Benefits of family planning: an assessment of women's knowledge in rural Western Kenya

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Benefits of Family Planning: An Assessment of Women's Knowledge in Rural Western Kenya.

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Abstract

Background

The last two decades have seen an increase in literature reporting an increase in knowledge and use of contraceptives among individuals' and couples in Kenya, as in the rest of Africa, but there is a dearth of information regarding knowledge about benefits of family planning (FP) in Kenya.

Objectives

To assess the knowledge levels and associated factors regarding the benefits of FP, for both women and children, among women in rural Western Kenya.

Methods

Data are drawn from the Packard Western Kenya Project Baseline Survey, which collected data from rural women (15-49). Ordinal regression was used on 923 women to determine levels of knowledge and associated factors regarding benefits of FP.

Results

Women in rural Western Kenya have low level of knowledge about benefits of FP and are more knowledgeable about benefits for the mother rather than for the child. Only age, spousal communication and type of contraceptive method used are significant.

Conclusion

Women's level of knowledge about benefits of FP is quite low and may be one of the reasons why fertility is still high in Western Kenya. Therefore, FP programs need to focus on increasing women's knowledge about the benefits of FP in this region.

Strengths and Limitations

The major strength of this study is that it has affirmed the importance of information provision about the benefits of family planning and the potential role of involving men in up-scaling the uptake of family planning methods in Western Kenya. However, like any other quantitative study, the paper does not bring out the actual stories behind these statistics.

Key messages

- Knowledge levels about the impacts of family planning are low among women in Rural Western Kenya
- FP programs need to focus on increasing women's knowledge about the benefits of family planning.
- Discussion of family planning with spouse plays an important role in contributing to knowledge about the benefit of family planning

Data source

The data set can be obtained from Michael Mutua (mmutua@aphrc.org)

Background

The last two decades have seen an increase in literature reporting an increase in knowledge and use of contraceptives among individuals and couples in Kenya, as in the rest of sub-Saharan Africa, but there is a dearth of information regarding knowledge about the benefits of family planning in Kenya. In Kenya, knowledge of family planning is almost universal at 95% for women of reproductive age, with male condoms, injectable contraceptives, and pills being the most commonly known methods [1]. Family planning use has also over the years increased from 18% (1987) to 39 % (2008/9) [1]. However this increase has not been matched with reduction in the unmet need for family planning and reduction in fertility rates. The unmet need for family planning in Kenya has stalled at around 25% and is highest among the less economically well-off women and those in rural areas [2]. Total fertility rate (TFR) in rural areas has remained unchanged at 5.2. In addition, at national level, only a slight decrease in fertility has been reported from 4.7 in 1998 to 4.6 in 2008/9. There are regional variations in fertility trends in Kenya. Fertility is highest in Nyanza and Western provinces at 5.6 and 5.4, respectively. Married women in the rural areas of Kenya use modern methods of family planning (37%) less than women in urban areas (47%) [1].

Family planning has several benefits, some of which are specific to the health of mothers and their children. Others include socioeconomic benefits; for example, women are able to advance their education and careers by delaying or limiting childbearing and this can bring better economic prospects to their household [3, 4]. Family planning serves to reduce child and maternal morbidity and mortality by preventing unintended pregnancies and unsafe abortions [5]. The number of maternal deaths that could be averted during childbirth as a result of reduction in the number of pregnancies and induced abortions would be significant [6]. Family planning also

enables birth spacing ultimately reducing child mortality while enhancing the nutritional status of both mother and child [4]. Moreland and Talbird's [5] analysis of the role of contraception use to the Millennium Development Goals showed that fulfilling the unmet needs of family planning in Kenya will prevent maternal mortality and child mortality by 14,040 deaths and 434,306 deaths respectively and reduce poverty [7]. Consequently this could contribute to significantly empowering women, achieving universal education for all, and achieving long term environmental sustainability [8].

Several studies have assessed women's and couples' knowledge about, and use of contraceptives, in addition to barriers to the uptake of family planning services [9-11]. A study conducted in Bondo District of Western Kenya found that few women knew that family planning prevented conception, enabled child spacing, reduced the risk of acquiring and transmitting sexually transmitted infections and helped avoid high-risk pregnancies [9]. Cultural beliefs, fear of side effects, disapproval by couples and inadequate knowledge about contraceptive methods and their benefits are major barriers to contraceptive uptake [9, 12, 13]. Women with knowledge about contraceptives and the benefits of family planning are more likely to use contraceptives. Knowledge enables women to make informed decisions about what contraceptives to use and when to use them.

As earlier noted, the Western region of Kenya has poor reproductive health indicators. In response to this need, the Packard Western Kenya Project (PWKP) with financial support from the David and Lucile Packard Foundation ,was launched in 2010 in line with the National Reproductive Health Strategy (2009-2015), which, amongst other aims, seeks to involve communities in enhancing the health of the population through interventions implemented at community level. The PWKP is being implemented in the region with an ultimate goal of

reducing unwanted and mistimed pregnancies, lowering the incidence of unsafe, illegal abortion, reducing maternal morbidity and mortality, and decreasing fertility rates over time. These goals are to be met by increasing routine use of modern contraceptive methods among women of reproductive age in Western Kenya. In 2010, a baseline survey was designed to provide information on key program elements for subsequent monitoring and evaluation of the performance of the PWKP. As part of the baseline, the women were asked what they perceived as the impacts of family planning on both women and children. In this paper we analysed the knowledge levels and associated factors regarding the benefits of family planning for both women and children.

Data and Methods

Data source and sample design

The data for this paper are drawn from the PWKP Baseline Survey, which collected data from rural women aged 15-49 years. This study was approved by the Kenya Medical Research Institute (KEMRI) Ethics Committee. The African Population and Health Research Center implemented the 2010 household baseline survey for the PWKP, in collaboration with the Kenya National Bureau of Statistics, and the Great Lakes University of Kisumu. A representative sample of 2,125 households from 60 enumeration areas distributed proportionally among four districts (Bondo, Busia, Siaya and Teso) was drawn for the survey using the frame of the 2008 KNBS. Data collection took approximately two weeks and a total of 1,997 women were interviewed, representing a response rate of 86%.

Variables

Two dependent variables are used in this paper: level of knowledge about FP benefits for the child and level of knowledge about FP benefits for the mother, also referred to as Model I and Model II in Table 5, respectively. Since the ordered logit models used require the dependent variable to have three outcomes, the two dependent variables were recoded into trichotomous variables. These variables were constructed based on responses to a series of questions on the impact of family planning on the mother and child. The information in Figure 1 was used to construct the first dependent variable. Each correct response was assigned a code of 1 while each incorrect response was assigned a code of 0. All respondents who scored 0 on all questions had the final score of 0 and were coded as having no knowledge or classified into the "none" category. All respondents who scored 1 out of 7 were coded as having "low" knowledge level.

Scores 2-7 were coded as "high" knowledge category. The categorization of scores was based on relative scores and was also aimed at minimizing skewness in the dependent variable as majority of respondents had low scores (see ***Figure 1***). The scores ranged between 0 and 5 with a median score of 2. In the strict sense, for example, persons who scored 2 out of 7 had a low score but were categorized as high in order to distinguish them from those with 0 and 1 scores.

Information in ***Figure 2*** was used to construct the second dependent variable. Similarly, in the construction of the second dependent variable, we assigned a code of 1 for each correct response. Each incorrect response was assigned a code of 0. All respondents who scored 0 on all questions had the final score of 0 and were coded as having no knowledge or classified into the "none" knowledge level category. All respondents who scored 1-3 out of 12 were coded as having "low" knowledge level. Scores 4-12 were coded as "high" knowledge category. The scores ranged between 0 and 8 out of 12 with a median score of 2.

A total of 12 independent variables were included in the analyses (see Tables 1-3). Marital status was excluded from the analytical models as less than twenty women were married. Women of ethnicities other than Luhya, Luo and Teso were also excluded from the analyses as they were very few (<30).

Data analysis

Frequencies, cross-tabulations and the ordered logit were used to analyse levels and differentials in knowledge levels among women (15-49) in Western Kenya. Ordinal regression depends upon the idea of the cumulative logit, which in turn relies on the idea of the cumulative probability [14] [15] . A negative **β** coefficient shows lower log-odds of having higher than lower knowledge about the impacts of family planning on the child/mother compared with the

reference category (i.e. lower knowledge than the reference category). On the other hand, a positive coefficient indicates higher log-odds of having higher than lower knowledge about the impacts of family planning on the child/mother compared with the reference category (i.e. higher knowledge than the reference category). Exponentiation of **β** coefficients yields odds ratios (not shown in tables).

Results

Descriptive Characteristics of Respondents

Only 923 (46%) women (15-49) out of the 1,997 women interviewed were valid for the regression analyses and their characteristics are shown in Table 1. Most (83%) women in this sample had access to the radio while a quarter had access to television and newspaper/magazine. By age, majority (49%) of women were aged 25-39 years and the rest were aged 15-24 (30%) and 40-49 (21%). The frequency distributions in Table 1 also confirm other observations about high fertility in this region of Kenya as more than half the women had four or more children ever born.

Luo women were the majority (58%), followed by Luhya women who comprised a quarter of the entire sample size. Catholics were minority when compared to non-Catholics; 32 versus 68 percent, respectively. Education levels are quite low among these women. Approximately 80 percent had not received education beyond primary education. A similar pattern is observed among their partners: less than 40% of the women had partners who had some post-primary education. Table 1, however, also shows that majority (68%) of women reported discussing family planning with their partner/husband even though almost half (49%) of the sample were not using a method of contraception at the time of the survey. Strikingly, majority of women reporting current use of contraception were using a long-acting or permanent method of contraception. According to district, more than a third (38%) of the women surveyed were from Siaya district while the smallest sample was drawn from Bondo District (19%).

According to level of knowledge about impacts of using family planning on the child, which is one of the dependent variables for this paper, majority of women had none or low level of knowledge. Less than 40% of women were in the high level knowledge category. Concerning the level of knowledge about impacts of using family planning on the mother, data indicated some relatively higher knowledge for impacts on the mother than on the child as approximately 95% of women exhibited some knowledge about the impacts on the mother compared with 83% for the impacts on the child (see ***Table 1***).

Factors associated with knowledge about impacts of using family planning methods on children and women

A higher proportion of women had some knowledge about impacts of using family planning on the mother than on the child. 17% of the women had no knowledge at all about the impacts on the child while only 6% exhibited total lack of knowledge about the impacts of family planning on the mother. The results in ***Table 2*** show some significant associations between level of knowledge about impacts of family planning and some characteristics.

