REVIEW OF EPIDEMIOLOGICAL SURVEY OF HIV POSITIVE MALE PATIENTS ON KNOWLEDGE, PERCEPTION AND UPTAKE OF CONTRACEPTION

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Abstract: An integral part in the comprehensive care of HIV and a significant health service is contraception. Sub-Saharan Africa is the most affected region, having 25.8 million of all people with HIV infection living in the region and approximately 3.5 million people are living with HIV infection in Nigeria majority of whom are in their reproductive years. There is reduction in AIDS-related deaths among women (33% decrease) compared with men (15% decrease) reflecting higher treatment coverage among women than men, 52 and 41%, respectively; also men account for 58% of adult AIDS related deaths. The key goal of programs should be to promote greater equality between men and women in the area of reproductive health. If there is neglect then this means that patients on antiretroviral therapy who are healthy and as such may engage in high-risk sexual behavior are at risk of transmitting HIV to sero-negative partners and re-infecting themselves with new strains of the virus. There are previous studies carried out to assess the uptake and knowledge of contraception among HIV positive women and prevention of mother to child transmission of HIV (PMTCT) in both urban and low resource setting. Research carried out to know the perception and utilization of HIV positive men are few, this review aim to outline the knowledge, perception and uptake of contraception among HIV positive male patient.

Keywords: Contraception, epidemiological, HIV positive, knowledge, perception

Introduction

Acquired Immune Deficiency Syndrome (AIDS) was formally recognized first in USA on June 15, 1981 (Sharp & Hahn, 2010; De Cock *et al*., 2012; Ruelas & Greene, 2013), HIV was also isolated two years later and was proven to be the cause of AIDS in 1984 (Ruelas & Greene, 2013). HIV is a retrovirus and it is divided into HIV-1 and HIV-2 (Sharp & Hahn, 2010). HIV-1 strains can be divided into three distinct groups (N, M, and O) (Simon *et al*., 2006), and their prevalence in each county differs.

Group N and Group O are rare and largely restricted to West Africa, of which the vast majority (approximately 98%) of HIV infections pandemic are caused by Group M (Sharp & Hahn, 2010; Maartens *et al*., 2014). HIV-2 is predominant in West Africa, although it cause the similar symptoms or illnesses as HIV-1, the immunodeficiency progression is much slower and HIV-2 is less transmissible than HIV-1 (Morison, 2001; Sharp & Hahn, 2010). The first case of AIDS in Nigeria was diagnosed in Lagos in a young female sex worker aged 13 years from one of the West African countries in 1985 and reported in 1986 (Sharp & Hahn, 2010).

Transmission of HIV

Sexual transmission

This is the transmission of HIV through unprotected sexual intercourse. Heterosexual intercourse is the major route for HIV transmission globally and in Nigeria it is estimated that over 80% of PLWHIV acquired it through this means (National Agency for the Control of AIDS, 2010). There are other factors associated with increased risk of sexual transmission of HIV these include sexually transmitted infections, pregnancy and receptive anal intercourse (Morison, 2001).

Parenteral transmission

This is contacted via transfusion of infected blood and blood product (such as Factor VIII), intravenous drug users (IDUs) are infected through this means when needles are being shared. Contaminated needles for injections and needle stick injuries among health professionals are another source of infection (National Agency for the Control of AIDS, 2010; Maartens *et al*., 2014). Globally, about 3 million IDUs are estimated to be infected with HIV, and drug injection accounts for almost one-third of HIV incidence outside of sub-Saharan Africa(De Cock *et al*., 2012).

Mother to child transmission of HIV

This is the transmission of HIV from the mother to the fetus through pregnancy, during child birth or through breastfeeding.

