Asian Pac. J. Health Sci., 2018; 5(3):89-96 e-ISSN: 2349-0659, p-ISSN: 2350-0964

Document heading doi: 10.21276/apjhs.2018.5.3.12 Original Article

Knowledge, Attitude and Practices towards cervical cancer screening among female medical students at the Copperbelt University School of Medicine, Zambia

E. Kabelenga[1,2*] V. Mwanakasale[1], S. Siziya[1]

[1]Micheal Chilufya Sata School of Medicine, The Copperbelt University, P.O. Box 71191, Ndola 10101, Zambia
[2]Ndola College of Nursing and Midwifery, Private Agency, Ndola 10101, Zambia

Received: 15-06-2018 / Revised: 18-07-2018 / Accepted: 15-08-2018

ABSTRACT

Introduction: In Zambia, cervical cancer is the most frequent cancer among women aged between 15 and 44 years and as a result, free cervical cancer screening has been rolled out to many health facilities countrywide in order to minimize cervical cancer morbidity and mortality. However, despite all these efforts, no study has been conducted to determine the knowledge, attitude and practices towards cervical cancer screening among medical students at the public universities in Zambia. **Methods**: A cross sectional study was conducted among female medical students in clinical years at the Copperbelt University, school of medicine between May and July, 2017. Simple random sampling method was used to select a total of 72 participants. Data was collected through standardized pre tested tools. Ethical clearance was obtained from the Tropical Disease Research Centre, Ndola Zambia. Data was analyzed using STATA 13.0 statistical software. Univariate analysis was performed. **Results:** A total of 72 female students were enrolled into the study. Most (79.2%) of the participants were below 30 years of age. All the participants were knowledgeable while 86.1% had positive attitude towards cervical cancer screening. However, only 22 (30.6%) participants had gone for cervical cancer screening. **Conclusion and recommendations:** Our study has demonstrated that despite good knowledge and attitude on cervical cancer and its screening, uptake of free screening remains low among female medical students at the Copperbelt University. We recommend that the Copperbelt University intensifies campaigns on cervical cancer screening program to increase the uptake.

Key words: Attitude; Cervical cancer screening; Knowledge; Practice; Zambia.

Introduction

Cervical cancer is a public health concern that is causing high morbidity and mortality among woman. It is a preventable disease of the female reproductive system. Globally, it is the second most common cancer in women. An estimated 70,000 new cervical cancer cases occur annually in sub-Saharan Africa, the majority (10) of these African countries are found in the Southern African development Community (SADC) [1-3].

**Correspondence*
E. Kabelenga
Ndola College of Nursing and Midwifery,
Private Agency, Ndola 10101, Zambia
E-Mail: ekabelenga@gmail.com

In 2014 World Health Organisation (WHO) estimated that 70% of all cervical cancer cases reported throughout the world are caused by only HPV types 16 and 18 [4]. Zambia in 2002 was ranked number 6th country globally with cervical cancer but in 2014, it was ranked number 4th globally and 3rd in Africa [5,6].

In Zambia, cervical cancer ranks the first most common cancers among women aged between 15 and 44 years. It is estimated that every year 2, 330 Zambian women are diagnosed with cervical cancer and 1, 380 die from the disease [7,8]. Cervical cancer screening is a public health intervention provided to an asymptomatic target population that is aimed at identifying individuals with increased probability of having either the disease itself or a precursor of the disease [4].

Many factors have been found to predispose to cervical cancer in Zambia. These include HPV type 16 and 18 with the prevalence among women estimated at 68.8 % [2]. Other factors identified to contribute to the

development of cervical cancer include smoking, number of sex life partners, parity, use of oral hormonal contraceptive, fertility rate, HIV infections, insertion of herbs in vagina, genetic predisposition and early engagement in sexual activity [2,6,9].

