Awareness by individuals about health is fundamental to promoting a healthier life. This involves understanding the causes of ill-health and how to improve on them. Early detection of cancer for example improves survival and quality of life (WHO, 2017). However, due to poor public knowledge of cancer symptoms and negative beliefs, there are delays in seeking medical help (Ravichandran, *et al.* 2010; Forbes *et al.* 2013). Macdonald *et al.* 2006, points out that raising public awareness of the early signs and symptoms of cancer and encouraging screening could reduce patient-attributable delay in cancer diagnosis and decrease cancer mortality.

Different studies have reported different levels of prostate cancer awareness. Such studies are however limited in Kenya. In the UK a study conducted among men showed that most of the respondents had heard of prostate cancer and were aware of what prostate cancer is although this was more frequently reported by White respondents (64 %) than Black participants (37%) (Rajbabu *et al.* 2007).

Mohamed and Ali (2015) study among males in Eastern Nile region of Sudan further shows that the majority of the respondents (76%) had heard about prostate cancer and 70 percent were aware of the vulnerable age group who are mainly the elderly males. This level of awareness could be attributed to the fairly well educated fraction of participants in the study. The main source of information was the community itself, mainly relatives. About 76 percent of the respondents had heard about prostate cancer with the majority from relatives, followed by media and least by health care providers.

Similarly, Jo *et al.* (2013) reported a high awareness level among men above 50 years in Benin City (71%). However, though the respondents were all in the age group at potential risk of prostate cancer, only 43 percent (less than half) were aware that age is a risk factor associated with prostate cancer. The study further notes that lack of awareness of the symptoms of prostate cancer is one of the factors responsible for late presentation of men affected by the disease.

A study by Nakandi *et al.* (2014) in Uganda provided insight into prostate cancer awareness among younger men aged 18-28 years. Only 54 percent of the respondents were aware of prostate cancer indicating low level of awareness. Similar low levels of awareness were noted by Ebuehi and Otumu (2011) in Nigeria among male staff at University of Lagos aged above 41 years where two-thirds of the respondents were aware of prostate cancer (66%).

Mofolo *et al.* (2015) conducted a study to determine the knowledge of prostate cancer among males aged above 35 years in South Africa. The study revealed low levels of awareness about prostate cancer with less than half of the respondents (45%) indicating that they had heard of the disease. Media (television) was identified as the most common source of information (71%) followed by the radio at 66.8 percent. In Nigeria, there was lack of awareness about the disease among the native African urban population according to a study by Ajape *et al.* (2016). About 79 percent of the respondents indicated that they had never heard about prostate cancer. The rest (21%) had minimal information about the disease which was obtained mainly from friends. There was no significant association between level of knowledge, age, language or marital status.

In a study by Atulomah *et al.* (2010) to ascertain the level of awareness of prostate cancer among males in a rural community of south-western Nigeria, the authors found low levels of awareness. Only 39 percent of the respondents had heard about prostate cancer. Information regarding the disease was mainly provided by doctors/physicians. Only a small proportion of the respondents (5%) received information from doctors/physicians. Oladepo Oladimej *et al.* (2015) in a study in Oyo state Nigeria on older men indicated that most of the respondents were aware of prostate cancer. The main source of awareness was mainly friends/relatives (24%) and mass media (21%). 15 percent of the respondents got information from the health workers while the rest obtained information from the work place. Oladunjoye *et al.* in a survey on cancer awareness among men aged 40-80 reported that 52 percent of the respondents had never heard of the disease.

Education is one of the key factors associated with awareness of prostate cancer. Ebuehi and Otumu (2011) in a study among male staff of the University of Lagos have demonstrated that awareness of prostate cancer was positively associated with the level of education. As educational level increased, the awareness and uptake of prostate cancer screening increased. Similarly, a study by Oranusi *et al.* on prostate cancer awareness and screening among male public servants in Nigeria showed a high level of knowledge (74%) which was attributed to higher education levels and greater access to information among the men. Ogundele and Ikuerowo (2015) found a positive relationship between the level of education and awareness whereby level of awareness about prostate cancer increased with education level of the respondents. The study did not show any association between age of participants and awareness of the disease.

An American study among low income men with prostate cancer reported that low levels of education and older age were directly related to poor knowledge about prostate cancer (Deibert *et al.* 2007). Smith *et al.* (1997) found out that income, marital status, and education, were significantly related to knowledge about prostate cancer among African American males. The study further suggests that physicians play an important role in educating clients about prostate cancer. Respondents who had a discussion with their doctor about prostate had a higher level of understanding about the disease.

Olaopa *et al.* (2014) study in Nigeria on knowledge about prostate cancer among men 40 years and above found that men were generally ignorant of prostate cancer irrespective of their socio-economic status and level of education.

Studies reviewed generally indicate low levels of awareness on prostate cancer by men. There is limited data on Kenya. Little is especially known about factors associated with prostate cancer awareness hence this analysis is necessary to fill the gap. The KDHS 2014 for example only captures awareness of prostate cancer by age, type of place of residence, region of residence, level of education and wealth quintile. However, the report does not provide information on the relationship between these variables and awareness of prostate cancer. Furthermore, the report does not capture other possible variables like marital status, risk factors and access to media.

1.3 Theoretical Framework

Different conceptual models have been proposed to explain health behaviours. *Health belief model* first developed in 1950s and later modified postulates that health behaviour is determined by personal beliefs or perceptions about a disease and the strategies available to decrease its occurrence – the perceived threats and net benefits (Glanz, Rimer & Lewis, 2002). The determinants of health beliefs or perceptions identified are perceived susceptibility, perceived severity, perceived benefits, and perceived barriers and later on cues to action and self-efficacy.

Reasoned action & planned behaviour theory recognizes that individuals act rationally and emphasizes the power of individual's intention to induce behaviour governed by attitudes, subjective norms and perceived behavioural control (Godin & Kok, 1996).

Learning theories/classical conditioning model suggests that desired behaviours stem from positive experiences, associations, and thus responses to stimuli (Mackintosh, 1983).

Social learning theory posits that learning occurs in a social context with a dynamic and reciprocal interaction of the person, environment, and behaviour—individuals' observations affect behaviour either by observing others in their social network engaging in a particular behaviour (direct modelling) or observing others they identify with as portrayed in the media (symbolic modelling) (Bandura, 1977). This analysis borrows from each of these models.

1.4 Conceptual Framework

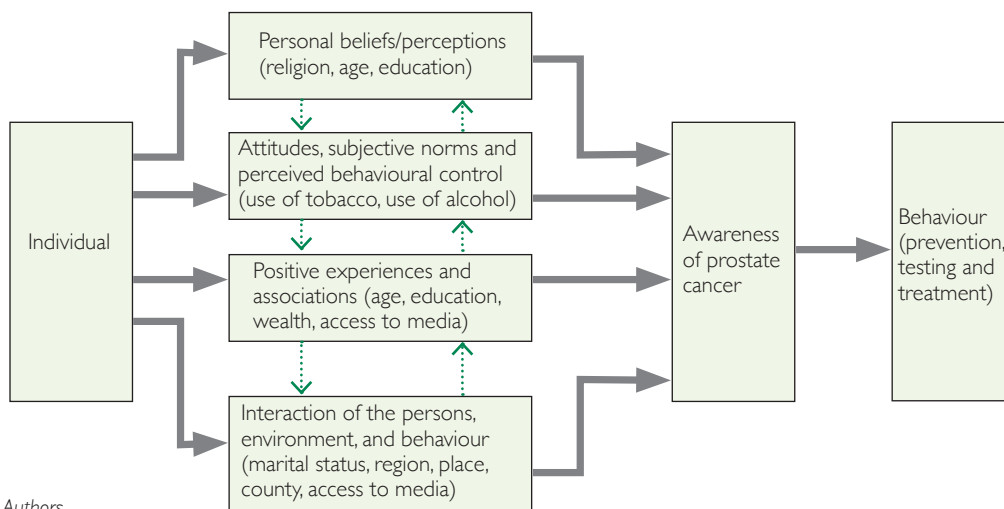


Figure 1.1: Conceptual Framework

Awareness of individuals about health is fundamental to promoting a healthier life. This conceptual model borrows from the theoretical models discussed above. It explains the relationship between the predictor variables and the dependent variable. It adds the component of behaviour (prevention, testing and treatment of prostate cancer) because ultimately awareness is expected to influence behaviour. Based on conceptual model religion, age and education influence personal beliefs/perception about prostate cancer. Similarly, use of tobacco and alcohol are matters of personal attitudes and subjective norms which in turn determine awareness of prostate cancer. Furthermore, interaction of persons in influence by their religion, place of resident and access to media and these determine awareness of prostate cancer. However, these variables overlap and interact with each other. Personal beliefs/ perceptions influence personal attitude and vice versa.

1.5 Methods

This study on the factors associated with men's awareness on prostate cancer in Kenya used data from the 2014 Kenya Demographic and Health Survey (KDHS). The sample for the 2014 KDHS was drawn from a master sampling frame, the Fifth National Sample Survey and Evaluation Programme (NASSEP V). This frame contains a total of 5,360 clusters drawn from the enumeration areas of the 2009 Kenya Population and Housing Census. The 2014 KDHS was designed to provide estimates at national, provincial, and county levels. A total of 39,679 households from 1,612 clusters spread across the country were selected for the survey, with 995 of these clusters in the rural areas and 617 in urban areas. Given the design of the survey, the 2014 KDHS was not self-weighting and therefore the resulting data was weighted to be representative at the national, regional, and county levels.

