

# Knowledge, Attitude and Practice of Gynecologists at Public Teaching Hospitals in Sana'a city towards Cervical Cancer Screening, -Yemen, 2020

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## Authors' Contributions

All authors conceived the study; KA designed the study protocol and obtained ethical approval and permission to collect the data; KW, KA and MA collected the data; all authors were involved in the data analysis which is led by KW; MB and KW interpreted the data and drafted the manuscript which is critically revised by all authors for intellectual contents; MB lead the publication process. All authors read and approved the final manuscript. KA is the guarantor of the paper while MB is the corresponding author.

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## Ethical approval

Ethical approval was granted from the ethics committee at the Ministry of Health in Sanaa, Yemen. Permission to collect the data was obtained from hospital directors and head of departments. Prior to data collection, informed written consent was obtained from participants who were briefed about the study objectives and procedures to ensure confidentiality and anonymity of their responses. All procedures followed during the study were in accordance with the ethical standards of the Helsinki Declaration (1964, 2008) of the World Medical Association.

## Abstract

### Background:

*Cervical cancer is the fourth most prevalent cancer among women causing 250, 0000 annual deaths worldwide. The available data, although limited, indicates that 8.5 million Yemeni women are at risk of developing cervical cancer and most cases are diagnosed at late stages causing deaths from this illness which could be prevented through screening. There is limited evidence about the awareness of health staff in Yemen about the importance, eligibility criteria, role and availability of cervical cancer screening as well as their attitude toward it and their utilization of this service either for themselves or their patients.*

**The aim:** *to assess the knowledge, attitude, and practice (KAP) of gynecologists toward cervical cancer screening as well as barriers of implementing this screening service in Yemen.*

### Methods:

*All physicians who provide gynecology and obstetrics care at the four main public teaching hospitals in Sana'a city were targeted in this cross-sectional study. The data was collected using a validated self-administered questionnaire.*

### Findings:

*Gynecologists in the main public teaching hospitals in the capital of Yemen have a satisfactory knowledge of importance of screening of cervical cancer and positive attitude toward this service. However, their awareness and positive attitude are not well-reflected in the utilization of cervical cancer services, either for themselves or their patients. Barriers of using cervical cancer services include unawareness and misconceptions of gynecologists.*

### Conclusion:

*The identified gap in gynecologists' KAP and barriers should be addressed to enhance the neglected cervical cancer screening in Yemen toward better control of this serious preventable disease.*

### Key words:

*Knowledge, Attitude, Practices, Cervical cancer, Gynecologists, Yemen.*

## 1. Introduction

Globally, cervical cancer ranks as the fourth most prevalent cancer among women; approximately 500,000 new cases and 250,000 deaths are reported annually (1). There is a striking disparity between countries in the incidence and mortality of cervical cancer. However, it is evident that cervical cancer mortality in developing countries is ten folds the mortality in developed countries (2-4). Limited data is available about cervical cancer prevalence rate in Yemen due to the poor screening services and community-based surveys (1, 5). However, the national cancer registries indicate that 170 new cases and 117 deaths of cervical cancer are reported each year in Yemen and about 8.5 million Yemeni women above 15 years old are at risk of developing cervical cancer (5).

Screening is a key intervention that showed effectiveness in reducing cervical cancer mortality and morbidity in many developed countries and strongly recommended globally for controlling cervical cancer (6, 7). However, many resource-limited countries rarely implement accessible, affordable and systematic screening services for cervical cancer due to several challenges faced (8, 9). These countries need to accelerate actions to respond to the World Health Organization (WHO) call for action toward the global elimination of cervical cancer (7).

Health staff, especially doctors, play a key role in informing, gauging, encouraging and referring women to use cervical cancer screening services and thus improving the utilization of this service when exists (4, 7). The awareness of health staff about the importance, eligibility, role and availability of this service as well as their attitude toward it, is often crucial in gaining women's confidence and markedly influence women's utilization of cervical cancer screening (9, 10). These issues have not been explored sufficiently in Yemen (5). Therefore, it is essential to conduct this Knowledge, Attitude and Practice (KAP) study whose overall goal is to contribute in informing the design of preventive interventions toward enhancing awareness, attitude and practices of health staff and thus enhance using cervical cancer screening services in Yemen.

