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Knowledge, Attitudes and Practices in Relation to Cervical Cancer Screening among Female Employees at King Abdulaziz University

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Abstract: Background: Cervical cancer ranks as the fourth most frequent cancer among women and the second most common female cancer in the women aged 15 to 44 years in world. In Saudi Arabia, there is a population of 2,784 million women aged 15 years and older who are at risk of developing cervical cancer. Current estimates in Saudi Arabia indicate that every year, 241 women are diagnosed with cervical cancer and 84 die from the disease. **Aim:** The aim of this study is to assess the knowledge, attitudes and practices in relation to cervical cancer screening among female employees at King Abdulaziz University. **Study Design:** A quantitative descriptive design. **Sampling:** 380 female employees were selected through nonprobability, convenience sampling. **Setting:** This study was conducted at King Abdulaziz University female section in its main branch (Alsulaimaniah). **Study period:** From 10 November 2015 till 25 March 2016. **Tools:** A Self-administered Questionnaire was adopted from literature to assess the knowledge, attitudes and practices in relation to cervical cancer screening. **Results:** More than half of participants (55.3%) had adequate knowledge about cervical cancer and screening. Faculty members had significantly less knowledge than administrators ($p < 0.001$) and non-medical faculty members had significantly greater knowledge than medical faculty members ($p < 0.001$). Female employees had positive attitude toward cervical screening, their overall mean was (3.9 out of 5). Faculty members had significantly positive attitude more than administrators ($p = 0.008$) and those medical faculty had significantly positive attitude more than non-medical faculty members ($p = 0.001$). Regarding uptake of screening, the majority (70.3%) reported they have never had cervical screening and about the third (29.7%) responded they had. Administrators significantly had low history of cervical screening than faculty members ($p = 0.005$). **Conclusions and recommendations:** Female employees in KAU had adequate knowledge and positive attitude toward cervical cancer and its screening while their screening practice was poor. Improving awareness through education programs can improve women attitude and enhance screening uptake, also, a National Centre for cervical cancer screening in Saudi Arabia is required to cover all women who are at risk.

Keywords: cervical cancer, screening, Pap test, Knowledge, attitude, practice, KAP

Introduction

Cervical cancer is one of the serious threats to women's lives. Worldwide, it ranks as the fourth most frequent cancer among women and the second most common female cancer in the women aged 15 to 44 years in world (WHO, 2014). Recent estimates display that every year 527,624 women are diagnosed with cervical cancer and 265,672 die from the disease (HPV Information Centre, 2017). It kills more women than any other type of cancer in 55 countries including several countries in sub-Saharan Africa, most Asia countries, and some Central and South American countries (WHO, 2014).

Current estimates in Saudi Arabia indicate that every year 241 women are diagnosed with cervical cancer and 84 die from the disease (HPV Information Centre, 2017). According to the Saudi registry 2014, the incidence of cervical cancer is low in Saudi women in compare to the world. The actual reason for low incidence of cervical cancer is unknown. This may be due to underreporting of the cases (Mohamud, 2015; Al-Othman, et al, 2015). In addition, the closed society, Islamic culture, and standards of mores could make women less vulnerable to HPV infection might be a reason (Raza, et al, 2010; Alsbeih, 2014).

Furthermore, cervical cancer is a slow growing cancer that takes long period to develop and it is asymptomatic in early stages (NIH, 2017). Persistent infection with high risk or oncogenic types of human papilloma virus HPV is an essential precursor to develop the precancerous dysplasia of the cervix that progress to invasive cancer (Reich, Girardi, & Tamussino, 2017).

It has been observed the positive impact of implementation of secondary prevention efforts, which include early diagnosis and treatment for pre-cancer and early cancer, and effective screening on mortality and morbidity rate of cervical cancer (WHO, 2014). Both incidence and mortality of cervical cancer have sharply declined in a number of large populations following the introduction of well-run screening programs such as Iceland, Finland, Sweden, United States and Canada (Screening and Prevention Editorial Board, 2017). Furthermore, vaccines against HPV have been developed and provide effective protection against some HPV types (Kessler, 2017).

Moreover, serious cervical cancer screening program in Saudi Arabia is not well recognized (Sait, Bentley, Anfinan, & Power, 2012). Furthermore, Low screening coverage leads to the fact that most patients come to the hospital with advanced disease (Maranga, et al, 2013). Most Saudi women seek medical care in late stage of disease which requires

extensive chemo-radiation therapy (Alsbeih 2014). Women with late-stage cancers require medical care that may extend for many months after diagnosis to ensure the delivery of comprehensive care. Thus, financial burden of late-stage cancer treatment will cost the country more than early-stage cancer (Subramanian, *et al*, 2010).

