

ORIGINAL RESEARCH ARTICLE

Knowledge, attitudes and practices on contraceptive use among young people in selected universities in Zimbabwe

DOI: 10.29063/ajrh2022/v26i10.7

Mercy Marimirofa*, Munyaradzi Murwira, Farai Machinga, Alfred Zvoushe and Lovejoy S. Gamba

Zimbabwe National Family Planning Council (ZNFPC), Evaluation and Research Unit, Harare Zimbabwe

*For Correspondence: Email: ed@znfpc.org.zw, marimirofamercy8@gmail.com; Phone: +263242621250

Abstract

Contraception is vital, not only because of the statistical evidence on utilisation of the services by women, but for economic and societal reasons. Uptake and use of contraceptives among youth in Zimbabwe is low at 12% for the 15-19 years and 49% for the 20-24 years compared to 67% of all married women in the country. Unmet need for family planning remains high at 13% (15-19 years) and 10.4% (20-24 years) compared to 10% among all women in Zimbabwe. Students in tertiary institutions are within these age groups and use of contraception among them is vital. The study was conducted to explore the knowledge level, attitudes and practices among young people towards the use of contraceptives in purposively selected universities. A mixed method approach using both qualitative and quantitative research design was used. Data was collected from 537 female students aged 18-24 years using structured questionnaires. Twenty Key informant interviews and 12 focus group discussions with both young males and females were conducted. Quantitative data was cleaned and analysed using STATA while content analysis was used for qualitative data. Ninety five percent (95%) of the young women in tertiary institutions had ever heard of contraception and 27% had ever used contraceptives. Students had myths and misconceptions regarding use of contraceptives including causing cancers, infertility in future and unbearable side effects. The pill was the most common contraceptive method known (85%). Religion and the involvement of family members, peers as well as other relatives were among the factors contributing to barriers of FP services uptake. The study has provided evidence that awareness on contraceptives among young people in tertiary institutions, does not necessarily lead to increased uptake. Educational campaigns with emphasis on the benefits of contraception will help reduce misconceptions and increase access and utilization of family planning services among the tertiary institution students. (*Afr J Reprod Health 2022; 26[10]: 55-62*).

Keywords: Contraception, family planning, knowledge, unintended pregnancy, unsafe abortions

Résumé

La contraception est vitale, non seulement en raison des données statistiques sur l'utilisation des services par les femmes, mais aussi pour des raisons économiques et sociétales. L'adoption et l'utilisation des contraceptifs chez les jeunes au Zimbabwe sont faibles à 12 % pour les 15-19 ans et 49 % pour les 20-24 ans, contre 67 % pour toutes les femmes mariées du pays. Les besoins non satisfaits en matière de planification familiale restent élevés à 13 % (15-19 ans) et 10,4 % (20-24 ans) contre 10 % pour l'ensemble des femmes au Zimbabwe. Les étudiants des établissements d'enseignement supérieur font partie de ces groupes d'âge et l'utilisation de la contraception parmi eux est vitale. L'étude a été menée pour explorer le niveau de connaissances, les attitudes et les pratiques des jeunes vis-à-vis de l'utilisation des contraceptifs dans des universités choisies à dessein. Une approche de méthode mixte utilisant à la fois une conception de recherche qualitative et quantitative a été utilisée. Les données ont été recueillies auprès de 537 étudiantes âgées de 18 à 24 ans à l'aide de questionnaires structurés. Vingt entretiens avec des informateurs clés et 12 groupes de discussion avec de jeunes hommes et femmes ont été menés. Les données quantitatives ont été nettoyées et analysées à l'aide de STATA tandis que l'analyse de contenu a été utilisée pour les données qualitatives. Quatre-vingt-quinze pour cent (95 %) des jeunes femmes dans les établissements d'enseignement supérieur avaient déjà entendu parler de la contraception et 27 % avaient déjà utilisé des contraceptifs. Les étudiants avaient des mythes et des idées fausses concernant l'utilisation des contraceptifs, y compris la cause de cancers, l'infertilité à l'avenir et des effets secondaires insupportables. La pilule était la méthode contraceptive connue la plus courante (85%). La religion et l'implication des membres de la famille, des pairs ainsi que d'autres parents figuraient parmi les facteurs contribuant aux obstacles à l'utilisation des services de PF. L'étude a fourni des preuves que la sensibilisation aux contraceptifs chez les jeunes dans les établissements d'enseignement supérieur ne conduit pas nécessairement à une utilisation accrue. Des campagnes éducatives mettant l'accent sur les avantages de la contraception contribueront à réduire les idées fausses et à accroître l'accès et l'utilisation des services de planification familiale parmi les étudiants des établissements d'enseignement supérieur. (*Afr J Reprod Health 2022; 26[10]: 55-62*).