Three types of questionnaires were used in the 2014 KDHS namely; household, women's, and men's questionnaires. The household and women's questionnaires were administered in all sampled households while the men's questionnaire was administered in every second household. Only men of reproductive age (15-54 years) were eligible to respond to the questions in the men's questionnaire. A total of 12,819 men of reproductive age, from 36,430 households across all the 47 counties in Kenya, were successfully interviewed during the 2014 KDHS using the men's questionnaire. All these men were included in this study on the factors associated with prostate cancer awareness. The men's data file from the 2014 KDHS was used for this study.

The dependent variable for this study was 'Ever heard about prostate cancer'. This dichotomous variable (SM81ID) was used as found in the KDHS dataset. Categories for the dependent variables had been coded as follows; No – 0 and Yes – 1. The eleven independent variables used were; Age in 5 year groups (MV013), Region (MV024), Residence (MV025), Religion (MV130), Education attainment (MV149), Access to mass media (MV156-158), Wealth index (MV190), Tobacco use (MV463A-X), Current Marital Status (MV501), Alcohol use (SM81IA), and County of Residence (SCOUNTY). Table 1.1 shows the three independent variables that were recoded before being used.

Table 1.1: Independent Variables that Were Recoded

	Independent Variable	Recoding
1.	Access to Mass Media	Variables MV156-158 on frequency of access to newspapers, radio and television respectively were recoded into a new variable on access to media with two categories; access less than once a week and access at least once a week.
2.	Tobacco Use	The variables on the different forms of tobacco use (MV463A-X) were recoded into a new variable on tobacco use with two categories; No (Don't use) and Yes (Use).
3.	Current Marital Status	Variable MV501, with six categories was recoded into a new variable with three categories; Never married, Married (Married and Living Together), and Divorced/Separated/Widowed.

Before undertaking the analysis for this study, the data was first weighted using a computed weight variable (i.e. variable MV005 divided by 1,000,000). A descriptive analysis was then undertaken. This involved crosstabs

between the dependent variable and each of the independent variables. A Chi-square test was also done with the crosstabs to indicate the significance of the association between dependent variable and each of the independent variables. Finally, a binary logistic regression analysis was done for the dependent variable while controlling for the eleven independent variables.

1.6 Results

Table 1.2 shows that overall 66 percent of men in Kenya have heard about prostate cancer. It also shows that men's awareness of prostate cancer has a highly significant association ($p < 0.001$) with nine out of the ten independent variables used in this study, the exception being tobacco use ($p = 0.488$).

Table 1.2: Crosstab for 'Ever Heard about Prostate Cancer' by Various Characteristics for Men 15-54 years

Independent Variables	Categories	Ever heard of Prostrate Cancer			
		No	Yes	Chi-Square Test p-value	N
Age in 5-year groups	15-19	58.9%	41.1%	0.000	2,540
	20-24	33.3%	66.7%		2,125
	25-29	28.9%	71.1%		2,104
	30-34	28.3%	71.7%		1,785
	35-39	29.7%	70.3%		1,483
	40-44	24.9%	75.1%		1,224
	45-49	21.9%	78.1%		800
	50-54	24.3%	75.7%		756
Region	Coast	45.9%	54.1%	0.000	1,321
	North Eastern	77.8%	22.2%		241
	Eastern	33.2%	66.8%		1,950
	Central	23.2%	76.8%		1,707
	Rift Valley	33.7%	66.3%		3,212
	Western	42.3%	57.7%		1,257
	Nyanza	27.9%	72.1%		1,501
	Nairobi	33.7%	66.3%		1,630
Type of place of residence	Urban	30.4%	69.6%	0.000	5,562
	Rural	37.6%	62.4%		7,257
Current Marital Status	Never Married	44.5%	55.5%	0.000	5,354
	Married	27.0%	73.0%		6,757
	Widowed/Divorced/ Separated	30.2%	69.8%		696
Religion	Roman Catholic	33.1%	66.9%	0.000	2,746
	Protestant/Other Christian	32.0%	68.0%		8,640
	Muslim	60.5%	39.5%		839
	No Religion	41.0%	59.0%		525
	Other	34.4%	65.6%		64
Educational Attainment	No Education	67.1%	32.9%	0.000	398
	Incomplete Primary	50.2%	49.8%		3,217
	Complete Primary	36.1%	63.9%		2,950
	Incomplete Secondary	40.8%	59.2%		2,029
	Complete Secondary	19.0%	81.0%		2,462
	Higher	10.1%	89.9%		1,763

Independent Variables	Categories	Ever heard of Prostrate Cancer			
		No	Yes	Chi-Square Test p-value	N
Wealth Index	Poorest	53.0%	47.0%	0.000	1,807
	Poorer	39.8%	60.2%		2,266
	Middle	34.9%	65.1%		2,534
	Richer	30.8%	69.2%		3,152
	Richest	23.0%	77.0%		3,060
Drink Alcohol	No	37.1%	62.9%	0.000	8,943
	Yes	28.5%	71.5%		3,871
Tobacco Use	No	34.3%	65.7%	0.488	10,460
	Yes	35.1%	64.9%		2,359
Frequency of Access to Media	Access less than once a week	54.0%	46.0%	0.000	1,248
	Access at least once a week	32.4%	67.6%		11,571
TOTAL		34.5%	65.5%		12,819

Generally, men's awareness of prostate cancer increases with one's age, education and wealth index as shown in Table 1.2. The level of awareness among men aged 15-19 years is 41 percent and this rises to above 75 percent among those aged 40 years and above. Among the men with no education, only 3 out of 10 are aware about prostate cancer compared to 8 and 9 out of 10 among those with secondary complete and higher levels of education respectively. Awareness among men in the poorest wealth quintile is 47 percent compared to 77 percent among those in the richest quintile. Married men showed the highest levels of awareness on prostate cancer followed by those who were divorced/separated/widowed (70%) and those who had never been married (56%). In terms of religion, Muslim men had the lowest levels of awareness (40%) compared to those in other religions (66% and above).

From Table 1.2 it is evident that those who take alcoholic beverages, which are classified among risk factors for various diseases including prostate cancer, have higher levels of awareness of prostate cancer (72%) compared to those not engaged in this practice (63%). Awareness among those who use tobacco, which is another risk factor for prostate cancer, is 65 percent compared to 66 percent among non-consumers. Frequent access to mass media (newspapers, radio and television) appears to contribute to higher levels of awareness of prostate cancer. Men who access the mass media at least once every week have an awareness level of 68 percent compared to those who access the mass media less than once a week (46%).

There is a variation in the levels of men's awareness on prostate cancer by region as shown in Table 1.2. Men living in North Eastern region have the lowest awareness levels (22%) followed by Coast region (54%). Those in Nyanza and Central regions have the highest awareness levels at over 70 percent. Type of place of residence indicates a difference in the awareness levels with 70 percent of men living in urban areas aware of prostate cancer compared to 62 percent of their colleagues in the rural areas.

Table 1.3 shows the level of men's awareness of prostate cancer by county. The findings show that Mandera (2%) and Wajir (3%) have the lowest levels of awareness, these being far below the rest of the counties. Other counties whose level of men's awareness is less than one-third are Samburu (19%), West Pokot (27%), and Kwale (28%). Counties with the highest levels of awareness, at 80 percent and over, are Laikipia (80%), Nyamira (81%), Uasin Gishu (83%), Taita Taveta (84%) and, surprisingly, Turkana at 91 percent. In Kenya's three cities, the level of awareness was found to be 57 percent in Mombasa, 66 percent in Nairobi, and 74 percent in Kisumu.

Table I.3: Crosstab for 'Ever Heard about Prostate Cancer' by Various Characteristics for Men 15-54 years

Independent Variables	Categories	Ever heard of Prostrate Cancer			N
		No	Yes	Chi-Square Test p-value	
County	Mombasa	44.2%	55.8%	0.000	496
	Kwale	71.6%	28.4%		232
	Kilifi	38.0%	62.0%		384
	Tana River	54.8%	45.2%		73
	Lamu	47.5%	52.5%		40
	Taita Taveta	15.8%	84.2%		96
	Garissa	49.0%	51.0%		96
	Wajir	97.5%	2.5%		82
	Mandera	98.4%	1.6%		62
	Marsabit	60.5%	39.5%		43
	Isiolo	45.9%	54.1%		37
	Meru	23.0%	77.0%		540
	Tharaka-Nithi	25.0%	75.0		112
	Embu	43.8%	56.2		178
	Kitui	25.8	74.2		318
	Machakos	35.1	64.9		459
	Makueni	50.4	49.6		263
	Nyandarua	23.1	76.9		212
	Nyeri	15.9	84.1		251
	Kirinyaga	25.0	75.0		200
	Murang'a	21.8	78.2		312
	Kiambu	25.8	74.2		732
	Turkana	9.1	90.9		88
	West Pokot	72.7	27.3		109
	Samburu	80.6	19.4		36
	Trans Nzoia	33.3	66.7		345
	Uasin Gishu	17.2	82.8		373
	Elgeyo Marakwet	45.1	54.9		91
	Nandi	26.1	73.9		276
	Baringo	38.5	61.5		131
	Laikipia	19.6	80.4		139
	Nakuru	27.4	72.6		619
	Narok	60.6	39.4		246

