Self-Management for Elderly Woman with Endometrial Cancer Receiving Radiotherapy: An Educational Intervention

Shimaa Abo Khalil Abd Elrafea[1], Eman Shokry Abd Allah[2], & Naeima Mohammed Elsayed Ahmed [3]

[1] instructor of Gerontological Nursing, Faculty of Nursing at Zagazig University, Egypt

[2] Professor of Gerontological Nursing, Faculty of Nursing, Zagazig University, Egypt.

[3] Assistant professor of obstetrics and gynecological Nursing, Faculty of Nursing, Zagazig University,

Corresponding Author: **Shimaa Abo Khalil Abd Elrafea.**

Email: **d.shimaa.ahmed@gmial.com**

Abstract

Background & Aim: Endometrial cancer affects mainly post-menopausal women and ranks the 12th most frequent cancer among elderly women. Effective self-management requires elderly women to have the necessary knowledge and skills to engage in self-care tasks.

Methods & Materials: This quasi-experimental study was conducted in radiotherapy department at the cardiac and chest Hospital at Sednawy hospital, zigzag university hospital at Zagazig City. The study sample composed of 50 elderly women with endometrial cancer, purposively assigned according to study inclusion criteria. Twelve sessions for small groups (3 to 5 elderly patients in each group) were held as part of the program's implementation in the current study.

Tools: Two tools were used in the present study; **Tool I** was a structured interview questionnaire consisted of two parts and **Tool II** was Radiotherapy self-management scale.

Results: The results revealed post intervention statistically significant improvements in studied elderly women information about endometrial cancer and radiotherapy, as well as improving their self-management experience. Also, there was improvement in total mean score of elderly women's self-management domains post program with a highly statistically significant difference (P< 0.01) between pre and post program. Additionally, there was statistical significant positive correlations between the studied elderly patients' total self-management knowledge and total self-management.

Conclusion: The applied educational program was effective in increasing self-management knowledge level and promoting self-management among studied elderly women with endometrial cancer undergoing radiotherapy.

Keywords: Educational Program, Endometrial Cancer, Radiotherapy, Self-management.

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Introduction

Endometrial cancer is a very common malignancy affecting hundreds of thousands of elderly women worldwide with the number of cases increasing annually (Jemal, 2021). Endometrial cancer is mainly a disease of menopausal and postmenopausal women with the peak of incidence in women aged 55-65 years. Endometrial cancer is among the most common gynecological cancer and may develop in atrophic or hyperplastic endometrium. Most of the cancers are detected at an early stage with the tumor confined to the uterine corpus in 75% of patients (Taieb et al., 2021) .

Endometrial cancer affects mainly post-menopausal women and the average age of women diagnosed with endometrial cancer is 60, it's uncommon in women under the age of 45. Endometrial cancer ranks the 12th most frequent cancer among elderly women. Each year, approximately 17.8 per 100,000 women are diagnosed having endometrial cancer in the Egypt, still about 400 women yearly die from the disease (North American Association of Central Cancer Registries, 2022)

Multiple risk factors associated with endometrial cancer include estrogen replacement therapy, endometrial hyperplasia, obesity, null parity and menopause later than age 52 years. Genetic predisposition appears to play a role since risk factors also include a family history of endometrial or breast cancer (Saez et al., 2020).

Treatment is usually surgical, comprising total hysterectomy and bilateral salpingo-oophorectomy; adjuvant therapy with radiotherapy, chemotherapy, or hormonal therapy is considered in more advanced or high risk disease. So, Radiation therapy (also called radiotherapy) is a treatment for cancer that uses strong beams of energy to kill and damage cancer cells which a machine directs the energy rays to the area of cancer. Its goal is to kill cancer cells and shrink tumors, there are 2 main ways to get radiation therapy for endometrial cancer as external radiation (the beams of energy are aimed at the tumor and go through the skin) and internal radiation (brachytherapy) the more common type of radiation therapy used for endometrial cancer, However, some cases need both, where an external radiation treatment often for a few minutes each day for 4 to 5 weeks then followed by internal radiation often 2 to 3 sessions (National Cancer Institute ,2022) .

Self-management in the context of cancer care is defined as "awareness and active participation by the person in their recovery, recuperation and rehabilitation to minimize the consequences of treatment and promote survival health and well-being may help cancer survivors in more effectively managing the problems that cancer and its treatment present for their physical, functional, social, and psychological well-being compared to areas of prevention and screening, elderly women receiving radiation therapy have a greater need for education and may be anxious about their declining health or their planned treatments (Clarke et al., 2020). Cancer self-management education (SME) programs as in endometrial cancer can help elderly women affected by cancer identify ways to reduce anxiety, manage pain and adverse reactions as skin reactions from radiotherapy, relax, and feel better after radiation therapy sessions (Jones et al.,2018) .

Gerontological nurses play an important role in the application of the teaching program on anxiety level and cancer self-management to produce and boost radiation therapy knowledge and behaviors among elderly women with endometrial cancer, which is a catalyst in patients trying to practice self-management while on prevention of radiotherapy adverse reactions (Traeger et al., 2017).

Method

Study Design and Setting

A quasi- experimental design with pre and post-test will be utilized to conduct the present study.

Sample

The sample of this study included (50) elderly women from the aforementioned setting who met the following criteria; A confirmed diagnosis of endometrial cancer (Stage I & II) in elderly women above 60 years , receiving radiotherapy and able to participate in the study and able to communicate.

Sample size calculation

The sample size was calculated by software Epi-info package at level of confidence 95%, margin of error 5% and power of test were 80%, assuming anxiety among elderly patients with endometrial cancer is 16.0% from 120 elderly patients (Sanjid et al., 2019) the sample should include 50 elderly patients.

Tool of data collection

To gather the required data, four tools were used .**Tool I:** an interview questionnaire that was developed by the researchers based on the literature review. It is composed of two parts: demographic characteristics and medical history of the elderly women with endometrial cancer.It was used to assess the characteristics of the studied elderly women which included age, gender, residence, marital status, educational level and history of chronic diseases as

diabetes and hypertension as well as medical history data related to endometrial cancer as duration of its diagnosis, in additions to medical data about radiotherapy regimen as (number of sessions, duration between each session).