Mots-clés: Contraception, planification familiale, connaissances, grossesse non désirée, avortements à risque

Introduction

Contraception is vital, not only because of the statistical evidence of utilisation of the services by women, but for economic and societal reasons as well. Forty seven (47%) of women begin sexual relationships between the ages of 15 and 19 and face significant challenges in obtaining services and information to protect themselves from unwanted pregnancy and sexually transmitted infections, including HIV¹⁻³. The availability of, access to and utilisation of family planning services particularly by young women in tertiary institutions has dual and mutually exclusive benefits of a substantial reduction in the recorded number of unintended pregnancies as well as enabling advancement in their professional goals. Zimbabwe is among one of the countries with a successful family planning program with a modern contraceptive prevalence rate of 67%⁴. Despite all this success, the issue of unintended pregnancies and unsafe abortions still exists. This could be due to limited information as sexual education is rarely taught in schools including tertiary institutions and is a taboo discussion topic at home and negative attitudes among the adolescents who are primarily those in need of contraception⁵. Adolescent sexual and reproductive health programming in Zimbabwe has targeted in and out of school youth and is weak in tertiary institutions. The incidence of sexual indulgency and all forms of risk sexual behaviour among students in tertiary institutions is of great concern to the society considering the widespread of sexually transmitted infections, teenage and unintended pregnancies.

As the world's population of 15 to 19 year olds continues to grow, countries needs to meet increasing demand for contraception services and information that addresses their specific needs⁶. Programs have previously supported stand-alone adolescent clinics that offer contraception services or adolescent-friendly contracepton services offered in a separate room within an existing health facility⁷. These programs demonstrated mixed effects⁸⁻⁹. Scaling up has been challenging for many countries due to complexity of the programs, with resource requirements threatening their long-term sustainability¹⁰.

According to the UN Convention of the Rights of the Child, adolescents enjoy the right to

the highest attainable standard of health, including access to contraception information and services^{11-12,6}. Studies consistently show that sexually active adolescents (married or unmarried) face many barriers to obtaining contraceptive services and products to prevent pregnancy, whether to delay, space, or limit pregnancy^{1,13-17,9}. These barriers are a generalised component for the majority of adolescents regardless of geographical area, social or economic status in Zimbabwe. Addressing these barriers within programs and policies is likely to improve the quality of services for all people who need contraception and is of particular importance to adolescents. The unmet need for family planning services among the adolescents in the age group 15-19 is 12.6 % which is the highest among all women of reproductive age and 10.4% in 20-24 years⁴. The subsequent impact of this evidence guided gap in tertiary institutions is yet to be holistically determined across the categories of institutions in the country. Contraceptive use has increased in Zimbabwe to 67% but among the adolescents, especially students in tertiary institutions, there seems to be a persistent gap between high sexual activity and contraceptive use in the presence of high contraceptive awareness. There is need to understand the sexual behaviour, knowledge and use of contraceptives among this high-risk group in order to contribute to the development and implementation of reproductive health strategies amongst the students.

Methods

A mixed method approach using both quantitative and qualitative data collection was conducted. Four main state universities in Zimbabwe (University of Zimbabwe (UZ), Chinhoyi University of Technology (CUT), National University of Science & Technology (NUST), Midlands State University (MSU)) were selected for the study. Key informants included those from departments that are responsible for students' non-academic affairs such as Health services as well as peer educators/behaviour change facilitators. Policy documents including the Adolescent Sexual and Reproductive Health Strategy, life skills curriculum, international protocols and declarations and laws on contraception and abortion were reviewed. Studies on contraceptive use conducted in Zimbabwe, the

