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**Sarah Neamah Ahmed**  
General Partitional, Baghdad  
Teaching Hospital, Ministry of  
Health, Iraq

**Lujain Anwar Alkhazrajy**  
Professor, Consultant Family  
Physician, Al-Kindy College of  
Medicine, University of  
Baghdad, Iraq

**Hadeel Neamah Ahmed**  
Gyn., Obst. Specialist, Al-  
Elwya teaching Hospital,  
Ministry of Health, Iraq

## Improving awareness of cervical cancer screening program among Iraqi women attending primary health care centers: An intervention educational program

**Sarah Neamah Ahmed, Lujain Anwar Alkhazrajy and Hadeel Neamah Ahmed**

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### Abstract

**Background:** Cervical cancer is a serious health problem in women during their reproductive years, the number and percentage of the women diagnosed or died from cervical cancer is increasing so there is a dramatic need to increase awareness about its signs and symptoms, screening and prevention.

**Objectives:** To assess the awareness of sample of Iraqi women about early detection and screening of cervical cancer; and to determine the effectiveness of educational program of this knowledge.

**Methodology** At four primary health care facilities in Baghdad, a quasi-experimental research was done with a sample size of 90 females who were selected using a simple selection procedure. The study had two groups: 60 women in the control group and 30 women in the intervention group. With minor modifications, a questionnaire was used to gather data over a period of seven months. To examine the associations between the variables, the t-test, chi-square test, and fisher exact test were employed, with a P value of 0.05 or less being deemed statistically significant.

**Results:** More than one third of the studied sample aged between (20-29), The highest level of education was primary, intermediate school for control, intervention group respectively (35%,33.3%), (66.6%) of the studied sample were house wives and (25.5%) were governmental sector employed; (75.5%) of the women were married, while (93.3%) of them had negative Family history of cervical cancer. (35.55%) of the studied sample had Intermediate socioeconomic status, there was no significant association between knowledge score of the participants and their Sociodemographic variables

**Conclusions:** Health education program significantly increases the knowledge of women about cervical cancer screening.

**Keywords:** Awareness of cervical cancer, Iraqi women attending, intervention educational program

### Introduction

Nearly 500000 women worldwide are diagnosed with cervical cancer each year, and 311,000 of them pass away from the illness. World Health Organization (WHO 2018) reports that 85% of them are found in low- and middle-income countries. One woman dies of cervical cancer every two minutes worldwide, making it one of the biggest hazards to women's lives. The Human Papillomavirus (HPV) vaccine, cervical precancerous lesion screening, and subsequent treatment may make it one of the most curable and preventive types of cancer. Since cancer normally develops over a long period of time, physicians have the chance to identify tumours early and treat them if they are discovered during screening <sup>[1, 2]</sup>. The majority of sexually transmitted diseases-human papilloma virus (HPV) genital infection-are linked to all (99%) of cervical cancer cases in the EMR. Precancerous lesions may progress into aggressive cancer over the course of 10 to 20 years, eventually resulting in death <sup>[1]</sup>. In the United States, its incidence and mortality have been declining due to the screening programs. Were in 2019 incidence of cervical cancer 720; while in 2020 it raises to 862; 2021 incidence of cervical cancer 986; 2022 incidence of cervical cancer 441. In United Kingdom (UK) its incidence and mortality have been also declining where in 2019 incidence of cervical cancer 246; 2022 incidence of cervical cancer 140 <sup>[2]</sup>. In Egypt every year 866 females are diagnosed with cervical cancer and 373 die owing to it., cervical cancer ranks as the 10th most frequent cancer among women between 19 and 44 years of age in Saudi Arabia moreover the annual number of cervical cancer cases 358 women and the annual

