Effect of Mobile-based Mindfulness intervention on stress, pain, and quality of life among patients with Prostate Cancer

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Abstract

Prostate cancer is associated with substantial psychosocial morbidity. Mindfulness-intervention is an effective method for reducing stress among patients with Prostate Cancer. This study **aimed** to evaluate the Effect of Mobile-based Mindfulness intervention on stress, pain, and quality of life among patients with Prostate Cancer. **Design**: Quasi-experimental design (pre-posttest). Setting: This study was conducted in the inpatient and outpatient oncology clinic at South Egypt Cancer Institute - Assiut University, Egypt.Sample: A purposive sample **of 50 patients in this study**. Tools: structured interview questionnaire, medical history, patient knowledge about Prostate Cancer, level of pain, perceived stress scale, quality of life and Mindful attention awareness scale tool. **Results**: There was a significant difference between pre and post test Mindfulness intervention for knowledge, perceived stress, level of pain, QOL and Mindful attention awareness (P= 0.001**). **Conclusion**: The Mindfulnessintervention program had a positive effect on patients with Prostate Cancer. There was a statistically significant difference between the pre and post test for knowledge, level of pain, perceived stress scale, quality of life, and attention awareness. **Recommendations**: use mass media to improve men's awareness of prostate cancer screening.

Keywords: Mindfulness Program, Prostate Cancer, Pain, QOL, Stress.

Introduction:

Prostate cancer is the most common cancer in men and the second leading cause of cancer-relateddeath in men. It affects middle-aged and older men and usually has an indolent but progressive clinical course. Patients are often diagnosed when they are less able to endure disease-related morbidities because of age or other illnesses; they are less able to endure disease-related morbidities. Prostate cancer specifically affects the anatomical area responsible for sexual function. Owing to the location of the prostate gland and the delicate nature of the treatment, men with prostate cancer often face a host of difficulties, which can affect psychological conditions and increase stress and anxiety (**Abd-Almonaem et al., 2021).**

Telehealth interventions are methods in which patients and health care professionals can communicate clinical information remotely via different media**,** such as the telephone, web-based methods, and mobile apps. This method is increasingly used to deliver cancer care as it provides opportunities for efficient and flexible service delivery and enables clinicians to maintain involvement independent of the physical location of the patients or clinicians (**Aapro et al., 2020**).

These characteristics have been driven **by** their increased application to support the delivery of care during the COVID-19 pandemic, enabling theavoidance of direct physical contact while contributing to the providing continuous care in the community. Telephone-based approaches have been highlighted as a possible means of overcoming gaps in service delivery for cancer patients, including reducing the travel required to access support services which can lead to physical, psychological, and financial stress. Examination of telehealth approaches for patients with chronic diseases has found to have varying effects, with improved self-management of diabetes and reduced mortality and hospital admissions for heart failure, however, these improvements have not observed for across other conditions, including cancer (**Goodman et al., 2022**).

The MBSR program helps people improve their mindfulness through intensive mindfulness practice to help them link physical and mental states in a way that is more nonjudgmental and accepting. MBSR is significantly more efficient in reducing psychological distress in prostate cancer patients. MBSR reduces the symptoms of pain, depression, and stress and improves the quality of life of patients with various somatic and psychiatric disorders **(Suh et al., 2020).**

The Components of mindfulness-based stress reduction consist of many items such as body scans (paying attention to what the body feels). Sitting meditation focuses on breathing, sounds, thoughts, bodily sensations, feelings, and emotions. Simple movement exercises such as walking or standing meditation. Informal meditation exercises such as paying full attention to daily activities, such as brushing one's teeth, showering, and eating **(Matis et al., 2020).**

Nurses play an important role in the health care team, having knowledge and assessing patients, gathering data about personal and family history, and using evidence-based guidelines. Regular assessment of patient needs, provision of information and support, symptom control, and screening for prostate cancer can decrease morbidity and mortality associated with prostate cancer. Additionally, harmony between the oncology care team, including nurses, pharmacists, and patients is crucial for effective side effect management of chemotherapy for prostate cancer (**Kamberi, 2020**).

Significance of the study

Worldwide, prostate cancer is the most commonly diagnosed malignancy and the sixth leading cause of cancer-related deaths in men in 2020; this accounted for 1,800,000 newly diagnosed cases and 307,000 worldwide. The prostate cancer (PC) is common in North Africa. PC **i**s the second most common cancer among men followed by liver cancer with incidence of more than 200 cases per 100,000 people per year the incidence of prostate cancer in Egypt is 25/100,000 annually and is the second leading cause of mortality. The fifth type in Egypt represents 11% **of** male tumors **(WHO, 2022)**. Thus, PC has a significant psychological impact. This condition has been assessed as stressful because it involves loss and threat, and has been shown to negatively affect physiological processes leading to ill health **(Abd-Almonaem et al., 2021).**

Aim of the study:

This study aimed to evaluate the Effect of Mobile-based Mindfulness intervention on stress, pain, and quality of life among patients with Prostate Cancer

Hypothesis Statement:

1- Mobile based Mindfulness-intervention will have a positive effect on pain level of patients with Prostate Cancer.

