RESEARCH ARTICLE

Communication, knowledge, social network and family planning utilization among couples in Mwanza, Tanzania

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Abstract

Family planning utilization in Tanzania is low. This study was cross sectional. It examined family planning use and socio demographic variables, social networks, knowledge and communication among the couples, whereby a stratified sample of 440 women of reproductive age (18-49), married or cohabiting was studied in Mwanza, Tanzania. A structured questionnaire with questions on knowledge, communication among the couples and practice of family planning was used. Descriptive statistics and Logistic regression were used to identify factors associated with family planning (FP) use at four levels. The findings showed that majority (73.2%) of respondents have not used family planning. Wealth was positive related to FP use (p=.000, OR = 3.696, and 95% C.I = 1.936 lower and upper 7.055). Religion was associated with FP use (p=.002, OR =2.802, 95% C.I = 1.476 lower and 5.321 upper), communication and FP use were significantly associated, (p=.000, OR = 0.323 and 95% C.I = 0.215) lower and upper = 0.483), social network and FP use (p=.000, OR = 2.162 and 95% C.I = 1.495 lower and upper =3.125) and knowledge and FP use(p=.000 , OR = 2.224 and 95% C.I = 1.509 lower and upper =3.278). Wealth showed a significant association with FP use (p=.001, OR = 1.897, 95% C.I = 0.817 lower and 4.404).Urban area was positively associated with FP use (p= .000, OR = 0.008 and 95% C.I = 0.001 lower and upper =0.09), semi urban was significant at (p= .004, OR = 3.733 and C.I = 1.513 lower and upper =9.211). Information, education and communication materials and to promote family planning in Tanzania should designed and promoted. (*Afr J Reprod Health 2013; 17[3]: 57-69).*

Résumé

Contexte: L'utilisation de la planification familiale en Tanzanie est faible. Il s'agit d'une étude transversale. Elle a examiné l'utilisation de la planification familiale et les variables sociodémographiques, les réseaux sociaux, la connaissance et la communication chez les couples, selon laquelle un échantillon stratifié de 440 femmes en âge de procréer (18-49 ans), mariés ou vivant en concubinage a été étudié à Mwanza, en Tanzanie. Un questionnaire structuré avec des questions qui portaient sur la connaissance, la communication chez les couples et la pratique de la planification familiale a été utilisée. L'on s'est servi des statistiques descriptives et de régression logistique pour identifier les facteurs associés à l'utilisation de la planification Familiale (PF) à quatre niveaux. Les résultats ont montré que la majorité (73,2%) des interviewés n'ont pas utilisé la planification familiale. La richesse était lié positivement à l'utilisation de la PF (p = .000, OR = 3.696, et IC 95% = 1,936 inférieure et supérieure 7,055). La religion a été associée à l'utilisation de la PF (p = .002, OR = 2,802, IC à 95% = 1,476 inférieure et supérieure 5,321), la communication et l'utilisation de la PF étaient significativement associées, (p = .000, OR = 0,323 et 95% CI = 0,215) inférieur et supérieure = 0,483), le réseau social et l'utilisation de la PF (p = .000, OR = 2,162 et CI à 95% = 1,495 inférieure et supérieure = 3,125) et la connaissance et l'utilisation de la PF (p = .000, OR = 2,224 et 95% CI = 1,509 inférieure et supérieure = 3,278). La richesse a montré une association significative avec l'utilisation de la PF (p = .001, OR = 1,897, 95% CI = 0,817 inférieur et 4,404). Le milieu urbain était positivement associé à l'utilisation de la PF (p =, 000, OR = 0,008 et 95% CI = 0,001 inférieure et supérieure = 0,09), le milieu semi urbain était significatif à (p =, 004, OR = 3,733 et CI = 1,513 inférieure et supérieure = 9,211). Il faut concevoir des matériels d'information, d'éducation et de communication et pour promouvoir la planification familiale en Tanzanie. (*Afr J Reprod Health 2013; 17[3]: 57-69).*

Keywords: Family planning, communication and social network

Introduction

Millions of women in the developing world die each year during pregnancy or childbirth. Ronsmans & Graham[1] noted that one woman dies in every minute due to pregnancy and child birth complications. Another million women suffer permanent pregnancy related disabilities. Much of

this suffering and death could be prevented through effective use of modern family planning (FP) methods. Family planning use can protect women from the health risk of unplanned pregnancies and disabilities[2]. Family planning use continues to be low especially in developing countries where use of any method is only 27 %[3]. In Africa, there are many obstacles that impede people from using contraceptives ranging from cultural, social factors and structural factors like less access, availability and affordability of contraceptives[4].