**This study aims** to assess the knowledge, attitudes, and practices of gynecologists toward cervical cancer screening as well as their perspectives about barriers of implementing this screening service in Yemen.

## 2. Materials and methods

This is a cross-sectional study carried out at the main four public teaching hospitals in Sana'a city (Al-Thawra, Al-Kuwait, Al-Sabeen and Al-Jomhuri). These hospitals were selected because they are referral hospitals and host under and postgraduates training, including diagnosis and treatment of cervical cancer. The study targeted all physicians who provide gynecological care in these hospitals.

Data was collected in January –February 2020 using a semi-structured self-administered questionnaire. The questionnaire was designed based on reviewing similar studies, validated, and pretested before data collection to ensure clarity and appropriateness of contents and length to respondents' busy schedule and commitments. The questionnaire included seven questions on sociodemographic characteristics of respondents, 12 questions on their knowledge of cervical cancer risk, screening and prevention in addition to five questions exploring each of their attitudes and practices in relation to cervical cancer screening. Responses about practices and barriers were presented as frequencies while respondents' knowledge and attitudes were scored.

The knowledge was assessed by 12 multiple choice questions that explore 18 facts about cervical cancer (risk, screening, and prevention). Each correct response deserves a score of one while any incorrect response deserves a zero score. The maximum points to be scored are 18 and the minimum is zero. Based on the Modified Bloom's cut off points (11), the level of knowledge was classified into: 1) good if scored >80% (answers about 14-18 facts were correct); 2) satisfactory if scored 50%-79% (answers about 10– 13 facts were correct); poor if <50% was scored (answers about zero to nine facts were correct).

The Attitude was assessed through five questions using Likert scale (12) as each question has positive and negative responses that ranged from strongly agree, agree, neither agree nor disagree, disagree and strongly disagree. The scoring system of each attitude-related response ranged from: five for strongly agree to one for strongly disagree. The responses were summed up to represent the attitude level of each respondent toward cervical screening; the highest expected score is 25 and the lowest expected score is 5 (12).

The non-response was considered after three consecutive visits to each participant and questionnaires were checked for any inconsistency and incompleteness. The coded data was systematically verified and checked for errors.

Epi-info software (version 7.2) was used for data entry and analysis. The data was analyzed using univariate analysis for frequency computations and bivariate analysis for computing associations between variables. Chi-square test was used to measure the strength of associations between categorical variables and T-test was used for continuous variables where P value < 0.05 indicates statistical significance.

### *Ethical approval*

Ethical approval was granted from the ethics committee at the Ministry of Health in Sanaa, Yemen. Permission to collect the data was obtained from hospital directors and head of departments. Prior to data collection, informed written consent was obtained from participants who were briefed about the study objectives and procedures to ensure confidentiality and anonymity of their responses. All procedures followed during the study were in accordance with the ethical standards of the Helsinki Declaration (1964, 2008) of the World Medical Association.

### 3. Result

The study included 202 physicians (out of 250) who provide gynecological care services in the main four public teaching hospitals in Sanaa. Their age range is 25-78 with a median of 32 years and most of them were females (97%), married (75%), and obtained their last qualification at Yemen (93%), see table 1. Their professional experience ranged from one to 48 years with an average of 7.2 ( $\pm 7.22$  SD) years and 67% of them hold at least a master's degree.

**Table 1: The sample characteristics (n.202)**

The character		No.	%
Gender	Female	195	97%
	Male	7	3%
Age	25– 34	133	66%
	35 – 44	52	26%
	$\geq 45$	17	8%
Marital Status	Single	51	25%
	Married	140	69%
	Divorced	10	5%
	Widow	1	1%
Qualification	Bachelor	67	33%
	Master	80	40%
	Doctorate (PhD)	55	27%
Country from which the last qualification ascertained	Yemen	188	93%
	Others	14	7%
Years of professional experience	1 – 5	108	53%
	6 – 10	65	32%
	>10	29	14%
Hospital of work	Al-kuwaitt	51	25%
	Al-Thawra	54	27%
	Al-Sabeen	68	34%
	Al-Jomhuri	29	14%