2- Mobile based Mindfulness-intervention will have a positive effect on stress, and attention condition of patients with Prostate Cancer

3- Mobile based Mindfulness-intervention will have a positive effect on QOL of patients with Prostate Cancer

Subjects and Method:

Research Design

A quasi-experimental design (pretest-posttest) was used to conduct this study. **Prem S. Mann, (2020)**

Study Settings:

This study was conducted at the inpatient departments and outpatient oncology clinic at the South Egypt Cancer Institute - Assiut University, Egypt.

Sample:

A purposive sample was composed of 55 patients who were recruited by clinic-based means, three were ineligible and two did not respond to attempts to contact them; the remaining 50 enrolled yielded a 91% response rate.

Patients were selected according to inclusion criteria as follows:

- Able to communicate effectively
- patient diagnosed with Prostate Cancer
- Patients who could read and had telephone access.
- Willing to participate in the study.

- The patient had no history of head injury, dementia, or psychiatric illnesses.

The sample size was estimated using the EPI info 7.0 programs based on these parameters; population size: 550 over six months, expected frequency: 7%, acceptable error: 5%, confidence coefficient: 95%, design effect: 1, the minimum sample size was 50 reached to 55.

Tools of data collection: In order to collect the necessary data for the study five tools were used:

Tool I: Structured interview Questionnaire contained three parts:

Part I: Socio-demographic Characteristics of patients with prostate cancer. It was developed by the researchers after reviewing the relevant literature to obtain the necessary information related to age, educational achievement, marital status, and monthly income **Jocham, 2019 & Liselotte, 2018.**

Part II: Medical history included questions about, chronic diseases (hypertension, diabetes, respiratory diseases, kidney diseases\ date of disease onset, number of follow-up times, age at the onset of illness and Type of treatment the patient received) **Jack A. Clark. 2017.**

Part III: the knowledge of patients with prostate cancer. It consisted of closed questions related to prostate cancer such as definition, causes, and risk factors. The total score of the 10 questions was 10 degrees, which equaled 100%, each question was assigned a score according to the patients' knowledge responses were correct answers scored as 1 and incorrect answersscored as 0. Patient knowledge was checked usinga model key answer and accordingly the patient knowledge was categorized as satisfactory or unsatisfactory. These scores were summed and converted to a percentages score. **Mohamed Abd-Allah et al. (2021)**

Satisfactory	The total scores ≥ 60%.
Unsatisfactory	The total score was <60%.

Tool (II): Wong Baker FACES Pain rating scale

It developed by **Wong L., et al. (2010)** to assess pain. The rating scale was composed of six faces, with numbers (0–5) assigned to each face to quantify pain assessment**.**

Tool (III): Perceived stress scale: this scale was developed by **Cohen, (1988).** It is a measure of the degree to which situations in one's life are appraised as stressful. **It** consisted of 10items six items were negatively worded (1, 2, 3, 6, 9, and 10) and four positively worded (4, 5, 7, and 8).

Scoring system:

Patient is asked to score their feelings and thoughts during the previous month. regarding the frequency of the different aspects on the following response scales: The studied patient's response Scores Never 0Almost Never1 sometimes 2 Fairly Often 3 Very Often 4 The total score ranges from 0 to 40 points, with higher scores indicating higher tress, although this effect is nonlinear. Those scores were summed and converted into percentages. The total scores of the statements were equal 100%. Each item is rated on a 5-point scale. Scores were calculated after reverse-keying positive items and summation of scores. The possible total score range from 0 to 50 (with higher scores indicating greater stress, although this effect is nonlinear).

These were classified into the following three categories:

Mild	The total score < 50 %.
Moderate	Total score from 50- 70%.
Severe	Total score ≥ 70%

Tool (VI): The **Mindful Attention Awareness Scale (MAAS),** developed by **Brown and Ryan, (2003**), The MAAS is a 15-item, intended to assess a foundation characteristic of mindfulness, namely, a receptive state of mind in which attention, informed by a sensitive awareness of what is occurring in the present, simply

observes what is taking place. Each item was rated on a 6-point scale. MAAS score were classified as the following:

High MAAS	**Total score.≥75%.**
Moderate MAAS	**Total score is from 50-75%.**
Low MAAS	**Total score <50%**

Tool (V): Quality of life

Self-reports of health provide helpful information regarding function and well-being. It was developed by National Institutes of Health initiative to develop state-of-the-science measures **(Ron D.et al, 2017)**. It consists of 10 universal health items that characterize five core PROMIS domains (physical function (1-3Q), pain, fatigue, emotional distress, social health (7-10 Q). Then, total scoring system of quality of life was scored by calculating the frequency of items of each dimension. Patients' total QOL score were classified as the following:

High QOL	**>75% of total scale score**
Moderate QOL	**60-75% of total scale score**
Low QOL	**<60% of total scale score**

Tools validity and reliability

The tools validity: was examined by five experts in the medical, surgical nursing, psychiatric &mental health nursing and community health nursing field. Their opinions were elicited regarding the format, layout, consistency, accuracy and relevance of the tools. The reliability of tool **I-V** was tested to measure their internal consistency by using Cornbrash's alpha test. It was (r= 0.753 for tool Structure interview questionnaire part II), (r= 0.851 for part III), (r= 0.822 for tool Level of pain), (r= 0.834 for tool Perceived stress scale), (r=0.815 for QOL) and (r=0.812 for tool Mindful Attention Awareness Scale) which indicated a high reliability.