Cervical pre-cancer goes through many stages before it becomes cancer. It becomes cancer when the abnormal cells spread below the epithelial layer down into the deeper tissues (stroma) of the cervix, a process called invasion [10]. Cervical cancer screening is the process of detection of precancerous cervical lesions in otherwise healthy women before the lesions develop into cancer. These precancerous lesions can be treated easily or removed to stop cervical cancer from developing. Because these precancerous lesions take many years to develop into cervical cancer, even periodic screening can detect almost all lesions before they progress to cancer. According to WHO 2014 guidelines on screening and treatment of cervical cancer, screening is aimed at all females in the target age group, followed by treatment of detected precancerous lesions so that the majority of cervical cancers are prevented. WHO further recommend that at least one cervical cancer screening be performed on any female who is 30 to 49 years old. However, this can be extended to females younger than 30 years provided there is evidence of a high risk for CIN [4,10-13]. In Zambia, any women aged 25 to 49 years old are supposed to undergo cervical cancer screening every after 3 to 5 years [14]. Cervical cancer screening tests are available globally and differ according to the available resources and government recommendations. The screen and treat is one simplified approach that has been developed and accepted by WHO. It uses visual inspection with acetic acid (VIA) and immediate cryotherapy for secondary prevention of cervical cancer. This approach has been adopted and is now being used in countries with limited resources such as Zambia. Visual cervical screening is a method where there is visual inspection of cervical epithelium with acetic acid (VIA). It is a simple screening procedure that is performed by a nurse. In Zambia, the Cervical Cancer Prevention Program in Zambia (CCPPZ) was started in 2006. It introduced and scaled-up screening for cervical cancer using the single-visit approach of screening women with VIA and treating eligible lesions with cryotherapy [4, 15,16].

The government of Zambia through Ministry of Health has put in efforts to minimize cervical cancer morbidity and mortality by rolling out free cervical cancer screening to many health facilities countrywide. However, according to our knowledge there is no study that has been conducted to determine the knowledge, attitude and practices towards cervical cancer screening among medical studies in Zambia. The aim of this study was to determine the level knowledge, attitude and practices towards cervical cancer screening services among female medical students at the Copperbelt University, School of medicine, Ndola City, Zambia.

Methodology

The study was a cross sectional survey employing quantitative methods for data collection. Simple random sampling technique was utilised to select participants. Data was collected between May and July, 2017 using a standard pre tested questionnaire. The study was conducted at the Copperbelt University, Micheal Chilufya Sata School of Medicine, Ndola City, Zambia among female medical students. Sample size calculated using a formula by Yamane [16] and was seventy six (76). Only female medical students in clinical years were included in the study while preclinical medical students and those who had deferred their studies to later years were excluded. Selection bias was minimised by using random sampling table and all questions were written in English, the official language used by all Medical students to minimise language bias. Ethical approval was sought and granted by Tropical Diseases Research Centre (TDRC) Ethics Committee IRB Registration Number: 00002911 and FWA Number: 00003729. Equally permission to conduct the study among female medical students was sought from The Dean of students, Copperbelt University. Written informed consents were obtained from participants before being enrolled into the study. Confidentiality and privacy of the participants were maintained throughout the study according to the standard ethical practices. The questionnaires were numbered first. Responses to open questions in the questionnaires were coded before being entered into Microsoft excel and analysed using STATA version 13 (STATA Corp, College Station, Taxes). Initial analysis was by generation of frequency distribution tables. Descriptive statistics were used to summarise demographic variables of participants. Participants who answered 6 or more out of 10 questions on knowledge with a yes or good were regarded as knowledgeable while those who positively answered 6 or more out of 10 questions on attitude were regarded as having good attitude.

Results

A total of 76 study participants were enrolled but 72 responded with a response rate of 94.7%. The demographic characteristics of participants are presented in table 1. The ages of the participants ranged from 20 to 41 years. Their mean age was 26.3 years (SD±5.0). The majority (79.2%) of the participants were in the age range 20 - 29 years. Sixty eight percent (68.1%) were single. Despite married participants being few (31.9%), they were the majority 13 (59.1%) who undertook screening. More than half (58.3%) of the participants had never been pregnant before while 55.9% had never given birth before.

Table 1: **Participants' characteristics** (**N=72**)

VARIABLE	Frequency	Percent (%)
Age group		
20-29	57	79.2
30 years and above	15	20.8
Marital status		
Single	49	68.1
Married	23	31.9
Gravid	30	41.7
Yes	42	58.3
No		
Parity		
Yes	30	44.1
No	38	55.9
Total	**68**	**100%**

Table 2 summarises participants' responses to their knowledge, attitude and practices about cervical cancer screening. Participants demonstrated good knowledge and attitude butlow practices.

