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# Female Employee Knowledge, Attitude toward Pap Smear Screening: An intervention study

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**Abstract**
**Background:** Knowledge regarding the screening test (Pap smear) among women has been proven to be a significant predictor of first-time screening and in turn helps in early diagnosis and treatment of the disease. Hence the present study was conducted to evaluate the effect of health instruction module on female employee knowledge and attitude toward Pap smear screening. **Design: A** quasi-experimental design (One group pre-test posttest design) was utilized to fulfill the aim of this study. **Setting:** This research was conducted at 3 collages (Nursing, Medicine and Law) in Zagazig university **subjects** A purposive sample of 120 employed women among those who working the setting mentioned above. **Results:** Comparing between total score of Knowledge, attitude level throughout study phases. A statistically significant difference observed through the study phases there is improvement of women's Knowledge (satisfactory Knowledge 25.8% in pre intervention to 80% in post and 72.5% in follow up phase) attitude (positive 45.8% in pre intervention phase to 87.5% in post and 84.2% in follow up phase). As regards utilization there this no statistically significant difference observed between pre, post and follow up phase among study subjects. **Conclusion and Recommendation:** In pre intervention phase most of women had poor knowledge and practice related to Pap smear screening. But their attitude is favorable for screening. Knowledge score show improvement from pre and post intervention phase to follow up phase as well as total attitude score but utilization not changes. This study highlights the need for continuous educational programs for the midlife aged women to improve their knowledge, attitude and utilization regarding Pap smear screening.

***Keywords: Attitude Female employee, Knowledge& Pap Smear Screening***

## Introduction

Cervical cancer is a public health problem due to its high rates of prevalence and mortality in women of low social and economic levels and in the productive phase of their lives. Internationally, cervical cancer has been regarded as the third most common form of cancer among women after breast and colorectal cancer, it remains one of the leading causes of cancer death in women globally, with over 260,000 women dying annually **(Globocan, 2012).** In 2018 in Egypt about 969 new cervical cancer cases are diagnosed annually as well as cancer cervix reported as 14$^{th}$ leading cause of female cancer in women aged ranged between 15 to 44 years.**(Bruni et al., 2019)**The risk factors for cervical cancer include early age at first intercourse and multiple sexual partners. A male consort who in turn has had intercourse with multiple women and smoking also confers significant risk. Research evidence has suggested that infection with human papilloma virus (HPV) significantly increases the relative risk for developing cervical cancer. HIV infection may also increase a woman's risk for cervical neoplasia.(**Al-Meer et al., 2011)**
Importantly, this malignant neoplasm is one of many cancers with great potential for prevention and cure. It is considered one of the most preventable cancer. Population-based cervical smear screening programs for cervical cancer have shown the effectiveness of screening in reducing mortality (**International Agency for Research on Cancer 2013).**
Early detection and treatment via screening can prevent up to 80% of cervical cancers in developed countries **(Perry, 2011).** Pap smear test which is used to look for any cytological changes (pre-malignant or malignant) the target of the screening is to discover these changes earlier, like dysplasia or metaplasia and to treat the patient as early as possible. It plays a significant role in reducing both the incidence and mortality of invasive cancer (**Elfström et al., 2014)**
Although Pap smear test is inexpensive and easily performed but low educational status, prohibitive cost of healthcare, the expense of obtaining and retaining the infrastructure, the technical expertise that are required for cytological screening as well as for tracking women with abnormal test result reported as barrier for utilization of pap smear screening **(Bradford & Annekathryn2013)** The vast majority of deaths occur in women living in low- and middle-income countries. Effective methods for early detection of precancerous lesions using cytology

(Pap smear) exist and have been shown to be successful in high income countries. However, competing health care priorities, insufficient financial resources, weak health systems, and limited numbers of trained providers have made high coverage for cervical cancer screening in most low- and middle-income countries difficult to achieve **(Human papillomavirus and cervical cancer 2019).**

## Significant of the study

The widespread introduction of the Pap test for cervical cancer screening has
resulted in significantly reducing the incidence and mortality of cervical cancer in developed countries presence of abnormal results on Pap test or symptoms of cervical cancer may mandate further testing in the form of colposcopy, colposcopic-directed biopsy and end cervical curettage, which can help in confirming if abnormal cells are dysplastic or cancerous. There are limited number of studies on knowledge and attitude of women regarding Pap smear test in our country. Studies document that nurses play a major role in enlightening the public on the availability and need for cervical cancer screening services. Their attitude is often crucial in gaining women's confidence as they are the person who helps to conduct tests. It is therefore relevant to appraise the perception and utilization of cervical cancer screening services by women**. (WHO guidance note 2013).** Hence, this study was conducted to evaluate the knowledge and attitude regarding Pap smear screening among female employee.