The variables age, parity, partner's level of education, discussion of family planning with partner and contraceptive use have the strongest association with knowledge about impacts of family planning on the child. Age is directly related with level of knowledge about impacts of family planning on the child i.e. the older the woman, the higher the level of knowledge. Similarly, women with a higher number of children (>3) have higher knowledge about impacts of family planning on the child than women with a smaller number of children (<4). As expected, women who reported to have partners with lower than secondary education level have lower level of knowledge than women whose partner had secondary or higher level of education. Interestingly,

women's own level of education was less significant than partner's education level on their knowledge about impacts of using family planning on the child, suggesting the influential role partner's characteristics may pose on women. Women who reported that they discussed family planning with their partners and those using a method of family planning (either short- or long-term) exhibited higher knowledge about the impacts of family planning on the child than women who did not discuss family planning with partner and were not using a method of family planning.

Though they did not have the strongest association, ethnicity and district were also significantly associated with knowledge about the impacts of using family planning on the child. The Luhya women had the highest (38%) level of knowledge, followed by the Teso women (35%). By district, women from Busia district (39%) had the highest knowledge levels, followed by women from Bondo district (35%). Access to the media and religion had no significance on the knowledge about impacts of family planning on the child. The knowledge about impacts of family planning on the mother was significantly associated with all independent variables except partner's education level. Religion and access to the media, which were of no significance on the knowledge regarding impacts of family planning on the child, show significance on the level of knowledge about impacts of family planning on the mother.

Determinants of knowledge about impacts of using family planning methods on the child

Results on the determinants of knowledge about impacts of using family planning on the child are presented as under Model I of the ordered logit in Table 5. Only two variables are significant on knowledge about benefits of family planning for the child. These variables are "discussed use of family planning" ($p<0.007$) and "type of family planning method" being used ($p<0.02$).

Women who discussed family planning with partner have higher knowledge about benefits or impacts of family planning on the child than those who did not. Women who are not using a method of family planning have lower knowledge about the impacts of family planning on the child than women using long-acting or permanent methods of family planning. The model also shows that there are no significant differences in knowledge levels between women using short-acting methods of family planning and women using long-acting or permanent methods of family planning.

Determinants of knowledge about impacts of using family planning methods on the mother

Model II in Table 3 shows the determinants of knowledge about impacts of family planning on the mother or woman. As in Model I, "discussed use of family planning" and "type of family planning method" being used are significant on a woman's level of knowledge about impacts of family planning on the mother. These variables actually show stronger significance on knowledge about benefits for the mother than for the child. However, unlike for Model I where age of the woman is insignificant, Model II shows that the age ($p<0.002$) of a woman is a strong predictor of knowledge about impacts of family planning on the mother. Young women (15-24) are significantly less likely to have higher knowledge about the impacts of family planning on the mother than older women (40-49). There is no significant difference in knowledge levels between middle aged women (25-39) and older women (40-49).

Discussion and Conclusion

This paper has examined the level of knowledge regarding the benefits of family planning and has also analysed factors associated with this knowledge. Knowledge levels about the impacts of family planning are generally low as less than 40% of women in Western Kenya reported high knowledge about the impact of family planning on the child while approximately 16% were highly knowledgeable about the impact on the mother.

According to women's characteristics, only three out of the 12 variables examined are significant predictors of knowledge about the benefit of family planning. The strongest predictor is the discussion of family planning with spouse. This variable was significant on both knowledge about the impacts on the child and mother. As mentioned, no studies have documented this relationship but discussion of family planning with spouse has been found to be critical in the use of family planning methods elsewhere. For example, Ethiopian women who neither discussed about family planning with their husbands nor with a health worker had the highest unmet need for family planning [13]. Similarly, women not using contraceptive methods are less knowledgeable about benefits of family planning and this is expected as individuals are less likely to adopt behaviours for the sake of change without anticipating some benefits from such behaviour.

Age was only significant on the knowledge about benefits for the mother. Younger women were less knowledgeable about the benefits of family planning compared with older women (40-49).

Generally, older women are more experienced about reproductive health matters than younger women, hence this observation.

Therefore, emphasis should be laid on increasing knowledge about the benefits of family planning among women in Western Kenya. This intervention should also involve men as they are critical in influencing women's decisions regarding family planning.

Authors' contributions

This work was a collaborative effort between the authors. NM partly conceptualised the study, ran the statistical analysis and wrote part of the first draft of the manuscript. PB took part in the conceptualisation of the study and interpretation of the data, managed the literature searches and wrote part of the first draft of the manuscript. CM was involved in the interpretation of the data and contributed to further development of the manuscript. EK contributed to the literature searches. All the authors read, reviewed, and approved of the final manuscript.

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Tables and Figures

Figure 1: Percentage distribution of respondents according to number of correct responses to questions about impacts of family planning on the child (n=1,965).

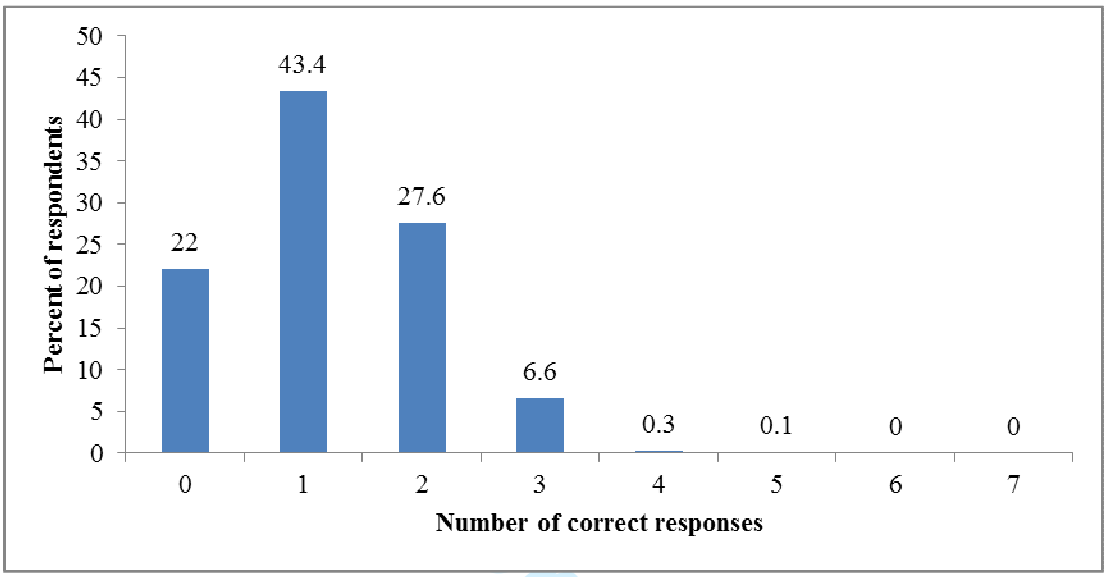

Figure 2: Percent distribution of respondents according to number of correct responses to questions about impacts of family planning on the mother (n=1,965).

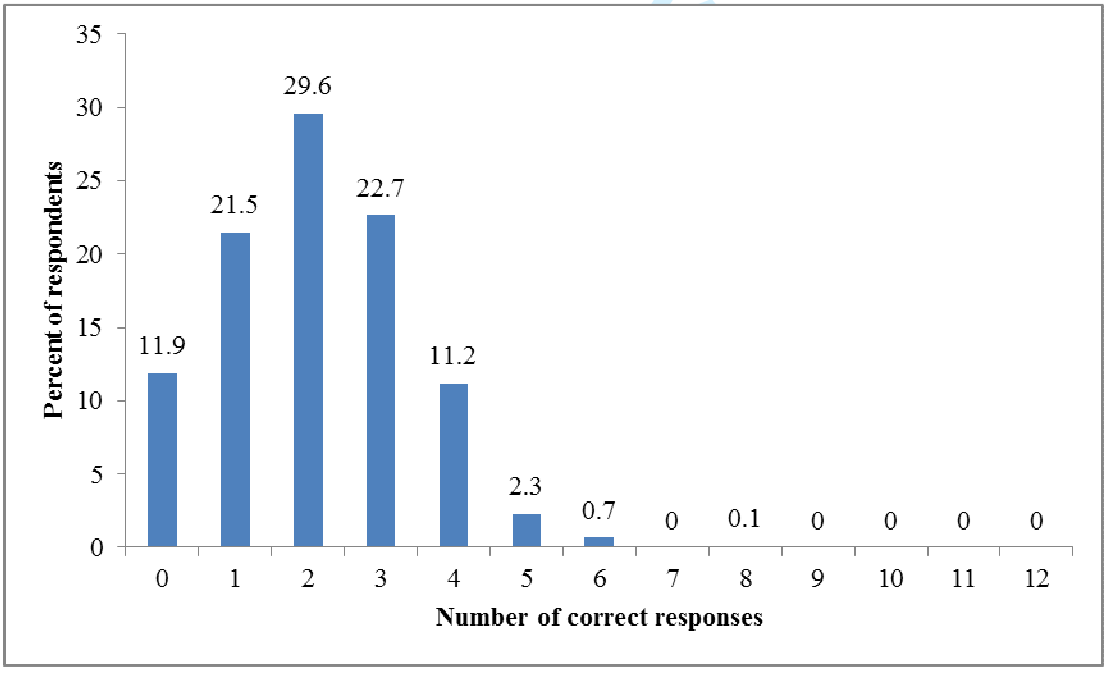

Table 1: Percentage distribution of women (15-49) included in the analysis by selected characteristics in Nyanza and Western Regions of Kenya.

Characteristics	%	n
Age		
15-24	30.3	280
25-39	48.6	449
40-49	21.0	194
Parity		
<2	15.1	139
2-3	28.7	265
4-5	26.4	244
6+	29.8	275
Ethnicity		
Luhya	25.0	231
Luo	57.7	533
Teso	17.2	159
Religion		
Catholic	30.6	282
Other	69.4	641
Level of education		
<Secondary	79.8	737
Secondary+	20.2	186
Partner's level of education		
<Secondary	61.0	563
Secondary+	39.0	360
Reads newspaper or magazine		
Yes	25.4	234
No	74.6	689
Listens to radio		
Yes	83.7	773
No	16.3	150
Watches television		
Yes	23.0	212
No	77.0	711
Discussed use of family planning with spouse		
Yes	68.9	636
No	31.1	287
Type of FP method being used		
None	49.4	456
Short-acting	16.1	149
Long-acting or permanent	34.5	318
District		
Bondo	19.2	177
Siaya	38.2	353
Busia	22.1	204
Teso	20.5	189
Level of knowledge about family planning benefits for the child		
None	17.3	160
Low	46.4	428
High	36.3	335
Level of knowledge about family planning benefits for the mother		
None	5.9	54
Low	78.5	724
High	15.7	145
Total	**100.0**	**923**

Table 2: Prevalence of knowledge about impacts of family planning for mother and child among women (15-49) in Nyanza and Western Regions of Kenya.