Contraception

Human race has been exploring innovative and imaginative ideas regarding contraceptive technique throughout history. Coitus interrupt us which is withdrawal of penis before ejaculation is the earliest contraceptive method known to man and also the barrier method of contraception with the introduction of condoms made of animal skin was also impactful. However, the contraceptive options available in the market have it balance tilted in favor of women. Condoms and vasectomy are the two methods of contraception easily available for men at present (Vivek & Ganapathi, 2012; Amory, 2016). The 1994 International Conference on Population and Development in Cairo put forth a new reproductive health paradigm and advocated for male involvement in reproductive decisions such as family planning; maternal and child health; prevention of sexually transmitted diseases, including HIV; prevention of unwanted and high- risk pregnancies (Darroch, 2008). An ideal contraceptive for men should be easily available, relatively cheap, easy to use and acceptable to both partners, without short or long term side effects, easily reversible, it should not interfere with sexual activity and neither affect libido (Hoesl *et al*., 2005; Vivek & Ganapathi, 2012). Given the physiology of sperm production, a male contraceptive can work in one of several ways: Prevention of sperm from fertilizing the egg e.g. condom and vasectomy; Preventing sperm production through experimental hormonal and non-hormonal methods; Inhibiting the sperm ability to fertilize the egg after ejaculation through spermicide (Hoesl *et al*., 2005; Amory, 2016).

Types of contraceptives

The different types of contraceptives are usually broken down into a few categories: barrier methods (e.g. condoms or a cervical cap), hormonal methods (e.g. the pill), intrauterine devices (IUD), sterilization and emergency contraception (morning after pill) (Frini & Nabag, 2013).

Condom

Condom is a barrier method of contraception, there are various forms extending from those made from animal skins and intestine to latex and polyurethane condoms (Vivek & Ganapathi, 2012). It has a dual function and purpose as it protects against STIs including HIV and also prevent unwanted pregnancies when used consistently and correctly (World Health Organization, 2015). There are some disadvantages associated with condom use which are; latex allergies, decrease in sexual pleasures, condom breakage and spillage due to incorrect use, and poor compliance in long term users (Amory, 2016).

Pills

These include combine oral contraceptive pills (COCPs) and progesterone only pills (POPs). COCPs contain estrogen and progestin and it act by suppressing ovulation, cervical mucus thickening and induces uterine atrophy. Benefits include regulation of abnormal menses, cessation of primary dysmenorrheal while weight gain, acne and hirsutism are minor side effects; major side effects are venous thrombosis and myocardial infarction. POPs contain progesterone only and act locally on cervical mucus and uterine endometrium preventing sperm transport and implantation of the fertilized ovum; it has reduced side effects as compared to COCPs (Monjok *et al*., 2010).

Vasectomy

It is a surgical procedure where the vas deference is obliterated or occluded under local anesthesia. The rate of unwanted pregnancies after vasectomy is generally less than 1% therefore it is highly effective with minimal complication. There is delay in the incitation or development of azospermia and therefore there is need for the use of barrier contraception like condom during this period (Amory, 2016). Also, because it is a more permanent method of contraception, it is not easily reversible (Vivek & Ganapathi, 2012). The ultimate disadvantage is that it does not protect against sexually transmitted infection STIs including HIV therefore at risk couples/individuals should use a barrier method of contraception (World Health Organization, 2015).

Tubal ligation

The fallopian tubes are permanently occluded to prevent pregnancy this can be done after six weeks post-delivery, within one week or 48 hours after delivery or concurrently with cesarean section. It is also a permanent method like male sterilization and it is not easily reversible. There are minimal side effects of surgical procedure only, e.g. bleeding, hematoma, and surgical infection(Monjok *et al*., 2010).

Coitus interruptus (Withdrawal Method)

This is a traditional family planning method in which the man completely removes his penis from the vagina and away from the external genitalia of the female partner, before he ejaculates. Coitus Interruptus prevents sperm from entering the woman's vagina, thereby preventing contact between sperm and the egg. Coitus Interruptus effectiveness depends on the willingness and the discipline of the man to withdraw before ejaculation. This method also does not protect against sexually transmitted infections including HIV(World Health Organization, 2015).

