KNOWLEDGE OF OVARIAN CANCER AND ITS DETERMINANTS FACTORS AMONG WOMEN ATTENDING CLINIC IN HOSPITAL USM

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by

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Dissertation submitted in partial fulfillment of the requirements for the degree of Bachelor of Nursing (Honours)

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CERTIFICATE

This is to certify that the dissertation entitled "Knowledge of Ovarian Cancer and Its Determinants Factors Among Women Attending Clinic in Hospital Universiti Sains Malaysia (HUSM)" is the bona fide record of research work done by Ms. Norhazliana binti Hashim during the period of September 2019 to June 2020 under my supervision. I have read this dissertation and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation to be submitted in partial fulfillment for degree of Bachelor of Nursing (Honours).

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DECLARATION

I hereby declare that this dissertation titled "Knowledge of Ovarian Cancer and Its Determinants Factors Among Women Attending Clinic in Hospital Universiti Sains Malaysia (HUSM)" is the result of my own investigations, excepts where otherwise stated and duly acknowledged. I also declare that it has not been previously or concurrently submitted as a whole for any other degrees at Universiti Sains Malaysia or other institutions. I grant Universiti Sains Malaysia the right to use the dissertation for teaching, research and promotional purposes.

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LIST OF ABRREVIATIONS

Hospital USM	-	Hospital Universiti Sains Malaysia
WHO	-	World Health Organization
HBM	-	Health Belief Model
SOPD	-	Surgical Out-Patient Department
KRK	-	*Klinik Rawatan Keluarga*
ORL	-	Otorhinolaryngology
O&G	-	Obstetrics and Gynecology

KNOWLEDGE OF OVARIAN CANCER AND ITS DETERMINANTS FACTORS AMONG WOMEN ATTENDING CLINIC IN HOSPITAL UNIVERSITI SAINS MALAYSIA

ABSTRACT

Ovarian Cancer is known as the fourth leading cancer in Malaysia. A cross sectional study was conducted on 110 women attending clinic in Hospital USM. The general objective of the study was to determine the knowledge level of ovarian cancer and its determinants factors among women attending clinic in Hospital USM. Respondents were recruited using a non-probability purposive sampling method. Demographic data of the respondents was analysed using descriptive statistic. Descriptive statistic was also used to determine the level of knowledge of ovarian cancer among women attending clinic in Hospital USM. A validated questionnaire was given to all respondent that fit the inclusion criteria Pearson's Chi Square test was applied to study the relationship between level of knowledge on ovarian cancer with selected factors (age, marital status, educational level, hear/read about ovarian cancer, interest to know about ovarian cancer, has family history of ovarian cancer, had discuss about ovarian cancer with doctor). The findings of this study show that majority of women has low knowledge on ovarian cancer. In this study, there is no statistically significant relationship between selected factors (age, marital status, educational level, hear/read about ovarian cancer, interest to know about ovarian cancer, had family history of ovarian cancer, had discuss about ovarian cancer with doctor) with knowledge level of ovarian cancer. By increasing knowledge on ovarian cancer among women might help in reducing the mortality rate among women.

PENGETAHUAN TENTANG KANSER OVARI DAN FAKTOR PENENTU YANG MEMPENGARUHI DALAM KALANGAN WANITA YANG HADIR DI KLINIK HOSPITAL UNIVERSITI SAINS MALAYSIA

ABSTRAK

Kanser ovari dikenali sebagai kanser keempat terkemuka di Malaysia. Kajian keratan rentas dilakukan terhadap 110 wanita yang hadir ke klinik Hospital USM. Objektif umum kajian ini adalah untuk mengetahui tahap pengetahuan mengenai kanser ovari dan faktor penentunya di kalangan wanita yang menghadiri klinik di Hospital USM. Responden direkrut menggunakan kaedah persampelan bertujuan bukan probabiliti. Soal selidik yang disahkan diberikan kepada semua responden yang sesuai dengan kriteria kemasukan. Data demografi responden dianalisis menggunakan statistik deskriptif. Statistik deskriptif juga digunakan untuk mengetahui tahap pengetahuan mengenai kanser ovari dan faktor penentunya di kalangan wanita yang menghadiri klinik di Hospital USM. Ujian Pearson's Chi Square diaplikasikan untuk mengkaji hubungan antara tahap pengetahuan mengenai kanser ovari dengan faktor-faktor terpilih (umur, status perkahwinan, tahap pendidikan, mendengar / membaca tentang barah ovari, berminat untuk mengetahui mengenai kanser ovari, mempunyai sejarah keluarga mengenai kanser ovari, pernah berbincang mengenai kanser ovari dengan doktor). Hasil kajian ini menunjukkan bahawa majoriti wanita mempunyai pengetahuan yang rendah mengenai kanser ovari. Dalam kajian ini, tidak ada hubungan yang signifikan secara statistik antara faktor-faktor terpilih berikut dengan tahap pengetahuan kanser ovari. Dengan meningkatkan pengetahuan mengenai kanser ovari di kalangan wanita mungkin dapat membantu mengurangkan kadar kematian di kalangan wanita.

CHAPTER 1 INTRODUCTION

1.1 Background of Study

According to the Malaysian Cancer Registry, In Malaysia, ovarian cancer is the fourth commonest cancer in women with an aged-standardised incidence rate (ASR) of 5.9 per 100,000 population. It is more common among the Chinese, compared to the Malay and Indian populations. Peak incidence is between the ages of 60 and 65, with more than 50% presenting with advanced disease which are in stage 3 and 4 (cancer, T. and life, N. ,2019).

