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Health Related Quality of Life among Ovarian Cancer Women Receiving Chemotherapy at Zagazig University Hospitals

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Abstract: Background: Ovarian cancer is one of the ten most frequent malignant tumors in female population with a high rate of mortality. **The aim of this study:** was to investigate health related quality of life among ovarian cancer women receiving chemotherapy at zagazig university hospitals. **Research design:** a descriptive study design. **Settings:** The present study was conducted in the gynecologic oncology outpatient's clinic at zagazig university hospitals. **The sample:** consisted of 75 women diagnosed with ovarian cancer and receiving chemotherapy. **Tools of data collections:** Three tools were used: **Tool (I): An interview schedule** including 3 parts: First part: to collect the socio-demographic characteristics, the second part for a reproductive history and third part for: treatment modality, protocol of chemotherapy and problem encountered after ovarian cancer treatment. **Tool (II):** Cancer Patient Quality of Life Scale (EORTC QLQ-C30). **Tool (III):** Ovarian Cancer Quality of Life Scale (EORTC QLQ-OV28). **Results:** the highest affected dimension of health related quality of life (EORTC QLQ-C30) was for physical functioning scale with mean of (76.0±16.4) the role functioning scale (mean 75.80), and emotional functioning scale (mean 73.6) following by social functioning scale and cognitive functioning (mean 72.4, 61.70 respectively). Meanwhile the higher symptom scores for QLQ-C30 were found for fatigue, nausea and vomiting (88.00±9.00 & 85.00± 19.25 respectively). The highest mean scores of ovarian cancer module QLQ -OV28 were body image and attitude to disease/treatment following by sexuality (75.83, 65.55& 51.66 respectively). Additionally the higher mean score for the symptoms scales on the OV-28 instrument were peripheral neuropathy and chemotherapy side effects (85.92& 80.95 respectively). **Conclusion:** It can be concluded that women with ovarian cancer and receiving chemotherapy experience high prevalence of chemotherapy symptoms that adversely affected their quality of life. **Recommendation:** Further research should be carried out to identify the best strategies to further integrate results of quality of life assessments in ovarian cancer treatment protocols and to examine the long-term effects of cancer and its treatment on patients and their families.

Key words: ovarian cancer, chemotherapy, quality of life

INTRODUCTION

Ovarian cancer is the most common cause of death among women with gynecologic malignancies. It accounts for 4-5% of all malignant tumors in female and participates with 4.2% in mortality structure. It affects women of all ages, but is most commonly diagnosed in those 55 to 64 years of age. About 90% of tumors are epithelial ovarian cancer that occurs primarily in postmenopausal women (**National Institutes of Health, 2016**).

Several factors have been suggested to increase risk for ovarian cancer which including genetic, reproductive, hormonal and behavioral factors. Genetic factors may have the most consistent association with increased risk for ovarian cancer. At least 10% to 12% of all ovarian cancers are reported to be hereditary compared with 1.8% lifetime risk for a woman in the general population, additionally a woman with one first-degree relative with ovarian cancer has been suspected from 4-5% lifetime risk while the risk increases to 7% for a woman with two first-degree relatives affected by the disease (**Jelovac & Armstrong., 2011**). Concerning reproductive factors it was estimated that nulliparity, early menarche and late menopause may increase risk for ovarian cancer meanwhile the effect of infertility drug treatment is uncertain. Increasing maternal

age, postmenopausal hormone therapy (especially for more than five years) and life style as obesity, weight gain, smoking and lack of exercise were suggested to increase risk for ovarian cancer (**Hunn & Rodriguez., 2012**).

Ovarian cancer is the most gynecologic cancer it is often referred as the silent killer according to its asymptomatic clinical pattern and mostly diagnosed in its advanced stages with a poor prognosis, with a 20% to 60% five years survival rate (**Bhugwandass et al., 2016**). Furthermore, about 60% of women with ovarian cancers have metastatic disease at the time of diagnosis because early stage disease is insidious, mysterious and usually asymptomatic. While the late stage ovarian cancers often have symptoms, but they are usually nonspecific and not recognized as symptoms of cancer (**Prat, 2014 and Ibrahim et al., 2014**).

Chyke et al., (2016) found the early symptoms of ovarian cancers are abdominal discomfort, abdominal distension or bloating, urinary frequency or dyspepsia. Constitutional symptoms include fatigue, weight loss, anorexia and depression. It most commonly presents with a pelvic or abdominal mass that may be associated with pain. On other hand abdominal, pelvic or back pain is usually a late sign and seen only with early disease that is complicated by

torsion, rupture, or infection. It may cause abnormal uterine bleeding and usually associated with ascites.