Improving awareness through education can enhance the response to preventative health services. For any health project to be effective, good awareness about the project can improve utilization. Different studies have emphasized the effect of women's knowledge as an important determinant of attitude of risk and subsequent health seeking behavior (Lim, & Ojo, 2016). Accordingly, increasing women knowledge by providing them information about cervical cancer, risk factors, signs and symptoms, availability of cervical cancer screening, and consequences of not receiving the screening will improve their attitude toward cervical cancer and its screening methods and will enhance utilization of the screening. Consequently, this could reduce morbidities and mortalities resulting from cervical cancer (Ncube, *et al*, 2015; Driscoll, 2016).

Nurses and midwives can play an essential role in increasing the women participation in cervical cancer screening programs. Nurse-midwives working in antenatal clinics have a unique opportunity to reach teenagers as well as adult women with information on how to decrease the risk of contracting sexually transmitted diseases such as the human papillomavirus (HPV). Nurses also can advise these individuals of the advantages of doing the screening regularly (Hilton, *et al*, 2003). Cervical cancer education at community-based programs is needed to improve the knowledge of women about cervical cancer and its screening, correct the misconceptions, promote their attitude and increase screening utilization.

Significant of the study:

There is a population of 2,784 million women aged 15 years and older who are at risk of developing cervical cancer in Saudi Arabia (HPV Information Centre, 2017). Furthermore, it is predicted that as the population ages, there will be a dramatic increment of cervical cancer incidence. The estimated number of 309 new cervical cancer cases and 117 deaths in 2025 (Sait, Bentley, Anfinan, & Power, 2012). Also there are a few studies in the literature that have

highlighted the assessment of women knowledge, attitude and practice towards cervical cancer and its screening in Saudi Arabia. Regarding King Abdulaziz University, there is no similar study was conducted in female section, including female faculty and administrative staff in both medical and non-medical campuses.

Study aim and objectives.

This study aimed to assess the knowledge, attitudes and practices in relation to cervical cancer screening among female employees at King Abdulaziz University. To reach this aim the following objectives have to be achieved:

1. Assess the knowledge of cervical cancer screening among female employees.
2. Determine the attitude of female employees towards cervical cancer screening.
3. Identify the female employees' practice of cervical cancer screening services.

Research Question.

What are the levels of knowledge, attitudes and practices in relation to cervical cancer screening among female employees at King Abdulaziz University?

Subjects and Methods:

Study Design: Quantitative descriptive design was used.

Study Setting: This study was carried out at King Abdulaziz University in Sulaimaniah branch, Saudi Arabia.

Study subjects: Three hundred eighty (380) participants were chosen by nonprobability, convenience sampling according to the following criteria.

Inclusion criteria: Involved administrators and faculty members at King Abdul Aziz University in the main branch in Sulaimaniah. Married, divorced, or widow, in age between 20 and 60 years, willing to participate in the study and available during the period of data collection.

Sample size:

The Research Services unit at KAU helped the researcher by providing the employment statistics inside all colleges and centers of Sulaimaniah branch. The numbers of female employees (faculty members and administrators) at this branch were 4371 employees. The researcher discussed the sample size with the statistician and was advised to have a total of 380 samples according to the population size.

D: The maximum acceptable error = 0.2.

$N = \frac{Z^2 \times P \times Q}{D^2}$ <p>N: Calculated sample size Z: The z-value for the selected level of confidence (1- α) = 1.96. P: an estimated incidence of complications in the study sample = 40%, i.e., 0.4. Q: (1 - P) = 60%, i.e., 0.6. D: The maximum acceptable error = 0.2.</p>
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FIGURE 3.1 Sample Size Equations.

Tools of data collection: Data were collected through a self-administered questionnaire. It was designed by the researchers after reviewing related literature; to be filled from each participant. It consisted of four parts.

Part I: Sociodemographic Characteristics and Obstetric History.

This part including 15 questions divided into two sections. First section assesses general characteristics (age,

educational level, occupation, marital status, husband educational level, monthly family income, and smoking history). The second section identified the obstetric history included (parity, number of miscarriages, marriage duration, age in first marriage, number of marriages, medical history of cervical cancer, and family history of cervical cancer).

Part II: Knowledge about Cervical Cancer and Its Screening.

