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The needs of patients receiving brain radiotherapy at Fayoum oncology center

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Abstract---Background: Brain radiotherapy is an indispensable mainstay treatment for the majority of brain tumors. It has an important role in the treatment of brain tumors either with curative intent or for palliation. Although radiotherapy is well tolerated by most patients, some experience radiation-induced side effects. Aim of the study: To assess the needs of patients receiving brain radiotherapy at fayoum oncology center. Design: Descriptive exploratory research design was used to conduct this study. Setting: The study was conducted in the radiotherapy unit at Fayoum Oncology Center at fayoum governorate. Subjects: A purposive sample of 60 adult patients from both gender receiving brain radiotherapy. Tools: A structured interviewing questionnaire included socio-demographic data, medical history, surgical history and patients' health needs assessment questionnaire. Results: the highest unfulfilled health needs of patients treated with brain radiotherapy were discomfort, activities of daily living, anxiety and depression. There is statistically significant correlation between physical health needs, psychological and social health needs. Additionally, there is statistically significant correlation between physical discomfort and anxiety and between physical discomfort and depression Conclusion: The study concluded that the patients suffered from unfulfilled health needs physical, social and psychological. Recommendations: It is recommended that Regular assessment should be carried out to monitor physical, psychological and social functioning of patients receiving brain radiotherapy.

Keywords---needs of patients, brain radiotherapy, oncology center.

Introduction

A brain tumor is a collection, or mass, of abnormal cells in brain. or skull, which encloses the brain, is very rigid. Any growth inside such a restricted space can cause problems (Almadhoun & Abu-Naser, 2022). Brain tumor also can be defined as unnatural and uncontrolled growth in brain cells. Since the human skull is a rigid and volume limited body, consequently, any unexpected growth may affect a human function according to the involved part of the brain; moreover, it may spread into other body organs and affect human functions (Sutradhar, et al, 2021). There are roughly 130 different types of brain and central nervous system tumors, all ranging from benign to malignant and from extremely rare to relatively common. But of those 130 brain tumors, it is categorized as primary or secondary. The former represents about 70% of all brain tumors, while secondary tumors are the residuals 30%. This classification is determined according to tumors origin just as tumors first originate in the brain are called primary tumors. On the other side, tumors first arise in any other part of the body and then transferred to the brain are called secondary tumors, and most of them are malignant (Pertz, et al, 2022).

Brain radiotherapy is an indispensable mainstay treatment for the majority of these brain tumors. It has an important role in the treatment of brain tumors either with curative intent or for palliation. Cranial irradiation (IR) is commonly used to treat known tumor occurrence in the brain, either with highly precise stereotactic radiation or therapeutic cranial irradiation. The prognosis for patients with BMs is poor, and whole-brain radiotherapy (WBRT) is the standard therapy in clinical practice guidelines for the management of BM; it can palliate neurological symptoms and control the local disease (Noll, et al, 2022). Although, radiotherapy is a mainstay and successful treatment in most cancer patients, there are many side effects associated with the treatment. radiotherapy works by killing cells that are dividing rapidly and this is why radiotherapy cause side effects as it acts on cells in the body that naturally divide rapidly. Side effects usually are related to the area being treated with radiotherapy (Liu, et al, 2021).

Side effects of radiotherapy in normal tissue can be divided into early (or acute) and late responses, depending mostly on tissue turnover time and their modulation by processes that mimic a wound healing response. Early (or acute) side effects occur during, immediately after, or soon after weeks from radiotherapy treatment. Late normal tissue side effects are defined by their occurrence several months to years after radiotherapy (Thariat, et al, 2022). The most common early side effects for patients receiving brain radiotherapy are extreme tiredness which is feeling tired physically, mentally, and emotionally and skin changes, other early side effects are headache, hair loss, nausea, vomiting, Blurred vision, hearing loss, scalp changes, trouble with memory and speech and seizure (Surendran, et al, 2022). Physical symptoms affect the individual's psychological well-being, usually there is body image changes due to hair loss, skin changes, fatigue, hearing loss, trouble with memory and speech can confound the problems of psychological distress. The physical and psychological