Ovarian cancer is the common gynaecological malignancies worldwide and correlates with the high mortality rate (Bankhead et al., 2008; Karim-Kos et al., 2008). It is also known as a silent killer because the chances of cure were very poor when the symptom often been diagnosed at a late stage (Goff, 2012). The fatality rate for ovarian cancer is 0.67 which is quite high because women usually present in the wide-spread disease. Compared to other gynaecologic cancer, ovarian cancer accounts for more death which is the 3rd commonest genital tract malignancy after the uterus and cervix cancer and estimated 238,719 new cases in 2012 (Ferlay J et al., 2013 and Goff, 2012). One in 76 women will be affected with ovarian cancer (ACS, 2016; National Cancer Institute, 2015). Risk of ovarian cancer is increasing with age, even though the rate of increase getting slower after menopause. About 10-15 percent of cases happen before menopause occurs which is uncommon, peak in women aged between 15 to 35 (Kufe, D., et al.,2003).

The symptoms of ovarian cancer are non-specific and no effective screening tests to identify cancer early (Lalwani N et al, 2010). Symptoms and signs of ovarian cancer

are recently started of symptoms frequently include eating difficulty, bloating, pelvic or abdominal pain, urgency/frequency of urination, and feeling full quickly. If these symptoms occurred more than 12 episodes per month, diagnosis of ovarian cancer should be taken into account (Goff, 2012). Women with ovarian cancer may not be aware that their symptoms were indicative of a serious condition like ovarian cancer and may misattribute them to simple and benign conditions such as monthly period, irritable bowel syndrome, aging, or even stress (Cooper CP et al, 2013).

Screening for ovarian cancer has not been proved to decrease the death rate and, therefore, there is no standard routine screening or test even for high risk ovarian cancer patients such as patients with inherited genetic syndrome (Buys et al., 2011). However, women with family history of ovarian cancer or familial ovarian cancer syndromes are at a higher risk of developing ovarian cancer (Permuth-Wey and Sellers, 2009). The other risk factors of ovarian cancer include infertility, endometriosis, postmenopausal hormone-replacement therapy, cigarette smoking and alcohol consumption. On the other hand, increased parity, using oral contraceptives, oophorectomy and breast feeding were found to decrease the risk of ovarian cancer (Hunn and Rodriguez, 2012).

Developing an effective screening test that can detect a preclinical phase of ovarian cancer were not successful due to failing to understand the natural history of this cancer. Thus, all current screening methods of ovarian cancer lack of effectiveness and fail to reduce the mortality rate of this disease (Jacobs, 2016; Kobayashi, 2008). But, there are few initiatives to determine whether the screening by using intra-vaginal ultrasound, symptom index, in combination with biomarkers can help to diagnose ovarian cancer at earlier stages (Anderson, 2010).

According to the Penang Cancer Registry (2010) and Malaysia National Cancer Registry (2007), the fourth most common cancer among women in peninsular Malaysia is ovarian cancer. These women are diagnosed during the late stage causing cancer to spread and difficult to be cured. Ovarian cancer that has been early detect and diagnose could result in high 5-year survival rate and high chances to be cured, but most of patient that suffered from this cancer usually detected during the late stages (Buys et al., 2011). It shows that ovarian cancer among women are account with high morbidity and mortality rates. Women that having good knowledge and aware on ovarian cancer warning symptoms can motivate them to utilize early detection programs and seek medical attention (Ott et al., 2009; Sopik et al., 2015).

As the public knowledge and awareness especially women regarding the ovarian cancer is the key to combat this crisis, thus this raises the questions on knowledge of ovarian cancer and its determinants among women.

1.2 Problem Statement

The finding of Al-Naggar et al. (2013) showed that knowledge of ovarian cancer on symptoms and risk factor among the working women are very poor due to the lack of awareness. Limited knowledge of the ovarian cancer also associated with delayed in the detection of ovarian cancer which explained by the symptoms such as bloated abdomen, abdominal or pelvic pain and urinary symptoms (Goff, 2012). Then, because of the symptoms of ovarian cancer are not specific, women may attribute those symptoms to other gastrointestinal or urinary system disorders (Brain et al., 2014). Thus, it will result in delayed detection of ovarian cancer cases and increasing the mortality rate.

According to Cooper CP et al (2013), women that suffered from ovarian cancer are not aware of the symptoms related to gynaecologic cancers and did not seek for any care if the symptoms appeared which may misattribute to simple and benign conditions. Besides that, the tendency to delay the care seeking in general because of cost concerns and able to tolerate with the pain which is barriers for the early detection of ovarian cancers.

According to the study conducted by Lockwood-Rayermann et al (2009), women are not aware especially on the symptoms and the risk factor of ovarian cancer. Thus, to lower the delay in diagnosis, they should be encouraged to seek medical examination after notice any new onset of pelvic or abdominal symptoms. The result from the study shows that only few of respondents might identified the symptoms of the ovarian cancer, while thirty-nine percent respondents reported that they are unsure regarding the risk factor of ovarian cancer. A study conducted among Jordanian women found that level of awareness and knowledge regarding ovarian cancer are very low (Freij et al., 2017).

