ORIGINAL RESEARCH ARTICLE

Determinants of Preference of Source of Injectable Contraceptives among Rural Women in Uganda: A Case Study of Depo-Provera

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Abstract

Understanding preference of source of contraceptive commodities is essential in enhancing the delivery of family planning services. This paper identifies the determinants of preferred source of Depo-Provera among rural women in Uganda. The analysis is based on data sourced from a Save the Children and Family Health International study involving 642 women who were introduced to the contraceptive three years prior to the evaluation. Data were analyzed at univariate, bivariate and multivariate levels. Private sources were the most preferred of Depo-Provera as compared to public sources. Preference for private sources was more likely among older women ($p < 0.05$), those who had never experienced stock-outs of Depo-Provera ($p < 0.01$), and those who had obtained their last injectable from private sources ($p < 0.01$). These findings support the strategy of community-based distribution of contraceptives in enhancing access and utilization of family planning services in Uganda. *(Afr J Reprod Health 2014; 18[3]: 48-56)*

Keywords: Uganda; Source of contraceptives, rural environment

Résumé

Comprendre la préférence de la source des produits contraceptifs est essentiel pour l'amélioration de la prestation des services de la planification familiale. Ce document identifie les déterminants de la source préférée de Depo-Provera chez les femmes rurales en Ouganda. L'analyse est basée sur des données provenant des études réalisées par Save the Children et Family Health International impliquant 642 femmes qui ont été introduites pour les trois ans de contraception avant l'évaluation. Les données ont été analysées aux niveaux univariée, bivariée et multivariée. Les sources privées ont été préférées (de 69,6%) à des sources publiques pour la procuration de Depo-Provera. La préférence des sources privées était plus probable chez les femmes plus âgées ($p <0,05$), celles-là qui n'ont jamais connu des ruptures de stock de Depo-Provera ($p <0,01$), ont été introduites à Depo-Provera par des sources privées ($p <0,01$) et avaient obtenu leur dernière injection de sources privées ($p <0,01$). Ces résultats confirment la stratégie de distribution à base communautaire des contraceptifs dans l'amélioration de l'accès et l'utilisation des services de planification familiale. *(Afr J Reprod Health 2014; 18[3]: 48-56)*

Mots-clés: Ouganda; Source des contraceptifs, environnement rural

Introduction

Family planning utilization has been hailed to be among the top public health achievements in the world in the twenty first century[1]. However, over 200 million women worldwide have no access to contraceptives despite their expressed desire to use them[2]. Indeed, most of the world's poorest women and men remain less empowered with regard to deciding the number of children and timing of their births[3]. Many developing economies are thus characterized by rapid population growth attributed to high fertility rate, yet with a decline in death rates and low contraceptive utilization[4]. In fact, about 75 million women in developing countries experience unintended pregnancies each year of which 20 million often resort to unsafe abortions[2,5]. A rapid population growth - often due to high fertility rate associated with low contraceptive prevalence impedes economic growth[2, 6].

Sub-Saharan Africa's population growth rate (2.8%) is one of the highest in the world[7]. Access to effective contraceptives in the region remains

limited[5]. A recent World Bank study puts the contraceptive prevalence in the region at a rate of 22%[8]. Acceptance of family planning in Africa as a whole has traditionally been low coupled with high cultural resistance[9].

Uganda is not different from the rest of Sub-Saharan Africa regarding family planning utilization and related aspects. Access to and utilization of family planning services in the country remain a challenge to the achievement of the United Nation's Millennium Development Goals (MDGs) by the 2015 target date. The country is reported among those with the world's fastest rates of population growth (3.2%), high fertility rate (6.7) and a high maternal mortality rate of 435 deaths per 100,000 live births[10].

Despite an increase in the use of modern contraceptives in the past two decades, unmet need for family planning remains a concern in many developing countries, including Uganda. Unmet need for family planning in the country remains high at about 34.3% despite the decline from 41% in 2006. Unmet need is higher among rural women (37%), and in hard-to-reach areas such as the Northern region (43%) with limited access to health facilities[10]. Some of the determinants of non-utilization of contraceptive services are: socio-demographic characteristics[11-12], larger desired family size[12], female empowerment aspects[13]. However, these factors cannot be generalised for all women in all countries. In addition, the setting of conventional Family Planning (FP) clinics has been regarded as a limitation towards access and utilization of FP services[14-15].