Tool II: Radiotherapy self-management scale (Dongen et al, 2020):

The radiotherapy self-management questionnaire consists of 30 questions and includes of seven dimensions that include: Medicine and pharmacology, lifestyle management, psychological/mental health, social support, knowledge and information about disease and radiation therapy, navigation and coordination and medical decision making. The elderly women response to each item using three-point ordinal rating scale (1 = Don't follow this behavior, 2= Follow weakly, 3 = Follow strongly). .Consists of 30 items which categorized into seven domains. The scoring system was three-point Likert-type scale was used to report self-management behaviors: Don't follow this behavior (1 points), Follow weakly (2 points) and Follow strongly (3 points). The seven domains scores were obtained by calculating the mean of the responses in each subscale items. Then score for overall self-management behaviors was obtained by calculating a mean of the individual's response to all 30 items. The possible range of scores was therefore 30-90 points, from the worst to the best self-management behavior.

Educational Program

***Assessment phase*:**

This phase involved the pre-program data collection for baseline assessment. The researcher used to go to Radiotherapy department at the cardiac and chest Hospital at 9 am, where patients would come early to meet with them before the appointment of the specialist doctor for examination and follow-up, as well as taking their radiology session. Each elderly woman was interviewed individually by the researcher who introduced herself and explained the aim of the study briefly seeking their agreement in the study and reassured them that information obtained is strictly confidential and would not be used for any purposes other than research. The time consumed for filling the study tools ranged from 30 to 45 minutes. The data were preliminary analyzed to provide the basis for building-up the program according to identified needs.

Planning phase:

Based on the results obtained from the data analysis of the assessment phase, and in view of the relevant literature about endometrial cancer and their self-management, the researcher developed the proper educational program and session's content for elderly women with endometrial cancer. According to the elderly needs, study objectives, requirements, and deficiencies. Theoretical and practical sessions were translated into aim, objectives of program and set in the form of an illustrative colored booklet to be distributed to each of the studied elderly women as a guide for all pertinent data related to interventions.

Implementation phase:

The program was implemented in the study setting in the form of twelve sessions for small groups. This was intended to give more chance for discussions, interactions, and practical training. The total sample was divided into small groups (3 to 5 elderly in each group). All groups received the same content using the same teaching methods, media, discussions, and the same booklet. The length of each session 30-45 minutes was variable according to elderly's responses, active participation, the time available, as well as the content of each session. Motivation and reinforcement techniques as praise and recognition during the session were used to enhance active participation and foster learning. The sessions were aided by using pictures, posters, as well as the booklet.

Evaluation phase:

The evaluation of the effectiveness of the training program (post-test) was done after one month of the program completion by post-test, using the same pertest tools to evaluate the degree of improvement of self-management for elderly women with endometrial cancer and receiving radiotherapy.

Ethical Considerations

Ethical approval was obtained from the Scientific and Ethics Committee of the Faculty of Nursing at Zagazig University. The aim of the study was explained to each elderly woman before applying the tools to gain her confidence and trust. Informal consent was obtained from each elderly woman who agreed to participate in the study, after ensuring her that data collected will be treated confidentially.

Statistical analysis

All data were collected, tabulated and statistically analyzed using SPSS 20.0 for windows (SPSS Inc., Chicago, IL, USA 2011). Quantitative data were expressed as the mean ± SD and qualitative data were expressed as absolute frequencies (number) & relative frequencies (percentage). Marginal homogeneity test or Mc nemar test was used to compare between two dependent groups of categorical data. Paired t-test was used to compare between two dependent groups of normally distributed variables. ANOVA (One way analysis of variance) test was used for comparison between more than two different groups of quantitative data which were normally distributed. The student "t" test was used for comparison of means of two independent groups of quantitative data which were normally distributed. Spearman correlation coefficient was calculated to assess relationship between study variables, (+) sign indicate direct correlation & (-) sign indicate inverse correlation. Multiple linear regression (step-wise) was also used to predict factors which affect knowledge, self-management.

Results

Demographic Characteristics of the Studied Elderly Women with Endometrial Cancer. (n=50).

Table 1 The study included 50 elderly women with endometrial cancer whose age ranged between 60 and 77 years, with mean 62.60±4.67 years and 82.0 % of the elderly women were married. Concerning to income and living, the same table reveals that 68% and 96.0% of women were had insufficient income and living with their relatives and 66% of them family were responsible for their care.

Distribution of the studied elderly women according to their residence (n=50).

Figure I demonstrates that 66 % of the studied elderly patients were residing rural area.

Level of education among the studied elderly women (n=50).

As displayed in **Figure II**, it was presented that 30% of the elderly women with endometrial cancer in the study sample were illiterate and only 6.7% had a secondary education.

Distribution of the Studied Elderly Women with Endometrial Cancer According to Their Medical History (n=50).

Table 2 Represents that 98% of the elderly women suffered from chronic diseases and anemia was the most common diseases in 94% of them. Furthermore, 52% of the elderly women diagnosed with endometrial cancer in duration from one to three year. Moreover, 2.0% of the elderly women had family history of cancer, and 100% of them were sister.

Stage of Endometrial Cancer (n=)

Figure III Demonstrates that 64.0% of elderly women with endometrial cancer were in second stage, while 36.0 % of them were in first stage.

Information about Self-Management among Studied Elderly Women Pre and Post Program (n=50).

Table (3) Clarifies that there are statistically highly significant differences between pre and post intervention results of all the items of knowledge regarding self-management and ways to overcome side effects of radiotherapy at ($p<0.001$).

Self- Management of the Studied Elderly Women regarding radiotherapy management) Medicine and Pharmacology domain) throughout Study Phases (n=50).

Table 4 Shows a highly statistical significant differences between pre-post radiotherapy management regarding medicine and pharmacological domain of self-management for studied elderly women with endometrial cancer, it clarifies that 20.0% of studied elderly women were follow strongly monitoring symptoms, self-administering medication and adhering treatment schedules at pre intervention phase while 96.0%, 92.0% and 100.0% were follow strongly at post intervention phase. Additionally, none of studied elderly women (0.0%) of studied elderly

women weren't follow strongly adjusting or discontinuing treatments at pre intervention phase while 42.0% of them were follow strongly at post intervention phase.