**Corresponding Author:**  
**Sarah Neamah Ahmed**  
General Partitional, Baghdad  
Teaching Hospital, Ministry of  
Health, Iraq

number of cervical cancer deaths 179 women [3, 4]. Screening used to detect the presence of asymptomatic disease also; is an important component of health maintenance and can be used at any patient visit [5]. The Papanicolaou (Pap) smear (Cervical cancer screen) is the primary detection tool for cervical cancer, developed in countries using the Pap smear as screening have had dramatic drops in rates of cervical cancer. Cervical cancer resulted in 3,939 deaths in the United States in 2010 [6]. In Iraq the fourth commonest cause for death malignant neoplasms and tenth causes of cancer deaths according to primary site for female is malignant neoplasm of uterus, part unspecified. percentage from total females' cancer 2.75 in 2019; cervical cancer screen program is not applicable in Iraq, one center in Al-Elwiyia Hospital is assigned as screening center but, in other Gynecology hospitals as part of treatment when the signs and symptoms are present [7].

### Objectives

1. To assess the awareness of Iraqi women about early detection and screening of cervical cancer.
2. To determine the effectiveness of educational program on this knowledge.

### Subjects and Methods

#### Study design and duration

A quasi-Experimental Study that was conducted over a period of 6-month from the first of January till the end of June 2022.

#### Setting

The study was conducted at: four primary health care centers of family medicine in Baghdad 2PHCC at Al-Rusafa health Directorate and 2 PHCC at Al-Karkh health Directorate where four primary health care centers were conveniently chosen.

1. Al-Mustansyria PHCC.
2. Bab Al Muea'dham PHCC.
3. Al- Yarmouk PHCC.
4. Al -Dakhilia PHCC.

#### Sample size and sampling technique

A sample of 90 women were involved in this study: 60 women were assigned as control group and 30 women as intervention group, women were chosen through systematic random sampling, every third women attending the PHCC were chosen whatever was the type of health services they attend.

#### Inclusion Criteria

All women attending PHCC at age (15-60 year) and were willing to participate.

#### Exclusion Criteria

1. Women who already had cervical pathology.
2. Women aged less than 15 years and above 60 years.

#### Data collection method

Data were collected by a self-structured questionnaire, that was established by the researchers, based upon data from relevant international studies [8-10] and through direct interview the researcher filled the questionnaire. The questionnaire consists of two parts:

#### Studied of variables

Such as: Age, Education, Occupation, Marital status, Family history of cervical cancer, House ownership, Car ownership,

Socioeconomic status is measured according to this equation:

$$SES = Education + Occupation + House ownership * 0.5 + Car ownership * 0.1 + (age-20)/100 - Retired/unemployed/deceased^{[11]}.$$

#### Knowledge part

Consists of 46 questions divided into 5 parts; Knowledge about cervical cancer, Cervical cancer symptoms, Causes and risk factors for cervical cancer, prevention of cervical cancer, Cervical screening examination (Pap smear) These questions were answered by (Yes, no, I don't know).

The questionnaire was distributed on the control group and data were collected regarding their responses, the same thing done for the intervention group and their responses were collected also, then the intervention group was exposed to four sessions of, knowledge, sign and symptoms, causes and risk factor, prevention, screening, regarding cervical cancer through one month period, the questionnaire then was redistributed again after one-month duration to test the intervention knowledge after the health education sessions was measured.

Scoring system to assess the knowledge, scoring system was used where each correct answer scored as 2, incorrect answer scored as 1, I don't know answer scored as 0, as follow:

- 0-46 scored as poor score 50%.
- 47-69 scored as fair 51-75%.
- 70-92 scored as good 76-100%.

#### Pilot Study

The questionnaire was tested on 5 women to find out the time needed to complete the questionnaire or the presence of any linguistic problems at the questions, in addition to the time needed to complete each interview with the women, it took about 20-30 min.

#### Ethical consideration

Women had the right to agree or refuse to participate in the study.

- Oral consent was obtained from all women who participated in the study, and they were informed that the collected data were used for the study only and confidentiality was kept.
- An official permission clarifying the purpose of the study was obtained to gain approval from Ministry of health / research, training and development center and the scientific committee of Al-Kindy College of Medicine /University of Baghdad.
- Approval from Al-Rusafa and Al- Karkh health Directorate to conduct this study at the assigned primary health care centers.