problems together can lead to substantial social problems, such as the inability to work and reduced income. Actually, physical, psychological, and social stressors are often intertwined, both resulting from and contributing to each other (Stafford, et al, 2021). Radiotherapy nurses play a central role in a substantial role in the prevention and management of radiotherapy side effects and it is important that nurses have sufficient knowledge and understands the individual treatment options prescribe. They are also responsible for monitoring cancer patients' vital signs and overall well-being that helping them manage pain and lessen side effects as they undergo treatment (Zhang, et al, 2022).

Significance of the study

The number of new cancer cases per year is estimated to rise to 22.2 million by the year 2030 worldwide. and about 12 million patients will receive radiotherapy as part of their treatment (Jehan, et al, 2022). brain tumors are among the most prevalent cancers in recent years. Brain tumors are the most common cancer site among children younger than 14 years with 5.47 cases per 100,000 population, the third most common in adolescents and young adults (15–39 years) with 10.71 per 100,000 and the ninth most common cancer site in adults aged 40+ years. the brain cancer is considered to be the 10th leading cause of death in both women and men. In 2019, around 17 760 adults (7850 women and 9910 men) were estimated to have died from the primary cancerous brain (Marcu, et al, 2021). Every year, hundreds of thousands of patients worldwide undergo radiotherapy for primary brain tumors and for brain metastases originating from extracranial tumors (Reichl, et al, 2022). Brain tumors are somewhat uncommon considering one individual in 165 will be diagnosed with a brain tumor in their lifetime. However, trends from 1970s onwards have shown an increased diagnosis of brain tumors in developed countries, with a world age standardized incidence rate that ranges from 4.3 to 18.6 per 100,000 per year. Gliomas are the most common histological type of primary CNS (central nervous system) tumors (Kurdi, et al, 2021). Central nervous system (CNS) tumors represent a major public health problem, and their epidemiological data in Egypt have been rather incomplete except for some regional reports. There are no available frequency-based data on central nervous system tumors in our locality. the frequency of central nervous system tumors in east delta region, Egypt. Intracranial tumors represented 86.7% of cases in comparison to only 13.3% for spinal tumors. Gliomas were the CNS tumors of the highest frequency (35.2%), followed by meningioma (25.6%), pituitary adenoma (11.6%) and nerve sheath tumors (6.6%). 10.25% of tumors were of children <15 years (Zalata, et al, 2011).

Aim of the study

The aim of the present study is to assess the needs of patients receiving brain radiotherapy through the following objectives:

- Assess the physical needs of patients receiving brain radiotherapy.
- Assess the psychological needs of patients receiving brain radiotherapy.
- Assess the social needs of patients receiving brain radiotherapy.

Research questions

- What are the physical needs of Patients receiving brain radiotherapy?
- What are the psychological needs of Patients receiving brain radiotherapy?
- What are the social needs of Patients receiving brain radiotherapy?

Research design

Descriptive exploratory research design was used to conduct this study. Descriptive research aims to accurately and systematically describe a population, situation or phenomenon. It can answer what, where, when and how questions, but not why questions. A descriptive research design can use a wide variety of research methods to investigate one or more variables (Raja & Lakshmi, 2021).

Setting

This study was conducted at radiotherapy unit - Fayoum Oncology Center - Fayoum Governorate. It is located in extension of el Nabawi el Mohandas street at AL-Fayoum city. It belongs to the Scientific Society for the Care of Oncology Patients in Fayoum and the first center for the treatment of oncology patients in northern Upper Egypt, the only hospital provides radiotherapy at the governorate and it serves patients from all areas in this governorate and neighboring governorates. It consists of five floors. Radiotherapy unit in the ground floor and includes four rooms, first room for checkup, the second room is a pace accelerator room, the third room is a physics room and the fourth room is a control room. The radiotherapy unit was worked all days of the week except Thursday and Friday for 6 hours daily from 9 Am to 5 P.m. I took the sample from that hospital because that hospital is the only hospital in Al-Fayoum city that provide radiotherapy for oncology patients.