It includes 22 questions which include causes, clinical pictures, risk factors, early detection and preventive measures, treatment modality, awareness about cervical cancer screening, participant's source of information. Two types of questions used in this section, from 1 to 18 consist of statements that answered by Yes, No, or I Don't Know, and questions from 19 to 22 including multiple choice questions.

Part III: Attitudes toward Cervical Cancer and Its Screening.

This part consists of 5 points Likert scale of 14 items. It contains of declarative statements that assess the attitude toward cervical cancer and its screening. Study participants were asked to specify how much they agree or disagree with each statement by choosing (Completely disagree, Disagree, No idea, Agree, or completely agree).

Part IV: Practices of Women toward Cervical Cancer Screening

In this section, closed ended (Yes or No) question used to assess utilization of cervical cancer screening before. Depending on the answer, there were related questions need to be answered. In (Yes) answer, the following questions were: How many times have undergone to cervical cancer screening? How old are you when you did first cervical cancer screening? When is the last time you underwent a cervical cancer screening? Do you undergo cervical cancer screening regularly?

Scoring System:

Regarding knowledge part, for (Yes/No/Don't Know) questions, (Yes) scored with 3 points, (No) with 2, and (I don't know) with 1 point. The overall total knowledge score for each woman was computed using the sum of all provided correct questions, resulting in a knowledge score between 1 and 54 as a maximum. The knowledge evaluation was assessed individually, scored and categorized into three categories: excellent if the women scored 70% and above, adequate if the women scored 50% to below 70%, and poor if the score was below 50%. Furthermore, for multiple choice questions, each selection scored with a 1 point and non-selected answers with a 0. Regarding attitude section, the agreement level measured using a 1-5 likert scale, with 1= strongly disagree and 5= strongly agree. Moreover, the positive attitude was measured by calculating the inputs of (Agree and Strongly Agree) categories, the neutral attitude was recorded by calculating the inputs of (No Idea) category, and the negative attitude by calculating inputs of (Disagree and Strongly Disagree) categories. Regarding practice, the question about if woman underwent cervical cancer screening or not, the answers were coded with 1 for Yes and 2 for No.

Data Collection Process:

The questionnaires were collected within 5 months in period from 10 November 2015 to 25 March 2016. Sample selection procedure composed of two phases. Phase one is distributing of tool, the researcher began the process of data collection by selecting the buildings. Initially, she visited non-medical faculties and covered all specialties there. The researcher took the administrators sample from the colleges she visited and the administrative buildings as well. Then, she moved to the campus of medical faculties to collect data from faculty members of these colleges and she covered all medical colleges. Moreover, the researcher used to introduce herself and explained the title, aims of the study, and target sample to each participant. After obtaining the participant's verbal agreement the researcher started to distribute the questionnaires. Phase 2 is collecting the tools, some of the participants filled up the questionnaire at the same time and some of them gave the researcher an appointment to get back the questionnaire. The researcher made a quick review to make sure that all questions has been answered. If the participant still available, the researcher asked her kindly to answer the unanswered questions. If she is not available the researcher will drop out the uncomplete questionnaire. The researcher dropped out the participant who visited three time and not answered the tool or was unavailable.

Statistical Analysis:

Microsoft Office Excel Program 2013 was used for data entry, and the Statistical Package for Social Sciences (SPSS) software version 22.0 was used for data analysis. Descriptive statistics (e.g., number, percentage, mean and standard deviation) and Kruskal-wallis, Mann-whitney U, and Chi-square tests were used to test for the association and/or the difference between two categorical variables. Tests of significance used, P-values less than 0.05 will be considered as statistically significant.

Validity of the tools:

The instrument used in this study was adopted from a study conducted by Khosravi and others (2012) in Iran. Tools were reviewed by three jury from experts in maternity nursing field to test the content validity. According to experts suggestions the tools were modified

Reliability:

The reliability of the instrument was tested by using the Cronbach's alpha test. This is "a statistical procedure used to examine the extent to which all items in the instrument measure the same construct". The expected value of the Cronbach's alpha in the research is at least .80 (DePoy, & Gitlin, 2016). The reliability coefficient value for the original instrument was (0.85) and the reliability coefficient value for the modified instrument used in this study was (0.8) which shows that the data instrument is reliable

Ethical Consideration:

Ethical approval was obtained from the ethical committee of faculty of nursing and the ethics committee of faculty of medicine at the KAU in Jeddah for application of this study. Then, the approval from deanship of postgraduate studies was taken to allow the researcher to access the female employees at KAU in Sulaimaniah branch and to start collecting necessary information. The oral informed consent was obtained from the women prior to the participation in the study.