#### Statistical Analysis

(SPSS) V.26 was used to analyse the data. Tables with descriptive data (numbers, percentages) were shown. In terms of analytical statistics, the T-test was employed to determine if the sociodemographic parameters of the control group and intervention group differed. p-value 0.05 is deemed statistically significant when using the Chi-Square and Fisher Exact Tests to evaluate the associations between variables, and the ANOVA test was used to compare the knowledge scores for the research sample groups.

#### Results

The age of the studied sample ranged between (20-29 yr.) and one third had age that ranged between (30-39); The

highest level of education for control group was primary school were it reaches nearly 35%, while The highest level of education for intervention group was intermediate where it reaches nearly 33.3% while 66.6% of the studied sample was house wife, (75.5%) of the studied sample was married; and nearly all the studied sample had negative family

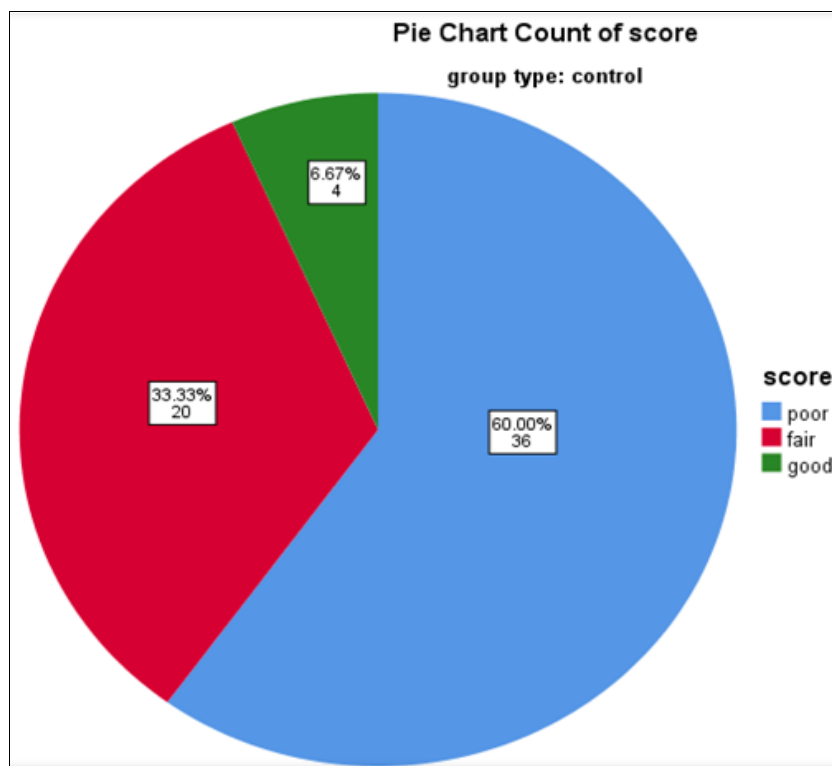
history of cervical cancer (93.3%) moreover, about 35.55% of the studied sample had Intermediate socioeconomic status, as shown in (Table 1). There was no significant variation between the two groups regarding the demographic variables of the study.

**Table 1:** Socio-demographic characteristics of the entire studied sample

Sociodemographic Variables		Control N=60		Intervention N=30		P-value
		No.	%	No.	%	
Age of respondent	Less than 20	4	6.7	0	0	0.064
	20-29	19	31.70	15	50	
	30-39	17	28.30	13	43.30	
	40 and more	20	33.30	2	6.70	
Education	Illiterate	6	10	1	3.30	0.814
	Primary School	21	35	6	20	
	Intermediate School	10	16.70	10	33.30	
	High School	4	6.70	7	23.30	
	Institute (2 Year)	3	5	1	3.30	
	College	14	23.30	5	16.70	
Occupation	house wife	37	61.70	23	76.70	0.175
	Government Sector Employed	17	28.30	6	20	
	Private Sector Employed	3	5	0	0	
	Student	3	5	1	3.30	
Marital Status	Married	45	75	23	76.70	0.652
	Unmarried	13	21.70	7	23.30	
	Divorced	2	3.30	0	0	
Family History of Cervical Cancer	Yes	5	8.30	1	3.30	0.376
	No	55	91.70	29	96.70	
Socioeconomic Status	Low	20	33.3	10	33.3	0.521
	Intermediate	19	31.7	13	43.3	
	High	21	35.0	7	23.3	