Table 1: Socio-demographic characteristics

Characteristic	Total Number (n)	Percentage (%)
Age group		
18 – 19	108	20.1
20 – 21	236	44
22 – 24	193	35.1
Marital Status		
Never married	510	95
Married	18	3
Divorced/separated	3	1
Cohabiting	6	1
Religion		
African Tradition	47	9
Roman Catholic	79	15
Protestant	162	30
Pentecostal	176	33
Apostolic	50	9
Muslim	3	1
None	20	4
Duration at Institution		
Less than one year	176	33
Between one and two years	153	28
Between two and three years	72	13
More than three years	136	25
Total	537	100

ZDHS (2011 and 2015) and the MICS (2014) were reviewed to inform the study design through identifying the strengths and weaknesses of previous studies and also provide a basis for comparison of study results. A survey was conducted among young women in tertiary institutions using a structured questionnaire. The national modern contraceptive prevalence rate for young people was used to calculate the sample size at 95% confidence interval using Cochran formula and the sample size was 537. The survey was conducted to determine the level of knowledge and practises on contraception use among tertiary students. The young women were proportionately sampled using the distribution of young women by tertiary institution. Interviewer-administered questionnaires were used for young women. Focus group discussions were conducted among young women and men at tertiary institutions aged between 18-24 years. Three FGDs were conducted at each institution using a focus group discussion guide. These were conducted to gather information on uptake of contraceptives among students. A key Informant interviewer guide was used during the in-depth interviews to provide data on the policies, strategies, provision of ASRH services including

contraceptives and interventions to address the low uptake of services. Data from the field was edited for accuracy, missing data, validity and consistency. Quality controlled questionnaires were programed into the Tablet using CSPro software for electronic data capturing. Specific indicators were generated in SPSS/STATA. Cross-tabulations were developed and used so as to enhance data interpretation where necessary. The data was analysed to assess individual knowledge, attitudes and practices on contraception by the young people. Content analysis was used to analyse qualitative data from the FGDs and in-depth interviews.

Results

The median age of young women was 21 years. Pentecostals were the predominant group accounting for 33% of the respondents followed by Protestants at 30% among religious affiliation. Ninety-five (95%) of the young women had never been married. The proportion of respondents who reported being currently married was 3% and 1% of the young women were cohabiting (living together). Thirty-three (33%) of the young women were less than a year at the institution, followed by those between one and two years (29%) and 25% who had been at the institution for over three years.

Knowledge about contraceptives/family planning methods

Ninety five percent (95%) of the young women in tertiary institutions had ever heard of contraception. The most known method by 85% of young women was the pill, followed by condoms, implants and IUCD at 82%, 66% and 48% respectively. The least known methods were vasectomy with 7% and tubal ligation (1%). Ninety-two (92%) of young women know that the condom is a dual protection method for both STI's and pregnancy. Ninety-one (91%) of those who had less than one year at the learning institution had knowledge of contraceptives compared to 99% with more than 3 years at the institution. The highest proportion (98%) of respondents aged 22-24 reported knowing about contraceptives, whereas for the lower age groups it was 94%. The majority of young women (65%) got to know about contraceptives at secondary school

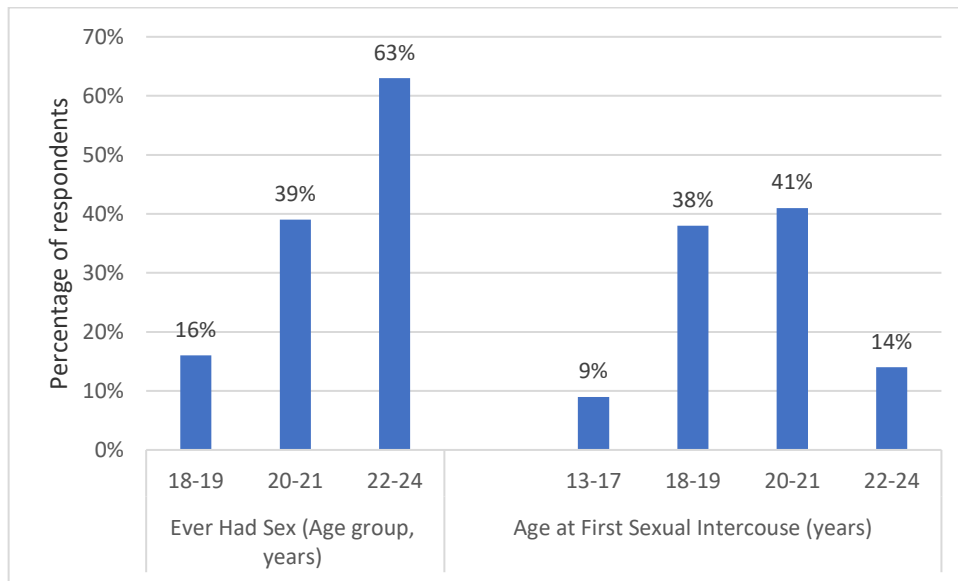


Figure 1: Percentage of young women’s age at first intercourse and ever had sexual intercourse