Pilot Study:

A pilot study was conducted on (10 %) of samples with the eligibility criteria from nursing college to evaluate the efficiency, reliability and the validity of the study tool and to test clarity of designed questionnaire as well as to estimate

the time needed to answer them and then the necessary modifications were made and additional questions on demographic, knowledge, attitude and practice parts were added to the instrument based on the results of this pilot study.

RESULTS**Socio-demographic Characteristics and Obstetric History.****TABLE 1.1 Distribution of Female Employees at KAU in Relation to Their Socio-demographic Characteristics (n= 380).**

Socio-demographic characteristics	Studied Sample F (No.380)	%
Age (mean 35.3,SD±11.9 years)		
• 20-<30	52	13.7
• 30-<40	192	50.5
• 40-<50	79	20.8
• 50-60	57	15
Education level		
• High School	14	3.7
• Bachelor Degree	145	38.2
• Master Degree	103	27.1
• PhD or Higher.	118	31.1
Occupation		
• Faculty Member	228	60
• Administrator.	152	40
Faculty Specialty (n=228)		
• Medical Specialty	66	17.4
• Non-medical Specialty.	162	42.6
Marital status		
• Married	345	90.8
• Divorced	25	6.6
• Widowed.	10	2.6
Smoking habits		
• Yes.	22	5.8
• No.	350	92.1
• Past Smoker.	8	2.1
Husband education		
• High School	62	16.3
• University Degree	179	47.1
• Higher Educated	116	30.5
• Other	23	6.1
Family monthly income (mean 5750, SD ±3752.7 SR)		
• ≤3000 SR	3	0.8
• 3000-<5000 SR	14	3.7
• 5000- <10,000 SR	132	34.7
• ≥10,000 SR	231	60.8

Table 1.1 showed that the mean age of the participants in the study was (35.3, SD ±11.9) years. More than third (38.2%) were attained bachelor degree and (27.1%) (31.1%) were master and PHD degree respectively. Almost two third of participants (60%) were faculty member and the two fifth (40%) were administrators. Number of medical faculty members was 66 out of 380 (17.4%) and a non-medical faculty members were 162 out of 380 (42.6%). While the majority (90.8%) of participants were married.

Regarding obstetric history, (70%) were married at age 20 to less than 30 years old, followed by about one fifth (18.4%) who married at age less than 20 years old. The majority of the total study participants (93.4%) were married once. Moreover, about three quarter (74.2%) reported having between 1 to 4 children. More than two thirds of participants (63.2%) had no history of abortion while more than one quarter (32.9%) had 1 to 2 abortions. None of them had a history of diagnoses with cervical cancer but few of them (6.1%) reported relatives having been diagnosed with cervical cancer.

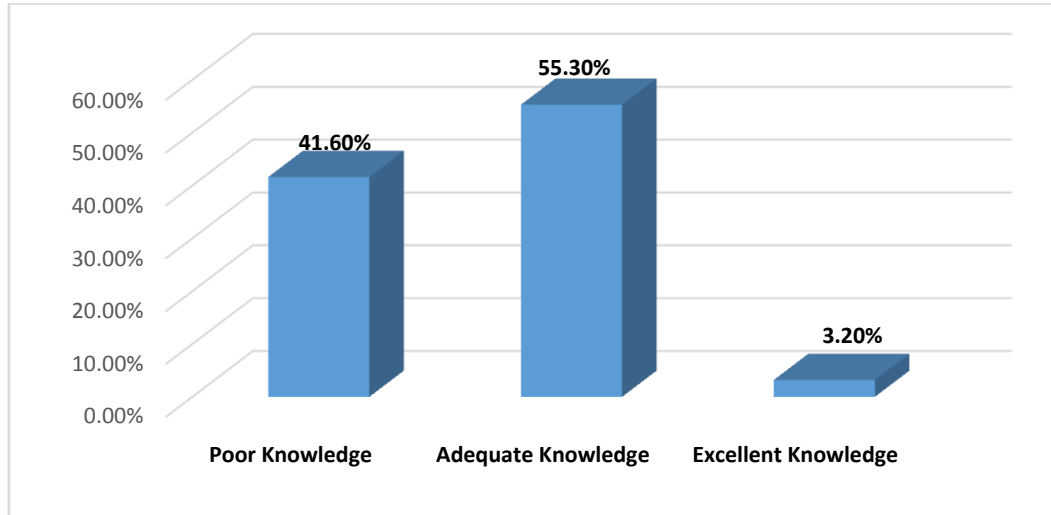
Female Employee's Knowledge about Cervical Cancer and its Screening:**FIGURE 2.1** Frequency and Percentage of Knowledge Categories (n=380).