Table 2: Knowledge, Attitude and uptake of cervical cancer screening (**N=72**)

Variable	f/(%)
Knowledge level	
Good	56 (78.9)
Bad	15 (21.1)
Attitude	
Good	62 (86.1)
Bad	10 (13.9)
Practice	
Ever screened	22 (30.6)
Not screened	50 (69.4)

Knowledge

Table 3 gives details of participants' responses on knowledge about cervical cancer and its screening. All (72) study participants had heard about cervical cancer and screening services. Forty-three percent (43.1%) of the participants first heard of cervical cancer screening from a medical lecturer. The majority (80.6%) of the participants had knowledge of the location of cervical cancer screening clinic. Most (84.7%) of the participants were aged below 25 year when they first had their first sexual intercourse. About 3 in 4 (77.6%) of the participants had 1 male sex partner. Condoms were never used by 11.9% of the participants. Altogether, 9.7% of the participants never had an HIV test. About two thirds (67.8%) of the participants had male sex partners who were circumcised. Overall, 78.9% of the participants had good grade of awareness on cervical cancer risk factors, signs and symptoms and preventive measures.

Attitude

Table 4 gives details of participants' responses on attitude towards cervical cancer screening. All together 32 (44.4%) participants indicated that they would not feel shy when a male medical staff performed cervical cancer screening on them. Sixty four (88.9%) participants screened felt it was necessary to undertake cervical cancer screening. The main reason for up taking cervical cancer screening was early detection and treatment of pre-cancerous cells 53 (81.5%). Most (85.9%) of the participants openly discuss sex matters. Almost half (48.8%) of the participants were advised go for screening by peers.

Table 3: Knowledge of female medical students on cervical cancer (N=72)

Variable	Frequency	Percentage (%)
Ever heard of cervical cancer and its screening		
No	0	0
Yes	72	100
First source of information about cervical cancer screening		
Medical lecture	31	43.1
Hospital	17	23.6
Others	24	33.3
Knowledge of the location of cervical cancer screening clinic		
No	14	19.4
Yes	58	80.6
Ever had unprotected vaginal sex		
No	16	22.2
Yes	56	77.8
Age at sexual debut		
15-24 years		
25 years and above	50	84.7
Number of male sex partners have you had	9	15.3
1		
2 and above	45	77.6
Use of condoms when having vaginal sex	13	22.4
Never		
Sometimes/Always	7	11.9
Ever had HIV test	52	88.1
No		
Yes	7	9.7
Male sex partner circumcised	65	90.3
No	19	32.2
Yes	40	67.8
Grade of awareness on cervical cancer risk factors, signs and symptoms and preventive measures		
Poor	15	21.1
Good	56	78.9

Others = Media, Friends/Colleagues or Relatives

Table 4: **Female medical students' attitude towards cervical cancer screening (N=72)**

Variable	Frequency	Percentage (%)
Would you feel shy when a male medical staff performed cervix cervical cancer screening on you?		
No	32	44.4
Yes	40	55.6
Is it necessary to go for cervical cancer screening		
No	8	11.1
Yes	64	88.9
Reasons for up taking cervical cancer screening		
For early detection and treatment of pre-cancerous cells	53	81.5
I am sexually active	12	18.5
Medical staff's attitude in cervical cancer screening clinic		
Bad	7	10.9
Good	57	89.1
Medical students' attitude towards cervical cancer screening		
Bad	10	13.9
Good	62	86.1

Do you openly discuss sex matters?		
No	10	14.1
Yes	61	85.9
Who do you discus sex matters with?		
Family	17	27.0
Friends	46	73.0
Is seeking cervical cancer screening associated to bad sexual behaviour?		
No	44	62.9
Yes	26	37.1
Who advised cervical cancer screening		
Family	9	22.0
Peers	20	48.8
Medical staff (Doctors and Nurses)	12	29.3

Practice

Out of 22 participants who undertook cervical cancer screening, 14 had been screened only once. Only 11/22 participants were screened at NTH.