### *Knowledge*

Only one fifth of the gynecologists in the main public teaching hospitals of Sanaa have good level of knowledge about the risk, screening and preventive measures of cervical cancer, while 62% have satisfactory knowledge and another fifth (19%) have poor knowledge about this serious illness. The mean knowledge score was 12 ( $\pm 2.7$  SD) ranged from five to 18. Knowledge found to be significantly high among participants who are above 32 years old ( $X^2 10.6$ ,  $P= 0.001$ ,  $OR=3.6$  95%  $CI= 1.6-8.1$ ), have over 5 years of experience ( $X^2 4.8$   $P= 0.02$ ,  $OR= 2.2$ , 95%  $CI= 1.0-4.8$ ) and hold at least a master's degree ( $X^2 2.7$ ,  $P= 0.008$ ,  $OR=3.9$ , 95%  $CI=1.3 -11.8$ ).

**Table 2 Participants' knowledge about cervical cancer (risk, screening and prevention)**

Items of the knowledge scale about cervical cancer (no.=202)		Correct No (%)	Incorrect No (%)
Risk factors of cervical cancer	Multiple sex partners	173 (86%)	29 (14%)
	Sexually transmitted disease	171 (85%)	31 (15%)
	Early age of sex activity	164 (81%)	38 (19%)
	Smoking	115 (57%)	87 (43%)
	Multi-parity	79 (39%)	123 (61%)
	Use of oral contraceptive for long period (> 5 years)	72 (36%)	130 (64%)
	Early age at first pregnancy	27 (13%)	175 (87%)
The screening aims to detect precancerous changes and cervical cancer.		146 (72%)	56 (28%)
Cervical cancer is caused by a virus that is transmitted by Sexual intercourse.		176 (87%)	26 (13%)
Cervical cancer is most common among women in their 20s.		135 (67%)	67 (33%)
HPV is related to cervical cancer		195 (97%)	7 (3%)
HPV could be transmitted by both gender, and condom provide protection against it.		150 (74%)	52 (26%)
HPV causes pre-invasive and invasive carcinoma of the cervix		166 (82%)	36 (18%)
Cervical cancer could be prevented by vaccination		129 (64%)	73 (36%)
HPV vaccine prevent cervical cancer		43 (33%)	86 (67%)
Ideal time for vaccination	Before they initiate sexual activity	66 (51%)	63 (49%)
	Before and after initiation of sexual activity	27(21%)	102 (79%)
	I don't know	36 (28%)	93 (72%)
Symptoms of cervical cancer include post-coital bleeding, menorrhagia, postmenopausal bleeding, and foul-smelling vaginal discharge.		146 (72%)	56 (28%)
Pap test is the most effective public health tools for screening and detecting precancerous cervical cells		153 (76%)	49 (24%)

As Table 2 demonstrates, many respondents have poor or inappropriate awareness about the prevalence and some risk factors of cervical cancer and the possibility of preventing cervical cancer through vaccination. About quarter of the included gynecologists have poor knowledge about the symptoms of cervical cancer (28%); the role of condom in preventing Human Papilloma Virus (HPV) infection and thus cervical cancer (26%); the screening role in early detection of cervical cancer (28%) and pap smear effectiveness in detecting cervical cancer and precancerous changes in the cervix (24%), see Table 2.

The study also identified that more than two thirds of the gynecologists believe that the risk of cervical cancer increases by having multiple sex partners, environmental pollution, or early age of sex activities (86% and 81 respectively). One third (31%) of the respondents believe that pap smear should only be done as a part of cervicitis management but not for screening purposes unless suspicious symptoms (such as bleeding or malicious feature of cervix) exist. While 6% of the gynecologists would not consider Pap smear because it is an invasive test and risky procedure which may cause metastasis in undiagnosed cancer cases. This finding reflects their misconception about the difference between pap smear and biopsy.

### *Attitude*

In average, most (180/220) participants expressed positive attitude toward cervical cancer while 10% expressed negative attitude.