Figure 2.1 shows that out of the 380 female employees more than half of them (55.3%) had an overall adequate knowledge, followed by more than two fifths (41.6%) of

them were having poor Knowledge (below 50%), and rest of them (3.2%) had excellent knowledge.

TABLE 2.1 Relation between Socio-Demographic Characteristics/Obstetric History and Mean Knowledge Scores of Female Employees at KAU (n=380).

Socio-demographic Characteristics & Obstetric History	Knowledge score		test statistic	p
	Mean	SD**		
Age				
• 20-30	11.4	4.56	14.8 ^a	0.002*
• 30-<40	10.1	5.18		
• 40-<50	9.7	4.91		
• 50-60	7.8	5.23		
Education				
• High School	10.7	4.27	29.1 ^a	<0.001*
• University Degree	11.4	4.95		
• Master Degree	9.3	5.01		
• PhD or Higher.	8.2	5.02		
Occupation				
• Faculty Member	8.4	4.89	6.68 ^b	<0.001*
• Administrator.	12	4.73		
Faculty specialty				
• Medical	5.3	4.7	5.8 ^b	<0.001*
• Non-medical	9.6	4.4		
Marital Status				
• Married	9.9	5.11	0.918	0.632
• Divorced	8.8	5.81		
• Widowed	9.8	4.18		
Family Income				
• <3000 SR	13	8.66	34.2 ^a	<0.001*
• 3000-<5000 SR	11.8	6.07		
• 5000 -<10,000 SR	11.7	5.02		
• ≥10,000 SR	8.6	4.74		
Parity				
• Nullipara	9.9	6.34	0.073	0.964
• 1 to 4	9.8	4.95		
• 5 or more.	9.9	4.34		

* Significant.

** SD= standard deviation.

a= Kruskal-Wallis tests.

b= Mann-whitney U test.

Table 2.1 presents that there is a significant relation between women’s knowledge and some of their socio-demographic characteristics including age, level of education, occupation, faculty specialty and monthly family income. The comparison showed that women aged between (50-60 years) had significantly less knowledge than women aged (20-30 years) and those aged (30-40 years). Furthermore, more educated women who have master’s degree or higher had less knowledge than women with a high school and a university degree. The differences regarding the

participants’ occupation was statistically significant, as administrators had significantly more knowledge than faculty members. Moreover, non-medical faculty members had significantly greater knowledge than those who are medical faculty members. Regarding income, women coming from highly monthly income families ($\geq 10,000$ SR) tended to have less knowledge than the women coming from low income families (< 3000 SR) and (3000- < 10000 SR) respectively.