Pilot Study:

The pilot study was conducted on 10% those represent five patients to test the applicability of the constructed tools and the clarity of the questions. The pilot also served to estimate the time needed for each subject to fill in the questionnaire. According to the results of the pilot, no corrections or omissions of items were performed

Operational Designed

The included operational design of this study consisted of four phases, the preparatory phase, ethical considerations, the pilot study and fieldwork.

Preparatory Phase

This phase included a review of current and past, local and international related literature and theoretical knowledge of various aspects of the study using books, articles, periodical magazines and the internet to modify tools for data collection. During this phase, the researchers visited the selected places to become acquainted with the personnel and the study settings.

Ethical Considerations

Research approval was obtained from the ethical committee of the faculty of nursing at Assiut University. The researcher clarified the objectives and aim of the study for patients included in the study before starting the study. Oral consent was obtained from the patients before inclusion in the study; a clear and simple explanation was given according to their level of understanding. They ensured that all gathered data were confidential and used for research purposes only. The researcher was assured maintained anonymity and confidentiality of subjects' data included in the study. The patient was informed that he could choose to participate or not in the study and have the right to withdrawal from the study at any time.

Fieldwork:

Data were collected over six months, from the beginning of March 2021 tothe end of August 2021. The researcher firstly met the patient in the previously mentioned settings, explained the purpose of the study after introducing herself. , the individual interviewing was performed after obtaining patient consent to participate. The researcher was visiting the study setting 2days/week (Monday and Wednesday) from (9AM - 2PM).The questionnaire was completed by researchers who took 10–20 minutes. The intervention was divided into theoretical and practical sessions. Finally, the researcher disseminates to patient an Arabic hand out

about prostate cancer patients. Moreover, the researcher evaluated the effect of the mindfulness intervention program on stress and Mindful Attention Awareness.

The Mindfulness-intervention program:

The program was developed by the researchers based on reviewing the most recent related literature. The fieldwork was divided into four phases:

1- The Assessment Phase

A pre-test was performed using the previous tools to assess the knowledge of the patient, level of pain, QOL, White perceived stress scale and Mindful Attention Awareness Scale.

2- The Planning Phase

The analysis of the pre-test findings was used to detect the actual needs of the patients with Prostate Cancer. The Mindfulness Intervention Program was prepared by the researcher; and the program was applied through 8 sessions. The program aimed to reduce anxiety, stress, and pain. Also improve the knowledge, QOL and Mindful attention, and every session has specific objectives.

3- The Implementation Phase:

The study patients were divided into small groups ranging from 2 to 7, with group taking 8 sessions, each session ranging from 30–45 minutes. MBIP sessions are taught by an investigator by face-to-face and mobile with the group on What's App up application that entails a weekly group meeting, to provide the patient with a mindfulness program that has done for the patient in eight sessions: 2 theoretical and 6 practical. The theoretical part; covered anatomy and physiology of the prostate, meaning of prostate cancer, causes, clinical manifestations, and coping methods used to relieve pain, QOL and stress. The practical part; was concerned with mindfulness meditation, breathing exercises and relaxation exercises that take about 30 to 45 min in session.

4- The Evaluating Phase:

The same tools were used after the implementation of Mindfulness-intervention as an indicator to evaluate the effect of Mindfulness-intervention program on the level of knowledge, pain, stress, QOL and attention among patients with prostate cancer.

Administrative Design

An official Approval was obtained through on an issued letter from the form of the Dean of Faculty of Nursing, Assiut University to directors of the previously mentioned setting. The researcher then met the hospital director and explained the purpose and the methods of the data collection &approval, consent of patients.

Statistical Analysis:

Data collected from the studied sample was revised, coded and entered using Personal Computer (PC). Computerized data entry and statistical analysis was fulfilled using the Statistical Package for Social Sciences (SPSS) version 24. Data presented using descriptive statistics in the form of frequencies, and percentages. Chi-square test (X^2) was used for comparisons between qualitative variables. Spearman correlation measures the strength and direction of association between four ranked variables.

Significance of the results:

- Highly significant at p-value < 0.01.
- Statistically significant was considered at p-value < 0.05
- Non-significant at p-value ≥ 0.05

Result:

Table (1) reveals that morethan two thirds (68.0%) of the studied patients their age ranged between 50 to 70 years, less three quarters (72.0%) of them married, 56.0 % living at rural area and (50.0 %&70.0%) of them had secondary and employed, in addition, the majority of them insufficient income.

Table (2): displays medical history, it was noticed that the about two-thirds of the studied patients had chronic diseases other than prostate problem, it was found that (70.0%& 60.0%) of them had urinary problems and hypertension, respectively Moreover, more than half of them had family history of cancer, and (62.0% & 52.2%) of them had a prostate problem 1 to 5 a year ago. Furthermore; less than two-thirds (60.0%) of them were treated with surgical

intervention and 66% had a sexual problem from prostate cancer

Figure (1) reveals that 76.0% of the studied patients had unsatisfactory knowledge about prostate cancer, while after applying of intervention program their improvement in total knowledge score; more than one-third of them had unsatisfactory knowledge. Moreover, there were significant differences between before and after mindfulness with p-value <0.05*.

Figure (2) shows that, pre mindfulness intervention program two fifths of the studied patients had "even more" pain levels, while after the implementation of the program, more than one third of them had "little more." Besides, there was a significant difference between the pain level pre and post the implementation of the Mindfulness intervention (P= < 0.05).