Knowledge of contraception among HIV positive male patients

Knowledge of contraceptives varies from country to country with age and place of residence (Duze & Mohammed, 2006), knowledge of a method simply means that a respondent has heard of the method (Ezeh *et al*., 1996). According to DHS comparative studies done in West Africa, East Africa, North Africa and Asia on men's fertility, contraceptive use, and reproductive preferences, it showed that knowledge of contraception method in West Africa ranges from 66% in Mali to 85% in Niger and pill is the most widely known method, followed by condom and female sterilization. In Morocco, 78% of the men knew of female sterilization while less than 10% knew of male sterilization which indicates that female sterilization is widely known than male sterilization. It was recorded in this study that the knowledge of modern contraceptive method increases with education (Ezeh *et al*., 1996). Although, in a similar study done in Uganda Rhoda, more than 98% of men have heard of family planning methods (Wanyenze *et al*., 2011). A study done in Zimbabwe on family planning knowledge, attitude and practice of men, it was discovered that male knowledge of family planning was high, as 98% of the men reported that they have heard of at least one method out of which 93.5% have heard of pill and 91% have heard of condom (Mbizvo & Adamchak, 2015).

In a study done in Nigeria, it showed that 89·7% of the respondents reported that they knew of at least one method of family planning of which the most commonly known method was condom, then pill and withdrawal but female and male sterilization were least known. There was also a negative association between age and contraceptive knowledge among men. Also, about 62% of men with no formal education reported knowing at least one modern method while 97·5% of men with post-secondary education reported knowing at least one modern contraceptive method. Which denotes that age and education background have influence on the knowledge of contraceptive method (Oyediran *et al*., 2002). In a study done in Osun State, Nigeria, condom (69.7% in rural and 80.2% in urban) is the method best known in both groups, followed by sterilization, traditional methods, and withdrawal. The major source of information about family planning is the radio (74.1%), which shows that with adequate public enlightenment through the media, awareness and use of family planning methods can be increased. Mass media expose the male audience to messages that can influence their knowledge, attitude and behavior with regard to reproductive health (Orji *et al*., 2007). According to a study done in Olorunda Local Government Area, Osogbo, Nigeria on male involvement in family planning: challenges and way forward where 57.0% had a good knowledge of FP and 100% of the respondents identified condom as a contraceptive method while 90% identified pills, 64.2% identified IUD, and 81.4% identified injectable as a contraceptive method although overall only 57% had good knowledge on family planning and also, majority (98.6%) of the respondents knew that FP is a service for the prevention of pregnancy (Adelekan *et al*., 2014). This is similar to a study done on family planning knowledge, attitudes and practices of males in Ilorin, Nigeria where 97% of male have heard of contraceptive methods and 60% reported that they had learnt about it through radio, television or newspapers, although condom was the most known contraception in 88% of the highest education group (Oni & McCarthy, 1991).

Ninety percent of the respondents had correct knowledge of condom and knew that condom is one of the prevention measures for HIV. However, only 60% had good knowledge on how to correctly use a condom according to a study done on condom use among sero-concordant couples living with HIV and AIDS attending a secondary health facility in North-Central Nigeria (Salaudeen *et al*., 2013). This is in contrast to a similar study done on male knowledge, attitude and family planning practices in northern Nigeria, 63.6% of the respondent indicated that they knew of at least a method of contraception and the researcher also found out that the knowledge of family planning methods is associated with place of residence, age and education as people that live in an urban setting, younger and have post-secondary education know of modern method of contraception than people who live in rural setting, older and have no formal education(Duze & Mohammed, 2006).

Perception of contraception among HIV positive male patients

Negative attitude results from low literacy level, prevailing religious, political and cultural beliefs of the people, Inaccessibility of the services, especially in rural areas, may be a limiting factor, while the apparent benefits parents derive from their children do not support fertility control (Duze & Mohammed, 2006). In a study done in Zimbabwe, about 84% approved of family planning of which 60% of the respondents indicated that obtaining family planning information and contraceptive supplies is the responsibility of the woman but the men should make decision on use family planning and determine number of children. The more educated and urban residents approved of family planning significantly more than the less educated and rural residents, this is evidence that the level of education and residence have influence on men's attitudes toward family planning (Mbizvo & Adamchak, 2015). In a similar study carried out at Osun State, it was discovered that 8.9% of the respondents believed that decisions on family planning should be the responsibility of the wife only while 17.8% felt that only the husband should take the decision however, 72% felt it should be a joint decision. The researcher also found out that there was a statistical significant association between religion and attitude of respondents as the Christian religion favored good attitudes to family planning while family planning was opposed by Islamic religions a it is generally considered alien to the culture (Orji & Onwudiegwu, 2003).