Characteristics of respondents	Knowledge about impacts of family planning for the child			Knowledge about impacts of family planning for the mother		
	None	Low	High	None	Low	High
Age		***p=0.000***			***p=0.000***	
15-24	28.3	43.0	28.7	18.8	71.8	9.4
25-39	18.0	44.5	37.6	6.0	76.7	17.3
40-49†	16.7	42.0	41.3	8.6	72.7	18.7
Parity		***p=0.000***			***p=0.000***	
<2	29.1	42.4	28.5	21.0	68.5	10.4
2-3	22.4	46.8	30.9	8.7	79.4	11.9
4-5	15.8	41.4	42.7	5.3	74.7	20.1
6+†	17.3	43.1	39.6	8.0	75.1	16.9
Ethnicity		***p=0.001***			***p=0.000***	
Luhya	22.5	39.9	37.6	9.3	76.0	14.7
Luo	19.3	47.3	33.4	8.6	76.3	15.1
Teso†	27.0	38.1	34.9	21.8	65.8	12.4
Religion		*p=0.191*			***p=0.035***	
Catholic	24.1	40.8	35.1	14.6	71.5	13.9
Other†	21.1	44.6	34.4	10.6	75.0	14.4
Level of education		***p=0.011***			***p=0.000***	
<Secondary	23.1	43.8	33.1	13.2	73.2	13.6
Secondary+†	16.7	44.5	38.8	6.4	74.9	18.7
Partner's level of education		***p=0.000***			*p=0.094*	
<Secondary	19.2	45.0	35.8	8.1	77.8	14.1
Secondary+†	16.9	45.4	37.7	5.2	77.9	16.9
Reads newspaper or magazine		*p=0.472*			***p=0.024***	
Yes	23.2	41.2	35.6	12.8	69.8	17.4
No†	21.6	44.2	34.2	11.6	75.4	13.1
Listens to radio		*p=0.228*			***p=0.004***	
Yes	21.3	43.3	35.4	11.6	72.8	15.6
No†	24.6	43.7	31.6	13.0	77.8	9.2
Watches television		*p=0.148*			***p=0.008***	
Yes	21.9	39.8	38.2	10.9	70.4	18.8
No†	22.1	44.4	33.6	12.2	74.9	12.9
Discussed use of FP with spouse		***p=0.000***			***p=0.000***	
Yes	14.6	46.0	39.4	3.8	79.1	17.1
No†	26.9	43.7	29.4	14.7	74.4	10.9
Type of FP method being used		***p=0.000***			***p=0.000***	
None	24.3	44.9	30.8	14.8	73.2	12.1
Short-acting	17.6	40.4	42.0	7.1	74.5	18.4
Long-acting or permanent	12.6	46.4	41.0	1.1	80.9	17.9
District		***p=0.001***			***p=0.000***	
Bondo	20.7	44.6	34.7	9.6	74.6	15.9
Siaya	18.9	49.5	31.6	8.0	77.6	14.4
Busia	23.5	37.2	39.3	9.6	75.5	15.0
Teso†	25.6	40.5	33.9	20.6	67.1	12.3

Table 3. Log-odds of having higher than lower knowledge about impacts of family planning among women (15-49) in Nyanza and Western Regions of Kenya by selected characteristics.

Characteristics of respondents	Model I		Model II	
	β	*p-value*	β	*p-value*
Age				
15-24	-0.127	0.596	-0.925	**0.003**
25-39	-0.118	0.508	-0.231	0.306
40-49†	-	-	-	-
Parity				
<2	0.098	0.700	0.223	0.508
2-3	-0.117	0.567	0.053	0.842
4-5	0.107	0.547	0.373	0.099
6+†	-	-	-	-
Ethnicity				
Luhya	-0.159	0.561	-0.272	0.438
Luo	0.036	0.913	-0.149	0.726
Teso†	-	-	-	-
Religion				
Catholic	-0.022	0.876	-0.030	0.867
Other†	-	-	-	-
Level of education				
<Secondary	-0.153	0.371	-0.176	0.415
Secondary+†	-	-	-	-
Partner's level of education				
<Secondary	0.040	0.775	-0.120	0.505
Secondary+†	-	-	-	-
Reads newspaper or magazine				
Yes	0.172	0.289	0.297	0.151
No†	-	-	-	-
Listens to radio				
Yes	0.130	0.459	0.263	0.261
No†	-	-	-	-
Watches television				
Yes	-0.060	0. 711	0.090	0.659
No†	-	-	-	-
Discussed use of FP with spouse				
Yes	0.393	**0.006**	0.627	**0.001**
No†	-	-	-	-
Type of FP method being used				
None	-0.357	**0.016**	-0.568	**0.004**
Short-acting	0.053	0.783	0.055	0.815
Long-acting or permanent†	-	-	-	-
District				
Bondo	-0.228	0.503	0.216	0.622
Siaya	-0.406	0.201	0.346	0.397
Busia	-0.158	0.551	0.262	0.441
Teso†	-	-	-	-
Intercept 1	**-1.810**	**0.000**	**-2.885**	**0.000**
Intercept 2	**0.383**	**0.227**	**1.920**	**0.000**
χ^2 value	**37.756**	**0.006**	**65.236**	**0.000**
df	**19**	**-**	**19**	**-**

df=degrees of freedom; †reference category

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Benefits of Family Planning: An Assessment of Women's Knowledge in Rural Western Kenya.

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Abstract

Background

The last two decades have seen an increase in literature reporting an increase in knowledge and use of contraceptives among individuals and couples in Kenya, as in the rest of Africa, but there is a dearth of information regarding knowledge about benefits of family planning (FP) in Kenya.

Objectives

To assess the factors associated with knowledge about the benefits of FP for women and children, among women in rural Western Kenya.**Methods**

Data are drawn from the Packard Western Kenya Project Baseline Survey, which collected data from rural women (15-49). Ordinal regression was used on 923 women to determine levels of knowledge and associated factors regarding benefits of FP.

Results

Women in rural Western Kenya have low levels of knowledge about benefits of FP and are more knowledgeable about benefits for the mother rather than for the child. Only age, spousal communication and type of contraceptive method used are significant.

Conclusion

Women's level of knowledge about benefits of FP is quite low and may be one of the reasons why fertility is still high in Western Kenya. Therefore, FP programs need to focus on increasing women's knowledge about the benefits of FP in this region.

Strengths and Limitations

The major strength of this study is that it has affirmed the importance of information provision about the benefits of family planning and the potential role of involving men in up-scaling the uptake of family planning methods in Western Kenya. However, like any other quantitative study, the paper does not bring out the actual stories behind these statistics.

Key messages

- Knowledge levels about the impacts of family planning are low among women in Rural Western Kenya
- FP programs need to focus on increasing women's knowledge about the benefits of family planning.
- Discussion of family planning with spouse plays an important role in contributing to knowledge about the benefit of family planning

Data source

The data set can be obtained from Michael Mutua (mmutua@aphrc.org)

Background

The last two decades have seen an increase in literature reporting an increase in knowledge and use of contraceptives among individuals and couples in Kenya, as in the rest of sub-Saharan Africa, but there is a dearth of information regarding knowledge about the benefits of family planning in Kenya. In Kenya, knowledge of family planning is almost universal at 95% for women of reproductive age, with male condoms, injectable contraceptives, and pills being the most commonly known methods [1]. Family planning use has in the last two decades also increased from 18% (1987) to 39 % (2008/9) [1]. However this increase has not been matched with a reduction in the unmet need for family planning or reduction in fertility rates. The unmet need for family planning in Kenya has stalled at around 25% and is highest among the less economically well-off women and those in rural areas [2]. Total fertility rate (TFR) in rural areas has remained unchanged at 5.2. In addition, at national level, only a slight decrease in fertility has been reported from 4.7 in 1998 to 4.6 in 2008/9 [2]. There are regional variations in fertility trends in Kenya. Fertility is highest in Nyanza and Western provinces at 5.6 and 5.4, respectively [1]. Married women in the rural areas of Kenya use modern methods of family planning (37%) less than women in urban areas (47%) [1].

Family planning has several benefits, some of which are specific to the health of mothers and their children. Others include socioeconomic benefits; for example, women are able to advance their education and careers by delaying or limiting childbearing and this can bring better economic prospects to their household [3, 4]. Family planning serves to reduce child and maternal morbidity and mortality by preventing unintended pregnancies and unsafe abortions [5].

The number of maternal deaths that could be averted during childbirth as a result of reduction in the number of pregnancies and induced abortions would be significant [6]. Family planning also enables birth spacing ultimately reducing child mortality while enhancing the nutritional status of both mother and child [4]. Moreland and Talbird's [5] analysis of the role of contraception use to the Millennium Development Goals showed that fulfilling the unmet need for family planning in Kenya will prevent maternal mortality and child mortality by 14,040 deaths and 434,306 deaths respectively and reduce poverty [7]. Consequently this could contribute to significantly empowering women, achieving universal education for all, and achieving long term environmental sustainability [8].

Several studies have assessed women's and couples' knowledge about, and use of contraceptives, in addition to barriers to the uptake of family planning services [9-11]. A study conducted in Bondo District of Western Kenya found that few women knew that family planning prevented conception, enabled child spacing, reduced the risk of acquiring and transmitting sexually transmitted infections and helped avoid high-risk pregnancies [9]. Cultural beliefs, fear of side effects, disapproval by couples and inadequate knowledge about contraceptive methods and their benefits are major barriers to contraceptive uptake [9, 12, 13]. Women with knowledge about contraceptives and the benefits of family planning are more likely to use contraceptives [4]. Knowledge enables women to make informed decisions about what contraceptives to use and when to use them [4].

As earlier noted, the Western region of Kenya has poor reproductive health indicators. In response to this need, the Packard Western Kenya Project (PWKP) with financial support from the David and Lucile Packard Foundation,was launched in 2010 in line with the National Reproductive Health Strategy (2009-2015), which, amongst other aims, seeks to involve

communities in enhancing the health of the population through interventions implemented at community level. The PWKP is being implemented in the region with an ultimate goal of reducing unwanted and mistimed pregnancies, lowering the incidence of unsafe, illegal abortion, reducing maternal morbidity and mortality, and decreasing fertility rates over time. These goals are to be met by increasing routine use of modern contraceptive methods among women of reproductive age in Western Kenya. In 2010, a baseline survey was designed to provide information on key program elements for subsequent monitoring and evaluation of the performance of the PWKP. As part of the baseline, the women were asked what they perceived as the impacts of family planning on both women and children. In this paper we analysed the factors associated with knowledge about the benefits of family planning on women and children.