Figure (3): shows that half (50.0%) of the studied patients had severe stress before implementation of the mindfulness intervention. While after that, twenty percent of them had mild stress. Additionally, there was a significant difference between total stress pre and post the implementation of the intervention (P< 0.05).

Figure (4): shows that more than three fifth (64.0%) of the studied patients had low QOL before implementation of the mindfulness intervention program, while after the implementation of the mindfulness intervention program one half (50%) of them had high QOL about prostate cancer. Moreover, there was a significant difference between total QOL pre and post the implementation of the mindfulness intervention program at (P= < 0.05).

Figure (5): reveals the distribution between the patients under study' at pre- and post-intervention regarding their total Mindfulness level, it was displayed that before intervention 42% of the studied patients had moderate awareness, while post intervention 46% of them had high awareness, moreover, there was a high statistically significant difference between the studied patients' at pre and post intervention regarding their Mindfulness level scale at p value (.000**).

This table (3) illustrates that there was a significant relationship between total knowledge of the studied patients and their age, educational level and income at (P= < 0.05). But there was no significant correlation with marital status, Residence and Occupation at (P= > 0.05).

Table (4): Illustrates that, a highly statistically significant correlation between Total Mindful Attention Awareness and total knowledge, pain, Perceive stress and QOL among studied patients with prostate cancer, and pre, and post intervention program. P=<0.001

Table (1): Socio-demographic of the studied patient with prostate cancer (n=50)

Socio-demographic data	No (50)	%
Age groups (years):		
30 –	16	32.0
50- 70	34	68.0
Marital status:		
Single	8	16.0
Married	36	72.0
Widow	4	8.0
divorced	2	4.0
Residence:		
Urban	22	44.0
Rural	28	56.0
Education level:		
Basic	10	20.0
Secondary	25	50.0
University	15	30.0
Occupation:		
Employed	35	70.0
Unemployed	15	30.0
Income:		
Insufficient	45	90.0
Sufficient	5	10.0

Table (2): Distribution of medical history among studied patients with prostate cancer (N=50)

Past history	No	%
Have chronic disease:		
Yes	33	66.0
No	17	34.0
If yes, what types of diseases @#		
Diabetic	25	50.0
Hypertension	30	60.0
Respiratory diseases	10	20.0
Endocrine diseases	20	40.0
Vision problems	5	10.0
Gastrointestinal diseases	7	14.0
Urinary diseases	35	70.0
Other	3	6.0
Family history of cancer disease:		
Yes	27	54.0
No	23	46.0
Onset of diagnosis: (year)		
-Less than 1	7	14.0
- 1 -5	31	62.0
-More than 5	12	24.0
Stage of disease:		
Stage (I)	10	20.0
Stage (II)	26	52.2
Stage (III)	14	28.0
Present treatment used#		
Chemotherapy	5	10.0
Radiotherapy	10	20.0
Surgical	30	60.0
Hormonal	5	10.0
Did you have complications from prostate cancer?		
Yes	50	100.0
No	0	0.0
What is the type of complication? #		
Sexual problems	33	66.0
Urinary problems	25	50.0
Gastrointestinal problems	10	20.0
Skin disorders	20	40.0
Others	7	14.0

@ Percentage calculated from patient mentioned yes # more than one answer

Figure (1): Total knowledge score (pre – post program) among patients with prostate cancer. N=50

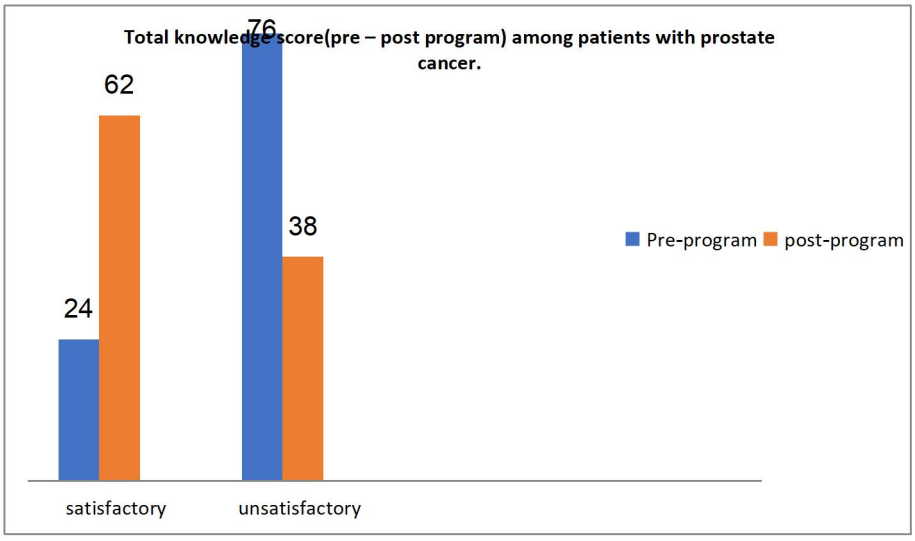

Figure (2): Total level of pain score (pre – post program) among studied patients with prostate cancer N=50

