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Assessment of Health Problems Caused by Gynecological Malignancies Treatments

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Abstract: Background: Women with gynecological malignancies often experience health problems associated with their disease process or from the cancer directed treatment modalities. **The purpose of the study** was to assess the health problems caused by gynecological malignancies treatments. **Methods:** A descriptive cross sectional research design was utilized. **Sample:** A purposive sample of 180 women with gynecological malignancies was selected. **Setting:** The study was carried out in Menoufia Clinical Oncology Hospital. **Instruments:** A structured interviewing questionnaire, anthropometric assessment measures, checklist regarding health problems affecting the women received gynecological malignancies treatments were used. **Results:** the study findings revealed that all the study participants (100.0%) suffered from health problems caused by gynecological malignancies treatments. The majority of these health problems started during the treatment period and some of these problems had long term effect that extended after the treatment (83.8%). **Conclusion:** Gynecological malignancies treatments caused a wide variety of health problems and affected all body systems negatively. **Recommendations:** Ongoing health education for the patients receiving gynecological malignancies treatments regarding the health problems that may be caused by the treatment and the ways to alleviate it.

Keywords: *gynecological malignancies, health problems, gynecological malignancies treatments.*

Introduction

Gynecologic cancer is an uncontrolled growth and spread of abnormal cells that originate from the reproductive organs. There are several types of gynecologic cancers which include cervical, gestational trophoblastic disease (GTD), primary peritoneal, ovarian, uterine/endometrial, vaginal and vulvar cancers **(Philip, 2016).**

Women with gynecological cancers often experience health problems associated with their primary disease process or from the cancer directed treatment modalities. Symptoms caused by cancer such as bleeding, urinary tract obstruction, fistula and intestinal obstruction are primary health problems of gynecological cancer that usually need to be managed coincidentally with the cancer itself **(Philip et al., 2017& Funston et al., 2018) .**

Traditionally, gynecological cancers are approached in a multimodal fashion, employing surgery, chemotherapy, and radiation **(Jennifer & Christina, 2016).**

These important therapies while very effective at treating malignancy, often results in undesirable effect on body systems including gastrointestinal,

hepatic, hematology and integumentary system **(Guler, 2019).**

Surgery is the removal of a visible tumor and is the most frequently used cancer treatment. It is most effective when a cancer is small and confined to one area of the body. Surgical management may cause some health problems such as intraoperative genitourinary injury, bladder dysfunction, and postoperative infection **(Philip et al., 2017).**

Chemotherapy primary focuses on killing the rapidly dividing cells and thus doesn't discriminate between normal and cancer cells **(Jennifer & Christina, 2016).**

Chemotherapeutic agents have toxic effect on cells which can cause series health problems as nausea, vomiting, skin reaction including alopecia, allergic hypersensitivity reactions, skin necrosis and sloughing at the site of intravenous extravasation **(Bradly, 2017).**

These treatments may cause health problems for organs adjacent to female genital organs as small bowel, bladder and rectum. Some of these health problems have acute onset they appear during the treatment including gastrointestinal complications as proctitis, enteritis, diarrhea and cramps, urological complications as acute radiation cystitis and hematuria. It also may cause sexual dysfunction and vaginal stenosis. Radiation also may cause chronic complication as chronic diarrhea, small bowel obstruction and fistula **(Williams, 2018).**

The role of nurse is to assess the patient physical and emotional status, past health history, health practices, and both the patient's and the family's knowledge regarding the disease and its treatment. The oncology nurse should review the treatment plan with the oncologist, should be aware of the expected outcomes and possible complications, and independently assesses the patient's general physical and emotional status **(Donald et al., 2018).**

Significance of the study

All women are at risk for developing gynecologic cancers, and the probability increases with age. Each year, 71,500 women are diagnosed with gynecologic cancer, and 26,500 women die from it. The gynecologic cancer with the highest incidence is uterine cancer (24.8 per 100,000); ovarian cancer is a distant second (11.4 per 100,000), and cervical cancer is third (7.5). Vaginal cancer (diagnosed in 1,000 women annually) and vulvar cancer (3,500 women) are uncommon, accounting for 6% to 7% of all gynecologic cancers diagnosed each year in the United States (Somnath Pal., 2018 & Dood et al., 2018). Estimated number of cases of cervical cancer in Egypt in 2012 was 866, crude rate is 2.1 and age-standardized rate (ASR) is 2.3 (Alsbeih, 2018). Age-standardized incidence rates of uterine cancer in Egypt, (4.1 per 100,000 (95% CI: 3.8–4.4)) (Alshahrani et al., 2018).The annual flow rate of gynecological malignancies patients at oncology department - Menoufia University in 2019 was 111 patients (Hospital records, 2019). Surgery, chemotherapy, and radiation are very effective treatments but often results in undesirable effect on body systems so the researcher found it is important to assess the health problems caused by gynecological malignancies treatments.