Table 3 summarizes respondents' answers to the five questions on attitude toward cervical cancer screening. Most participants have positive attitude toward making cervical cancer screening as essential part of women's health care (94% agree or strongly agree) and support establishing screening program in Yemen (86% agree or strongly agree) that should screen all eligible women (81% agree or strongly agree) as any women could be at risk of getting cervical cancer (73% agree or strongly agree). However, one quarter (20%) of the included Gynecologists have either negative or neutral attitude toward obtaining cervical cancer screening for themselves or their relatives.

**Table 3. Participant's attitude toward cervical cancer screening**

Attitude towards cervical cancer screening (n.=202)	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1) Cervical cancer screening should be essential part of women's health care.	2 (1%)	0 (0%)	10 (5%)	30 (15%)	160 (79%)
2) I believe that any woman is at risk of getting cervical cancer	2 (1%)	25 (12%)	28 (14%)	93 (46%)	54 (27%)
3) Yemen should start cervical cancer screening program.	4 (2%)	3 (1%)	22 (11%)	44 (22%)	129 (64%)
4) All eligible women for cervical cancer should be screened.	0 (0%)	6 (3%)	34 (17%)	76 (38%)	86 (43%)
5) I will undergo cervical cancer screening (female doctors) or encourage close relatives?	3 (1%)	10 (5%)	38 (19%)	67 (33%)	84 (42%)

### Practices

Two thirds (65%) of the recruited gynecologists have performed pap smear to screen their patients for cervical cancer; over a half (58%) of them did that less than six times in their entire career period while only a quarter (26%) did that over ten times. Only a quarter (25%) of the gynecologists who ever performed pap smear screen their eligible patients every three years following the international recommendations, see table 4. However, it was unclear if they consider patients' age in changing this frequency. In contrast, one third (35%) of the included gynecologists never performed Pap smear test to screen their patients; mainly because of lack of training, time limitations and unavailability of private place to perform the test, see table 4. Among the 145 female married Gynecologists, only 8% had ever undergone a Pap smear to screen themselves for cervical cancer.

**Table 4. Practices of cervical cancer screening.**

Practice of cervical cancer screening	Frequency	Percent
<b>1-Have you ever performed pap smear as a screening test for your patients? (no.=202)</b>		
Yes	132	65%
No	70	35%
<b>2. Approximate number of Pap smear tests you have performed for your patients? no.=132)</b>		
1-5	77	58%
6-10	21	16%
>10	34	26%
<b>3-How frequent you do it for your patient? (no.=132)</b>		
1- Once a year	79	60%
2- Once every two years	12	9%
3- Once every three Years	33	25%
5- Once every five years	8	6%
<b>4- Reasons of never performing pap smear for your patients? (n =70) *</b>		
Lack of training	38	54%
Patient refusal	21	30%
Too many patients	15	21%
Lack of space to respect patient privacy	12	17%
Lack of time	9	13%
Others	12	17%
<b>5.Have you ever had pap smear for yourself? (no.=145 married females)</b>		
No	133	91.7%
Yes	12	8.3%
Total eligible (married females)	145	100%

\*Multiple answers are allowed

The analysis shows that good practices of cervical cancer screening test is positively associated with the gynecologists' age above 32 years ( $X^2 = 11.8$ ,  $P$  value=0.0006, OR= 2.8, 95% CI=1.5-5.3); years of experience above five ( $X^2 = 16.1$ ,  $P$  value=0.0000, OR=3.5, 95% CI=1.8-6.6 ); and having at least a master's degree ( $X^2 = 16.0$ ,  $P$  value=0.0000, OR=5.1, 95% CI=2.1-12.1).

### *Barriers to cervical cancer Screening services*

A considerable proportion of the eligible gynecologists did not screen themselves for cervical cancer because they are afraid of the result (20%); dislike to be examined by colleagues (21%), or they don't have suspicious symptoms to be screened (26%). Unawareness of where screening services exist prevented a third (35%) of the eligible gynecologists from screening themselves. This barrier also hinders women from accessing screening services, as table 5 shows.