For maximal ovarian cancer survival, extensive cytoreductive surgery and adjuvant chemotherapy are required. At the same time women's quality of life become a major issue among survivors (Kim *et al.*, 2015). These treatments can improve survival, reducing tumor size but they may also have negative impacts on (health related quality of life, HRQoL) of women because of the adverse effects of chemotherapy and surgery (Chie & Greimel., 2012).

Chemotherapy is a cornerstone of cancer treatment for many tumor entities. It is a method uses chemical agents or drugs to destroy or kill cancer cells in the cell cycle or inhibit the growth and spread. To decrease the damage to healthy cells, chemotherapy is usually given in cycles and the standard regimen treatment for ovarian cancer every three weeks for 6 to 8 cycles (Lawrie *et al.*, 2015).

The side effects associated with chemotherapy for ovarian cancer differ in terms of frequency, duration and intensity. Each side effect has its own effect on a woman's physical, emotional, functional and social well-being. Side effects may be temporary as nausea and vomiting, alopecia, diarrhea or cumulative and/or permanent like neurotoxicity, myelosuppression, nephrotoxicity, and fatigue. Such changes after treatment can have a great impact on the health related quality of life (Sun *et al.*, 2007).

The World Health Organization (WHO) defines quality of life as an individual's perception of their position in life in the context of the culture and value systems in which they lives, and in relation to their goals, expectations, standards and concerns. Health-related quality of life (QOL) is a multidimensional concept that refers to how an individual's usual physical, emotional and social well-being is impacted by a medical condition and its treatment (Pensriet *al.*, 2007). QOL issues are particularly important in ovarian cancer, and in last year they have become the focus of many research efforts as well as incorporated into clinical trials (Zhu, 2005).

Taylor & Davis., (2011) reported that the nurses have important duties as, educator, counselor and guidance in determining the factors affecting physical, social and psychological functions of ovarian cancer women, problems that may be experience in these matters, and education about the side effects of chemotherapy management and providing help to those individuals in order to get over these problems. The health care of women during this stage requires special attention to the identification of their health needs in order to provide competent care (Gharaibeh *et al.*, 2010).

Significance of the study:

Ovarian cancer is one of the ten most common malignant tumors in female population. Particular importance lies in fact that this tumor has high rate of mortality. Additionally it is considered the 4th commonest cancer among Egyptian women (Ibrahim *et al.*, 2014). Women that have experiences ovarian cancer and receiving chemotherapy they experience a group of medical, psychological and social problems that affect negatively on their quality of life. Therefore, the assessment of the health related quality of life

of women with this cancer is considered of paramount importance.

Aim of the study:

Aim of the study was: To investigate health related quality of life among ovarian cancer women receiving chemotherapy at zagazig university hospitals

Research Questions:

What is the quality of life for ovarian cancer women undergoing chemotherapy?

Subjects & Method:

Research design:

A descriptive study design was used in this study.

Study Settings:

The present study was conducted in the gynecologic oncology outpatient's clinic at zagazig university hospitals.

Studied women:

A convenience sample of study population consisted of all women who had ovarian cancer diagnosis and receiving chemotherapy. The sample consisted of 75 women recruited during the study period (one year) from the above mentioned setting.

Inclusion criteria

Criteria for selection included:-

- Women >45 years old with ovarian cancer.
- Women had a surgical treatment for ovarian cancer and receiving at least one cycle of chemo therapy whether pre or post-operative.
- Women without a history of breast or cervical cancer

Tools of data collection:

Three tools were developed by the researchers, based on current related literature were used to collect the necessary data.

Tool (1): An interview schedule including 3 parts:

- 1) First part was used to collect the socio-demographic characteristics including: women's age, level of education, occupation, marital status, monthly income, and residence.
- 2) The second part is a productive history including; age of menarche, parity, abortions, delivery type.
- 3) Third part: Treatment modality and protocol of chemotherapy and problem encountered after ovarian cancer treatment. Researchers reviewed medical records to document and verify treatment modality, time of starting chemotherapy after surgery, patient's compliance for the treatment, number of chemotherapy doses taken, and frequency of chemotherapy treatment.