Independent Variables	Categories	Ever heard of Prostate Cancer			
		No	Yes	Chi-Square Test p-value	N
	Kajiado	32.0	68.0		253
	Kericho	33.2	66.8		226
	Bomet	44.1	55.9		281
	Kakamega	56.3	43.7		451
	Vihiga	30.0	70.0		151
	Bungoma	36.7	63.3		444
	Busia	32.7	67.3		211
	Siaya	27.8	72.2		222
	Kisumu	25.7	74.3		326
	Homa Bay	34.2	65.8		266
	Migori	26.7	73.3		218
	Kisii	29.8	70.2		336
	Nyamira	18.8	81.2		133
	Nairobi	33.7	66.3		1,630
	TOTAL	34.5%	65.5%		12,819

Tables 1.4 and 1.5 show the odds ratios generated from the logistic regression analysis for men's awareness of prostate cancer by various characteristics. The findings in Table 1.4 indicate that, when controlling for independent variables, the most significant factors associated with men's awareness of prostate cancer are age, current marital status, educational attainment, tobacco use, and access to mass media. For men aged 45-49 years, their odds of being aware of prostate cancer is 3.7 times higher ($p < 0.001$ [CI 2.877 – 4.782]) than that of men aged 15-19 years. For men aged 20-29 and 30-39 years their respective odds are more than 2 times higher than that of the 15-19 year olds, while that of those aged 50-54 years is more than 3 times higher. For men who are widowed/divorced/separated and those who are currently married, their respective odds of being aware of prostate cancer are 1.5 ($p < 0.001$ [CI 1.236 – 1.911]) and 1.4 ($p < 0.001$ [CI 1.231 – 1.628]) times higher than that of men who have never married. Those who have completed secondary school and those with higher than secondary school education have odds that are 6.4 ($p < 0.001$ [CI 4.729 – 8.665]) and 13.7 ($p < 0.001$ [CI 9.822 – 19.115]) times higher of being aware of prostate cancer than those who have no education. The awareness odds for men who use tobacco is 23 percent lower ($p < 0.001$ [CI 0.683 – 0.874]) than that of men who do not use tobacco implying that men who do not use tobacco have a higher probability of having heard about prostate cancer. At the same time, men who access mass media at least once a week have prostate cancer awareness odds that are 1.6 times ($p < 0.001$ [CI 1.365 – 1.861]) higher than their colleagues who access mass media less than once a week.

The findings in Table 1.4 indicate that the association between prostate cancer awareness on one hand and the region of residence, wealth index, and county of residence on the other hand, while controlling for the independent variables, is partially significant. Men in Nyanza, Western and Rift Valley have awareness odds that are respectively 4.7 ($p < 0.001$ [CI 2.744 – 7.934]), 3.5 ($p < 0.001$ [CI 2.360 – 5.139]) and 1.7 ($p = 0.004$ [CI 1.180 – 2.350]) times higher than their counterparts in Coast region as shown in Table 1.4. Those in North Eastern region have odds that are 96 percent lower ($p = 0.002$ [CI 0.004 – 0.290]) than that of their counterparts in Coast region.

Table I.4: Odds Ratios for 'Ever Heard About Prostate Cancer' by Various Characteristics for Men 15-54 Years

Independent Variables	Categories	95% CI for Odds			
		Sig	Odds	Lower	Upper
Age in 5-year groups	15-19 (Reference Category)	.000	1.000		
	20-24	.000	2.139	1.855	2.467
	25-29	.000	2.442	2.055	2.902
	30-34	.000	2.653	2.182	3.227
	35-39	.000	2.637	2.143	3.245
	40-44	.000	3.276	2.628	4.084
	45-49	.000	3.709	2.877	4.782
	50-54	.000	3.365	2.606	4.346
Region	Coast (Reference Category)	.000	1.000		
	North Eastern	.002	.036	.004	.290
	Eastern	.251	1.227	.865	1.742
	Central	.000	2.277	1.736	2.988
	Rift Valley	.004	1.665	1.180	2.350
	Western	.000	3.483	2.360	5.139
	Nyanza	.000	4.666	2.744	7.934
	Nairobi	.408	1.102	.876	1.386
Type of place of residence	Urban (Reference Category)		1.000		
	Rural	.730	1.021	.905	1.153
Current Marital Status	Never Married (Reference Category)	.000	1.000		
	Married	.000	1.416	1.231	1.628
	Widowed/Divorced/ Separated	.000	1.537	1.236	1.911
Religion	Roman Catholic (Reference Category)	.239	1.000		2.746
	Protestant/Other Christian	.196	1.072	.965	1.191
	Muslim	.229	.865	.683	1.096
	No Religion	.948	.993	.794	1.240
	Other	.421	1.285	.698	2.363
Educational Attainment	No Education (Reference Category)	.000	1.000		
	Incomplete Primary	.000	1.821	1.368	2.422
	Complete Primary	.000	2.398	1.795	3.203
	Incomplete Secondary	.000	3.173	2.348	4.288
	Complete Secondary	.000	6.401	4.729	8.665
	Higher	.000	13.702	9.822	19.115
Wealth Index	Poorest (Reference Category)	.000	1.000		
	Poorer	.438	1.062	.912	1.238
	Middle	.001	1.288	1.102	1.504
	Richer	.001	1.336	1.134	1.574
	Richest	.000	1.641	1.360	1.981
Drink Alcohol	No (Reference Category)		1.000		
	Yes	.793	1.014	.912	1.128
Tobacco Use	No (Reference Category)		1.000		
	Yes	.000	.773	.683	.874
Frequency of Access to Media	Access less than once a week		1.000		
	Access at least once a week	.000	1.594	1.365	1.861

This study found that the association between prostate cancer awareness on one hand and the region of residence, wealth index, and county of residence on the other hand, while controlling for the independent variables, is partially significant. Men in Nyanza, Western and Rift Valley have awareness odds that are respectively 4.7 ($p < 0.001$ [CI 2.744 – 7.934]), 3.5 ($p < 0.001$ [CI 2.360 – 5.139]) and 1.7 ($p = 0.004$ [CI 1.180 – 2.350]) times higher than their counterparts in Coast region as shown in Table 1.4 Those in North Eastern region have odds that are 96 percent lower ($p = 0.002$ [CI 0.004 – 0.290]) than that of their counterparts in Coast region.

Table 1.5: Odds Ratios for 'Ever Heard About Prostate Cancer' by Various Characteristics for Men 15-54 Years

Independent Variables	Categories	Ever heard of Prostate Cancer			
		No	Yes	Chi-Square Test p-value	N
County	Mombasa (Reference Category)	.000	1.000		
	Kwale	.032	.644	.431	.963
	Kilifi	.000	2.808	2.044	3.857
	Tana River	.028	1.899	1.071	3.367
	Lamu	.180	1.653	.793	3.444
	Taita Taveta	.000	6.801	3.667	12.615
	Garissa	.000	83.304	10.036	691.506
	Wajir	.660	1.734	.150	20.094
	Marsabit	.519	1.295	.590	2.841
	Isiolo	.070	2.047	.943	4.443
	Meru	.000	4.117	2.917	5.811
	Tharaka-Nithi	.000	3.831	2.253	6.512
	Embu	.128	1.388	.910	2.119
	Kitui	.000	5.589	3.811	8.195
	Machakos	.001	1.835	1.299	2.591
	Nyandarua	.000	2.117	1.429	3.135
	Nyeri	.000	2.227	1.492	3.326
	Kirinyaga	.037	1.515	1.025	2.240
	Murang'a	.000	2.083	1.479	2.933
	Turkana	.000	29.149	13.033	65.194
West Pokot	.001	.413	.243	.703	
Samburu	.002	.213	.081	.560	
Trans Nzoia	.000	1.906	1.335	2.720	
Uasin Gishu	.000	3.619	2.456	5.334	
Elgeyo Marakwet	.304	.759	.448	1.284	
Nandi	.000	2.429	1.644	3.589	

Independent Variables	Categories	Ever heard of Prostrate Cancer			
		No	Yes	Chi-Square Test p-value	N
	Baringo	.138	1.426	.892	2.281
	Laikipia	.000	3.436	2.035	5.800
	Nakuru	.001	1.721	1.241	2.389
	Narok	.002	.546	.371	.803
	Kajiado	.826	1.046	.701	1.560
	Kericho	.013	1.653	1.110	2.462
	Kakamega	.000	.269	.185	.391
	Vihiga	.475	1.196	.733	1.950
	Bungoma	.440	.860	.588	1.260
	Siaya	.744	.909	.512	1.612
	Kisumu	.261	.728	.418	1.267
	Homa Bay	.122	.647	.372	1.124
	Migori	.899	1.038	.583	1.848
	Kisii	.187	.694	.403	1.195

According to Table 1.5, the counties with the highest significant ($p < 0.05$) odds of prostate cancer awareness among men when compared to Mombasa County are Garissa (83), Turkana (29), Taita Taveta (7), and Kitui (6) in that order. Counties whose odds are significant ($p < 0.05$) and fall between 1 to 5 times higher than that of Mombasa County are Meru, Tharaka Nithi, Uasin Gishu, Laikipia, Kilifi, Nandi, Nyeri, Nyandarua, Muranga, Trans Nzoia, Nakuru, Kericho. The counties with significant ($p < 0.05$) prostate cancer awareness odds that are lower than that of Mombasa (that is, less than 1) are Narok (0.55), West Pokot (0.41), Kakamega (0.27), and Samburu (0.21).

Table 1.4 shows that the association between prostate cancer awareness and three of the eleven independent variables used in this study is insignificant when all the independent variables are controlled for. These independent variables are; type of place of residence, religion, and alcohol consumption.