Self- Management of the Studied Elderly Women regarding Radiotherapy Management of Daily life Management (Lifestyle Domain) throughout Study Phases (n=50).

Table 5 indicates that all the items of the life style domains were improved in post intervention than pre intervention and all differences were statistical highly significant (p<0.001).

Self- Management of the Studied Elderly Women regarding Radiotherapy Management of Psychology/Mental Health and Social Support Domains throughout Study Phases (n=50).

Table 6 reveals that all the items of the psychology/mental health and social support domain were improved in post intervention than pre intervention and all differences were statistical highly significant (p<0.001).

Self- Management of the Studied Elderly Women regarding Radiotherapy Management of Knowledge, Information, Navigation and Coordination Domains throughout Study Phases (n=50).

Table 7 demonstrates that, all the items of the knowledge and information management domain were improved in post intervention than pre intervention and all differences were statistical highly significant (p<0.001). Moreover, 6.0%, 0.0% and 6.0% of studied elderly women were follow strongly coordinating medical services, delegating aspects of care and coordinating information to relatives at pre intervention phase while 40.0%, 18.0% and 76.0% of them were follow strongly at post intervention phase.

Self-Management of the Studied Elderly Women regarding Radiotherapy Management of Decision-Making Domain throughout Study Phases (n=50).

Table 8 shows a highly statistical significant differences between pre-post intervention regarding decision-making domain of radiotherapy self-management for studied elderly women with endometrial cancer, it clarifies that none of the of studied elderly women (0.0%) of studied elderly women weren't follow strongly making informed decisions about treatment, making financial and practical plans and engaging in advance care planning at pre intervention phase while 0.0%, 18.0% and 58.0% were follow strongly at post intervention phase. Also, 24.0% of studied elderly women were follow strongly short-term goal setting at pre intervention phase while 100.0% of them were follow strongly at post intervention phase.

Relation between Demographic Characteristics of the Studied Elderly Women and Their Total mean Score of Self-Management throughout Study Phases.

Table 9 demonstrates that, there was statistically significant relation between demographic characteristics and total mean score of self-management of the studied elderly women as marital status, educational level and current working at ($P < 0.05$). While, there was no statistically significant relation with their age, residence, monthly income, living with whom and who responsible for care at ($P > 0.05$).

Discussion

In term of age of the studied elderly women, the findings of this study indicated that most of the studied elderly women their age were from 60 to < 70 years old and the mean of age was 62.60±4.67 years. The previous findings were in the same line with a study carried in Korea by **Jaewon et al., (2022)** who revealed that the mean age of elderly women was 59.5 years, By 2050, this number is expected to increase to 19 million with the significant portion of them being older than age 65.

As for the monthly income, the current findings of the study showed that nearly one-third of studied elderly women their monthly income was not sufficient. This result might be due to that most of the studied elderly were depending on their pension which is often very low compared to their requirements and drugs needed, therefore the financial burden of cancer increased.

As regards, study in **Malaysia** conducted by **Dohler et al., (2022)** who found that they were generally from low socioeconomic backgrounds with relatively low income.

In the same context**, Yip et al., (2022)** carried out a study in **Africa**, which reported endometrial cancer mortality in countries with lower income is higher where women in low-income countries seek treatment in advanced stages of disease, when it has spread to other organs and care has a relief aspect in these people.

The explanation of such result is that poverty is considered a major contributing factor of occurrence of endometrial cancer as lower socioeconomic status is associated with less accessibility to healthcare services to detect endometrial cancer or even treat any radiotherapy reactions. Additionally, such results might be due to that cancer and radiotherapy increase the financial burden on geriatric patients as many of them are defraying some of their treatment expenses besides low economic status that already present.

With regards to the level of education and residence of studied elderly women, the present study findings show that around more than three quarter of them were not work, two-thirds belonged to rural areas and nearly one -third of the studied elderly women were illiterate,. This result might be due parental focus or interest particularly in children's education has been low in the last century.

In the same line, a large prospective cohort study conducted in **United States of America** by **Mouw & Yoder (2020)** found that the lowest educational achievement category was related to a higher risk of cancer especially endometrial cancer in women. Such result might be due to a low level of knowledge regarding ways of endometrial cancer prevention and healthy lifestyle such as healthy diet, exercises, and encourage them about using birth control pills (oral contraceptives) that have both estrogen and progesterone may help protect women from developing uterine cancer.

Additionally, low education has been associated with the forgetting of medical knowledge and more negative attitudes towards cancer. So, if having a better grasp of patient's backgrounds, the healthcare professionals are able to implement an effective strategy in managing radiotherapy-related side effects and providing important information.

It is obvious from the present study, nearly all studied elderly women had chronic diseases as majority of studied elderly women had anemia, this is attributed to comorbidities increase with endometrial cancer, as endometrial cancer associated with a higher risk of heavy menstrual bleeding. Heavy menstrual bleeding has also been linked with an increased risk of iron deficiency anemia **(Munro et al., 2021).**

In the same line with this finding, **Benson et al. (2022)** in **New York** showed anemia is present in more than 60.0% of cancer patients, and the risk of becoming anemic increases with more advanced stages of cancer. Similarly, **Chaves et al. (2021)** in **Korea** mentioned that anemia is an independent risk factor, increasing morbidity and mortality and decreasing the quality of life in the elderly women; further, it is one of the leading indicators of cancer and is often overlooked because it is very common.

The danger of endometrial cancer is maximum if the affected family member had uterine cancer at a juvenile period or if female is a close family member. First-degree family members such as daughter, sister and mother are mainly significant in estimating threat. Numerous second-degree relatives such as an aunt and grandmother with uterine cancer might also enhance threat **(Erbas et al., 2020).**

Concerning to the family history, only one case (2.0%) of the elderly women had family history of endometrial cancer, and all of them (100%) of them were sister. Also, the studied elderly women diagnosed with endometrial cancer in duration from one to three year had family history of endometrial cancer. Similarly, **Aung et al. (2022)** in **USA** a study about '' **Endometrial Cancer Risk Increased With Family History cancer''**, demonstrated that, elderly women with a first-degree relative with endometrial cancer had a relative risk for endometrial cancer . By age 70 years, women with this family history had a 3.1% risk of developing endometrial cancer compared with a 1.7% risk for women without such a history.