Tool (2): Cancer patient Quality of Life Scale (EORTC QLQ-C30) it is cancer-specific questionnaire developed by the Study Group on Quality of Life from the European Organization for Research on Treatment of Cancer comprising a core set of questions applicable to all cancer patients and modules to be used to specific cancer sides, such as ovarian cancer. It is based on a multidimensional model of QOL, covering cancer specific symptoms of the disease, psychological distress, treatment side-effects, social interaction, physical functioning, body image, sexuality,

global health and QOL, and satisfaction with medical care. The core QOL instrument is composed by 30 items, comprising nine scales of QOL: one global QOL scale (2 items), five functional scales (physical functioning, role functioning, cognitive functioning, emotional functioning, and social function) (15 items). A Clinical and Translational Update three symptom scales (fatigue, pain, nausea and vomiting) (7 items), and six single items, assessing additional symptoms commonly reported by cancer patients (breathlessness, difficulty sleeping, appetite loss, constipation, diarrhea, and financial difficulties) (Aaranson *et al.*, 1993 & Cull *et al.*, 2001).

Scoring System for tool 2:

Each scale is scored separately. Seven questions have a dichotomous yes/no response. For the two global QOL items, respondents have to answer by using a 5point scale, where '1 = very poor' and 5 = excellent'. The remaining questions have a four-point Likert scale, ranging from '1 = Not at all' to '4 = Very much'. No timeframe is specified in the seven dichotomous questions. In the remaining questions, the patient has to answer according to the past week.

- Each of the multi-item scales includes a different set of items- no item occurs in more than one scale.

For all scales, the raw score (RS) is the mean of the component items: $RS = (I1 + I2 + \dots + n)/n$

Then, for Functional Scales: Score = $\{1 - (RS - 1) / \text{range}\} \times 100$

And for Symptom scales/Global Health Status: Score = $\{(RS - 1) / \text{range}\} \times 100$. *range = difference between the maximum possible value and minimum possible value.

- All of the scales and single-item measures range from 0 to 100. A high scale score represents a higher response level. Thus, *i*) a high score of functional scale represents a high/healthy level of functioning, *ii*) a high score for global health status/QOL represents a high QOL, but *iii*) a high score for symptoms scale/item represents a high level of symptomatology/problems.
- Raw score is calculated by estimating the average of the items which contributed to the scale than transformation is used to standardize the raw score. The scoring approach for the OV28 is identical in principle for the functional scale and symptoms scale items of QLQ-30.

Tool (3): Ovarian Cancer patient Quality of Life Scale (EORTC QLQ-OV28) is the ovarian cancer module designed to supplement the EORTC QLQC30, for the assessment of QOL in ovarian cancer patients in clinical trials and related studies. It consists of 7 subscales and a total of 28 items, which assess abdominal symptoms (abdominal pain, feeling bloated, clothes too tight, changed bowel habit, flatulence, fullness when eating, indigestion), peripheral neuropathy (tingling, numbness, and weakness), other chemotherapy related side effects (hair loss and upset by hair loss, taste change, muscle pain, hearing problem, urinary frequency, and skin problem), hormonal/menopausal symptoms (hot flushes and night sweat), body image (less attractive, dissatisfied with body), attitude to disease and treatment (disease burden, treatment burden, and worry about future) and sexual functioning (interest in sex, sexual activity, enjoyment of sex and dry vagina) (Cull *et al.*, 2001 and Greimel *et al.*, 2003).

Scoring System for tool 3:

Each scale is scored separately. For symptom scales, a higher score means a lower QOL, while for function scales, such as body image and sexual function, a higher score means a better QOL.

Validity and reliability:

The tools were revised for content validity by a jury of five experts (3 expert. from Obstetric and Gynecological Nursing specialties Faculty of Nursing, Zagazig University, and 2 expert from gynecological oncologist Faculty of Medicine) to review the developed instrument for clarity, relevance, comprehensiveness, simplicity, and applicability of tool , minor modification were done. Reliability of the proposed tools was done by Cronbach's Alpha test; it was 0.865 for tool (I) and 0.935& 0.921for tool (II&III).

Pilot study:

It was carried on 10% of women diagnosed with ovarian cancer and receiving chemotherapy for 3 months to test applicability and clarity of the tools; Simple necessary modifications were done as revealed from the pilot study results in the form of omissions and rephrasing of certain items. The pilot sample was not included in the main study sample.

Administrative and ethical considerations:

Subject of the proposed research was approved by the Research Ethics Committee of the Faculty of Nursing at Zagazig University and official permissions were obtained by submission of an official letter to responsible authorities of the above mentioned settings using proper channel of communication after explanation of the aim of study. As for the Ethical considerations, the aim of the study was explained to every woman before participation, which was totally voluntary. Women were reassured that any obtained information will be confidential, and will be used only for the purpose of the study. They were informed that they were being free to refuse to participate and they were notified that they could withdraw at any stage of the research.