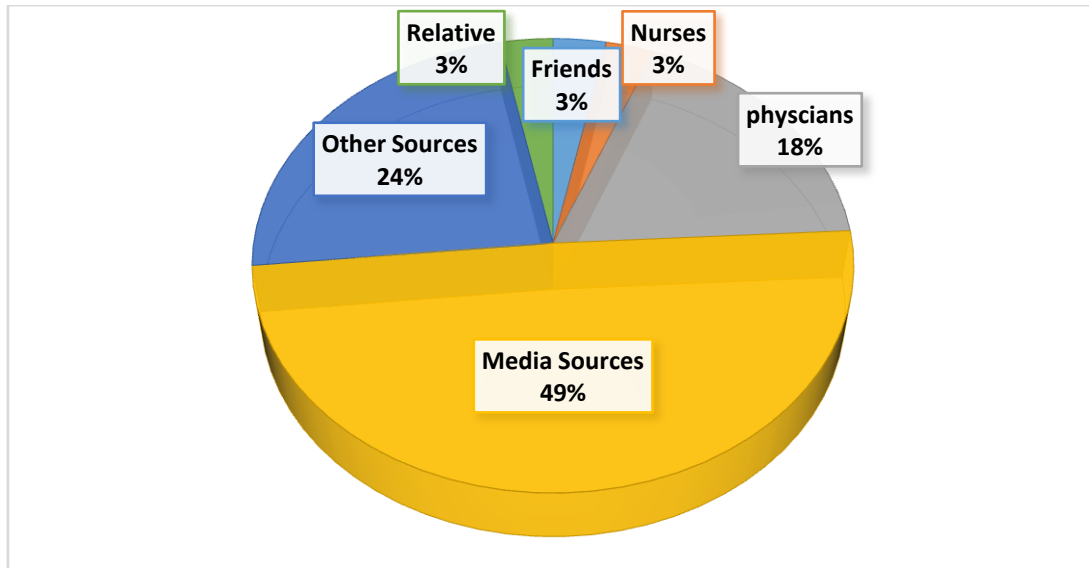


FIGURE 2.2 Distribution of Female Employees According to the Source of Information about cervical cancer and its screening (n=380).

Figure 2.2 shows the percentage of different source of information about cervical cancer and its screening among the participants. Among 380 participants, more than one half (58.3%) of them got information from media sources while (27.7%) were obtained information from other sources (books, students activities and curriculum) and (21.4%,

3.7%, 3.7%, 3.4%) were selected physician, relative, friends and nurses respectively.

Female Employees’ Attitudes toward Cervical Cancer and its Screening:

Overall, the women had positive attitude toward cervical screening, their overall mean score was 3.9 out of 5 maximum points.

TABLE 3.1 Relation between Socio--demographic Characteristics/Obstetric History and Mean of Attitude of Female Employees at KAU (n=380).

Socio-demographic characteristics & Obstetric History	Mean	SD**	test statistic	p
Age				
• 20-30	3.9	0.62	1.7	0.639
• 30-<40	3.9	0.53		
• 40-<50	3.9	0.65		
• 50-60	4	0.44		
Education				
• High School	4	0.7	4.2	0.241
• University Degree	3.8	0.65		
• Master Degree	3.9	0.46		
• PhD or Higher.	4	0.47		
Occupation				
• Faculty Member	4	0.44	2.66 ^a	0.008*
• Administrator.	3.8	0.67		
Faculty specialty				
• Medical	4.1	0.4	-3.4 ^a	0.001*

• Non-medical	3.9	0.4		
Marital Status				
• Married	3.9	0.56	2.41	0.299
• Divorced	4.1	0.57		
• Widowed	4	0.45		
Family Income				
• <3000 SR	2.9	1.65	14.3 ^b	0.003*
• 3000-<5000 SR	4.1	0.56		
• 5000 - <10,000 SR	3.7	0.62		
• ≥10,000 SR	4	0.46		
Parity				
• Nullipara	3.8	0.69	3.64	0.162
• 1 to 4	3.9	0.53		
• 5 or more.	4	0.45		

* Significant.

**Standard deviation.

a= Standardized Mann-whitney U value. b= Standardized Kruskal-wallis test value.

Table 3.1 showed a significant relation between women’s attitude and some of their socio-demographic characteristics including occupation, faculty specialty and monthly family income. Faculty members had significantly greater attitude toward cervical screening than administrators. Moreover, medical faculty members had significantly positive attitude

toward cervical screening more than non-medical faculty members. Besides, women with a high monthly family income tended to have significantly greater attitudes towards the cervical screening than those with low monthly family income.

Practice Regarding Cervical Cancer Screening and Immunization:

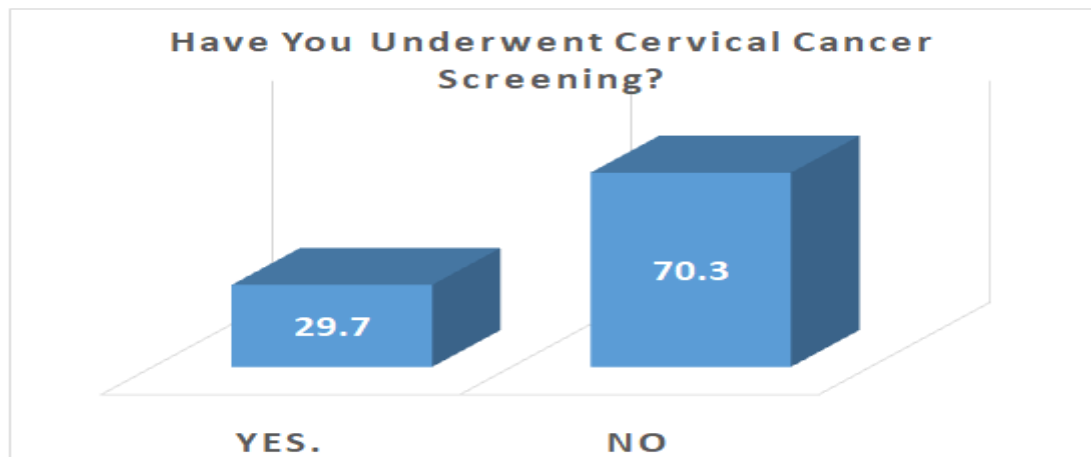


FIGURE 4.1 Distribution of Female Employees at KAU Regarding Previous History of Screening for Cervical (n=380).