According to a study done on the role of men in family planning and decision-making in rural and urban population at Osun State, Nigeria, it showed that 91.4% of rural men and 84.1% of urban men approved of family planning also, more rural than urban men would prefer to use family planning instead of their wives of which the reasons for disapproval of contraceptive use by a few men include fear of promiscuity, cultural opposition and religious opposition. However, majority of men, whether urban or rural, believed that decisions about the use of contraception should be jointly taken by husband and wife (Orji *et al*., 2007). In a similar study done on male involvement in family planning in Osogbo more than half (69.8%) of the respondents had a positive perception score while 30.2% had negative perception score, the perception of 20.8% was that only women who are promiscuous use FP without their husband's consent and 54.8% were of the perception that attending FP clinic is entirely the woman's issue and not the man, the perception of 48.8% was that husband should follow his wife to FP clinic only when his attention is needed (Adelekan *et al*., 2014).

In a study done in Ilorin it was noted that men are more willing to support their wives in using contraceptives than they are to consider using it themselves and they also felt that they should have a major role in the decision to limit fertility but that the responsibility for actual use of contraceptives lies predominantly with women while there is a tendency to believe in sharing both the authority to make decisions and the responsibility for implementing contraception among men from the less traditional sectors of Ilorin (Oni & McCarthy, 1991). According to a study done in a secondary health facility in North-Central Nigeria, majority of the respondents had positive attitude towards condom use, 76.9% said they like using condom during sexual intercourse and 97.8% said condom use should be promoted among people living with HIV/AIDS (Salaudeen *et al*., 2013). This is in contrast to a study done in 2006 on male knowledge, attitudes and family planning practices in northern Nigeria among 1160 respondents, 55% of the respondents had unfavorable attitude and 35.7% had favorable attitude which the researcher attributed to cultural and religious beliefs of the people which discouraged the practice of contraception (Duze & Mohammed, 2006).

Uptake of contraception among HIV positive male patients

Contraception in the form of correct and consistent condom use can prevent the sexual transmission of HIV, thereby contributing to the prevention of HIV in the general population (Wilcher *et al*., 2008). In a study done in León, Nicaragua showed that 72% of the men reported using contraception with their partners. The most prevalent methods were female sterilization 22%, followed by oral contraceptives 18%, condom 16%, and IUD 9%. There was a significantly higher use of contraceptives among urban men 78% than rural ones 57%, the main reasons for non-use in both men and women were dislike of contraceptives 76%, fear of side effects 6%, irregular sex 4% and religious motives 2%. There was a higher use of condoms among the men aged 25-34 years than among the older ones (Zelaya *et al*., 1996). This is similar to a cross sectional study done in Bangladesh where the current contraceptive use rate was 63% among the men and there was a significant association with education, occupation, income, access to media, and number of living children (Shahjahan *et al*., 2013). In India, condoms were the most commonly reported contraceptive method used by married PLHIV followed by tubal ligation, 95% of PLHIV reported currently using a contraceptive (96% of men, 95% of women) (Chakrapani *et al*., 2011).

A study in Uganda Rhoda, where 87% of the respondents had ever used FP and 58% were currently using a FP method as the FP use for men (68%) was higher than that among women (52%). The most commonly used FP method was male condoms as 62% of the men and 39% of the women were using male condoms, 11% of the respondents reported using dual methods (condoms and other FP methods) and preference for male and female sterilization was also fairly high at 14 and 16%, respectively. 24% of the respondents preferred withdrawal method, 22% rhythm and 19% lactation amenorrhea (Wanyenze *et al*., 2011). According to a study done in Nyanza Province, Kenya, 65% of women and 69% of men felt they or their partners would be more likely to use contraception if it were available in the HIV clinic (Newmann *et al*., 2010). This is similar to a study done on Contraceptive need and use among individuals with HIV/AIDS living in the slums of Nairobi, Kenya where 58.8% of the male respondents had used contraception (Wekesa & Coast, 2015). It was discovered that Contraceptive use was higher among married individuals with HIV/AIDS, and increased with age, education level, and household wealth. It was also noted that condom use was one commonest method of the contraceptive use and men with HIV/AIDS reported higher condom use (Wekesa & Coast, 2015).

