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RESEARCH ARTICLE

DETERMINANTS OF CONTRACEPTIVE UTILISATIONAMONGST TEENAGEMOTHERS: A CASE-CONTROL STUDY IN KYANGWALI REFUGEE SETTLEMENT (UGANDA)

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A B S T R A C T

The determinants of contraceptive utilisation amongst teenage mothers in refugee settings are poorly understood. To establish and compare determinants of contraceptive utilisation amongst refugee and host teenage mothers in Kyangwali Refugee Settlement, we conducted a case-control study to interview 132 cases and 264 controls made up of mothers aged 13-19 years during April 2014, using survey questionnaires and a focussed group discussion. Quantitative data was analysed using SPSS 16.0.Chi-square testing and Odds ratios at 95% confidence interval, and $p<0.05$ as significant were conducted to determine factors that significantly influenced contraceptive utilisation. Of the 396 teenage mothers, 64.6% (256) were refugees whereas 35.4% (140) were host nationals. Spousal support [X^2=6.489, p=0.039; OR=2.250 (1.994-2.571) 95% CI], husband' level of education [X^2=16.189, p=0.000; OR=2.043(1.442-2.896) 95% CI] and a low birth order [X^2=7.749, p=0.005; OR=1.227 (1.072-1.405) 95% CI] were significant determinants of contraceptive use. The major barriers contraception were fear of side effects 35.4% (140), refusal by the husband 30.3% (120) and lack of community based access 23.0% (91). There was no significant statistical difference in current use of contraceptives between refugee teenage mothers and host nationals [X^2=0.138, p=0.710; OR=1.087(0.701-1.686) 95% CI].There is need to restructure delivery of contraceptive services in a way that enhances maximum uptake amongst teenage mothers in refugee settings, through integrated outreaches, girl-child education and male targeted messages in order to curtail the consequences of contraceptive underutilisation in this population.

INTRODUCTION

Kyangwali Permanent Refugee Settlement is a home for over 40,000 refugees (UNHCR, 2013) and Ugandan nationals living in host areas. It is located in Hoima District, 80km from Hoima town-South Western Uganda. The refugees are from Congo, Rwanda, Burundi, South Sudan, Somalia and Kenya (Action Africa Help International, 2013). The on-site refugee settlement management is headed by the Office of the Prime Minister (OPM) alongside the United Nations High Commissioner for Refugees (UNHCR) with its' implementing partners (UNHCR, 2013).

The settlement has 4 health facilities that offer Family Planning (FP) services. Referrals are made to Hoima Regional Referral (80km from the settlement) and Mulago National Referral Hospitals (207km from the settlement) for specialist services. Provision of quality FP and ensuring manageable families for economic development and self-reliance are in line with the government and UNHCR's objectives (UNHCR, 2007).

The poor adolescent population in Africa and Uganda is at high risk of unwanted pregnancy and HIV/STI's due to unmet need, low uptake and low contraceptive prevalence rate (CPR) (UN, 2OO1; Westoff, 2001; UNFPA, 2002). In Uganda CPR is only at 24% and unmet need for FP at 35% (UNFPA, 2001; Westoff, 2001) resulting in abortions (Global health council, 2002), high adolescent pregnancy rate (UNDP, 2006) and high fertility rates of 6.7 children per woman (Population Data Sheet, 2007) amidst HIV pandemic (UNFPA, 2001). Only 12% of teenage mothers use contraceptives (Alan Guttmacher Institute 2004, Macro International 2002) resulting in high maternal mortalities due to high blood pressure, excessive bleeding, obstructed labour and new HIV infections (UNAIDS, 2004; Myagmar E, 2000; Cates *et al.*, 2010; Crossette *et al.*, 2005).

Maternal mortality and low contraceptive uptake are reported to be highest amongst women in rural areas (WHO, 1997; UNDP 2006) like Kyangwali Refugee settlement, where contraceptive usage is only at 29% (Action Africa Help Uganda, Performance Indicators Report, 2013), despite the reported availability of free FP services.

Statement of the Problem

Africa's adolescent pregnancy rate is highest in the world with 12% of African teens giving birth every year as compared to 3% in developed countries (UNDP, 2006). Despite Maternal and Child Health having a high priority on the Global agenda, most prominently underlined in the Millennium Development Goals (MDG) 4 "To reduce child mortality" and 5 "To improve maternal health",the prospects towards achieving these MDGs by 2015 in Uganda appear bleak.Ugandan CPR of 24% is too low compared to 60% in Asia and 70% in Western Europe yet teenage birth rates are so high amidst AIDS pandemic (UNFPA, 2001).

Ugandan adolescents conceive as early as 13 years as and more than 50% engage in sexual relationships by the age of 15 years (Lule *et al.,* 2013). In a refugee setting, the implication of an unplanned teenage pregnancy is not only socially devastating but also economically delays self-reliance that contravenes the goal for humanitarian agencies.

Justification

Ugandan Maternal Mortality Ratio and Infant Mortality Rate continues to be high at 700/100,000 live births and 172/1,000 live births respectively (UBOS, 2007), despite the availability of free FP services. An important intervention towards achieving the MDG 5 target is the provision of modern FP among women in Sub- Saharan Africa (Cates *et al.,* 2010; Sachs *et al.,* 2005). There is evidence that if couples can space their pregnancies by at least two years apart through the use of contraceptives, up to 35% of maternal deaths and up to 13% of child mortalities could be averted (Cleland *et al.,* 2006; Rutstien, 2008; Stover *et al.,* 2010), whilst 25% of under- five mortalities could be averted if birth intervals were at least three years (Rutsien, 2008).The cost-effectiveness of contraceptive usage in poverty reduction and socio-economic development in the poor communities is well documented (Reproductive Health Supplies Coalition, 2009; Singh *et al.,* 2009; Speidel *et al.,* 2009).

Thus contraceptive uptake in refugee settings will not only break the cycle of poverty but also enhance self-reliance.However no such case-control studies have currently been conducted in Ugandan refugee settings to provide the evidence base for restructuring such services in this age group. Establishing the determinants of FP utilisation will guide Ministry of Health, UNHCR and other relevant health bodies in setting up plans and strategies that will enable vulnerable teenage refugee mothers to seek and access FP services. Study findings will be used as evidence to improve contraceptive security to minimise delays in access to contraceptives for survivors of sexual violence and strengthen human resource capacity to provide sustainable FP services in conflict and post conflict situations.

Main objectives of the study

- To determine the socio-demographic, sociocultural and service delivery factors that influence contraceptive utilization and preferred methods in Kyangwali refugee Settlement.
- To compare determinants of health and contraceptive utilisation between refugee and host teenage women aged 13 to 19 years living in Kyangwali Refugee Settlement.
- To highlight priority areas for programmes and policies aimed at improving contraceptive security for adolescent mothers in Refugee Settings.

Review of Literature

Factors Influencing Contraceptive Usage in General Population

Despite the existence of adolescent and other reproductive health policies, lack of political will has been a major hindrance to improving contraceptive security in Uganda, with 70% ofcontraceptive supplies being provided through donor funding (Leahy *et al.,* 2009).Even in areas where the government has made the FP services freely available and accessible, no significant increase in uptake has been noticed at community level(Anthony, 2003).There is paucity of data on case control studies targeting FP utilisation amongst refugee teenage mothers in Africa and Uganda in general. However for the general reproductive age group, the commonest reasons for non-use of FP include: rejection by the husband (Onwuzurike *et al.,* 2001; Calverton, 2002; Ikechebelu *et al.,* 2005), insufficient knowledge (Ozgur, 2001; Naghma, 2002; Korra *et al.*,, 2002), fear of side effects and religious prohibition (Korra *et al.,* 2002; Ikechebelu *et al.,* 2005; Kumar*et al.,* 2005), level of education and urban locality (UNDP, 2006) amongst others.

