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RESEARCH ARTICLE

WOMEN\'S AWARENESS AND ATTITUDE TOWARD SCREENING OF OVARIAN CANCER IN RIYADH, SAUDI ARABIA.

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Abstract

Background: Ovarian Cancer is considered the 8th most common malignancy among ladies worldwide[1]. It has the greatest mortality rate of gynecological malignancies [1][2]. The symptoms do not usually appear until late stages, therefore, it has been called the silent killer[2][3]

Aim of the study: this study will report the knowledge of 200 women regarding ovarian cancer risk factors and their attitude toward screening [14] .

Materials and Methods: 200 Women aged from 18-45 years completed the questionnaires, the questionnaires have been distributed at Princess Nora University, schools and different hospitals. The study has been held in Riyadh, Saudi Arabia. (6) questions assessing knowledge, beliefs regarding ovarian cancer, and (10) Questions assessing the attitude towards ovarian cancer screening, the answers on attitude questions presented on 4 points likert scale. The cut off total score of knowledge was taken at 50% where > or = 50% correct answers are considered as good knowledge, <50% correct answers are considered poor knowledge. Moreover, the cut off total score of attitude was taken at 50%, where > or = 50% correct answers are considered as a good attitude and <50% correct answers are considered as a bad attitude.

Results: In all, 62.5% were aware that a family history of OC was associated with a higher risk of progressing the disease. But only 19% recognized the increased risk associated with a family history of breast cancer. 25% acknowledged the increased probability of developingOC after menopause. 23.5% identified the association between pregnancy and reduced OC risk; only 12.5% were aware of the preventive effects of breastfeeding. The overall knowledge of females about OC, its incidence and risk factors was good. While the overall attitude toward screening was good. The final result of the study of the association between knowledge and attitude showed that most participants (46.5%) have a good knowledge and have a good attitude.

Conclusion: Overall the level of the knowledge of the participants about the perception of risk and risk factors of ovarian cancer was considered good. On the other hand, most of the participants had a good attitude toward screening.

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Introduction:-

Ovarian Cancer is considered the 8th most common malignancy among ladies worldwide[1]. It has the greatest mortality rate of gynecological malignancies; hence, it has serious effects on the socioeconomic and society[1][2].The symptoms do not usually appear until late stages, therefore, it has been called the silent killer[2][3].Annually 220,000 ladies are diagnosed with epithelial ovarian malignancy around the world. The International Agency for Research on Cancer showed that the standard occurrence rate and the standard fatality rate for ovarian malignancy in Saudi Arabia in 2012 was 3.4 for each 100,000 ladies and 2.5 for each 100,000 ladies, respectively. Moreover, in 2011, the registry at King Faisal Specialist Hospital and Research Center reported 1510 cases of ovarian malignancy which was admitted to the hospital from 1975 to 2011. Furthermore, information from the Saudi Cancer Registry (SCR) in 2008 implied that ovarian cancer is rated seventh in malignancies among Saudi ladies. In 2012, the reported incidence rate of ovarian malignancy for Oman, United Arab Emirates, Kuwait, Qatar, and Bahrain was 10.2, 6.4, 4.7, 4.6, and 4.4 for each 100,000 ladies, respectively[1].

Risk Factors:-

Women who are older in age ">50" and those with critical family history have a higher risk of developing ovarian cancer; The risk also increases by around threefold when having 1st or 2nd degree relative diagnosed with ovarian malignancy[4][2]. The risk of developing ovarian cancer is higher with long use of post-menopausal estrogen-only hormone replacement therapy, high body mass index, endometriosis, and perineal talcum powder application. Also; null parity, infertility, low parity, early menarche, late menopause or normal menopause with hot flushes and carrying the BRCA1 or BRCA2 gene mutations[4][5]. Recognition of BRCA1 and BRCA2 has led to significant shifts in treatment of women with inherited disposition to breast and ovarian cancer[6]. Ovarian malignancy cannot be stopped but the risk factors can be modified by targeting components that interfere with ovulation, for example bilateral salpingo-oophorectomy, pregnancy, breastfeeding and oral contraceptive use. Ladies with a history of dysmenorrhea and hysterectomy also have a lower risk of developing ovarian cancer[4].