Data and Methods

Data source and sample design

This was an exploratory study, which employed data from a cross-sectional baseline sample of the PWKP Baseline Survey (PWKPBS). The PWKPBS collected data from rural women aged 15-49 years. All study participants were required to give consent before undertaking in the research. For women ages 15-18, interviewers sought further consent from the parents or guardian of the respondent. The face to face interviews were conducted in a private place to protect the confidentiality of responses and enhance the comfort of respondents. The questionnaire used was translated into the commonly spoken languages in the study area. This study was approved by the Kenya Medical Research Institute (KEMRI) Ethics Review Committee. The African Population and Health Research Center implemented the 2010 household baseline survey for the PWKP, in collaboration with the Kenya National Bureau of Statistics (KNBS), and the Great Lakes University of Kisumu (GLUK), using 36 interviewers. A representative multi-stage sample of 2,125 households from 60 enumeration areas distributed proportionally among four districts (Bondo, Busia, Siaya and Teso) was drawn for the survey using the frame of the 2008 KNBS. Data collection took approximately two weeks and a total of 1,997 women were interviewed, representing a response rate of 86%. However, 54% of these women were excluded from analyses in this paper as they did not know a method of family planning.

Some of the criteria considered for an individual to be included in the survey were age (15-29), the ability to communicate in the survey languages and availability to participate in the survey.

Variables

Two dependent variables are used in this paper: level of knowledge about FP benefits for the child and level of knowledge about FP benefits for the mother, also referred to as Model I and

Model II in Table 5, respectively. Since the ordered logit models used require the dependent variable to have three outcomes, the two dependent variables were recoded into trichotomous variables. These variables were constructed based on responses to a series of questions on the impact of family planning on the mother and child (see Tables 1 & 2). The information in Figure 1 was used to construct the first dependent variable. Each correct response was assigned a code of 1 while each incorrect response was assigned a code of 0. All respondents who scored 0 on all questions had the final score of 0 and were coded as having no knowledge or classified into the "none" category. All respondents who scored 1 out of 7 were coded as having "low" knowledge level. Scores 2-7 were coded as "high" knowledge category. The categorization of scores was based on relative scores and was also aimed at minimizing skewness in the dependent variable as majority of respondents had low scores (see ***Figure 1***). The scores ranged between 0 and 5 with a median score of 2. In the strict sense, for example, persons who scored 2 out of 7 had a low score but were categorized as high in order to distinguish them from those with 0 and 1 scores.

Information in ***Figure 2*** was used to construct the second dependent variable. Similarly, in the construction of the second dependent variable, we assigned a code of 1 for each correct response. Each incorrect response was assigned a code of 0. All respondents who scored 0 on all questions had the final score of 0 and were coded as having no knowledge or classified into the "none" knowledge level category. All respondents who scored 1-3 out of 12 were coded as having "low" knowledge level. Scores 4-12 were coded as "high" knowledge category. The scores ranged between 0 and 8 out of 12 with a median score of 2.

A total of 12 independent variables were included in the analyses (see Tables 1-3). Marital status was excluded from the analytical models as less than twenty women were not married. Women

of ethnicities other than Luhya, Luo and Teso were also excluded from the analyses as they were very few (<30).

Data analysis

Frequencies, cross-tabulations and the ordered logit were used to analyse levels and differentials in knowledge levels among women (15-49) in Western Kenya. Ordinal regression depends upon the idea of the cumulative logit, which in turn relies on the idea of the cumulative probability [14] [15] . The cumulative probability can be thought of as the probability that the ***i***th individual is in the ***j***th or higher category. This can be expressed as:

$$C_{ij} = \Pr(y_i \leq j) = \sum_{k=1}^{j} \Pr(y_i = k)$$

where:

y = dependent variable (level of knowledge about impact of family planning); and

k = values of y (1., 2., 3., ... n).

The cumulative probability above can be transformed into the cumulative ordered logit:

$$\text{Logit}(C_{ij}) = \log[C_{ij}/(1- C_{ij})]$$
$$= \alpha_{ij} - \beta_{ij}$$

where:

α_j = logit of the odds of being equal to or less than category ***j*** for the baseline group (also referred to as intercepts or cut-points); and

β = the increase in the log-odds of being higher than category ***j*** per one-unit increase in the independent variable.

A negative **β** coefficient shows lower log-odds of having higher than lower knowledge about the impacts of family planning on the child/mother compared with the reference category (i.e. lower knowledge than the reference category). On the other hand, a positive coefficient indicates higher log-odds of having higher than lower knowledge about the impacts of family planning on the child/mother compared with the reference category (i.e. higher knowledge than the reference category). Exponentiation of **β** coefficients yields odds ratios (not shown in tables).

Results

Descriptive Characteristics of Respondents

Only 923 (46%) women (15-49) out of the 1,997 women interviewed were valid for the regression analyses and their characteristics are shown in Table 3. The rest (54%) did not know a method of family planning, hence their exclusion. Most (83%) women in this sample had access to the radio while a quarter had access to television and newspapers/magazines. By age, majority (49%) of women were aged 25-39 years and the rest were aged 15-24 (30%) and 40-49 (21%). The frequency distributions in Table 3 also confirm other observations about high fertility in this region of Kenya as more than half the women had four or more children ever born.

Luo women were the majority (58%), followed by Luhya women who comprised a quarter of the entire sample size. Catholics were minority when compared to non-Catholics; 32 versus 68%, respectively. Education levels are quite low among these women. Approximately 80% had not received education beyond primary education. A similar pattern is observed among their partners: less than 40% of the women had partners who had some post-primary education. Table 1, however, also shows that majority (68%) of women reported discussing family planning with their partner/husband even though almost half (49%) of the sample were not using a method of

contraception at the time of the survey. Strikingly, the majority of women reporting current use of contraception were using a long-acting or permanent method of contraception. According to district, more than a third (38%) of the women surveyed were from Siaya district while the smallest sample was drawn from Bondo District (19%).

According to level of knowledge about impacts of using family planning on the child, which is one of the dependent variables for this paper, the majority of women had none or low level of knowledge. Less than 40% of women were in the high level knowledge category. Concerning the level of knowledge about impacts of using family planning on the mother, data indicated some relatively higher knowledge for impacts on the mother than on the child (see ***Table 1***).

Factors associated with knowledge about impacts of using family planning methods on children and women

A higher proportion of women had some knowledge about impacts of using family planning on the mother than on the child. 17% of the women had no knowledge at all about the impacts on the child while only 6% exhibited total lack of knowledge about the impacts of family planning on the mother. The results in ***Table 4*** show some significant associations between level of knowledge about impacts of family planning and some characteristics.

The variables age, parity, partner's level of education, discussion of family planning with partner and contraceptive use have the strongest association with knowledge about impacts of family planning on the child. Age and level of knowledge regarding the impact of family planning on the child have a positive linear correlation i.e. the older the woman, the higher the level of knowledge. Similarly, women with a higher number of children (>3) have higher knowledge about impacts of family planning on the child than women with a smaller number of children

(<4). As expected, women who reported to have partners with lower than secondary education level have lower level of knowledge than women whose partner had secondary or higher level of education. Interestingly, women's own level of education was less significant than partner's education level on their knowledge about impacts of using family planning on the child, suggesting the influential role partner's characteristics may pose on women. Women who reported that they discussed family planning with their partners and those using a method of family planning (either short- or long-term) exhibited higher knowledge about the impacts of family planning on the child than women who did not discuss family planning with partner and were not using a method of family planning.

Though they did not have the strongest association, ethnicity and district were also significantly associated with knowledge about the impacts of using family planning on the child. The Luhya women had the highest (38%) level of knowledge, followed by the Teso women (35%). By district, women from Busia district (39%) had the highest knowledge levels, followed by women from Bondo district (35%). Access to the media and religion had no significance on the knowledge about impacts of family planning on the child. The knowledge about impacts of family planning on the mother was significantly associated with all independent variables except partner's education level. Religion and access to the media, which were of no significance on the knowledge regarding impacts of family planning on the child, show significance on the level of knowledge about impacts of family planning on the mother.

Determinants of knowledge about impacts of using family planning methods on the child

Results on the determinants of knowledge about impacts of using family planning on the child are presented under Model I of the ordered logit in Table 5. Only two variables are significant

on knowledge about benefits of family planning for the child. These variables are "discussed use of family planning" ($p<0.007$) and "type of family planning method" being used ($p<0.02$). Women who discussed family planning with partner have higher knowledge about benefits or impacts of family planning on the child than those who did not. Women who are not using a method of family planning have lower knowledge about the impacts of family planning on the child than women using long-acting or permanent methods of family planning. The model also shows that there are no significant differences in knowledge levels between women using short-acting methods of family planning and women using long-acting or permanent methods of family planning.

Determinants of knowledge about impacts of using family planning methods on the mother

Model II in Table 5 shows the determinants of knowledge about impacts of family planning on the mother or woman. As in Model I, "discussed use of family planning" and "type of family planning method" being used are significant on a woman's level of knowledge about impacts of family planning on the mother. These variables actually show stronger significance on knowledge about benefits for the mother than for the child. However, unlike for Model I where age of the woman is insignificant, Model II shows that the age ($p<0.002$) of a woman is a strong predictor of knowledge about impacts of family planning on the mother. Young women (15-24) are significantly less likely to have higher knowledge about the impacts of family planning on the mother than older women (40-49). There is no significant difference in knowledge levels between middle aged women (25-39) and older women (40-49).

Discussion

This paper has examined the level of knowledge regarding the benefits of family planning and has also analysed factors associated with this knowledge. Knowledge levels about the impacts of family planning are generally low as less than 40% of women in Western Kenya reported high knowledge about the impact of family planning on the child while approximately 16% were highly knowledgeable about the impact on the mother.

According to women's characteristics, only three out of the 12 variables examined are significant predictors of knowledge about the benefit of family planning. The strongest predictor is the discussion of family planning with spouse. This variable was significant on both knowledge about the impacts on the child and mother. Discussion of family planning with spouse has been found to be critical in the use of family planning methods elsewhere. Several studies have shown that women who discuss with their spouses about, and have their partner's approval for, family

planning are more inclined to use a modern method of contraception[13, 16-18] .For example, Ethiopian women who neither discussed about family planning with their husbands nor with a health worker had the highest unmet need for family planning [13]. In this study, women not using contraceptive methods are less knowledgeable about benefits of family planning and this is expected as individuals are less likely to adopt behaviours for the sake of change without anticipating some benefits from such behaviour. Age was only significant on the knowledge about benefits for the mother. Younger women were less knowledgeable about the benefits of family planning compared with older women (40-49). Generally, older women are more experienced about reproductive health matters than younger women, hence this observation.