Subjects

60 adult patients of both sexes who were undergoing brain irradiation were selected at random for this study. They came from the previously described environment from where they were recruited.

Exclusion criteria

- History of other chronic disease.
- Uncooperative patients.
- Patient with mental disorders.
- Patient with communications disorder.
- Patient with physical disability.

Sample size calculation

Participants in the study included a representative cross-section of all of the new patients admitted to the center during the course of the year. There was a total of 75 patients under their care. According to the sample size calculation, there will be a total of sixty patients included in the research. The sample size was

determined by first setting the power of the test to 80 percent and the confidence interval to 95 percent, then changing the margin of error acceptable to 5 percent, and then using the following equation to factor in a total population of 75 patients:

$$n = N [1 + N (e^2)]$$

n = sample size

N = population size is 75

e =, 05 is the level of perception

$$n = 75 [1 + 75 (, 0025)] = 60$$

Tools of data collection

Two tools were used to collect data of this study as follow:

- Tool (1): A Structured interviewing questionnaire:
- It was adapted from (Lynn, 2011) and translated into arabic based on (Ghonem, 2017). It will consist of the two sections listed below: demographic characteristics of the patient, and their medical history.
- Tool (2): patient Needs Assessment Tool (PNAT)
- This tool was adapted from (Richardson et al. 2005) and translated into Arabic based on (Ghonem, 2017). It was used to the needs of patients receiving brain radiotherapy at fayoum oncology center.

Scoring system of PNAT scale

The response format on five-points scale ranges from (1= profound impairment, 2= severe impairment, 3= moderate impairment, 4= mild impairment and 5= No impairment).

Validity

The developed tool was formulated and submitted to five experts at Faculty of Nursing, fayoum University to assess the content validity. Three experts in medical surgical nursing, two experts in community health nursing. The expertise reviewed the tool for clarity of sentences, relevance, accuracy, comprehensiveness, simplicity and applicability and minor modification were done.

Reliability

Cranach's Alpha was be used to determine the internal reliability of the tool. Reliability is the extent to which the same answers can be obtained using the same instruments more than one time of proposed tools was done statistically by alpha Cronbach test. Cronbach's alpha reliability coefficient normally ranges between 0 and 1. Higher values of Cronbach's alpha (≥ 0.7) denote acceptable reliability (Cortina, 1993).

Ethical considerations

In the context of this investigation, ethical research issues included the following: Before beginning the investigation, permission of the study protocol was requested from and granted by the scientific research ethics committee housed within the faculty of nursing at Helwan University. The investigator provided the patients who participated in the trial with further information on the purpose and goal of the study. The investigator gave their word that the patient's information would be kept anonymous and secret at all times. Patients were told that they were free to choose whether or not they wanted to take part in the research, and that they also had the freedom to withdraw from the study at any time and without having to provide any explanations. Consent after receiving appropriate information was acquired from every patient. It detailed the purpose of the investigation, as well as the possible rewards, dangers, and discomforts associated with participation. There was a respect shown for ethics, values, culture, and beliefs.

Operational item

The operational design included preparatory phase, pilot study and field work.

- **Preparatory Phase:**

It entailed a review of relevant literature from the recent past, the present, both nationally and internationally, as well as In order to construct effective data collecting instruments, it is necessary to have a solid theoretical grounding in the study's subject matter.

- **Pilot study:**

This was a pilot study meant to assess how clear the tool was, how well it could be used, and how well it could be understood. It has been tested on ten percent of the sample, which is equivalent to six patients, all of whom were undergoing radiation for the brain with no modifications made. The participants in the pilot research were used as the sample for this investigation.