Genetic Testing:-

Almost 5–10% of breast malignancies and 10% of ovarian malignancies have a genetic component[7]. BRCA1 and BRCA2 tumor suppressor genes makes up a critical role in DNA damage and repair lane. Germline mutation in these genes are firmly connected with an expanded risk of breast and ovarian cancer[8].Women with these genes mutations are at increased risk of having ovarian cancer by 40% in BRACA1 mutation and 18% in BRACA2 mutation, Same as breast cancer which has a higher risk by 57% in BRACA1 mutation and 49% in BRACA2 mutation[14].The therapeutic management of patients can include yearly screening, prophylactic surgery, and hereditary testing for BRCA1/2 which is frequently done in women with higher risk of having breast and ovarian cancer[7].Previous studies in Poland showed that 15% of patients diagnosed with ovarian malignancy carry BRACA1/2 mutation gene. This percentage is practically comparable to the general prevalence of BRCA1/2 mutations among ovarian cancer patients around the world [8].

Five Years Survival Rate:-

Ladies who have been diagnosed with stage 1 disease had 90% five year survival whereas, ladies with stage 4 disease had 4% five year survival[3]. Moreover, The effective treatment highly depends on the detection of early signs of ovarian malignancy[4].

Signs and Symptoms:-

Early stages:-

The signs and symptoms of early disease are vague and could be explained by less sever and different conditions, for example, irritable bowel syndrome (IBS). Nonspecific symptoms like, abdominal pain, bloating, abdominal distention, nausea, early satiety, anorexia, weight loss, urinary symptoms, abnormal vaginal bleeding and pelvic mass. Most ladies would have these symptoms for a period of time before presentation[4].

Late stages:-

Greater than 80% of patients showing progressive (stage 3 or 4) disease due to delay presentation thus, the mortality rate in general is elevated[3]. Of those determined to have early stage ovarian malignancy, 90% were symptomatic prior to identification of the disease[4]. The reason behind the poor survival rates of the stages(2-3) disease is the absence of the symptoms in the early stages[3].

Diagnosis:-
The terms predictive value, sensitivity, and specificity are crucial to understand which test is appropriate .The test sensitivity is defined as the ability of a test to correctly identify those with the disease, whereas test specificity is the ability of the test to correctly identify those without the disease.The positive predictive value (PPV) is the probability of that subjects with a positive screening test truly have the disease[9].

Screening:-
Ultrasound:-
Imaging has an important role in detection and confirming the presence of a neoplastic lesion. Ovarian carcinoma can be found incidentally using imaging techniques that were indicated for other reasons other than cancer screening. Ultrasonography is the gold standard imaging modality used for investigating an adnexal mass. Because it is affordable , noninvasive and broadly accessible. The risk of having a cancer in a basic unilocular anechoic cyst and smaller than 5 cm is low , less than 1% in premenopausal and 1.6% in postmenopausal ladies. In asymptomatic premenopausal women with an anechoic lesion that is less than 5 cm and in postmenopausal women with an anechoic that is less than 1 cm, no observation is needed[10][11][12].

Transvaginal US:-
Transvaginal US is an essential part of all ovarian malignancy screening tests. Transvaginal has high resolution for detecting uterine and adnexal masses whose texture is not clear in transabdominal US. Although, TVUS is accurate and sensitive it can't be relied on as the only test. Studies have shown that the difference between malignant and benign ovarian tumors can be determined using a gray scale criteria of either transabdomenal or transvaginal Us. Some Morphologic appearances that suggest a malignancy can be described as irregular thick walls and septa , solid echogenic loculi and papillary projections . Color Doppler US can detect vascularity of solid tumor tissue. Benign tumors form new blood vessel peripherally from main vessels, while malignant tumors form new blood vessel centrally[10][11][12].