The score of knowledge level for control group was poor score, the percent of women in control group that had poor

knowledge level 60%, 33.3% had fair knowledge level, only 6.6% had good knowledge level as shown Fig. (1)



**Fig 1:** Distribution of knowledge score among control group.

The study showed that there was no significant association between knowledge score of the participants of the control

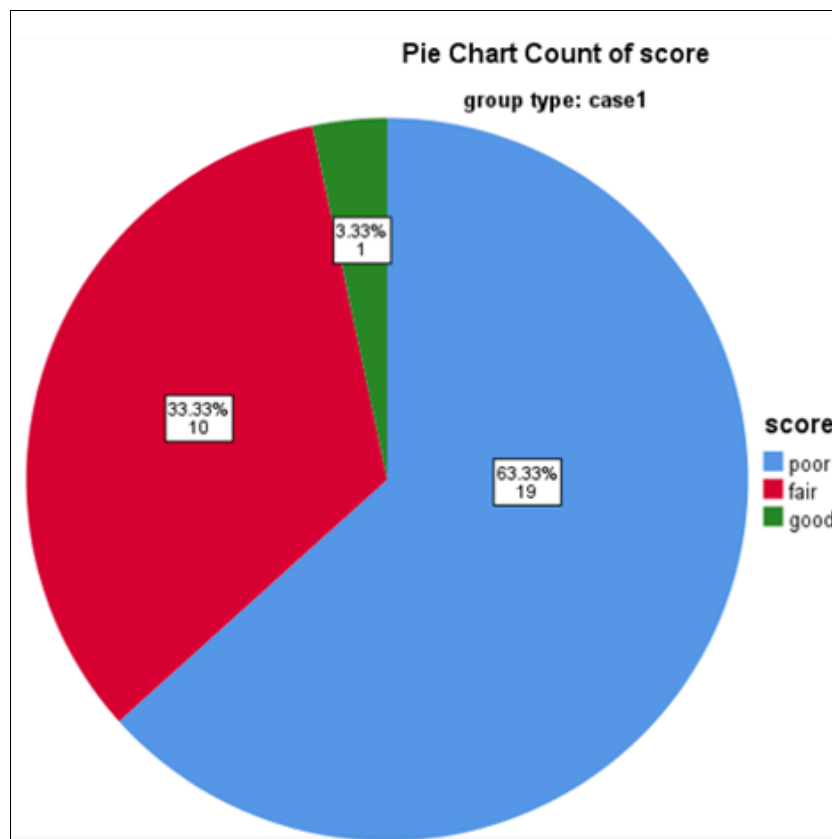
group and its Sociodemographic variables where p-value more than 0.05, as shown in table (2)

**Table 2:** Association between knowledge level about cervical cancer screening and Sociodemographic variables among control group