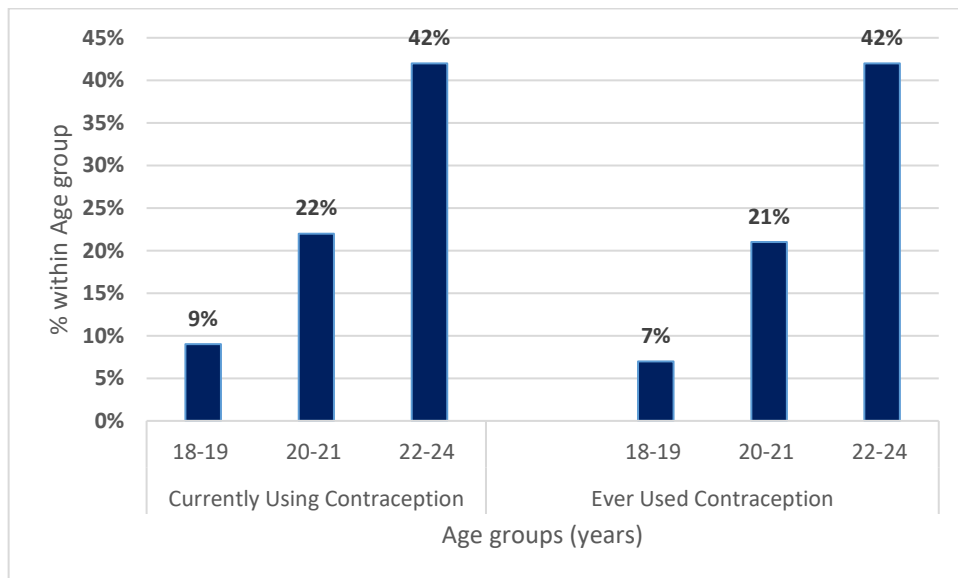


Figure 2: Experience using contraceptives

while 11% got to know about contraceptives at tertiary institutions. Forty-seven (47%) percent of respondents reported having received formal teaching on contraception during the years of schooling at their institutions.

Emergency contraceptives were known by 92% among young women in all institutions. The college health facility is the most popular source of contraceptives known by young women although

they do not like to access contraceptives from the facilities. The pharmacy was the most common source (66%) preferred by young women to access contraceptives followed by public health facilities (46%). However, a different pattern was revealed on individual analysis by institution. The majority of young women at NUST reported that contraceptives can be accessed from pharmacy (76%) followed by college clinic (69%).

Attitude towards contraception use

The majority of young women (93%) reported that contraceptives prevent unwanted or unplanned pregnancies and also 77% reported that contraceptives prevent STIs while 18% reported that contraceptives control number of births. It was noted that 67% of the respondents perceived young unmarried women who use contraception as responsible, whereas 30% viewed them as being promiscuous. Sentiments of a negative perception towards young women who use contraceptives were also put forward during focus group discussions.

Practices on contraceptive use

Sexual behaviours of young women in tertiary institutions

Out of the 537 young women interviewed, 512(95%) were sexually active. The study revealed that sexual experience increases with age from 16% among young women aged 18-19 years to 63% among those aged 22-24 years. The median age at first intercourse for the young women was 20 years. For those who reported having had sexual intercourse, 9% reported having had sexual intercourse before the age of 18. Forty-three (43%) percent of the respondents reported that they had ever had sexual intercourse. Another issue which was revealed by circumcised young men was that they are not using condom as a method of protection because the penis would be very dry therefore they would not feel comfortable in using the condom.