The interpretation of the findings in this study needs to be done with caution as the study uses cross-sectional survey data. To this end only associations, and not causal relationships between variables and outcomes, can be accounted for. This limitation is accentuated with a lack of qualitative information to complement the findings.

Conclusion

This study has demonstrated that women in the study area have low knowledge about the benefits of family planning to themselves and to their children. Therefore, family planning interventions need to emphasise on increasing knowledge about the benefits of family planning among women in Western Kenya. These interventions should also involve men as they are critical in influencing women's decisions regarding family planning.

Authors' contributions

This work was a collaborative effort between the authors. NM partly conceptualised the study, ran the statistical analysis and wrote part of the first draft of the manuscript. PB took part in the conceptualisation of the study and interpretation of the data, managed the literature searches and wrote part of the first draft of the manuscript. CM was involved in the interpretation of the data and contributed to further development of the manuscript. EK contributed to the literature searches. All the authors read, reviewed, and approved of the final manuscript.

Interests

None declared

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Data sharing

The data set can be obtained from Michael Mutua (mmutua@aphrc.org)

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Figure legends

Figure 1: Percentage distribution of respondents according to number of correct responses to questions about impacts of family planning on the child (n=1,965).

Figure 2: Percent distribution of respondents according to number of correct responses to questions about impacts of family planning on the mother (n=1,965).

Table 1: Per cent distribution of respondents by knowledge about impacts of family planning on the child

What are the impacts on the child if the mother uses family planning?	Response (%)		
	Yes	No	Missing
Better growth	52.7	45.9	1.4
Better nutritional status	23.1	75.3	1.6
Better health	43.9	54.6	1.5
Better survival chance	8.5	89.8	1.7
Better attention by mother	39.3	59.3	1.5
Better educated	22.8	75.5	1.7
More opportunities	10.7	87.6	1.7

Table 2: Per cent distribution of respondents by knowledge about impacts of family planning on the mother

What are the impacts on the mother if she uses family planning?	Response (%)		
	Yes	No	Missing
Easy to space pregnancies/children	45.2	53.4	1.4
Better nutritional status	16.5	82.2	1.3
Lower incidence of anaemia	2.3	96.1	1.7
Less pregnancy complications	5.3	93.2	1.5
Avoid STI/HIV	0.8	97.6	1.6
Reduce unwanted pregnancies	20.1	78.5	1.4
Better health	28.9	69.6	1.5
Spousal harmony/marital happiness	3.3	95.1	1.6
Fewer children to educate	23.3	75.2	1.5
She has more free time	38.2	60.3	1.5
Family has more money	6.8	91.6	1.6
Peace of mind	17.1	81.5	1.4

Table 3: Percentage distribution of women (15-49) included in the analysis by selected characteristics in Nyanza and Western Regions of Kenya.

Characteristics	%	n
Age		
15-24	30.3	280
25-39	48.6	449
40-49	21.0	194
Parity		
<2	15.1	139
2-3	28.7	265
4-5	26.4	244
6+	29.8	275
Ethnicity		
Luhya	25.0	231
Luo	57.7	533
Teso	17.2	159
Religion		
Catholic	30.6	282
Other	69.4	641
Level of education		
<Secondary	79.8	737
Secondary+	20.2	186
Partner's level of education		
<Secondary	61.0	563
Secondary+	39.0	360
Reads newspaper or magazine		
Yes	25.4	234
No	74.6	689
Listens to radio		
Yes	83.7	773
No	16.3	150
Watches television		
Yes	23.0	212
No	77.0	711
Discussed use of family planning with spouse		
Yes	68.9	636
No	31.1	287
Type of FP method being used		
None	49.4	456
Short-acting	16.1	149
Long-acting or permanent	34.5	318
District		
Bondo	19.2	177
Siaya	38.2	353
Busia	22.1	204
Teso	20.5	189
Level of knowledge about family planning benefits for the child		
None	17.3	160
Low	46.4	428
High	36.3	335
Level of knowledge about family planning benefits for the mother		
None	5.9	54
Low	78.5	724
High	15.7	145
Total	**100.0**	**923**

Table 4: Prevalence of knowledge about impacts of family planning for mother and child among women (15-49) in Nyanza and Western Regions of Kenya.

Characteristics of respondents	Knowledge about impacts of family planning for the child			Knowledge about impacts of family planning for the mother		
	None	Low	High	None	Low	High
Age		***p=0.000***			***p=0.000***	
15-24	28.3	43.0	28.7	18.8	71.8	9.4
25-39	18.0	44.5	37.6	6.0	76.7	17.3
40-49†	16.7	42.0	41.3	8.6	72.7	18.7
Parity		***p=0.000***			***p=0.000***	
<2	29.1	42.4	28.5	21.0	68.5	10.4
2-3	22.4	46.8	30.9	8.7	79.4	11.9
4-5	15.8	41.4	42.7	5.3	74.7	20.1
6+†	17.3	43.1	39.6	8.0	75.1	16.9
Ethnicity		***p=0.001***			***p=0.000***	
Luhya	22.5	39.9	37.6	9.3	76.0	14.7
Luo	19.3	47.3	33.4	8.6	76.3	15.1
Teso†	27.0	38.1	34.9	21.8	65.8	12.4
Religion		*p=0.191*			***p=0.035***	
Catholic	24.1	40.8	35.1	14.6	71.5	13.9
Other†	21.1	44.6	34.4	10.6	75.0	14.4
Level of education		***p=0.011***			***p=0.000***	
<Secondary	23.1	43.8	33.1	13.2	73.2	13.6
Secondary+†	16.7	44.5	38.8	6.4	74.9	18.7
Partner's level of education		***p=0.000***			*p=0.094*	
<Secondary	19.2	45.0	35.8	8.1	77.8	14.1
Secondary+†	16.9	45.4	37.7	5.2	77.9	16.9
Reads newspaper or magazine		*p=0.472*			***p=0.024***	
Yes	23.2	41.2	35.6	12.8	69.8	17.4
No†	21.6	44.2	34.2	11.6	75.4	13.1
Listens to radio		*p=0.228*			***p=0.004***	
Yes	21.3	43.3	35.4	11.6	72.8	15.6
No†	24.6	43.7	31.6	13.0	77.8	9.2
Watches television		*p=0.148*			***p=0.008***	
Yes	21.9	39.8	38.2	10.9	70.4	18.8
No†	22.1	44.4	33.6	12.2	74.9	12.9
Discussed use of FP with spouse		***p=0.000***			***p=0.000***	
Yes	14.6	46.0	39.4	3.8	79.1	17.1
No†	26.9	43.7	29.4	14.7	74.4	10.9
Type of FP method being used		***p=0.000***			***p=0.000***	
None	24.3	44.9	30.8	14.8	73.2	12.1
Short-acting	17.6	40.4	42.0	7.1	74.5	18.4
Long-acting or permanent	12.6	46.4	41.0	1.1	80.9	17.9
District		***p=0.001***			***p=0.000***	
Bondo	20.7	44.6	34.7	9.6	74.6	15.9
Siaya	18.9	49.5	31.6	8.0	77.6	14.4
Busia	23.5	37.2	39.3	9.6	75.5	15.0
Teso†	25.6	40.5	33.9	20.6	67.1	12.3

Table 5. Log-odds of having higher than lower knowledge about impacts of family planning among women (15-49) in Nyanza and Western Regions of Kenya by selected characteristics.

Characteristics of respondents	Model I		Model II	
	β	*p-value*	β	*p-value*
Age				
15-24	-0.127	0.596	-0.925	**0.003**
25-39	-0.118	0.508	-0.231	0.306
40-49†	-	-	-	-
Parity				
<2	0.098	0.700	0.223	0.508
2-3	-0.117	0.567	0.053	0.842
4-5	0.107	0.547	0.373	0.099
6+†	-	-	-	-
Ethnicity				
Luhya	-0.159	0.561	-0.272	0.438
Luo	0.036	0.913	-0.149	0.726
Teso†	-	-	-	-
Religion				
Catholic	-0.022	0.876	-0.030	0.867
Other†	-	-	-	-
Level of education				
<Secondary	-0.153	0.371	-0.176	0.415
Secondary+†	-	-	-	-
Partner's level of education				
<Secondary	0.040	0.775	-0.120	0.505
Secondary+†	-	-	-	-
Reads newspaper or magazine				
Yes	0.172	0.289	0.297	0.151
No†	-	-	-	-
Listens to radio				
Yes	0.130	0.459	0.263	0.261
No†	-	-	-	-
Watches television				
Yes	-0.060	0. 711	0.090	0.659
No†	-	-	-	-
Discussed use of FP with spouse				
Yes	0.393	**0.006**	0.627	**0.001**
No†	-	-	-	-
Type of FP method being used				
None	-0.357	**0.016**	-0.568	**0.004**
Short-acting	0.053	0.783	0.055	0.815
Long-acting or permanent†	-	-	-	-
District				
Bondo	-0.228	0.503	0.216	0.622
Siaya	-0.406	0.201	0.346	0.397
Busia	-0.158	0.551	0.262	0.441
Teso†	-	-	-	-
Intercept 1	**-1.810**	**0.000**	**-2.885**	**0.000**
Intercept 2	**0.383**	**0.227**	**1.920**	**0.000**
χ^2 value	**37.756**	**0.006**	**65.236**	**0.000**
df	**19**	**-**	**19**	**-**

df=degrees of freedom; †reference category

Benefits of Family Planning: An Assessment of Women's Knowledge in Rural Western Kenya.

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Abstract

Background

The last two decades have seen ~~an increase~~an increase in literature reporting an increase in knowledge and use of contraceptives among individuals~~'~~ and couples in Kenya, as in the rest of Africa, but there is a dearth of information regarding knowledge about benefits of family planning (FP) in Kenya.

Objectives

To assess the ~~knowledge levels and associated~~ factors associated with knowledge about ~~regarding~~ the benefits of FP~~,~~ for ~~both~~ women and children, among women in rural Western Kenya.

Methods

Data are drawn from the Packard Western Kenya Project Baseline Survey, which collected data from rural women (15-49). Ordinal regression was used on 923 women to determine levels of knowledge and associated factors regarding benefits of FP.

Results

Women in rural Western Kenya have low levels of knowledge about benefits of FP and are more knowledgeable about benefits for the mother rather than for the child. Only age, spousal communication and type of contraceptive method used are significant.

Conclusion

Women's level of knowledge about benefits of FP is quite low and may be one of the reasons why fertility is still high in Western Kenya. Therefore, FP programs need to focus on increasing women's knowledge about the benefits of FP in this region.