Sociodemographic Variables		Knowledge Level(control)						p-value
		Poor n=36		Fair n=20		Good n=4		
		No.	%	No.	%	No.	%	
Age of respondent	Less than 20	4	6.70	0	0.00	0	0.00	0.509
	20-29	11	18.3	6	10.00	2	3.30	
	30-39	11	18.3	6	10.0	0	0.00	
	40 and more	10	16.70	8	13.30	2	3.30	
Education	Illiterate	6	10.0	0	0.0	0	0.0	0.225
	Primary School	16	26.7	4	6.7	1	1.7	
	Intermediate	4	6.7	5	8.3	1	1.7	
	High School	2	3.3	2	3.3	0	0.0	
	Institute (2year)	1	1.7	2	3.3	0	0.0	
	College (Bachelor Degree)	5	8.3	7	11.7	2	3.3	
	College (Master Degree)	2	3.3	0	0	0	0.0	
Occupation	House Wife	26	43.3	10	16.7	1	1.7	0.212
	Government Sector Employed	7	11.7	8	13.3	2	3.3	
	Private sector employed	1	1.7	1	1.7	1	1.7	
	Student	2	3.3	1	1.7	0	0.0	
Marital status	Married	28	46.7	15	25.0	2	3.3	0.141
	Unmarried	7	11.7	5	8.3	1	1.7	
	Divorced	1	1.7	0	0	1	1.7	
Family history of cervical cancer	Yes	4	6.7	0	0	1	1.7	0.162
	No	32	53.3	20	33.3	3	5.0	
Socioeconomic Status	Low	20	33.3	0	0	0	0	0.196
	Intermediate	15	25.0	2	3.3	2	3.3	
	High	1	1.7	18	30	2	3.3	

The score of knowledge level for intervention group pre-test represented as pie chart with number and percent of each score also highest number and percent for poor score and

then for fair score and lowest number and percent for good score as shown Fig. (2).



**Fig 2:** Distribution of knowledge score among pre-test intervention group.

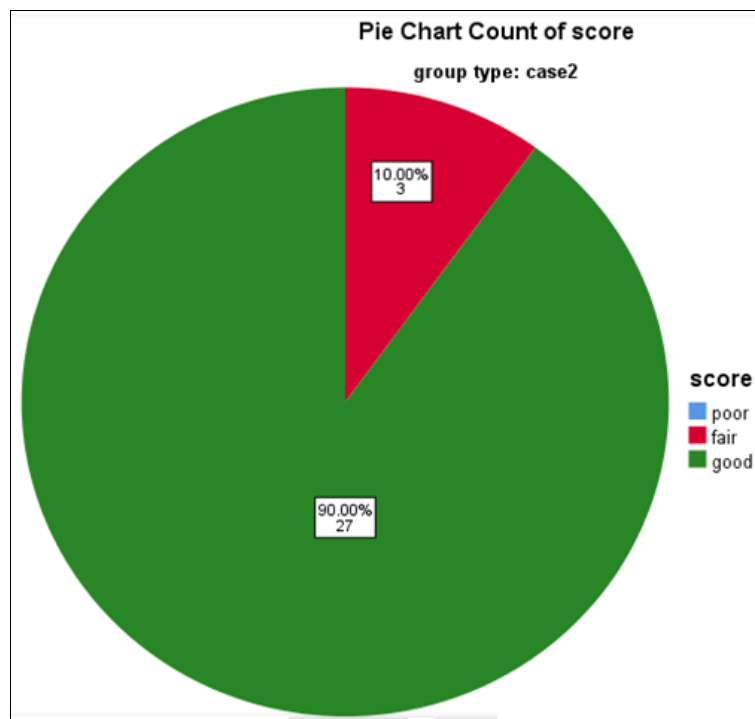
The study showed that there was no significant association between knowledge score of the participants of the intervention group and its Sociodemographic variables, and the percent of women in intervention group that had poor

knowledge level 63.4%, and 33.3% had fair knowledge level, only 3.3% had good knowledge level as shown in table (3)

**Table 3:** Association between knowledge level about cervical cancer screening and Sociodemographic variables among (pre –test intervention group)