Similarly, a cross-sectional study that was conducted in Oman showed that general awareness among public are lower regarding awareness of risk factor and symptoms of ovarian cancer (Al-Azri et al., 2014; Al-Azri et al., 2016; Al-Azri et al., 2017). Poor public knowledge on the early symptoms has been considered to be a predominant reason for the delay in the diagnosis (Macleod et al., 2009). Worldwide, studies that have been conducted also shown that public awareness levels of ovarian cancer were poor and women often diagnose the ovarian cancer during the late-stage which probability to be cure is low (Lockwood-Rayermann et al., 2009).

Limited studies have been carried out among Malaysian women which in UPM Serdang, Selangor that was conducted among female non-academic staff and in Kuala

Lumpur among working Malaysian women (Al-Naggar, 2013; N.M Elmahdi, 2017). Malaysian women also showed that women have significant poor knowledge related to ovarian cancer (Keng SL, 2015; AL-Naggar RA, 2013; Abidin AA, 2015). Similar studies were not conducted or done in HOSPITAL USM. Consequently, more investigations are needed to help plan an effective strategy which increase the level of ovarian cancer awareness among Malaysian women and enhance the early detection of ovarian cancer. From my observation, women should be evaluated by assessing their level of knowledge of ovarian cancer towards symptoms, risk factor, screening and early detection. The consequences of increasing statistic on this ovarian cancer cases towards nursing professions is if women lack or low of knowledge towards ovarian cancer, it may cause delaying in seeking treatment on the cancer, thus it will increase the number of women having ovarian cancer at the late stage lead to increasing the workload towards nursing and other healthcare providers. Mortality rate also will be increased. Thus, this study is aiming to determine the level of knowledge of ovarian cancer and its determinants among women in Hospital USM and the relationship between the variables.

1.3 Research questions

I. What is the level of knowledge of ovarian cancer among women in Hospital USM?

II. Is there any relationship between level of knowledge of ovarian cancer with selected factors (age, marital status, educational level, hear/read about ovarian cancer, interest to know about ovarian cancer, had family history of ovarian cancer, had discuss about ovarian cancer with doctor) among women in Hospital USM?

1.4 Research Objectives

1.4.1 General Objectives

The general objective of this study is to determine the knowledge of ovarian cancer and its determinant factors among women in Hospital USM.

1.4.2 Specific Objectives

The following specific objectives of this study are:

I. To determine the level of knowledge of ovarian cancer among women in Hospital USM.

II. To assess the relationship between level of knowledge on ovarian cancer with selected factors (age, marital status, educational level, hear/read about ovarian cancer, interest to know about ovarian cancer, had family history of ovarian cancer, had discuss about ovarian cancer with doctor) among women in Hospital USM.

1.5 Research Hypothesis

Hypothesis 1

H^o : There is no significant relationship between level of knowledge on ovarian cancer with socio-demographic (age, marital status, educational level) among women in Hospital USM.

H^1 : There is significant relationship between level of knowledge on ovarian cancer with socio-demographic (age, marital status, educational level) among women in Hospital USM.

Hypothesis 2

H^o : There is no significant relationship between level of knowledge on ovarian cancer with hear/read about ovarian cancer among women in Hospital USM.

H^1 : There is significant relationship between level of knowledge on ovarian cancer with hear/read about ovarian cancer among women in Hospital USM.

Hypothesis 3

H^o : There is no significant relationship between level of knowledge on ovarian cancer with interest to know about ovarian cancer among women in Hospital USM.

H^1 : There is significant relationship between level of knowledge on ovarian cancer with interest to know about ovarian cancer among women in Hospital USM.

Hypothesis 4

H^o : There is no significant relationship between level of knowledge on ovarian with had family history of ovarian cancer among women in Hospital USM.

H^1 : There is significant relationship between level of knowledge on ovarian cancer with had family history of ovarian cancer among women in Hospital USM.

Hypothesis 5

H^o : There is no significant relationship between level of knowledge on ovarian cancer with had discuss about ovarian cancer with doctor among women in Hospital USM.

H^1 : There is significant relationship between level of knowledge on ovarian cancer with had discuss about ovarian cancer with doctor among women in Hospital USM.

1.6 Conceptual and Operational Definitions

Definitions for the operational terms used in this research proposal are as shown below:

Terms	Conceptual	Operational
Knowledge	Bergeron (2003) defined it as information that is organized, synthesized or summarized to enhance comprehension, awareness, or understanding. Similarly, Karlsen and Gottschalk (2004) defined knowledge as information combined with experience, context, interpretation, reflection, intuition and creativity.	In this study, knowledge is the information or facts, understanding on eligibility criteria of ovarian cancer among respondents.
Ovarian cancer	Ovarian cancer is a disease that affect female (women). The ovarian cancer occurred when cell in the ovary become	In this study, it is referred to make a survey whether the respondents have knowledge on ovarian cancer or not.

	abnormal and multiply without control to form a tumour (Genetics Home References,2019).	
Determinants	an element that identifies or determines the nature of something or that fixes or conditions an outcome (Merriam-webster.com. ,2019).	In this study, it is referred to identify the factors (age, marital status, educational level, hear/read about ovarian cancer, interest to know about ovarian cancer, had family history of ovarian cancer, had discuss about ovarian cancer with doctor of the respondents) that contribute towards the knowledge level of ovarian cancer.
Women	An adult human female (Definitions.net. ,2019).	In this study, it is referred to women attending clinic (orthopaedic, surgical out-patient department (SOPD), klinik rawatan keluarga (KRK), otorhinolaryngology (ORL), obstetrics and gynaecology(O&G) in Hospital USM.