With regard to the type of contraceptive commodities used, the 2006 Uganda Demographic and Health Survey (UDHS) presents a low utilisation of Injectable contraceptives among all women (7.7%). The proportion of married women using Injectable contraceptives has increased steadily in the recent past. Preference of Injectable Contraceptives are attributed among other factors to privacy, effectiveness, and (positive – according to some of the users) side effects such as weight gain[16]. However, negative side effects such as headaches and irregular bleeding patterns are noted to be some of the reasons for not using Injectable contraceptives. The 2006 UDHS indicates a 46.6% 1-year discontinuation rate of the Injectable in the country[10].

Access variables are important factors that influence contraceptive use. The introduction of community-based distribution (CBD) programs have been implemented in many developing countries with the aim of bringing FP services closer to the intended users in acceptable and culture sensitive ways. The programs refer to a broad range of services that can range from workers who go door-to-door, satellite clinics, employer-based programs, to private-sector programs. These programs were introduced to Africa in the 1980s and continue to expand to-date. The common aspect about these health delivery approaches is using existing community structures and community agents to provide low-technology and reproductive health services and information[17, 18]. CBD programs are aimed at expiation of access to reproductive health and family planning services, particularly in rural areas. The programs have been found to be effective in improving uptake of reproductive health and family planning services.

Whereas levels of client satisfaction with CBD have been assessed and noted to be high among the rural women in the Uganda[17], there is hardly any documented evidence on preference of source of the contraceptive commodity. The recent assessments of Depo-Provera (DMPA) utilization following a Community Based Distribution (CBD) approach in the country[17, 19, 21] limited in their analyses to frequency distributions and summary statistics. Additionally these studies did not assess factors related to preference of sources of DMPA using rigorous multivariate analysis tools that we employed. The analysis is based on the argument that the source of contraceptive commodities influences uptake and continuity in use of DMPA; hence, our interest in establishing the preferred source of DPMA.

Methods

Analytical Framework

The theoretical grounding of this study is based on: First, Anderson's[22] 1995 Model of Health Care Utilization. The theory presents health service

utilization as an important factor predisposing and enabling the critical health outcomes. The socio-demographic characteristics of respondents, presented as predisposing factors in Anderson's model, are considered to be key factors for preference of source of the Injectable contraceptive. Further, family/community support, and access to health insurance are enabling factors which are crucial in determining preference of source of FP services. The presence or absence of the enabling conditions would either promote or hinder choice of a particular source of obtaining health care services.

Second, Goddard and Smith's[23] principle of equity of access to health care utilization is equally important in explaining preference of source of health care services. The principle is based on two major concepts: need and access. The principle provides four major reasons for variations in access offered by the supply side: (i) availability – either certain services may not be available to certain groups of individuals or clinicians may have varying propensities to offer services to clients with identical needs from different population groups; (ii) quality – quality of services offered to identical clients may vary between population groups; (iii) costs – service providers may impose costs (financial or otherwise) which vary between population groups; and, (iv) information – health care services may fail to ensure that the availability of certain services is known with equal clarity by all population groups. In light of the aforementioned theories, Figure 1 presents a conceptual framework adopted in guiding this study.

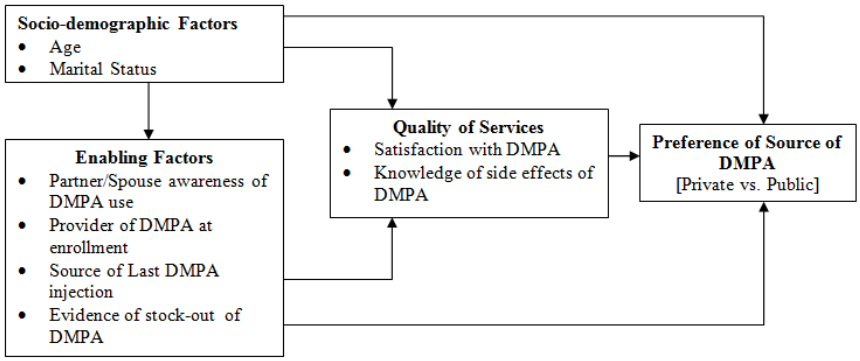

Figure 1: Diagrammatical representation of preference of source of DMPA Contraceptive

The illustration suggests that the socio-demographic characteristics and enabling factors either directly influence ones preference for source of the contraceptive commodity, or work through the quality of services offered at a facility to achieve the same goal. The enabling factors are suggested in this study to influence the user's preference of source of the contraceptive commodity. Further, the quality of service offered at a health facility[23] is noted to have a direct impact on a respondent's preference of source for the contraceptive commodity.