Strengths and Limitations

The major strength of this study is that it has affirmed the importance of information provision about the benefits of family planning and the potential role of involving men in up-scaling the uptake of family planning methods in Western Kenya. However, like any other quantitative study, the paper does not bring out the actual stories behind these statistics.

Key messages

- Knowledge levels about the impacts of family planning are low among women in Rural Western Kenya
- FP programs need to focus on increasing women's knowledge about the benefits of family planning.
- Discussion of family planning with spouse plays an important role in contributing to knowledge about the benefit of family planning

Data source

The data set can be obtained from Michael Mutua (mmutua@aphrc.org)

Background

The last two decades have seen an increase in literature reporting an increase in knowledge and use of contraceptives among individuals and couples in Kenya, as in the rest of sub-Saharan Africa, but there is a dearth of information regarding knowledge about the benefits of family planning in Kenya. In Kenya, knowledge of family planning is almost universal at 95% for women of reproductive age, with male condoms, injectable contraceptives, and pills being the most commonly known methods [1]. Family planning use has in the last two decades also ~~over the years~~ increased from 18% (1987) to 39 % (2008/9) [1]. However this increase has not been matched with a reduction in the unmet need for family planning or ~~and~~ reduction in fertility rates. The unmet need for family planning in Kenya has stalled at around 25% and is highest among the less economically well-off women and those in rural areas [2]. Total fertility rate (TFR) in rural areas has remained unchanged at 5.2. In addition, at national level, only a slight decrease in fertility has been reported from 4.7 in 1998 to 4.6 in 2008/9 [2]. There are regional variations in fertility trends in Kenya. Fertility is highest in Nyanza and Western provinces at 5.6 and 5.4, respectively [1]. Married women in the rural areas of Kenya use modern methods of family planning (37%) less than women in urban areas (47%) [1].

Family planning has several benefits, some of which are specific to the health of mothers and their children. Others include socioeconomic benefits; for example, women are able to advance their education and careers by delaying or limiting childbearing and this can bring better economic prospects to their household [3, 4]. Family planning serves to reduce child and

maternal morbidity and mortality by preventing unintended pregnancies and unsafe abortions [5]. The number of maternal deaths that could be averted during childbirth as a result of reduction in the number of pregnancies and induced abortions would be significant [6]. Family planning also enables birth spacing ultimately reducing child mortality while enhancing the nutritional status of both mother and child [4]. Moreland and Talbird's [5] analysis of the role of contraception use to the Millennium Development Goals showed that fulfilling the unmet needs of for family planning in Kenya will prevent maternal mortality and child mortality by 14,040 deaths and 434,306 deaths respectively and reduce poverty [7]. Consequently this could contribute to significantly empowering women, achieving universal education for all, and achieving long term environmental sustainability [8].

Several studies have assessed women's and couples' knowledge about, and use of contraceptives, in addition to barriers to the uptake of family planning services [9-11]. A study conducted in Bondo District of Western Kenya found that few women knew that family planning prevented conception, enabled child spacing, reduced the risk of acquiring and transmitting sexually transmitted infections and helped avoid high-risk pregnancies [9]. Cultural beliefs, fear of side effects, disapproval by couples and inadequate knowledge about contraceptive methods and their benefits are major barriers to contraceptive uptake [9, 12, 13]. Women with knowledge about contraceptives and the benefits of family planning are more likely to use contraceptives [4]. Knowledge enables women to make informed decisions about what contraceptives to use and when to use them [4].

As earlier noted, the Western region of Kenya has poor reproductive health indicators. In response to this need, the Packard Western Kenya Project (PWKP) with financial support from the David and Lucile Packard Foundation, was launched in 2010 in line with the National

Reproductive Health Strategy (2009-2015), which, amongst other aims, seeks to involve communities in enhancing the health of the population through interventions implemented at community level. The PWKP is being implemented in the region with an ultimate goal of reducing unwanted and mistimed pregnancies, lowering the incidence of unsafe, illegal abortion, reducing maternal morbidity and mortality, and decreasing fertility rates over time. These goals are to be met by increasing routine use of modern contraceptive methods among women of reproductive age in Western Kenya. In 2010, a baseline survey was designed to provide information on key program elements for subsequent monitoring and evaluation of the performance of the PWKP. As part of the baseline, the women were asked what they perceived as the impacts of family planning on both women and children. In this paper we analysed the ~~knowledge levels and~~ ~~the~~ factors associated with knowledge about ~~factors regarding~~ the ~~impacts~~ benefits ~~benefits~~ of family planning on~~for both~~ women and children.

Data and Methods

Data source and sample design

This was an exploratory study, which employed ~~The~~ data ~~for this paper are drawn~~ from a cross-sectional baseline sample of the PWKP Baseline Survey (PWKPBS). The PWKPBS~~, which~~ collected data from rural women aged 15-49 years. All study participants were required to give consent before undertaking in the research. For women ages 15-18, interviewers sought further consent from the parents or guardian of the respondent. The face to face interviews were conducted in a private place to protect the confidentiality of responses and enhance the comfort of respondents. The questionnaire used was translated into the commonly spoken languages in the study area. This study was approved by the Kenya Medical Research Institute (KEMRI) Ethics Review Committee. The African Population and Health Research Center implemented the 2010 household baseline survey for the PWKP, in collaboration with the Kenya National Bureau of Statistics (KNBS), and the Great Lakes University of Kisumu (GLUK), using 36 interviewers. A representative multi-stage sample of 2,125 households from 60 enumeration areas distributed proportionally among four districts (Bondo, Busia, Siaya and Teso) was drawn for the survey using the frame of the 2008 KNBS. Data collection took approximately two weeks and a total of 1,997 women were interviewed, representing a response rate of 86%. However, 54% of these women were excluded from analyses in this paper as they did not know a method of family planning.

Some of the criteria considered for an individual to be included in the survey were age (15-29), the ability to communicate in the survey languages and availability to participate in the survey.

Variables

Two dependent variables are used in this paper: level of knowledge about FP benefits for the child and level of knowledge about FP benefits for the mother, also referred to as Model I and Model II in Table 5, respectively. Since the ordered logit models used require the dependent variable to have three outcomes, the two dependent variables were recoded into trichotomous variables. These variables were constructed based on responses to a series of questions on the impact of family planning on the mother and child (see Tables 1 & 2). The information in Figure 1 was used to construct the first dependent variable. Each correct response was assigned a code of 1 while each incorrect response was assigned a code of 0. All respondents who scored 0 on all questions had the final score of 0 and were coded as having no knowledge or classified into the "none" category. All respondents who scored 1 out of 7 were coded as having "low" knowledge level. Scores 2-7 were coded as "high" knowledge category. The categorization of scores was based on relative scores and was also aimed at minimizing skewness in the dependent variable as majority of respondents had low scores (see ***Figure 1***). The scores ranged between 0 and 5 with a median score of 2. In the strict sense, for example, persons who scored 2 out of 7 had a low score but were categorized as high in order to distinguish them from those with 0 and 1 scores.

Information in ***Figure 2*** was used to construct the second dependent variable. Similarly, in the construction of the second dependent variable, we assigned a code of 1 for each correct response. Each incorrect response was assigned a code of 0. All respondents who scored 0 on all questions had the final score of 0 and were coded as having no knowledge or classified into the "none" knowledge level category. All respondents who scored 1-3 out of 12 were coded as having "low"

knowledge level. Scores 4-12 were coded as "high" knowledge category. The scores ranged between 0 and 8 out of 12 with a median score of 2.

A total of 12 independent variables were included in the analyses (see Tables 1-3). Marital status was excluded from the analytical models as less than twenty women were not married. Women of ethnicities other than Luhya, Luo and Teso were also excluded from the analyses as they were very few (<30).

Data analysis

Frequencies, cross-tabulations and the ordered logit were used to analyse levels and differentials in knowledge levels among women (15-49) in Western Kenya. Ordinal regression depends upon the idea of the cumulative logit, which in turn relies on the idea of the cumulative probability [14] [15] . The cumulative probability can be thought of as the probability that the ***i***th individual is in the ***j***th or higher category. This can be expressed as:

$$C_{ij} = \Pr(y_i \leq j) = \sum_{k=1}^{j} \Pr(y_i = k)$$

where:

y = dependent variable (level of knowledge about impact of family planning); and

k = values of y (1., 2., 3., ... n).

The cumulative probability above can be transformed into the cumulative ordered logit:

$$\text{Logit}(C_{ij}) = \log[C_{ij}/(1- C_{ij})]$$
$$= \alpha_{ij} - \beta_{ij}$$

where:

α_i = logit of the odds of being equal to or less than category ***j*** for the baseline group (also referred to as intercepts or cut-points); and

β = the increase in the log-odds of being higher than category ***j*** per one-unit increase in the independent variable.

A negative **β** coefficient shows lower log-odds of having higher than lower knowledge about the impacts of family planning on the child/mother compared with the reference category (i.e. lower knowledge than the reference category). On the other hand, a positive coefficient indicates higher log-odds of having higher than lower knowledge about the impacts of family planning on the child/mother compared with the reference category (i.e. higher knowledge than the reference category). Exponentiation of **β** coefficients yields odds ratios (not shown in tables).

Results

Descriptive Characteristics of Respondents

Only 923 (46%) women (15-49) out of the 1,997 women interviewed were valid for the regression analyses and their characteristics are shown in Table 3~~1~~. The rest (54%) did not know a method of family planning, hence their exclusion. Most (83%) women in this sample had access to the radio while a quarter had access to television and newspapers/magazines. By age, majority (49%) of women were aged 25-39 years and the rest were aged 15-24 (30%) and 40-49 (21%). The frequency distributions in Table 3~~1~~ also confirm other observations about high fertility in this region of Kenya as more than half the women had four or more children ever born.

Luo women were the majority (58%), followed by Luhya women who comprised a quarter of the entire sample size. Catholics were minority when compared to non-Catholics; 32 versus 68% ~~percent~~, respectively. Education levels are quite low among these women. Approximately 80% ~~percent~~ had not received education beyond primary education. A similar pattern is observed among their partners: less than 40% of the women had partners who had some post-primary education. Table 1, however, also shows that majority (68%) of women reported discussing family planning with their partner/husband even though almost half (49%) of the sample were not using a method of contraception at the time of the survey. Strikingly, the majority of women reporting current use of contraception were using a long-acting or permanent method of contraception. According to district, more than a third (38%) of the women surveyed were from Siaya district while the smallest sample was drawn from Bondo District (19%).