MRI:-
MRI plays a critical role in screening. Moreover, hard segment or papillary projection in a cystic adnexal mass on Grey-scale ultrasound pictures are the most considerable sign of malignancy(Fig1.1). Adnexal masses representation has a high sensitivity for both MRI and US (97% and 100%, respectively). In comparison between MRI and Doppler US in detecting malignancy, MRI has greater specificity (84%) and sensitivity (89%) than Doppler US (40% specificity and 64% sensitivity). Thus, the appearance of abnormal adnexal masses at US may appear as a benign tumor on MRI, avoiding unnecessary operations. The highest difference in probability of ovarian cancer has been detected by MRI ($P < .001$) in pre and post-menopausal women[10][11][12].

CT:-
No evidence has proven that CT is an imaging modality that is useful for detecting early stages of ovarian cancer. 2869 ladies has experienced unenhanced CT colon imaging, uncertain adnexal mass was found in 4.1% of the imaging group. At further imaging, none of the distinguished adnexal lesions was suspected to be cancer. Yet, among 2751 ladies, four developed ovarian carcinoma during the following years. Contrast enhanced CT is the standard imaging modality used to evaluate suspected ovarian malignancy seen on US. Also, a valuable morphologic appearance might be picked up from the utilization of intravenous contrast material–enhanced CT, for instance, the appearance of a complex cystic mass with solid parts or accessary elements, and for example ascites and omental or peritoneal accumulation in malignancy. On the other hand, the nature of a single adnexal mass may stay be hazy on CT (Fig1.2)[10].

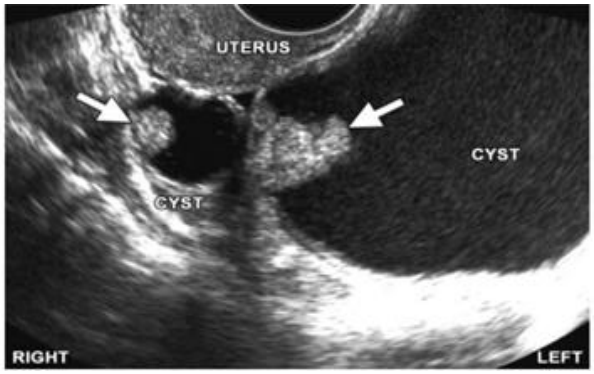


Fig: 1

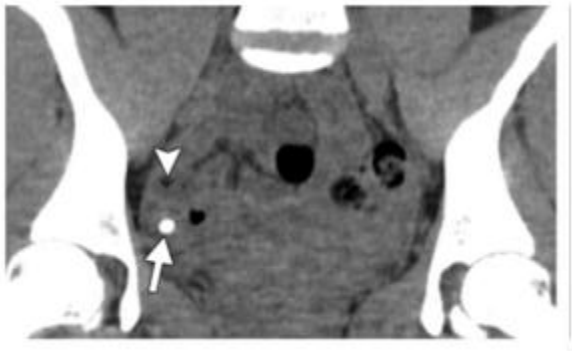


Fig: 2

CA-125:-

Cancer antigen 125 (CA-125) is the most frequently utilized cancer marker in the detecting of ovarian cancer although it is poor in sensitivity and specificity. Transvaginal ultrasound (TVUS) and serial measurements of CA-125 are utilized to observe treatment reaction and recurrence of ovarian cancer. However, it has no effect on long-term results or death rate and may lead to damage by disclosing ladies with no cancer to unneeded surgery. Exclusion to this females are at great risk to grow ovarian cancer. Still also in those females, there is no proof that testing with CA-125 and TVUS would decrease the probability of mortality due to ovarian cancer.[4].

OC Screening programs :-

The American College of Obstetricians and Gynecologists (ACOG) recommended that generalist obstetrician-gynecologists stay aware of the initial signs and symptoms of ovarian cancer, for instance abdominal or pelvic pain and unperceived weight loss, which can be assessed by pelvic evaluation, CA-125 or ultrasound. The American Cancer Society (ACS) declare that ladies with strong family history of ovarian cancer should be examined[13].On this point, No established existent imaging strategy to detect the early stage ovarian mass.