1.7 Significance of the Study

This study provides data on the symptoms in general (Brain et al., 2014; Low et al., 2013). Thus, it is important to us to know about symptoms, risk factor, screening and early detection regarding ovarian cancer. This study can help to collect the information related to knowledge of ovarian cancer and its determinants among women in Hospital

USM. This study also will be helpful in reducing the delay in diagnosis of ovarian cancer and can recognise the early symptom to increase the chances to be cured and increase the quality of life in women. Therefore, assessing the level of knowledge and its determinants of ovarian cancer is important which directly can reduce the mortality rate. Then, the purpose of this study is to provide an educational opportunity about ovarian cancer to women. Through an opportunity to learn, it is hoped that knowledge is gained and, in the future, health outcomes of women with ovarian cancer are improved.

CHAPTER 2 LITERATURE REVIEW

2.1 Introduction

This chapter is a review of literature about definition of ovarian cancer, tumour staging, risk factors, symptoms, screening and early detection, women's' knowledge of ovarian cancer, and factor associated with level of knowledge on ovarian cancer. The framework that will guide this project is also discussed.

2.2 Ovarian Cancer

Ovarian cancer is the fifth deadliest cancer and most lethal gynaecological cancer among women (ACS, 2014; Doubeni et al., 2016). The American Cancer Society (2014) estimated that in the U.S., 22,280 women would be diagnosed with ovarian cancer and 14,240 would die from the disease in 2016 (ACS,2014). Worldwide in 2008, women with ovarian cancer was ranked the seventh most common cancer. In the same year, there were 225,500 new cases of ovarian cancer diagnosed throughout the world (Carlson, 2016). Very little improvements have been made on the incidence and mortality rates of ovarian cancer in the past forty years (Doubeni et al., 2016).

Ovarian cancer is a disease that affects female (women). ovarian cancer occurred when the cell in the ovary become abnormal and multiply without control to form a tumour (Genetics Home References, 2019). According to the American Cancer Society (2018), ovaries are reproductive glands found in women. Ovaries will produce eggs for reproduction. The eggs move along the fallopian tubes from the ovaries into the uterus where the fertilization occurs and develops into a fetus. Ovaries are the main sources of

female hormone (estrogen and progesterone). One ovary is on each side of the uterus (ACS,2018).

2.2.1 Staging

American Cancer Society (2018) stated that the doctor will try to figure out the spreading of tumour and this process is called staging. Ovarian cancer ranges are started from stage I to stage IV. The lower the number of stages, the less cancer has spread. It is means that the larger number, the more cancer has spread. Each person's cancer experience facing it differently (ACS,2018).

The result for ovarian diagnosis depends on the tumour stage. In stage I, cancer does not extend beyond the ovary. Then, in stage II, the cancer started to extend beyond the ovary but limited to the pelvis. In stage III, the tumour continues to extend outside the pelvis and for this stage, it is involved the regional lymph nodes. Distant metastasis is requisite for a stage IV classification (Doubeni et al., 2016; Rooth, 2013).

The survival rate is depended on the stage of ovarian cancer. About 45% women that been diagnosed with ovarian cancer have an overall five-year survival rate (Carlson, 2016). While women with stage I, the five-year survival rate is 90% (Carlson, 2016; Slatnik & Duff, 2015). Women that suffered with stage IV ovarian cancer have lower five-year survival rate which only 6%. More than 70% of women are diagnosed with ovarian cancer during the late stage (stage III or IV). But only 30% are diagnosed in the earliest stages (Slatnik & Duff, 2015).

2.2.2 Symptoms of Ovarian Cancer

According to the ovarian cancer symptoms consensus statement, the key criteria in the diagnosis of ovarian cancer are the frequency and/or the numbers of these presenting symptoms. When these symptoms are present on almost a day-to-day basis for more than a few weeks, the probability the women for having ovarian cancer is high, and such women are advised to see their doctor, especially their gynecologist. When these symptoms are detected promptly and investigated appropriately, they may help in early diagnosis and management, resulting in better prognosis and outcome for the patients (Gynaecologic Cancer Foundation, 2007; Adeyemi AS, 2015).

The ovarian cancer is not diagnosed until it has progressed to the late stage for most cases. According to the American cancer society, only 20% of the cases are diagnosed at an early stage. This is because the symptoms of ovarian cancer either are not apparent in the early stage or mimic the common stomach and digestive issues that are often mistakenly diagnosed. Women commonly experience those symptoms when the disease has spread beyond the ovaries, typically to the lymph nodes outside the abdomen, the skin, liver, spleen, fluid around the lungs, intestines or brain (cancer treatment centers of America,2019).

Mortality rates are associated with ovarian cancer attributed to the non-specific nature of symptoms which are bloating, lower back pain, pelvic pain and abdominal pain (Olson et al., 2001). Thus, potentially serious symptoms may not be recognised by patients or they might be misinterpreted as symptoms of the benign disease such as irritable bowel syndrome, aging and stress (Low et al., 2013). A study conducted in UK showed that most of these women with ovarian cancer presented initially to their general

practitioner and half of them were having symptoms more than a month (Hamilton et al., 2009).