Most research on use of FP in Tanzania have focused on factors contributing to the non-adoption of FP methods. For instance, Msoffe & Kiondo[5] found that 69% of the surveyed population was aware of the availability of FP services in rural areas, but less than 50% actually used the services. Keefe[6] concluded that perceptions of Islamic rules about FP were constraining FP use in Northern Tanzania. Similarly, Hollos & Larsen[7] indicate that the change from a traditional marital union to companionate marriage was instrumental in accepting modern contraception.

However, none of these studies addressed the importance of factors, like the communication and bargaining among couples, the available knowledge and beliefs on FP, and the role of social networks for FP use. It is against this background that this study becomes relevant in filling this knowledge gap. It is hypothesized that, communication among couples, social network and knowledge on FP might have a positive effect on FP use. Moreover, FP use depends on relevant individual socio-demographic characteristics like age, religion, wealth, household size and educational level.

Factors Influencing FP Use

Communication & bargaining

Several studies have found that the status of women in the family is related to the ability to communicate with their husbands about the number and timing of children birth and the use of FP methods[8-10]. Rutenberg and Watkins[11] underscored the importance of communication within the conjugal unit and the gossip networks of women in Kenya on FP use. Low contraceptive prevalence rate prevails in a situation where women have low education, low socio-economic status and live in extended patriarchal families [11]. Ezeh[8] found that ancestral customs in sub Saharan Africa give men right over women's proactive power. In such situations the husband's approval may often be a precondition for a woman to use family FP.

Communication between spouses is very important in fertility making decisions[12.] Such communication should be among the most important precursors of lower desired family size and increase contraceptive use. Several studies have reported a low level of communication between spouses about family size and FP[12-14]. However, in most countries in sub Saharan Africa, the communication practice on FP use remains low, even though FP knowledge is high occasionally among men and women[15].

In a similar vein, Nyablade and Menken[16], examined the effect of husband and wife communication on contraceptive use. They found a significant association between couples communication and their contraceptive use. Also, Bawah[17] found that spousal communication predict contraceptive behaviour, even when other factors were controlled. Furthermore, Lasee and Becker [10] in Kenya found that wife's perception of husband's approval of FP was highly associated with current use of contraceptive. They found out that dialogue appears to increase the effectiveness of communication. Specifically, one spouse's perception of the other spouse's approval is more likely to be correct if they have discussed FP than if they have not[10.]

Social networks

Individuals do not make decisions in social isolation but with interactions with others. Theoretical analyses of contraceptive choice and fertility dynamics show that social interactions can help to explain changes in patterns of fertility or contraceptive behaviour[18, 19], as well as more general individual's behaviour[20]. Bongaarts and Watkins[21] suggest that social networks may work through social influences and social learning by

providing examples of behaviour that may then be considered and copied by others.

Analyses from Kenya and Thailand have provided evidence that women chat with each other about family size and FP[22]. Behrman and Kohler[23] found that social networks have significant and substantial effects on contraceptive use in rural Kenya. They found that women in their social network discuss about FP and through that way FP information were spreading.

New attitudes are seen as being transmitted when members of social networks interact with each other[24.] Interpersonal communication has been identified as essential to persuade the average receiver to adopt an innovation, especially communication from peers such as friends and neighbours[24].

The acceptance of new beliefs, norms and fertility behaviour can be explained by two processes that occur during social interaction, which are social learning and social influence[25.] Social networks encompass both the social aspect of information acquisition and the filtering of that information into terms that are meaningful to individual use[25].

Social networks include the extended family, friends, neighbours, political groups, church group, youth groups, and other formal and informal associations[26]. For many women, informal communication is a primary source of FP information[11]. Gayen and Raeside[27], found that the informal social networks of women are important on contraception use. They further found out that both structure and attitudinal properties of one's interpersonal networks are associated with their contraception use[27].

The influence of social networks is crucial to informed choice. Most people seek the approval of others and modify their own behaviour to please others or to meet others' expectations[21,22]. In Nigeria and other West African countries for example, some women said it was difficult for them to use FP because their relatives or friends were not using it. These women were reluctant to be the first in their social group to use FP[22]. People choose contraceptive methods that are commonly used in their community because they know that it is socially acceptable to do so, and they tend to know more about these methods[24].