Sociodemographic Variables		Knowledge Level (pre-test)						p-value
		Poor N=19		Fair N=10		Good N=1		
		No.	%	No.	%	No.	%	
Age of respondent	Less than 20	0	0	0	0	0	0	0.222
	20-29	11	36.7	4	13.3	0	0	
	30-39	8	26.7	4	13.3	1	3.3	
	40 and more	0	0	2	6.7	0	0	
Education	Illiterate	1	3.3	0	0	0	0	0.345
	Primary School	3	10	2	6.7	1	3.3	
	Intermediate	9	30	1	3.3	0	0	
	High School	4	13.3	3	10	0	0	
	Institute (2 year)	0	0	1	3.3	0	0	
Occupation	College (Bachelor Degree)	2	6.7	3	10	0	0	0.487
	House Wife	16	53.3	6	20	1	3.3	
	Government Sector Employed	3	10	3	10	0	0	
Marital status	Student	0	0	1	3.3	0	0	0.738
	Married	15	50	7	23.3	1	3.3	
Family history of cervical cancer	Unmarried	4	13.3	3	10	0	0	0.741
	Yes	1	3.3	0	0	0	0	
Socioeconomic Status	No	18	60	10	33.3	1	3.3	0.434
	Low	9	30.0	2	6.7	1	3.3	
	Intermediate	8	26.7	7	23.3	0	0	
	High	2	6.7	1	3.3	0	0	

The highest score of knowledge level for intervention (10%) and no one of women had poor score as shown Fig. (group post-test) was good 90% followed by fair score (3)



**Fig 3:** Distribution of knowledge score among post-test intervention group.

**Table 4:** Association between knowledge level about cervical cancer and Sociodemographic variables among (Post –test intervention group)

Sociodemographic Variables		Knowledge Level (Post-test)				p-value
		Fair N=3		Good N=27		
		No.	%	No.	%	
Age of respondent	Less than 20	0	0	0	0	0.662
	20-29	1	3.33	14	46.6	
	30-39	2	6.7	11	36.6	
	40 and more	0	0	2	6.7	
Education	Illiterate	0	0	1	3.33	0.869
	primary school	1	3.33	5	16.6	
	Intermediate	1	3.33	9	30	
	High School	0	0	7	23.3	
	Institute (2 Year)	0	0	1	3.33	

	College (Bachelor Degree)	1	3.33	4	13.3	
Occupation	House Wife	2	6.7	21	70	0.052
	Government Sector Employed	0	0	6	20	
	Student	1	3.33	0	0	
Marital status	Married	1	3.33	22	73.3	0.061
	Unmarried	2	6.7	5	16.6	
Family history of cervical cancer	Yes	0	0	1	3.33	0.735
	No	3	10	26	86.6	
Socioeconomic Status	Low	1	3.33	11	36.6	0.757
	Intermediate	2	6.7	13	43.3	
	High	0	0	3	10	

There was a statistically significant difference between percentages of means of the three groups. Were the interference group showed advanced knowledge score than the control after the intervention table (5)

**Table 5:** Comparison of knowledge score for the study sample groups

Group	No.	Mean of knowledge score	F	p-Value
Pre-test	30	1.4000	80.207	0.000
Post-test	30	2.9000		
Control	60	1.4667		
Total	120	1.8083		

ANOVA test used for comparison of Knowledge score for the study sample groups.

**Discussion**

Preventive health care and screening for various diseases are parts of routine medical care at all ages, cervical cancer preventable primary by vaccine and secondary by screening [12].

The study was conducted on 90 participants consisted from two group, 60 participants were assigned as control group and 30 were assigned as intervention group, two group matching for age of respondent, education, occupation, marital status, family history of cervical cancer, socioeconomic status, There was no significant variation between the two groups regarding the demographic variables of the study.

**Knowledge of Iraqi women regarding cervical cancer screening program**

The study revealed that Iraqi women had poor knowledge level about cervical cancer screen, as less than half of them answered correctly regarding questions related to cervical cancer screening, and the reviled level is less than that of the study was conducted among 400 women in Duhok city where in Duhok city Only 7.3% of women had good knowledge about Pap smear while About our study only 6.7 of control of study sample had good knowledge score about Pap smear [13].

The current study showed higher percentages of correct responses regarding the presence of cervical cancer, the possibility of its early diagnosis, it's signs and symptoms, the presence of vaccine for protection against this virus (HPV), cervical screening important because it detects early signs of cervical cancer or any abnormal change in cervix, these results better from a study done in Aira Hospital, Ethiopia, where About 400 (95.0%) of the study participants ever heard of cervical cancer [14], and similar to result done in South-Eastern Nigeria where the majority of the respondents have heard of cervical cancer screening (68.8%) [15, 16].