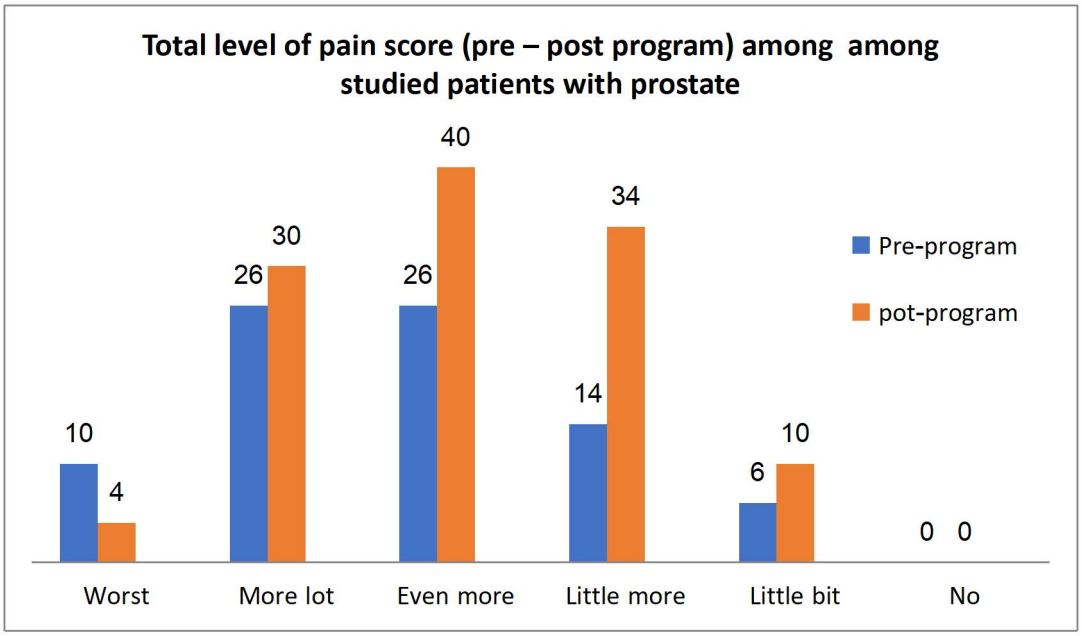

Figure (3): Total stress scores (pre and post) among prostate cancer patients N= 50