**Aim of the study:**

The aim of the present study was to evaluate the effect of health instruction module on female employee knowledge, attitude regarding Pap smear screening.

**This aim was achieved through the following:-**

**Objectives:-**

- Assessing female employee level of knowledge, attitude and utilization regarding Pap smear screening.
- Design, implement and evaluate the effectiveness of the health instructional module regarding Pap smear screening on female employee knowledge, attitude and utilization of pap smear test.

**Research hypotheses**

There will be a significant improvement of women's knowledge, attitude and utilization regarding Pap smear screening after applying the health instructional module compared to their pre-intervention level.

## Subjects & Methods

**Research design:** A quasi-experimental design (One group pre-test posttest design) was utilized to fulfill the aim of this study. A quasi-experiment is an empirical interventional study used to estimate the causal impact of an intervention on the target population without random assignment. In a pretest-posttest design, the dependent variable is measured once before the intervention is implemented, and once after it is implemented **(Posternak & Miller, 2001; Spurlock, 2018).**

**Research Setting**

This research was conducted at 3 collages (Nursing, Medicine and Law) in Zagazig University. This particular setting has chosen because it contain large number employed women with different social backgrounds.

**Subjects**

A purposive sample of 120 women among those who working the setting mentioned above for period of six months was recruited for the study.

**Tools of data collection**: The study questionnaire was designed by the researchers after revising of related literature and getting opinions of expertise for content, validity, and, included the following:

**Tool I**: A structured Interview Sheet: was developed to collect data about:

(A)Socio-demographic characteristics as: Age, education level, income and residence.

(B) Obstetrics and sexual history as: age and number of marriage, parity and age at first birth and mode of delivery. Medical history was also obtained. Utilization and duration of family planning methods and occurrence of genital tract infection to women or her husband and Husband Circumcision

**Tool II: Women's Knowledge regarding Pap smear test:** this tool consists of 8 items about definition of cervix, definition and indication of Pap smear test. **Scoring system for knowledge part**

For each query, the right answer scored as one and the wrong answer as

Zero, the knowledge score were calculated in the range of (0-10). Then all

Scores summed up and illustrated into two categories: Knowledge was considered satisfactory if the percent score was 60% or more and unsatisfactory if less than60%

**Tool III: Women's practice of Pap smear test: t**his tool consists of 10 items about having had a Pap smear done, and indication for it and place where Pap smear performed and consideration of studied women about practice of Pap smear test. Reasons for non-uptake of cervical screening test.

**Tool IV:** It was adapted from **(Panda, 2016)** and translated by the researchers into Arabic language. The 10 items questionnaire to assess women's attitude toward Pap smear test. The total score ranged from 8-10. The total score for each women was divided by the total maximum score and multiplied by 100 to get the percentage of total score, and classified as:

Negative if < 75% and Positive if ≥ 75% based on statistical analysis.

**Procedure of data collection:-**

- Validity of the research tools was ensured through a review by 3 experts who hold a D.N.Sc. in nursing and the necessary modifications were made and the tools language was also tested for clarity of meaning.
- An official permission was obtained from the Manager of the selected three colleges in Zagazig University.
- The written consent was obtained from women before being involved in the study.
- A pilot study was conducted on ten women that represent (10%) of the study subjects to ensure the feasibility of the tools and estimate the time needed to answer the questions. The women who participated in the pilot study were excluded from the main study sample.

**Field work:**

Data collection for the study was carried out over a period of six months from beginning of January 2021 to end of June 2021.

- The researchers informed the women that participation is voluntary, and confidentiality of information assured and that they have the right to withdraw at any time without giving any reason.
- The previous mentioned settings were visited by the researchers three days/week sometimes in the morning or afternoon alternatively according to the women work during study period. The study was carried out through four phases: initial assessment, planning, implementation and evaluation.