Determinants of Family Planning Usage in Refugee settings

Although some studies demonstrate that camp based refugees and IDPs have better reproductive health outcomes than the populations in their host country or country of origin (Hynes *et al.,* 2002) and that some risks such as maternal and infant mortality increase in early stages of an emergency, but can diminish as refugees benefit from health services in stabilized camp settings (Bartlett *et al.,* 2002), sustainability of such improved reproductive health services in refugee populations remains a challenge as some implementing partners tend to withdraw donor funds in the stabilisation phase, especially in a permanent refugee settings like Kyangwali.

Despite the fact that an ideal programme for refugees should comprehensively cover FP, safe motherhood, STIs/HIV prevention, and sexual and gender-based violence protection (IAWG, 1999), often FP services are not seen as life-saving interventions in crisis humanitarian situations (Beatty *et al.,* 2001). Improving FP services in refugee settings not only safeguards individual health and rights but also improves the quality of life for individual women, their husbands, and the children. However according to the Palestinian Central Bureau of Statistics (PCBS, 2004) and (UNFPA, 2006), the FP consumption rate tends to be low amongst refugee women compared to the general population. It is also true that the world's highest maternal and infant mortality rates are often reported in refugee populations where FP consumption is extremely low (UNFPA, 2007; Tomczyk *et al.,* 2000) thus the current contraceptive prevalence rate of 29% in Kyangwali refugee settlement is worrying.

Whilst support for contraception and other reproductive health programmes has increased considerably over the past two decades in refugee population, there is still variation in the quality and availability of such comprehensive services by country, setting, and service provider; with the greatest effort, especially during the emergency response phase being set towards STI/HIV prevention (Krause *et al.,* 2000; IAWG, 2004), yet experiences from Sierra Leone (Sonneveldt *et al.*, 2008; CARE Sierra Leone, 2005) warrantees attention to emergence contraception as sexual exploitation, gender-based violence, and transactional sex during conflict situations are commonly reported, particularly when rebels decide to rape women and girls as means to subdue and humiliate their opponents (Human Rights Watch, 2003). It is also not uncommon for women in conflict situations to offer sex as an easy way to access food and shelter, or to gain passage through border crossings and get transportation to safer locations (Women's Commission for Refugee Women and Children, 2004). These risks come along with increased unwanted pregnancies, STIs and vicious cycles of poverty that socioeconomically disempower such victims from being self-reliant yet self-reliance is the core value and main objective of the humanitarian agencies.

Even though there may be willingness for refugee women to use contraceptives, limited options, supplies and stock-outs may limit their consumption in camp settings (Women's Commission for Refugee Women and Children, 2003; Krause *et al.*, 2005). Stock-outs of contraceptives are common due to irregular supply and disrupted distribution systems, as well as difficulties in estimating needed quantities (Dixon, 1996; Beatty *et al.,* 2001). Such limitations cannot be disputed for Kyangwali Refugee Settlement where host nationals also compete for the same reproductive health services offered at health centres within the settlement. In the context of limited supplies, high demand, and corruption, clients may be charged informal fees or may be asked to provide their own supplies (Beatty, *et al.,* 2001). In some cases, minimal contraceptive options are available at a time as long-term methods are often seen as less critical in crisis situations and may be lacking (IAWG, 2004).

Even in presence of reliable supplies for contraceptives, accessibility by refugee women may be limited due to shortages of trained medical personnel both in camp and non-camp settings (Pougin *et al.,* 2005), since identifying and deploying staff with experience in emergency relief may be impossible (Krause *et al.,* 2000). Whilst it necessitates training staff in conflict situations; in fields of FP and the latest contraceptive technologies (Women's Commission for Refugee Women and Children, 2004), retaining such staff in remote and hard to reach areas like Kyangwali is difficult especially in presence of demotivating low salaries (IAWG, 2004). Maintaining appropriate gender balance of staff, particularly for women seeking contraception for rape and other sexual abuse also remains a challenge (Women's Commission for Refugee Women and Children, 2003; IAWG, 2004) as more males than females form health care providers. Frequent absence and turnover of personnel, disproportionate urban-rural or regional distribution of doctors and nurses, medical barriers like restrictions on the personnel permitted to distribute contraceptives or to administer drug treatment, and the requirement of spousal consent for adolescent mothers, lack of understanding of how the information from service statistics can be used, long delay in new directives from the central level reaching local levels may all affect usage of available family planning services in refugee settings like Kyangwali.

Reproductive health staff may also lack adequate, consistent guidelines and protocols on service provision or may face obstacles in effectively implementing them, particularly in acute crisis situations (IAWG, 2004). In some cases, refugee settlements have not appointed reproductive health focal personnel or gender and child protection officers (Women's Commission for Refugee Women and Children, 2003), especially for youths and adolescents as desired. Other refugee settings lack protocols like the (Bosmans and Temmerman, 2003; Centers for Disease Control and Prevention, 2007; and Women's Commission for Refugee Women and Children, 2004 and 2006) for addressing rape that include provision of emergency contraceptives (Human Rights Watch, 2005). Policy frameworks for meeting the reproductive health needs of teenage refugee mothers may also be lacking (Michael *et al.,* 2005) but also inadequate guidelines on coordination and collaboration amongst implementing partners in reproductive health in refugee settlements can weaken the quality services delivered (IAWG, 2004). In the absence of clear guidelines and supervision, service providers may rely on their own judgments to determine which clients are eligible to receive FP services that may create an unmet need for adolescent mothers and rape victims especially where there are restrictions based on age, marital status, parity, spousal refusal, religious prohibition and parental consent.

Refugee populations may have various religious, cultural, gender, and social norms that may prevent them from using contraceptives (Morrison, 2000; IAWG, 2004; Women's Commission for Refugee Women and Children, 2003; and Human Rights Watch, 2005). For example, women may be unable to negotiate condom use or may face opposition from their husbands in using other contraceptive methods. Also, attitudes held by men and broader perceptions about male involvement in family planning may result in limited outreach to men. In terms of demand, the stress and uncertainties of conflict situations may result in increased demand for contraceptives.

Conversely however, in post-conflict situations, women may feel increased pressure to replace their lost families or help re-populate their countries of origin, thus limiting FP consumption (McGinn, 2000; McGinn *et al.,* 2004). On the other hand; lack of transportation and long travel distances; inconvenient hours of clinic operation; lack of teenage-friendly reproductive health services; lack of appropriate information, education, communication (IEC) materials for refugees; and limited monitoring and evaluation of reproductive health services in refugee settings may potentially affect the quality, delivery and consumption of FP services. It is upon these dynamics that routine accessibility, acceptability and attitudinal studies become mandatory to enable the evidence base for restructuring policies and guide delivery of such services in a vulnerable refugee population. Although researchers have evaluated factors associated with

the use of family planning methods in most parts of Africa and Asia where consumption tends to be low. None of such case-controlstudieshad been conducted in Uganda particularly in refugee settings. To fill these gaps, this case-control study determines the socioeconomic, sociocultural, service delivery and socio-demographic factors as well as individual attitudes and knowledge influencing the use of contraceptivesamongst teenage mothers in Kyangwali Refugee Settlement, South Western Uganda. It is hoped that study findings will contribute to the improvement of FP consumption particularly amongst the vulnerable teenage women in refugee settings through appropriate service delivery strategies and community desired approaches.