- **Fieldwork:**

- An official letter issued from Dean of Faculty of Nursing, Helwan University and directed to the manager of Fayoum Oncology Center in Al-Fayoum City including the aim of the study to obtain permission after establishing a trustful relationship, each subject interviewed individually by the investigator to explain the study purpose.
- Data was collected within nine months of academic year (2020-2021) five days/ week (Saturday, Sunday, Monday, Tuesday and Wednesday) from 9 am to 5pm till the needed sample completed.
- During this study phases, the investigator met each patient individually in the radiotherapy unit before receiving the radiotherapy session and the investigator introduced herself for each patient, then explained the purpose of the study to assess health needs of patients receiving brain radiotherapy. During This interview the investigator fill the sociodemographic and medical history tool which taken around 10-15 minutes and second tool Patient needs assessment tool taken 15-30 minutes for each patient.

Administrative item

The dean of the nursing school at Helwan University and the director of the Fayoum Oncology Center both gave official permission for the study to be done. This letter also gave permission to collect the necessary information and explained what the study was about.

Statistical item

The data were collected and coded. Then the collected data were organized, analyzed using appropriate statistical significance tests using the Computer Statistical Package for Social Science (SPSS), version 24. Data were presented using descriptive statistics in the form of frequencies and percentages.

Results

Part I: Socio-demographic characteristics of the studied patients.

Table 1
Percentage Distribution of the Studied patients as regards to Demographic Characteristics (n=60)

Variables	N	%
Age (years)		
<40	8	13.3
40- <50	13	21.7
50- <60	19	31.5
60 or more	20	33.5
Mean±SD	51.98±10.75	
Gender		
Male	25	41.7
Female	35	58.3
Mean±SD	22.77±2.17	
Level of education		
Illiterate	9	15.0
Read and write	19	31.7
Primary	15	25.0
Secondary	11	18.3
University	6	10.0
Occupation		
Not working	23	38.3
Worker	21	35.0
Employee	16	26.7
Socioeconomic state		
Low	40	66.7
Moderate	12	20
High	8	13.3

Table (1) shows that the highest percent of studied patients age (33.5%) was 60 years or more and (31.5%) falls between (50- <60), more than half of them were female patients (58,3%), Regarding educational level about (31.7%) of studied patients read and write, (38.3%) of studied patients are not working and (35%) are working, (66.7%) of studied patients have low income.

Part II: Frequency and Distribution of the studied patients according to their health needs (n= 60).

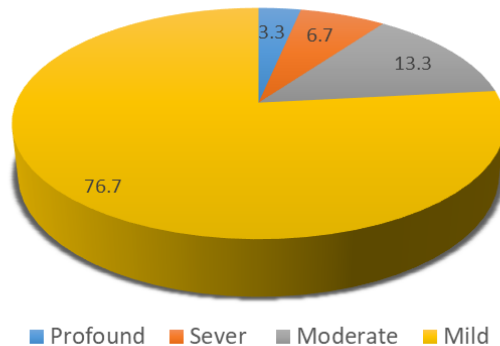


Figure 1. Frequency and Percentage distribution of the studied patients according to degree of total physical impairment (n= 60)

Figure 1 shows that shows the highest percent 76.7 % of the level of physical dimension of studied patients are mild.

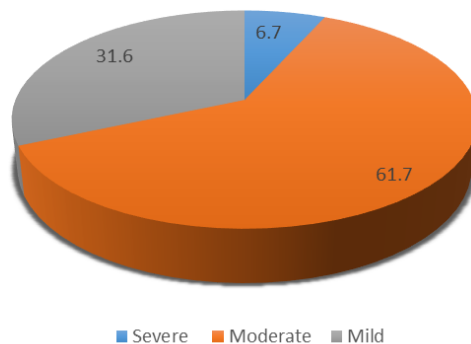


Figure 2. Frequency and Percentage distribution of the studied patients according to degree of total psychological impairment. (n= 60)

Figure 2 shows that the majority 61.7 % of the level of psychological dimension of the studied patients are moderate.