Individual characteristics

Several studies have established the influence of religion on the demographic behaviours of individuals. For instance, Doctor, Phillips and Sakeah[28] found strong association of contraceptive use and change of parity with the shift from traditional religion to the practice of Christianity and Islam in Ghana. They found that African traditions subordinate individual agency to the traditional family and kindred norms and customs[28]. A study by Hirsch[29] in rural Mexico among the Catholics on contraceptive use found the creativity with which people use to religious frameworks to justify their contraceptive use behaviour.

Many studies found that women who participate in paid employment, and especially those pursuing demanding career limit their fertility and either have relatively few children or none[30,31.] This negative correlation economic theory is emphasized by the opportunity costs to women, pointing out rational calculations of the costs of having children against opportunities in the labour market. To explain the relations between work and fertility decisions, economic theory emphasizes the effect of economic considerations on both domains in women's lives[32].

Women's work decisions depend on their educational level because women take into account their opportunity costs that are their forgone earnings while staying at home. Accordingly higher education, which is translated into higher wages, is expected to have strong positive effect on women's labour force participation[33].

Fertility differentials by socio economic status have attracted renewed attention because of potential importance to relative growth rates of sub-populations and long term changes in population composition. They found that rich families had higher net fertility[34]. Wang et al.[35] reported positive associations between socio economic status and fertility. Bengtsson & Dribe [36] identified a positive correlation between total fertility rate and household's landholding status in Southern Sweden. However, a study on the population living in the city of Venice in Italy

reveals a negative association between income and fertility; that artisan and shopkeepers had lower fertility than day labourers[37].

Location

Several studies on FP have been conducted in rural and urban areas. For instance[38] in urban area in Nigeria found that knowledge on FP was high 81.7% but only 20% of the women were practicing FP method. Furthermore, Njogu[39], examined trends in contraceptive use in Kenya comparing data between 1977 - 1978 and 1989 at both the aggregate and the subgroup level. He found that better educated, urban women were more likely to use contraceptives during both periods[39].

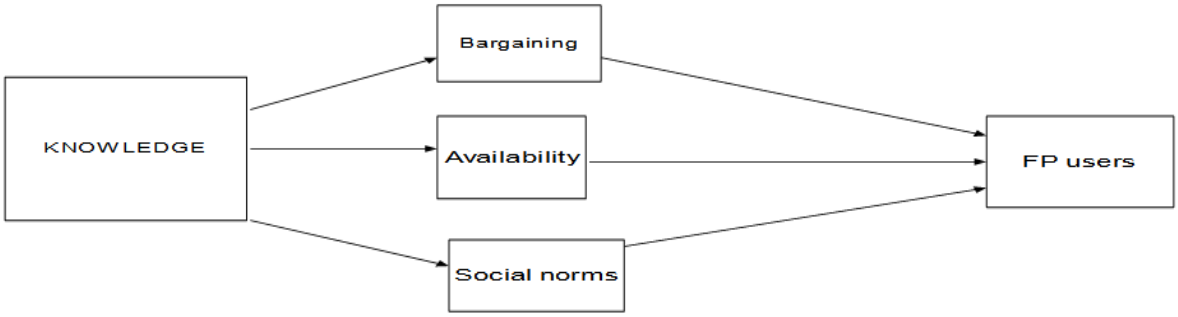
Odhiambo[40], in Kenya found out that region of residence was an important factor that exerts a strong positive influence on current use of contraception. Direct and indirect effects of region of residence were equally important, the indirect effect operating through couple communication, desire for children, number of living children, wife's education, and age at first marriage. To be more specific urban rather than rural areas was positively related to use of contraception[40].

A study in Uganda rural by Ntozi, and Kabera[41] finds that the use of both traditional and modern contraceptive methods was low. However, the women reported using traditional methods much more than they had used the modern contraceptives. Low use of modern methods was associated with lack of knowledge of sources of supplies, low education, low levels of employment outside the home, un- availability of supplies, and pronatalist cultures[41]). Msoffe & Kiondo[5] found that 69% of the respondents in rural areas were aware of the availability of FP services and out of those 47% accessed FP services. Forty four percent of the respondents were using FP methods to control births[5]. Furthermore, Plummer et al.[42], examined condom knowledge, attitude, access and practices in rural Mwanza, Tanzania. They found out that condom use was very low primary as a result of limited demand[42.] In addition, Chen, and Guilkey[43] found that the use of FP methods in most areas of rural Tanzania was quite low. Pile and Simbakalia[44] found that current use of any modern FP method varies with urban- rural and regional residence. Women in urban areas were twice as likely to use contraception as were women in rural areas 41.8% against 21.6 % for any method and 34.3% against 15.5% for a modern method[44].