According to level of knowledge about impacts of using family planning on the child, which is one of the dependent variables for this paper, the majority of women had none or low level of knowledge. Less than 40% of women were in the high level knowledge category. Concerning the level of knowledge about impacts of using family planning on the mother, data indicated some relatively higher knowledge for impacts on the mother than on the child ~~as approximately 95% of women exhibited some knowledge about the impacts on the mother compared with 83% for the impacts on the child~~ (see ***Table 1***).

Factors associated with knowledge about impacts of using family planning methods on children and women

A higher proportion of women had some knowledge about impacts of using family planning on the mother than on the child. 17% of the women had no knowledge at all about the impacts on the child while only 6% exhibited total lack of knowledge about the impacts of family planning on the mother. The results in ***Table 4~~2~~*** show some significant associations between level of knowledge about impacts of family planning and some characteristics.

The variables age, parity, partner's level of education, discussion of family planning with partner and contraceptive use have the strongest association with knowledge about impacts of family planning on the child. Age and level of knowledge regarding the impact of family planning on the child have a positive linear correlation ~~is directly related with level of knowledge about impacts of family planning on the child~~ i.e. the older the woman, the higher the level of knowledge. Similarly, women with a higher number of children (>3) have higher knowledge about impacts of family planning on the child than women with a smaller number of children (<4). As expected, women who reported to have partners with lower than secondary education

level have lower level of knowledge than women whose partner had secondary or higher level of education. Interestingly, women's own level of education was less significant than partner's education level on their knowledge about impacts of using family planning on the child, suggesting the influential role partner's characteristics may pose on women. Women who reported that they discussed family planning with their partners and those using a method of family planning (either short- or long-term) exhibited higher knowledge about the impacts of family planning on the child than women who did not discuss family planning with partner and were not using a method of family planning.

Though they did not have the strongest association, ethnicity and district were also significantly associated with knowledge about the impacts of using family planning on the child. The Luhya women had the highest (38%) level of knowledge, followed by the Teso women (35%). By district, women from Busia district (39%) had the highest knowledge levels, followed by women from Bondo district (35%). Access to the media and religion had no significance on the knowledge about impacts of family planning on the child. The knowledge about impacts of family planning on the mother was significantly associated with all independent variables except partner's education level. Religion and access to the media, which were of no significance on the knowledge regarding impacts of family planning on the child, show significance on the level of knowledge about impacts of family planning on the mother.

Determinants of knowledge about impacts of using family planning methods on the child

Results on the determinants of knowledge about impacts of using family planning on the child are presented ~~as~~ under Model I of the ordered logit in Table 5. Only two variables are significant on knowledge about benefits of family planning for the child. These variables are "discussed use

of family planning" ($p<0.007$) and "type of family planning method" being used ($p<0.02$). Women who discussed family planning with partner have higher knowledge about benefits or impacts of family planning on the child than those who did not. Women who are not using a method of family planning have lower knowledge about the impacts of family planning on the child than women using long-acting or permanent methods of family planning. The model also shows that there are no significant differences in knowledge levels between women using short-acting methods of family planning and women using long-acting or permanent methods of family planning.

Determinants of knowledge about impacts of using family planning methods on the mother

Model II in Table 5~~3~~ shows the determinants of knowledge about impacts of family planning on the mother or woman. As in Model I, "discussed use of family planning" and "type of family planning method" being used are significant on a woman's level of knowledge about impacts of family planning on the mother. These variables actually show stronger significance on knowledge about benefits for the mother than for the child. However, unlike for Model I where age of the woman is insignificant, Model II shows that the age ($p<0.002$) of a woman is a strong predictor of knowledge about impacts of family planning on the mother. Young women (15-24) are significantly less likely to have higher knowledge about the impacts of family planning on the mother than older women (40-49). There is no significant difference in knowledge levels between middle aged women (25-39) and older women (40-49).

Discussion ~~and Conclusion~~

This paper has examined the level of knowledge regarding the benefits of family planning and has also analysed factors associated with this knowledge. Knowledge levels about the impacts of family planning are generally low as less than 40% of women in Western Kenya reported high knowledge about the impact of family planning on the child while approximately 16% were highly knowledgeable about the impact on the mother.

According to women's characteristics, only three out of the 12 variables examined are significant predictors of knowledge about the benefit of family planning. The strongest predictor is the discussion of family planning with spouse. This variable was significant on both knowledge about the impacts on the child and mother. D~~As mentioned, no studies have documented this~~

~~relationship but d~~iscussion of family planning with spouse has been found to be critical in the use of family planning methods elsewhere. Several studies have shown that women who discuss with their spouses about, and have their partner's approval for, family planning are more inclined to use a modern method of contraception[13, 16-18] .For example, Ethiopian women who neither discussed about family planning with their husbands nor with a health worker had the highest unmet need for family planning [13]. In this study~~Similarly~~, women not using contraceptive methods are less knowledgeable about benefits of family planning and this is expected as individuals are less likely to adopt behaviours for the sake of change without anticipating some benefits from such behaviour. Age was only significant on the knowledge about benefits for the mother. Younger women were less knowledgeable about the benefits of family planning compared with older women (40-49). Generally, older women are more experienced about reproductive health matters than younger women, hence this observation.

The interpretation of the findings in this study needs to be done with caution as the study uses cross-sectional survey data. To this end only associations, and not causal relationships between variables and outcomes, can be accounted for. This limitation is accentuated with a lack of qualitative information to complement the findings.

Conclusion

This study has demonstrated that women in the study area have low knowledge about the benefits of family planning to themselves and to their children. ~~Age was only significant on the knowledge about benefits for the mother. Younger women were less knowledgeable about the benefits of family planning compared with older women (40-49). Generally, older women are~~

~~more experienced about reproductive health matters than younger women, hence this observation.~~

Therefore, family planning interventions need to emphasise ~~should be laid~~ on increasing knowledge about the benefits of family planning among women in Western Kenya. These~~is~~ interventions should also involve men as they are critical in influencing women's decisions regarding family planning.

Authors' contributions

This work was a collaborative effort between the authors. NM partly conceptualised the study, ran the statistical analysis and wrote part of the first draft of the manuscript. PB took part in the conceptualisation of the study and interpretation of the data, managed the literature searches and wrote part of the first draft of the manuscript. CM was involved in the interpretation of the data and contributed to further development of the manuscript. EK contributed to the literature searches. All the authors read, reviewed, and approved of the final manuscript.

Interests

None declared

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Acknowledgements

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Tables and Figures

Figure 1: Percentage distribution of respondents according to number of correct responses to questions about impacts of family planning on the child (n=1,965).

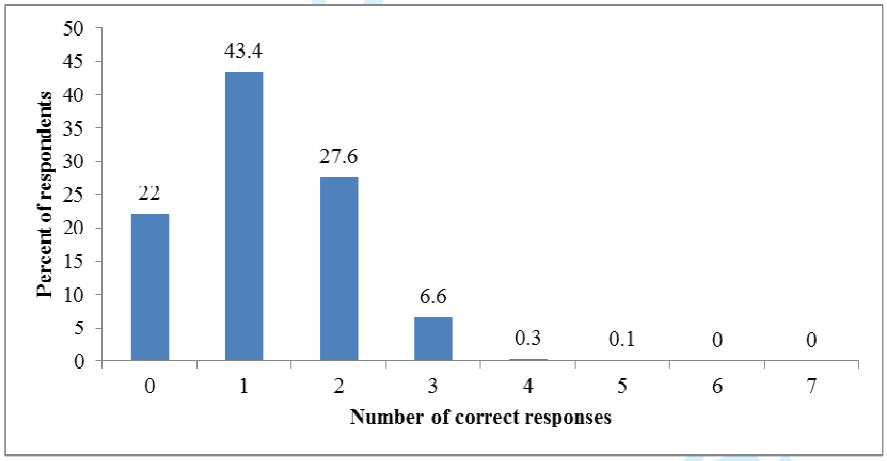

Figure 2: Percent distribution of respondents according to number of correct responses to questions about impacts of family planning on the mother (n=1,965).

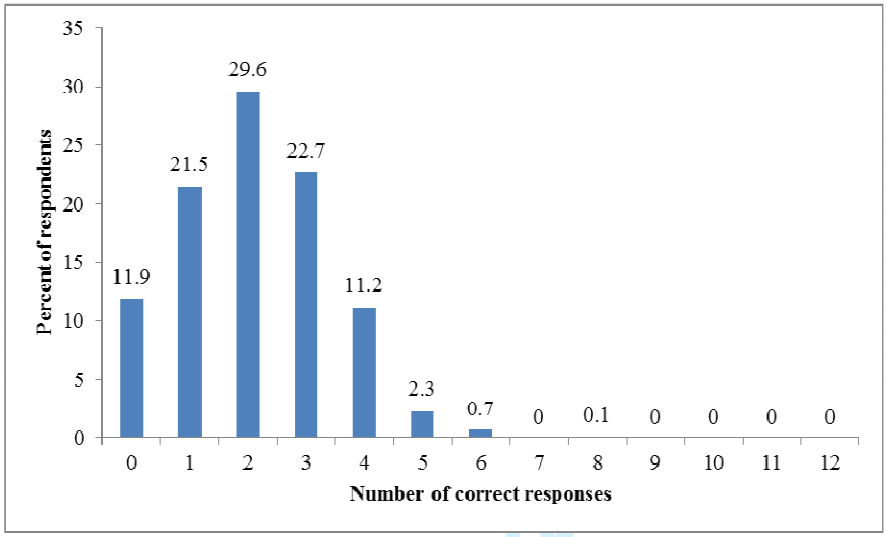

Table 1: Per cent distribution of respondents by knowledge about impacts of family planning on the child

What are the impacts on the child if the mother uses family planning?	Response (%)		
	Yes	No	Missing
Better growth	52.7	45.9	1.4
Better nutritional status	23.1	75.3	1.6
Better health	43.9	54.6	1.5
Better survival chance	8.5	89.8	1.7
Better attention by mother	39.3	59.3	1.5
Better educated	22.8	75.5	1.7
More opportunities	10.7	87.6	1.7

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Table 2: Per cent distribution of respondents by knowledge about impacts of family planning on the mother

What are the impacts on the mother if she uses family planning?	Response (%)		
	Yes	No	Missing
Easy to space pregnancies/children	45.2	53.4	1.4
Better nutritional status	16.5	82.2	1.3
Lower incidence of anaemia	2.3	96.1	1.7
Less pregnancy complications	5.3	93.2	1.5
Avoid STI/HIV	0.8	97.6	1.6
Reduce unwanted pregnancies	20.1	78.5	1.4
Better health	28.9	69.6	1.5
Spousal harmony/marital happiness	3.3	95.1	1.6
Fewer children to educate	23.3	75.2	1.5
She has more free time	38.2	60.3	1.5
Family has more money	6.8	91.6	1.6
Peace of mind	17.1	81.5	1.4

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Table ~~1~~3: Percentage distribution of women (15-49) included in the analysis by selected characteristics in Nyanza and Western Regions of Kenya.