**Assessment phase:**

This phase involved the pre-intervention data collection for baseline assessment. The researchers first introduced themself and explained the purpose of the research briefly to the dean of each faculty. All women were met and their written agreements for participation were obtained. At the beginning of interview the researchers greeted the women, introduced themself to all women included in the study and disturb the questionnaire to them and answer any explanation. The researchers interviewed the women face to face and introduced themselves to the eligible women and briefly explained the nature of the study. Then the same questionnaires were used after the intervention implementation for post assessment (post-test) and follow up after one month. The time consumed for answering the study questionnaire ranged from 20-25 minutes.

**Planning and implementation phase:**

Based on review of literature, sample features and the results obtained from the assessment phase, the researchers designed intervention content which was validated by a panel of expertise and then distributed to women to be used as a guide learning and to satisfy the studied women' deficit knowledge and attitude regarding Pap smear test. The intervention was conducted in Arabic language to be easily understood.

- The researchers divided the participants into small groups each group contains 5 women and then held a meeting with each group in their faculty according to their work circumstances. The intervention was implemented for two interactive sessions (2 day / week) for each group and each session was conducted for one hour. Health educational sessions were given to the women in the form of lectures and group discussion by using audio-visual aids. At the beginning of the first session an orientation to the educational intervention such as it emphasized on improving women's knowledge regarding to anatomy of cervix and definition, indication and time of Pap smear test. Second session emphasizes on Pre and post preparation of Pap smear test, procedure and results of Pap smear test. To ensure that the women understand the content, the second session was started by a summary about what was given through the previous session, followed by the objectives of the new one. An additional 15 minutes were assigned at the end of the session for an open discussion with the women about this topic.
- Methods of teaching used were lecture followed by focus group discussion. Posters were also used to provide and view more information. A booklet was developed with more detailed information about the study and each woman was provided a copy.

**Evaluation phase:**

The study tool was used three times throughout the study. First time was before intervention started to get a base line data about participants' knowledge and attitude regarding Pap smear test. Second time was immediately after completion of educational intervention to test if there is any improvement in women's knowledge and attitude toward Pap smear test. The third time was one month later to examine if knowledge and attitude were retained over time among the study women and if women practice of Pap smear test. The filling of questionnaire took 30-45 minutes by participants.

**Administrative and ethical considerations:**

An official permission was granted to the responsible authorities of the study setting to obtain their permission for data collection. Approval of the Ethics Committee of Scientific Research in Faculty of Nursing was obtained. All ethical issues were taken into consideration during all phases of the study. The inclusion in the study was totally voluntary. The aim, procedure, risks and benefits of the study were explained to every woman before participation and an oral consent was obtained. Women can withdraw at

any stage of the research without being penalized; also they assured that the information obtained would be confidential and used for research purpose only.

**Statistical analysis:**

All data were collected, tabulated and statistically analyzed using SPSS 20.0 for windows (SPSS Inc., Chicago, IL, USA 2011)). Quantitative data were expressed as the mean ± SD &median (range), and qualitative data were expressed as absolute frequencies (number) & relative frequencies (percentage). Distributed. Mann Whitnney u test was used to compare between two independent variables of not normally distributed Percent of categorical variables were compared using Chi-square test or Fisher's exact test when appropriate. Cochran's Q test of significant was used to compare more than two dependent categorical variables .MC Nemar test was used to compare two dependent categorical variables. Pearson's correlation coefficient was calculated to assess relationship between various study variables, (+) sign indicate direct correlation & (-) sign indicate inverse correlation, also values near to 1 indicate strong correlation & values near 0 indicate weak correlation. All tests were two sided. p-value < 0.05 was considered statistically significant (S), p-value < 0.001 was considered highly statistically significant (HS), and p-value ≥ 0.05 was considered statistically insignificant (NS).

