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Effect of Educational Program on Elderly Women Knowledge regarding Endometrial Cancer receiving Radiotherapy

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Abstract

Endometrial cancer is one of the most common types of gynecologic cancer in developed countries and the second most common gynecologic cancer, it is mainly a disease of menopausal and postmenopausal women with the peak of incidence in women aged 55-65 years. Radiation therapy is a treatment for 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. 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. The study findings reported that total mean information was 13.00±4.54 pre intervention and increased to 32.48±5.93 post intervention, with highly statistically significant ($p<0.001$).Also, the current study result reveals that, 16% of studied elderly women had satisfactory Knowledge before the program and this percentage was increased to 86.0% post the program with highly statistically significant improvement at ($p>0.000$). **Conclusion**: The applied educational program was effective in improving elderly women knowledge regarding endometrial cancer receiving radiotherapy.

Keywords: Educational Program, Elderly women, Endometrial Cancer, Radiotherapy

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1. Introduction

Populations around the world are ageing at a faster pace than in the past and this demographic transition will have an impact on almost all aspects of society. By 2030 the world is likely to have 1 billion older, accounting for 13 percent of the total population. While today's proportions of older people typically are highest in more developed countries, the most rapid increases in older populations are occurring in the less developed world **[1].** Egypt's elderly people account 6 .5million (3.5 million males and 3 million females) according to the (Central Agency for Public Mobilization and Statistics "CAPMAS", 2019) [2].

Endometrial (Uterine) cancer, the most common malignancy of the female genital tract, is one of the few cancers with elevating incidence and mortality. It is 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 [3].

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 [4]. 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 [5].

Moreover, radiation oncology is the medical specialty concerned with prescribing radiation and is distinct from radiology. Also, radiation may be prescribed by a radiation oncologist with intent to cure (curative") or for adjuvant therapy. It may also be used as palliative treatment (where cure is not possible and the aim is for local disease control or symptomatic relief) or as therapeutic treatment (where the therapy has survival benefit and can be curative). It is also common to combine radiation therapy with surgery, chemotherapy, hormone therapy, immunotherapy or some mixture of the four. So, most common cancer types can be treated with radiation therapy in some way [6]. Radiation therapy not only destroys fast-growing cancer cells, but it also destroys or delays the development of fast-growing and dividing healthy cells, it travels throughout the body. Side effects depend on the doses received and reaction to them. Side effects may get worse during treatment. However, most side effects are temporary and subside once treatment is finished. Sometimes radiation therapy can have short term side effects and long-term or permanent effects [7].

Effective education program has emerged as an essential method in improving elderly women knowledge. Additionally, gerontological nurses play an important role in the application of the teaching program to produce and boost endometrial cancer and radiation therapy knowledge and behaviors among elderly women. Hence, this research aimed to evaluate the effect educational program on elderly women knowledge regarding endometrial cancer receiving radiotherapy.

2. Materials and Methods

Study Design and Setting

A quasi-experimental study design was utilized to conduct the current study in radiotherapy department at the cardiac and chest Hospital at Sednawy hospital, zigzag university hospital.

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, two 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: Elderly women's knowledge regarding endometrial cancer and radiotherapy.

The second tool was modified by the researcher after reviewing the related literature to collect the necessary data for the study. It composed of two parts. **Part 1:** Elderly women's knowledge about endometrial cancer, **Part 2**: Elderly women's knowledge about Radiotherapy.

Scoring system:

The total score ranged from 0-44 grades for each item. The correct answer was allotted one grade and zero for wrong answer or don't know. The knowledge scores depended on the numbers of grades the participant obtained regarding all questions. The total grade was computed out of fourteen (44) grades and knowledge was considered satisfactory if the percent score was 60% or more (>26grade) and unsatisfactory if less than 60% (<26grade).

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.. The researcher read and explained each item of the study scales to the elderly and then recorded her response to each item. 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, anxiety 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 chances for discussions, interactions, and practical training. The total sample was divided into small groups (3 to 5 elderly people 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. To ensure that the studied elderly women understand the content.

Each session was started by a summary about what was given through the previous session and the objectives of the new one, taking into consideration the use of simple language to suit the level of understanding of the elderly. 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 of anxiety level of 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, and that the study maneuvers do not entail any harmful effects on participating elderly women. Elderly women were informed that they have the right to withdraw from the study at any time without giving any reason.