Purpose of the study

The purpose of the study was to assess the health problems caused by gynecological malignancies treatments.

Research question

What are the health problems caused by gynecological malignancies treatments?

Method

Research Design:

A descriptive cross sectional research design was utilized in this study.

Research Setting:

The present study was carried out at Menoufia clinical oncology hospital

Sample selection:

A purposive sample of 180 women with gynecological malignancies was assessed for the health problems that occur before, during and after treatment at Menoufia clinical oncology hospital.

The inclusion criteria of the study participants were:

- Women who received gynecological malignancies treatments at Menoufia Clinical Oncology Hospital.

Exclusion criteria of the study participants were:

- Women who were diagnosed with dementia, depression or other conditions that may impair the ability to answer the questions.

Instruments:

Instrument I: A structured interviewing questionnaire

This instrument consists of two parts. It was adopted from Shannon et al., (2017) to assess the quality of life of women with gynecological cancer . It was modified by the researcher to match the purpose of the study and culture of the participants. These parts are:

Part I: social characteristics: It included name, age, level of education, occupation, residence, marital status, and the income.

Part II: Clinical information about the current illness: It included medical diagnosis, whether the patient started treatment or not and treatment modality (surgery only, chemotherapy only, radiation only, hormonal therapy or combination) and the presence of any chronic diseases and when did it start.

Instrument II: anthropometric measures:

It was adopted from Tinggaard, et al., (2014) to determine the body mass index of study participants. It included height (cm), weight (kg) and body mass index (BMI)

Scoring system of the (Body mass index BMI):

- Underweight when BMI is less than 18.5
- Ideal body weight when BMI ranges between 18.5 – 24.99
- Overweight when BMI ranges between 25 – 29.99
- Obese when BMI is higher than 30.

Instrument III: Checklist regarding health problems affecting women who received gynaecological malignancies treatments:

- It was developed by the researcher to assess the health problems that affect patients with gynecological malignancies and whether these health problems were developed before starting the treatment, during the treatment period or after the treatment. It consisted of the following items:
- General problems such as: fatigue, body aches, sleep problems, difficulty in performing activity of daily living. Immunological problems that cause recurrent fever, recurrent infection, and other immunological problems. Central nervous system problems such as recurrent headache, dizziness/ vertigo, numbness or tingling, incoordination, difficult speaking, difficult swallowing. Gastrointestinal problems (e.g. nausea, vomiting, anorexia, heart burn, recurrent diarrhea, recurrent constipation, no control over defecation, proctitis, enteritis, small bowel obstruction, fistula, ascites or other GIT problems).
- Respiratory problems as recurrent respiratory infection, dry cough, productive cough, shortness of breath. Cardiovascular problems such as palpitation, activity intolerance,

syncope, edema, hypotension, hypertension, thrombus or other cardiovascular problems. Renal problems as cystitis, urinary incontinence, urinary tract obstruction, urine retention, urgency, dysuria, hematuria, burning sensation at urination, recurrent urinary infection, kidney dysfunction or other renal problems.

- Reproductive problems as dysmenorrhea, amenorrhea, menstrual irregularities, inter menstrual bleeding, infertility, dyspareunia, vaginal dryness, diminished arousal, loss of sexual desire, decreased satisfaction, vaginal stenosis, vaginal prolapse, vaginal fistula, recurrent genital infection or other reproductive problems. Sensory problems as hearing problems, visual problems, loss of smell sensation, tactile problems, taste problems or other sensory problems.
- Musculoskeletal problems as bone pain, osteoarthritis, arthralgia, recurrent fracture, muscle weakness or other musculoskeletal problems. Integumentary problems as hypersensitivity, mouth sore, wound infection or cellulitis.