As regarding to endometrial cancer stage at the time of diagnosis, the present study showed that nearly two-thirds of the studied elderly women were at second stage at the time of their diagnosis. This might be due to that most Egyptian women do not scan regularly for uterine cancer disease detection which might be attributed to decreased health awareness, unhealthy lifestyle and low socioeconomic status.

This result is in harmony with a study of **American Cancer Society (ACS), 2021** in **USA,** which revealed that elderly women in low-income countries seek treatment in advanced stages of disease when it has spread to other organs. While approximately 38 percent of elderly women are diagnosed at this stage, when the survival rate is lower.

The present study revealed that nearly two-thirds of studied elderly women were in second stage, these findings could be attributed to lack of gynecological screening for elderly women and a disease or condition that increases the amount of estrogen, but not the level of progesterone, in the body can increase the risk of second stage endometrial cancer as obesity, diabetes and irregular ovulation patterns (menopause).

On the contrary to the results of the current study, **Zhang (2019)** in **Asia** showed that 82.0% of Asian women were diagnosed in late stages as stage III or IV and are associated with higher mortality.

Radiotherapy plays an essential role in the management of endometrial cancer. The current understanding of risk-tailored radiotherapy that is guided by patterns of failure, especially in light of the updated 2023 FIGO staging system (mentioned it in my literature review) which discuss how the characteristics of patients and their tumors allow for the tailoring of radiotherapy courses by modality, technique, and regimen **(Kristin Hsieh et al., 2018).**

The present study results were in agreement with a study done by Exterman et al. (2023) in Austria, who reported that the major finding was that more than half of the women had a low level of endometrial cancer knowledge, these findings associated with aging process, low education level, low income and underemployment.

As well, **Koskas et al. (2022)** in **Taipei,** Taiwan showed that there was inadequate information and awareness of radiotherapy among elderly women aged above 40 years old with endometrial cancer. Likewise, Guo, et al. (2022) in Los Angeles, California found that most participants had poor knowledge of radiotherapy and its role.

These results go in line with the study carried by **Adulaziz et al. (2018**) in **Riyadh, Saudi Arabia** a study was conducted in King Khalid University Hospital and King Fahad Medical Hospital in Riyadh which included 157 physicians. It was revealed that about half (58.6%) of participants lacked knowledge about radiation dose for many common radiological examinations.

The current study also found that there were several factors influenced the total self-management knowledge of the studied elderly women with endometrial cancer as ways to overcome side effects of radiotherapy as diarrhea and anal pain, skin reactions as redness, radiation vaginal irritation and changes in urination. These side effects of radiotherapy and chemotherapy increases with aging process.

Additionally, side effects due to anticancer therapy are often neglected because clinicians and healthcare providers are usually more focused on clinical response of tumor itself or potentially life-threatening side effects. However, side effects to these therapies are sometimes so severe that they make significant disturbance to patients and the dose of anticancer agent should be adjusted at times, meaning that they can affect not only the elderly women quality of life (QoL), but also optimal anticancer treatment. Therefore, they must not be ignored and should be evaluated and managed **(Jaewon et al. 2022)**.

In cancer, self-management has been defined as "awareness and active participation by the person in their recovery, recuperation, and rehabilitation to minimize the consequences of treatment, promote survival, health and well-being" (**Foster et al., 2021).** Engagement in self-management is important for adjustment to a "new normal", managing issues with healthcare, psychological well-being, and re-establishing routine and social roles (**Dwarswaard et al., 2023).** For an individual to effectively self-manage, they are likely to require support from others to ensure that they are appropriately equipped with the necessary knowledge and skills. There is a maturing evidence base on self-management interventions in cancer survivors; it is suggested they can improve numerous clinical, psychosocial and economic outcomes in cancer patients, such as quality of life, physical and psychological well-being **(Boland et al., 2022).**

Radiotherapy does not only affect cancer cells it also affects to a greater or lesser degree all besides cells in the body. Elderly women with endometrial cancer are subjected to numerous stressors as anxiety caused not only by the cancer itself but also by the subsequent treatment. These stressors include physical, mental and social factors that can collectively affect the elderly women quality of life **(Moth et al., 2017).**

Centered on dimensions of radiotherapy self-management among studied elderly women (medicine and pharmacology domain, lifestyle domain, psychology/mental health and social support domains, knowledge, information, navigation and coordination domains and decision-making domain), the current study revealed that significant improvement in all self-management dimensions pre and post the educational program.

Concerning to Medicine and Pharmacology domain, the current study found that self- management of the studied elderly women regarding radiotherapy management (medicine and pharmacology domain) throughout were improved significantly post program by implementing the educational program. It might be due to doctors who are busy treating elderly women with endometrial cancer often give less time to educate elderly women about prescribed medicines.

Also, because most elderly women have other chronic diseases associated with endometrial cancer and take many medications. Additionally, more than one thirds of them were illiterate and belonged to rural areas so had insufficient knowledge about the medicines prohibited for elderly women with endometrial cancer. On the same line the previous findings go with **Hughes et al., (2021**) who carry this study in **France** and mentioned that health care providers should include specific education about which medicines are suitable for endometrial cancer elderly women and consult with doctors before using them.

Conversely, these previous results disagree with **Jiang et al., (18**, who found that participants reported strong perceptions of medication and communication safety, positively correlated with medication self-management ability and patient activation. Although most participants perceived a medication safety self-reporting system as useful (158/204, 77.5%) and easy to use (157/204, 77%), had a positive attitude toward use (162/204, 79.4%), and were willing to use such a system (129/204, 63.2%), Furthermore participants achieved the highest scores for medication management in relation to other self-management behavior domains., another study in **United States** by **Brian et al., (2020)**, demonstrated that endometrial cancer elderly women followed the medication schedule more strongly than the diet one.

Another explanation for medication self-management focused on persons taking a medication as prescribed, referred to as medication compliance or medication adherence. Although these perspectives suggested passive patient engagement in the decision process of taking medications, these studies did shine a light on the magnitude of challenges individuals face in taking medications, as approximately half of patients take medications differently than as prescribed.