Figure 4.1 showed that the majority (70.3%) of participants reported they had cervical screening and about one third (29.7%) responded they had.

TABLE 4.1 Relation between Socio-demographic Characteristics/Obstetric and Practice toward Cervical Cancer Screening among Female Employees at KAU (n=380).

Socio-demographic characteristics & Obstetric History	Practice of screening		Chi squared test.	P
	Yes =113 N (%)	No=267 N (%)		
Age				
• 20-30	3 (2.7%)	49 (18.4%)	25.4	<0.004*
• 30-<40	55 (48.7%)	137(51.3%)		
• 40-<50	27 (23.9%)	52 (19.5%)		
• 50-60	28 (24.8%)	29 (10.9%)		
Education				
• High School	6 (5.3%)	3 (2.1%)	14.8	0.002*

• University Degree	30 (26.5%)	115(43.1%)		
• Master Degree	28 (24.8%)	75 (28.1%)		
• PhD or Higher.	49 (43.4%)	69 (25.8%)		
Occupation				
• Faculty Member	80 (70.8%)	148(55.4%)	7.8	0.005*
• Administrator.	33 (29.2%)	119(31.3%)		
Specialty (n=228 faculty members)				
• Medical (n=66)	25 (31.2%)	41 (27.7%)	0.3189	0.573
• Non-medical (n=162)	55 (24.1%)	107 (72.3%)		
Marital Status				
• Married	103 (91.2%)	242 (90.6%)	2.17	0.354
• Divorced	9 (8%)	16 (6%)		
• Widowed	1 (0.9%)	9 (3.4%)		
Family Income				
• <3000 SR	0 (0%)	3 (1.1%)	20.3	<0.001*
• 3000-<5000 SR	3 (2.7%)	11(4.1%)		
• 5000 - <10,000 SR	22 (19.5%)	110 (41.2%)		
• ≥10,000 SAR	88 (77.9%)	143 (53.6%)		
Parity				
• Nullipara	9 (8%)	53 (19.9%)	20.97	<0.001*
• 1 to 4	83 (73.5%)	199 (74.5%)		
• 5 or more.	21 (18.6%)	15 (5.6%)		
* Significance was considered at p-value <0.05.				

Table 4.1 showed a significant relation between women's practice and some of their socio-demographic characteristics including age, education, occupation, monthly family income and parity. Regarding age, female employees who were younger than 30 years old were inclined to significantly not undergo a cervical screening and those aged 30 to below 40 years were more exposed to cervical screening. With regards to women's education, women with PhD or a higher degree, those tending to be significantly higher likelihood of having had a cervical screening. Administrators significantly had less history of cervical screening than faculty members. Regarding monthly family income, as income increases the proportion of women who have had a cervical screening also increases. In the same manner, nulliparous women significantly reported less history of cervical screening than either of those with one to four children or those with five or more children.

DISCUSSION

The broad purpose of the current study was to assess knowledge, attitudes and practices regarding cervical cancer and its screening among female employees at KAU. This part deals with and summarizes the study findings, addresses the interpretations, and discusses these findings in context with the existing literature. The results of this study shows that out of the 380 female employees more than half of them (55.3%) had an overall adequate knowledge. In contrast, findings of a cross-sectional study conducted among 1000 Iranian women, displayed that a large percentage of participants (59.4%) had weak knowledge; and only 7.9 %