Validity of the instrument:

The validity of the instrument was ensured by five qualified experts (one expert from Maternal and Newborn Health Nursing department, two experts from Medical Surgical Nursing Department Faculty of Nursing, one expert from Oncology and Nuclear Medicine Department Faculty of Medicine and one expert nurse at Oncology Department University Hospital). They reviewed the instrument for content accuracy and internal validity. They were also asked to judge the items for completeness and clarity (content validity). Suggestions were incorporated into the instrument and modifications were made.

Procedure:

1) An official letter was sent from the Dean of the Faculty of Nursing to the directors of selected settings containing the purpose of the study and methods of data collection in order to obtain their acceptance to conduct the study.

2) Data collection started in September 2020 and ended in February 2021. The participants were interviewed at the waiting area before they enter the outpatient clinics also during their stay at inpatient ward, the number of cases the researcher interviewed varied from day to day (from 1 to 7 cases a day). The interview took about 10- 15 minutes to be completed for each participant.

3) At the beginning, the researcher introduced herself to the participants and explained the purpose of the study. The researcher asked the questions in Arabic and recorded the answers in the structured instrument

4) First social characteristics such as name, age, level of education, occupation, residence, marital status, and the income were assessed.

5) The patients' medical records were reviewed to check the accuracy of information reported by the patient about their medical diagnosis and clinical information about the disease.

6) The researcher assessed the anthropometric measures such as weight, height and then calculated the body mass index through dividing the weight in kg by the height in meters square.

7) A checklist of health problems was used as a guide to ask the patients about the health problems caused by treatments and when these problems started.

8) Data was collected from the previously mentioned setting 5 days a week (Sunday, Monday, Tuesday, Wednesday, and Thursday).

Ethical Considerations:

The researchers introduced themselves to women in the study, explained the purpose of the study and the nature of the research to obtain their acceptance to participate in the study and to gain their cooperation. Approaches to ensure the ethics were considered in the study regarding the confidentiality. Confidentiality was achieved by the use of locked sheets with the names of the participating women replaced by numbers. All women were informed that the information they provided during the study would be kept confidential and used only for statistical purposes. The findings would be presented as a group of data without participant's personal information remained. Informed consent was obtained from all women after explaining the nature and purpose of the study. Each woman was informed that participation in the study was optional and they were given the opportunity to freely refuse participation.

Statistical Analysis:-

Data was entered and analyzed by using SPSS (Statistical Package for Social Science) statistical package version 22. Graphics were done using Excel program as well as SPSS package. Quantitative data were presented by mean (X) and standard deviation (SD). It was analyzed using student t- test for comparison between two means, and ANOVA (F) test for comparison between more than two means. Qualitative data were presented in the form of frequency distribution tables, number and percentage. It was analyzed by chi-square ($\chi 2$) test. However, if an expected value of any cell in the table was less than 5, Fisher Exact test was used(if the table was 4 cells) , or Likelihood Ratio (LR) test (if the table was more than 4 cells). Level of significance was set as P value <0.05 for all significant tests.

Results:-

Table 1: Social Characteristics of the Studied Women (N = 180)

Demographic characteristics	N0.	%
Age (Years):		
- less than 45 years	47	26.1
- 45 to 55 years	54	30
- more than 55 years	79	43.9
Mean ± SD	**61.5 ± 2.4**	
Educational Level:		
- Illiterate/Read and write	100	55.5
- Primary education	22	12.2
- Secondary education	54	30.0
- University	4	2.2
Employment		
- working fulltime	9	5
- Disabled	2	1.1
- House wife	169	93.9
Residence:		
- Urban	66	36.7
- Rural	114	63.3
Marital status:		
- Married	139	77.3
- Divorced	6	3.3
- Widow	35	19.4
Family income:		
- Enough	86	47.8
- Not enough	94	52.2
Total	180	100

Table 1 There were more than 55 years with mean of 61.5 ± 2.4 years. More than half of them (55.5%) were illiterate, while only 2.2% of them had university education. As regard to employment, the majority of them were housewives (93.9%), and 5% were working fulltime. More than half of the study sample (52.2%) stated that they had not enough family income.