Referring to daily life management of studied elderly women, the current study found that self- management of the studied elderly women regarding radiotherapy management (daily life domain) were improved significantly post program by implementing the educational program. This could be due to age related changes in all body organs among studied elderly women with endometrial cancer associated with weaker self-care behaviors and lower willingness to learn, practice, and sustain self-care for themselves.

For more explanation for decreased daily life practices among the studied elderly women had chronic diseases which eventually interfere with the studied elderly women ability to conduct daily activities and thus become increasingly dependent upon others in performing their activity of daily life such as feeding, bathing, toileting, mobility exercise, dressing, and grooming.

This findings is supported by study carried in **Denmark** by **Koutoukidis, et al., (2019)**, who reported that the daily life management domain scored was the lowest when compared with total mean score of other self-management behavior domains.

Conversely, these previous results disagree in **Mexico** with **Mozaffarian et al., (2020)**, who found that studies provide limited and inconclusive evidence regarding the association of these modifiable factors with the risk of developing endometrial cancer. Also, no study has yet been performed to determine the association of dietary pattern and lifestyle habit with the risk of developing endometrial cancer among elderly women in the UK.

With respect to psychology/mental health and social support management of studied elderly women, the current study found that self- management of the studied elderly women regarding radiotherapy management (psychology/mental health and social support domain) were improved significantly post program by implementing

the educational program. This could be due to self-care, self-efficacy, coping strategies, and depressive symptoms are potential pathways through which social support may affect life satisfaction in women with endometrial cancer.

So, healthcare providers, family, and friends should offer more social support to the elderly women and make efforts to strengthen their self-management that facilitate active coping, and alleviate depressive symptoms to improve elderly women's life satisfaction. Psychological morbidities, such as anxiety, depression, fear of cancer recurrence (FCR), distress and fatigue, were reported in **Stavanger of Norway** eight studies by both **Avci et al., (2020)** & **Beaver et al., (2019)** that used the State-Trait Anxiety Inventory to measure patients' anxiety levels during intervention.

This findings is supported by study carried in **Jeonju of South Korea** by **Biggs et al., (2020)**, showed that regarding psychology/mental health and social support management of the studied women regarding endometrial cancer, less than half (44%) of the participant women had cancer stigma had the strongest association with psychosocial adjustment among cancer survivors, followed by social support and coping strategies.

Considering to knowledge, information, navigation and coordination domains of studied elderly women, the current study found that self- management of the studied elderly women regarding radiotherapy management (knowledge, information, navigation and coordination domains) were improved significantly post program by implementing the educational program. This could be due to when obtaining useful information was complicated. Some patients preferred not to think, talk or read about cancer over obtaining knowledge and information, as this made them feel able to exert control over their disease experiences and protected them from sad feelings. Also, elderly women with advanced endometrial cancer must be coordinated medical services between different healthcare providers by collecting, exchanging health-related documents and coordinated their care by delegating some of its aspects as relatives and friends.

However, the studied elderly women had a deficiency in their self-management knowledge regarding their illness. Additionally; these previous aspects were emphasized during the sessions of the educational program. Also, Navigating across the healthcare system can be very challenging, which may include having to transition between healthcare providers (HCPs), settings (eg, hospital to community), and stages of illness, and/or recovery. For elderly women with complex conditions (ie, multiple physical, mental, social, cultural, and/or spiritual needs) transitions across the healthcare system are common **Gallagher et al., (2021).**

Bedsides, **Nass et al., (2020)** in **Washington** found that 55.1% of the studied elderly women with endometrial cancer had low knowledge, information, navigation and coordination regarding radiotherapy management.

In agreement with this, a study in **Amsterdam** done by **van Dongen et al. (2020)** demonstrated that, a significant improvement in knowledge, information, navigation and coordination domains occurred post nursing interventions in comparison to the beginning of study.

With regard of decision-making domain of studied elderly women, the current study found that self-management of the studied elderly women regarding radiotherapy management (decision-making domain) were improved significantly post program by implementing the educational program. This could be due to several elderly women participated in advance care planning or made together with their healthcare professionals shared decisions regarding future medical care and treatments. Others used short-term goal setting as a strategy to reach long-term goals. Over time, several elderly women shifted their focus on quality of life and for this reason, some of them considered foregoing treatment.

For more explanation, Decision making is one of the most complex skills required of an oncologist and is affected by a broad range of parameters. For example, the wide variety of treatment options, with various outcomes, side-effects and costs present challenges in selecting the most appropriate treatment. Many treatment choices are affected by limited scientific evidence, availability of therapies or patient-specific factors. In the decision making process, standardized approaches can be useful, but a multitude of criteria are relevant to this process.

Likewise, **Panje et al., (2020)** in **Korea** found that 46% of the studied elderly women with endometrial cancer had low medical decision making can be particularly complex and multi-layered, involving diagnostic and

therapeutic uncertainties, patient preferences and values, and includes the complexities of the healthcare environment regarding radiotherapy management.

The results of the present study, demonstrates that, there was statistically significant relation between demographic characteristics and total mean score of self-management of the studied elderly women as marital status, educational level and current working at ($P < 0.05$). While, there was no statistically significant relation with their age, residence, monthly income, living with whom and who responsible for care at ($P > 0.05$).

Additionally, there is a maturing evidence base on self-management interventions in cancer survivors; it is suggested they can improve numerous clinical, psychosocial and economic outcomes in cancer patients, such as quality of life, physical and psychological well-being and reduce healthcare utilization .Underpinning social cognition theories indicate that this is achieved by empowering self-efficacy, through training, education, and skill development (**Bandura., 2021).**

In congruence with these current study findings, a systematic review done by **Murfin et al. (2020)** showed that lower levels of education can constrain health literacy because of a limited ability to read and fullycomprehend the given information. Similarly, **Enyan et al. (2024)** in **Ghana** indicated that women with higher levels of education, at the post- secondary or tertiary levels had better chances of having knowledge of endometrial cancer than those without any formal education or less educated.

Finally, elderly women with endometrial cancer experience more health problems than younger women in survivorship, regardless of whether or not they received radiotherapy and they have a lower physical and psychological health and health-related self-management due to comorbid conditions.