Eighty-five (85%) of the young women across all ages said they never had multiple sexual partners, 42% among the 22-24 years said they had sex with their partners without using a condom. Eighty three percent (83%) and 48% of the 20-21 and 22-24 age group highlighted that, men and woman discontinue condom use during sexual intercourse respectively. However, 37% of the 22-24 age group agreed that condoms reduce sexual pleasure.

Experience using contraceptives and use of emergency contraception

Forty two percent (42%) of the young women were currently using contraception as a family planning

method in the age group 22-24 years while 9% of the 18-19 years were currently using contraception.

Young people indicated that other long term and reversible contraceptives were not commonly used because of fear of their parents. The young unmarried young people are using contraception in secrecy as highlighted by young women during focus group discussions. Out of the 140 respondents who had ever used emergency contraception, 35% reported that they had used it 2-3 times for the past 6 months prior to the survey followed by 32% who had used Emergency Contraception once. Twelve percent (12%) highlighted that they had used Emergency Contraception more than 4 times in the last six months prior to the study. Those who had used emergency contraception, (59%) indicated that they did not encounter any problems from using the method and one percent (1%) stated that they got pregnant after using Emergency Contraception. Forty percent (40%) and 39% of the 22-24 years and 20-21 years reported that they would use EC again respectively. Eighty-six (86%) of those who had used Emergency Contraception highlighted that they will recommend their friends in future to use Emergency Contraception.

Barriers to contraceptive access and use among young people in tertiary institutions

Availability of contraceptives

Young people across all institutions highlighted that there is no method mix for them to choose in college clinics. Health service providers interviewed also highlighted that contraceptives are available on offer although they were experiencing some stock outs. Students prefer using the Emergency Contraception and this was not readily available within the college clinics. Condoms were available but however the type of condoms being provided through the public sector is not preferred by the young people. "Poor quality", "bursts during sex" as well as "bad smell" were some of the reasons cited by all students in all institutions during the focus group discussions on why they do not prefer them.

Social norms and barriers to contraception use

Fear of side effects, discrimination as well as religion were commonly identified factors during

focus group discussions which are hindering use of contraception. Female students cited that girls might want to use contraception, but men use their powers to dictate what they want. Fear of parents and friends were major concerns of young women and men for not using contraception. Pentecostal and the protestant affiliated members had the highest proportion of students who said religion acts as barrier to contraception use with 32% and 30% respectively. Students highlighted that most of the side effects are undesirable and also lack of knowledge on types of contraceptives available hinder contraception use. For those whose parents know and are aware of their contraception use, 41% of the 20-21 years said their parents are in support of them using contraception while 44% said the parents do not support.

Discussion

Generally, contraceptives are associated with a myriad of myths and misconceptions which require demystification. Side effects are perceived as a major problem associated with the use of contraceptives. Young tertiary students believed that continued use of modern contraceptives will have adverse side effects which can extend to infertility hence they were reluctant to use them. Partner's influence was found to be a key barrier to contraceptive use for young women who are in intergenerational relationships. There is evidence that young women in tertiary institutions sometimes do not make decisions to use contraceptives, but their male counterparts do while in some circumstances they do consult their partners and through social networking. Both information and misinformation are spread through social networks thereby providing an opportunity to encourage or discourage use.

Use of contraceptives among young women is significantly different from that of older married couples, and it is influenced by a myriad of educational, developmental, social, and psychological factors. Knowledge and awareness do not always translate to uptake of contraceptives. Age at first sexual intercourse can be used as a proxy for the beginning of exposure to the risk of pregnancy and sexual experience increases with age. The high level of sexual activity among the students requires maximum effort to address the

issue of risky sexual behaviour among young people in higher institutions of learning. Despite high contraceptive knowledge particularly among young women, use remains low and this does not necessarily correlate to use as has been shown in other studies^{18,19}.

Information about contraceptives is disseminated through various media sources as well as in learning institutions. This also correlates with the issue where young people in tertiary institutions initially get to know about contraceptives at secondary school level. As noted in other studies²⁰. The pill is the most common contraceptive method known by young people in tertiary institutions and this was also noted in Uganda²¹.