Table 2: Medical Diagnosis Characteristics of the Studied Women (N = 180)

Variables	N0.	%
Medical diagnosis:		
- Ovarian cancer	68	37.8
- Uterine cancer	71	39.5
- Cervical cancer	19	10.6
- Vaginal cancer	8	4.4
- Vulvar cancer	8	4.4
- Other	6	3.3
Duration since diagnosis:		
- Less than 3 years	151	83.9
- 3-< 5 years	11	6.1
- ≥ 5-10 years	18	10
Total	180	100

Table 2 demonstrates that uterine cancer was the highest percentage of medical diagnosis among the studied women (39.5%), followed by ovarian cancer with 37.8%, and both vaginal and vulvar cancer was the lowest percentage with 4.4% for each. The majority of the studied women with gynecological malignancies had less than 3 years duration since their diagnosis (83.9%), while only 6.1% their duration ranged from 3 to less than 5 years.

Fig.1: Mean of Body Mass* Index *distributed by age categories of the studied women.

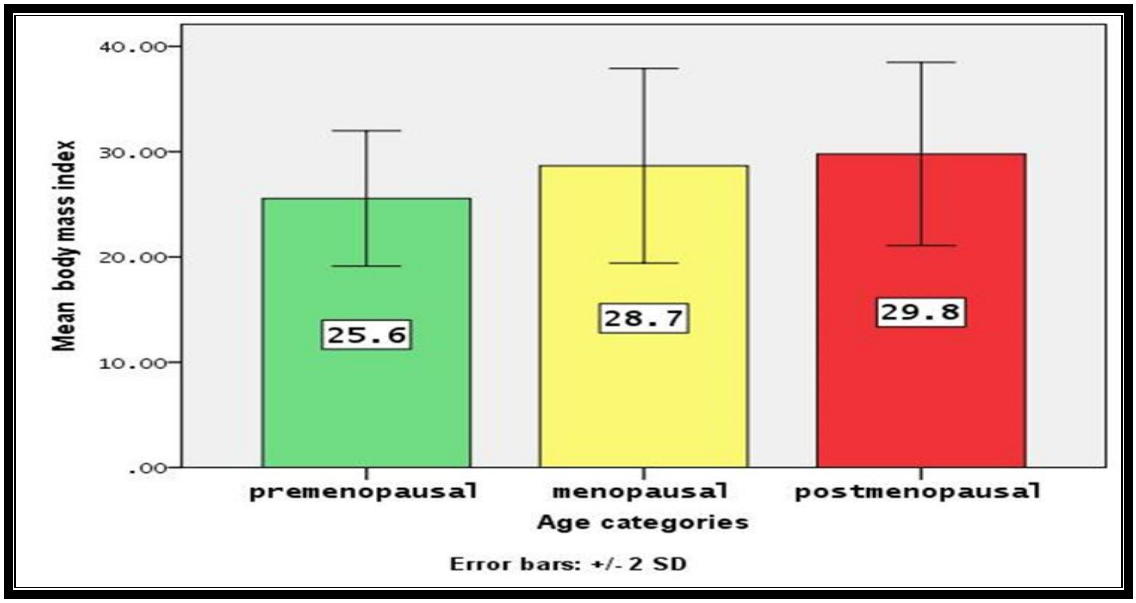

Fig.1 reveals that there were a statistically significant difference between age groups of the studied women with gynecological malignancies, and each of height, weight, and BMI(P <0.02, P<0.0001, and P<0.0001 respectively.

Table 3: Central Nervous System Problems Caused by Gynecological Malignancies Treatments among the Studied Women (N = 180)

Variables	N0.	%
Having any Central Nervous System Problems?		
- Yes	160	88.9
- No	20	11.1
If Yes, What are these problems?(N=160)*		
1.Recurrent headache	84	52.5
2. Dizziness/ vertigo	74	46.3
3. Heaviness at any part of the body	62	38.8
4. Numbness or tingling	90	56.3
5. Incoordination	49	30.6
6. Difficult speaking	34	21.3
7. Difficult swallowing	57	35.6
If yes, when did each problem start?		
1. Recurrent headache (N=84):		
- During treatment	69	82.2
- After malignancy treatment	2	2.4
- Before and during treatment	6	7.1
During and after treatment	7	8.3
Subtotal	84	100
2. Dizziness/ vertigo (N=74)		
- During malignancy treatment	63	85.1
- Before and during treatment	2	2.7
- During and after treatment	9	12.2
3.Heaviness at any part of the body (N=62)		
- During malignancy treatment	54	87.1
- During and after treatment	8	12.9
4. Numbness or tingling(N=90)		
- Before malignancy treatment	2	2.2
- During treatment	76	84.4
- During and after treatment	12	13.3
5. Incoordination (N=49)		
- Before treatment	2	4.1
- During treatment	47	95.9
6. Difficult speaking(N=34)		
- During treatment	34	100
7. Difficult swallowing(n=57)		
- During treatment	57	100
Total	180	100