Gastrointestinal, urinary, and gynaecological symptoms are the most common complaints (Crull et al., 2014). Most often, symptoms are gastrointestinal which are abdominal distension, nausea, dyspepsia, early satiety, diarrhoea and constipation. The others common is urinary frequency or urgency and it may include a recent unexplained increase in abdominal size, bloating, back or abdominal pain, loss of appetite, change in bowel habits (constipation/diarrhoea), sudden weight loss/gain, and suspected new diagnosis of irritable bowel syndrome. Fatigue, pelvic pressure or pain, postmenopausal bleeding, menstrual irregularities, and rectal bleeding are other possible symptoms of ovarian cancer (Chura, 2015; Slatnik & Duff, 2015). Other than that, some people will persist with upset stomach or heart burn, back pain, pain during sex and menstrual changes. If symptoms are new and persist for more than two weeks, it is recommended that a woman see her doctor, and a gynaecologic oncologist before surgery if cancer is suspected (NOCC, 2019).

2.2.3 Risk Factor of Ovarian Cancer

Some factors might increase woman's risk for ovarian cancer. Factors include family history, age, genetics, reproductive history, the use of hormones, and lifestyle choices (Carlson, 2016; Chen & Berek, 2016; Rooth, 2013).

Epidemiologic studies indicated that after controlling for age, the predominant risk factor for ovarian cancer is a family history of this disease (Risch et al., 2001). The strongest risk for the development of ovarian cancer is family history. A positive family

history of ovarian cancer is present about 10-15% of women who develop ovarian cancer. Risk is greater when a heredity cancer syndrome (breast-ovarian cancer syndrome or Lynch II syndrome) is present (Carlson, 2016). Women with one first-degree relative with ovarian cancer have a 5% lifetime risk and women with two or more first- degree relatives have a 7% risk. The risk is greater for the sisters and daughters than for the mother (Cook, 2002).

In developing countries, the incidence of ovarian cancer is high and increases with age (Siegel et al., 2014). More than half of ovarian cancers are diagnosed in women over 65 years old. The average age of women who are diagnosed with ovarian cancer is at 63 years old (Crull et al., 2014). Ovarian cancer diagnosed at a later age decreases the likelihood that the cancer is linked to a gene mutation (Carlson, 2016).

Reproductive history is associated with ovarian cancer. Nulliparity, early menarche (before age 12) and late menopause (after age 50) increased the risk to develop ovarian cancer (Chen & Berek,2016). The increasing incidence of ovarian cancer near the age of menopause may relate to the diminution of oocytes, reduction in circulating estrogen levels, or increase gonadotropic hormones FSH and LH (Vanderhyden, 2005). Infertility, endometriosis, polycystic ovarian syndrome, and pelvic inflammatory disease also may increase ovarian cancer risk (Carlson, 2016; Chen & Berek, 2016; Crull et al., 2014; Rooth, 2013). Another in risk reduction is the using of oral contraceptive pills. The collaborative Group on Epidemiological Studies of Ovarian Cancer (2008) conducted a meta-analysis of 45 studies and found that every five years of using oral contraceptives associated with 20% reduction in the risk of ovarian cancer. Women that used oral contraceptive more than 15 years has less half the risk of developing ovarian cancer compared to who never used them. The risk-reducing effect of oral contraceptives persists

for up to 30 years but decreases somewhat over time. Used of oral contraceptives for five or more years has been associated with a 50% risk reduction compared to those who have never used oral contraceptives. Researchers are uncertain whether those who carry the BRCA1 or BRCA2 mutations are included in the reduced risk with OCP use (Chura, 2015; Rooth, 2013).

Other factors that increase the risk of developing ovarian cancer include hormone replacement therapy (HRT), lifestyle factors, and ethnic background (Chen & Berek, 2016; Rooth, 2013). The long-term use of Hormone Replacement Therapy (HRT) increased risk of ovarian cancer incidence is increased by one added occurrence of ovarian cancer per 2,500 users of Hormone Replacement Therapy (HRT) and mortality is increased by one extra death per 3,300 users of Hormone Replacement Therapy (HRT) (Chen & Berek, 2016; Rooth, 2013). The ovaries produce oestrogen and progesterone before menopause and gradually decrease as menopause progress. Early Hormone Replacement Therapy (HRT) was comprised of oestrogen alone. However unopposed oestrogen therapy led to hyperplasia of the endometrium and associate with the risk of malignancy. Hormone Replacement Therapy (HRT) combines estrogen with progestin to reduce these adverse health effects (Anderson et al., 2003). The association between Hormone Replacement Therapy (HRT) and ovarian cancer is increasing, which the increasing risk of epithelial ovarian cancer is related to the use of Hormone Replacement Therapy (HRT) (Riman et al., 2002; Lacey et al., 2002; Anderson et al., 2003; Beral et al., 2007). Lacey et al. (2002) observed there is a significant positive association between estrogen replacement therapy and ovarian cancer among women who used estrogen only for 10 year or more. However, there was no significant change in ovarian cancer for women who used estrogen–progestin for a short time (Lacey et al. 2002).