1.7 Discussion, Conclusion, and Recommendations

Worldwide, prostate cancer is among the most common cancer that afflict men. It's also the second most common cause of cancer related deaths among men. Elderly men are more predisposed to this cancer. The incidence of this disease varies from one region to another. Risk factors for this cancer include family history of the disease, lifestyle, age, and race. In Sub-Saharan Africa, the countries with the highest incidence rates are Nigeria, Democratic Republic of Congo and Uganda in that order. Data from Kenya, based on an examination of the 2004 – 2008 cancer registers in Nairobi, shows that prostate cancer is the commonest form of cancer among men at 17 percent of all cases.

Awareness of prostate cancer has been identified as important for promoting healthy lifestyles and early detection thereby leading to lower levels of morbidity and mortality from the disease. On the other hand, low awareness of the disease is associated with high mortality. According to the 2014 KDHS, 65 percent of

men in Kenya have heard about prostate cancer and 3 percent have been screened for the same. Few studies have looked at the association between prostate cancer awareness and various background characteristics of men. This study therefore sought to fill this knowledge gap in Kenya.

From the results of this study it is evident that age, education attainment, marital status, use of tobacco, and access to mass media have a significant association with Kenyan men's awareness of prostate cancer. Region and county of residence as well as wealth status were found to have a partial association with awareness. Low odds of prostate cancer awareness among men was found in the following groups; men below 40 years, those with no education, men who have never been married, those who use tobacco, men who are poor, and those who hardly access the mass media. These findings generally agree with studies on knowledge from other countries which have identified age, education attainment, location of residence, and wealth status as factors that influence a person's awareness of prostate cancer. The main difference between this study and other studies is that this study has also identified tobacco use as a significant factor associated with prostate cancer awareness.

This study had some limitations. First, the 2014 KDHS was a cross-sectional survey and therefore no causal relationship between the dependent and independent variables could be deduced. For example, from the study it cannot be concluded that for the married men, their awareness of prostate cancer preceded their marriage or vice versa. This study was therefore limited to looking at significance and strength of the associations between the dependent and independent variables. Second, the lack of a clear definition on what awareness or knowledge of prostate cancer is, limited comparison between various studies on the same. While some of the studies that were reviewed considered a respondent to be aware if he knows the risks, symptoms and screening methods for the disease, in this study the respondents were considered to be aware if they had heard about the disease irrespective of whether they knew the risks, symptoms and screening methods. This may explain why the level of awareness in Kenya (65%) appears higher than that of other developing countries in the region. Lastly, social media is now a major platform through which people get information. Unfortunately the 2014 KDHS only collected information on newspapers, radio and television as a source of information. This study was therefore limited when it came to looking at the association between prostate cancer awareness among men and their access to mass media.

The implications of the above findings is that more effort needs to be made to reach out to those groups of men whose odds of cancer awareness is low. This will entail putting in place public health awareness campaigns on prostate cancer that can ride on existing structures such as the community health strategy and other programmes that have a component of public health education. Another implication of the findings is that a comprehensive survey on prostate cancer awareness needs to be undertaken in Kenya. This survey will provide a better understanding on awareness of the diseases in Kenya alongside other non-communicable diseases. In this regard the next KDHS scheduled for 2019 should incorporate more questions on prostate cancer. Issues of social media as a source of information needs to feature in this survey.

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2

Rural-Urban Migration Selectivity among Men in Kenya. Evidence from the Kenya Demographic and Health Survey, 2014

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2.1 Introduction

Movement of people from rural to urban areas popularly known as rural-urban migration has become a major concern in the recent years. Kenya for example has witnessed rapid urban population increase from 1960 to 2014 with the share of population living in Kenyan urban areas rising from 7.4 percent to 25.2 percent. (Oyvat and Githinji, 2017). Studies have shown that majority of those who move from rural to urban areas are men (Oucho, Oucho and Ochieng', 2014). Migration is selective as only those who have resources are likely to move as migration is an expensive undertaking (Todaro, 1969, Harris and Todaro 1970).

The Government of Kenya in addressing the challenges of urbanization enacted the Urban and Cities Act of 2011. The main purpose of this act was to streamline classification of urban areas and cities and how they would be managed. When fully implemented the unplanned urban settlements will be minimized. A study carried out in Siaya County in Kenya showed that among those aged 18 to 40 years, majority of rural-urban migrants were males (62.5%) compared with females who constituted 25 percent of the total rural-urban migrants (Oucho, Oucho and Ochieng', 2014). With Kenya having devolved units at county level, rural-urban migration is expected to fuel urbanization in the counties.

Migration is essentially selective and despite some exceptions, for example where people are forced to migrate or move, the vast majority of migration contain an element of migrant selectivity also referred to as differentiation. The most commonly examined migrant differences are related to age, gender, level of education, socio-professional status, marital status, and housing situation whether owner or renter of property. Consequently, such attitudinal differences are manifested in behavioural differences with respect to staying in or leaving the community (White and Woods, 1980). Selectivity occurs because there are distinct differences between the interests of the individuals who belong to various social groups. Younger educated people, are more likely to migrate than older persons.

The study focuses on age, education, level of income, marital status, work status, land ownership and size of households' factors which have been shown to influence migration of men from rural to urban area.

Studies have found that older rural dwellers are less likely to migrate as the returns of migration declines with increased age and therefore age tends to reduce the probability of rural to urban migration (McCormick and Wahba, 2005; Zhao, 1999). In Kenya, those who migrated to Mombasa, Kisumu, Nakuru, Eldoret and other urban areas were found to be slightly older, while there seemed to be no much difference in age between those who migrated to other rural areas and those who did not migrate Oyvat and Githinji, 2017).

On the other hand, the level of education among men significantly increases the possibility of migration from rural to urban areas because of the greater returns in the urban areas. According to Oucho, Oucho and Ochieng' (2014) and Osborne (2012), rural-urban migration of the youth is stimulated by expectations of better opportunities for college or university education, career development and employment. Potential migrants are likely to value different attributes of places, to have different information available to them, and therefore to react in different manners. Today, information is widely available and updated through complex networks of professionals and organizations.

It has been found that urban and rural incomes are important factors in determining rural-to-urban migration. Scholars, Harris and Todaro (1970) and many others (for example Cole and Sanders, 1985; Fields, 1975, 2005) have theoretically shown that migration of rural dwellers to urban towns or cities is due to better employment opportunities and/or higher wages. Empirical case studies based on micro data also find that expected urban and rural incomes are crucial determinants of rural-to-urban migration (Zhu, 2002; Tunali,

1996; Bowles, 1970; Fields, 1982; Schultz, 1982). Similar results are shown in empirical studies focusing on migration in Kenya (Agesa, 2001; Agesa and Agesa, 1999; Bigsten, 1996; Gray, 2011).

Regarding marital status and rural-urban migration, it has been found that married individuals were less likely to migrate to other areas, either because migrating as a family was more costly or split migration was less desirable (Zhu, 2002; Zhao, 1999).

Availability of employment opportunities in urban areas has been found to be a major influence on rural to urban migration among men in developing countries. Studies have found that there are few opportunities for formal employment outside the urban areas, as the government efforts have concentrated on developing the urban economy over the rural one (Oucho, Oucho and Ochieng', 2014; Agesa and Kim, 2001). Consequently, wages are significantly higher in urban areas and over the years, these benefits have acted as a strong motivation for many rural dwellers to migrate to the cities in search for employment (Oucho, Oucho and Ochieng', 2014; Agesa and Kim, 2001).

Studies have found that land ownership influences rural-urban migration among people in Kenya. Higher land inequality in rural households has been found to increase the probability of people migrating from rural areas to urban areas especially to the five largest urban areas of Mombasa, Kisumu, Nakuru, Eldoret and Nairobi, (Oyvat and Githinji, 2017; Oyvat, 2016).

2.2 Scope and Limitations of the Study

The study focuses on rural-urban migration among men derived from a sub-sample of 3,672 men whose previous place of residence was the countryside and were currently living either in urban or rural areas at the time of the 2014 Kenya Demographic and Health Survey. Data for this study was weighted in order to facilitate and make it representative of the entire population of men in Kenya. However, given that age groups of men in the 2014 Kenya Demographic and Health Survey, did not include men aged 55 years and above, the results of this study may not fully represent all the men in Kenya who migrated from rural to urban areas. This is one of the limitations of the study.

In addition, information on factors influencing rural-urban migration were only inferred from the datasets because no direct question was asked among men regarding the reasons for their movement from rural to urban areas. Besides, studies on rural-urban migration focus on households and very few studies have focused on migration of individual men in the absence of women in Kenya.

However, despite these limitations, the results in this study, provide much needed data and information necessary for designing appropriate interventions to address challenges emanating from rural-urban migration among men in Kenya.

2.3 Theoretical Perspective of the Study

The theoretical perspective of this study is derived from a standard theoretical foundation of migration in developing countries as proposed by the Harris-Todaro model (Harris and Todaro 1970). The theory states that a prospective migrant weighs the difference between the expected earnings from formal sector urban employment (possibly after an initial period of informal sector employment) and the expected earnings in the rural areas.

This study was informed by the assumption that, age, education, level of income, marital status, work status, land ownership and size of households influences migration of men from rural to urban areas.