(Foster et al, 2007)conducted a research to find out that the few females in the general population of the United Kingdom were aware of the risks of OC and its screening, and 59% of women were unconcerned about the risk factors associated with OC[14]. (Redhwan Ahmed Al-Naggar et al, 2013) suggested that there is a poor knowledge of Malaysian working women because of the lack of awareness about ovarian cancer[15].

In conclusion, for patients with ovarian cancer, imaging studies will continue to grow as an important tool to enhance early detection, lower morbidity and mortality and increase overall cure rate. Advanced imaging studies should be utilized more in the management of patients with suspected ovarian cancer. Early detection of ovarian cancer with the aid of imaging modalities combined with increased awareness about early symptoms and people at risk can significantly decrease mortality and overall prevalence in the future[9].

Objective:-

Our study is designed to evaluate the knowledge and beliefs of Saudi women about risk factors and attitude toward screening of ovarian cancer.

2.Materials and Methods

2.1Research design:

A cross-sectional study.

2.2 Research setting:

The study has been held in Riyadh, Saudi Arabia. It has been elected during the period from September 2016 to December 2016 contributed at PNU college, schools and different hospitals.

2.3 Study population:

200 women from Riyadh, Saudi Arabia.

2.4 Inclusion and exclusion criteria:

- Women whose age from 18 to 45 years have been considered in the study.
- Only Females with personal history of ovarian cancer have been excluded.

Data collection tools and management :-

Questionnaires have been distributed to working females among hospitals, Princess Nora University and it schools. It contains 16 questions; 6 questions are about the knowledge and 10 questions are about attitude. It was intended to evaluate the knowledge of the incidence of ovarian cancer as well as their thoughts about which the age group has the highest risk of developing the disease. Also to evaluate the general risk factors and lifetime risk of developing it. Furthermore, the importance of sharing knowledge among family members about screening has been looked at, as well as the potential benefit of ovarian screening program. The rest of the questionnaire has assessed people's prospective about the importance and the yield of the screening. And evaluated the degree of awareness about the difference between the presence of benign and malignant lump in the ovaries. In addition, it has also evaluated the significance of screening family members and friends of people with a positive screen, the general stigma women feel when they get a gynecological assessment as well as people's thoughts about the implication of positive screening such as anxiety about a positive screen and how it is going to change the course of their disease, if detected at early stages versus last stages of the disease. The cut off total score of knowledge was taken at 50% where > or = 50% correct answers are considered as good knowledge, <50% correct answers are considered poor knowledge. More over, the cut off total score of attitude was taken at 50%, where > or = 50% correct answers are considered as a good attitude and <50% correct answers are considered as a bad attitude.

2.6 Statistical analysis:

The data analysis has been conducted in this study by descriptive statistic. Data is presented as mean ±SD. SPSS program has been used in all statistical analysis. Chisquare test has been used and the results considered significant at a p-value $\leq$ 0.05.

2.7 Ethical considerations:

The study has been conducted after it got the ethical approval from PNU. During this study, respect for the dignity of participants has been optimized. The participants have participated in the study voluntarily and the informed consent has been given to them prior to the study, and they have been informed about the objective of the study and their involvement in it. Participants have also been informed about the right to privacy anonymity while participating in this .Upon her approval, each participant has been requested to sign the informed consent before taking part of the study. All the data obtained has been highly confidential and has been used only for study purposes.

Results:-

Table 3.1-[Sample Study Characteristics

Variable	Category	Number	Percentage (%)
Age (years)	18 - 24 25 -31 32 -38 39 -45	107 35 27 31	53.5% 17.5% 13.5% 15.5% Total : 100%
Sex	Female	200	%100
Residency	Urban	200	%100

Sample Study Characteristics:

A total number of 200 women aged from (18-45) with no previous history of personal ovarian cancer participated in this study. Participants were from Riyadh, Saudi Arabia. The majority of the women sample (53.3%) were in the age group 18-24, whereas 17.5% of them were aged from 25 to 31. While women aged from 39 to 49 made up 15.5% and women aged from 32 to 38 represents the lowest sample group which is 13.5%. (Table 3.1)