Lifestyle also contributes to an increased risk of ovarian cancer. Lifestyle factors include smoking, obesity, lack of exercise, high-fat diet, and perineal talcum powder use (Crull et al., 2014). Long-term cigarette smoking was associated with an enhanced risk of epithelial ovarian tumours which women who have smoked for years have high risk compared to those who never smoked (Terry et al., 2003). Other than that, obesity might be associated with cessation of ovulation in premenopausal women and increased estrogen levels in the postmenopausal woman (Pike et al., 2004). Besides that, although numerous studies, including a meta-analysis (Huncharek et al., 2003), showed a strong link between the use of talcum in the genital area and ovarian cancer.

2.2.4 Screening and Early Detection Ovarian Cancer

The Purpose of cancer screening is to detect malignancies and detect the cancer at an earlier stage. The screening methods are symptom index, pelvic examination, tumour biomarkers, ultrasound or combinations of these methods. Currently there are no clinical guidelines in North America that recommend screening for ovarian cancer in average risk women (AAFP, 2016b; ACOG, 2011; Doubeni et al., 2016; Moyer, 2012; NCCN, 2015; Qaseem et al., 2014; Wilt et al., 2015).

Since 70% of women diagnosed in the late stage of the disease, ovarian cancer is considered one of the deadliest gynaecologic cancers. early diagnosis is related to a more favourable outcome.

The Five-year survival rate of stage I ovarian cancer is 90% compared to the 6% survival rate of stage IV (Slatnik & Duff, 2015). Many methods are available to detect

ovarian cancer: symptom index, pelvic examination, tumour biomarkers, and ultrasound (Crull et al., 2014; Doubeni et al., 2016; Rooth, 2013).

2.2.4.1 Symptom Index

The symptom index help clinicians to identify women with ovarian cancer. Pelvic pain, abdominal pain, bloating, increased abdominal girth, difficulty in eating and early satiety make up the symptom index. The index is considered positive if any of the six symptoms occur more than 12 times per month for fewer less than 12 months. In the early-stage of the disease, the symptom index has a sensitivity of 56.7% and 79.5% for advanced-stage disease. The Specificity of the symptom index in women less than 50 years of age was 86.7% and 90% in women greater than 50 years of age (Goff et al., 2007).

2.2.4.2 Pelvic Examination

The tumours can be detected during the bimanual pelvic examination. During a pelvic examination, the ovaries are palpated for size, shape, and consistency (ACS, 2014). Due to the location of the ovary, early stage tumours are not often found. Usually tumours can be detected at the advanced stage (Carlson, 2016).

2.2.4.3 Tumor Biomarkers

The Biomarker is a biological molecule found within the body that is an indicator of normal/abnormal process. The level of tumour biomakers rises in response to tissue damage caused by a proliferating tumour. CA-125 and human epididymis protein 4 (HE4) are two biomarkers that are used to assess for ovarian cancer (Rooth, 2013).

CA-125 is a tumour biomarker used to detect ovarian cancer which is rising in the presence of tissue damage. The level can also be increased in other diagnoses such as endometriosis, uterine leiomyoma, cirrhosis, pelvic inflammatory disease, pleural or peritoneal fluid, or cancers of the lung, breast, endometrium, and pancreas (Carlson, 2016; Rooth, 2013).

HE4 is another biomarker for ovarian cancer, with similar sensitivity as CA-125. HE4 is less likely than CA-125 to be elevated in benign disease (Carlson, 2016). In the U.S., HE4 is used for disease recurrence and progression, not screening (Carlson, 2016; Doubeni et al., 2016; Slatnik & Duff, 2015).

2.2.4.4 Ultrasound

Transvaginal ultrasonography is another method used to detect ovarian cancer. The size of ovaries and morphologic characteristics can be visualized (Carlson, 2016). The sensitivity for differentiating benign and malignant lesions is 86 to 94%. Specificity ranges from 94 to 96% (Doubeni et al., 2016).

2.3 Women Knowledge of Ovarian Cancer

Even larger gaps in knowledge about ovarian cancer exist among women (Goldstein et al., 2015). Two different groups of researchers, Lockwood-Rayermann, Donovan, Rambo, and Kuo (2009) and Goldstein et al. (2015) assessed women's knowledge of ovarian cancer. Similar results were reported.

Lockwood-Rayermann et al. (2009) found that among women, a knowledge deficit exists regarding ovarian cancer risk factors and symptoms. Researchers surveyed women 40 years of age and older about ovarian cancer risk factors, symptoms, and diagnosis. Less than half of respondents can recognize symptoms of ovarian cancer from a list provided. Then, there are lacking knowledge about risk factors on ovarian cancer. Researchers concluded women 40 years of age and older need to be better informed about ovarian cancer (Lockwood-Rayermann et al., 2009).

Goldstein et al. (2015) also discovered women's awareness of symptoms and risk factors of ovarian cancer. Eight hundred and fifty-seven women completed the survey about symptoms and risk factors related to ovarian cancer. Recognition of symptoms ranged from 23-72%. Only 23% of respondents were able to identify urinary frequency or urgency as a symptom of ovarian cancer. Of the women who participated, 72% were able to identify bloating and pelvic/abdominal swelling as a symptom. The identification of risk factors associated with ovarian cancer, risk factor identification ranged from 25-82%. The number of participants who incorrectly believed that an abnormal Pap test is an indicator of ovarian cancer was 57%. Women were not able to identify all of the listed symptoms and risk factors related to ovarian cancer (Goldstein et al., 2015).