Characteristics	%	n
Age		
15-24	30.3	280
25-39	48.6	449
40-49	21.0	194
Parity		
<2	15.1	139
2-3	28.7	265
4-5	26.4	244
6+	29.8	275
Ethnicity		
Luhya	25.0	231
Luo	57.7	533
Teso	17.2	159
Religion		
Catholic	30.6	282
Other	69.4	641
Level of education		
<Secondary	79.8	737
Secondary+	20.2	186
Partner's level of education		
<Secondary	61.0	563
Secondary+	39.0	360
Reads newspaper or magazine		
Yes	25.4	234
No	74.6	689
Listens to radio		
Yes	83.7	773
No	16.3	150
Watches television		
Yes	23.0	212
No	77.0	711
Discussed use of family planning with spouse		
Yes	68.9	636
No	31.1	287
Type of FP method being used		
None	49.4	456
Short-acting	16.1	149
Long-acting or permanent	34.5	318
District		
Bondo	19.2	177
Siaya	38.2	353
Busia	22.1	204
Teso	20.5	189
Level of knowledge about family planning benefits for the child		
None	17.3	160
Low	46.4	428
High	36.3	335
Level of knowledge about family planning benefits for the mother		
None	5.9	54
Low	78.5	724
High	15.7	145
Total	**100.0**	**923**

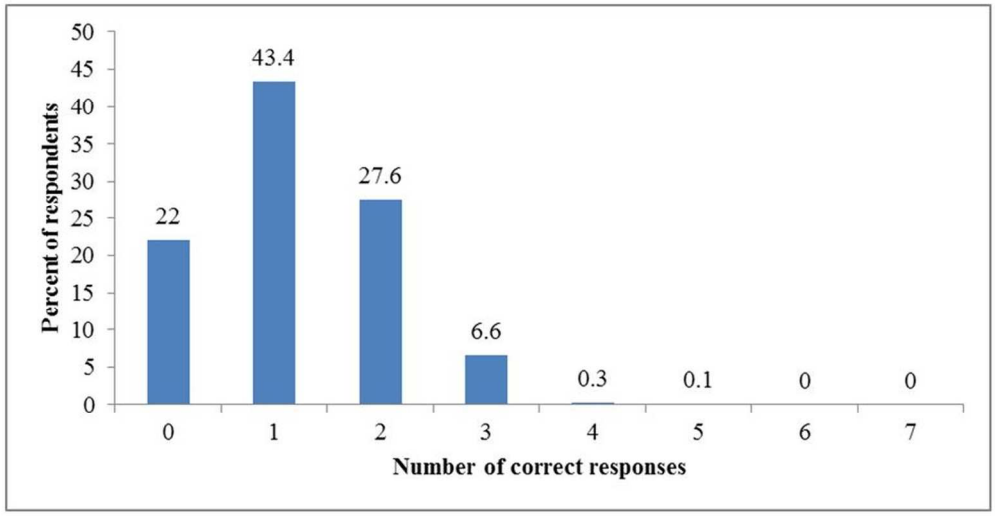
Table 42: Prevalence of knowledge about impacts of family planning for mother and child among women (15-49) in Nyanza and Western Regions of Kenya.

Characteristics of respondents	Knowledge about impacts of family planning for the child			Knowledge about impacts of family planning for the mother		
	None	Low	High	None	Low	High
Age		***p=0.000***			***p=0.000***	
15-24	28.3	43.0	28.7	18.8	71.8	9.4
25-39	18.0	44.5	37.6	6.0	76.7	17.3
40-49†	16.7	42.0	41.3	8.6	72.7	18.7
Parity		***p=0.000***			***p=0.000***	
<2	29.1	42.4	28.5	21.0	68.5	10.4
2-3	22.4	46.8	30.9	8.7	79.4	11.9
4-5	15.8	41.4	42.7	5.3	74.7	20.1
6+†	17.3	43.1	39.6	8.0	75.1	16.9
Ethnicity		***p=0.001***			***p=0.000***	
Luhya	22.5	39.9	37.6	9.3	76.0	14.7
Luo	19.3	47.3	33.4	8.6	76.3	15.1
Teso†	27.0	38.1	34.9	21.8	65.8	12.4
Religion		*p=0.191*			***p=0.035***	
Catholic	24.1	40.8	35.1	14.6	71.5	13.9
Other†	21.1	44.6	34.4	10.6	75.0	14.4
Level of education		***p=0.011***			***p=0.000***	
<Secondary	23.1	43.8	33.1	13.2	73.2	13.6
Secondary+†	16.7	44.5	38.8	6.4	74.9	18.7
Partner's level of education		***p=0.000***			*p=0.094*	
<Secondary	19.2	45.0	35.8	8.1	77.8	14.1
Secondary+†	16.9	45.4	37.7	5.2	77.9	16.9
Reads newspaper or magazine		*p=0.472*			***p=0.024***	
Yes	23.2	41.2	35.6	12.8	69.8	17.4
No†	21.6	44.2	34.2	11.6	75.4	13.1
Listens to radio		*p=0.228*			***p=0.004***	
Yes	21.3	43.3	35.4	11.6	72.8	15.6
No†	24.6	43.7	31.6	13.0	77.8	9.2
Watches television		*p=0.148*			***p=0.008***	
Yes	21.9	39.8	38.2	10.9	70.4	18.8
No†	22.1	44.4	33.6	12.2	74.9	12.9
Discussed use of FP with spouse		***p=0.000***			***p=0.000***	
Yes	14.6	46.0	39.4	3.8	79.1	17.1
No†	26.9	43.7	29.4	14.7	74.4	10.9
Type of FP method being used		***p=0.000***			***p=0.000***	
None	24.3	44.9	30.8	14.8	73.2	12.1
Short-acting	17.6	40.4	42.0	7.1	74.5	18.4
Long-acting or permanent	12.6	46.4	41.0	1.1	80.9	17.9
District		***p=0.001***			***p=0.000***	
Bondo	20.7	44.6	34.7	9.6	74.6	15.9
Siaya	18.9	49.5	31.6	8.0	77.6	14.4
Busia	23.5	37.2	39.3	9.6	75.5	15.0
Teso†	25.6	40.5	33.9	20.6	67.1	12.3

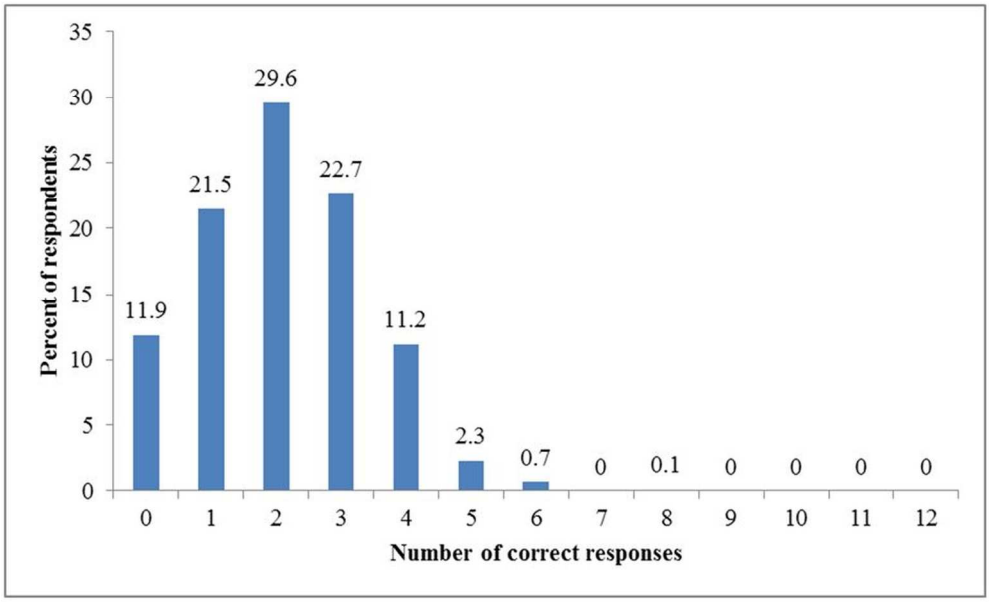
Table 53. Log-odds of having higher than lower knowledge about impacts of family planning among women (15-49) in Nyanza and Western Regions of Kenya by selected characteristics.

Characteristics of respondents	Model I		Model II	
	β	*p-value*	β	*p-value*
Age				
15-24	-0.127	0.596	-0.925	**0.003**
25-39	-0.118	0.508	-0.231	0.306
40-49†	-	-	-	-
Parity				
<2	0.098	0.700	0.223	0.508
2-3	-0.117	0.567	0.053	0.842
4-5	0.107	0.547	0.373	0.099
6+†	-	-	-	-
Ethnicity				
Luhya	-0.159	0.561	-0.272	0.438
Luo	0.036	0.913	-0.149	0.726
Teso†	-	-	-	-
Religion				
Catholic	-0.022	0.876	-0.030	0.867
Other†	-	-	-	-
Level of education				
<Secondary	-0.153	0.371	-0.176	0.415
Secondary+†	-	-	-	-
Partner's level of education				
<Secondary	0.040	0.775	-0.120	0.505
Secondary+†	-	-	-	-
Reads newspaper or magazine				
Yes	0.172	0.289	0.297	0.151
No†	-	-	-	-
Listens to radio				
Yes	0.130	0.459	0.263	0.261
No†	-	-	-	-
Watches television				
Yes	-0.060	0. 711	0.090	0.659
No†	-	-	-	-
Discussed use of FP with spouse				
Yes	0.393	**0.006**	0.627	**0.001**
No†	-	-	-	-
Type of FP method being used				
None	-0.357	**0.016**	-0.568	**0.004**
Short-acting	0.053	0.783	0.055	0.815
Long-acting or permanent†	-	-	-	-
District				
Bondo	-0.228	0.503	0.216	0.622
Siaya	-0.406	0.201	0.346	0.397
Busia	-0.158	0.551	0.262	0.441
Teso†	-	-	-	-
Intercept 1	**-1.810**	**0.000**	**-2.885**	**0.000**
Intercept 2	**0.383**	**0.227**	**1.920**	**0.000**
χ^2 value	**37.756**	**0.006**	**65.236**	**0.000**
df	**19**	**-**	**19**	**-**

df=degrees of freedom; †reference category



173x90mm (300 x 300 DPI)



148x90mm (300 x 300 DPI)