ANALYTICAL FRAMEWORK

We start from the hypothesis that knowledge on FP and availability of FP can lead to FP use. However, FP availability and knowledge can reinforce intra-household bargaining processes. Similarly, FP use is also influenced by social norms and attitudes. It is argued that FP use is mediated by several intra-household and village factors, including culture, traditions, values, social norms and attitudes that again shape the bargaining power among the couples. Figure 1 below outlines our analytical model.

Figure 1: Analytical model



Earlier studies have analyzed several components of this model. It is shown that FP methods can be available but due to several obstacles people do not use them. For instance, Caldwell & Caldwell[4]

pointed out that in Africa there are many obstacles impeding people from using FP methods which range from cultural, social and structural factors related to FP methods. Ezeh[8] found that ancestral customs in sub Saharan Africa give men right over women. In such situations the husband's approval may often be a precondition for a woman to use family FP. The status of women in society can affect FP use. For instance, Ezeh; Kritz et al., and Lasee and Becker[8-10], found that the status of women in the family is related to the ability to communicate with their husbands about the number and timing of children birth and the use of FP methods.

Several studies have pointed out the importance of social networks and how it affects the FP use. For example, Rutenberg and Watkins[11] underscored the importance of communication among the social networks in Kenya. They also found that low contraceptive prevalence rate prevails in a situation where women have low education, low socioeconomic status and live in extended patriarchal families[11].

Communication or bargaining among husbands and wives is an important determinant for FP use. For instance, Nyablade, and Menken[16], examined the effect of husband and wife communication on contraceptive use. They found that communication is associated with FP use. Also, Bawah[17] found that spousal communication predicts contraceptive behaviour, even when other factors were controlled. It was on this line of empirical findings evidence that the above analytical model was selected to guide this study.

Hypothesis

1. We hypothesized that, knowledge, FP availability, communication among couples, have a positive effect on FP use. Communication among the couples facilitates the use of FP among the couples compared to the couples who do not communicate on FP.
2. We also hypothesized that there is a positive relationship between socio demographic characteristics (age, religion, wealth, number of people in the household, education) and FP use. (Asset index as a proxy for wealth) was constructed from the ownership of durable goods within the households including; ownership of a bank account, car, bicycle, cattle, also source of energy, water, house materials, number of meals per day, number of days that they consumed meat in past week prior this study, were used to construct an asset index as proxy of wealth in this study.) Wealth and education play a significant role on FP use[44].
3. We hypothesized that social network have a positive effect on FP use. Contraceptive choices and fertility pattern can be affected by social network that prevails in a certain area[18.] Through social network work people get information and learn new ideas and apply them in their daily lives.

Methods

Data was collected between June and September 2010 in three districts of Mwanza region. Multi-stage sampling was adopted to identify the study areas. Stratified random sampling was employed to obtain 440 females of reproductive age 18 – 49 cohabiting or married, with children were selected to participate in the study.

Mwanza is located in the Northern part of Tanzania. According to the 2002 Tanzania National Census Mwanza had the population of 2,929,644 of whom 26.7% live in urban area and 73.3% live in rural area[45.] The main economic activities are agriculture, fishery and mining. Mwanza has an area of 19,592km^2, (divided into eight districts at the time of the study namely Ukerewe, Magu, Sengerema, Kwimba, Nyamagana, Geita, Misungwi and Ilemela). The study was done in Ilemela, Magu and Misungwi districts.

In Mwanza, contraceptive prevalence rate is 15% for all methods, out of those 12% were using modern contraceptive methods[46]. Likewise, Mwanza is among the regions in Tanzania with high unmet needs for contraceptives (21.6%) and has high fertility rate of 5.7%. Accordingly, the region has a population growth rate of 3.2%[46.] Mwanza has relatively well established and functioning public and private health facilities offering FP services. According to Tanzania Ministry of Health and Social Welfare (MoHSW),

Mwanza has a total of 377 health facilities[47]. The facilities in the region range from dispensaries, health centres, district hospitals, one regional hospital and a referral hospital (Bugando).