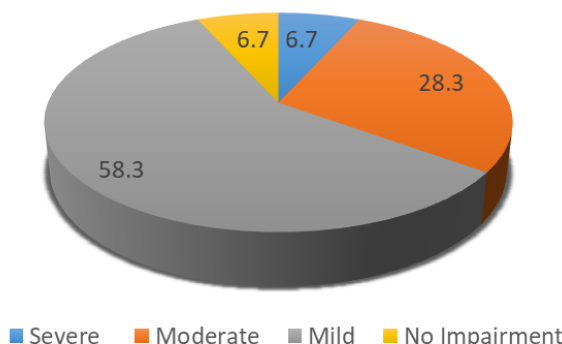


Figure 3. Frequency and Percentage distribution of the studied patients according to degree of total social impairment. (n= 60)

Figure 3 shows that the majority 48.3 % of the social needs of studied patients are mild.

Table 2
Correlation between Physical, Psychological and Social dimension scores

Patient needs dimension	Physical dimension score		Psychological dimension score	
	R	P-value	R	P-value
Social dimension score	0.275	0.033*	0.274	0.034*
Psychological dimension score	0.266	0.040*		

Table (2): Shows Correlation between physical health needs, psychological and social health needs. It was found significance relation between physical needs and psychological needs with p value .040 and social needs with p value .033. There was positive statistically significant Correlation between Physical, Psychological and Social dimension scores when p-value was <0.05*

Discussion

Radiation therapy (RT) has an essential role in the treatment of head and neck malignancies. Although the improvement in radiation delivery techniques, normal structures in the vicinity of the target area remain susceptible to a wide range of adverse effects. Given their high incidence, but radiation-induced adverse effects remain a clinical issue (Rocha, et al, 2022). Cranial radiotherapy side effects have a considerable impact on quality of life and can severely impair a patient's ability to manage daily activities, employment, economic status, socio-cultural, personal experience and lifestyle aspects (Wang & Tepper, 2021). Regarding to age, the present study showed that the majority of studied patients receiving cranial irradiation age was 60 years or more and also patients who aged between (50-<60) years. Regarding to gender of patients, the current study revealed that more than half of them were female patients; they constitute 58.7 % of studied patients.

This could be as a result of female patients admitted to oncology units more than males due to the high prevalence of breast cancer among female patients in fayoum oncology center which is metastatic to the brain.

This explanation is consistent with Komorowski, et al., (2020) who studied "Incidence of brain metastases in nonmetastatic and metastatic breast cancer: is there a role for screening? *Clinical breast cancer* " reported that incidence of brain metastases was much higher among the metastatic breast cancer population overall. As well, it's consistent with Sevenich, (2019) who studied "Turning "cold" into "hot" tumors opportunities and challenges for radio-immunotherapy against primary and metastatic brain cancers" found that Brain metastases (BM), that most frequently arise from breast- or lung cancers, are the most common intracranial tumor in adults. This finding was inconsistent with Trommer, et al., (2022) who studied " Oncologic Outcome and Immune Responses of Radiotherapy with Anti-PD-1 Treatment for Brain Metastases Regarding Timing and Benefiting Subgroups " reported that 40.9% of patients receiving brain radiotherapy were female and 59.1% of patients were male. Regarding to marital status of patients, the current study revealed that the majority of them were married; they constitute 93.3 % of studied patients. This could be as a result of the majority of patients age were between 50-60 years old and also females more than males.