**Table ( ): Test of reliability of study tools by Cronbach's Alpha**

| Tool | Cronbach's Alpha | N of Items |
|---|---|---|
| Knowledge | 0.896 | 8 |
| Attitude | 0.561 | 15 |

## Results

**Table (1): Demographic characteristics of the studied women (n=120):**

| Variables | | Number | Percent |
|---|---|---|---|
| **Age per years** | 20- ≤35 | 57 | 47.5 |
| | ≥35-45 | 63 | 52.5 |
| **Marital** | Married | 120 | 100.0 |
| **Income** | Insufficient | 61 | 50.8 |
| | Sufficient | 59 | 49.2 |
| **Education** | Basic | 28 | 23.3 |
| | Secondary | 69 | 57.5 |
| | University | 23 | 19.2 |
| **Residence** | Urban | 90 | 75.0 |
| | Rural | 30 | 25.0 |

**Table (2): Clinical and gynecological history of the studied women (n=120):**

| Variables | | Number | Percent |
|---|---|---|---|
| **Medical history** | | | |
| | Yes | 36 | 30.0 |
| | No | 84 | 70.0 |
| **Single marriage** | Yes | 120 | 100.0 |
| **Age at marriage** | Mean ±SD Median (range) | 22.26±2.8 | 21(19-30) |
| **Have children** | Yes | 120 | |
| **Number of children** | Mean ±SD Median (range ) | 2.3±0.9 | 2(1-4) |
| **Mode of delivery** | Normal | 52 | 43.3 |
| | CS | 68 | 56.7 |
| **Family planning(FP)** | Yes | 105 | 87.5 |
| | No | 15 | 12.5 |
| **Duration of FP/years** | Mean ±SD Median (range ) | 2.1±1.4 | 1(1-5). |
| **Occurrence of genital infection** | Yes | 75 | 62.5 |
| | No | 45 | 37.5 |
| **Husband infection** | No | 120 | 100.0 |
| **Husband Circumcision** | Yes | 120 | 100.0 |

**Table (3): Consideration of the studied women about utilization of Pap smear test (n= 120)**

| Items | utilization pap smear | |
|---|---|---|
| | No. | % |
| **Have ever had a Pap smear done?** | | |
| Yes | 15 | 12.5 |
| No | 105 | 87.5 |
| **Reason for not doing pap smear** | | |
| **Know nothing about it** | 105 | 87.5 |
| **If you were told that a Pap smear is simple, painless and good for early detection of cervical cancer, would like to have one?** | | |
| Yes | 68 | 56.7 |
| No | 52 | 43.3 |
| **Where would you prefer to have this test done(n=68)** | | |
| Primary health care center | 22 | 32.4 |
| Gynecological clinic | 10 | 14.7 |
| Private clinic | 36 | 52.9 |
| **Prevention of Cervical Cancer** | | |
| It is preventable | 89 | 74.2 |
| It is possible to detect it | 16 | 13.3 |
| Early detection increases survival | 15 | 12.5 |
| **Source of information** | | |
| Health professionals | 112 | 93.3 |
| Electronic media | 8 | 6.7 |

**Table (4): Factors associated with utilization of Pap smear among the studied women**

| variables | Utilization of pap smear | | | | n. | $\chi^2$ | p-value |
|---|---|---|---|---|---|---|---|
| | Yes | | No | | | | |
| | No. | % | No. | % | | | |
| **Age per years** | | | | | | | |
| **<35** | 7 | 12.3 | 50 | 87.7 | 57 | 0.005 | 0.94 |
| **≥35** | 8 | 12.7 | 55 | 87.3 | 63 | | |
| **Income** | .. | | | | | | |
| Insufficient | 0 | .0 | 61 | 100.0 | 61 | 17.7 | 0.0001* |
| Sufficient | 15 | 25.4 | 44 | 74.6 | 59 | | |
| **Education** | . | | | | | | |
| Illiterate | 0 | .0 | 7 | 100.0 | 7 | | |
| Basic | 0 | .0 | 21 | 100.0 | 28 | 14.7 | 0.0001* |
| Secondary | 7 | 10.1 | 62 | 89.9 | 69 | | |
| University | 8 | 34.8 | 15 | 65.2 | 23 | | |
| **Medical history** | .. | | | | | | |
| Yes | 15 | 41.7 | 21 | 58.3 | 36 | f | 0.0001* |
| No | 0 | .0 | 84 | 100.0 | 84 | | |
| **Mode of delivery** | .. | | | | | | |
| Normal vaginal | 8 | 15.4 | 44 | 84.6 | 52 | 0.69 | 0.4 |
| CS | 7 | 10.3 | 61 | 89.7 | 68 | | |
| **Family planning** | .. | | | | | | |
| Yes | 7 | 6.7 | 98 | 93.3 | 105 | f | 0.0001* |
| No | 8 | 53.3 | 7 | 46.7 | 15 | | |
| **Duration Family planning** Mean ±SD | 3±0 | | . 2±1.5 | | | U 2.7 | 0.006* |
| **Occurrence of genital infection** | | | | | | | |
| Yes | 7 | 9.3 | 68 | 90.7 | 75 | 1.8 | 0.17 |
| No | 8 | 17.8 | 37 | 82.2 | 45 | | |
| **Husband Circumcision** | .. | | | | | | |
| Yes | 15 | 13.4 | 97 | 86.6 | 112 | f | 0.59 |
| No | 0 | .0 | 8 | 100.0 | 8 | | |