RESEARCH METHODOLOGY

Study Site, design and Scope

A case control study was employed since no such a study had been conducted in this region yet appropriate for a dynamic refugee population whose follow up might be difficult. A 2:1 matching was employed where two control persons were sought for every case person.The study was both healthy facility and field based, carried out in 4 weeks during the month of April 2014, in Kyangwali Refugee Settlement in Hoima District, South Western Uganda. The cases were selected from registers of clients accessing contraception services at the four health facilities available within the refugee settlement including; two government aided public facilities (Kyangwali HC III and Kasonga HC II) and two private UNHCR funded facilities (Rwanyawawa HC III and Nguruwe HC II).

Study Population

The study population wasteenage mothers aged 13 to 19 years who were living in Kyangwali Refugee Settlement at the time of data collection.

Inclusion Criteria

General

Teenage mothers aged 13 to 19 years living within Kyangwali Refugee Settlement were recruited and interviewed once until the required sample size was obtained. Evidence of registration as a refugee by show of registration card or equivalent and presentation of proper identification for host nationals was a prerequisites for inclusion into the study. This was to screen off those who might have been visitors to the settlement. Each identified eligible participant was then be assigned an anonymous unique code.

Cases

The study population included teenage mothers aged 13 to 19 years in Kyangwali Refugee settlement who were registered modern family planning users. The target population included all teenage women aged 13 to 19 years who live in Kyangwali Refugee Settlement and were currently using any modern contraceptive method and all women in the specified age group who were not currently using any modern method of contraception but whose spouses were currently practicing modern male contraception.

Controls

Study population included all teenage mothers aged 13 to 19 years living in Kyangwali Refugee Settlement who have never used any modern contraceptive method. The target population included teenage mothers aged 13 to 19 years living in Kyangwali Refugee Settlement who have never practiced any modern contraceptive method. These controls were matched for; age group, marital status, place of residence and country of origin.

Exclusion Criteria

General

Teenage mothers who are not registered or with no proper identification document to live within Kyangwali Refugee Settlement, severely sick or insane mothers of the study age group living with in the refugee settlement and women outside the age bracket of 13 to 19 years were beyond the scope of this study. Eligible mothers who declined an informed written assent/ consent were also excluded.

Case

Teenage mothers aged 13 to 19 years who were practicing traditional methods of family planning were excluded since the aim of the study was to establish determinants for the low use of modern contraceptives.

Controls

Teenage mothers who had practiced modern contraceptive method in the past but were not currently using any modern contraception were excluded. Teenage women were currently using traditional contraceptive methods were also excluded.

Sample size estimation

The sample size was determined by using the Keish and Leslie (1965) formula as below:

$N = Z^2PQ/D^2$

Where N= sample size required

Z is the standard normal deviate at α =5% (1.96 for a 95% confidence interval)

P and Q are the population proportions; P = Probability of exposure give that a person is currently using family planning and Q is (1-P). Since the contraceptiveexposure rate from the previous survey is reported to be 29%, then P=0.29, and Q=0.71 D = the level of precision desired (0.05); Therefore,

$$N = \frac{(1.96)^2 \times 0.29 \times 0.71}{(0.05 \times 0.05)}$$

N = 317

Assuming a 75% response rate, additional 25% was added on

the sample size, thus N=317+79

The sample size was 396 participants. In this study, two controls were matched for each case i.e. (controls: cases=2:1); thus the exact number of cases and controls were derived as follows: *n*controls + *n*cases=396. But *n*controls=*2n*cases, thus number of cases wre 132 while number of controls were 264.

Sampling procedure, Identification of Cases and Controls

According to action Africa Help Uganda (2013), there are only four available static health facilities within the refugee settlement where people seek for health care and each of these offer contraception and reproductive health services. Two of these are government facilities and the other two are private UNCHR funded facilities. For maximum representation, all these wererepresented in the study. For equal representation, with the aid of FP registers, proportional allocation of sample sizes were computed for each of the 4 health units depending on number of cases that accessed FP services at a given facility.

Since there were family planning registers for all women using modern contraceptives at each of the four health facilities with in Kyangwali refugee settlement, selection of cases were initially stratified into two age groups: (13-17) years and (18-19) years. The rationale for this age stratification was because the Ugandan constitution considers any sexual relationship with women below 18 years as defilement. Using proportional allocation, sample sizes were calculated for each age stratum. Simple random sampling was then conducted to select the pre-determined number of participants for each age stratum from the stratified registers. These cases were then be traced through safe motherhood promoters, local chair persons and village health teams (VHTs); with the aid of address lists extracted from the regional office of the prime minister and regional Health Centre FPregisters within the refugee settlement.

The team of 2 VHTs, 2 safe motherhood promoters and 2 Local Council one Chairmen for each facility weretrained on the recruitment criteria and wererequested to trace and recruit as many teenage mothers as needed who are using modern contraceptives. This approach was suitable sinceeach Health Center in the refugee settlement is attached to these safe motherhood promoters and VHTs, who not only know the FP clients personally but also by their house hold locality. The recruiting team of 24 were broadly divided into two groups of 12 i.e. those recruiting cases and those recruiting controls, however these moved together. The potential clients were invited to report at their respective nearest Health Centres for screening and recruitment once they met the inclusion criteria. Transport refund was made for these participants.

Control persons were recruited from the same localities where case persons resided. These were matched for; age, marital status, place of residence and country of origin. Active search for controls was conducted starting at the house hold of cases. In the event that no suitable controls were found within a house hold, they were sought in the adjacent households until the required number was achieved. Controls were then invited at their respective nearest health facility to be screened for eligibility and recruitment.

Main Study Variables

The study variables include both dependent and independent. In this study, the determinants of contraceptive utilisation are the independent variables while current contraceptive utilisation is the major dependent variable.

Outcome Variables

The study determines factors influencing contraceptive usage. Percentages, Chi square and Odds ratios are calculated for each of independent determinants for contraceptive usage. Data on exposure variables including; Socio-demographic characteristics like; age, religion, parity, marital status, education level, refugee status; Service delivery factors like travel distance from home to the nearest health facility, duration of stay in the refugee settlement, convenience of opening hours at the health facility, service provider attitude, availability of preferred options of contraceptionwas obtained. Information on sociocultural factors like spousal and parental approval for use of FP and any other cultural hindrances was also obtained in the survey questionnaire, and was complemented with one focussed group discussionfor qualitative analysis.

Study Procedures

Every respondent was explained to the purpose and outcomes of study and consented/assented to participate. A self-administered research questionnaire was then administered. Women who could read and write filled the questionnaires themselves while the rest were assisted by the investigators, VHTs and midwives who had been trained on the concept of case control studies and administration of the questionnaires, to avoid misinterpretation of concepts. It took about 5-10 minutes to fill each questionnaire. The right of each patient to participate or opt out of the study at any stage was highly respected.

Forty-five minutes focussed group discussion with 20 purposively selected key informants including; 8 members of Safe Motherhood Promoters, 8 members of Village Health Teams (VHTs) and 4 midwives who had not participated in the data collection was conducted in the last week of data collection. The selection was made in such a way that there was equal representation of males and females in each group for each of the health centres. Each of these was availed with a focused group discussion guide. Counting and tallying respondents' opinion and recording any other additional responses by use of notebooks and tape recorders was conducted to avoid missing any verbal deliberations.