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 and anxiety scores. Cronbach alpha coefficient was calculated to assess the reliability of the scales through their internal consistency. P-value < 0.05 was considered statistically significant, p-value < 0.001 was considered highly statistically significant, and p-value ≥ 0.05 was considered statistically non-significant.

3. Results and discussion

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. Also, 66 % of the studied elderly patients were residing rural area. Regarding educational level, 30% of the elderly women with endometrial cancer in the study sample were illiterate and only 6.7% had a secondary education. 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.

Past Medical and Current Medical History of the Studied Elderly Women with Endometrial Cancer.

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. But, 64.0% of elderly women with endometrial cancer were in second stage, while 36.0 % of them were in first stage. Moreover, 2.0% of the elderly women had family history of cancer, and 100% of them were sister.

Part III: Elderly women's information about Endometrial Cancer and Radiotherapy throughout the Study phases*:*

Information about Endometrial Cancer among Studied Elderly Women Pre and Post Program (n=50).

Table 3 Reveals that, there are statistical highly significant differences between the pre and post intervention results some items of knowledge regarding endometrial cancer as (definition, symptoms, stages of endometrial cancer, diagnosis and screening, methods of treating and complications) at (p<0.001). Meanwhile, there was a statistical significance differences between the pre and post intervention regarding the risk factors and causes of endometrial cancer at (p<0.05).

Total knowledge score among Studied Elderly Women throughout the Study Phases (n=50).

Figure (I) demonstrates that 16% of studied elderly women had satisfactory Knowledge before the program and this percentage was increased to 86.0% post the program with highly statistically significant improvement at (p >0.000).

Relation between Demographic Characteristics of the Studied Elderly Women and Their Total mean score Knowledge throughout Study Phases.

Table 4 demonstrates that, there was statistically significant relation between total mean score knowledge of the studied elderly women and their demographic characteristics as age and educational level at (P< 0.05). While, there was no statistically significant relation with their residence, marital status, current working, monthly income, living with whom and who responsible for care at (P > 0.05).

Relation between Past Medical History of the Studied Elderly Women and Their Total mean Score of Knowledge throughout Study Phases.

Table 5 validates that, there was no statistically significant relation between total mean score knowledge of the studied elderly women and their past medical history as all the items of chronic diseases at (P= > 0.05).

Relation between Present Medical History of the Studied Elderly Women and Their Total mean Score of Knowledge throughout Study Phases.

Table 6 reveals that, there was highly statistically significant relation between total mean score knowledge of the studied elderly women and their present medical history as duration of endometrial cancer diagnosis at (P= < 0.001).). While, there was no statistically significant relation with stages of endometrial cancer and family history 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 [8]. In the same context, Yip et al., (2023) 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 [9].

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 [10]

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, Ph 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 [11]. 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 [12]. 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, Andrew et al. (2019) 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), 2020 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 (2020) 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 [13]. Concerning using of radiation therapy, the present study findings revealed that nearly three-quarters of the studied elderly women the duration of received radiotherapy was from 3-6 weeks. Furthermore, approximately majority of elderly women received 20-30 radiological sessions. As well as, for the duration between radiological sessions it was obvious that about most of the elderly women the duration was every day with no previous history of receiving radiotherapy and underwent surgical intervention with a combination of chemotherapy treatment. As to radiotherapy administration, it was found that nearly half of them were administrated external radiotherapy. So, radiotherapy may be used in the early stages of cancer or after it has started to spread. It can be combined with chemotherapy or used before surgery called (neo-adjuvant radiotherapy) or after surgery called adjuvant. Similarly, a study carried out in United States by Lee et al. (2018) who reported that almost all elderly women with endometrial cancer undergo a variety of oncologic treatments including surgery, radiation, and traditional chemotherapy [14]. Additionally, this finding is matching with the study of Almuwaqqat et al. (2020) who found that more than three-quarters of the elderly women took radiation therapy, often both vaginal brachytherapy and external pelvic radiation, may be given after the elderly women has recovered from surgery. Another option is to give the radiation therapy first, and then do a simple hysterectomy. Referring total information of the studied elderly women about endometrial cancer, the current study revealed that total mean knowledge was 5.76±2.05 of studied elderly women had unsatisfactory knowledge level at pre intervention. These were improvement to satisfactory knowledge at post intervention was 11.74±1.06**.** These were evident in all dimensions of endometrial cancer knowledge.