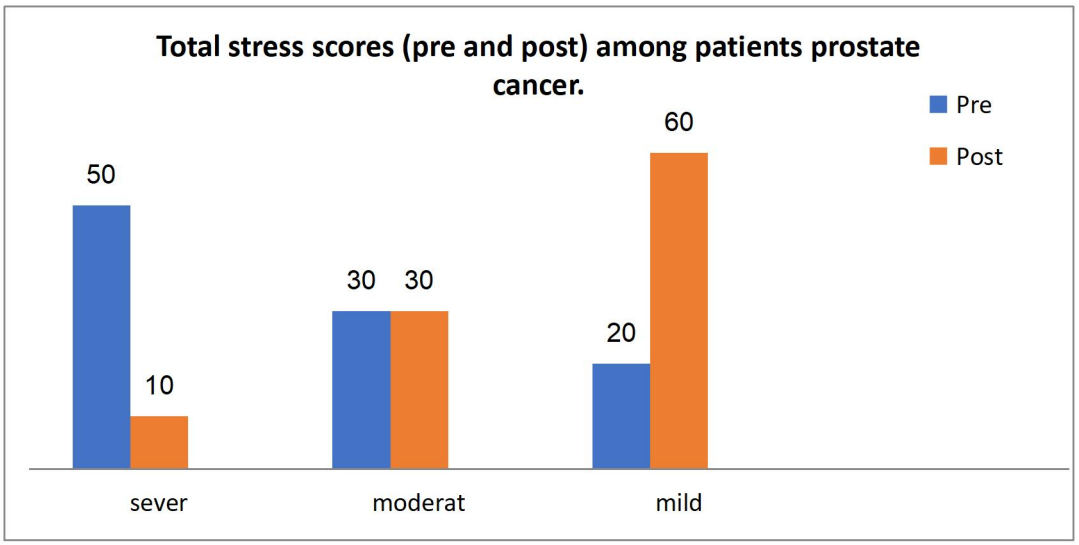

Figure (4): Total QOL scores (pre –post) among patients prostate cancer. N= 50

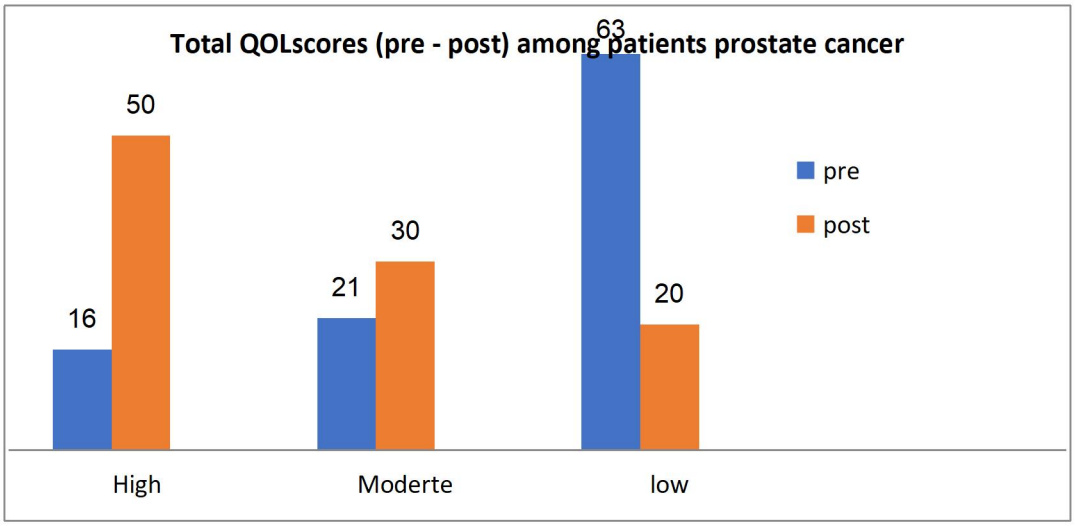

Figure (5): Distribution of the studied patient according to total Mindfulness scale

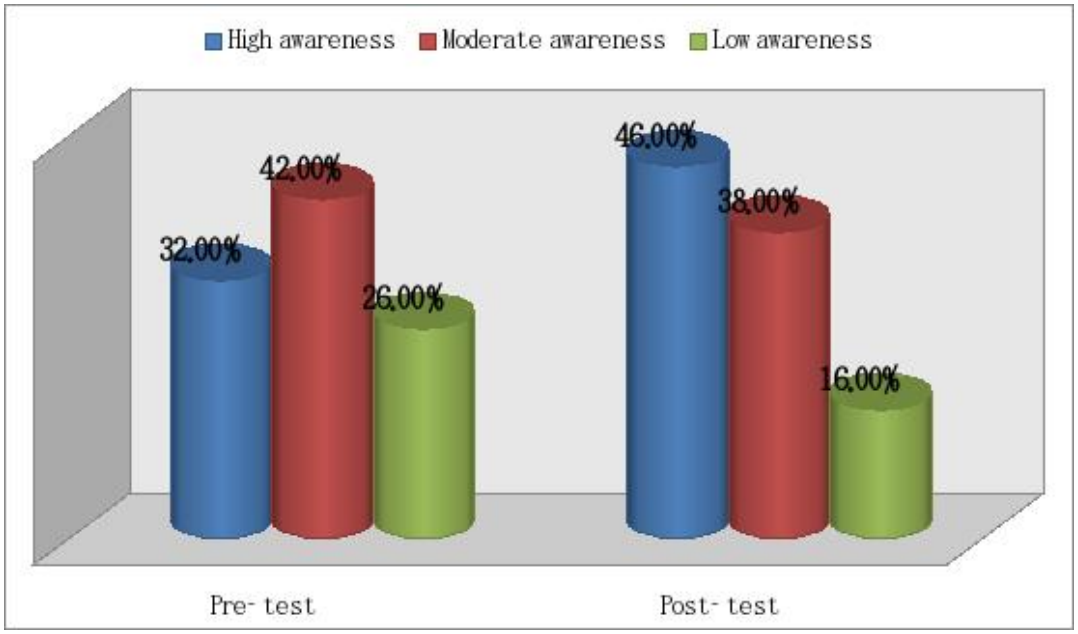

Table (3): Relation between Characteristics of the study patients and their Total knowledge regarding the prostate cancer post program (N=50)

Items		Total knowledge				X2	P-Value
		Satisfactory (n=31)		unsatisfactory (n=19)			
		N	%	N	%		
Age groups (years):	30 –	13	41.9	3	15.8	14.41	.021*
	50- 70	18	58.1	16	84.2		
Marital status:	Single	6	19.4	2	10.5	1.361	.742
	Married	23	74.2	13	68.5		
	Widow	2	6.4	2	10.5		
	Divorced	-	0.0	2	10.5		
Residence:	Urban	18	58.1	13	68.5	1.15	.42
	Rural	13	41.9	7	31.5		
Occupation:	Employed	20	64.5	15	79.0	.61	.96
	Unemployed	11	35.5	4	21.0		
Education level	Basic	4	12.8	6	31.6	8.728	0.04*
	Secondary	15	48.5	10	52.6		
	University	12	38.7	3	15.8		
Income:	Insufficient	27	87.1	18	94.7	3.89	0.03*
	Sufficient	4	12.9	1	5.3		

*significant p < 0.05. **highly significant p < 0.01.

Table (4): Correlation between Studied Variables

	Total Mindfulness Level			
	Pre -Program		Post Program	
	R	P Value	R	P Value
Total knowledge	0.033	0.45	0.39	0.001**
Level of pain	.475	.205	.039	.000**
Total stress	- 0.028	0.763	0.354	0.000**
Total QOL	0.025	0.32	0.30	0.001**

Discussion:

This study evaluated the effect of Mobile based Mindfulness-intervention program for patients with Prostate Cancer.

Regarding sociodemographic table (1) revealed that less than half of the studied patients their age ranged between 50 to less than 60 years, fewer than three quarters of them were married, living in rural areas and half of them had secondary in addition, most of them employed and had insufficient income. this result in same agreement with the study by **Metwaly, & Hamad**, **(2019)** who conducted a study about the effect of palliative care program on the nurses' performance regarding prostate cancer and patients' outcomes and reported that less than two thirds of studied patients worked, two fifths of them had an intermediate level of education moreover, most of them were married.