Conclusion

On the light of results of the current study and answers of the research hypotheses, it was concluded that most of the studied elderly women with endometrial cancer had unsatisfactory level of knowledge regarding endometrial cancer and radiotherapy, in addition to low self-management pre intervention. As well as, after intervention, the studied elderly women had a significant improvement in their knowledge, side effects of radiotherapy complains. Ultimately, it was proved that self-management intervention is effective in improvement radiotherapy side effects of elderly women with endometrial cancer. As well as good response towards nursing care they have received. Therefore, the study findings have supported the stated research hypotheses.

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Declaration of Conflicting Interests

The Author(s) declare(s) that there is no conflict of interest.

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Table (1): Number and Percentage Distribution of the Studied Elderly Women with Endometrial Cancer According to Their Demographic Characteristics (n=50).

Characteristics	Frequency	Percent
Age (years)		
• 60- <70	42	84.0
• 70- 80	8	16.0
Mean± SD	**62.60±4.67**	
Range	**(60 -77)**	
Marital status		
Single	1	2.0
Married	41	82.0
Widowed	8	16.0
Current Working		
Working	6	12.0
Not Working	44	88.0
Monthly Income		
Not Sufficient	34	68.0
Sufficient	16	32.0
Living Condition		
Alone	2	4.0
Relatives	48	96.0
Responsible for Women Care		
Herself	17	34.0
Family members	33	66.0

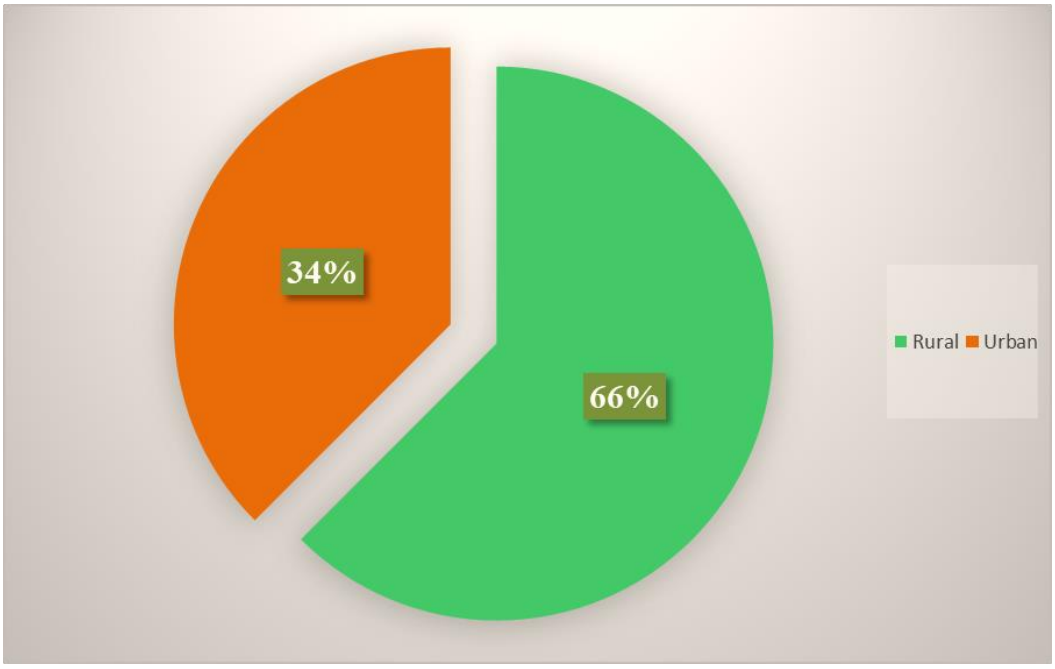

Figure I: Distribution of the studied elderly women according to their residence (n=50).

In relation to residence of the studied elderly women,

Figure I demonstrates that 66 % of the studied elderly patients were residing rural area.

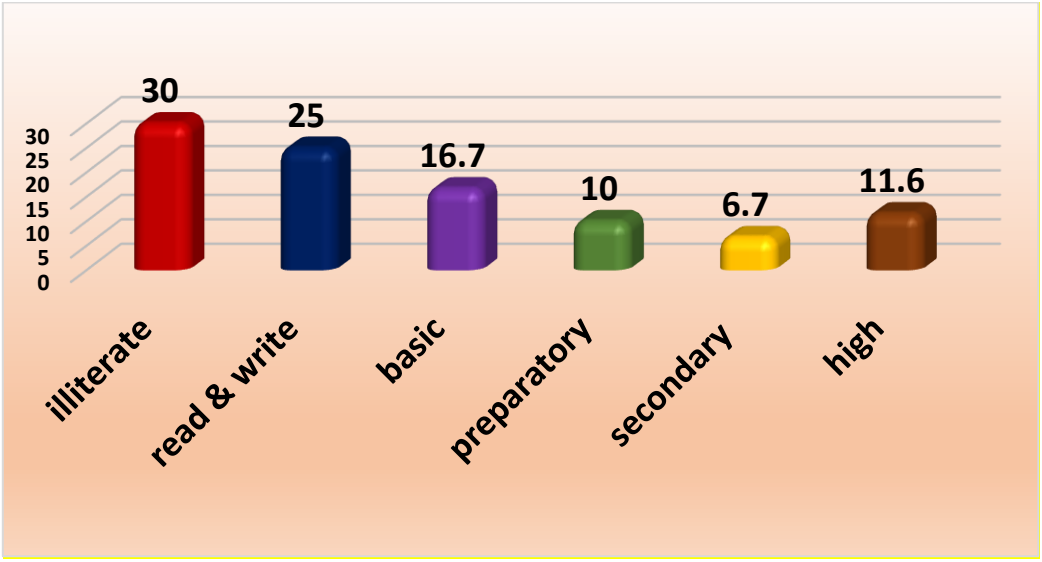

Figure (II): level of education among the studied elderly women (n=50).

As displayed in **Figure II**, it was presented that 30% of the elderly women with endometrial cancer in the study sample were illiterate and only 6.7% had a secondary education.

Table (2): Distribution of the Studied Elderly Women with Endometrial Cancer According to Their Medical History (n=50).