Discussion

In Zambia, any woman aged 25 to 49 years old is supposed to undergo cervical cancer screening every after 3 to 5 years [14]. Even though cervical cancer screening tests are available globally, they differ according to the available resources and government recommendations. The screen and treat using visual inspection with acetic acid (VIA) is one simplified approach accepted by WHO and currently adopted in Zambia [15,16].

The current study found high awareness levels as regards cervical cancer and its screening with good attitude but low practice. The high awareness level could be related to the nature of the participants being medical students in clinical years. However the level of awareness does not translate into practice as is the case in many studies that have been conducted in many developing countries both in Africa and outside Africa [18-21].

The demographic characteristics of participants are necessary in contextualizing the study. The study was conducted at a medical school among female undergraduate medical students with greater proportion of the participants (82%) being below 30 years of age. This finding is consistent with the findings in the Zambia Demographic and Health Survey (ZDHS) of 2013 to 2014 which found that a total of 13.9% of the Zambian population are females aged 20-29 years [22]. This finding is similar to what was found in a similar study conducted in Ilorin, North Central Nigeria [25] and in a study conducted among Female University Students from 25 Low, Middle Income and Emerging Economy Countries [21]. This age structure shows that the sample consisted young population which could have higher fertility and are in need of reproductive health services to meet their sexual and reproductive health needs. This finding is also consistent with findings of similar studies that were conducted on similar topics among university female students in South Africa and MizanTepi University, Ethiopia in 2016 [18,19]. Older participants, 31 years and above (9/15) had gone for cervical cancer screening more than the younger ones despite the younger ones being more. This group could have done so as they perceive themselves susceptible to the disease and prolonged exposure to HPV types 16 and 18 during unprotected vaginal sex [2,4,24]. This finding is similar to what was found in a similar study in Tanzania on determinants of cervical cancer screening that found that older age groups had significantly higher odds of being screened [25]. Married participants were the majority (59.1%) who went for screening. This finding is similar that which was found in Katete district, Zambia in a similar study [12] and on determinants of women participation in cervical cancer screening in Maharashtra, India [20]. This could be attributed to the fact that married women perceive themselves to be more predisposed to HPV 16 and 18, a virus that cause cervical cancer and receive encouragements from their husbands to go screening [2,4,9, 12,23]. With regards gravidity and parity, the study has shown that those with gravidity and parity had gone for screening more than null paras. This finding is similar to what was found in a similar study in Katete district of Zambia [12]. This finding could be attributed to the perception held by such women that they are exposed to HPV 16 and 18 virus and repeated trauma to the cervix during delivery which make them more reliable to develop cervical cancer. This view is also supported by

American cancer Society on the causes, treatment and prevention of cervical cancer and other publications by other writers including WHO [2,4,26,27].