Data Collection

Prior to the main fieldwork, a pilot study was conducted in one street in Ilemela district. This street in which pilot was done was excluded from the main study. The pilot test was useful in identifying any problems as well as checking time spent in responding to questions. Pilot testing of instruments was also intended to improve the precision, reliability, and cross-cultural validity of data. Following the analysis of the pilot study data, questions were rephrased for the good flow and some few questions were removed.

We used structured questionnaires to collect data on education, religion, number of people in the household, wealth, knowledge on FP, FP communication among spouses and social networks. Questionnaire was prepared in English and later translated into Kiswahili. In order to check the validity of translated version, there was a back-translation of the questionnaire from Kiswahili to English.

The researcher and research assistants administered the questionnaires at the households' levels. The administration of the questionnaire took place in a convenient place with no interference of other household members, and this place was secured according to the interviewee's preference given that solitude can be assured. The questionnaire took a maximum of fifty minutes. Every day after field work the researcher and assistants held a meeting. The researcher used the meetings as an opportunity for controlling the quality of information through checking the questionnaires for completeness.

Data analysis

Descriptive statistics are presented; also logistic regression was employed to identify variables associated with FP use.

There were seven statements measuring family planning knowledge and effectiveness of the pills and assumed modern family planning methods effects. Five point Likert scale was used to rate these statements from one (strongly agree) to five (strongly disagree). Factor analysis was used to reduce data. One question was dropped because of strong correlation. From the remained 6 questions one factor on FP knowledge was made.

On communication among couples there were 2 statements on communication among the couples on 5 point Likert scale from strongly agree to strongly disagree. From these statements one factor on communication was created. Likewise for questions on social networks, there were eleven statements on 5 point Likert scale from strongly agree to strongly disagree. The statements largely based upon the themes on FP and to extent of which the respondent will seek advice, discuss, seek support, and approval of the friends and relative on decision to use FP. Two questions were dropped because of strong correlations. One factor on social network was made from the remained nine statements.

A logistic binary model was used to examine the effect of the factor analyzed knowledge statement and FP use/non use. The dependent variable for each observation takes on a value of one if the respondent was using FP and a value of zero if the respondent was not.

The wealth index was used as a proxy of wealth to reflect the economic status of the household. Five wealth quintiles were constructed; lower quintiles representing poor people while higher quintiles represented wealthy people. Therefore, durable goods owned within the household, ownership of bank account, car, bicycle, source of energy, source of water, house materials, number of meals per day, number of days that they consumed meat in past week prior this study, were used to construct an asset index as a proxy of wealth. Variables included in the asset index construction were adopted from the TDHS-2004 questionnaire. Since the study included rural areas, inclusion of animals such as cattle, became necessary. This is because ownership of animals in rural areas of Tanzania is an indication of wealth, even if animals are not commonly regarded as durable goods. Variables used to construct the asset index were binary in nature. The information was therefore converted into dummy variables i.e. (1 for those who had those assets, and 0 for those

who did not have). By using dummy variable (a move from 0 to 1), weights have an easy interpretation of variation between owning a certain type of durable good and not owning it. The statistical procedure of one factor extraction in the SPSS software was used to create one factor score as a proxy for wealth.

Also independent variables (were coded into dummies), age of the respondent, religion and type of job were included as independent variables. Question on religion was coded into dummies (1= Muslim and 0= Christians), Education, (Primary = 0, secondary 1) Family size(0 = 2-4 family members, 1 = 5 to 11 members, wealth (0= low quintile, 1= High quintile), type of job was coded into dummies, (1= employed, and 0= unemployed).

Results

Characteristics of study respondents

Majority of the respondents had primary education (n=347) and majority of them were Christians (n=371). On the area of residence there were roughly equal numbers of participants from urban, semi urban and rural. Furthermore, majority of respondent preferred to have 1 to 2 children (n=215). Also majority of them have not used FP (n=322). On the family size, majority of the households have more than 4 people (n= 224). Furthermore, majority of them were employed or doing informal business (n=275). On wealth, majority of them were in high quintile (266).