Field work

The study was conducted during the period from the beginning of June 2016 up to the end of May2017. Informed consent to participate in the study was obtained from the subjects. Modifications of the tools were done accordingly. Each subject was individually interviewed using the previously mentioned tool. Time consumed for each interview ranges from 30 to 45 minutes. Face to face, structured interview conducted by the researcher in a private area of the clinic. Each woman was interviewed separately to give her chance to talk freely. The questions were given in Arabic language to be easily understood. The collected data were categorized, tabulated and made ready for use.

Statistical analysis:

All data collected were organized, entered and analyzed using appropriate statistical significance test. The data were collected, coded and entered to computer. The data were analyzed by using SPSS, (Statistical Package for Social Sciences), soft -ware program (SPSS version 20.0).According to the type of data qualitative represent as number and percentage, quantitative continues group represent by mean \pm SD, and minimum, maximum, median

were also used, the following tests were used to test differences for significance. Differences between parametric quantitative independent groups by t test. Multiple parametric by ANOVA, correlation by Pearson's correlation. The observed differences and associations were considered as the following: P value was set at Non significant (NS): $P > 0.05$, significant (S): $P \leq 0.05$ and highly significant (HS): $P < 0.001$.

RESULTS

Table (1): demonstrates the socio-demography of the studied women. The table showed that (73.3%) of the studied women belonged to the age group ranged from 55 to less than 65 years old with mean age of 60.9 ± 4.9 years, in addition to 36.0% among them were illiterate, and (76.0%) were house wife. Meanwhile, 36.0% of studied women have enough income and (68.0%) of them were currently married. Finally, 64.0% of women were living in the rural areas.

Table (2): reveal the distribution of studied women according to their obstetric history, regarding the age of menarche, (48.0%) of the studied women reported that they had their menarche from 9 to 12 years and 51.4% of the studied women had experienced two to three deliveries. As for the history of previous abortion, it was present in 40.0% had two to three abortion. According to type of delivery, (58.3%) women have normal vaginal delivery while (15.3%) have the C-section.

Table (3): displays the distribution of the studied women according to their treatment modality and their protocol of chemotherapy. All of the studied women (100.0%) underwent primary *surgical* treatment and received chemotherapy, while radiation treatment was involved in 13.3% of women and 64.0% received chemotherapy after surgery of less than three months. As regards number of chemotherapy cycles / doses, the same table revealed that 66.7% of women have six to eight doses. And all of them (100.0) were monthly exposed to the chemotherapy, however, 60.0% of them were compliance to the treatment.

Table (4): represents baseline HRQoL scores and the global health status among studied women. At qL-C30 functional scales the table reveals a higher scores were presented in the physical functioning scale (mean 76.00), the role functioning scale (mean 75.80), and emotional functioning scale (mean 73.6) following by social functioning scale and cognitive functioning (mean 72.4, 61.70 respectively). In addition, a higher symptom scores were found for fatigue (mean 88.00), nausea and vomiting (mean 85.00), appetite loss (mean 82.21), constipation (mean 81.25) following by dyspnea (mean 80.00), diarrhea (mean 67.25) and insomnia (mean 66.80). The same table demonstrates that the studied women had a financial difficulty with a mean of (66.00) and had a low score of their global health status (62.4 ± 18.5).

Table (5): illustrates the comparison of OV-28 module among the studied women. Concerning to the functional scales, it was observed that, the highest mean scores of ovarian cancer module were body image and attitude to disease/treatment (75.83 ± 13.56 , 65.55 ± 22.48 respectively), following by sexuality (51.66 ± 16.48). According to symptom scales on the OV-28 instrument indicated higher

mean scores for peripheral neuropathy (85.92 ± 11.16) and mean scores for chemotherapy side effects (80.95 ± 9.345).

Table (6): displays the relationship between socio-demographic characteristics and quality of life (EROTC QLQ – C 30) of studied women. It was found that the mean quality of life score (min-max) in women was 85.32 (36.00-97.00) for age ranged from 55 – less than 65 years old and there was no statistical significance differences between quality of life and age. According to level of education, the mean quality of life score (min-max) in women was 81.14 (60.00-98.00) for those with illiterate education and there was statistical significance differences between quality of life and level of education. As regards occupation and income, the mean quality of life score (min-max) in women was 80.00 (60.00-98.00), 83.00 (46.00-98.00) respectively) for house wife women and not enough income and there was no statistical significance differences between quality of life and occupation and income. Furthermore, there was a positive association between global quality of life score and marital status and residence.