Knowledge of participants on cervical cancer and its screening is critical in the prevention strategies. The current study has shown that all the participants had good knowledge. This level of knowledge was much higher than what was found among university female medical students in South Africa and 30.5% women who didn't know about cervical cancer screening in Kenya [18,28]. Despite such good knowledge demonstrated by the participants, there was low uptake of screening and is similar to what was found in Ghana at 31.6% [29]. Although 30.6% is much higher than what was found in similar studies conducted in other parts of Africa such as Uganda (4.8%), Nigeria (8%) and South Africa (15%), it is lower when compared to a similar study done in Kuwaiti where 76.9% had gone for screening [18,23,30,31]. This therefore calls for more sensitization by health personnel to the student populace on the importance of cervical cancer screening. Forty-eight (66.7%) participants knew the location of cervical cancer screening clinic. This finding was higher than 20% reported in 2016 in a similar study in Ilorin, North Central Nigeria [23]. The 21 (95.5%) participants who had been screened knew the location of cervical cancer screening clinic. This shows that knowledge on the location of medical facilities necessitates uptake of the service being rendered. This finding is similar to what was alluded to in a similar study conducted in Uganda in 2016 [30]. Furthermore, all the participants screened had exposure to unprotected sex. This finding is supported by the fact that the majority of Zambian women are exposed to human papilloma virus types 16 and 18 which cause cervical cancer [2, 4]. Majority(77.3%) of participants screened were among the 50 who had their sexual debut between 15and 24 years of age. This age group was similar to that of participants in a similar study that was conducted in Nigeria among female undergraduate and in the Niger delta region of Nigeria where sexual debut was at the mean age 15.4 years [32]. This could be attributed to the participants' perception that the younger the age at sexual debut, the higher the predisposition to HPV type 16 and 18 that cause cervical cancer [4,16, 26]. Interestingly this study has demonstrated that participants who reported having multiple sexual partners were proportionally less (30.8%) screened. This probably shows that they were among the participants who demonstrated bad knowledge on risk factors to cervical cancer [4,9,16,26]. On the contrary, 18/22 participants screened was those whose sex partners sometimes or always used a condom when having penetrative vaginal sex. This shows that such women are more courageous, health conscious and have encouraging sex partners hence they are able to go for screening. This finding is similar to the findings in a similar study that was conducted in Tanzania in 2015 [25]. The current study has further shown that most participants screened had circumcised partners. This finding is similar to the findings in a similar study conducted on male circumcision, human papilloma virus and cervical cancer: from evidence to intervention [24]. This finding shows that such women could have gone for screening after being encouraged to do so and are more health conscious of HPV types 16 and 18 that cause cervical cancer [1,4]. Even though only 22 were screened, they were among participants 56 who demonstrated good knowledge on risk factors, sign and symptoms of cervical cancer. This kind of knowledge is important as it can trigger positive health seeking behaviour such as cervical cancer screening. This finding is similar to what John found in his study on the Knowledge, Attitude, Practice and Perceived barriers towards screening for premalignant cervical lesions among women aged 18 years and above, in Songea Urban, Ruvuma. Tanzania [33] and in similar study that was conducted in Nigeria's Bauchi Metropolis that found that women with knowledge of preventive attitude and purpose for screening were more likely to identify themselves as at risk for cervical cancer [34].

Attitude plays an important role in formulating health seeking behaviour. Even in the absence of clinical features, perceived risks may encourage women to go for cervical cancer screening [30]. The attitude of female medical students towards cervical screening was generally good. Sixty-two (86.1%) felt it was necessary for them to undertake cervical cancer screening. Even though this was less than the attitude of participants in a similar study that was conducted in Nigeria where 97% were willing to be screened, it was higher than what was found in Ethiopia in 2016 by Mulatu et al [19]. However, despite the majority (86.1%) having positive attitude towards screening, only 30.6% undertook cervical cancer screening. Even though this level of uptake of screening was higher than what was found in similar studies conducted within Africa like Ethiopia at 14.4% in 2016 and South Africa at 15% in 2014 [18,19], this shows that there is need to intensify educational campaigns on the importance of cervical cancer screening. In the current study reasons for screening included early detection and treatment of precancerous cells 53 (81.5%) and

being sexually active 12 (18.5%). The current study has therefore shown that perceived susceptibility to a disease can drive health seeking behaviour. This finding is also alluded to by John in a similar study that was conducted in Tanzania [33]. The current study has revealed that 20 (90.1) who regarded clinic staffs' attitude and theirs as good equally have been screened. Good attitude is therefore a catalyst towards uptake of screening. This finding is similar to what was found in Uganda in 2016 by Ndejjo et al in a similar study [30]. This study has shown that proportionally more (11/17) participants who discussed sex matters with their families had been screened. Additionally, the six screened where among the nine who were advised to do so by their families. These findings are supported by similar findings in a study on knowledge, attitude and practices regarding cervical cancer and screening among women visiting primary health care in Qatar [35]. This finding has demonstrated the influence of a family in fostering person's positive attitude towards health seeking like uptake of cervical cancer screening. Furthermore, it has shown that people value the advice from those who they regard as being very influential in their lives.

In this study screening uptake of 30.6% does not translate into the good knowledge demonstrated by the participants. Most (14) participants screened had screened only once. This number is less when compared to women in a study that was conducted in Quarta where almost 40% of the women had screened once [35]. This difference could be attributed to age differences between those women who were enrolled in a study in Quarta and those in the current study.