Data Collection

The survey questionnaire was pretested in Kiryandongo refugee camp, a smaller refugee settlement outside the study area but presumed to have similar characteristics to the study site. A pretested questionnaire was modified accordingly before the real field work. These tools were designed in English based on variables elicited in the problem statement and study objectives; with both closed and open ended questions that were filled on spot to obtain quantitative and

qualitative data. To cater for other commonly used languages in Kyangwali refugee settlement, these questionnaires were translated in French and Swahili by use of secondary teachers who mastered in these languages and were validated during data collection workshop with the safe motherhood promoters and VHTS who were fluent in these local languages. Qualitative data was alsoobtained through FGDs by use of key informant interview guides, manila papers and tape recorders to ensure that no verbal responses were omitted. The data collection process took 4 weeks.

Data Management and Analysis

Questionnaires from each study site were packed in one envelope, labelled and put in a water proof bag. Data sorting, coding, entry and analysis was conducted by the investigators with the help of a biostatician and stored on password protected computers. Quantitative data was analysed using Statistical Package for the Social Sciences (SPSS Inc., Chicago, IL, version 16.0 for windows), while directed content analysis of themes of transcribed qualitative data was conducted manually for common categories and sub-categories.

Data Presentation

Results are displayed in charts as appropriate. Descriptive statistics including frequencies, percentages, mean, median and standard deviation are used. Categorisation of variables, Chi square testing, and Odds ratios were computed, with the main dependent variable as "current use of modern contraception" to determine the factors that significantly influence contraceptive utilisation. The modern contraception referred to in this context include oral contraceptive pills, Injectaplans, condoms, implants, intrauterine devices, vasectomy and tubal ligation. The variable was measured as a dummy binary variable with "No" representing non-usage and "Yes" representing usage.

Ethical consideration

Approval to execute the study was obtained from the institutional review board (IRB) of the Uganda National Council for Science and Technology and a technical ethical regional committee from the Office of the Prime Minister. Permission was also sought from the respective health centre administrators and local village chiefs. The consent form was translated into relevant local language to cater for those who do not understand English. The study participants indicated their consent/assent by endorsing the predesigned forms in presence of the investigators. Respondents were free to opt out at any time if they so wished. Confidentiality and privacy was highly observed as respondents names did not appear in the data collected. Tape records were destroyed after the study duration to avoid retrieval by non-investigators. Data was kept in password protected files until final stages of dissemination. The results of the study were availed to the health centre administrators, relevant local governments Ugandan Ministry of Health through a national stake holder's conference on adolescents' health held 29th to 30th July 2015 at Imperial Royale Hotel, Kampala.

Quality Control

The pre coded questionnaires was pretested amongst teenage mothers in Kiryandongo refugee camp (Northern Uganda) to ensure accuracy and validity and were translated to local languages to avoid misinterpretation of concepts. Female midwives and chaperones were present during interviews to improve disclosure. Each respondent was identified, recruited and interviewed once and a track or records was kept at each of the 4 health facilities to avoid duplication and double recruitment. Questionnaires were rechecked for completeness every after the interview and were stored centrally to ensure safety of the items. Key informant interviewsprovided a strong backup for reliability of the information obtained.

RESULTS

Socio-demographic Data of Participants

Of the 396 teenage mothers, 64.6% (256) were refugees whereas 35.4% (140) were host nationals.Their age ranged from 13 to 19 years with a mean age of 17.44years (Std.Deviation 1.392). Majority 85.4 % (338) had lived with in the refugee settlement for more than six months and majority 32.3% (128) were Protestants followed by Catholics 26.85% (128). Majority 83.1% (329) had not attained primary education and 30.8% (122) were single mothers. A total of 15.7% (62) teenage mothers reported having conceived their current or most recent pregnancy following rape.

Socio-demographic determinants of contraceptive usage amongst teenage mothers

There was no statistically significant association between current use of family planning and duration of stay within the refugee settlement [X^2=1.010, P=0.367; OR=1.045(0.963-1.135) 95% CI].There was a significant association between current use of contraceptives and country of origin [X^2=10.321, p=0.016 (95% CI)]; Fig.1

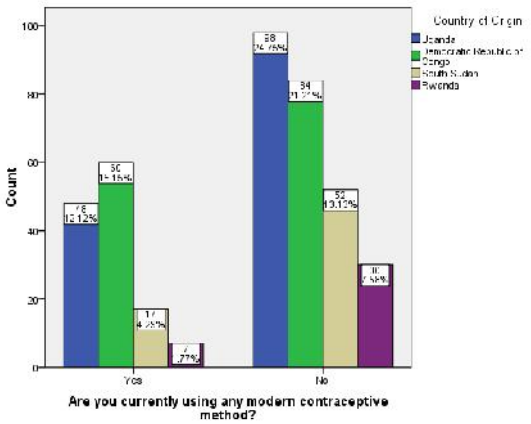

Figure 1 Showing bar graph for current contraceptive use cross tabulated with country of origin

There was no statistically significant association between current contraceptive usage and age of teenage mothers, [X^2=3.757, p=0.710, 95%CI]

There was no statistically significant association between current use of contraceptives and religious affiliation [X^2=3.395, p=0.494, 95%CI] (Fig. 3).

There was no association between current contraceptive use

and attainment of primary education amongst teenage mothers [X^2=0.411, p=0.814, 95% CI] (Fig.4).

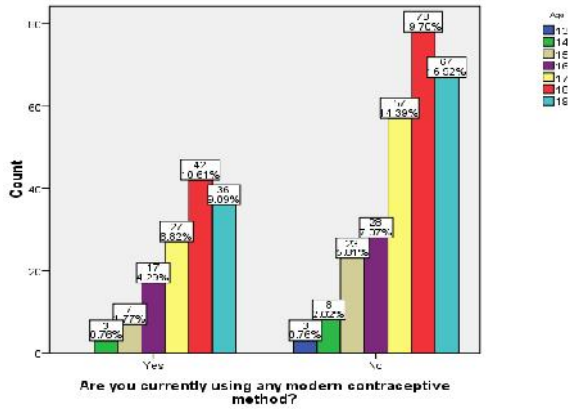

Figure 2 Showing bar graph of current FP use cross tabulated with age of teenage mothers

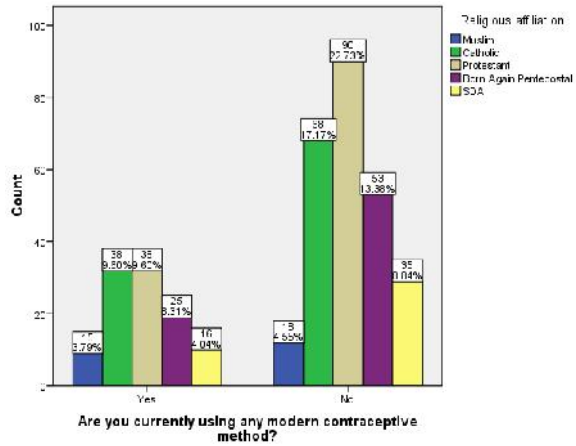

Figure 3 Showing bar graph of current FP use cross tabulated with religious affiliation

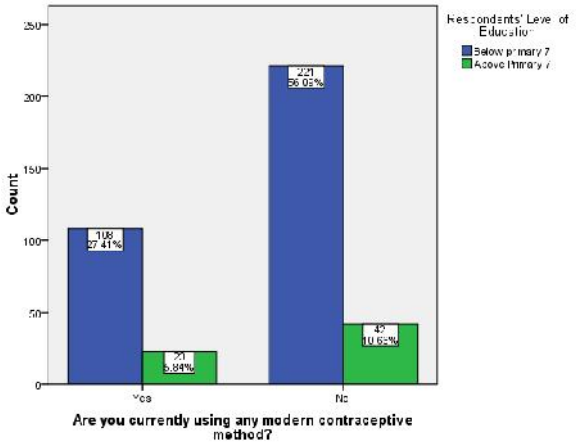

Figure 4 Showing bar graph of current FP use cross tabulated with respondents' level of education

However there was a statistically significant association between current contraceptive usage amongst teenage mothers and husband' level of education[X^2=16.189, p=0.000, 95% CI]. Teenage mothers whose husbands attained an education level above primary seven were more likely to use contraceptives[OR=2.043(1.442-2.896) 95% CI] (Fig. 5).