**Table (5): Knowledge, Attitude score of the studied subjects throughout the study phases (n= 120)**

| Knowledge score | Time | | | Improvement percent | |
|---|---|---|---|---|---|
| | Pre | Post | Follow up | Pre& Post | Post& follow |
| Mean± SD<br>Median<br>Range | 5.12±5.5<br>4<br>(0-16) | 11.32±3.7<br>13<br>(0-16) | 9.66±3.2<br>11<br>(0-15) | 12.1% | 14.7% |
| Attitude score | | | | | |
| Mean± SD<br>Median<br>Range | 21.76±6.9<br>21<br>(9-34) | 32.5±6.1<br>35<br>(9-36) | 28.98±5<br>31<br>(9-33) | 49.3% | 10.8% |

*% of improvement = (after value – before value) / before value) * 100*

**Table (6): Comparison between total score of Knowledge, attitude, practice level throughout study phases (n= 120)**

| Parameters | level | | Time | | | &p | |
|---|---|---|---|---|---|---|---|
| | | | Pre | post. | Follow up | | |
| Knowledge | Satisfactory | N | 31 | 96 | 87 | | (.0001)* |
| | | % | 25.8% | 80.0% | 72.5% | 0.0001 | (0.11)** |
| | Unsatisfactory | N | 89 | 24 | 33 | | |
| | | % | 74.2% | 20.0% | 27.5% | | |
| Attitude | Positive | N | 55 | 105 | 101 | | (.0001)* |
| | | % | 45.8% | 87.5% | 84.2% | 0.0001 | (.219)** |
| | Negative | N | 65 | 15 | 19 | | |
| | | % | 54.2% | 12.5% | 15.8% | | |
| Utilization | Done | N | 15 | 15 | 16 | | |
| | | % | 12.5% | 12.5% | 13.3% | 0.368 | |
| | Not done | N | 105 | 105 | 104 | | |
| | | % | 87.5% | 87.5% | 86.7% | | |

*& Cochran's Q test of significant (Pre, post, follow up) p<0.001 highly significant*
*McNemar Test(Pre, post, )* McNemar Test(post, follow up )***

**Table (7): Correlation matrix between knowledge score, and attitude score throughout the study phases (n=120)**

| Parameters | | knowledge score | |
|---|---|---|---|
| | | (r ) | P |
| Pre | Attitude score | 0.023 | 0.8 |
| Post | Attitude score | 0.393** | 0.0001 |
| Follow up | Attitude score | 0.466** | 0.0001 |