Table (7): displays the relationship between socio-demographic characteristics and ovarian cancer module of studied women. It was found that the mean ovarian cancer module score (min-max) in women was 78.56 (69.00-93.00) for age ranged from 55 – less than 65 years old, there was no statistical significance differences between ovarian cancer module and age. According to level of education, the mean ovarian cancer module score (min-max) in women was 80.48 (63.00-98.00) for those with illiterate education, there was statistical significance differences between quality of life and level of education. As regards occupation and income, the mean ovarian cancer module score (min-max) in women was 82.44 (77.33-93.00), 79.33 (65.00-87.00) respectively) for house wife women and not enough income there was no statistical significance differences between ovarian cancer module and marital status and income. Furthermore, there was a positive association between ovarian cancer module score and occupation and residence.

DISCUSSION

Ovarian cancer is the most fatal malignancy of the female genital tract and the fourth most common cause of female cancer death. It is an aggressive illness associated with very poor survival and high recurrence rates. Ovarian cancer is detected at an advance stage, with a 5-year survival rate of 46 % for all the stages and 31 % for advanced stages (Siegel *et al.*, 2012). Malignant ovarian tumors are considered to be among the worst problems in gynecological oncology because of the lack of screening methods, impossibility of early detection, unspecific symptoms of the disease, extremely malignant course and high mortality rate (Gonçalves, 2010).

The WHO identified four broad domains as being universally relevant for the quality of life, namely physical health, psychological well-being, social relationships, and environment. Because QoL information can provide a detailed assessment of disease and treatment effects and their global impact on the individual's daily life, it can be used as a planning tool for assessing the need for further treatment and rehabilitation (Pensri *et al.*, 2007). This

current study undertaken to assess the health related quality of life among ovarian cancer women receiving chemotherapy.

The current study revealed that nearly three quarter of the studied women belonged to the age group ranged from 55 to less than 65 years old with mean age of 60.9 ± 4.9 years. In agreement with this result, a study carried out in Brazil by **Paes et al., (2011)** who found that the mean age at diagnosis of ovarian cancer was 54.6 years in a retrospective study evaluating clinic-pathologic characteristics of ovarian tumors. On the same line, this results was supported by **(Office for National Statistics, 2012)** which highlighted that an average of 53% of cases were diagnosed with ovarian cancer in women aged 65 years. Similarly, **Masoud & Emam., (2016)**. In Egypt who evaluating the quality of life among menopausal women with gynecological cancer undergoing chemotherapy and mentioned that 55% of their of studied women aged from 50-60. On the same line **Chyke et al., (2016)** mentioned that increased age is one of the most important non-genetic risk factor for ovarian cancer and this due to cancer is primarily a disease of older people.

The results of present study shows that the nearly one third of women have illiterate, and the most of them were house wife with low proportion has enough income. In addition to, nearly half of them were currently married and two third were living in the rural areas. The low level of education is a common finding in this generation in Egypt, especially in rural areas where the education of girls is usually lower, especially at a time when it was not compulsory and this finding might be related to the selected age group of the studied sample. The finding is in agreement with similar studies in Egypt where more than half of participant women had low or no education (**Moursy & Ead., 2014**). Similarly this results in accordance with what has been reported by **Kim et al., (2015)** who found that the high rate of ovarian cancer disease was found in married women (95.9%) and nearly (64.4%) were unemployed. Meanwhile, the present results disagreement with **Teng et al., (2014)** who found that ninety-five percent of participants had obtained a high school diploma or higher and the most of women (76.0%) have housewife, (80.0%) of them haven not enough income. Meanwhile, 44.0% were married. Finally, 64.0% of women were living in the rural areas.

According to obstetric history, the current study portrayed that, nearly half of women reported that they had their menarche from 9 to 12 years and nearly half of women had experienced two to three deliveries. As for the history of previous abortion, it was present in almost 42.9% had two to three abortion. This result in disagreement with **Deyet al., (2010)** who estimated that null parity may increase risk for ovarian cancer and the risk has a more substantial effect in women with a family history of ovarian cancer. On other hand **Pięta et al., (2012)** stated that, if the pregnancy was terminated with miscarriage, the risk of contracting ovarian cancer decreases compared to the women who have never been pregnant.

Concerning to the treatment modalities, the finding of the current study demonstrated that the majority of women

underwent primary surgical treatment and received chemotherapy while radiation treatment following chemotherapy was 13.3% of women. This current study results support the goal of primary cytoreductive surgery which used to remove as much as disease as possible because residual tumors of less than 1cm have more favorable prognosis than residual tumor of greater volume 2cm. These results are consistent with result of **Sehouli et al., (2010)** in Berlin who reported in their review that 89% of the patients with advanced ovarian cancer underwent surgery. Similarly, **Thrall et al., (2011)** who evaluating patients with advanced ovarian epithelial carcinoma was found that surgery was performed initially in 58.8% of the women. Moreover, **(Brand, 2011)** in Australia and New Zealand found that about 65% of the surgeons perform optimal cytoreductive surgery for patients with stages III and IV ovarian cancer. On the same line **Teng et al., (2014)** confirmed that the majority of participants (86%) underwent primary surgical treatment and radiation treatment was involved in the primary adjuvant treatment of 10% of participants.