Data source

The study is based on secondary data sourced from the 2008 Save the Children and Family Health International study conducted in Uganda's district of Nakasongola. Permission for using the data was granted by the relevant organizations. The target population comprised of DMPA clients in the district who were women (18 years and above) who had ever received the contraceptive commodity irrespective of the source of the injections. The data were based on a cross-sectional study design. A predominantly structured interviewer administered questionnaire was used for data collection. The compiled data comprised a total of 642 women initially introduced to DMPA.

Variables and Measurement

The dependent variable for the study is preference of source of DMPA contraceptive which was

coded with a nominal binary categorical outcome i.e., either woman preferred private to public sources. Public sources were Government or Ministry of Health hospitals while the private sources were Community Reproductive Health Worker (CRHW), woman's home and private clinics. The independent variables comprised respondent's socio-demographics, client's family planning history and provider information with regard to DMPA which is used as a proxy for determining the quality of counseling received from the various sources.

Data analysis

Data were analysed at three stages: First, an assessment of a woman's socio-demographics characteristics was made using frequency distribution, summary statistics where applicable. Further, a similar approach was adopted in the assessment of the distribution of women with regards to their preference of source of DMPA. Second, an assessment of the association between all the independent variables by preference of source of DMPA, the dependent variable, was made using the univariate logistic regression. The variables were investigated by the dependent variable each in turn. All variables with a relatively small probability values ($p < 0.5$) were considered for further analysis at the multivariable stage, unless indicated otherwise[24]. Third, the net-impact of the variables with regards to preference of source of DMPA, the dependent variable, was investigated at the multivariable stage using the Complementary Log-log Regression. Choice of the approach was based on the fact that the outcome variables is binary in nature and is evaluated in this study using nominal outcomes. The likelihood of preferring private to public sources of the contraceptive commodity was modelled based on the mathematical expression:

$$\log[-\log(1-p_i)] = \beta_o + \beta_1 X_1 + ... + \beta_k X_k$$

Where;

p_i represents the probability of preferring private to public sources

X_i represents the i^{th} variable

β_i represents exponentiated coefficient of the variables

β_o represents the constant

The complementary log-log transformation or function adopted in the investigations was assessed for appropriateness when compared to the Logit and probit regression alternatives using a link specification test.

Results

From a total of 642 women initially introduced to DMPA, 359 were still using the contraceptive method at the time of the evaluation. The number of women who were using the contraceptive commodity at the time of the evaluation (n = 359) represents a discontinuation rate of about 44% (95% CI 40.2 – 48.0). The socio-demographic characteristics of the women (age and marital status) who were still using DMPA at the time of the evaluation are as follows: predominantly married (77.4%), followed by the never married or single (12.5%) while the rest were either widowed or separated. With regards to age, slightly less than a half of the women (49.3%) were in their 30s; this proportion was followed closely by women below 30 years of age (42.3%) while the rest were 40 years and above.

Preference of source of DMPA

Table 1 presents a distribution of contraceptive users and their preferred source of Depo-Provera.

Table 1: Pattern of Preference of Source of Depo-Provera

Preference of Source	n	Percentage
Public	109	30.4
Private	250	69.6
Total	**359**	**100.0**

Note. The analysis is based on women who were still using DMPA at the time of the study

In the results according to Table 1, majority of women (69.6%) preferred private to public sources of DMPA.

Predictors of preference of source of DMPA

Tables 2 and 3 present likelihood estimates of preferring private sources of DMPA using a

Univariate logistic regression and complementary log-log regression, respectively. From the assessment in Table 2, only two variables had relatively large probability values ($p > 0.5$) generated in the Univariate Logistic regression. These were: awareness of use of DMPA by partner and marital status. Marital status was however incorporated in the analysis at the Multivariable stage because of its relative importance noted in the literature.