This finding was supported by Park, et al., (2021) who studied " Radiotherapy for brain metastasis and long-term survival " confirmed that, 31.16% of the study patients belonged to age group of 60-69 years and the second age group 29.12% belonged to age group of 50-59 years. Regarding to level of education of patients the current study revealed that the majority of patients read and write, have primary and secondary education. This result reinforced by Kanyilmaz, et al., (2022) who studied " The Use of Complementary and Alternative Medicine Among Cancer Patients Treated with Radiotherapy" reported that more than half of patients were illiterate or had primary education and the majority of them were married. Regarding to Socioeconomic state the current study revealed that more than half of patients have low income (66.7%). Regarding to the Medical and surgical history, the present study revealed that the majority of studied patients received WBI (whole brain irradiation). This is confirmed by Chen, et al., (2022) who studied " Improving on whole-brain radiotherapy in patients with large brain metastases: A planning study to support the AROMA clinical trial" reported that the majority of brain cancer patients received WBRT (Whole Brain Radiation Therapy). The present study illustrated that the highest percent of studied patients have past history of breast cancer and lung cancer. This could be as a result of the high prevalence rate of breast cancer.

Regarding to the Physical needs, all studied patients in current study suffering from discomfort. This could be attributed to any symptom may be troubling patients receiving brain radiotherapy such as fatigue, headache, loss of appetite or nausea and vomiting and result in discomfort. This can be interpreted by, although radiotherapy is administered locally to the brain but can produce side effects on the different body system as a result of Pro-inflammatory cytokines that is produced in the central nervous system in response to radiation generate fatigue. Also, all other physical presenting symptoms are related to increased intracranial pressure including headache, loss of appetite, nausea and vomiting.

This finding goes in line with Albano, et al., (2021) who studied "Imaging side effects and complications of chemotherapy and radiation therapy" supports the opinion by stating that radiation therapy though administered locally, can produce systemic side effects such as fatigue, anorexia, nausea, vomiting, alteration in the taste, sleep disturbance, headache, anemia, dry skin, constipation etc. Also, this is consistent with Rajesh, et al., (2022) who studied "An observational study to monitor and report radiation-related adverse events by a clinical pharmacist to achieve a better therapeutic outcome and suggest preventive measures in a tertiary care teaching hospital" reported that radiotherapy-induced fatigue was a common early and chronic side effect of irradiation and it was reported more in patients with head-and-neck cancers due to activation of Pro-inflammatory cytokines.

On the same line, Ghadjar, et al., (2021) who studied "External application of liver compresses to reduce fatigue in patients with metastatic cancer undergoing radiation therapy" reported that, Fatigue reported in $\geq 30\%$ of patients of cancer patients during radiation therapy. Also, in accordance with the present study Pruijsen, et al., (2022) reported that in patients receiving head and neck radiotherapy fatigue was highly prevalent: 51.7% experienced severe fatigue (subjective fatigue score ≥ 35). On the same way, the study of Yang, et al., (2022) reported that, of all the patients receiving radiotherapy, 12.1% (15/124) patients developed gastric symptoms including loss of appetite and nausea. In the same way, Iglseider, et al., (2022) reported that, 20% of the patients receiving radiotherapy experienced acute Neurological side effects as headache due to increased intracranial pressure. This finding in agreement with the results of the study done by Sourati, et al., (2017) about Acute side effects of radiation therapy in cancer patients revealed that the most frequently reported side effects were fatigue, headache, anorexia or nausea, and vomiting. Each of these side effects was experienced by more than 70% of the cancer patients receiving brain radiotherapy caused by Pro-inflammatory cytokines and increased intracranial pressure.

Regarding activities of daily living, the majority of patients have moderate and mild impairment in activities of daily living; for example, can feed self but requires some assistance in bathing and dressing. This could be as a result of fatigue. this finding in agreement with the results of the study done by Nehlsen, et al., (2022) who studied "Impact of radiotherapy on daily function among older adults living with advanced cancer (RT impact on function in advanced cancer)" reported that patients were classified as high-deficit for ADL (activities of daily living) functioning, respectively related to fatigue. This result was inconsistent with Maitre, et al., (2021) who reported that there is improvement in activities of daily living (greater functional independence) over time.