Conclusion and Recommendation

Despite good knowledge and attitude on cervical cancer and its screening, there is low uptake of free cervical cancer screening among female medical students. We recommend to the Copperbelt University, to intensify different campaigns on cervical cancer to increase the uptake of screening.

Authors' contributions

EK conceptualized the study, participated in the protocol preparations, data collection, analysis and interpretation, drafting and revision of manuscript.VM participated in the conceptualization of the study, protocol preparation and revision of manuscript. SS supervised data analysis, interpretation of findings and preparation of the manuscript.

References

1. Chitashi, NS. Quality of life in Zambian cervical cancer women post chemo-radiology. South Africa: University of Johannesburg(Unpublished masters dissertation) 2012.
2. Parham GP, Mwanahamuntu MH, Kapambwe S et al. Population-Level Scale-Up of Cervical Cancer Prevention Services in a Low-Resource Setting: Development, Implementation, and Evaluation of the Cervical Cancer Prevention Program in Zambia. PLOS one 2015;1-19.
3. Southern Africa Litigation Centre (SALC). Tackling Cervical Cancer: Improving Access to Cervical Cancer Services for Women in Southern Africa Vol 8(**9**).Southern Africa Litigation Centre. http://www.southernafricalitigationcentre.org/wp-content/uploads/2017/08/CERVICAL-CANCER-Report1.pdf2012.(25/01/2016).
4. Afri dev. Info. Africa Cervical Cancer Multi Indicator Incidence & Mortality Scorecard. Information & Analysis on Health, Population, Human & Social Development 2014. (25/01/2016).
5. WHO. Comprehensive cervical cancer control,A guide to essential practice. WHO: Geneva 2014. (20/02/16).
6. Institut Catalàd'Oncologia (ICO). ICO Information Centre on HPV and Cancer - HPV Information Centre. Spain: Barcelona 2017. (20/02/16).
7. Zambian Cancer Society. Cancer in Zambia. http://www.zambiancancersociety.org 2015. (20/01/16).
8. Mbewe, A. A study to determine women's knowledge and practices towards cervical cancer at St. Francis hospital in Katete. Lusaka: Ridgeway campus.http://dspace.unza.zm:8080/xmlui/handle/123456789/38102008(21/01/2016).
9. Kalima, MH, Lishimpi, K, MezaLJ et al. Observed and Expected Incidence of Cervical Cancer in Lusaka and the Southern and Western Provinces of Zambia, 2007 – 2012. International Journal of Gynecology Cancer2016; 25(1): 98–105.
10. Viviano M, DeBeaudrap P, Tebeu MP et al. A review of screening strategies for cervical cancer in human immunodeficiency virus-positive women in sub-Saharan Africa. International Journal of Women's Health 2017; 9: 69–79
11. Panagiotis T, Stefanos Z, Bachar M et al. Cervical cancer: screening, diagnosis and staging. JBUON 2016;21(2): 320-325
12. Groesbeck, P. Cervical Cancer Prevention Program in Zambia. Lusaka: CIDRZ/UAB 2012. (20/02/2016).
13. Cervical Cancer Prevention Program in Zambia (CCPPZ). Free Cervical Cancer Screening Clinics

are located in every Zambian Province. http://www.acewcc.org 2015. (21/01/2016).

14. Groesbeck, PP, Mwanahamuntu, MH & Hicks, LM.). A Manual for Physicians, Nurse Practitioners, and Managers: Custom Publication of the African Centre of Excellence for Women's Cancer Control. 2nd edition. Zambia: Lusaka 2014: 42 – 44.

15. WHO. Guidelines for screening and treatment of precancerous lesions for cervical cancer prevention. WHO: Geneva 2013.

16. Mwanahamuntu MH, Sahasrabuddhe VV, Blevins M,et al. Utilization of Cervical Cancer Screening Services and Trends in Screening Positivity Rates in a 'Screen-And- Treat' Program Integrated with HIV/AIDS Care in Zambia.PLoS ONE 2013; 8 (9).

17. Yamane T. Statistics, An Introductory Analysis, 2nd Ed. New York: Harper and Row 1967.

18. Hoque ME, Ghuman S, Coopoosmay R, et al. Cervical Cancer Screening among University Students in South Africa: A Theory Based Study 2014. PLoS ONE 9 (11).