Perception Of Risk:

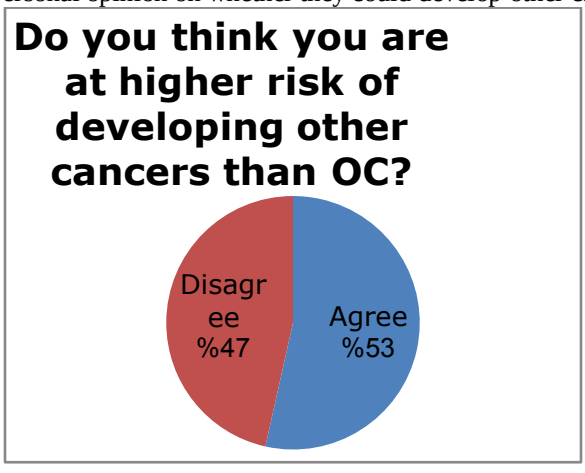
The majority of the women sample (44%) answered with (I don't know) when asked to estimate the lifetime risk of women getting ovarian cancer in Riyadh, whereas 25.5% gave the most accurate answer (1 in 70), 16.5% overestimated the risk (1 in 12) and 14% underestimated the risk (1 in 500). (Table 3.2, First Row) On the other hand, when asked to estimate their own lifetime risk of progressing ovarian cancer, 45.5% chose 1 in 100, 32.5%

chose 1 in 500 and 22% chose 1 in 10. Women who estimated a greater level of personal risk had family history of ovarian cancer. (Table 3.2, Second Row) Furthermore, when the participants were asked if wether they think that they could develop cancers other than ovarian cancer, 53.5% agreed , while 46.5% disagreed. (Figure 3.1)Only 26.5% of the participants were aware that most ovarian lumps turn out to be cysts rather than cancer, whereas 22.5% thought it was cancer and the majority (51%) did not know. (Table 3.2, Third Row) Majority of the participants (38%) thought that women in the age group 45-55 are at a higher risk of developing OC, whereas 35.5% thought that it's the age group from 35 to 45, while only 12% figured the correct age group (55-65). (Table 3.2, Fourth Row)

Table 3.2:- Perception of Risk

Questions	Number	Percentage (%)
1) The chances of women getting ovarian cancer in her life :		
-1 of 500	28	14%
-1 of 70	51	25.5%
-1 of 12	33	16.5%
I don't know-	88	44%
2) What do you think is your lifetime risk of developing ovarian cancer :		
1 in 10 chance	44	22%
1 in 100 chance	91	45.5%
1 in 500 chance	65	32.5%
3) Most ovarian lumps turn out to be :		
- Cyst	53	26.5%
- Cancer	45	22.5%
I don't know-	102	51%
4) The chances of an ovarian lump being cancer are highest in women aged:		
- 25-35 years	17	8.5%
- 35 – 45 years.	71	35.5%
45-55 years -	76	38.5%
- 55-65 years	24	12%
Over 65 -	12	6%
Total	200	100%

Figure 3.1:- Personal opinion on whether they could develop other cancer than OC



Knowledge Of Risk Factors:

Participants were given a list of factors and asked to choose which they thought were associated with an increased risk of progressing ovarian cancer. Most women (62.5%) were aware that a family history of ovarian cancer was associated with a higher risk of progressing the disease, but only 19% knew of the increased risk associated with a

family history of breast cancer, while 25% acknowledged the increased probability of progressing ovarian cancer after the menopause, whereas 23.5% recognized the association between pregnancy and reduced ovarian cancer risk and only 12.5% identified the preventive effects of breastfeeding. furthermore, 11% thought that an abnormal cervical smear may lead to an increased chance of developing ovarian cancer. (Table 3.3)