Regarding to the Psychological needs, all studied patients in current study have anxiety and the majority of them have moderate depression. Concerning the anxiety and depression of patients receiving brain radiotherapy in the current study could be as a result of physical discomfort. This is in agreement with Pruijsen, et al., (2022) who studied "Long-term cognitive, psychosocial, and neurovascular complications of unilateral head and neck irradiation in young to middle-aged adults" found that patients receive head and neck irradiation suffer

from high levels of anxiety and depression due to physical discomfort. This explanation also reinforced by Mungase, et al., (2021) results who studied "Stress, anxiety, depression, and resilience in cancer patients on radiotherapy" showed that from total 100 cancer patients receiving radiotherapy depression was present in 24 of patients, anxiety was significantly high in 25 patients, while stress was significantly high in five patients due to headache. Also, in patients undergoing radiotherapy, stress, anxiety, and depression were significantly negatively correlated.

Regarding to attitude toward disease, the most patients' attitude toward disease were usually copes well, but has occasional periods of despair, hopelessness and the most patient's attitude toward treatment were frequently hopeful, with episodes of pessimism that any therapy can provide comfort or prolong life. This can be interpreted by, Concerning the attitude toward disease and treatment in the part of hope and coping ability could be due to social and medical support, but regarding to the part of episodes pessimism and despair could be due to their diagnosis and physical discomfort. These findings agreed Geyikci, et la., (2018) who studied "Correlation of anxiety and depression levels with attitudes towards coping with illness and sociodemographic characteristics in patients with a diagnosis of breast cancer" reported that breast cancer patients have good coping attitude toward their illness due to social support. This result matched with a study conducted by Sharifzadeh, et al., (2021) who studied "Attitudes and Perceptions Towards Radiation Therapy in Breast Cancer Patients: The Role of a Multidisciplinary Care Team" reported that breast cancer patients' beliefs regarding radiation therapy report increased agreement of patients with radiation therapy (RT's) ability to reduce cancer recurrence due to the support of family and friends.

Also, Rajah, et al., (2021) who studied "Reliability and Validity of the Brief Illness Perception Questionnaire in Bahasa Malaysia for Patients with Cancer" about the illness perceptions of cancer patients indicated that cancer patients strongly believe the cancer treatment to be effective. this explanation was inconsistent with Edmonds, et al., (2020) who studied "Correlates of adjuvant therapy attitudes in African American breast cancer patients" reported that although the presence of family support toward treatment, most breast cancer patients (54%) reported negative attitudes toward radiation therapy. Also, in contrast Hopman & Rijken (2015) who studied "Illness perceptions of cancer patients: relationships with illness characteristics and coping" results revealed that, most cancer patients perceive their illness as a chronic condition, as something that drastically affects their lives (consequences), and the more it elicits negative emotional responses, the more likely they are to adopt more passive ways of coping such as helplessness/hopelessness, preoccupation, or fatalism.

Regarding to Social needs, the majority of studied patients in current study have mild impairment including Non-medical support network. Most patients in the current study reported that assistance is available and adequate for any practical needs (Needed assistance with essential tasks, such as cooking, cleaning and shopping), individual support network (family& significant others) offering complete support and perceives the degree of support from these non-medical groups (e.g., religious, occupational, social recreational, political) to be generally,

but not fully satisfactory. This can be interpreted by, concerning the practice and individual support availability for patients receiving brain radiotherapy in the present study could be due to the culture of patients and their families.

This results is agreed with respect with Adam & Koranteng, (2020) who studied "impact of social support on breast cancer treatment among breast cancer patients in Kumasi, Ghana: A qualitative study" revealed that the majority of participants received maximum social support, practical support, encouragement and love from their family, friends and relatives due to positive culture of support and beliefs in their environment and reported varying positive impacts on their lives as a result of the support received. On the other hand, Park, et al., (2019) study results about support programs be a good resource for managing the unmet needs of cancer patients, disagreed with the results of current study; stated that cancer patients had unmet practical, family, spiritual and social supportive care needs. Regarding to financial security, the majority of studied patients in current study have mild impairment in Financial security, the results of the current study showed a disparity between current resources and expenses. Full inpatient coverage and adequate funds for all needs, but unexpected and substantial additional expenses. This could be as a result of, financial distress was associated with anxiety, depression, and poor quality of life. This finding is supported by Benedict, et al., (2022) study about " Greater financial toxicity relates to greater distress and worse quality of life among breast and gynecologic cancer survivors. *Psycho-Oncology*" scored in the range of high to overwhelming financial distress and they found that financial distress was associated with overall distress.