2.4 Source of Data and Methods

Data for this study is derived from the 2014 Kenya Demographic and Health Survey sub-sample of male dataset comprising of 3,672 men whose previous place of residence was the countryside and were currently living either in urban or rural areas. The unit of analysis for this study is the sub-sample of 3,672 men whose previous place of residence was the countryside and were currently living either in urban or rural areas derived from the male questionnaire who were successfully interviewed during the survey.

Weighting of data was first carried out before cross-tabulation and logistic regression analysis in order to obtain better results of the analysis. Cross-tabulations were undertaken to establish the distribution of men whose previous place of residence was the countryside and were currently living either in urban or rural areas by their various selected characteristics. The results of the cross-tabulations were used to describe the data in this study in order to shed more light on the selected characteristics of men whose previous place of residence was the countryside and were currently living either in urban or rural. The same results were used in the analytical interpretation of the findings of the chi-square analysis.

The dependent variable in this study is the type of place of residence—whether urban or rural among men in Kenya. This dependent variable was cross-tabulated against various selected characteristics of the men to identify their patterns.

A Chi-square test of independence (with a statistical alpha significance level of 0.05 (95%) was performed in this study to compare the men residing in urban and rural areas on selected characteristics. The chi-square technique was used to test both the null and the alternative hypothesis for existence of association between dependent and the independent variables in a contingency table.

It tests the null hypothesis is that there is no association or relationship between the dependent and the independent variables at 0.05 (95%) level of significance for all the cross-tabulations in this study. In the case where the significance level is greater than 0.05 we accept the null hypothesis, otherwise we reject the null hypothesis when it is less than 0.05 and accept the alternative hypothesis that there is an association between the dependent and the independent variables

This test is used to test for significant relationships between two variables organised in a bivariate table and does not provide much information about the strength of the relationship between the dependent and independent variables. The test therefore does not provide much information about the strength of the relationship between the dependent and independent variables.

However, the establishment of statistical association by means of chi-square does not necessarily imply any causal relationship between the attributes being compared, but it does indicate that the reason for the association is worth investigating.

To identify and quantify the specific effects of independent variables on the dependent variables a multivariate logistic regression technique of data analysis was used in this study. This technique was to examine the odds (probability) of men who did not migrate to urban from the rural areas over those who migrated and it is limited to the 3,672 men whose previous place of residence was the countryside and were currently living

either in urban or rural areas, who were successfully interviewed at the time of 2014 Kenya Demographic and Health Survey. In the model men who were residing in the rural areas at the time of the survey are coded 1 and those who were residing in urban areas are coded 0.

The dependent variable that is type of place of residence is dichotomous taking the value of 1 if the men were residing in rural areas and 0 if otherwise. This therefore makes logistic regression model an appropriate statistical model for use in data analysis in this study.

The logistic regression model is similar to any model building technique such as linear or multiple regression, the idea being to find the best fitting model to describe the relationship between an outcome or response variable which in the case of this study is the type of place of residence of men.

In the analysis, men characteristics (categories) least likely to migrate from rural to urban areas were used as reference categories. The odds ratios generated from the analysis in this study show the likelihood that men in a given category were residing in rural over urban areas relative to the selected characteristics (categories) in the reference category.

These odds ratios permit direct observation of the relative importance of each independent variable in predicting the likelihood of the staying in rural over moving to urban areas among the Kenyan men.

Data for this study was analyzed using the statistical package for social science (SPSS) computer package.

2.5 Results/Findings

The study examines the effects of various independent variables on migration of men from rural to urban areas in Kenya. Results of cross-tabulations and chi-square values are presented here to show the assessment of the association between the dependent and the independent variables. In addition, the logistic regression model was used to determine whether the men whose previous place of residence was countryside (the unit of analysis) were currently living either in urban or rural areas at the time of 2014 Kenya Demographic and Health Survey given the independent variables in the model. Results of both the cross-tabulation and logistic regression analysis are presented in table 2.1 and 2.2

Table 2.1: Percent distribution of male migrants aged 15-54 years by selected characteristics, KDHS 2014

Respondents Characteristics	N	%	N	%
	Urban	Urban	Rural	Rural
Age (5-year age group)*				
15-19	204	10.4	297	17.4
20-24	396	20.2	246	14.4
25-29	431	21.9	251	14.7
30-34	313	15.9	246	14.4
35-39	249	12.7	196	11.5
40-44	197	10.0	186	10.9

Respondents Characteristics	N	%	N	%
	Urban	Urban	Rural	Rural
45-49	90	4.6	144	8.4
50-54	84	4.3	143	8.4
Total	1964	100	1709	100
Education Levels*				
No education	29	1.5	85	5.0
Primary	776	39.5	1013	59.3
Secondary	803	40.9	479	28.0
Higher	356	18.1	132	7.7
Total	1964	100	1709	100
Household Size*				
4 Members and below	1489	75.9	784	45.9
5-8 Members	428	21.8	760	44.5
9 or more members	46	2.3	164	9.6
Total	1963	100	1708	100
Wealth Index*				
Poor	184	9.4	788	46.1
Middle	195	9.9	427	25.0
Rich	1584	80.7	494	28.9
Total	1963	100	1709	100
Currently Working**				
Not Working	246	12.5	244	14.3
Working	1716	87.5	1461	85.7
Total	1962	100	1705	100
Marital Status**				
Married/Living together	1145	58.3	985	57.6
Not Married	722	36.8	609	35.6
Widowed/Divorced/ Separated	96	4.9	115	6.7
Total	1963	100	1709	100
Land Ownership**				
No Land	1129	57.5	936	54.8
Owns Land	834	42.5	772	45.2
Total	1963	100	1708	100

*Significance at 95 percent confidence level

**No Significance at 95 percent confidence level

Table 2.2: Logistic Regression results indicating whether men aged 15-54 years migrated from rural to urban areas over those who did not by selected characteristics, KDHS 2014

Respondent's Characteristics		Sig.	Exp(B)	95% C.I.for EXP(B)	
				Lower	Upper
Age in 5-year groups	15-19 (RC)	.	1.000		
	20-24	.125	.686	.424	1.110
	25-29	.007	.555	.363	.849
	30-34	.000	.457	.309	.674
	35-39	.023	.639	.435	.939
	40-44	.000	.428	.287	.638
	45-49	.003	.538	.359	.806
	50-54	.528	.864	.550	1.359
Educational level	No education (RC)		1.000		
	Primary	.834	.948	.574	1.566
	Secondary	.023	.713	.533	.954
	Higher	.906	.982	.731	1.321
Level of Income	Poor (RC)		1.000		
	Middle income	.000	2.781	2.330	.714
	Rich	.000	2.808	1.909	.138
Size of Household	4 Members	.000	.558	.437	3.320
	5 to 8 Members	.000	.116	.098	4.130
	9 or More (RC)		1.000		
Marital Status	Married/living together (RC)		1.000		
	Not Married	.476	1.097	.851	1.414
	Widowed/Divorced/Separated	.769	1.053	.744	1.492

Land Ownership	No land (RC)		1.000		
	Owns Land	.258	1.097	.934	1.288
Currently working	No (RC)		1.000		
	Yes	.115	1.262	.945	1.685
Constant		0.000	3.627		
-2 Log likelihood 3739.185,					
Model $\chi^2 = 1327.182$ df=18					
Level of Significance =0.000					

RC=Reference Category

Age and Rural-Urban Migration

The cross-tabulation results indicate that majority of rural-urban migrants are aged 25-29 year (21.9%) followed by those aged 20-24 years (20.2%). The results also show that older men aged 50-54 years (4.3%) followed by those aged 40-49 years (4.6%) are less likely to migrate from rural to urban areas. In addition, younger men age 15-19 years (17.4%) and those aged 25-29 years (14.7%) are more likely to remain in rural areas compared to those aged 44-49 and 50-54 years (8.4%) respectively. Chi-square test indicate that the association between the age of the migrants and type of place of residence, whether urban or rural is significant at 95 percent confidence level ($\alpha=0.000$).

Multivariate analysis results indicate that compared with those aged 15-19 years, those aged 20 years and above were less likely to move from rural to urban areas. The results are statistically significant at 95 per cent confidence level except for those aged 20-24 and 50-54 years.

Level of Education and Rural-Urban Migration

Majority of the migrants according to the cross-tabulation results indicate that those who had secondary education (40.9%) together with those with primary education (39.5%) were more likely to move from rural to urban areas compared with those with no education (1.5%) and those with higher education (18.1%). In addition, similar results were also found for those who did not migrate to urban from rural areas.

The results of the multivariate analysis indicate that compared with those who had no education; those with primary together with secondary and higher education were less likely to move to urban areas. However, results were statistically significant for those with secondary level of education at 95 per cent confidence level. The results are consistent with the literature that those with higher education are the one who are most likely to migrate.

Size of Household and Rural- Urban Migration

The percentage of those moving to urban from rural areas come from households, having up to four members and below (75.9%) together with those having 5-8 members (21.8%) compared to those with 9 or more (2.3%). Results were also similar for those who did not move from rural to urban areas.

The results of the multivariate analysis indicate that compared with those who households with 9 or more members, those coming from households with 4 or less together with 5 to 8 members were less likely to move from rural to urban areas. The results were statistically significant at 95 per cent confidence level.

Level of Income and Rural-Urban Migration

The results of the cross-tabulation indicate that majority of those who moved to urban areas from rural areas were rich (80.7%) followed by middle income earners (9.9%) compared with the poor (9.4%). Conversely, the percentage of those who did not move from rural to urban areas were poor (46.1%) followed by the rich (28.9%) compared to middle income earners (25.0%).