Table 1: Characteristics of respondents

Characteristics	**Number (n)**	**Percentage (%)**
Education	Primary 347	78.9
Secondary	93	21.1
Religion	Moslem 69	15.7
	Christian 371	83.3
Residence	Rural149	33.9
	Semi-urban 145	34.0
	Urban 144	32.1
Number of children they want	1-2 215	64.8
	3-4 117	35.2
Family size	2-4 216	48.5
	5-11 224	51.5
Ever use family planning	Never 322	73.2
	Used 118	26.8
Employment	Unemployed 165	37.5
	Employed 275	63.5
Wealth	Low 174	39.5
	High 266	60.5

Annex 1: a) Attitudinal and perception statements, its mean and STD and number

Knowledge statement Knowledge Cronbach's alpha = 0.700	Mean	Std	N
The pill can induce infertility	2.77	0.852	440
The pill increases the risk of cancer	2.71	0.829	440
Modern contraceptive causes cancer	2.59	1.152	440
Modern contraceptive causes infertility	3.13	0.919	440
Modern contraceptive injections causes infertility	2.95	0.989	440
Modern contraceptive are not effective in preventing pregnancy	3.06	0.797	440

b) Communication statements among spouses

Cronbach's alpha =0.772	Mean	Std	N
I discuss family planning freely with my partner/spouse	2.41	1.014	440
I discuss freely with my partner on ways to	2.34	1.304	440

prevent pregnancy			
c) Social network on FP Information			
Statement	Mean	Std	N
Cronbach's alpha =0.517			440
If you decide to use FP how much would you like to seek advice from your relatives about suitable contraceptive?	2.86	0.761	440
If you decide to use FP how much would you like to seek advice from your friends about suitable contraceptive?	2.96	0.681	440
If you decide to use FP how much would you like to seek advice from health workers about suitable contraceptive?	1.29	0.689	440
How likely do you think that your mother in law would approve if they were to know that you use FP	2.76	1.178	440
How likely do you think that your husband/partner would approve if they were to know that you use FP	3.16	1.035	440
How likely do you think that your relatives would approve if they were to know that you use FP	2.35	1.276	440
How likely do you think that your neighbours would approve if they were to know that you use FP	3.47	0.917	440
How likely do you think that your best friend would approve if they were to know that you use FP	2.94	1.220	440
How likely do you think that your pastors/religious leaders would approve if they were to know that you use FP	2.25	1.338	440

Socio demographic characteristics and FP use

Among the study participants more Christians have used FP compared to Muslims (n= 86), while more employed people have used FP compared to the unemployed (n= 72), wealthier people have used FP compared to the poor ones (n= 95), and majority of primary school holders (n= 88), have used FP compared to secondary school holders.

Also, majority of participants with more than four people in the households have used FP (n=64) compared to participants with four or less people in the households. Moreover, majority of participants in urban areas have used FP (n=87) compared to people in the semi urban and rural areas (See Table 2).

Table 2: Socio demographic characteristics and FP use among respondents (who ever used FP) (n= 440)

Religion	**N**	**%**
Christian	86	72.9
Muslims	32	27.1
Employment		
Employed	72	61
Unemployed	46	39
Wealth		
Low	21	18.1
High	95	81.9
Education		
Primary	88	80
Secondary	22	20
Family size		
0- 4	54	45.8
Above 4 people	64	54.2
Residence		
Urban	87	73.7
Semi urban	29	24.6
Rural	2	1.7

Annex 2: Individual and Household characteristics (descriptive)

Variables	**Mean**	**Std**	**N**
Employment (1 = employed, 0= unemployed	0.62	0.49	440
Family size (number of household members)	4.85	1.97	440
Education (0=no education, 1=primary education, 2= secondary, 3= post secondary	2.26	.85	440
Age (years)	28.59	6.10	440
Religion (Christian= 0, Muslim=1)	.16629	.37	440

Regression analysis

Model 1: In our initial logistic regression we included five individual variables which were; employment, religion, education, wealth and family size. As it was hypothesized, wealth was

positive related to FP use (p=.000, OR = 3.696, and 95% C.I = 1.936% lower and upper 7.055%). Also, in this model, religion was slightly associated with FP use (p=.002, OR =2.802, 95% C.I = 1.476% lower and 5.321% upper). Family size and employment in this model were positively associated with FP use, although were not significant.

Model 2: In our second logistic regression model we included three behavioural characteristics which were; communication among the couples, social network and knowledge. There was a statistical significance between communication and FP use, (p=.000, OR = 0.323 and 95% C.I = 0.215% lower and upper = 0.483%), social network (p=.000, OR = 2.162 and 95% C.I = 1.495% lower and upper =3.125%) and knowledge (p=.000, OR = 2.224 and 95% C.I = 1.509% lower and upper =3.278%). Wealth in this model showed a significant association with FP use (p=.001, OR = 1.897, 95% C.I = 0.817% lower and 4.404%).