These findings could be attributed to several causes such as, poor training of hospital staff regarding patient and family education; the elderly woman may be also embarrassed to ask medical staff to gain more knowledge about their diseases or don't have enough knowledge to know what to ask about. The present study results were in agreement with a study done by Gao et al. (2020) in Japan, who reported that the major finding was that more than half of the elderly women had a low level of endometrial cancer knowledge, these findings associated with older age, low education level, underemployment, low family income [15]. After implementation of the current study educational program there were a statistically significant improvements in the studied elderly women's knowledge total score as about one fifth (16%) of studied elderly women had satisfactory Knowledge before the program and this percentage was increased to more than three quarters (86.0%) post the program with highly statistically significant improvement at (p >0.000). This might be attributed to the content of the program, which focused on applied knowledge in simple, straightforward, understandable language, with illustrations and aimed to address the studied elderly women needs and concerns.

In the same stream, a study conducted in Japan by Achouri et al., (2022) who reported that good educational program had positive effect on subjects' knowledge as 87% of the studied elderly women had poor knowledge preprogram while improved to become 13% after program [16]. An online internet study of 235 women conducted in 2024 found that a low percentage of participants from the general population were aware of risks and symptoms of endometrial cancer and that most participants had never discussed symptoms with their physician, culture, etc. Similarly, Rebbeck, et al. (2021) in Columbus, USA found that women were not aware or had limited knowledge about gynecologic cancers as endometrial cancer [17]. In present study, the relation between demographic characteristic compared to the total mean score knowledge was statistically significant relation as age and educational level at (P= < 0.05). While, there was no statistically significant relation with their residence, marital status, current working, monthly income, living with whom and who responsible for care at (P > 0.05). These findings have been similarly reported by Alzabaidey, (2017) showed that the highest percentages of affected elderly women were in the age group 60 years and over. This might be due to high level of illiteracy, low socioeconomic conditions, and limited health care facilities in these areas, all of which negatively affection on their health and quality of life especially after receiving radiotherapy. In congruence with these current study findings, a systematic review done by Murphy et al. (2019) showed that lower levels of education can constrain health literacy because of a limited ability to read and fully comprehend the given information. The results of the present study, illustrated a highly significant relation between past and present history of the studied elderly women with endometrial cancer and their total effect on their knowledge. The possible explanation is that such chronic diseases, women with early endometrial cancer and coexistent comorbidities (chronic diseases) generally experience worse prognosis which may be in part related to inferior treatment.

In the same line, Hankinson et al., (2017) study in New York who found that breast cancer is the most frequently diagnosed cancer and cause of cancer death among women worldwide, the risk of developing and dying from endometrial cancer increases with age. In parallel with increased vulnerability to endometrial cancer, increasing age also confers greater risk for the development of a number of other chronic health conditions. Given projections of an ageing population .So, the absolute number of elderly endometrial cancer patients with coexistent comorbidities is expected to increase over the coming decades. Moreover, the current study results demonstrated that there was significant relation between family history of the studied elderly women with endometrial cancer and their total effect on quality of life. Additionally, the finding showed that the elderly women with no family history of endometrial cancer had a higher level of knowledge than those with family history of endometrial cancer. These findings were further

verified by multiple linear regression models in which illustrates that there was statistically significant independent positive predictor of studied elderly women knowledge score post intervention was level of education, meanwhile total anxiety score was a statistically significant independent negative predictor. The model explains 0.379 of the variation in information score as value of r-square indicates.

On the same way, a study conducted in Australia by Howlader et al (2019) who stated that; higher education level, current occupation and regular follow up were associated with good self-management knowledge among endometrial cancer elderly women [18].

On the other hand, by offering health education tailored to the needs of studied elderly patients, disease awareness and knowledge will be changed positively, leading to improvements in their self-management post program thus enables them to perform complex self-management activities. In addition, the researcher provided them with ongoing encouragement, interaction, and direction as the educational program was being implemented, which may have contributed to the achievement of such results.

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
Residence		
• **Rural**	33	66.0
• **Urban**	17	34.0
Educational level		
• **Illiterate**	24	48.0
• **Read &write**	4	8.0
• **Primary education**	5	10.0
• **Preparatory education**	2	4.0
• **Secondary education**	10	20.0
• **University education**	5	10.0
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

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**
Stages of endometrial cancer		
• **Stage I**	**18**	**36.0**
• **Stage II**	**32**	**64.0**
Family History of Endometrial Cancer		
• **Yes**	**1**	**2.0**
• **No**	**49**	**98.0**
Kinship Degree		
• **Sisters**	**1**	**100.0**

***Not mutually exclusive**

Table (3): Information about Endometrial Cancer among Studied Elderly Women Pre and Post Program (n=50).