2.4 Factor Affecting Level of Knowledge on Ovarian Cancer

Knowledge of ovarian cancer is associated with certain factors such as socio-demographic (age, marital status, educational level), hear/read about ovarian cancer, interest to know about ovarian cancer, had family history of ovarian cancer, had discuss about ovarian cancer with doctor.

Earlier studies conducted in Oman, which showed that people with higher levels of education recognized cancer symptoms better than those who were literate alone or less educated (Al-Azri et al., 2016; Al-Azri et al., 2017). Age was a significant predictor of the level of knowledge. This study showed that with an increase of 1 year in age, the ratio of low knowledge increased by 1.03 times (Elmahdi, N. M., 2017). Marital status also influenced the level of ovarian cancer knowledge in which married women were more exposed to health care facilities and health care professionals during follow up a consultancy at pregnancy and delivery (Elmahdi, N.M., 2017). Women with a skilled occupation were more knowledgeable about ovarian cancer risk factors compared with women with the unskilled occupations. Knowing someone who suffers from ovarian cancer factors that predicted good knowledge of the symptoms. Women who had previously discussed about ovarian cancer with a doctor had a higher level of knowledge of ovarian cancer symptoms and risk factors compared with women who had never discussed with a doctor which conversation about ovarian cancer as a predictor of good knowledge of ovarian cancer underscores the role the physician plays in health education and promotion (Okunowo, A. A., & Adaramoye, V. O., 2018). Another predictor affecting the level of ovarian cancer knowledge was heard/read about ovarian cancer. Participants who have heard and/or read about ovarian cancer were less likely 0.549 times to have low knowledge than participants have not heard or read about it and high percentage of study' sample interested to know about ovarian cancer which may reflect that they were motivated to learn about this cancer (Elmahdi, N. M., 2017).

2.5 Conceptual Framework

The theoretical framework for this study is based on the health belief model. The Health Belief Model (HBM) will help the researcher to understand better that what is the factor that associated with the knowledge level of ovarian cancer and how they influenced the knowledge level among the women attending the clinic, Hospital USM. HBM has commonly used theory in health education and health promotion (Glanz, Rimer & Lewis, 2002). HBM is a psychological tool used to explain and predict health behaviours (University of Twente, 2017).

The main use of HBM at that time was for testing the response to the failure of a tree tuberculosis (TB) health screening program. Since then, it has been adapted to explore a variety of either long or short-term health behaviours, including sexual risk behaviours and the transmission of HIV/AIDS (University of Twente, 2017).

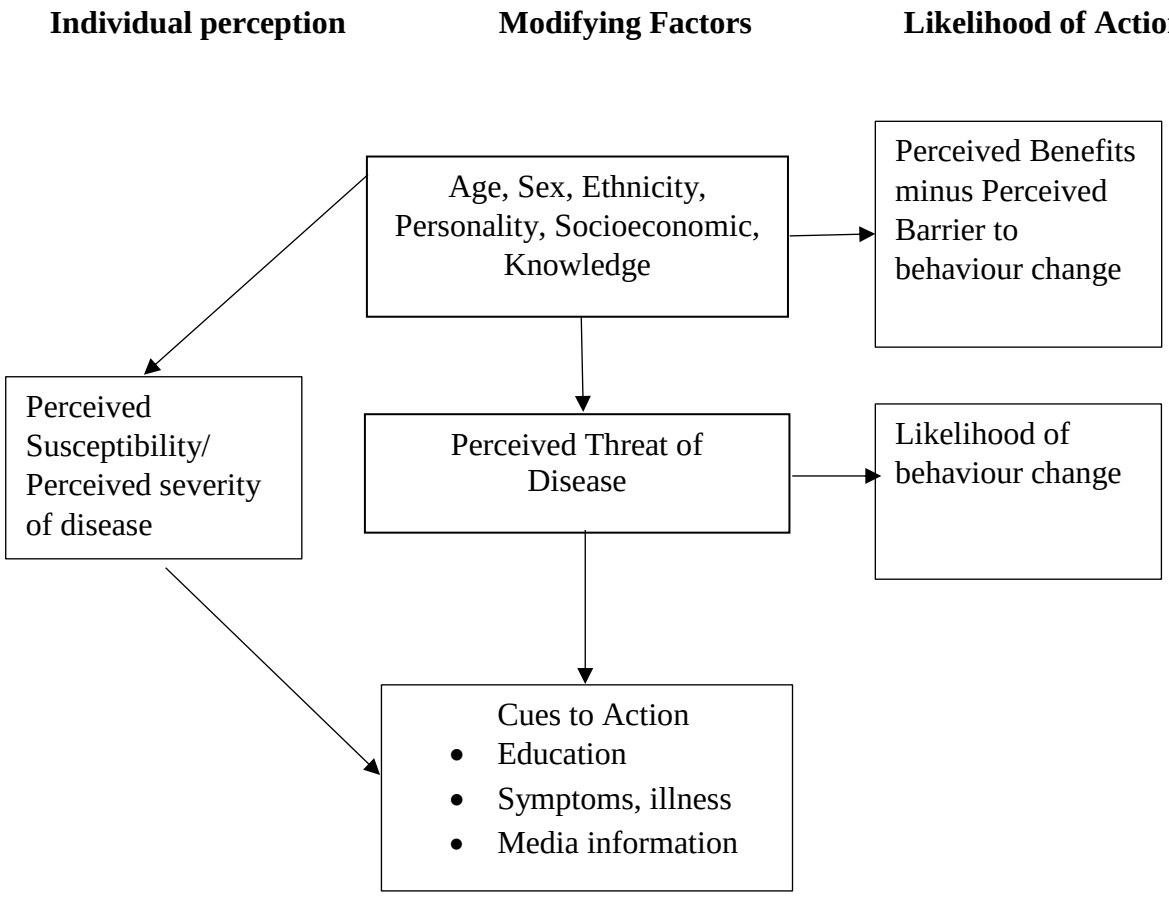

Figure 1: The Health Belief Model
[Source: Glanz, Rimer, & Lewis (2002)]