Table 3: Factors explaining FP use (Binary Logistic Regression; N = 436)
Model 1 and 2

					95.0% C.I for Exp (B)		Model 2 N = 436			95.0 C.I for Exp (B)		
	B	S.E	Sig	Exp (B)	Lower	Upper	B	S.E	Sig	Exp (B)	Lower	Upper
Constants	-2.121	364	.000	0.12			-2.073	0.477	.000	0.126		
Individual factors												
Employment	0.2	0.275	0.942	1.02	0.596	1.747	-286	0.375	-0.446	0.751	0.36	1.568
Religion	1.03	0.327	.002	2.802	1.476	5.321	0.936	0.45	0.038	2.55	1.055	6.162
Education	0.583	0.339	0.085	1.791	0.922	3.479	-0.015	0.48	0.975	1.015	0.396	2.603
Wealth	1.307	0.33	.000	3.696	1.936	7.055	0.64	2.217	.001	1.897	0.817	4.404
Family Size	.-105	0.293	0.72	0.9	0.507	1.598	0.397	0.961	0.327	0.673	0.304	1.486
Behavioural factors							1.132	30.217	.000	0.323	0.215	0.483
Bargaining/communication							0.771	16.794	.000	2.162	1.495	3.125
Network							0.771	16.794	.000	2.162	1.495	3.125
Knowledge							0.799	16.326	.000	2.224	1.509	0.799
Nagelkerke R2 =.159							Nagelkerke R2 = .672					

Annex 3: Contraceptive use in Mwanza Region

Residence	Have you and your partner ever used anything or tried in any way to delay or avoid getting pregnancy (n; Men=50, Women =440)							
	YES				NO			
	Females		Males		Females		Males	
	No	%	No	%	No	%	No	%
Urban	87	60.8	0	0	56	39.2	7	56.5
Semi-urban	29	19.9	10	50	117	80.1	10	50
Rural	2	1.3	10	43.5	149	98.7	13	100

Model 3: In our third logistic regression model we included regional dummies and communication showed a statistic significance with FP use (p=.000, OR = 0.333 and 95% C.I = 0.215% lower and upper = 0.517%) knowledge (p= .000, OR = 1.742 and 95% C.I = 1.161% lower and upper =2.615%) and social network (p= .007, OR = 2.317 and 95% C.I = 1.537% lower and upper = 3.494%). Urban was positively associated with FP use (p= .000, OR = 0.008, 95% C.I =0.001% lower and upper 0.09%) likewise semi urban was significant at (p= .004, OR = 3.733 and 95% C.I = 1.513% lower and upper =9.211%).

Model 4: In our fourth logistic regression step we included Interaction effect of communication and regional variables (rural, semi urban and urban). In this model, there was a significance relationship between communication, (p= .001, OR = 0.189 and C.I = 0.072% lower and upper =0.492%) social network and FP use (p= .000, OR = 2.165 and 95% C.I = 1.417% lower and upper = 3.307%) knowledge also was significant at (p=.021, OR = 1.65 and 95% C.I = 1.078% lower and upper = 2.525%) and communication in urban has significant association with FP at (p=.000, OR = 0.01 and 95% C.I = 0.001% lower and upper = 0.123%) and semi urban significant at (p= .003, OR = 5.687 and 95% C.I = 1.784% lower and upper = 18.133%).

Table 4: Factors explaining FP use (Binary Logistic Regression; N = 436)
Model 3 and 4

	Model 3 N = 436				95.0% C.I for Exp (B)		Model 4 N = 436				95.0% C.I for Exp (B)	
Constant	-1.301	.654	.047				-1.251	.675	.064			
Location	B	SE	Sig	Exp (B)	lower	Upper	B	S.E	Sig	Exp (B)	Lower	Upper
Urban	4.843	1.244	.000	0.008	0.001	0.09	-4.584	1.268	0.000	0.01	.001	0.123
Semi urban	1.317	0.461	.004	3.733	1.513	9.211	-1.738	0.592	.003	5.687	1.784	18.133
Interaction effects												
Communication * urban							0.605	1.219	0.62	1.831	0.168	19.961
Communication * semi urban							0.753	0.557	0.176	2.124	0.712	6.331
Nagelkerke R2 =.686							Nagelkerke R2 =.667					

*1= Rural reference category *

Annex 4: Contraceptives use among women in Mwanza.