The results of the multivariate analysis indicate that compared with those who were poor, those who were rich and middle income earners were twice more likely to move from rural to urban areas (Odds ratio, 2.808 and 2.781 respectively). The results were statistically significant at 95 percent confidence level.

Work status and Rural-Urban Migration

Among migrants to urban areas, the percentage of those who were working was higher (87.5%) compared with those who were not working (12.5%). Similarly, among those who did not move to urban areas, the results show that majority were working (85.7%) compared to those not working (14.3%).

The results of the multivariate analysis indicate that compared with those who were not working; those working were more than 26 percent more likely to move from rural to urban areas (Odds ratio, 1.262). However, the results were not statistically significant at 95 percent confidence level.

Marital Status and Rural-Urban Migration

The results of cross-tabulation indicate that the percentage of those married or living together and not married was higher for both those who moved to urban areas (58.3%) and (36.8%) respectively compared with those who were widowed/divorced/separated were 4.9 percent. Similar results were also found for those who did not move to urban areas.

The results of the multivariate analysis indicate that compared with those married or living together; those not married together with those widowed/divorced/separated more likely to move from rural to urban areas (Odds ratio, 1.097 and 1.053 respectively). However, the results were not statistically significant at 95 per cent confidence level.

Land Ownership and Rural-Urban Migration

Results of the cross-tabulation indicate that the percentage of those who did not own land who moved from rural to urban areas together with those who did not move was higher (57.5%) and (54.8%) respectively. For those who owned land, the percentage was higher in rural (45.2%) compared to urban areas (42.5%).

The results of the multivariate analysis indicate that compared with those who own no land, those owning land were more likely to move from rural to urban areas (Odds ratio, 1.097). However, the results were not statistically significant at 95 per cent confidence level.

2.6 Discussion, Recommendations and Conclusion

The results of both the cross-tabulation and logistic regression analysis indicate that age, level of education, size of household and level of income were statistically significant predictors of rural-urban migration among men in Kenya. These results were consistent with the findings that age, (McCormick and Wahba, 2005; Zhao, 1999), level of education, (Oucho et al, 2014; Osborne 2012 and Min-Harris, 2010) and the level of income (Harris and Todaro 1970; Cole and Sanders, 1985; Fields, 1975, 2005) were significant predictors of migration people from rural to urban areas. These factors are widely accepted as push factors at the place of origin and pull factors at destination.

Conversely, although work status, marital status and land ownership were found to influence rural-urban migration, the results of the Chi-square test and logistic regression analysis were not statistically significant at 95 percent (alpha, 0.05) level of confidence. These findings indicate that there are other factors that act as intervening variables that work with work status, marital status and land ownership to influence rural-urban migration among men in Kenya.

The results have shown that younger educated men were more likely to migrate to urban areas mostly in search of work. Investing in job creation in the rural areas will reduce the rate of these young people migrating. The decision to migrate to urban areas was influenced by levels of income of households. The houses with low income were less likely to migrate perpetuating the poverty levels of these households hence the need both national and county governments to create jobs to address the ones left behind in the rural areas.

Population migrating to urban areas will continue as urban population increased from 19.3 percent in 1999 to 31.3 percent in 2009 (KNBS 2012) Increasing urbanization is associated with falling levels of poverty and no country has ever reached middle-income status without a significant population shift into cities, and most countries grow richer as they urbanize (World Bank, 2016). There is a need therefore to ensure proper urban planning to accommodate rural-urban migrants and facilitate development of sustainable cities as a way of mitigating challenges posed by uncontrolled urbanization in Kenya. In addition, rural development initiatives should be enhanced in order to minimize push factors which causes people to migrate from rural to urban areas by investing on creation of jobs and provision of adequate amenities in the rural areas. This calls for the full implementation of Urban Areas and Cities Act number 13 of 2011 (revised 2015).

Besides, further research should be undertaken on migration selectivity among men and women in order to facilitate design of gender responsive policies and programmes on migration and urbanization in Kenya.

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3

Determinants of Traditional Family Planning Utilization in Kenya

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BACKGROUND

3.1 Introduction

Individuals and couples from ancient to modern times have been conscious to control or enhance their fertility. The decision to control or enhance fertility is made by the individual, couples and in some instances, family and communities for varied reasons. The main reasons for fertility control are demographic, health, and to advance human rights (UNFPA, 2013). Use of contraception enables individuals and couples realize their basic right to decide freely and responsibly if, when and how many children to have.

Family planning methods can broadly be classified into modern and natural/traditional methods (WHO, 2016). Methods of traditional family planning are among some the oldest methods known to mankind to regulate fertility. Delano (1988) defined traditional methods of birth control as the practice, beliefs or customs handed down from one generation to another aimed at preventing pregnancy. Delano proceeds to classify traditional methods of contraception broadly into two groups; the appliance methods and the non-appliance methods.

The appliance methods involve specific preparations by herbalists or traditional healers and dispensed to individuals. Appliance Methods could be herbal preparation taken orally by the woman. Some of the known methods include injections or scarification (incisions made to the body), barrier methods that include both physical and sperm killing agents; and the non-barrier methods that included the wearing of charms by the man or woman. The non-appliance traditional methods of birth control that do not need the attention of herbalists and are self-administered. They include abstinence, cultural emphasis on virginity, abortion, celibacy, abstinence with prolonged lactation, avoiding sex during menstruation, polygamy, taboo of incest and douching to kill the sperms.

Modern fertility awareness-based methods (FABMs) of family planning have been offered as alternative methods of family planning. Billings Ovulation Method, the Creighton Model, and the Symptothermal Method are the more widely used FABMs and can be more narrowly defined as natural family planning. The first two methods are based on the examination of cervical secretions to assess fertility. The Symptothermal Method combines characteristics of cervical secretions, basal body temperature, and historical cycle data to determine fertility. FABMs also include the more recently developed Standard Days Method and Two Days Method (Pallone & Bergus, 2009). All are distinct from the more traditional rhythm and basal body temperature methods alone.

The Demographic and Health Survey (DHS) define traditional methods as periodic abstinence (Rhythm), Withdrawal, and Abstinence. It has been noted that FABMs and the traditional family planning methods provide alternatives for those who, for any reason, cannot or do not wish to use pharmacological or mechanical contraceptives.

The World Health Organization, 1988 Guide to the provision of natural family planning services list the following advantages of traditional family planning methods:

- Can be used either to avoid or to achieve pregnancy.
- There are no physical side-effects.
- Correct use increases self-awareness and knowledge of human reproductive functions.
- Users develop self-reliance.
- Promotes involvement of the man, and cooperation, communication, and shared responsibility of the couple for family planning.
- Traditional FP services can be provided as a separate service or as part of an established health and family planning or community agency programme.
- Delivery of traditional FP services is not dependent on medically qualified personnel.

However, Traditional FP has some limitations/drawbacks which include:

- Partner must agree and cooperate.
- Fertility awareness methods provide no protection against sexually transmitted infections (STIs) including HIV.
- Fertility awareness takes time and effort each day to track days of menstrual cycle, chart temperature and/or cervical mucus.
- Viral infections that cause low-grade fevers can affect basal body temperature.
- Some medications such as antibiotics or antihistamines may change cervical mucus.

3.2 Effectiveness of the Traditional/Natural Methods

Pellone and Bergus, 2009 argue that the older and traditional methods (the appliance and non-appliance traditional methods of family planning) are not highly effective however, modern FABMs have typical-use unintended pregnancy rates of 1 to 3 percent in both developed and developing countries.

Other authors (Smoley *et al*, 2012) notes that the current evidence for effectiveness of natural family planning methods is limited to lower-quality clinical trials without control groups. Nevertheless, perfect use of these methods is reported to be at least 95 percent effective in preventing pregnancy. The effectiveness of typical use is 76 percent, which demonstrates that motivation and commitment to the method are essential for success (Smoley *et al*, 2012).

The effectiveness of family planning methods is measured for perfect and typical use. Perfect use failures represent failure of the method itself, whereas failures occurring during typical use include incorrect use (Lamprecht & Trussell, 1997). The reported failure rates for FABMs range from less than 1 to 5 percent for perfect use, and 2 to 25 percent for typical use (Frank-Herrmann *et al*, 2007).

3.3 Literature Review

Fertility decline in sub-Saharan Africa has been slower than expected and some authors propound that it has stalled in some regions. (Bongaarts 2008; Shapiro and Gebreselassie 2008). The region as a whole has the world's highest total fertility rate (5.0 children per woman) (PRB 2016), with a contraceptive prevalence rate of 26 percent of women in union. Fertility levels in sub-Saharan Africa are projected to decline from 5.1 in 2015 to 4.1 by 2030 (PRB, 2016; UN, 2015) and further to 3.1 by 2050 (UN, 2015).

Various fertility control methods based on existing knowledge and technologies have been devised. The growing use of contraceptive methods has resulted in not only improvements in health-related outcomes such as reduced maternal mortality and infant mortality (Ahmed and others, 2012; Bhutta and others, 2014; Rutstein and Winter, 2015), but also improvements in schooling and economic outcomes, especially for girls and women (Canning and Schultz, 2012; Schultz and Joshi, 2013).

There have been significant strides made in advancing women's and children's lives. The London summit held in July 2012 re-energized global commitments to improve access to family planning to the world's poorest countries and are also observed to be at the centre of the Sustainable Development Goals-SDGs Goal Number 3 (UN, 2015). These renewed focus bring to play, how best family planning programs can be reinvigorated.