There was a significant association between parity of teenage mothers and current use of contraceptives [X^2=7.749, p=0.005, 95% CI). Teenage mothers with a birth order of two and below were more likely to be currently using family planning [OR=1.227 (1.072-1.405) 95% CI]. Fig. 6

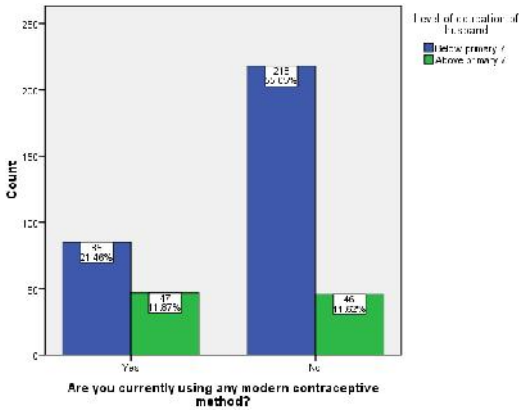

Figure 5 Showing bar chart for current use of contraceptives cross tabulated with husbands' level of education

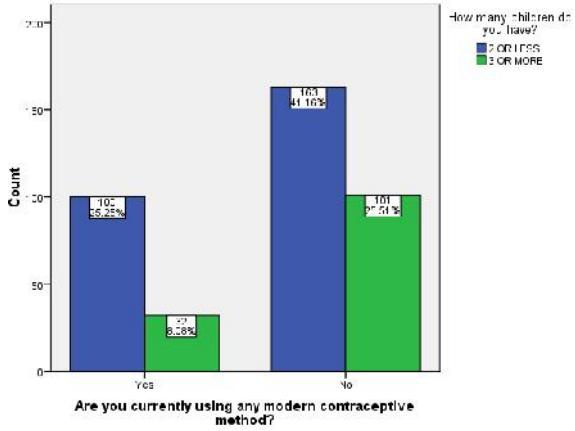

Figure 6 Showing bar chart from current use of FP cross tabulated with parity of teenage mothers

There was no association between current use of contraceptives and marital status of teenage mothers [X^2=0.024, p=0.909; OR=1.036 (0.658-1.658) 95% CI]. Fig 7

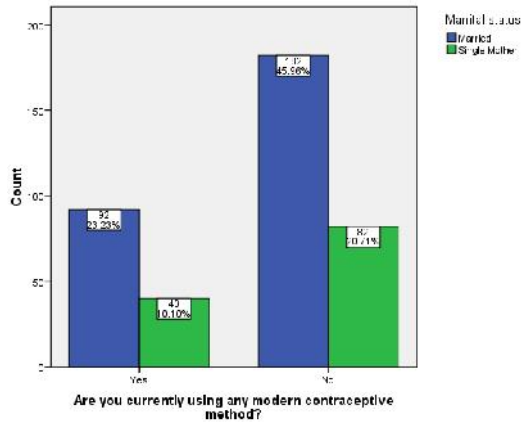

Figure 7 Showing bar chart of current contraceptive use cross tabulated with marital status

Sociocultural Determinants of Contraceptive Usage amongst Teenage Mothers

Husband's support and escort to the health facility was also significantly associated with current FP use [X^2=6.489, p=0.039, 955 CI]. Teenage mothers who reported spouse's support and escort in accessing FP were more likely to use contraceptives [OR 2.250(1.994-2.571) 95% CI].

Majority of respondents 87.4% (346) reported that they would want FP services in their communities; however 34.3% (136) believed that adolescents and teenage mothers should not have open access to contraceptives citing that such would result into infertility before they attain their desired birth order.In a forty five minutes focussed group discussion, teenage mothers who are members of the safe motherhood promoters and VHTs cited that adolescents who use contraceptives are rebelled as prostitutes in their communities,amidst strong rejection from their husbands.

"*We pay bride price for them to produce for us children but even when we escort them to the healthy facility, us men we are not given or taught anything, may be because we don't produce*", says one of the male members of Village Health Team. "*When we go to the healthy facility, we need to find providers who are fellow refugees who understand our language, when we feel we are not understood, we give up after all it is against God's creation to use family planning*", says 17 year old teenage mother. "*We stay in extended families in a camp setting; where ever you go your mother-in-laws follow you and cannot afford seeing you swallowing the pills. At least if they would get us inject plan when they come to immunise our children*" says an 18 year old mother. "*They may also imprison you if you escort your young wife because this is defilement yet you married her*", says a 31 year old local leader.

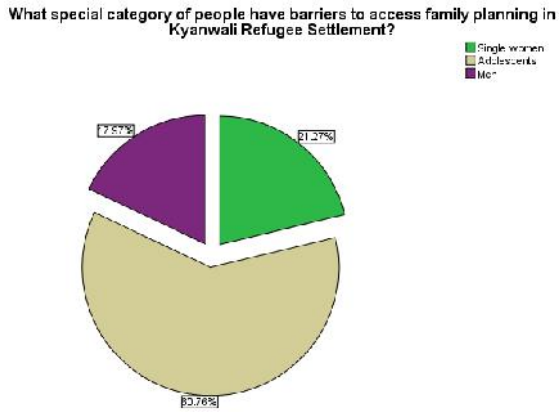

Figure 8 Showing perceived vulnerable category of people with major barriers to accessing family planning

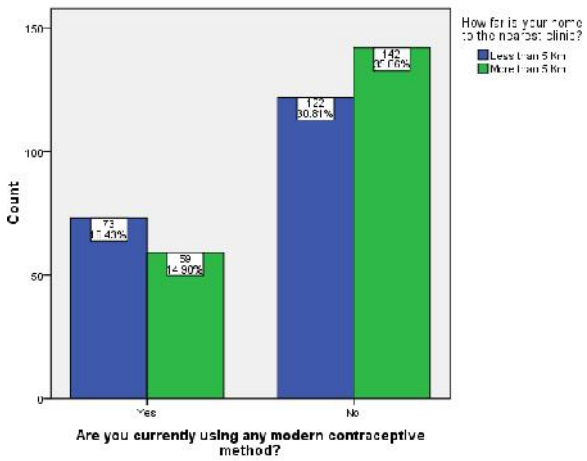

Figure 9 Showing bar chart for current FP usage cross tabulated with respondents'' travel distance to the nearest health facility

When asked if there is any special category of people with major barriers to accessing contraceptives, majority 60.6% (240) cited adolescents (Fig. 8).

Service Delivery Determinants of FP Utilisation amongst Teenage Mothers

There was no association between current use of contraceptives and respondents' travel distance from home to the nearest health facility [X^2=2.910, p=0.088; OR=1.440 (0.946-2.191) 95% CI]. Fig. 9

Injectaplans were the most preferred method of contraception 53.3% (211) amongst teenage mothers, followed by barriers and combined oral contraceptives in that order (Fig. 10).