Have you ever used anything to avoid getting pregnant? (n=440)				
Residence	Yes		No	
	N	%	N	%
Urban	29	19.9	117	80.1
Semi-urban	2	1.3	149	98.7
Rural	87	60.8	56	39.2

Discussion

In this article we studied the link between FP use individual characteristics and behavioural characteristics. We further explored the interaction effect on communication and places of residence on FP use. The study findings showed a significant association between wealth and FP use. This could suggest that access as important determinant to FP use. People who are wealth are able to access family planning compared to those who are poor. This finding is supported by other studies, for instance Bresch et al.; Onwuzurike & Uzochukwi[37,38]. Also this corroborates with other studies for instance, Pile and Simbakalia[44] found significant associations between modern FP methods and wealth.

However, when wealth was analyzed together with regional dummies and interaction effect we found that wealth was no longer a significant influence on FP use. This could suggest that wealth was not positively correlated with place of residence.

As it was expected in model two, the study findings showed that communication had a significant associations with FP use, this could be caused by the fact that the more couples communicate facilitate the use of FP. This corroborates other studies; for instance, a study done by Hollerbach[12] which contends that communication among the spouses is important in fertility decline. Also, Nyablade and Menken[16]

found a statistical significant association between couples communication and their contraceptive use. Also, in this study communication in urban area was significantly associated with FP use. The issue of positive relationship between communication and FP use could suggest that urban areas are exposed to more information on FP methods.

The study findings also showed a significant association between social network and FP use. This could be caused by the fact that people learn about the use of FP and FP information from the close friends/relatives. These findings are in the same line with other studies with the same findings, for example Casterine; Palloni; Behrman & Kohler[18, 19, 23].

In addition, the study findings showed a significant association between knowledge on FP methods and FP use. This could be caused by the fact that if people are exposed to information and ranges of FP methods then it is easy for them to make a choice on FP method. These findings are consistent with other studies done elsewhere. For instance, a study by Msoffe & Kiondo[5] found that lack of knowledge and information about FP methods led to low use of FP in rural areas. Moreover, Bruce[48] pointed out that it is important to provide information about FP methods available, their scientific documented contraindications and the advantages and disadvantages associated with each method as clients would be more ready to adopt and use FP methods which they are adequately knowledgeable about. Also, when knowledge, communication and social network were put together in model three with regional dummies, all of these variables have significant influence on FP use. This could suggest that communication, knowledge and social networks are important factors for family planning use in any place. In model four, communication, knowledge, social network, urban and semi urban areas have significant association with FP use. This suggests that these variables are associated with family planning use.

Furthermore, family planning use was associated with wealth; those who are wealthier used FP methods more compared to those who were poor. This could suggest that access as important determinant to FP use. This finding is supported by other studies, for instance Bengtsson & Dribe; Bresch et al.[36, 37], who found a positive correlation between socio economic status and fertility. Also Pile and Simbakalia[44] found association between FP use and wealth that FP method use was high in the highest wealth quintiles.

There was a significance association between all variables of communication, social network and knowledge. This implies that knowledge, communication and social network are important determinant to facilitate FP use among the people. When people are knowledgeable about FP, communicate with their spouses on FP and social networks where they can get information regarding FP are more likely to use FP methods. This is in line with other studies for instance a study done by Hollerbach[12], which contends that communication among the spouses is important in fertility decline. Education was not significantly associated with FP use. This could be caused by the fact that majority of respondents had primary education. Also, employment was negatively associated with FP use. This suggests that employment interact negatively with these behavioural characteristics on FP use. This was contrary to other studies which found a positive association between employment and education for example a study by Hakim; Becker and Lewis[31,32] who found a positive correlation between fertility and career; also Pile and Simbakalia[44] found relationship between education and FP methods use. Urban and semi urban had a significant association with FP Use. This suggests that area of residence is an important determinant for FP use. This agrees with other studies for instance TDHS[45] shows that women in urban areas are more likely to use FP methods compared to people living in rural areas.

Conclusion

The study findings showed significant associations between, wealth, social network, knowledge and communication among spouses. Therefore, interventions targeting to increase family planning information, communication among the couples, and social networks among the people should be designed and implemented. Others include raising

public awareness on the importance of using FP methods in all areas. In addition, it is important for policy makers to make sure that family planning methods are available to all people in rural and urban areas at all time.

Competing interest

The authors declare that they have no competing interests.

Author's contributions

Idda Mosha and Ruerd Ruben took part in designing the study, tools development, data analysis and manuscript writing. Both authors approved the final version of the manuscript

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