In a study done on in Nigeria, the results showed that 63% of men reported that they or their wives had previously used at least one modern or traditional method, men with post-secondary education were five times as likely as men without any formal education to have used a modern method and the ever-use of contraception is also influenced by place of residence as about 52% of men in the urban area reported that they or their spouses had used at least one modern method, as compared to 33·4% of men in the rural area (Oyediran *et al*., 2002). In a study done on condom use among antiretroviral therapy patients in Ibadan Southwestern Nigeria, it was reported that condom use increased from 14.0% at treatment entry to 43.3% after an average of eight months of treatment and it was found that greater increase in condom use were reported among those who had at least a secondary education (Akinyemi *et al*., 2010). In a study done on family planning knowledge, attitudes and practices of Males in Ilorin, Nigeria, ever use of contraception range from 6% in those with no education to 53% with those with post-secondary education

(Oni & McCarthy, 1991) The most commonly used method is the condom, with only 4% of those with no education and 43% of those with a postsecondary education reported that they had ever used the method, 14% of these men had used withdrawal, and 7% reported that their wives had used the pill, the IUD, injectable or sterilization (Oni & McCarthy, 1991).

Factors influencing contraceptive uptake among HIV positive male patients

The factors influencing the use of contraceptive uptake among HIV positive male patients are as follows:

(a) Religious belief reasons: DHS comparative studies done on men's fertility, contraceptive use, and reproductive preferences, men are more likely than women to give religious reasons for not intending to use contraceptives. Religion is especially important in Rwanda and among the Muslim populations of Bangladesh, Egypt, Pakistan, and Senegal. In contrast, women mention health concerns more often than men, and health issues are most frequently cited in Egypt, Kenya, Malawi, Morocco, and Rwanda. The reason least often cited is the cost or availability of contraceptives (Ezeh *et al*., 1996).

(b) Absence of husbands in FP clinic: A study done in India identified that one of the key barriers among married PLHIV to using other contraceptive methods apart from condom was lack of involvement of husbands in family planning counseling, placing the burden for contraception on women. This makes them miss the opportunity of meeting with health care providers that will help in educating them more about contraceptives other than condoms (Chakrapani *et al*., 2011).

(c) Custom and cultural practice of the community: The study on male involvement in family planning, identified barriers to male involvement were the perception that FP is woman's activity (89.4%) and was not their custom to participate in FP program (Adelekan *et al*., 2014).

(d) Poor attitude of health worker in FP clinic: Other barriers reported by respondents were long waiting times at FP clinic (80.9%), FP not male-friendly (90.1%), attitude of health workers (70.3%), and finance (69.4%) (Adelekan *et al*., 2014).

(e) Bad impression or misconceptions about the use of contraceptive: In a study done in India further identified the lack of acceptability of non-condom contraceptives to PLHIV due to misconceptions about and overestimation of their side effects, as one of the key barriers among married PLHIV to using non condom contraceptive methods either alone or along with condoms(Chakrapani *et al*., 2011).In a study on contraceptive practices in Nigeria it showed that Nigerian men are afraid that vasectomy will hurt their sex drive, which they treasure for fertility reasons, especially in polygamous relationships for these reasons, very few men in Nigeria who know about this method would choose it as a contraceptive method (Monjok *et al*., 2010). In a study on condom use among antiretroviral therapy patients in Ibadan it showed that educational attainment, marital union, gender, and partner enrollment were factors that influenced condom use (Akinyemi *et al*., 2010).

(f) Reluctance and poor attitude of men: In a study on factors influencing family planning use in Ilorin, Nigeria, The greater contraceptive use among women (74.1%) than men (25.9%) reflects the male domineering attitude and reluctance to use family planning it also reflects the belief that family planning use is the responsibility of women (Anate, 1995). In a study on male knowledge, attitudes and family planning practices in northern Nigeria showed that if the attitude is good there is likely going to be a good uptake of contraception (Duze & Mohammed, 2006).