Concerning on type of complications from prostate cancer, the present study demonstrated that most of the patients under study had sexual and urinary complications. This finding is similar to the study by **Porreca et al., (2018** who conducted a study in relation to the disease-specific and general health-related quality of life among the newly diagnosed prostate cancer patients and reported that most of the studied patients suffered from more sexual and urinary problems.

Related to the type of treatment for patients, the present study displayed that less than two-thirds of the sample being studied was treated with surgical therapy, this result was in the same line with the study by **Primea,**

(2022) who conducted a study focused on the prostate cancer screening and treatment patterns and represented that in Germany, prostatectomy was the most common treatment for prostate cancer.

Concerning the total knowledge, this study revealed that more than three-quarters of the studied patients had unsatisfactory knowledge about prostate cancer, while after applying of intervention program there was an improvement in the total knowledge score. Moreover, there were statistically significant differences with p-value <0.05*. This result might be due to the most patients should become aware of the disease risks and knew how to deal with the disease to preserve their life. This result is consistent with the study of **Cowman et al., (2021)** who conducted a study about" Knowledge and attitudes of men in Bahrain toward prostate cancer" and displayed that most of the studied patients had poor knowledge about the disease and recommended performing an educational programs to improve their knowledge.Furthermore, the outcome supported the study by **Micaux, (2021)** entitled "Web-based support for young adults with reproductive concerns following cancer" reported an improvement in the total knowledge score after the intervention program with p-value <0.05*.

Even more" level of pain, and recommended that perform psycho educational support with regard to the level of pain, the present study showed that in the pre mindfulness intervention program two-fifths of the studied patients had "even more" level of pain, while after the implementation of the program, more than one-third of them had " little more". Besides, there was a significant difference between the pain level before and after implementation of the mindfulness intervention (P < 0.05). This result was in constant with a study by **Mardani et al., (2020)** who conducted a study in relation to the health-related quality of life in prostate cancer survivors.

Regarding the total level of stress among the studied patients, it was observed that half of them had severe stress before implementation of mindfulness intervention program, while after implementation of the program less than of them had mild stress about prostate cancer. Moreover, there was a significant difference between total stress before and after implementation of mindfulness intervention program (P< 0.05). This result might be due to the effectiveness of mindfulness intervention program to reduce stress among studied patients. This outcome matched with a study done by **Matis et al., (2020)** who conducted a study on the subject of mindfulness-based programs for patients with cancer via mobile health and concluded that there was a significant difference between the total stress before and after implementation of mindfulness intervention program (P< 0.05).

Regarding percentage of the total QOL status score, the study findings illustrated that more than three-fifth of the studied sample had low quality of life status. While one fifth of them had high quality of life status. This finding was in accordance with **Abd-Almonaeml, (2021)** who conducted a study on the quality of psychological life for the patients with prostate cancer. The researcher discovered that more than half of the studied sample had a low quality of psychological status, while more than one-fifth of them had a moderate quality of psychological status. This may be due to change in patients' mood as psychological effects. This similarity assures that psychological aspect as one of quality of life domains has a great effect on the issues related to health mainly quality of life.

The present study reported that there was a significant relationship between the total knowledge of studied patients and their age, educational level, and income at (P< 0.05). But there was no significant relation with marital status, residence, and occupation at (P>0.05). This outcome matched with **Jeihooni et al., (2019)** who conducted a study with reference to the effect of educational program based on PRECEDE model in promoting prostate cancer screening in a sample of Iranian men" and found that there was a significant relation between total knowledge of studied patients and their age and educational at (P < 0.05).

The present study illustrated that, a highly statistically significant correlation between the total mindful attention awareness and stress, pain, QOL, and the total knowledge among

studied participants, and pre, and post-test (P<0.001). This outcome is in the same line with a study performed by **Mirmahmoodi et al., (2020)** entitled related to the influence of Mindfulness-based stress reduction counseling on psychological responses and some inflammatory factors in women with breast cancer " and showed that there was a statistically significant relation between patients' knowledge, perceived stress and total mindfulness level at p<0.05.

Conclusion:

The Mindfulness intervention program **had** a positive effect for patients with Prostate Cancer. There was a statistically significant difference between the pre and post test for knowledge, level of pain, perceived stress scale, quality of life and attention awareness

Recommendations:

In-service training programs should be developed for all nurses and other health care providers in hospitals focusing on helping patients how to cope with their stress, pain and improve their QOL. Further research needed with a large sample size to benefit fromCommunication technology to improve the health and psychological conditionand improve their QOL. There is a great need among patients with prostate cancer for mindfulness intervention program. The most cost-effective method for addressing this problem is incorporating health education on best knowledge, attention, level of pain, QOL ,and level of stress.

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Conflict of interest

The authors declare that there are no conflicts of interest.

References:

A bd-Almonaem M. A., Eshra2 D K, Ali I K, Shahin HE. Quality of Psychological life for Patients with Prostate Cancer. International Journal of Novel Research in Healthcare and Nursing Vol. 8, Issue 3, pp: (371-381), Month: September - December 2021, Available at: www.noveltyjournals.com

Aapro M, Bossi P, Dasari A, Fallowfield L, Gascón P, Geller M, et al. Digital health for optimal supportive care in oncology: benefits, limits, and future perspectives. Support Care Cancer 2020 Oct;28(10):4589-4612

Cohen, S. (1988). "Perceived stress in a probability sample of the United States," in The Claremont Symposium on Applied Social Psychology. The Social Psychology of Health eds S. Spacapan and S. Oskamp (Thousand Oaks, CA: Sage Publications, Inc), 31–68

Cowman, S., Cowman, J. G., Almumin, A., Altailasan, F. A. F. M., & Weathers, E. (2021, June). Knowledge and attitudes of men in Bahrain toward prostate cancer. In Seminars in Oncology Nursing (Vol. 37, No. 3, p. 151158). WB Saunders.