*(r) Correlation coefficient p<0.05 significant*

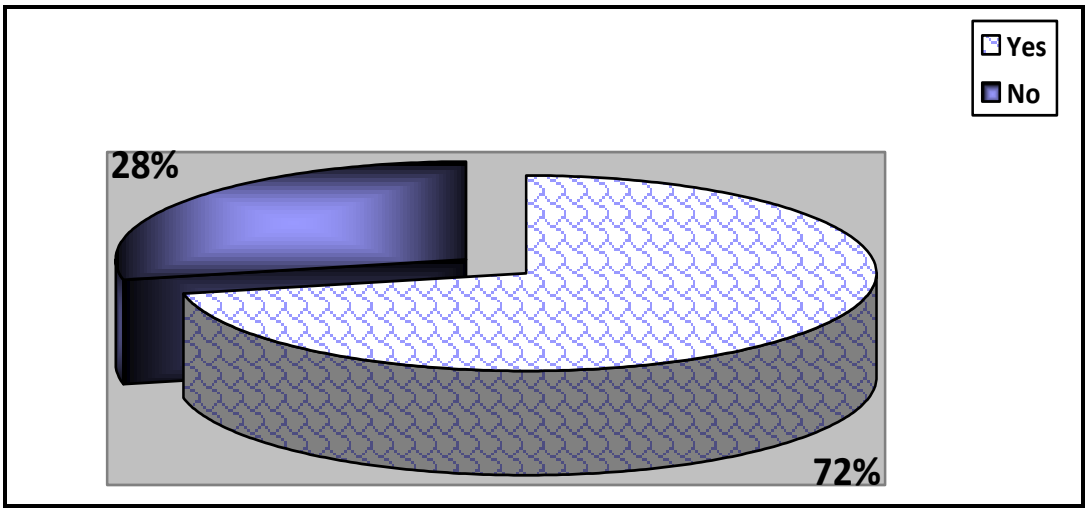


**Figure (2): Interested to practice Pap smear test in future.**

**Table (1):** Among the study participants, shows that the women ages ranged between 30 and 45 years. All of them were married but half of them 50.8% have insufficient income and the other half 49.2% have sufficient income. Regarding education more than half of them 57.5% had secondary education. And 75.0% of women are living in the urban area.

**Table (2):** In relation to clinical and gynecological history among the studied women shows that 30% of women had history of some disease and all of them have single married with Mean ±SD of age of marriage 22.26±2.8 and all of them have children. Regarding mode of delivery 56.7% of them delivered by CS. 87.5% of the study subjects use methods for family planning for a duration ranged between 1-5 years. Regarding occurrence of genital infection, 62.5% of the study subjects reported occurrence of genital tract infection and 100 % of their husband had circumcision.

**Table (3):** Shows consideration of the studied women about practice of Pap smear test, only 12.5% of the study subjects performed Pap smears test and rest of the subjects reported that they know nothing about it. But 56.7% of subjects will do it If they know that a Pap smear is simple, painless and good for early detection of cervical cancer. As well as 74.2% of them reported that Cervical Cancer is preventable disease and 93.3% of them reported that their source of information were health professional.

**Table (4):** Shows factors associated with practice Pap smear among the studied women. Among 15 cases who does Pap smear test. A statistically significant difference was observed between the study subjects and their income, education, medical history and use of family planning methods.

**Table (5):** Shows knowledge and attitude score of the studied subjects throughout the study phases. Knowledge score shows improvement from pre and post intervention phase 12.1% to follow up phase14.7%. Regarding total attitude score from pre and post intervention phase 49.3 to 10.8% in follow up phase.

**Table (6):** Compare between the total score of knowledge, attitude level throughout study phases. A statistically significant differences were observed through the study phases. It's clear from this table that there is improvement of women's Knowledge (satisfactory Knowledge 25.8% in pre intervention to 80% in post and 72.5% in follow up phase) attitude (positive 45.8% in pre intervention phase to 87.5% in post and 84.2% in follow up phase). As regards utilization there this no statistically significant difference was observed between pre, post and follow up phase among the studied subjects.

**Table (7):** As shown in Correlation matrix between knowledge score, and attitude score throughout study phases. A statistically significant difference observed between knowledge score and attitude score during the three study phases. $p<0.05$ significant

**Figure (2):** After application of intervention 72 % of the participants have reported that they were interested to undergo Pap smear screening in future.

## Discussion

Cervical cancer is the second most common cancer among women worldwide and is a major health problem in developing country. This cancer can be prevented because of the long pre-invasive period and its prevention and early detection by screening tests can contribute to the achievement of the Millennium Development Goals, **Abdulmalek & Kalary (2019)**. Therefore, needs assessment in any society is essential to any plan to promote health behavior regarding screening test of cancer cervix as results of several studies show wide variation in terms of participation, knowledge and attitudes about cervical cancer and Pap smear **Akinlaja &Anorlu (2014**).

Cervical cancer screening is relatively inexpensive and there is worldwide agreement that screening programme for cervical cancer is a necessity. So that the present study aimed to evaluate the effect of health instruction module on midlife female employee knowledge, attitude and utilization regarding Pap smear screening.