Items	Frequency	Percent
Past medical history		
Suffering from chronic diseases		
Yes	49	98.0

No	1	2.0
Types of chronic diseases (n=49)		
Hypertension	38	76.0
Respiratory diseases	2	4.0
Anemia	47	94.0
Diabetes mellitus	34	68.0
Arthritis	9	18.0
GIT diseases	1	2.0
Heart diseases	9	18.0
Liver diseases	2	4.0
Thyroid diseases	0	0.0
Renal diseases	1	2.0
Osteoporosis	38	76.0
Current Medical History		
Duration of Endometrial Cancer diagnosis		
<1year	22	44.0
1<3	26	52.0
≥3	2	4.0
Family History of Endometrial Cancer		
Yes	1	2.0
No	49	98.0
Kinship Degree		
Sisters	1	100.0

*Not mutually exclusive

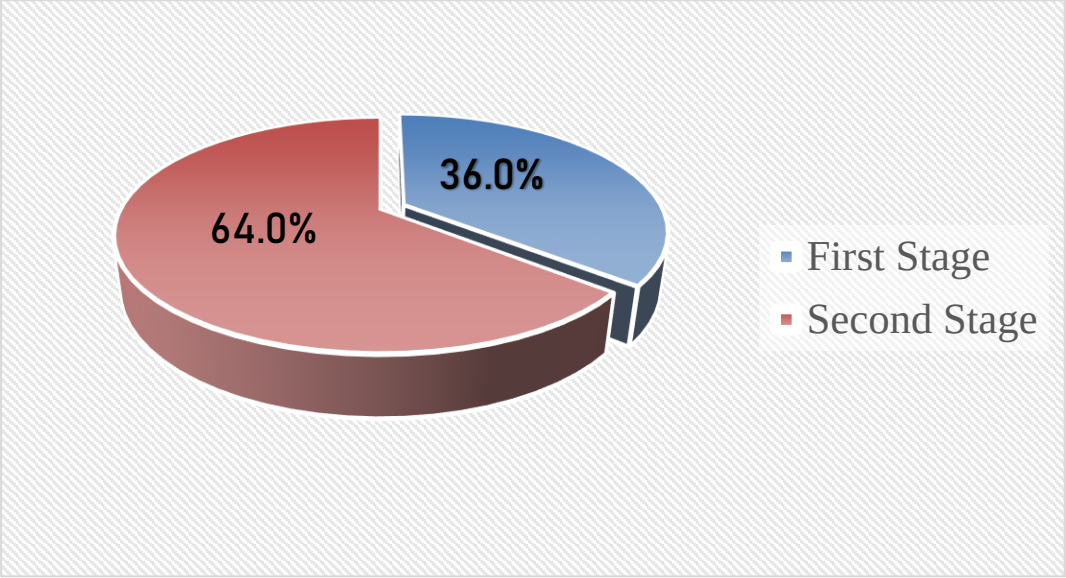

Figure III: Stage of Endometrial Cancer (n=)

Figure III Demonstrates that 64.0% of elderly women with endometrial cancer were in second stage, while 36.0 % of them were in first stage.

Table (3): Information about Self-Management among Studied Elderly Women Pre and Post Program (n=50).

Self-Management	Pre (50)						Post (50)						MHP-Value
	Complete Correct		Partial Correct		Incorrect		Complete Correct		Partial Correct		Incorrect		
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	
Definition	0	0.0	0	0.0	50	100.0	1	2.0	49	98.0	0	0.0	< 0.001**
Importance	0	0.0	0	0.0	50	100.0	7	14.0	43	86.0	0	0.0	< 0.001**
Self-Management ways to Overcome Side Effects of Radiotherapy													
Diarrhea and Anal Pain	0	0.0	15	30.0	35	70.0	23	46.0	27	54.0	0	0.0	< 0.001**
Skin Reactions as Redness	0	0.0	20	40.0	30	60.0	26	52.0	24	48.0	0	0.0	< 0.001**
Radiation Vaginal Irritation	0	0.0	42	84.0	8	16.0	17	34.0	33	66.0	0	0.0	< 0.001**
Changes in Urination	0	0.0	32	64.0	18	36.0	16	32.0	34	68.0	0	0.0	< 0.001**

MH: Marginal Homogeneity Test ** Statistically Highly Significant (p<0.001)

Table (4): Self- Management of the Studied Elderly Women regarding radiotherapy management (Medicine and Pharmacology domain) throughout Study Phases (n=50).

Medicine and pharmacology management	Pre						Post						MHp-value
	Don't Follow this Behavior		Follow Weakly		Follow Strongly		Don't Follow this Behavior		Follow Weakly		Follow Strongly		
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	
Monitoring Symptoms	9	18.0	31	62.0	10	20.0	0	0.0	2	4.0	48	96.0	0.001**
Self-Administering Medication	8	16.0	32	64.0	10	20.0	0	0.0	4	8.0	46	92.0	0.001**
Adhering Treatment Schedules	8	16.0	32	64.0	10	20.0	0	0.0	0	0.0	50	100.0	0.001**
Adjusting or Discontinuing treatment schedules	43	86.0	7	14.0	0	0.0	1	2.0	28	56.0	21	42.0	0.001**

MH: Marginal Homogeneity Test ** Statistically Highly Significant (p<0.001)

Table (5): Self- Management of the Studied Elderly Women regarding Radiotherapy Management of Daily life Management (Lifestyle Domain) throughout Study Phases (n=50).

Daily life Management (Lifestyle)	Pre						Post						MHP-Value
	Don't Follow this Behavior		Follow Weakly		Follow Strongly		Don't Follow this Behavior		Follow Weakly		Follow Strongly		
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	
Adjusting nutrition and diet	48	96.0	2	4.0	0	0.0	1	2.0	28	56.0	21	42.0	0.001**
Adjusting exercise	50	100.0	0	0.0	0	0.0	3	6.0	32	64.0	15	30.0	0.001**
Practicing complementary and alternative medicine	5	10.0	18	36.0	27	54.0	0	0.0	0	0.0	50	100.0	0.001**
Practicing religion	49	98.0	1	2.0	0	0.0	0	0.0	1	2.0	49	98.0	0.001**
Using relaxation technique	50	100.0	0	0.0	0	0.0	4	8.0	6	12.0	40	80.0	0.001**
performing leisure activities	45	90.0	5	10.0	0	0.0	0	0.0	33	66.0	17	34.0	0.001**
Maintaining daily routine by adjusting activities	50	100.0	0	0.0	0	0.0	4	8.0	37	74.0	9	18.0	0.001**
Not making any lifestyle changes	43	86.0	7	14.0	0	0.0	28	56.0	21	42.0	1	2.0	0.001**

MH: Marginal Homogeneity Test **: Statistically Highly Significant (p<0.001)

Table (6): Self- Management of the Studied Elderly Women regarding Radiotherapy Management of Psychology/Mental Health and Social Support Domains throughout Study Phases (n=50).