High knowledge levels are expected to translate into action so as to minimise chances of getting STIs, HIV and unwanted pregnancies. Knowledge about where to find contraceptives has a direct association with accessibility, it is widely expected that if one knows where to get contraceptives, he or she can easily get them. Findings from other studies also highlighted that students mostly prefer pharmacies although with limited choice determined by cost and availability of a trained service provider to offer comprehensive counselling²¹. Students do shun long procedures and requirements at public institutions as noted in other studies^{22,23}. Evidence generated from this study is that young people always think of preventing unwanted pregnancies rather than STIs as they prefer to use emergency contraception and not condoms which offer dual protection. These results are similar to the findings by Waheeda in Uganda²¹. Access to accurate information about contraceptives could assist young people to realise that effective utilization of family planning can successfully delay unplanned pregnancies, prevent STIs including HIV until they have completed their schooling and are financially stable. In other studies, it was noted that female students need knowledge for them to be able to make informed decisions as well as to evaluate their attitudes and beliefs about contraception.

It is clear that age is a very critical aspect in the utilisation of contraceptives which programmers need to consider when identifying the high-risk age groups and coming up with target specific interventions. It is possible that students may not use contraceptives out of ignorance,

unavailability (access or affordability) of the services, or lack of adequate information about the benefits and effects of contraceptives. These among other reasons greatly impact on the use and decisions to engage in sexual intercourse and non-use of contraceptives.

In many Shona cultures and doctrines, young people or unmarried people are encouraged to abstain until they get married while in other cultures, they are not allowed to engage in sexual intercourse without following some traditions. Delay in sexual debut also gives parents dignity in the society and as such they become strict in ensuring that their children are not indulging. This poses the dilemma that parents will not be comfortable to discuss about contraceptives and sexual issues with their children and neither will they be comfortable to encourage them to use contraceptives if they are sexually active²⁴. Students should be informed about the advantages and benefits of using contraception.

Ethical consideration

Written informed consent was obtained from each research participant. Participants were assured of confidentiality and the right to withdraw from the research at any time of the interviews and FGDs. Confidentiality was maintained by avoiding names and other identifiers. Clearance to conduct the study was sought from the Medical Research Council of Zimbabwe (MRCZ/A/2358), Joint Research Ethics Committee for the University of Zimbabwe College of Health Sciences and Parirenyatwa Group of Hospitals (JREC- 278/18), Ministry of Health and Child Care and the Ministry of Higher and Tertiary Education, Science and Technology Development.

Conclusion

This study has provided evidence to demonstrate that although the awareness of contraceptives among young people in tertiary institutions could be high, it does not necessarily lead or translate to increased uptake of these services. Students are not well informed about the benefits of family planning. It is therefore essential to organise educational campaigns on the awareness of family planning services with emphasis on the benefits as it will help reduce misconceptions and increase

access and utilization of contraceptives. There is need to understand the challenges they encounter which hinder them from accessing and using the services. Service providers also need to consider target specific interventions and strategies which can empower and overcome such obstacles. Provision of information and ease of access to the services empowers young people to engage in appropriate health decisions and sexual behaviour. This is also critical even to policy and decision makers to understand young people's desires. There is need to motivate young people for effective and appropriate use of contraceptives and arrest the trend towards unplanned pregnancy and acquisition of STIs including HIV and AIDS. Referral linkages between tertiary institution clinics and other service providers should create youth friendly environment to enable young people to access and afford family planning services of their choice.

Acknowledgements

We recognize the financial support from United Nations Population Fund (UNFPA) Zimbabwe and International Planned Parenthood Federation (IPPF) Africa Region. Our gratitude goes to the Zimbabwe National Family Planning Council (ZNFPC) staff for their technical guidance on research design, protocol development as well as data collection and analysis of the results.

Author contribution

Both authors in this study contributed immensely from research design up to the analysis and report writing. The first author was the principal investigator. The second author was the study coordinator and research supervisor. All authors were instrumental in the design of the study protocol, data collection, analysis and report writing.