Goodman, W., Bagnall, A. M., Ashley, L., Azizoddin, D., Muehlensiepen, F., Blum, D., . . . &Allsop, M. (2022). The Extent of Engagement With Telehealth Approaches by Patients With Advanced Cancer: Systematic Review. JMIR cancer, 8(1), e33355.

https://epi-info.software.informer.com/7.0/

International Journal of Caring Sciences May-August 2020 Volume 13 | Issue 2| Page 1322.Mardani, A., Razi, S. P., Mazaheri, R., Dianatinasab, M., &Vaismoradi, M. (2020). Health-related quality of life in prostate cancer survivors: implications for nursing care.

International Journal of Novel Research in Healthcare and Nursing. Vol. 8, Issue 3, pp: (371-381),Abd-Almonaem, M. A. A., Eshra, D. K., Ali, I. K., & Shahin, H. E. (2021). of Social life for Patients with Prostate Cancer.

Jack A. Clark. (2017). Expanding the de®nition of quality of life for prostate cancer. Cancer Suppl; 71: 1078±1082.

Jeihooni, A. K., Kashfi, S. M., Hatami, M., Avand, A., &Bazrafshan, M. R. (2019). The effect of educational program based on PRECEDE model in promoting prostate cancer screening in a sample of Iranian men. Journal of Cancer Education, 34(1), 161-172.

Jocham, Miller. (2019). The measurement of psychological states by use of factors derived from a combination of items from mood and symptom checklist. J Clin Psychol; 34: 677±685.

Kamberi, F. &Jaho, J. (2020):A retrospective study for Colorectal Cancer in Vlore, Albania-suggestions for further implications. Arch Cancer SciTher. 4: 003-006 DOI: 10.29328/journal.acst.1001013.

Matis, J., Svetlak, M., Slezackova, A., Svoboda, M., &Šumec, R. (2020). Mindfulness-Based Programs for Patients with Cancer via Health and Mobile Health: Systematic Review and Synthesis of Quantitative Research. Journal of medical Internet research, 22(11), e20709.

Metwaly, E. A., & Hamad, A. H. (2019). Effect of palliative care program on nurses' performance regarding prostate cancer and patients' outcomes. Egyptian Nursing Journal, 16(3), 195.

Micaux, C. (2021). Web-based support for young adults with reproductive concerns following cancer: development, process and outcome evaluation of a self-help psychoeducational intervention (Doctoral dissertation, KarolinskaInstitutet (Sweden)).

Mirmahmoudi, M. (2020): The Effect of Mindfulness-Based Stress Reduction Group Counseling on Psychological Responses and Some Inflammatory Factors in Women with Breast Cancer Referred to Kerman University of Medical Sciences in 2018-2019 (Doctoral dissertation, Faculty of Nursing and Midwifery, Kerman University of Medical Sciences, Kerman, Iran).

Mohamed Abd-Allah Abd-Almonaem, Dalal Khalil Eshra, Inas Kassem Ali , Hanaa Elsayed Shahin (2021).Quality of Psychological life for Patients with Prostate CancerVol. 8, Issue 3, pp: (371-381), Month: September December 2021, Available at: www.noveltyjournals.com

Patterns Differ Across Countries. available at https://www.cancertherapyadvisor.com/home/news/conference-coverage/american-society-of-clinical-oncology-genitourinary-asco-gu/asco-gu-2022/prostate-cancer-screening-treatment-patterns-differ-across-countries/

Porreca, A., Noale, M., Artibani, W., Bassi, P. F., Bertoni, F. Bracarda, S., & et al. (2018) Disease specific and general health-related quality of life in newly diagnosed prostate cancer patients: the Pros- IT CNR study. Health and quality of life outcomes 16(1): 122.

Prem S. Mann, (2020). Introductory statistics. 7th ed. *Library of Congress Cataloging in Publication Data. Printed in the* United States of America.

Ron D. Hays1*, Benjamin D. Schalet2, Karen L. Spritzer1 and David Cella (2017). Two-item PROMIS® global physical and mental health scales. Hays et al. Journal of Patient-Reported Outcomes 1:2 DOI 10.1186/s41687-017-0003-8

Suh, H. W., Jeong, H. Y., Hong, S., Kim, J. W., Yoon, S. W., Lee, J. Y., & Chung, S. Y. (2021). The mindfulness-based stress reduction program for improving sleep quality in cancer survivors: A systematic review and meta-analysis. Complementary Therapies in Medicine, 102667.

WHO (World Health Organization) (2022). Sexual and reproductive health: Key facts on adult people and reproductive health. http://www.euro.who.int/en/what-we-do/health-topics/Life-stages/sexual-and-reproductivehealth/

Wong L., Hockenberry-Eaton M., Wilson D., Winkelstein L., and Schwartz P., (2010): Essentials of Pediatric Nursing, 6th edition, Mosby Company, P1301.