Listed factors that could facilitate men's involvement in FP were motivation from their wife (87.6%), government policy regarding men's role in FP (30.7%), more FP clinic (65.2%), and adequate sensitization for men (85.2%) Other facilitating factors were attitudinal change of health workers (78.7%) and involvement of male religious leaders as FP advocates (30.4%) (Adelekan *et al*., 2014).

Conclusion

The epidemiological survey shows that there is good knowledge about contraception, especially condom although there is less acceptance of both vasectomy and tubal ligation. The perception is fair even though most of the studies showed that man still feel contraception is a female business and they are less concerned about it. The contraceptives methods available are basically tilted towards the women therefore research should be done on how to develop male contraceptive devices that will make the male all inclusive in reproductive decisions.

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Conflict of Interest

Authors declare that there is no conflict of interest reported in this work.

References

Adelekan A, Omoregie P & Elizabeth E 2014. Male involvement in family planning: Challenges and way forward. *Int. J. Population Res.*, 9(5): 1–8. https://doi.org/10.1002/ijpg.v9

Akinyemi JO, Awolude OA, Adewole IF & Kanki PJ 2010. Condom use among antiretroviral therapy patients in Ibadan, Nigeria. *J. Infection in Developing Countries*, 4(8): 495–502.

Amory JK 2016. Male contraception. *Fertility and Sterility*, 106(6): 1303–1309. https://doi.org/10.1016/j.fertnstert.2016.08.036

Anate M 1995. Factors influencing family planning use in Ilorin, Nigeria. *East African Medical Journal*, 72(7): 418–420.

Chakrapani V, Kershaw T, Shunmugam M, Newman PA, Cornman DH & Dubrow R 2011. Prevalence of and barriers to dual-contraceptive methods use among married men and women living with HIV in India. *Infectious Diseases in Obstetrics and Gynecology*, 1–8. https://doi.org/10.1155/2011/376432

Darroch JE 2008. Male fertility control-where are the men? *Contraception*, 78: S7-17. https://doi.org/10.1016/j.contraception.2008.04.117

De Cock KM, Jaffe HW & Curran JW 2012. The evolving epidemiology of HIV/AIDS. *AIDS*, 26(10), 1205–1213. https://doi.org/10.1097/QAD.0b013e328354622a

Duze MC & Mohammed IZ 2006. Male knowledge, attitudes, and family planning practices in northern Nigeria. *Afr. J. Reprod. Health*, 10(3): 53–65.

Ezeh AC, Michka S & Hendrik R 1996. Men's fertility, contraceptive use, and reproductive preferences. *DHS Comparative Studies*, 18: 1–42. https://dhsprogram.com/pubs/pdf/CS18/03Chapter03.pdf

Frini HO & Nabag WOM 2013. The knowledge and determinant factors of contraceptive use among married

Sudanese Women. *Applied Science Reports*, 4(3): 247–251.

Maartens G, Celum C & Lewin SR 2014. HIV infection: epidemiology, pathogenesis, treatment, and prevention. *The Lancet*, 384(9939): 258–271. https://doi.org/10.1016/S0140-6736(14)60164-1

Mbizvo MT & Adamchak DJ 2015. Family planning knowledge, attitudes, and practices of men in Zimbabwe. *Studies in Family Planning*, 22(1): 31–38. https://doi.org/10.2307/1966517

Monjok E, Smesny A, Ekabua JE & Essien EJ 2010. Contraceptive practices in Nigeria: Literature review and recommendation for future policy decisions. *Open Access J. Contracep.*, 1: 9–22. https://doi.org/10.2147/OAJC.S9281

Morison L 2001. The global epidemiology of HIV/AIDS. *British Medical Bulletin*, 58: 7–18. https://doi.org/10.1093/bmb/58.1.7

National Agency for the Control of AIDS 2010. National HIV/AIDS Strategic Plan 2010-2015.