In addition, Mao, et al., (2022) study about "Integrative oncology: Addressing the global challenges of cancer prevention and treatment" reported that Patients with cancer face challenges because of limited treatment options, and very underdeveloped or nonexistent palliative or survivorship care to cancer patients in need. Regarding to relation between social, psychological and physical dimension, the financial security of patients treated with brain radiotherapy in the present study could be due to costs of radiotherapy treatment is directly covered by health insurance. The current study found significant relation between social and psychological dimension. The finding of current study supported by Meeker, et al., (2016) who studied "Relationships among financial distress, emotional distress, and overall distress in insured patients with cancer" revealed that twenty-nine percent scored in the range of high to overwhelming financial distress and they found that financial distress was associated with overall distress.

In opinion of the investigator, Financial distress may be seen as distinct, but not isolated, from the overall anxiety and discomfort experienced by the patient with cancer as a result of the cancer diagnosis and its treatment described the construct of financial stress as resulting from the cost of health care, low income, or a lack of health insurance. Coupled with the emotional distress associated with the cancer experience, financial distress from mounting financial obligations and debt and the erosion of wealth may interfere with the patient's ability to cope effectively with cancer and, its physical symptoms, and its treatment, thereby adversely affecting health outcomes. The finding of current study also supported by Helmińska, et al., (2018) study about "Quality of life of patients treated with

radiotherapy" revealed that physical and psychological domains showed the highest significance correlation with each other and with other domains, suggesting the inter-relationship between them, as well as those that had the greatest influence in the general quality of life in cancer patients undergoing treatment with radiotherapy.

Additionally, Xiao, et al., (2021) study about " Association of epigenetic age acceleration with risk factors, survival, and quality of life in patients with head and neck cancer" confirmed that treatment with radiation therapy adversely affects the quality of life of patients. Also, Żadło, et al., (2021) who studied " The quality of life of patients with head neoplasms and incidence of depression treated with radiotherapy " stated that Both the overall assessment of the quality of life in the assessed areas and the perception of health by patients treated with radiation therapy for head cancer are low. Also, supported by Ma, et al., (2021) who reported that HNC (head and neck cancer) patients treated with radiotherapy (14.4%) reported high baseline financial toxicity. Also, Boby, et al, (2021) stated that financial toxicity is widely acknowledged to be a potential consequence of costly cancer treatment. The results of the current study showed a significant correlation between activity of daily living and practical support and individual support network. These findings agree with the results of the study done by De Maria, et al., (2020) about " Perceived social support and health-related quality of life in older adults who have multiple chronic conditions and their caregivers" reported a significant statistical correlation between physical role function and perceived social support.

Conclusion

In the light of the current study results, it can be concluded that, the mean age of the studied patients was 60 years or more and between (50- <60) years, more than half of them were female patients, and more than half of patients have low income. Almost all the patients complain of physical impairment including discomfort and impairment in activities of daily living, follow anxiety & depression and unsatisfied with non-medical support and mild disparity between current financial resources and expenses. Additionally, there was a statistically significance correlation between physical health needs and both psychological and social health needs.

Recommendations

- Recommendations for better patient's outcome
Regular assessments should be carried out to monitor physical functioning, degree of fatigue and headache and other side effects of radiotherapy.
- Recommendations for further researches
 - Replication of the study on larger probability samples selected from different geographical areas in Egypt is recommended to obtain data of more generalizability of findings.
 - Further researches should be conducted to develop strategy to overcome unfulfilled health needs of patients receiving brain radiotherapy and thus to promote the patients QOL.

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