Lowest percentages of correct responses regarding the risk factor of cervical cancer such as giving birth to more than

five children, involvement of sexual act an early age, presence of multiple partners and early menarche and late menopause, similar low percentages of correct answers was found regarding the vaccine such as its type, type of vaccine, Number of shots required and the necessity of having booster dose after five years, this is because no program is available at the PHCCs about cervical cancer and its risk factor and in addition to vaccine against HPV not available in Iraq, since primary level of health care is the best site for health education about different diseases comparing with study done in Saudi Arabia [9].

**Association between knowledge level about screening of cervical cancer and age of participants**

In control sample The study showed that there was no significant Association between knowledge level about cervical cancer screening and age of respondent, this similar to study done in Bharatpur, Chitwan, and similar to study done in Duhok City, and different from study done at Aira Hospital, West Wollega, also different from done in South-Eastern Nigeria. (17) (14) (15) (16) A similar result was found in the intervention group and this similar to study done In Indonesia, also similar to study done in village in Gurugram, similar to study done at Benha University Hospital in Egypt. (10) (18) (19)

**Association between knowledge level about screening of cervical cancer and educational level of participants**

The study showed that there was no significant Association between knowledge level about cervical cancer screening and Education level of respondent which was similar to study done in Duhok City, and different from study done in Central Ethiopia, also different from study done Aira Hospital, West Wollega, Ethiopia, also different from done in South-Eastern Nigeria, and from study done in Bharatpur, Chitwan. Regarding the intervention group also there was no significant association was observed [14-71, 20].

**Association between knowledge level about screening of cervical cancer and occupation of participants**

The study showed that there was no significant Association between knowledge level about cervical cancer screen and occupation of respondent, similar to study done in Bharatpur, Chitwan, and different from study done in South-Eastern Nigeria, and study done Aira Hospital, West Wollega, Ethiopia, also different from study done in Duhok City [17, 13, 15, 16].

**Association between knowledge level about screening of cervical cancer and marital status of participants**

Both control and intervention groups showed no significant Association between knowledge level about cervical cancer screen and marital status of respondent in this study and this



similar to study done in South-Eastern Nigeria, and different to study done at Aira Hospital, West Wollega, Ethiopia <sup>[15, 16]</sup>.

#### **Association between knowledge level about screening of cervical cancer and family history of participants**

The participants knowledge of this study (both control and intervention groups) showed no significant association between knowledge level about cervical cancer screen and Family history of cervical cancer, similar to study done in Duhok City and different from study done in Zanzibar, Tanzania 2020 <sup>[13, 12]</sup>;

#### **Association between knowledge level about screening of cervical cancer and socioeconomic status of participants**

The study showed that there was no significant Association between knowledge level about cervical cancer screen and socioeconomic status of respondent, similar to study done in Duhok City, this different from study done at Aira Hospital, West Wollega, Ethiopia <sup>[13, 15, 16, 17]</sup>.

#### **Effect of educational program on intervention group**

In the current study, the knowledge scores of the intervention group was higher than control group and pre-test intervention group, and significant statistical different between the groups, By using the interference program that promoted awareness and health education about cervical cancer and it's prevention and screen, this is similar to a study were conducted in Indonesia, where the results showed that the post-test score mean in the experimental group was 97.20 and the control group 56.50 with the p value 0.000 ( $p < 0.05$ ) <sup>[10]</sup>, also similar to study done in Saudi Arabi <sup>[9]</sup> similar to study were conducted in Ghana <sup>[22]</sup>. However, the current study women should be directed to educate and promote awareness of women to the risk factors of cervical cancer and to the need for screening programs and the administration of the vaccine <sup>[24]</sup>, also similar to study done in village in Gurugram <sup>[18]</sup>, and similar to result of study done in India <sup>[23]</sup>.

#### **Conflict of Interest**

Not available

#### **Financial Support**

Not available

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