Newmann S, Grossman D, Onono M, Bukusi E, Schwartz K, Sande H, King'ori WG, Ong'udi G, Blat C, Shade SB & Cohen CR 2010. Contraceptive knowledge, attitudes, and practices among HIV-infected women and men receiving HIV care and treatment in Nyanza Province, Kenya. *Contraception*, 82(2): 212. https://doi.org/10.1016/j.contraception.2010.04

Oni GA & McCarthy J 1991. Family planning knowledge, attitudes and practices of males in Ilorin, Nigeria. *Int. Family Planning Perspec.*, 17(2): 50–64. https://doi.org/10.2307/2133554

Orji EO, Ojofeitimi EO & Olanrewaju BA 2007. The role of men in family planning decision-making in rural and urban Nigeria. *Eur. J. Contracep. and Reprod. Health Care*, 12(1): 70–75. https://doi.org/10.1080/13625180600983108

Orji EO & Onwudiegwu U 2003. Contraceptive practice among married market men in Nigeria. *East Afr. Med. J.*, 80(7): 357–360. https://doi.org/10.4314/eamj.v80i7.8718

Oyediran KA, Ishola GP & Feyisetan BJ 2002. Factors affecting ever-married men's contraceptive knowledge and use in Nigeria. *J. Biosocial Sci.*, 34(4): 497–510. https://doi.org/10.1017/S0021932002004972

Ruelas DS & Greene WC 2013. An integrated overview of HIV-1 latency. *Sciencedirect*, 155(3): 519–529.

Salaudeen A, Yusuf A, Durowade K, Musa O, Ojotule A & Saka M (2013). Condom use among HIV sero-concordant couples attending a secondary health facility in North-Central Nigeria. *Nig. J. Basic and Clin. Sci.*, 10(2): 51. https://doi.org/10.4103/0331-8540.122758

Shahjahan M, Mumu SJ, Afroz A, Chowdhury HA, Russell Kabir & Ahmed K 2013. Determinants of male participation in reproductive healthcare services: a cross-sectional study. *BioMed. Central*, 10: 27. https://reproductive?health?journal.biomedcentral.com/articles/10.1186/1742?4755?10?27, Accessed 19/04/2018

Sharp PM & Hahn BH 2010. The evolution of HIV-1 and the origin of AIDS. *Philosophical Transactions of the Royal Society B: Biological Sciences*, 365(1552): 2487–2494. https://doi.org/10.1098/rstb.2010.0031

Simon V, Ho DD & Abdool Karim Q 2006. HIV/AIDS epidemiology, pathogenesis, prevention, and treatment. *Lancet (London, England)*, 368(9534): 489–504. https://doi.org/10.1016/S0140-6736(06)69157-5

Vivek M & Ganapathi B 2012. Male contraception. *Indian J. Endocrinol. and Metabolism*, 16(6): 910. https://doi.org/10.4103/2230-8210.102991

Wanyenze RK, Tumwesigye NM, Kindyomunda R, Beyeza-Kashesya J, Atuyambe L, Kansiime A, Neema S, Ssali F, Akol Z & Mirembe F 2011. Uptake of family planning methods and unplanned pregnancies among HIV-infected individuals: a cross-sectional survey among clients at HIV clinics in Uganda. *J. Int. AIDS Soc.*, 14: 35. https://doi.org/10.1186/1758-2652-14-35

Wekesa E & Coast E 2015. Contraceptive need and use among individuals with HIV/AIDS living in the slums of Nairobi, Kenya. *Int. J. Gynecol. & Obstetrics*, 130: E31–E36. https://doi.org/10.1016/j.ijgo.2015.05.001

Wilcher R, Petruney T, Reynolds HW & Cates W 2008. From effectiveness to impact: Contraception as an HIV prevention intervention. *Sexually Transmitted Infections*, 84(Suppl II): 54–60. https://doi.org/10.1136/sti.2008.030098

World Health Organization 2015. *Medical Eligibility Criteria for Contraceptive Use* (Fifth Edit). WHO Library Cataloguing-in-Publication Data.

Zelaya E, Peña R, García J, Berglund S, Persson LÅ & Liljestrand J 1996. Contraceptive patterns among women and men in León, Nicaragua. *Contraception*, 54: 359–365. https://doi.org/10.1016/S0010-7824(96)00203-X