Items	Pre (50)						Post (50)						MHP-Value
	Complete Correct		Partial Correct		Incorrect		Complete Correct		Partial Correct		Incorrect		
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	
Definition	14	28.0	0	0.0	36	72.0	50	100.0	0	0.0	0	0.0	< 0.001**
Risk Factors and Causes	0	0.0	50	100.0	0	0.0	8	16.0	42	84.0	0	0.0	< 0.05*
Symptoms	0	0.0	21	42.0	29	58.0	15	30.0	35	70.0	0	0.0	< 0.001**
Stages	9	18.0	0	0.0	41	82.0	47	94.0	1	2.0	2	4.0	< 0.001**
Diagnosis and Screening	0	0.0	48	96.0	2	4.0	1	2.0	49	98.0	0	0.0	< 0.05*
Methods of treatment	7	14.0	34	68.0	9	18.0	25	50.0	25	50.0	0	0.0	< 0.001**
Complication	7	14.0	0	0.0	43	86.0	49	98.0	1	2.0	0	0.0	< 0.001**

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

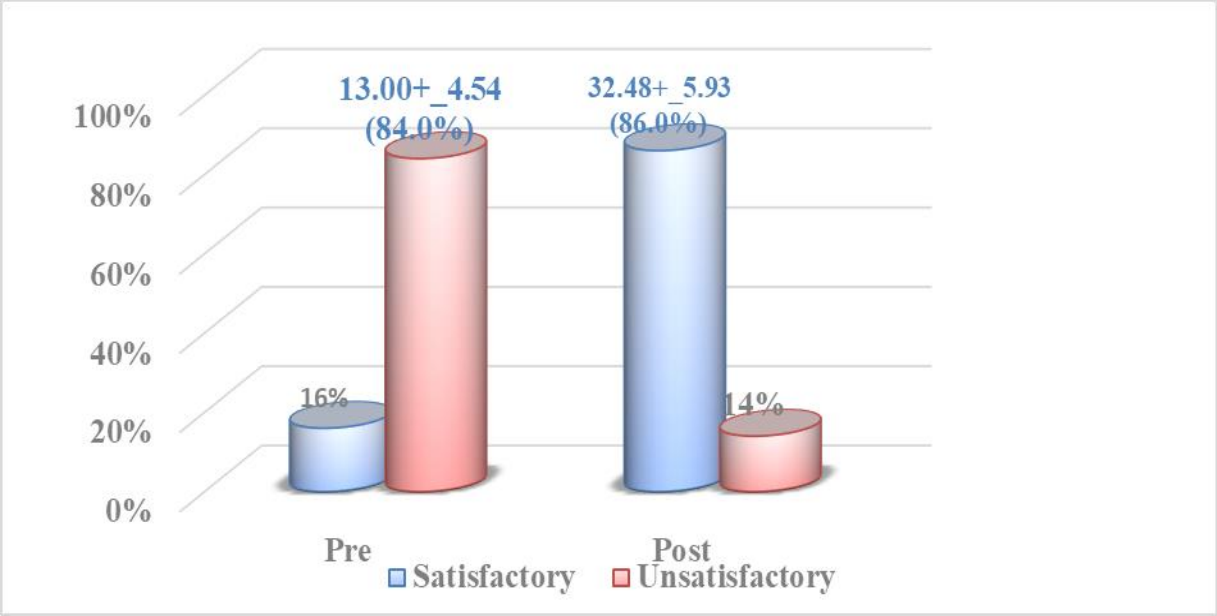

Figure (I): Total knowledge score among Studied Elderly Women throughout the Study Phases (n=50).

Table 4: Relation between Demographic Characteristics of the Studied Elderly Women and Their Total mean score Knowledge throughout Study Phases.