The component of HBM included, which are perceived susceptibility, perceived seriousness, perceived benefits, perceived barriers, cues to action, self-efficacy and modifying variables. This combination of six constructed HBM will provide a useful framework for designing both short-term and long-term behaviour change strategies.

In order to determine the knowledge of ovarian cancer among women attending clinic in Hospital USM, the researcher adapted a conceptual framework based on the Health Belief Model's explanation for this study (refer figure 2.2).

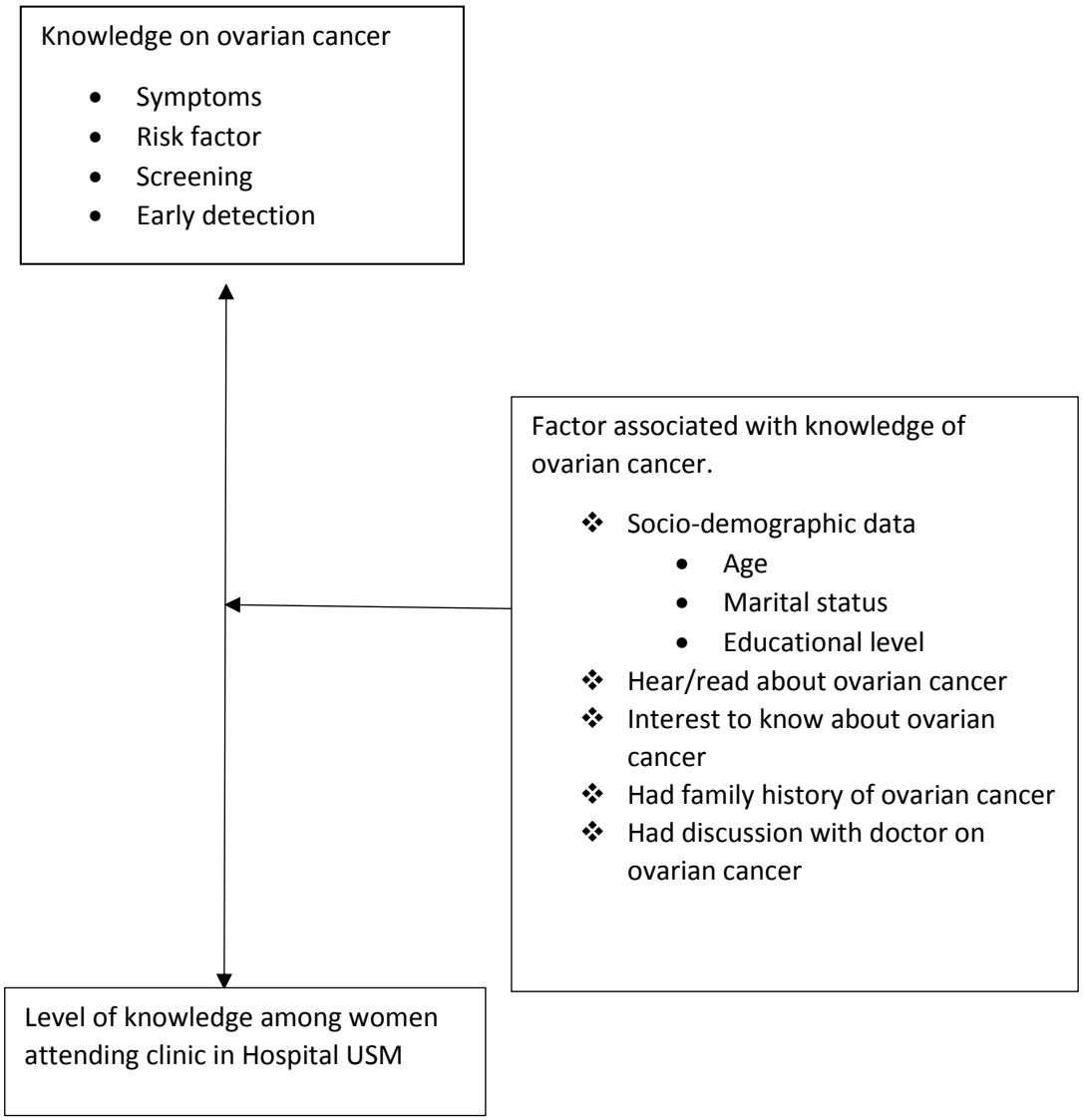

Figure 2 Adapted Health Belief Model
[Source: Glanz, Rimer, & Lewis (2002)]

For this study, the researcher wants to determine knowledge level among women attending clinic including its associated factors such as selected demographic data including age, marital status, educational level, hear/read about ovarian cancer, interest to know about ovarian cancer, had family history ovarian cancer and had discussion with doctor on ovarian cancer.