From the gynecologists' perspective, the most important barriers that hinder eligible women from seeking cervical cancer screening services in Yemen are: 1) poor awareness about the indication and benefits of screening; 2) believing that screening should only be done if suspicious symptoms exist; 3) absence of doctors' advice on when screening should be done; 4) fear of having bad results; 5) unaffordability of the test; 6) poor accessibility to screening services; 7) fear of pain during the procedure. See table 5 which also explains reasons for the poor utilization of cervical cancer screening services among the eligible female gynecologists.

**Table 5. Barriers to seeking cervical cancer screening in Sana'a city Yemen, 2020.**

<b>Barriers of seeking cervical cancer screening by eligible women, from gynecologists' perspectives</b>	<b>Frequency</b>	<b>Percent</b>
1. Unawareness of women about the screening indication & benefits	144	71%
2. Absence of suspicious symptoms	91	45%
3. Fear of bad results	72	36%
4. Absence of doctors' advices to do screening test	69	34%
5. The screening test is too expensive for patients	60	30%
6. Unavailability of cervical screening (pap test) in hospitals	56	28%
7. Fear of pain during screening procedure	56	28%
8. Long travel distance to the near available screening test services	47	23%
9. Others	13	6%
<b>Reasons for not seeking cervical cancer screening services by eligible female gynecologists</b>	<b>Frequency</b>	<b>Percent</b>
1. Not feeling at risk	80	40%
2. Unawareness of existing cervical cancer screening services	70	35%
3. Absence of suspicious symptom	53	26%
4. Unavailability of pap smear kits	45	22%
5. Does not want to be exposed by colleagues	43	21%
6. Afraid of the screening outcome	41	20%
7. Lack of interest	35	17%
8. Afraid of experiencing pain	25	12%
9. Others	31	15%

#### **4. Discussion**

This study explored the KAP of gynecologists because cervical cancer screening in Yemen is exclusively performed by Gynecologists, so they have a pivotal role in enhancing cervical cancer screening services. Moreover, previous studies showed that Gynecologists are the main source of reliable information of women in Low- and Middle-Income Countries (LMICs) in relation to cervical cancer screening (13, 14). Accordingly, this study focuses on Gynecologists rather than other health staff. This study achieved 81% response rate similar to other studies implemented in Arabic and LMICs (15-17). Although our data doesn't representative all Gynecologists in Yemen, this is the first study that explores KAP regarding cervical cancer screening among of Gynecologists in the main public teaching hospitals in the capital of Yemen. For cultural and religion reasons, gynecologists are mostly females in Yemen and thus in this study. This challenged gender comparison of the findings. Further studies should explore this topic among male and female health workers nationally in public and private health facilities as well as among women in Yemen.

Overall, the findings showed that the gynecologists at Sanaa's teaching hospitals have satisfactory knowledge and positive attitude toward cervical cancer but poor practices of this services. This may reflect absence of clear policy

about cervical cancer screening in Yemen. This study identified several critical gaps regarding Gynecologists' awareness, attitude, and practice of cervical cancer.

This and other studies (15, 18) concluded that health staff's awareness of cervical cancer positively increases with their age, years of experiences and degree of qualification. However, this study demonstrated that only one fifth (19%) of the gynecologists in Yemen have good level of knowledge about the risk, screening, and preventive measures of cervical cancer. This awareness level is lower than other neighboring countries like Saudi Arabia (60.5%) and Qatar (62.2%) and even poor countries like Bangladesh (40.9%) that involve gynecologists in ongoing training and existing cervical cancer screening programs (9, 15, 16, 19). However, the awareness of gynecologists in Yemen is higher than nurses and midwives in other Eastern Mediterranean countries (like Turkey) (20) and other LMICs (21) including India (22) and Tanzania (23).

Most (76%) of the gynecologists in Yemen trust that Pap smear is the most cost-effective test in screening cervical cancer compared with 48.5% of Jordanian Gynecologists who have a sound knowledge of the low sensitivity of Pap smear test (24). Jordan has a well-established cancer screening program (1, 24) where more sensitive screening tests (such as Colposcopy and HPV DNA testing) (7) are widely available, accessible and affordable (1). While there is limited evidence about the availability and accessibility of cervical cancer screening services as well as readiness of the health staff and system to provide this service in Yemen (5).