The present study findings have also revealed that the majority of the studied women received chemotherapy and more than half of them starting chemotherapy within less than three months after surgery with a median of six to eight cycles and all of the studied women received a monthly chemotherapy treatment. These results were supported by **Abdel Aziz et al., (2015)** shown that all patients received platinum-based chemotherapy; of them 77 patients completed six cycles of chemotherapy. On the same line **Ahmed et al., (2015)** found that more than half of the studied women starting monthly chemotherapy within less than six months after surgery and took more than ten doses of chemotherapy. Similarly these results are consistent with result of **Mostafa et al., (2012)** found the response rate to the first line chemotherapy (including both neo-adjuvant and following surgery) after three chemotherapy cycles was seen in 87.3% of the cases. Additionally **Mohammed, (2010)**, who found that half of sample starting chemotherapy from one to three months and more than half of sample receive from 2-6 cycles of chemotherapy. Moreover, **Fayers & Machin, (2013)** shows that there was an improvement in QOL as perceived by the patients as their chemotherapy session progressed.

Concerning to baseline HRQoL scores for the selected dimensions of the QLQ-C30 and QLQ-OV28 instruments. Regarding to the qlq-C30 functional scales, the present study found that, the physical functioning scale and the role function scale were the highest mean score while the lowest mean scores were recorded for social and cognitive function with a low score for a global health status. These results are congruent with **Manasawee & Nipon, (2013)** who found the median of the global quality of life score in recurrent ovarian cancer was 76.33 (35.80-94.00). The higher scores on their study were the physical, role, emotional following by social wellbeing domains. In agreement with foregoing present study findings, **Greimel et al., (2011)** noticed that significantly higher scores on their study were the physical functioning scale (mean 87.27 vs. 75.45) and the role functioning scale (mean 84.85 vs. 68.94) in addition, the lowest mean scores were for emotional functioning (mean

56.82) and global QoL/health status (mean 56.82). Similarly, **Wilailak et al., (2011)** who found that when the average scores of quality of life achieved in many areas were evaluated, it was found that the highest scale was in the scale of physical wellbeing, functional well-being, emotional well-being and social well-being.

Concerning qlq-C30 symptom scales the present study has also revealed that the higher symptom scores were found for fatigue, nausea and vomiting, appetite loss, constipation, following by dyspnea, diarrhea, and insomnia. The chemotherapeutic agents most commonly associated with taste change and appetite loss which reduce the food intake that deteriorating the quality of life. Additionally there was a financial difficulty among the studied women which interferes with the financial demand for the treatment of cancer. This was not surprising as most of the studied women were house wife and had inadequate outcome. In the line with the current results **Greimel et al., (2011)** confirmed that higher symptom scores for fatigue (mean 27.27 vs. 37.88), nausea and vomiting (mean 3.03 vs. 15.15), dyspnea (mean 18.18 vs. 36.36), appetite loss (mean 9.09 vs. 31.82) and diarrhea (mean 0 vs. 15.15) were observed. Financial difficulties related to cancer treatment were also reported. Similarly **Teng et al., (2014)** found the QLQ-C30 symptomatic components; insomnia, pain, and fatigue were the major QoL detriments, with median scores of 33.3, 16.7, and 33.3, respectively. In agreement with this finding **Mardas et al., (2015)** in Poland, in a study about "dietary habits changes and quality of life in patients undergoing chemotherapy for epithelial ovarian cancer" who found that fatigue was the most affected symptoms (54.0 ± 23.22) while the diarrhea was the least one (9.8 ± 17.1). Also **Bhugwandass et al., (2016)** who found that most mean scores in their study about "Effect of chemotherapy on health-related quality of life among early-stage ovarian cancer survivors" were very low and high mean scores were recorded for the insomnia, pain, and fatigue scales and the studied women had a financial hardship.

As regarding to qlq-OV28 functional scales and concerning to the functional scales, the present study found that, the highest mean scores of ovarian cancer module were body image and attitude to disease/treatment following by sexuality. Additionally the higher mean score for the symptoms scales on the OV-28 instrument were peripheral neuropathy and chemotherapy side effects. These findings of the study were supported by **Ezendam et al., (2014)** who mentioned that 51% of women were experienced symptoms of neuropathy which seriously affected their HRQOL. Similarly, **Bhugwandass et al., (2016)** reported that the attitude toward sickness, sexuality, and peripheral neuropathy showed the highest median scores.