Despite evidence regarding the importance of providing clients with a wide method mix, many programs (in sub-Saharan Africa and elsewhere) have tended to offer select methods, either as a matter of expediency or as a means of promoting the most effective and long-acting methods (Sullivan *et al.* 2006; Hubacher, Mauranezouli, and McGinn 2008; USAID 2010).

Natural family planning method provides an alternative for those who for some reasons do not wish to use artificial methods. Pregnancy can be avoided by timing of sexual intercourse in relationship to the woman's physiologically occurring infertile periods (safe periods). Because of the potential benefits of FP, it is important to any community when the births of children are spread.

The problem of low utilization of natural family planning (NFP) is worldwide. The disregard of natural methods may seem reasonable, considering their higher failure rates relative to modern medical methods and the available evidence suggesting low acceptance rates of modern methods by women in sub-Saharan Africa. According to Demographic and Health Surveys (DHSs), use of traditional and folk methods seems sparse, with only 6 percent prevalence across sub-Saharan Africa, compared with 16 percent for modern methods (UN 2011). These data suggest that traditional method use in sub-Saharan Africa can be compared to other developing regions, except in Middle Africa (see Bertrand *et al.* 1985; Shapiro and Tambashe 1994; and Johnson Hanks 2002): 12 percent of women in union use a traditional method and 6 percent do so in Eastern Africa, Western Africa, Latin America, and the Caribbean; and 8 percent in Southeast and Southern Asia (UN 2011).

Smaller, more localized studies, however, give new details. Of the sexually active adolescent girls surveyed in Port Harcourt, Nigeria, 57 percent reported current traditional method use (Okpani and Okpani 2000). In the Democratic Republic of Congo, Mathe, Kasonia, and Maliro (2011) found that more than 64 percent of a sample of postpartum women considered themselves current users of natural methods. In Zambia, a sample of 411 women at health clinics revealed that, among current users of contraceptives, 24 percent used natural methods (Kabonga, Baboo, and Mweemba 2010).

Pellone and Bergus, 2009 indicate that anecdotal evidence suggests that in the United States instruction on use of FABMs is not often available through physician providers, but occasionally through hospital programs, and more often available from faith-based groups. He further notes that when provided with positive information about FABMs more than 1 in 5 women in the United States of America expressed interest in using one of these methods to avoid pregnancy. However, only 1 to 3 percent of US women are currently using an FABM for this purpose.

Despite an improved understanding of the science underlying FABMs, rates of use have declined to 11 percent from 22 percent of married couples in 1955 (Stanford *et al*, 1998). Stanford and his fellow authors attribute this decline to a number of factors. Clinicians and patients frequently perceive a difficulty in learning the methods. Many women also believe FABM are not efficacious. They also indicate that many physicians do not have the knowledge to teach their patients about these methods.

One geographically limited study found that physicians have significant knowledge deficits about FABMs and that they generally know less about these methods than do nurse midwives (Stanford *et al*, 1999; Hanson & Stanford, 2001). Another survey of NFP users in the States showed that only 1 percent of them came to use those methods because of the advice of medical practitioners (Wilson, 2002).

A study in three regions of the Democratic Republic of Congo (then Zaire) indicate a prevalence of traditional methods of birth control largely due to the inaccessibility of modern methods of family planning due to ignorance, lack of personnel and supplies (Waife, 1978).

Northeastern Nigeria records a contraceptive prevalence of 6.5 percent. To understand why this is so, a qualitative study among the Kanuri tribe of Northeastern Nigeria, revealed that 63.4 percent of women respondents prefer traditional family planning to modern methods of family planning. The reasons given by women were those of husbands' opposition, fear of delay in return to fertility, damage to the reproductive systems (especially the uterus) and some believe that modern contraception was introduced to reduce the population of Muslim nations (Abdulkarim *et al* 2012).

The 2005 Ethiopian Demographic and Health Survey (EDHS) suggests that while 88 percent of currently married women and 93 percent of currently married men were aware of at least one method of contraception, only 15 percent of married women were using a contraceptive method. In a study on users of standard days method (SDM) of family planning in Ethiopia indicate that the most common reasons for choosing the SDM were absence of health effects/side effects, in 70.1 percent of the respondents, followed by fear of side effects, particularly of hormonal contraceptives by 53.8 percent of the respondents, and ease of use by 4.9 percent while 2.7 percent raised the issue that the method was available without any cost implications.

Contraceptive prevalence rate (CPR) for Malawi increased from 13 percent in 1992 to 26 percent in 2004 (Malawi Government, 2002, 2006). According to the 2011 World Contraceptive Use data sheet, contraceptive prevalence rate in Malawi is estimated at 41 percent, which is nearly twice the estimate for Sub-Saharan Africa. With these trends, the use of traditional methods that is abstinence and withdrawal declined from 6.4 percent in 1992 to 1.8 percent in 2004 (Cohen, 2000). Among users of traditional methods, region, rural-urban residence, number of living children, husband's approval, respondent approval and discussion with partner were found to have a significant effect on method choice.

According to TDHS 2010, 29 percent of all women with age 15-49 are using contraceptive methods, of which 34 percent are currently married women; and 51 percent are sexually active unmarried women. The

majority of women who are using a contraceptive method use modern method (24 percent) and 5 percent of women use traditional methods (Esabella, 2012).

Kenya since the first fertility survey was done in 1977, has been recording decreasing numbers of women and couples opting for traditional methods of family planning with the latest data set KDHS 2014 indicating that only 4.5 percent of currently married women and those living with a partner using the traditional methods (KNBS, 2014).

Contraceptive use has increased worldwide over the last decade. Yet, Africa—like many other regions of the developing world—continues to have a high unmet need for family planning approximately 25 percent of women and couples in sub-Saharan Africa who want to space or limit their births are not using any form of contraception. In Kenya 18 percent of women and couples in union have an unmet need for family planning. Kenyan data has also in the past indicated that reasons for non-use of contraception was mainly due to side effects, provider attitude and accessibility concerns, all factors which point to health provider assisted use.

More than half of the people in Africa are younger than 25 years old, so unmet need is only expected to increase as these individuals enter their reproductive years. Overall, rate of contraceptive use is associated with wealth, education, ethnicity, place of residence, and strength of national family planning programs within countries (Okech *et al*, 2011). With the alternative of using natural methods of family planning over the traditional methods, it would be important to understand the determinants of their use in an effort not to leave anyone one behind as envisaged in the Sustainable Development Goals.

3.4 Study Objective

This study seeks to address the determinants of traditional family planning use among all women of reproductive age in Kenya. Specifically the study seeks to:

- i) Compare background characteristics of the women 15 to 49 years using traditional methods of family planning
- ii) Examine regional differentials in the use of traditional family planning methods across Kenya
- iii) Make recommendations for policy guidance on use of traditional family planning in Kenya

3.5 Methodology

The study on the utilization of traditional methods of family planning uses the 2014 Kenya Demographic and Health Survey (KDHS) data set. The sample for the KDHS 2014 was drawn from a Master Sampling Frame, the Fifth National Sample Survey and Evaluation Programme (NASSEPV). The frame contains a total of 5,360 clusters drawn from the enumeration areas of the 2009 Kenya Population and Housing Census. The KDHS 2014 unlike in the past provided not only national and regional data but also included county specific data.

A total of 39,679 households from 1,612 clusters spread across the country were selected for the survey, with 995 of these clusters in the rural areas and 617 in urban areas. The design of the survey was not self-weighting and therefore the resulting data was weighted to be representative at the national and regional levels.

Three types of questionnaires were used in the 2014 KDHS: The household, women's and men's questionnaires. The household and women's questionnaires were administered in all sampled households while the men's questionnaire was administered in every second household. Only women of reproductive age 15-49 years were eligible to respond to the questions in the women's questionnaire.

A total of 31,079 women of reproductive age from 36,430 households across all the counties in Kenya were successfully interviewed during the 2014 KDHS using the women's questionnaire. Out of this, 1006 women in the reproductive ages 15-49 years were utilizing the traditional family planning methods for contraception.

The dependent variable for the study is the traditional methods of family planning that is found in the variable, "current use by method type (V313). The independent variables used were, age in five year age groups (V013), Children ever born (V218), education attainment (V149), region (V024), wealth index (V190), residence (V205), and religion (V130). All the variables are used as they were in the 2014 KDHS dataset except for the number of children ever born which was recoded into four categories; 0, 1-3, 4-6 and 7 or more children.

In undertaking the analysis, the data was first weighted using a computed weight variable (variable V005 divided by 1,000,000). Descriptive analysis was used which involved the production of frequency tables showing the percentage distribution of women in their reproductive years using traditional family planning methods by various background characteristics.

The second level of analysis was a bivariate correlational analysis using cross tabulation and the chi-square test to determine the significance levels for each of the independent variables against the dependent variable, which is women of reproductive age 15 to 49 years using traditional methods of family planning. The results from this analysis showed the significance of the relationship between the dependent variable and each of the independent variables for women aged 15-49 years. The third level of analysis undertaken was a binary logistic regression analysis using the dependent and independent variables to produce odds ratios for use of traditional family planning methods for women aged 15 to 49 years of age.

The study is limited by the fact that North Eastern region had no cases of women using the traditional methods while Western had only 37 cases which may not be enough for solid analysis.

3.6 Results

Table 3.1 shows the distribution of women in the age groups 15 to 49 years who were using traditional methods by their various background characteristics. Frequencies were run by regions. Here North Eastern indicates zero use while the highest use is recorded for Rift Valley at 32.2 percent followed distantly by Eastern at 19.9 percent. Use in Central and Coast regions are at 14.5 and 13.1 percent respectively.