Characteristics	Pre Mean± SD	Test and p-value	Post Mean± SD	Test and p-value
Age (years)				
60- <70	13.57±4.58	t=2.110	33.11±6.14	t=2.737
70- 80	10.00±2.97	P=0.040*	29.12±3.13	p=0.013*
Residence				
Rural	12.87±4.27	t=-0.261	31.69±4.17	t=-1.310
Urban	13.23±5.15	P=0.796	34.00±8.32	P=0.196
Marital status				
Single	12±0.00	F=0.026	32.0±0.00	F=0.465
married	13.00±4.40	P=0.974	32.85±6.05	P=0.631
Widowed	13.12±5.76		30.62±5.68	
Educational level				
Illiterate	19.20±3.03	F=9.339 P=0.001**	42.80±10.87	F=5.660 P=0.001**
Read &write	11.50±1.91		32.75±0.50	
Primary education	14.60±3.97		32.40±4.27	
Preparatory education	12.00±0		32.00±0	
Secondary education	16.50±3.97		33.10±4.88	
University education	10.25±3.20		30.08±3.53	
Current working				
Working	18.00±4.0	t=3.122	35.50±4.27	t=1.340
not working	12.31±4.20	P=0.003**	32.06±6.04	P=0.187
Monthly income				
not sufficient	12.50±4.71	t=-1.139	32.02±6.80	t=-0.780
sufficient and save	14.06±4.07	P=0.261	33.43±3.42	P=0.439
Living with				
alone	13.00±1.41	t=0.001	30.50±2.12	t=-.478
Relatives	13.00±4.61	P=0.99	32.56±6.03	P=0.635
Who responsible for care?				
Herself	11.94±2.81	t=-1.189	31.47±3.41	t=-0.861
Family members	13.54±5.16	P=0.240	33.00±6.87	P=0.393

T: Student t-test, F: One way ANOVA, *: statistically significant (p<0.05), **: statistically highly significant (p<0.001)

Table 5: Relation between Past Medical History of the Studied Elderly Women and Their Total mean Score of Knowledge throughout Study Phases.

Items	Pre Mean± SD	Test and p-value	Post Mean± SD	Test and p-value
Chronic Diseases				
Yes	21.00±0.00	t=-1.822	39.00±0.00	t=-1.113
No	12.83±4.43	P=0.075	32.34±5.91	P=0.271
Types of Chronic Diseases				
Hypertension	13.05±4.67	t=0-.144 P=0.886	33.13±6.48	t=-1.395 P=0.169
Respiratory diseases	11.50±0.71	t=0.473 P=0.638	29.00±4.24	t=0.844 P=0.403
Anemia	13.31±4.35	t=-2.029 P=0.048*	32.68±6.02	t=-.947 P=0.349
Diabetes mellitus	12.35±3.82	t=1.487 P=0.144	31.91±6.44	t=0.987 P=0.329
Arthritis	15.11±4.53	t=1.563 P=0.125	34.11±3.91	t=-.909 P=0.368
Heart diseases	9.77±3.11	t=2.471 p=0.017	29.44±3.43	t=1.729 P=0.090
Liver diseases	19.00±0.00	t=-1.962 P=0.056	33.00±0.00	t=-0.125 P=0.901
Osteoporosis	12.57±4.37	t=1.171 P=0.247	32.34±6.41	t=0.290 P=0.773

T: Student t-test, *: Statistically Significant (p<0.05).

Table 6: Relation between Present Medical History of the Studied Elderly Women and Their Total mean Score of Knowledge throughout Study Phases.

Items	Pre Mean± SD	Test and p-value	Post Mean± SD	Test and p-value
Duration of Endometrial Cancer diagnosis				
<1year	11.27±3.75	F=3.734 P=0.031*	32.18±2.92	F=15.479 P=0.001**
1-<3	14.11±4.69		31.34±4.88	
≥3	17.50±4.94		50.50±16.26	
Stages at diagnosis of endometrial cancer				
stage I	14.00±4.48	t=1.173 P=0.247	33.38±4.04	t=0.810 P=0.422
stage II	12.43±4.54		31.96±6.77	
Family history of endometrial cancer				
Yes	10.00±0	t=-.664 P=0.510	26.00±0	t=-1.106 P=0.274
No	13.06±4.56		32.61±5.91	

T: student t-test, F: One way ANOVA, *: statistically significant (p<0.05), **: statistically highly significant (p<0.001)

4. Conclusions

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. As well as, after intervention, the studied elderly women had a significant improvement in their knowledge and side effects of radiotherapy complains Meanwhile, there was a highly statistically significant positive correlations between the studied elderly women's knowledge of endometrial cancer and radiotherapy post program. Ultimately, it was proved that intervention is effective in improvement knowledge of endometrial cancer and radiotherapy side effects of elderly women. 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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