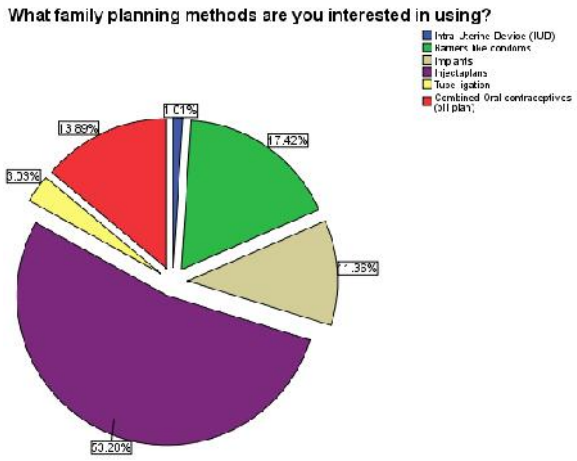

Figure 10 Showing preferred methods of contraceptives amongst teenage mothers

Of the 396 teenage mothers, majority 54.0% (214) preferred accessing FP services from public health facilities, followed by community based outreaches (Fig. 11). However during a focussed group discussion, it was established that there are concerns about privacy at these public health facilities. The midwives also testified that there is no opportunity for women and men who may want permanent contraceptive methods like tubal ligation or vasectomy respectively.

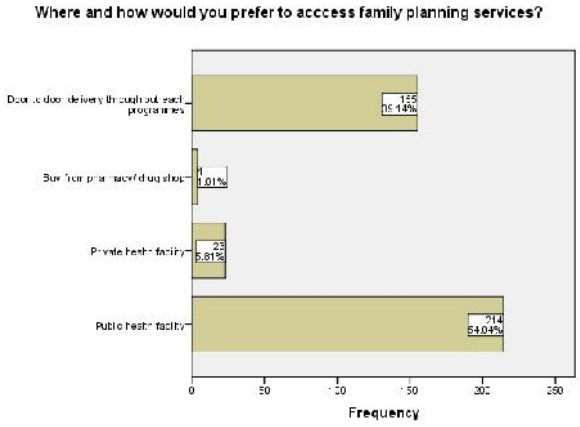

Figure 11 Showing preferred facility for access of contraceptives

There was no association between current contraceptive use and outcome of previous pregnancy [X^2=1.756, p=0.416, 95% CI]. There was also no association between current FP use and convenience of opening hours at the nearest healthy facility [X^2= 2.040, p=0.187; OR=0.945(0.870-1.027) 95% CI]. The major barriers to us of contraceptives amongst teenage mothers in Kyangwali Refugee Settlement were; fear

of side effects 35.4% (140), refusal by the husband 30.3% (120) and lack of community outreach based distribution 23.0% (91) Fig.12.

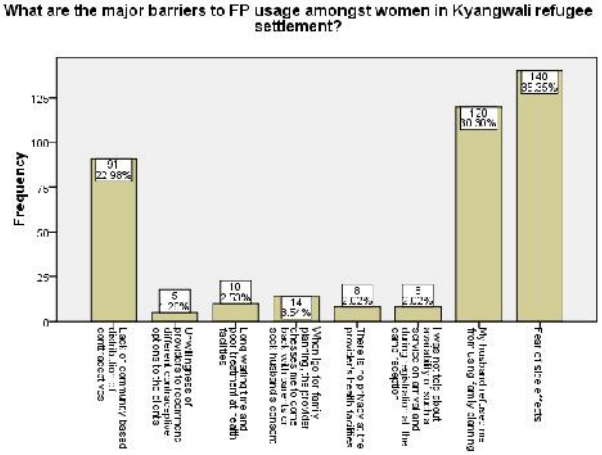

Figure 12 Showing major barriers to using contraceptives amongst teenage mothers

Comparisons between Refugee Teenage Mothers and Host Nationals

There was no significant statistical difference in current use of contraceptives between refugee teenage mothers and host nationals [X^2=0.138, p=0.710; OR=1.087(0.701-1.686) 95% CI] Fig.13.

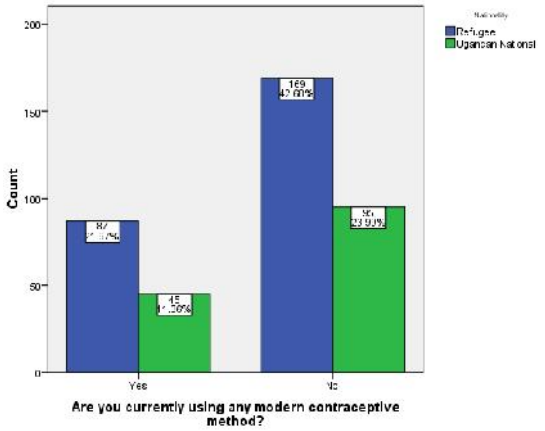

Figure 13 Showing bar graph of current use of contraceptive cross tabulated with nationality status

Of the 396 teenage mothers, a total of 52(13.1%) had their

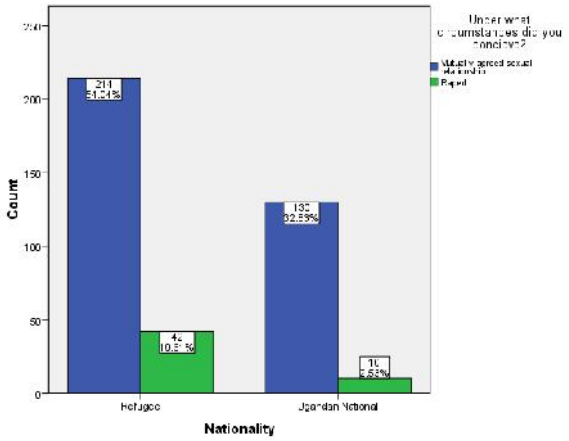

Figure 14 Showing bar graph for nationality cross tabulated with circumstance of Conception

most recent pregnancy following rape. Refugee teenage mothers 42(10.6%) were more likely to have conceived following rape than host nationals 10 (2.5%); [X^2=6.808; p=0.008; OR=2.293 (1.189-4.436) 95% CI], Fig. 14.

Refugee teenage mothers 24.8% (98) were more likely to be single mothers than host nationals 6.1 % (24);[X^2=18.971, p=0.000, OR=2.233(1.503-3.318) 95% CI]. Fig. 15

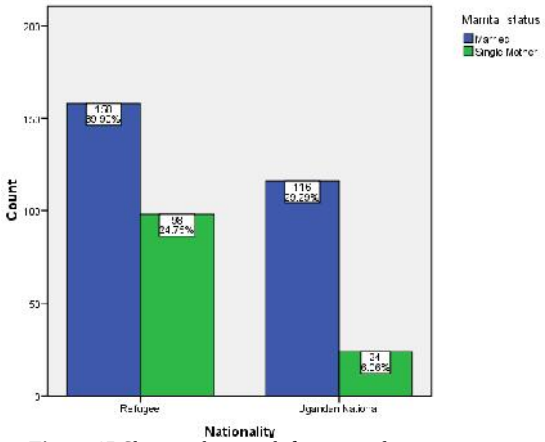

Figure 15 Showing bar graph for nationality status cross tabulated with marital status

Refugee teenage mothers were more likely to attain an education level below primary seven 63 (16.0%) as opposed to their counter host nationals 2(0.5%); [X^2=38.44, p=0.00, OR=2.347(1.403-3.319) 95%CI] (Fig. 16); although the refugees' husbands were more educated than those of host nationals[OR=5.104(2.649-9.834) 95%CI] (Fig 17).