References

1. Bankole AMS. Removing barriers to adolescents' access to contraceptive information and services. *Study Fam Plan write in full*. 2010;41(2):117-124.
2. UNFPA. The power of 1.8 billion: adolescent, youth and the transformation of the future. *State world Popul 2014*. Published online 2014.
3. Wellings K, Collumbien M, Slaymaker E, Singh S and

- Hodges ZPD. Sexual behaviour in context: a global perspective. *Lancet*. 2006;9548(368):1706-1728.
4. Indicators K. Zimbabwe Demographic and Health Survey. 2016;(May).
 5. Stanzia M and Oswell R. Contraceptives, Adolescence Knowledge, Attitudes and Practices: A case-study of Rural Mhondoro-Ngezi District, Zimbabwe. *Afr J Reprod Health*. 2017;21(1):49-63.
 6. Assembly. UNG. Convention on the Rights of the Child., *GA Res*. 1990;44(25).
 7. Senderowitz J and Solter CHG. Clinic assessment of youth friendly services: a tool for assessing and improving reproductive health services for youths. *Pathfind Int*. Published online 2002.
 8. Denno DM and Hoopes AJCMV. Effective strategies to provide adolescent sexual and reproductive health services and to increase demand and community support. *J Adolesc Heal*.write in full 2015;56:S22-S41.
 9. Tylee A, Haller DM, Graham T and Churchill RSL. Youth-friendly primary-care services: how are we doing and what more needs to be done? *Lancet*. 2007;369(9572):1565-1573.
 10. Hainsworth G, Engel DM, Simon C and Rahimtoola MGL. Scale-up of adolescent contraceptive services: lessons from a 5-country comparative analysis. *J Acquir Immune Defic Syn*. 2014;66(Suppl):S200-S208.
 11. Cook RDB. Recognizing adolescents' 'evolving capacities' to exercise choice in reproductive healthcare. *Int J Gynaecol Obs*. 2000;70(1):13-21.
 12. UNFPA. By choice not by chance family planning, human rights and development. *State world Popul 2012*. Published online 2012.
 13. Abdul-Rahman L and Marrone GJA. Trends in contraceptive use among female adolescents in Ghana. *African J Reprod Heal*. write in full 2011;15(2):45-55.
 14. Biddlecom AE, Munthali A and Singh SWV. Adolescents' views of and preferences for sexual and reproductive health services in Burkina Faso, Ghana, Malawi and Uganda. *African J Reprod Heal*. 2007;11(3):99-110.
 15. Chandra-Mouli V, McCarraher DR, Phillips SJ and Williamson NEHG. Contraception for adolescents in low and middle income countries: needs, barriers, and access. *Reprod Health*. 2014;11(1):1.
 16. Glinski A and Sexton M PS. Adolescents and family planning: what the evidence shows. Washington, DC: *Int Cent Res Women write in full*;. Published online 2014.
 17. Sidze EM, Lardoux S, Speizer IS, Faye CM and Mutua MMBF. Young women's access to and use of contraceptives: the role of providers' restrictions in urban Senegal. *Int Perspect Sex Reprod Heal*.write in full 2014;40(4):176-183.
 18. Oindo ML. Contraception and sexuality among the youth in Kisumu, Kenya. *Afr Health Sci*. 2002;2(1):33-39.
 19. Mustafa R and Uzma AHAH. Contraceptive knowledge, attitude and practice among rural women. *PubMed*. 2008;18(9):542-545.
 20. Nsubuga H, Sekandi JN, Sempeera H and Makumbi FE. Contraceptive use, knowledge, attitude, perceptions and sexual behavior among female University students in Uganda: A cross-sectional survey. *BMC Womens Health*. 2016;16.
 21. Waheeda SK and Magreth BJM. Knowledge, Attitude, and Practice of Contraception Methods Among Female Undergraduates in Dodoma, Tanzania. *PubMed*. 2018;11(4).
 22. Somba MJ, Mbonile M, Mahande JO and MJ. Sexual behaviour, contraceptive knowledge and use among female undergraduates' students of Muhimbili and Dar es Salaam Universities, Tanzania: A cross-sectional study. *BMC Womens Health*. 2014;14(1):1-8. <http://www.biomedcentral.com/1472-6874/14/94%5Cnhttp://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=emed12&NEWS=N&AN=2014701072>
 23. Sweya MN, Msuya SE, Johnson Mahande M and Manongi R. Contraceptive knowledge, sexual behavior, and factors associated with contraceptive use among female undergraduate university students in Kilimanjaro region in Tanzania. *Adolesc Health Med Ther*.write in full 2016;Volume 7(October):volume, issues number??109-115. doi:10.2147/ahmt.s108531
 24. Fathalla M. Global trends in women's health. *Int J Gynecol Obstet*. 1997;58(1).