of women had good knowledge (Bahri, Jajvandian, Bolandhemmat, & Mirzaiinajmabadi, 2015). This contradiction of results in both studies might be due to the differences of participants' educational levels. The results showed that women aged between (50-60 years) had significantly less knowledge than women aged below 40 years old. This result contradicted Sait's study (2009), results revealed that older women had previously been aware or undergone a Pap smear in comparison to younger women. Furthermore, more educated women who have master's degree or higher had less knowledge than women with a high school and a university degree. Moreover, in a similar study conducted in Iran among university faculty members and high school teachers, professors had the highest mean scores of knowledge towards cervical cancer screening (Jahani, Ghahramani, & Abdollahifard, 2015). However, this was not in agreement with the results of the current study. These results may have emerged because the women who had a master's, a PhD or higher degrees are more focused and deep on their sub-specialties than those in a bachelor's or with a high school level. Administrators had significantly more knowledge than faculty members and non-medical faculty members had significantly greater knowledge than those who are medical faculty members. The probable reason might be due to a larger number of non-medical faculty participants than medical faculty staff, or because administrators and non-medical faculty staff had more free time, hence they were able to gain more information about cervical cancer and its screening via electronic media. Women coming from highly monthly income families tended to have less knowledge than the

women coming from low income families. This finding was consistent with the findings of a recent study (Mukama, Ndejjo, Musabyimana, Halage, & Musoke, 2017). Moreover, more than one half (58.3%) of them got information from media sources, rational of this result is media is the broadest and the most accessible source to all members of the society through television, radio, internet networks, newspapers and magazines. Similarly to these percentages, the most selected sources of information by women in Sait's study (2009) were media (55.6) and physician (35.5).

Women had positive attitude toward cervical screening, Bahri and colleagues also mentioned positive attitudes amongst most of their sample (87.3%) (Bahri, Jajvandian, Bolandhemmat, & Mirzaianajmabadi, 2015). Faculty members had significantly positive attitude toward cervical screening more than administrators. Besides, medical faculty members had significantly greater positive attitude than non-medical faculty members. These results were consistent with the findings of the Iranian study (Jahani, Ghahramani, & Abdollahifard, 2015). The reason for such results might be because faculty member's particularly medical specialties believe on the importance of preventive measures more than other disciplines. Moreover, women with a high income tended to have significantly greater attitudes towards the cervical screening than those with low income. The reason for this result might be because women who had low family income may not be aware that cervical cancer screening is free of cost in our country, but because their financial constraints are a barrier they would have a negative attitude towards the screening because they can't afford its costs.

The majority (70.3%) of women never had cervical screening and about one third (29.7%) responded they had. Many studies were consistent with these results (Sayedalamin, et al, 2015; Sait, 2009; Bahri, Jajvandian, Bolandhemmat, & Mirzaianajmabadi, 2015; Elamurugan, Rajendran, & Thangamani, 2016). Female employees who aged 30 to below 40 years were more exposed to cervical screening. That is because those women got the highest mean score of knowledge ($m = 10.1$), thus made them more liable to uptake the screening. Women with PhD or a higher degree tended to be significantly higher likelihood of having had a cervical screening. This result on agreement with meta-analysis study's results which presented that women with the highest level of education were more likely to have screenings (Damiani, et al, 2015). Faculty members significantly had more history of cervical screening than administrators. In Sait's study (2011), doctors had undergone the screening test (30%) far more than female nurses and medical students (19%). Women with high family monthly income had more history of cervical screening. This finding was consistent with a Jamaican study (Ncube, Bey, Knight, Bessler, & Jolly, 2015). Women who had one to four children or those with five or more children significantly had more history of cervical screening than nulliparous women. The reason might be clarified by a greater interaction between those women and healthcare providers in maternal and health clinics which is considered a great chance to gain awareness about cervical cancer and screening.

CONCLUSION & RECOMMENDATIONS

Female employees in KAU had adequate knowledge and positive attitude toward cervical cancer and its screening while their screening practice was poor. Administrators had significantly more knowledge than faculty members. However, faculty members had significantly positive attitude and had history of cervical screening more than administrators. The researcher recommends establishing a National Cervical Cancer Screening Centre in Saudi Arabia that covers all women who are at risk of cervical cancer for screening and HPV vaccination, early detection and treatment. Increase awareness about cervical cancer and its screening via awareness campaign that reach women in all settings. Improve knowledge of healthcare providers through courses, symposiums and conferences about cervical cancer and its screening. Activate the role of media in increasing awareness among women. Regarding KAU, awareness campaign should be carry out in all university branches among students and employees to increase awareness about cervical cancer and its screening.

Study Strength and Limitation:

This study had significant findings that was considered as an addition to the Saudi literature and has recommendations to ensure the increased awareness and uptake of cervical cancer screening in Saudi Arabia. However, there were some limitations of this study;

- All participants were recruited from King Abdulaziz University. Thus, these findings may not be representative of the whole women in Jeddah.
- The study was confined to married, divorced, and widowed women but excluded single women who required attention and awareness as well.

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