Table 2: Likelihood estimates of preferring private sources in ULR

Proximate Determinants	OR [a]	LL [b]	χ^2 [c]	p-value
Age				
Below 30 [†]	1.00	.	.	.
30-39	2.09	-215.3	10.05	**0.0015**
Above 40	4.27	-216.5	7.71	**0.0055**
Marital Status				
Married [†]	1.00	.	.	.
Single/Never married	0.76	-219.7	0.61	0.4314
Divorced/Separated/Widowed	0.86	-219.9	0.15	0.6937
Source of Last DMPA				
Public [†]	1.00	.	.	.
Private	57.07	-115.7	204.66	**0.0000**
Evidence of DMPA Stock-outs				
Yes [†]	0.00	1.0	.	.
No	3.84	-204.6	25.88	**0.0000**
Satisfaction with DMPA				
Very Dissatisfied [†]	1.00	.	.	.
Dissatisfied	0.31	-219.2	2.19	0.1386
Satisfied	2.02	-216.0	8.61	**0.0033**
Very satisfied	0.54	-217.4	5.94	**0.0148**
Knowledge of Side effects of DMPA				
Yes [†]	1.00	.	.	.
No	4.04	-207.8	25.06	**0.0000**
Awareness of DMPA use by Partner				
Yes [†]	1.00	.		
No	0.93	-220.3	0.08	0.7680
Provider of DMPA at Enrolment				
Public [†]	1.00	.	.	.
Private	20.64	-152.28	136.21	**0.0000**

Note. Assessment is made on each of the variables at a time
[†] Represents reference categories adopted in the analysis
[a] represents odds Ratio
[b] represents Likelihood Ratio Estimates
[c] represents Chi-square estimates

Regression diagnostics

The complementary log-log link function adopted in the analysis assessed the appropriateness using the link test to establish whether: (i) the complementary log-log transformation is the correct specification for the outcome variable, (ii) a linear combination of the predictors is supported, (iii) a complementary log-log transformation is explained by a linear combination of the predictors. Table 4 presents the results of the link test; a summary of the findings is made subsequently.

Results of the Hat-statistic in Table 4 show that the model is well specified ($p < 0.05$) – a linear combination of the predictors on a complementary log-log transformation is the proper specification of the data adopted in the investigations. Results of the Hat-square statistic show that no additional variables were significant ($p > 0.05$).

Table 3: Likelihood estimates of preferring private sources in a Multivariable Stage

Explanatory Variables	Coef. [a]	RR [b]	Std. Err [c]	p-value
Age				
Below 30 †	0.00	1.00	.	.
30-39	0.58	1.78	0.265	**0.028**
Above 40	1.32	3.74	0.651	**0.043**
Marital Status				
Married †	0.00	1.00	.	.
Single/Never married	-0.19	0.82	0.360	0.597
Divorced/Separated/Widowed	-0.32	0.72	0.444	0.462
Provider of DMPA at Enrolment				
Public †	0.00	1.00		
Private	1.15	3.16	0.265	**0.000**
Source of Last DMPA				
Public †	0.00	1.00	.	.
Private	2.25	9.56	0.291	**0.000**
Evidence of DMPA Stock-outs				
Yes †	0.00	1.00	.	.
No	1.01	2.77	0.304	**0.001**
Knowledge of Side effects of DMPA				
Yes †	0.00	1.00	.	.
No	-0.07	0.93	0.329	0.820
Satisfaction with DMPA				
Very Dissatisfied †	0.00	1.00	.	.
Dissatisfied	-1.63	0.19	1.347	0.226
Satisfied	-0.09	0.90	1.073	0.928
Very satisfied	-0.27	0.76	1.075	0.796
Constant	-2.62	.	1.060	0.013

Note. Analysis is based on a complementary log-log regression; where, LR χ^2 *=246.34, p < 0.001, n = 351.*

† Represents reference categories adopted in the analysis represents coefficients

[b] represents Rate Ratio

[c] represents standard Errors of coefficients

Table 4: Specification Error Tests of the Link Function

Complementary Log-log	Coef.	Std. Err [c]	p-value
_hat [a]	0.99	0.102	0.000
_hatsq [b]	-0.02	0.086	0.859
Constant	0.02	0.174	0.899

[a] _hat represents hat-statistic

[b] _hatsq represents hat-statistic

[c] Std.Err represents standard Errors

Summary of the results

According to results in Table 3, preference of source of DMPA was significantly associated with age of the women, provider of DMPA enrolment, source of last DMPA and evidence of stock-outs, and provider of DMPA at enrolment. The likelihood of preference of private sources increased with age. Women in their 30s (RR = 1.78) and women aged 40 years and above (RR = 3.74) were more likely to prefer private to public sources of DMPA compared to those below 30 years. Women who had obtained their last Depo-Provera injection from a private source were more likely to prefer private to public sources compared to their counter parts who had obtained the contraceptive from a public source (RR = 9.56). Women who had never experienced a stock-out of Depo-Provera injection were more likely to prefer private to public sources compared to those who had ever experiences a stock-out of the contraceptive injection (RR = 2.77). Preference of private to public source was more likely among women who were introduced to IDPM through private sources (RR = 3.16).