NB: Percent's of women having CNS problems add to more than 100%, because one woman may suffer from more than one CNS problem

Table 3 reveals that 88.9% of the studied women suffered from central nervous system problems. 52.5% of them experienced recurrent headache and more than 82% of them experienced this problem during malignancy treatment, while only 46.3% of women experienced dizziness/ vertigo and more than 85% of them experienced this problem during malignancy treatment. 38.8% of women experienced heaviness at some body parts and 87.1% of them experienced this problem during malignancy treatment. 84.4% of women experienced numbness and tingling during malignancy treatments, while more than 95% of women suffered from incoordination during malignancy treatment. 21.3 % and 35.6% of women who suffered from CNS problems experienced difficult speaking and difficult swallowing respectively during malignancy treatment.

Table 4: Urinary Problems Caused by Gynecological Malignancies Treatments among the Studied Women (N = 180

Variables	N0.	%
Having any Urinary problems?		
- Yes	105	58.5
- No	75	41.5
If Yes, What are these problems?(N=105)*		
1. Cystitis	10	9.5
2. Urinary incontinence	11	10.5
3. Urinary tract obstruction	4	3.8
4. Urine retention	15	14.3
5. Urgency	27	25.7
6. Dysuria	36	34.3
7. Hematuria	2	1.9
8. Burning sensation at urination	66	62.9
9. Recurrent urinary infection	2	1.9
10. Kidney dysfunction	2	1.9
11. Other	2	1.9
Subtotal	105	100
<u>If yes, when did each problem start</u>		
1. Cystitis (N=10):		
- During treatment.	8	80
- After treatment	2	20
Subtotal	8	100
2. **Urinary incontinence (N=11)**		
- During treatment	11	100
3. **Urinary tract obstruction (N=4)**		
- During treatment	4	100
4. Urine retention (N=15)		
- During treatment	15	100
5. Urgency (N=27)		
- During treatment	23	85.2
- After treatment	2	7.4
- During and after treatment	2	7.4
6. Dysuria (N=36)		
- During treatment	28	77.7
- After treatment	6	16.7
- Before and During treatment	2	5.6
1. **Hematuria (n=2)**		
- During treatment	2	100
8. Burning sensation at urination (66):		
- During treatment	64	97
- Before &During treatment	2	3
9. Recurrent urinary infection(n=2)		
- After treatment	2	100
10. **Kidney dysfunction (n=2)**		
- Before treatment	2	100
11. Other urinary problems (n=2)		
- During treatment	2	100
Total	180	100

Table 4 reveals that 58.5% of the studied women suffered from urinary problems. The majority of these urinary problems were reported during treatment except recurrent urinary infection and kidney dysfunctions were reported before treatment and after treatment respectively.

Figure2: Percent Distribution of the Sensory Problems Caused by Gynecological Malignancies Treatments among the Studied Women.