Table 3.3:- Women is more likely to develop ovarian cancer if

Women is more likely to develop ovarian cancer if	Number	Percentage
Has never been pregnant or had children	47	23.5%
Did not breast feed	25	12.5%
has relatives with breast cancer	38	19%
Has relatives with ovarian cancer	125	62.5%
Is past the menopause	50	25%
Has had an abnormal cervical smear	22	11%

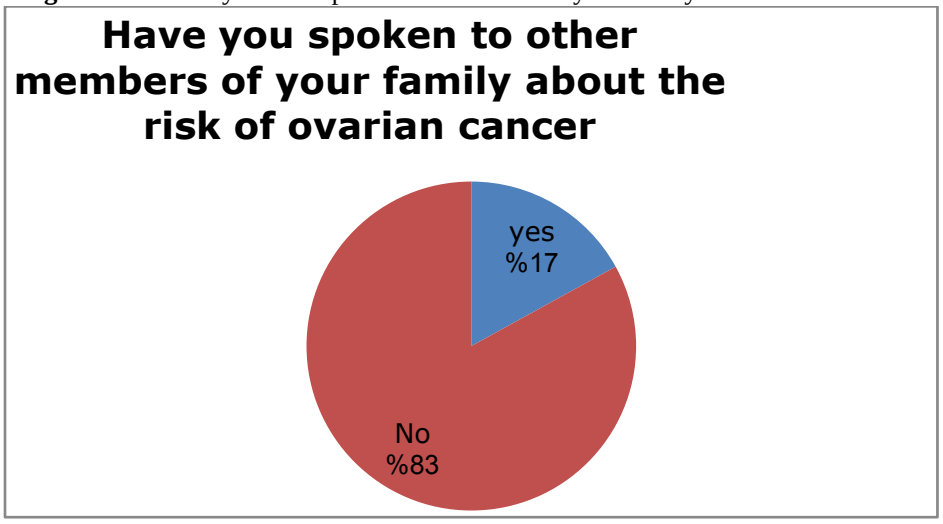
Overall knowledge:-

Depending on the statical analysis of the overall knowledge, females got a good score > or = to 50% correct answers represented as 55% of the sample. Whereas, the rest 45% of the participants has (<50%) correct answers. (Table 3.4)

Table 3.4:- Overall Knowledge

No.Q	Correct Answer		Incorrect Answer	
	Number	Percentage	Number	Percentage
1	51	25.5%	149	74.5%
2	53	26.5%	147	73.5%
3	24	12%	176	88%
4	31	15.5%	169	84.5%
5	188	94%	12	6%
	Good		Poor	
Overall Knowledge	Number	Percentage	Number	Percentage
	110	55%	90	45%

Figure 3.2:- Have you ever spoken to a member of your family about the risk of OC



Views On Attitude Towards screening:

The majority of participants (80%) had never spoken to other members of their family about the risk of ovarian cancer, whereas only 17% had previously spoken about it. (Figure 3.2) Participants were asked for their views on screening and their susceptibility to ovarian cancer; the majority (93.5%) believed a high uptake of ovarian cancer screening would reduce death rate and (94%) that screen-detected cancers would have an improved prognosis. While 36% estimated that witnessing friends or hearing of public figures getting ovarian cancer would increase

awareness of personal risk about progressing ovarian cancer. 30% said that coming for screening would cause them to worry unnecessarily and 70% disagreed. Almost 42% agreed to having concerns about developing ovarian cancer as they grow older, whereas 58% disagreed. 71% agreed that it's embarrassing to visit a gynaecology clinic, and 29% disagreed. There is no great significant in results when asked if they have many things to worry about and it is pointless to think about ovarian cancer(48.5% agreed and 51.5% disagreed). 68.5% thought if they look out for the symptoms of ovarian cancer they will find it sooner than screening, while 31.5% disagreed. 75.5% felt that it's too late to do anything when an ovarian lump is found, whereas 24.5% disagreed. (Table 3.5)Overall, the participants scored 76% which results in good attitude, while only 24% scored a bad attitude.(Table 3.5).