Discussion

In this study, the discontinuation rate on DMPA (44.0%: 95% CI 40.2 – 48.0) compares favorably with the 2006 and 2011 UDHS estimate (46.6% and 46.5% respectively)[10,24]. However, it is high compared to 31.9% and 24.4% for Kenya and Zimbabwe, respectively, but lower when compared to Bangladesh (48.2%), and Egypt (45%)[7].

Concerning the source of the contraceptive commodity, majority of women (69%) preferred private sources of DMPA. These findings corroborate the literature suggesting that private sources are the major sources of injectable contraceptives in the country as up to 60.1% of women prefer private sources[20,25-27]. Private sources in this study comprised predominantly the homes of community health workers. The finding supports the observation that community health distributors bring services close to users in a friendlier and cultural sensitive way[28]. This situation is not only associated with higher acceptance rate of the contraceptive commodities, but also high levels of client satisfaction concerning service delivery[17-18]. However, Landry, Wei and Frost's[19] arguments of the need to close the gap between private and public sources is equally important in enhancing efforts towards family planning service utilization for all persons. Thus, this implies that community based distribution should not be over emphasized over the use of orthodox hospitals administered through the public sector.

The results support the literature suggesting the influence of respondents' socio-demographic characteristics, enabling factors and quality of services on preferred source of contraceptives commodities in general and Depo-Provera in particular. Age was the only socio-demographic factor that was significantly associated with preferred source of DMPA. Our results are in consonance with findings elsewhere in sub-Saharan Africa[26-27,29-30]. Contrary to Arowojolu and others[29] who found that young people preferred private to public sources of contraceptive commodities in order to avoid direct contact with health workers, our findings show that preference of private sources of DMPA increases with increase in age. Preference of private sources among older women could be attributed to their desire for privacy and convenience since the services are delivered in community settings.

While marital status is identified as significant predictor of choice of source of contraceptive elsewhere[14], our findings show that the variable was not significantly associated with preference of source of DMPA. Most of the significant predictors of choice of sources of DMPA were provider or supply associated. Providers of DMPA at enrolment and source of the last DMPA were significantly associated with preferred source of DMPA - women enrolled by and/or accessed their last DMPA from private providers preferred the source to the public sources. Additionally, women who reported no evidence of stock outs preferred private community based sources. This is indicative of appreciation of quality of services predominantly delivered by community-based private providers, and the fact that the supply of DMPA through the approach is usually continuous. Certainly, services are brought closer to the intended users adopting culturally sensitive approaches[28]. Further, Community Based Distribution (CBD) of contraceptives is reported in these studies to be one of the effective interventions for improving continuation rates of contraception. CBD approach has potential for reducing the fear of side effects which Hytel and others[20] consider to be one of the main reasons for the high unmet need for family planning in the country.

Conclusion

In light of the fact that private sources of the contraceptive comprised community health worker and user's home, the argument for safe administration of Injectable contraceptives by trained community-based workers is highly supported. The approach is associated with delivery of services in a more culturally sensitive, accessible and friendly manner as compared to the predominantly public based administration of the contraceptive commodity. Certainly, the strategy of adopting community based distribution of contraceptives as a method of enhancing family planning service utilization[17,20,28] is strongly supported.

The analysis would have benefitted from inclusion of variables namely parity, education level and employment status. However, these variables were not were part of the dataset. Further, it is questionable that the community based distribution approach would be the preferred mode of delivery of other modern contraceptive commodities. Thus, it may be necessary to pilot delivery of other modern contraceptive commodities using the community based distribution approach.

Contribution of Authors:

Olivia Nakayiza conceived and designed study/compiling of data
Robert Wamala designed study, conducted the data analysis and participated in the writing of the manuscript.
Betty Kwagala designed study and prepared the manuscript
All authors approved the manuscript.

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