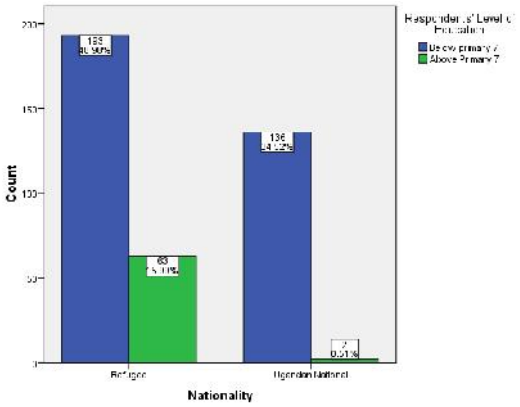

Figure 16 Showing bar graph for education level cross tabulated with nationality status

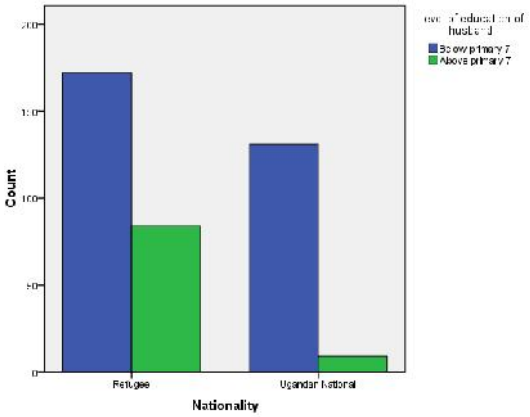

Figure 17 Showing husband's level of education cross tabulated with nationality status

Refugee teenage mothers were more likely to be accompanied and supported by their husbands to access FP compared to host nationals [X^2=6.233, p=0.01; OR=1.379(1.059-1.794)

95% CI] (Fig. 18).

Refugees teenage mothers were more likely to have unplanned pregnancy 30.6%(121) compared to host nationals 6.1%(24); [X^2=35.384, p=0.00, OR 2.757 (1.873-4.058) 95% CI] (Fig. 19).

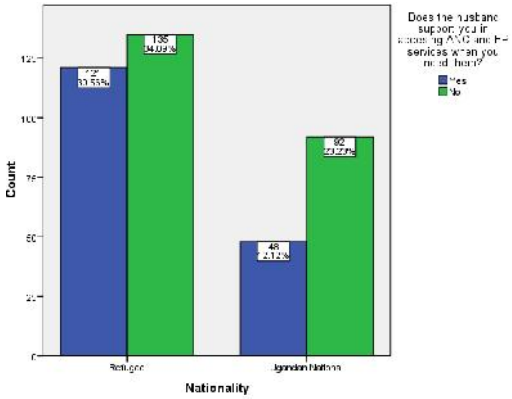

Figure 18 Showing Spouse' support for FP cross tabulated with nationality status

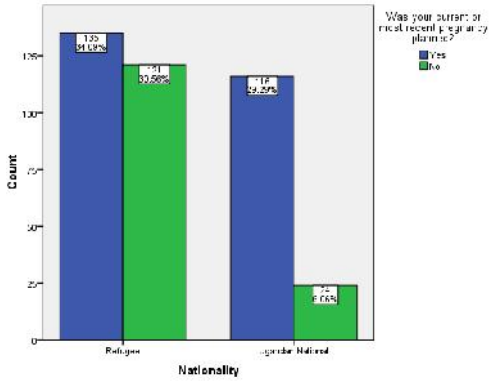

Figure 19 Showing bar graph for pregnancy planning cross tabulated with nationality status

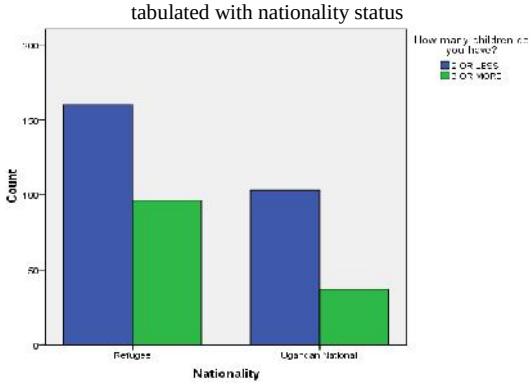

Figure 20 Showing bar graph from parity cross tabulated with nationality status

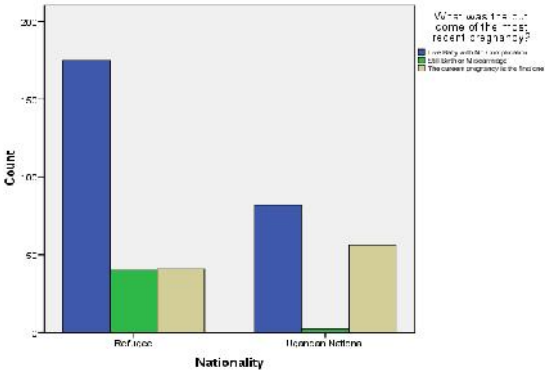

Figure 21 Showing outcome of most recent pregnancy cross tabulated with nationality

Refugee adolescents also were more likely to have a higher birth order compared to their host age mates [X^2=4.974, p=0.03 OR 1.419(1.032-1.951) 95% CI] (Fig. 20).

Refugees were more likely to have a poor outcome of most recent pregnancy as compared to their host nationals [X^2=39.789, p=0.000, 95% CI] (Fig. 21).

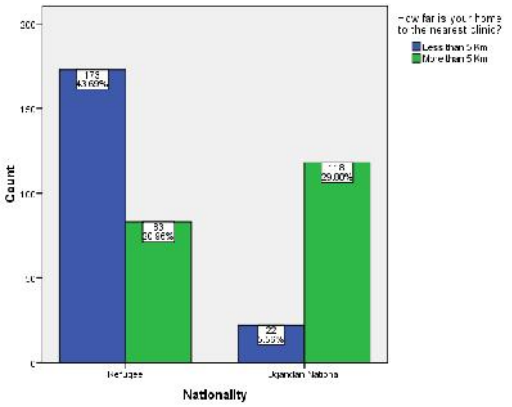

Figure 22 Showing distance from home to nearest health facility cross tabulated with nationality

Figure 23 Showing one of visited homes during recruitment of participants

Figure 24 Showing a road network to one of the health facilities within the settlement

Figure 25 Showing one of the UNHCR funded health facilities for access of FP services

Refugee teenage mothers accessed health care services nearer (less than 5km) 43.7% (173) compared to host nationals 5.6%

(22); [X^2=97.401, p=0.00 [OR 4.300 (2.903-6.370) 95%CI] (Fig. 22).

DISCUSSION

There was no significant statistical difference in current use of contraceptives between refugee teenage mothers and host nationals [X^2=0.138, p=0.710; OR=1.087(0.701-1.686) 95% CI]. This similarity might have arose given the fact that majority of refugees had lived in this permanent refugee settlement for a duration more than six months and presumably well acquainted with the dynamics of how and where to access contraceptive services just as host nationals. The findings also depict equity in provision of family planning services to both refugees and host nationals.

Refugees teenage mothers were more likely to have unplanned pregnancy 30.6% (121) compared to host nationals 6.1% (24); [X^2=35.384, p=0.00; OR=2.757 (1.873-4.058) 95% CI]. Since a total of 15.7% (62) teenage mothers reported having conceived their current or most recent pregnancy following rape and Refugee teenage mothers 42(10.6%) were more likely to have conceived following rape than host nationals 10 (2.5%); [X^2=6.808; p=0.008; OR=2.293 (1.189-4.436) 95% CI], this could have significantly contributed to the high unplanned pregnancy rates amongst the refugee teenage mothers.Subsequently Refugee adolescents were more likely to have a higher birth order compared to their host age mates [X^2=4.974, p=0.03; OR=1.419(1.032-1.951) 95% CI] despite the fact that they were the more at risk of a poor pregnancy outcome like still birth or miscarriage compared to nationals. However Refugee teenage mothers were also more likely to attain an education level below primary seven 63 (16.0%) as opposed to their counter host nationals 2(0.5%); [X^2=38.44, p=0.00; OR=2.347 (1.403-3.319) 95% CI]. Although attainment of a primary education was not significantly associated with increased FP utilisation amongst teenage mothers in the present study, the relationship of increased FP uptake existed for those whose husbands had attained an education level above primary seven [X^2=16.189, p=0.000; OR=2.043(1.442-2.896) 95% CI].