Table 3.5:- Overall Attitude

	Correct Answer		Incorrect Answer	
No.Q	Number	Percentage	Number	Percentage
1	187	93.5%	13	6.5%
2	69	34.5%	131	65.5%
3	49	24.5%	151	75.5%
4	72	36%	128	64%
5	63	31.5%	137	68.5%
6	103	51.5%	97	48.5%
7	142	71%	58	29%
8	84	42%	116	58%
9	140	70%	60	30%
Overall Attitude	Good Number	Percentage	Bad Number	Percentage
	152	76%	48	24%

Association Between Knowledge and Attitude:

(Table 3.6)illustrates that 46.5% have good knowledge and good attitude, while 8.5% have good knowledge and bad attitude. Moreover, 29.5% have poor knowledge and good attitude and 15.5% have poor knowledge and bad attitude. The relationship between the knowledge and attitude was highly significant = 0.002 ($p<0.05$)

Table 3.6:- Association between Knowledge and Attitude

Attitude		Knowledge				Chi-Squared Test	P-value P<0.05
		Poor		Good			
		Number	percentage	Number	percentage		
	Good	93	46.5%	59	29.5%	9.786	0.002
	Bad	17	8.5%	31	15.5%		

Discussion:-

The incidence of ovarian cancer has been increasing over the last years, thus the research aimed to measure the knowledge and attitude of Saudi women towards the screening of ovarian cancer. The study was held at Princess Noura University its schools and different hospitals in Riyadh, Saudi Arabia, between September – December 2016, with a sample of 200 women, with age range from 18-45. Overall, the knowledge of Saudi women was considered good in which it scored 55%, while 45% had poor knowledge. 76% of the participants had a good attitude toward screening of ovarian cancer, while 24% had a bad attitude. In regard to the association between knowledge and attitude; 46.5% had a good knowledge and a good attitude too. While, 8.5% had good knowledge and a bad attitude. 29.5% had poor knowledge and a good attitude. On the other hand, 15.5% had poor knowledge and a bad attitude. 38% of the people estimated that women aged from 45-55 have the chance of developing ovarian cancer. 81.5% was acknowledgeable about family history of ovarian and breast cancer. Participants of this study believes that screening of OC would reduce death rate. 68.5% agreed that looking out for Ovarian cancer symptoms would help them find it sooner than waiting for screening. The embarrassment of the gynecological screening has a huge impact on women

decisions to visit the clinic. In addition, almost half of the participants thought that it is pointless to think about ovarian cancer.

As stated in the research done by (Ibrahim Alghamdi, et al, 2014), most frequent women diagnosed with ovarian cancer are aged from 45-59[1] and that matches our results. (L Fallowfield et al, 2010) most participants believed that high uptake of OC screening would reduce the mortality rate[14]. On the other hand, according to (lockwood-rayemann et al, 2009) 59% of the participants were more aware about risk factors; in which they correctly identified personal or family histo- ry of ovarian, colon or breast cancer, in correlation, it slightly matches our study. Whereas (lockwood-rayemann et al, 2009) stated in their research that the women's awareness of ovarian cancer and risk factors in general population is poor[5] and that was against our results. While, (L Fallowfield et al, 2010) 41.1% of women believes that recognizing symptoms of OC will be better than waiting for screening[14], and that matches our results.

Since the study was conducted in Princess Nora University and the majority of the participants were in the age range 18-24; the awareness was higher due to their higher level of education.

Conclusion:-

The overall knowledge of the participants about the risk factors of ovarian cancer was considered good; as well as their attitude toward screening. Furthermore, the overall percentage (46.5%) had good knowledge and a good attitude, while 29.5% of those who had poor knowledge had a good attitude.

Recommendations:-

We suggest that there should be a national awareness program that take care of educating women in Saudi Arabia and advertising about all aspects of ovarian cancer which includes the symptoms, risks and screening methods. Another suggestion is to conduct more studies in rural areas across the country to measure the most accurate percentage awareness of women in Saudi Arabia

Limitations Of The Study:-

Short amount of time due to graduation requirements which restricted us to limit the study to a fewer sample of women and in only one region (Riyadh) without accessing rural areas.

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