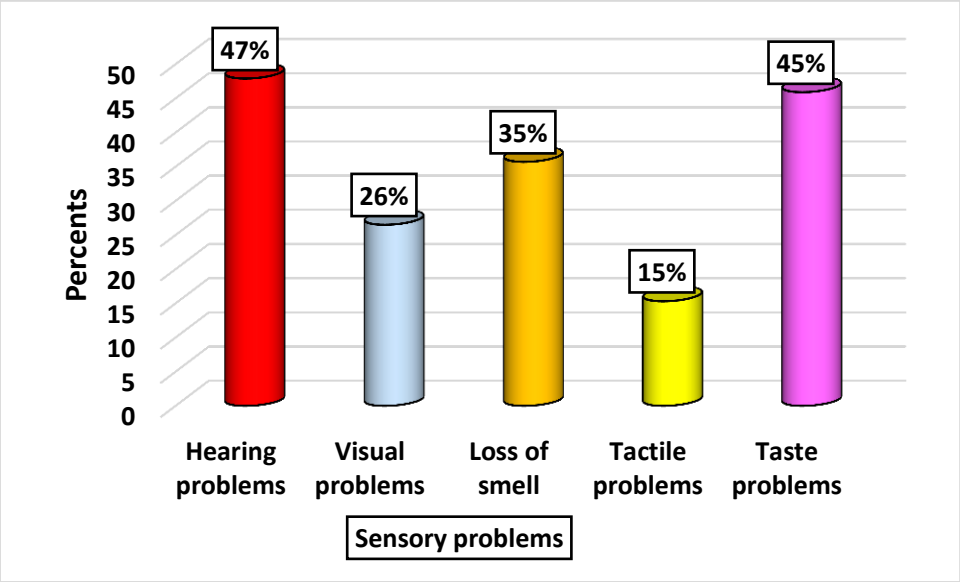

Figure2 reveals that more than 50% of the studied women suffered from sensory problems. Hearing problems have the highest incidence among sensory problems followed by taste problems, loss of smell, visual problems and tactile problems.

Discussion:

The present study revealed that most of the study participants were more than 55 years old and that the incidence of gynecological malignancies increases as age increase. This may be explained through several reasons as advanced age is a major risk factor for all types of cancer. The present finding comes in agreement with The National Cancer Registration and Analysis Service UK (2019) which states that age-specific incidence rates rise steeply from around age 55-59 years.

The findings are not consistent with a study by Mohammed et al., (2018) who investigated the "impact of quality of life improvement educational program in women undergoing gynecological and breast cancer treatment in Upper Egypt". The study revealed that the age range of the study sample was 21 to 55 years.

The present study revealed that more than half of the study participants were illiterate; living in rural areas and had not enough family income. The majority of the study participants were housewives and more than three quarters of them were married. This may be interpreted as the rural residents usually prefer to get married than to finish their education which make it difficult for women to find a job and therefore low family income. These findings are consistent with Nasr (2017) who studied" depression, anxiety and quality of life among women with breast and gynecological cancers at National Cancer Institute, Cairo University" and revealed that mean age of patients was 50.6 ± 12.9 years, the majority were married with the greatest part residents of urban areas, mostly of low educational level, and most of them were housewives.

Regarding the medical diagnosis, the study revealed that the highest percentage of women had uterine cancer, followed by ovarian cancer. Vaginal and vulvar cancer were the least common causes. These findings come in agreement with the center of disease control (2019) and prevention in United States which stated that the most common gynecologic cancer was uterine cancer and the least common was vaginal cancer.

The majority of the study participants had surgical treatment alone or in combination with other treatment modality and a combination of surgery and chemotherapy was the most commonly used treatment among the studied women. These findings are consistent with Nasr (2017) who studied "depression, anxiety and quality of life among women with breast and gynecological cancers" and stated that most of the participants were surgically treated and the majority received postoperative treatment as chemotherapy or radiation.

The present study demonstrated that more than one third of the studied women had chronic diseases as hypertension, heart diseases and diabetes mellites. The majority of them suffered from the chronic diseases before starting gynecological malignancy treatment. This may be because chronic diseases are considered risk factors for gynecological cancers. These findings come in agreement with Okamoto et al., (2020) who studied "the relationship between chronic diseases and occurrence of gynecological cancers in Japan" and stated that chronic disease and excess body weight were associated with gynecological malignancies regardless of the patient age. Chronic diseases contribute to more than one quarter of the occurrence of gynecological malignancies patients in Japan.

The present study demonstrated that the mean body mass index of the study participants at all age groups was 28.3 (over weight). This may be explained that obesity is a major risk factor for all kinds of gynecological cancer. These findings comes in agreement with Perry& Shulman (2020) who studied "the link between obesity, insulin, and cancer" and stated that obesity and type 2 diabetes increase the incidence and worsen the prognosis of more than a dozen tumor types.

These findings come in contrast with Foong & Bolton (2017) who made "a systematic review about obesity and ovarian cancer risk". This review concluded that there are inconsistent, limited clues of a positive relationship between obesity and ovarian cancer risk in thirty three studies. Four studies revealed a statistically significant positive association between ovarian cancer risk and higher body mass index. Twenty six studies revealed no significant association, and three studies revealed a negative association between ovarian cancer risk and higher body mass index.

The present study showed that all study participants who received gynecological malignancies treatments suffered from health problems. These health problems included general problems as fatigue, body pain, sleeping problems and difficulties in performing the activities of daily living. The majority of these problems started during the treatment and had a negative impact on the patient's quality of life even after completing the treatment. These findings may be explained as cancer treatments have a negative effect not only on the cancer cells but also on the healthy tissues which lead to un wanted side effects.