Other studies have also reported increased FP utilisation with attainment of secondary education for both women and their husbands (Beekle *et al.,* 2006; Magadi *et al.,* 2000; Addai, 1998; Bhatia *et al.,* 1995). Indeed lack of formal education has been shown to strongly reduce modern contraceptive use (Beekle *et al.,* 2006). A higher education attainment increases female decision making power and awareness of the benefits of contraception (Stephenson *et al.,* 2004). The evidence regarding the role of education in FP uptake is further provided by the present study which showed that refugee teenage mothers whose husbands were more likely to have attained an education level above primary seven [X^2= 35.060; P=0.000; OR=5.104 (2.649-9.834) 95% CI] than host nationals, were also more likely to be supported and escorted by their husbands to the FP clinics [X^2=6.233, p=0.01; OR=1.379 (1.059-1.794) 95% CI]; which was subsequently significantly associated with increased FP utilisation [X^2=6.489, p=0.039; OR=2.250 (1.994-2.571) 95% CI]. This highlights the need for policies aimed at improving modern contraceptive security in refugee settings to seriously consider the influence of formal education.

One of the major barriers to using FP amongst teenage mothers was refusal from the husband. A Nigerian study found similar (Ikechebelu *et al.,* 2005).Since (Stephenson *et al.,* 2004; Sharan *et al.,* 2002; Mahmood *et al.,* 1997; Pasha *et al.,* 2001; and Mekonnen *et al.,* 2011) have shown that spousal communication and endorsement for family planning is crucial in increasing uptake,husband's escort should be used as a golden opportunity to deliver male targeted messages. Male involvement in health education could help change their attitudes that contraception is "a woman's business". Massive sensitisation is thus required through cultural, religious and local leaders for these communities to stop looking at a girl child as "a child-factory".

There was a significant association between parity of teenage mothers and current use of contraceptives [X^2=7.749, p=0.005, 95% CI). Teenage mothers with a birth order of two and below were more likely to be currently using family planning [OR=1.227 (1.072-1.405) 95% CI] than those with a birth order of three and above. This is contravenes studies elsewhere (Sharma *et al., 2012*; Jabeen *et al.,* 2011) that have associated increased uptake of contraceptives with a high parity, although these studied women of the reproductive age group in general other than teens. Based on the present study however, and given the economic and social implication of a teenage pregnancy moreover in refugee settings, emancipated minors who need contraceptives should access them freely with or without spousal approval so that every pregnancy is wanted. This necessary especially in conflict and post conflict settings; where adolescents are commonly reported to be survivors of sexual violence (UNICEF, 2005) amidst increasing HIV epidemic and other STIs (UNAIDS, 2004; Uganda AIDS Indicator Survey, 2011; UBOS, 2010). This however would need change of health provider's attitude through continued engagement and training workshops.

The high birth orders amongst teenage mothers in the present study can be explained by the high level of sexual and gender based violence (rape) reported in this refugee setting, amidst the fear of side effects, miss perceived infertility and promiscuity linked to use of contraceptives. However contemporary literature reveals that oral contraceptives are generally safe for adolescents and beliefs like promiscuity have been shown to be associated with low contraceptive uptake (Ikechebelu *et al.,* 2005).The current use and choice of contraceptives differed by country of origin [X^2=10.321, p=0.016; 95% C.I)] possibly due to cultural differences and beliefs. The most preferred method of contraception was Injectaplans. Indeed no woman cited vasectomy as a measure of contraception. This is explained by the patriarchal nature of African families with the general concept of contraception as being a "woman's burden" alongside the stigma associated with combined oral contraceptives; particularly without spousal or parental endorsement.

Refugee teenage mothers accessed health care services nearer (less than 5km) 43.7% (173) compared to host nationals 5.6% (22); [X^2=97.401, p=0.00; OR 4.300 (2.903-6.370) 95%CI]. In a focussed group discussion, a local leader testified that new caseloads of refugees tend to aggregate near heath

facilitieson arrival in the refugee settlement following advice from existing caseloads. These strategic premises however have been reserved only for Refugees but not host nationals who are well conversant with the dynamics of the settlement. Although there was no association between travel distance and convenience of opening hours with current contraceptive use in the present study, such factors have been shown to be influential in earlier studies (Stephenson *et al.*, 2004).However it is also true that clients may seek for better services at a facility other than the nearest (Mensch *et al.*, 1994). Whichever the case, a shorter travel distance to the health facility should not be a substitute for door to door community outreaches, particularly in dynamic and vulnerable refugee settings where there is minimal television and radio coverage. Indeed there is evidence that community based outreaches and home visits increase family planning use (Yihunie *et al.*, 2013).

There is also need for adolescent and youth friendly reproductive health services with reasonable privacy in the most preferred public health facilities in this refugee settlement. Employing competent reproductive health focal persons with representation from the refugee community may increase disclosure and utilisation of FP services amongst teenage mothers and adolescents who decide to be sexually active. It is also reasonable and cost effective for the government of Uganda, UNHCR and its implementing partners to integrate immunisation outreaches with a mobile family planning clinic to enhance accessibility. In permanent refugee settlements, strategies should be drawn to allow access to long term and permanent contraceptive methods like tubal ligation for those women who need them. Construction of infrastructures like sterile operating theatres, building staff capacity and multiple collaborations with agencies like marries topes with experience in delivering these services would help overcome this problem

CONCLUSIONS

This case-control study has established that level of education, low parity and spousal support significantly determines contraceptive utilisation amongst teenage mothers in Kyangwali Refugee Settlement. The major barriers to contraception amongst this population are fear of side effects, spousal refusal and lack of community based access.

Recommendations

There is immense need to restructure delivery of contraceptive services in a way that enhances maximum uptake amongst teenage mothers in refugee settings. Creation of public awareness and access through integrated outreaches, girl-child education and male targeted messages are mandatory to curtail the consequences of FP underutilisation in this population.Routine larger scale generalisable studies are necessary to validate such strategies and ensure economic effectiveness.

Limitations

There was no way of validating history of no previous contraceptive usage amongst the control group other than health centre record which may lead to selection and observation bias. Since the data in FP registers for cases had been previously recorded for purposes other than research under investigation, there had been discrepancies like inaccurate addresses in a dynamic refugee camp setting. This was addressed by seeking guidance from VHTs who knew these clients. Contraceptive usage is still culturally a sensitive issue in African settings; however female midwives and safe motherhood promoters were involved in the study to improve on disclosure. The opinions of religious leaders, mothers above 19 years, elderly aunties and mother-in-laws who may be culturally influential in teens' uptake of contraceptives were beyond the scope of this study.

Competing interest: We declare no competing interests

Author Contributions

LH (1) conceived the study, carried out data collection and participated in analysis and drafting the manuscript. EI (2) participated in conceiving the study and reviewing the manuscript. NM (3) participated in conceiving the study, developing and pretesting data collection tools and MR (4) participated in analysis, drafting and reviewing the manuscript. All authors read and approved the final manuscript.

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