According to the relationship between socio-demographic characteristics and global quality of life score of the study subjects, there were no statistical significance differences between quality of life and age, occupation and income. While there were a statistical significance differences between quality of life and education, marital status and residence. These findings in accordance with **Lee et al., (2007)** and **Rabin et al., (2008)** found that no association was between quality of life and gender, age, being employed, type of surgery, time since surgery, staging, duration of the disease, and chemotherapy. Also **Stavraka et al., (2012)** who noticed that there was no major difference in QoL outcomes and age, occupation, stage, histology, and co-morbidities.

CONCLUSIONS

Based on data collected and analyzed it is concluded that the chemotherapy have an average effect on quality of life with different domains and the highest affected dimension for QLQ-C30 was for physical functioning, role function and emotional function, while the least affected dimension was a cognitive function. Meanwhile the higher symptom scores for QLQ-C30 were found for fatigue, nausea and vomiting, appetite loss and the highest mean scores of ovarian cancer module QLQ-OV28 were body image and attitude to disease/treatment following by sexuality. Additionally the higher mean score for the symptoms scales on the OV-28 instrument were peripheral neuropathy and chemotherapy side effects.

RECOMMENDATIONS

On the basis of the most important findings of the study, the following recommendations are suggested:

- Evaluation and identification of all factors that influence the quality of ovarian cancer patients could help in overcoming the difficulties and symptoms connected with them, and thus contribute to the improvement of the quality of life of the patient during survival period.
- Intervention programs are necessary to improve the patients quality of life of patients treated with ovarian cancer because of the considerable impact of this treatment on the physical, functional and psychological states of the patients
- Women should be given adequate counseling before initiating chemotherapy treatment and continued give information about the effects of treatment to prevent or minimize the detrimental effects of both ovarian cancer and treatment on the QOL of patients.
- Further researches about the factors that affect quality of life for patients after chemotherapy on a large sample in a various settings in order to generalize the results.

Table (1): Distribution of the studied women according to their socio-demographic characteristics (n= 75).

Personal Characteristics	N	%
Age groups (in years)		
• 45 -<55	3	4.0
• 55 -<65	55	73.3
• ≥65	17	22.7
Mean ± SD = 60.9 ±4.9		
Level of education		
• Illiterate/ read and write	27	36.0
• Primary/preparatory	15	20.0
• Secondary	24	32.0
• University	9	12.0
Occupation		
• Working women	18	24.0
• House wife	57	76.0
Marital status		
• Single	3	4.0
• Married	51	68.0
• Divorced/Widow	21	28.0
Income		
• Not enough	60	80.0
• Enough	15	20.0
Residence		
• Rural	48	64.0
• Urban	27	36.0

Table (2): Distribution of the studied women according to their obstetric history (n=75).

Obstetric history	N	%
Age of menarche:		
• 9-12	36	48.0
• 13-15	21	28.0
• >15	18	24.0
Parity (n=72):		
• Once	10	13.9
• 2-3	37	51.4
• More than three	25	34.7
Number of Abortions (n= 75):		
• None	13	17.3
• Once	15	20.0
• 2-3	30	40.0
• More than three	17	22.7
Delivery Type (n=72):		
• Vaginal	42	58.3
• Caesarean section(CS)	11	15.3
• Both	19	26.4

[©]3 women were single

Table (3): Distribution of the studied women according to their treatment modality and their protocol of chemotherapy (n=75).

Protocol of chemotherapy	N	%
Treatment modality		
• Surgical treatment	75	100.0
• Chemotherapy	75	100.0
• Radiotherapy after chemotherapy	10	13.3
Chemotherapy before surgery		
• Yes	20	26.7
• No	55	73.3
Time of starting chemotherapy after surgery		
• Less than three months	48	64.0
• More than three months	27	36.0
Number of chemotherapy cycles taken		
• From six to eight cycles	50	66.7
• More than six to eight cycles	25	33.3
Frequency of chemotherapy treatment		
• Monthly(every 21 day)	75	100.0
Patient's compliance for the treatment		
• Yes	45	60.0
• No	30	40.0

Table (4): Distribution of the studied women according to the health related Quality of Life Scale (EORTC QLQ-C30) (n=75).