19. Mulatu K, Motma A, Seid M, et al. Assessment of Knowledge, Attitude and Pratice on Cervical Cancer Screening among Female Students of MizanTepi University, Ethiopia, 2016. Cancer BiolTherOncol 2017; (1):1.

20. Nene B, Jayant K, Arrossi S et al. Determinants of women's participation in cervical cancer screening trial, Maharashtra, India: Bulletin of the WHO 2007; 85:264-272.

21. Pengpid S &Peltzer K. Attitudes and Practice of Cervical Cancer Screening among Female University Students from 25 Low, Middle Income and Emerging Economy Countries. Asian Pac J Cancer Prev 2015; 15 (17): 7235-7239.

22. Zambia Demographic and Health survey (ZDHS) 2013 - 2014. House hold population by Age and sex. Lusaka: Zambia 2015.

23. Idowu A, Olowookere,SAFagbemi, AT et al. Determinants of Cervical Cancer Screening Uptake among Women in Ilorin, North Central Nigeria: A Community-Based Study. Journal of Cancer Epidemiology 2015; 2016:1-8.

24. Bosch FX, Albero G & Castellsagué X. Male circumcision, human papillomavirus and cervical cancer: from evidence to intervention. FSRH J Fam Plann Reprod Health Care 2009: 35(1).

25. Cunningham MS, Skrastins E, Fitzpatrick R, et al. Cervical cancer screening and HPV vaccine acceptability among rural and urban women in Kilimanjaro Region, Tanzania. BMJ Open 2015;5.

26. American cancer society. Causes, Risk factors and Prevention of cervical cancer 2017. https://www.cancer.org/cancer/cervical-cancer/causes-risks-prevention/risk-factors.html. (23/02/2018).

27. IARC. IARC MonogrEval Carcinogen Risks Hum. Human Papillomaviruses, International Agency for Research on Cancer: Lyon 2007; 90.

28. Kei, MR, M'Ndegwa KJ, Ndwiga T &Masika F. Challenges of Cervical Cancer Screening Among Women of Reproductive Age in Kisii Town, Kisii County, Kenya. Science Journal of Public Health 2016; 4 (4):289-296.

29. Ebu IN, Mupepi CS, Siakwa MP et al. Knowledge, practice, and barriers toward cervical cancer screening in Elmina, Southern Ghana. International Journal of Women's Health 2015; 7: 31–39.

30. Ndejjo R, Mukama T, Musabyimana A et al. Uptake of Cervical Cancer Screening and Associated Factors among Women in Rural Uganda: A Cross Sectional Study. PLoS ONE 2016; 11(2).

31. Al Sairafi M & Mohamed AF. Cervical Cancer Screening among Kuwaiti Women. Med Princract 2009; 18: 35–42.

32. Isa IA, Gani OOI &McFubara K. Cervical cancer screening among female undergraduates and staff in the Niger delta region of Nigeria. Open Journal of Obstetrics and Gynecology 2013; 3: 61-66.

33. John J. The Knowledge, Attitude, Practice and Perceived Barriers towards screening for Premalignant Cervical Lesions among women aged 18 years and above, in Songea Urban, Ruvuma. Tanzania: Muhimbili University of Health and Allied Sciences (Unpublished masters dissertation) 2011.

34. Ibrahim U. Assessment of Cervical Cancer Knowledge, Perception and Prevention Attitude among Female Students of Reproductive Age (16 – 49) In Four Tertiary Institution within Bauchi Metropolis. International Journal of Advancements in Research & Technology 2014; 3 (11).

35. Al-Meer FM, Aseel MT, Al-Khalaf J, Al-Kuwari& Ismail MFS. Knowledge, attitude and practices regarding cervical cancer and screening among women visiting primary health care in Qatar. Eastern Mediterranean Health Journal 2011; 17 (11); 855 – 861.

36. Garces AHI, Dias MSF, Nogueira-Rodrigues A, et al. Staging Cervical Cancer–Current and Future Perspectives. Austin J Obstet Gynecol 2014; 1(4): 4.

Conflict of Interest: None
Source of Support: Nil