The study revealed the high positive attitude among gynecologists in Yemen toward cervical cancer screening similar to the situation in other LMICs like India (25) and Ethiopia (8) and Arabic countries like Qatar (19). However, when it comes to screening themselves, most gynecologists in Yemen did not translate their knowledge and positive attitude into action as only 8% of the eligible among them screened themselves for cervical cancer.

Coverage of cervical cancer screening is three times lower in developing countries compared with developed countries (6, 26). Moreover, in underdeveloped countries, women at highest risk for cervical cancer are least likely to be screened (27). Poor awareness, unavailability, inaccessibility and unaffordability are important barriers of proper screening in LMICs (28). This study found that only 8% of eligible female gynecologists in Yemen screened themselves for cervical cancer. This rate is lower (at least by 50%) than the utilization among health staff in other LMICs such as Bangladesh (19.2%) Tanzania (15.4%), Nigeria (27.8%), India (26.4%), Iran (18.7%), Iraq (18.8%) (15, 23, 25, 29-31) and Arabic countries like Saudi Arabia (26.2 %) and Qatar (42.2%) (16, 19). However, this low utilization rate among gynecologists in the capital of Yemen is similar to the utilization rate by health staff in the capital of Nigeria (7%) (32) and close to the situation in Ethiopia (11.4%) (33). Although LMICs share some barriers of cervical cancer screening services (9, 14, 27), studies that estimated the above utilization rates are implemented over different years and vary in the respondents' sociodemographic characteristics, age, work experience duration and place of residence (6, 26, 27). This limits the validity of comparing these utilization rates across countries.

An important reason for eligible gynecologists in this study not to screen themselves is feeling not at risk of cervical cancer (among 40%), similar to their colleagues in Iran (42%) (41) and India 29% (37) but higher than the situation in Qatar (12.3%) (17) and lower than the case in Saudi Arabia (80%) (18). Living in a conservative community minimizes individuals' feeling at risk of having cervical cancer which it is caused by sexually transmitted virus (HPV) (27). Unawareness of the service' availability is another important reason for not using cervical cancer screening services, as this and other studies in Arabic and LMICs identified (8, 16, 19, 26, 27). However, the unawareness of gynecologists in this study reflects the poor coverage of cervical cancer services in the main teaching hospitals in the capital of Yemen as they should be aware of this service if exists in their facilities, as gynecologists are the main providers of this services in the Yemeni context (5). Sensitizing gynecologists about available services usually improves utilizing cervical cancer screening (7, 10).

This study revealed that only 65% of gynecologists have ever screened their patients for cervical cancer, similar to their colleagues in Jordan 68.8% (24) but worse than the case in Morocco 90% (34). The WHO recommends performing routine cervical cancer screening test for women on three-years basis (7). However, only a quarter (24%) of gynecologists in Yemen follow this recommendation compared with 46% in Jordan (24), 55.5% in Tanzania (23) and 39% in Pakistan (35). This reflect a gap in health staff's knowledge and practice in Yemen and other LMICs which need to be addressed toward controlling cervical cancer.

Similar to findings of systemic reviews on LMICs (9, 10), this study identified that main barriers prevent women from using cervical cancer screening services in Yemen are poor awareness, absence of suspicious symptoms and advices from doctors as well as fear of bad results. Health staff could play important roles in addressing these barriers toward enhancing cervical cancer screening services (4, 9).

## 5. Conclusion:

This study identified that gynecologists in the main public teaching hospitals in the capital of Yemen have a satisfactory knowledge of importance of screening of cervical cancer and positive attitude toward screening. However, their awareness and positive attitude are not well-reflected in utilizing cervical cancer screening services, either for themselves or their patients. Several barriers of using cervical cancer services are related to awareness and misconception of gynecologists. The identified gap in the KAP among gynecologists as well as barriers should be addressed to enhance cervical cancer screening in Yemen toward better control of this serious preventable disease.

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