Domains of (EORTC QLQ-C30)	Mean	Standard deviation	Median	Minimum/ maximum
Functional scales:				
Physical functioning	76.0	16.4	75.0	37.5/89.0
Role functioning	75.8	24.1	62.5	38.5/85.0
Emotional functioning	73.6	20.9	80.0	40.0/95.0
Cognitive functioning	61.7	18.1	71.4	42.9/86.7
Social functioning	72.4	13.4	75.0	37.5/90.0
Symptom scales / items				
Fatigue	88.00	9.00	89.00	55.0/98.0
Nausea and vomiting	85.00	19.25	85.00	25.0/95.0
Pain	75.00	20.11	80.00	35.0/90.0
Appetite loss	82.21	18.21	88.00	45.00/95.0
Insomnia	66.80	20.2	75.00	25.00/97.0
Constipation	81.25	22.24	89.21	50.0/98.0
dyspnea	80.00	23.12	83.00	45.0/95.0
Diarrhea	67.25	18.89	77.21	50.0/100
Financial difficulties	66.00	21.01	85.00	25.0/100
Global health status	Mean \pm SD 62.4 \pm 18.5			

Table (5): Distribution of the studied women according to the ovarian cancer module (QLQ-OV28) (n=75).

	Mean	Standard deviation	Median	Minimum/ Maximum
Functional scales				
Body image	75.83	13.56	81.00	25.00/90.00
Sexuality	51.66	16.48	75.00	56.25/98.00
Attitude to disease/treatment	65.55	22.48	70.00	50.00/100.00
Symptom scales / items				
Abdominal/GI symptoms	76.76	15.54	76.92	46.15/95.00
Other chemotherapy side-effects	80.95	9.345	85.00	50.00/98.00
Hormonal/menopausal symptoms	77.33	10.04	78.57	44.45/88.89
Peripheral Neuropathy	85.92	11.16	88.88	64.29/90.00
Hair loss	76.14	14.34	75.00	40.00/80.00

Table (6): Relation between socio-demographic characteristics and Global Quality of Life Score of studied women (EROTC QLQ –C 30) (n=75).

EROTC QLQ –C 30					
Scale		Mean ± SD	Minimum/ Maximum	T test	p value
age	45-55	82.00 ±.00	75.00/88.00	1.1	0.33
	55-65	85.32 ±14.22	36.00/97.00		
	>65	78.58 ±13.90	46.00/92.00		
Level of education	Illiterate	81.14 ± 12.30	60.00/98.00	5.95	0.001**
	Primary	93.73 ± 2.98	86.00/96.00		
	Secondary	76.70 ±17.34	46.00/93.00		
	University	84.88± 8.43	76.00/95.00		
Occupation	Worker	80.00 ±13.10	46.00/98.00	1.04	0.21
	House wife	85.85± 14.22	60.00/97.00		
Marital status	Single	80.00 ±.00	71.00/85.00	6.95	0.002*
	Married	84.62± 11.51	80.00/90.00		
	Divorced/ Widow	72.09 ± 16.55	46.00/92.00		
Income	Not enough	83.00±15.11	46.00/98.00	0.007	0.93
	Enough	82.66 ± 8.33	74.00/92.00		
Residence	Rural	86.87 ± 11.39	60.00/98.00	4.01	0.001**
	urban	76.92 ± 15.54	46.00/93.00		

* P < 0.05 (Significant) **: P<0.001(highly significant)

Table (7): Relation between socio-demographic characteristics and Ovarian Cancer Module of studied women.

Ovarian Cancer Module (OV28)					
Scale		Mean ± SD	Minimum/ Maximum	T test	p value
age	45-55	81.00± .00	36.00/90.00	0.19	0.82
	55-65	78.56± 6.41	69.00/93.00		
	>65	78.11± 10.40	65.00/87.00		
Level of education	Illiterate	80.48±7.69	63.00/98.00	15.77	0.00**
	Primary\ preparatory	80.13± 2.19	78.00/83.00		
	Secondary	72.45± 5.80	65.00/87.00		
	University	86.4± 0.52	86.00/87.00		
Occupation	Worker	77.33± 5.39	65.00/93.00	3.21	0.009*
	House wife	82.44± 7.46	77.33/93.00		
Marital status	Single	81.00± .00	45.00/90.00	1.21	0.303
	Married	79.25± 6.13	69.00/93.00		
	Divorced/ Widow	76.52± 9.91	65.00/87.00		
Income	Not enough	79.33± 6.40	65.00/87.00	0.207	0.65
	Enough	78.56± 10.49	69.00/93.00		
Residence	Rural	82.06± 5.94	69.00/93.00	2.99	0.017*
	urban	77.88± 8.79	65.00/87.00		

* P < 0.05 (Significant)**: P<0.001(highly significant)

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