The distribution of women using traditional family planning was looked at by the type or place of residence and the data indicated that most of the users were women of reproductive age residing in rural areas at 58.1 percent while the women in urban areas formed 41.9 percent of the users.

When the data was run by age groups, women ages 20-29 were the greatest users of traditional methods at 19.2 and 18.2 percent for those aged 20-24 and 25-29 years respectively. The distribution in use from one age group to the next is all within 6 percentage point difference suggesting a more even distribution across the ages with the exception of those aged 15-19 years whose use is at 4.7 percent.

In terms of educational attainment among women using traditional family planning shows substantial differences between women with no education when compared to those with education. The highest percentage of users of traditional family planning is among women who have completed primary education at 26.9 percent followed closely by those who have completed secondary at 22.6 percent. The least users are those with no education at only 4 percent.

Use of traditional family planning by the number of children ever born indicate that those having one to three children ever born were the highest users of the traditional family planning methods at 52.5 percent when compared to those women with seven and above children ever born at only 11.3 percent.

The wealth index as the independent variable also elicits interesting information. It will be noted that women in the richest wealth quintile report higher use of traditional methods with 30.6 percent usage, followed with the richer wealth quintile at 23.9 percent and the lowest use is recorded for the poorest wealth quintile at 10.9 percent. Religion as a background characteristic indicate highest use of traditional methods amongst the Protestants and other Christians at 71.6 percent with the Catholic recording only 22.6 percent use.

The proportions of those who are in a marriage and those living with a partner when taken together compose the highest use of traditional family planning users at 81.6 percent. Notwithstanding, the traditional FP methods are also utilized by those who have never been in a union at 13.1 percent compared with lower percentages for the widowed, divorced and those women who are separated from their partners.

The results of the chi-square test as shown on Table 3.1 indicates significant association between the use of traditional family planning methods and the independent variables; region, age, marital status, religion, wealth index, education attainment, marital status and the number of children ever born. However, for the type or place of residence was found to have no significant association with the use of traditional family planning.

Table 3.2 shows the odds of traditional family planning use among women of ages 15 to 49 years in the country. The results show that the most significant factors influencing traditional family planning use in the country include region, age, education, children ever born and marital status. The odds of women in the ages 15 to 49 years in Coast (2.2), Eastern (1.9) and Rift Valley (1.8) using traditional family planning is two times more than that of women in Nairobi region. By the age groups, the women in the younger ages 15 to 19 (0.313), 20-24 (0.721), 25-29 (0.542) years were less likely to use traditional family planning when compared to women in the age group 45 to 49 years.

As far as the education attainment is concerned, women with lower levels of education attainment (no education, primary incomplete, primary complete and secondary incomplete) were less likely to use traditional family planning methods when compared to the women with higher education. For the variable children ever born, the women without children, those with one to three children, and those with four to six children were less likely to use traditional family planning methods when compared to those with seven children and above. When it comes to marital status, the women who were married or living with a partner were three times more likely to use traditional family planning methods when compared to women who were separated or no longer living with their partners.

Table 3.1: Percentage distribution of women 15-49 years using traditional family planning methods by background characteristics

Variables	Frequency	Percentage use	P Value
Region			
Coast	132	13.1	0.000
North Eastern	0	.0	
Eastern	200	19.9	
Central	146	14.5	
Rift Valley	324	32.2	
Western	37	3.7	
Nyanza	70	6.9	
Nairobi	98	9.7	
Type or place of residence			
Urban	422	41.9	0.465
Rural	584	58.1	
Age in five year groups			
15-19	47	4.7	0.000
20-24	193	19.2	
25-29	183	18.2	
30-34	149	14.8	
35-39	171	17.0	
40-44	134	13.4	
45-49	128	12.7	
Educational attainment			
No education	40	4.0	0.000
Incomplete primary	177	17.6	
Complete primary	271	26.9	
Incomplete secondary	121	12.0	
Complete secondary	227	22.6	
Higher	170	16.9	
Children Ever Born			
None	117	11.7	0.000
1 to 3 Children	528	52.5	
4 to 6 children	247	24.5	
7 and above	114	11.3	
Wealth Index			
Poorest	110	10.9	0.000
Poorer	150	14.9	
Middle	198	19.7	
Richer	241	23.9	
Richest	307	30.6	
Religion			
Roman Catholic	227	22.6	0.013
Protestant/ Other Christian	719	71.6	
Muslim	47	4.7	
No religion	11	1.1	

Current Marital Status				
Never in union	132	13.1	0.000	
Married	759	75.4		
Living with partner	63	6.2		
Widowed	11	1.1		
Divorced	14	1.4		
No longer living together/separated	28	2.8		
Total	1006	100.0		

Table 3.2: Odds ratios on the use of traditional family planning methods by women 15-49 years by various background characteristics

Variables	Significance	Odds	95% CI for Odds	
			Lower	Upper
Region				
Coast	0.000	2.196	1.643	2.936
North Eastern	0.083	0.027	0.000	1.608
Eastern	0.000	1.940	1.483	2.540
Central	0.029	1.348	1.030	1.765
Rift Valley	0.000	1.794	1.402	2.296
Western	0.000	0.464	0.311	0.693
Nyanza	0.037	0.704	0.506	0.979
Nairobi (Reference Category)		1		
Age in five year groups				
15-19	0.000	0.247	0.163	0.374
20-24	0.001	0.625	0.472	0.828
25-29	0.000	0.489	0.376	0.635
30-34	0.000	0.541	0.419	0.700
35-39	0.031	0.765	0.600	0.976
40-44	0.094	0.806	0.626	1.037
45-49 (Reference Category)		1		
Educational attainment				
No education	0.000	0.295	0.195	0.445
Incomplete primary	0.000	0.418	0.323	0.541
Complete primary	0.000	0.551	0.441	0.689
Incomplete secondary	0.000	0.623	0.482	0.805
Complete secondary	0.144	0.853	0.690	1.055
Higher (Reference Category)		1		
Children Ever Born				
None	0.000	0.452	0.306	0.666
1 to 3 children	0.000	0.623	0.479	0.810
4 to 6 children	0.004	0.702	0.551	0.893
7 and above (Reference Category)		1		
Wealth Index				
Poorest	0.596	0.928	0.703	1.225
Poorer	0.778	1.035	0.816	1.313

Middle	0.169	1.160	0.939	1.432
Richer	0.403	1.083	0.899	1.304
Richest (Reference Category)		1		
Religion				
Roman Catholic	0.997			
Protestant/ Other Christian	0.997			
Muslim	0.997			
No religion (Reference Category)				
Current Marital Status				
Never in union	0.320	1.245	0.809	1.916
Married	0.000	2.860	1.948	4.200
Living with partner	0.000	3.135	1.985	4.951
Widowed	0.121	0.572	0.282	1.158
Divorced	0.692	1.142	0.593	2.197
No longer living together/ separated (Reference Category)		1		

3.7 Discussions and Conclusions

Previous studies conducted point out to the fact some of the key determinants of traditional family planning include marital status, age, occupation, income and education levels. The purpose of this study was to determine factors influencing utilization of traditional family planning methods in Kenya.

The results indicate that the most significant factors affecting utilization of the traditional family planning methods are region, age, education attainment and marital status. Religion whilst previously seen as a determinant to traditional family planning use does not feature as a significant variable.

As literature and study results indicate, the absolute numbers of users of natural and traditional family planning methods are many. Explanations for the unmet need still point to a challenge in either access, client ignorance based on myths and general fear of the side effects of modern methods. Literature further suggests that health providers are not keen to discuss natural methods of family planning and thus the resultant bias in method mix. It is important to provide alternatives so that client's needs and method preference are captured and thereby increase the country's CPR.

Women empowerment together with spousal communication has been proven to be significant in the use of traditional methods and this backs up the idea that if one is well instructed or aware of their natural cycles, then the natural methods can offer an alternative to reducing the unmet need for family planning in the country.

Use of family planning takes cognizant of the fact that there needs to be discussions between couples for the methods to be effective, also indicative of the clear association between use and the marital status of the women studied. Where the emphasis has been on the involvement of the male partner in family planning, discussions around alternatives including the natural methods offer a viable means to achieving desired family size.

The National Policy for Population and Development, Sessional Paper No. 3 of 2012 recommends that for Kenya to attain population stabilisation by 2050, there is need for more investments in quality reproductive health services and supporting women or couples experiencing difficulties in conceiving to have children. The study recommends that as a policy imperative, more effort should be put in getting the health service provider to counsel on fertility awareness methods of family planning. It is at least in this way that clients' needs will be addressed in the best possible way given the identified risk factors and resistance to modern methods of family planning.

The Kenya National Family Planning Guidelines (2010) recommends use of natural/traditional methods of family planning by all women of reproductive age with established cycles, including women with disabilities and migrant populations. The Guidelines also notes that they serve as good family planning options for couples that cannot use modern methods on religious, cultural or medical grounds and couples who are willing to abstain from intercourse during the fertile time.

A key area that has been discussed in different studies is the ability of the health service provider to properly counsel on the use of natural methods for effective method use. It would add to the wealth of knowledge to know if this service is actually there in the public health facilities where most of the women turn up for reproductive health services. The advantage with this method in a resource poor setting is that it does not need a skilled health service provider but any counsellor who has been trained on effective use of the natural family planning methods.

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