The study findings were in agreement with Joly et al., (2019) who assessed

the "Long-term fatigue and quality of life among epithelial ovarian cancer survivors" A total of 663 patients were included in the study who received chemotherapy, with an average 6-year follow-up. The study revealed that ovarian cancer survivors had high levels of depression, neurotoxicity, and sleep disturbance and had an increased risk of developing sever long term fatigue.

The study findings showed that gynecological malignancies and their treatments affect all body systems creating a wide variety of health problems. The most commonly reported health problems were the integumentary problems as sever hair loss and darkened skin. These problems developed mainly during the treatment period. These integumentary problems may be caused by the toxic effect of cancer treatments especially chemotherapy on the skin.

Gastrointestinal problems were the second most commonly reported problems among the study participants. It affected majority of the study participants as vomiting, nausea and anorexia. These problems may be caused by the irritating effect of chemotherapeutic agents on the GIT lining. Central nervous system problems affected the majority of the study participants. The most commonly reported CNS problems were numbness, recurrent headache and dizziness. The CNS problems may result from disease related stress and the neurotoxic effect of the treatment.

The study findings are in agreement with Lorusso et al., (2017) who studied "Patients' perception of chemotherapy side effects: Expectations, doctor–patient communication and impact on quality of life – An Italian survey". A total of 761 patients participated in the study which concluded that the incidence of nausea/ vomiting was high among cancer patients who received chemotherapy. Cancer and chemotherapy side effects severely affected sexual life, daily activities, employment and had a strong negative impact on the quality of life.

In regard to urinary problems, burning sensation during urination, dysuria and urgency have the highest incidence among urinary problems which affected more than half of the study participants. This may be caused by the negative effect of radiotherapy on the pelvic organs or may be developed as a complication of the surgical management of gynecological malignancies.

The study findings were in agreement with Barker et al., (2019) who studied "The impact of radiotherapy late effects on quality of life in gynecological cancer patients". The study revealed that radiotherapy used for treatment of gynecological cancers affect the quality of life negatively. This negative effect is most apparent immediately after treatment. Certain late negative treatment effects appear at least 2 years after radiotherapy. These treatment effects are centered on symptoms related to the rectum and bowel, as diarrhea, tenesmus and urgency.

In regard to sensory problems, hearing problems were the most commonly reported sensory problems followed by loss of taste and loss of smell. Immunological and reproductive problems affected more than one third of the study participants. The most commonly reported reproductive problems were amenorrhea, loss of sexual desire; inter menstrual bleeding, menstrual irregularities and infertility. These reproductive problems were reported mainly during the treatment and most of them resulted from the artificial menopause and gonadal failure induced by cancer treatments.

Grover et al., (2018) studied the "Patient reported late effects of

gynecological cancer treatment" and the findings come in agreement with the current study. The mean age of the study participants was 49 years, and the majority of women was Caucasian and had attended at least some college. Almost half of the patients (180) had ovarian cancer, 92 patients had cervical cancer and 109 patients had uterine cancer. The late effects most commonly reported by all gynecological malignancies survivors were cognitive changes, sexual side effects, changes in bowel patterns, peripheral neuropathy and skin changes.

Conclusion

It was concluded that gynecological malignancies treatments cause fatigue, body ache, sleeping problems, difficulty in performing the activities of daily living, gastrointestinal problems and central nervous system problems. Cardiovascular problems were reported by more than three quarters of the study participants. More than half of patients received blood transfusion and the majority of the study participants suffered from musculoskeletal problems. Burning sensation during urination, dysuria and urgency have the highest incidence among urinary problems. Hearing problems were the most commonly reported sensory problems followed by loss of taste and loss of smell. Immunological and reproductive problems affected more than one third of the study participants. The most commonly reported reproductive problems were amenorrhea, loss of sexual desire; inter menstrual bleeding, menstrual irregularities and infertility. Respiratory problems were reported by one third of patients

Recommendations

In the light of the study findings, the following recommendations are proposed:

- Health education programs should be conducted for patients receiving gynecological malignancies treatments about the health problems that may be caused by the treatment and the ways to alleviate it.
- Educational programs to raise awareness of nursing staff about possible side effects of gynecological malignancies treatments and ways of management should be developed.

Further studies:

- Utilization of clinical pathways in the management of health problems caused by gynecological cancer or treatment modalities.
- Further studies can be done at different setting with larger sample size.

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