As regarding demographic characteristics of the studied women, ages ranged between 35 and 45 years. All of them were married but half of them have insufficient income. Regarding education more than half of them were secondary educated. In similar study conducted **by** , **Abdulmalek & Kalary (2019)** in Iraq who reported that, the majority of women (41.3%) aged between 30-39 years old, 39.3% were primary school graduation, while less than ten percent of women had university and high level of education.

Concerning occurrence of genital infection, more than half the study subjects reported occurrence of genital tract infection and less than ten percent of their husband hadn't Circumcision. This may return to religion instruction in Muslim societies that confirm male circumcision to all male children.

Regarding consideration and practice of studied women about Pap smear test, only less than one third of the studied women perform Pap smears test and rest of subjects reported know nothing about it. But more than half of subjects will do it if they know that a Pap smear is simple, painless and good for early detection of cervical cancer. As well as, majority of them reported that cervical cancer is preventable disease and that their sources of information were health profession.

In a similar study conducted **by Chamani S., et al. (2012)** who reported that only one quarter of the women had had Pap smear at least once. Most women reported their preference to have their Pap smear test by a woman, and 43.4% preferred to have it at a private clinic and the most common reason for non-participation was no physicians' recommendation and lack of knowledge about Pap smears. Also Another study conducted by **Abdulmalek & Kalary (2019)** reported that whether participants had practiced the PS or not, a small number of them (9.5%) had practiced it, while 90.5% reported that they had never practiced it.

Examining factors associated with practice Pap smear among studied women. Among 15 cases that had had Pap smear test. A significant difference observed between study subjects and their income, education, medical history and use of family planning methods. The previous finding explained by **Owoeye & Ibrahim (2013):** who reported that the low participation in cervical cancer screening observed in this study and similar studies in developing countries is unlike the findings in most developed countries with market economy and computerized screening programs where uptake of cervical cancer screening was generally high. In one of such studies in Germany, most women in the study group had a Pap smear test at least once a year and only a few had a smear less frequently than every five years. As well as **Akinlaja & Anorlu (2014)** reported the level of education and occupation were found to positively influence their knowledge of cervical cancer screening.

After application of the study intervention a statistically significant difference observed through the study phases regarding women's knowledge changed from one quarter in pre intervention to majority in post and follow up phase for satisfactory knowledge. Regards attitude changed from nearly half for positive attitude in pre intervention phase to majority in post and follow up phase. This explained as lack of knowledge affect women attitude.

In a similar study that assess women's knowledge only and not provide an intervention **Abdulmalek & Kalary (2019)** who reported that less than half (38.9%) of those who heard that PS helps to detect cervical cancer earlier, 55.5% knew that PS is done by avoiding douching 2 days before. Also **Chamani, et al., (2012)** reported that history of Pap smear among women with good knowledge was 79.4%, with medium knowledge 54.5% and with weak knowledge 34.6%. And the woman attitude towards PS shows that more than half (67.0%) of women had a negative attitude about PS, while 33.0% had a positive attitude.

Even though the participants perceive the grave nature of the cervical cancer, the subsequent attitude and screening utilization remain poor as the present study results reported that utilization level didn't changed throughout study phases with no statistically significant difference observed between pre, post and follow up phase among study subjects. This may return to the short period of the study and women may utilize pap smear in the future.

Similar finding reported by **Heena , et al., 2019 that** Although 343 (86.8%) participants in their study believed that Pap smear test is a useful test for detection of cervical cancer, only 103 (26.2%) participants had undergone Pap smear testing.

Regarding Correlation between knowledge score and attitude score throughout study phases. A statistically significant difference observed between knowledge score and attitude score during the three study phases. So that if there is change in women knowledge this will change their attitude. This finding was in agreement **with Owoeye & Ibrahim (2013):** Reasons given for nonparticipation included administrative failures, inconvenient clinic times, unavailability of a female screener, lack of awareness of the test's indications and benefits, considering one-self not to be at risk of developing cervical cancer, and fear of embarrassment, pain, or the detection of cancer.

## Conclusion and Recommendation:

In pre intervention phase most of women had poor knowledge and practice related to Pap smear screening. But their attitude is favorable for screening. Knowledge score show improvement from pre and post intervention phase to follow up phase as well as total attitude score but practice not changes. This study highlights the need for continuous educational programs for the midlife aged women to improve their knowledge regarding Pap smear screening.

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