Items	Pre						Post						MHp-value
	Don't Follow		Follow Weakly		Follow Strongly		Don't Follow		Follow Weakly		Follow Strongly		
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	
Psychology/Mental Health Management													
Keeping a diary	43	86.0	7	14.0	0	0.0	1	2.0	9	18.0	40	80.0	0.001**
Using mindful self-help strategies	43	86.0	7	14.0	0	0.0	32	64.0	16	32.0	2	4.0	0.001**

Doing meaningful activities	13	26.0	29	58.0	8	16.0	0	0.0	10	20.0	40	80.0	0.001**
Social Support Management													
Seeking support from relatives and friends	14	28.0	28	56.0	8	16.0	0	0.0	10	20.0	40	80.0	0.001**
Seeking support from healthcare professionals	36	72.0	11	22.0	3	6.0	10	20.0	22	44.0	18	36.0	0.001**
Seeking support from other cancer patients	38	76.0	12	24.0	0	0.0	6	12.0	19	38.0	25	50.0	0.001**
Providing social support to friends and relatives	39	78.0	11	22.0	0	0.0	4	8.0	25	50.0	21	42.0	0.001**
Limiting social interactions	39	78.0	4	8.0	7	14.0	5	10.0	22	44.0	23	46.0	0.001**

MH: marginal homogeneity test, **: statistically highly significant (p<0.001)

Table (7): Self- Management of the Studied Elderly Women regarding Radiotherapy Management of Knowledge, Information, Navigation and Coordination Domains throughout Study Phases (n=50).

Items	**Pre**						**Post**						**MHp-Value**
	Don't Follow		**Follow Weakly**		**Follow Strongly**		**Don't Follow**		**Follow Weakly**		**Follow Strongly**		
	No.	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	
Knowledge and Information Management													
Seeking information about disease	40	80.0	3	6.0	7	14.0	2	4.0	16	32.0	32	64.0	0.001**
Seeking information about self-care	40	80.0	3	6.0	7	14.0	4	8.0	14	28.0	32	64.0	0.001**
Neglecting information	36	72.0	14	28.0	0	0.0	2	4.0	45	90.0	3	6.0	0.001**
Navigation and Coordination Management													
Coordinating medical services	25	50.0	22	44.0	3	6.0	0	0.0	30	60.0	20	40.0	0.001**

Delegating aspects of care	50	100.0	0	0.0	0	0.0	14	28.0	27	54.0	9	18.0	0.001**
Coordinating information to relatives	27	54.0	20	40.0	3	6.0	0	0.0	12	24.0	38	76.0	0.001**

MH: Marginal Homogeneity Test, ** Statistically Highly Significant (p<0.001)

Table (8): Self-Management of the Studied Elderly Women regarding Radiotherapy Management of Decision-Making Domain throughout Study Phases (n=50).

Items	**Pre**						**Post**						**MHP-value**
	Don't Follow		**Follow Weakly**		**Follow Strongly**		**Don't Follow**		**Follow Weakly**		**Follow Strongly**		
	No.	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	
Making informed decisions about treatment	39	78.0	11	22.0	0	0.0	2	4.0	48	96.0	0	0.0	0.001**
Making financial and practical plans	47	94.0	3	6.0	0	0.0	5	10.0	36	72.0	9	18.0	0.001**
Engaging in advance care planning	50	100.0	0	0.0	0	0.0	9	18.0	12	24.0	29	58.0	0.001**
Short-term goal setting	9	18.0	29	58.0	12	24.0	0	0.0	0	0.0	50	100.0	0.001**

MH: Marginal Homogeneity Test, ** Statistically Highly Significant (p<0.001)

Table 31: Relation between Demographic Characteristics of the Studied Elderly Women and Their Total mean Score of Self-Management throughout Study Phases.

Characteristics	**Pre Mean± SD**	**Test and p-value**	**Post Mean± SD**	**Test and p-value**
Age (years)				
60-<70	39.90±6.74	t=1.010	69.50±8.23	t=0.244
70- 80	37.37±4.71	P=0.318	68.75±6.15	P=0.808
Residence				

Rural	39.21±6.17	t=-0.433 P=0.667	68.30±6.03	t=-1.356 P=0.181
Urban	40.05±7.23		71.47±10.52	
Marital status				
Single	31.00±0.00	F=3.430 P=0.041*	103.0±0	F=14.611 P=0.001**
married	38.80±6.06		68.95±5.88	
Widowed	44.12±6.89		67.37±8.43	
Educational level				
Illiterate	48.40±3.97	F=4.223 P=0.003**	74.75±19.95	F=2.463 P=0.047*
Read &write	36.50±5.44		73.80±6.01	
Primary education	38.40±8.8		71.20±3.89	
Preparatory education	45.0±0		55.50±0.70	
Secondary education	41.40±.1		70.20±7.31	
University education	37.12±4.49		68.0±4.67	
Current working				
Working	45.00±7.92	t=2.307 P=0.025*	76.33±15.88	t=2.411 P=0.020*
not working	38.75±5.99		68.43±5.82	
Monthly income				
not sufficient	39.73±6.50	t=0.370 P=0.713	67.94±6.45	t=-1.931 P=0.059
sufficient and save	39.00±6.65		72.43±9.85	
Living with				
alone	37.50±9.19	t=-0.441 p=0.661	79.50±33.23	t=1.900 P=0.064
Relatives	39.58±6.48		68.95±6.07	
Who responsible for your care?				
Herself	36.70±4.57	t=2.275 P=0.027*	71.11±9.22	t=1.120 P=0.268
Family members	40.93±6.91		68.48±7.09	

T: student t-test, F: One way ANOVA, *: statistically significant (p<0.05), **: statistically

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