DESIGN A HEALTHY LIFE STYLE GUIDELINE FOR PATIENTS UNDERGOING CHEMOTHERAPY IN PORT-SAID CITY

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ABSTRACT

Background: Cancer patients experience negative changes in their quality of life, and some of them can have physical side effects and mental health problems. Lifestyle changes related to exercise and nutrition can improve the health of these cancer patients. *Aim*: the aim of this study was to develop life style guideline for patients undergoing chemotherapy in Port Said City. *Subjects and Method: Design:* A quasi-experimental (one-group pretest-posttest) design. *Setting:* The present study was at health insurance hospital namely El-Tadamon hospital which have chemotherapy center in Port Said City. *Sample:* The purposive sample of the study included 66 cancer patients undergoing chemotherapy in the pre mentioned hospital. Tool: One tool used to gather the required data, namely, Health-Promoting Lifestyle Profile II (HPLPII). *Results:* The study revealed that 69.7% of the patients were females and 40.9% of them age range from forty to fifty years old. The majority of patients 74.2% had pain as a said effect of chemotherapy. In addition, in posttest, interpersonal relations gained the highest mean score (29.23±3.64), followed by responsibility for health (26.38±2.94). *Conclusion:* It can be concluded, a highly statistically improvements after implementation of guideline in all domains and overall scores of lifestyle from pre to post guideline implementation, furthermore, in post guideline implementation, a statistically significant associations between age and domains of physical activity, nutrition, interpersonal relations, overall of lifestyle a statistical associations between level of education and domains of physical activity, spiritual growth, stress management were detected, *Recommendations*: Designing and applying regular health education program for patients undergoing chemotherapy to improve maximum quality of life.

Key words: Cancer, Chemotherapy Patients, Health Promotion, Life Style

INTRODUCTION

Cancer disease is a master public health problem worldwide. In many middle - and low-income countries, such as Egypt, the prevalence of cancer is increasing rapidly due to epidemiological transmission (Abdulkareem, Sanni, Richman, Chambers, Hemmings and Grabsch, 2016).

Chemotherapy is a prevalent treatment for cancer; it is sometimes given before or after other treatments. If used before (new treatment), it is applied to reduce cancer to make the main treatment more effective. If chemotherapy treatment is given next the essential treatment (adjuvant treatment), the target is to kill the cancer cells (Clifford and Pang, 2015). Chemotherapy is correlating with a number of acute complications such as nausea and vomiting, anorexia, mucositis, diarrhea, infections, fatigue and emotional stress. There is an urgent need to identify areas where interventions should be focused on reducing the suffering of cancer patients and describing the experiences of patients undergoing chemotherapy. (Kang, 2015).

Cancer patients experience negative changes in their quality of life, and some of them can have physical side effects and mental health problems. Lifestyle changes related to exercise and nutrition improve the health of these cancer patients not only physically but also mentally. Therefore lifestyle intervention programs must be carefully examined, developed and implemented (Hwang and Nho, 2019).

Lifestyle can be defined as ways of living based on identifiable patterns of behavior which are determined by interplay between an individual personal characteristic, social interaction, and socio-economic and environmental living conditions (World Cancer Research Fund International, 2017). Various lifestyle modifications have been demonstrated, mostly in observational studies including reduction of dietary sodium intake, weight loss in the overweight, physical activity & healthy diet with smoking cessation. Adoption of healthy lifestyle by all individuals is critical in the protection and an indispensable part of the management of those with cancer patients (Romaguera, Ward and Wark, 2015).

Adopting a recommended lifestyle soon after diagnosis can prevent adverse changes in the body's composition and biomarkers of cancer, and improve treatment compliance, thereby improving the prognosis of cancer. (Abdulkareem, et al., 2016). For cancer patients, a positive lifestyle is very important to improve health, prevent cancer progression and treat

cancer. Lifestyle guideline interventions look promising in terms of the potential of cancer patients for physical and mental health benefits and as an empowering tool (Harford, 2015).

The Comprehensive National Cancer Network (NCCN) guidelines recommend maintaining a healthy weight, exercising regularly, eating a healthy diet, abstaining from alcohol, protecting you from UV rays, and planning regularly to ensure a healthy life against cancer (Swarm and Dans, 2018).

Nurses are pivotal in cancer prevention and early detection. Nurses carry out follow-up, coordinate treatment, ensure continuity throughout the process, provide up-to-date and pertinent information to facilitate patient knowledge and choice, work to ensure coordination among the various levels of care, provide ongoing training, lead research and publications concerning daily practice, and collaborate in investigation oriented toward early detection (Mulhaeriah, Engkus and Moh, 2018).

Significance of the study

Cancer is the second leading cause of death globally; it is responsible for an estimated 9.6 million deaths in 2018. Approximately 70% of deaths from cancer occur in low- and middle-income countries. Around one third of deaths from cancer are due to the 5 leading behavioral and dietary risks: high body mass index, low fruit and vegetable intake, lack of physical activity, tobacco use, and alcohol use. Tobacco use is the most important risk factor for cancer is responsible for approximately 22% of cancer deaths (Ferlay, Soerjomataram, Dikshit, Eser, Mathers, & Rebelo,2018) (Max &Hannah, 2018). In Egypt the current rates are 113 per 100,000 inhabitants and are expected to increase to 341 per 100,000 inhabitants, which revealing that the hit rate for males in liver cancer is 33.63%, while lung cancer is 5.69 %. For females 32.04 % of the hit rate in breast cancer, 13.54 % in liver cancer and 4.12 % in ovarian cancer (National Plan for Cancer Control, 2017). Chemotherapy is drug therapy for cancer. Chemotherapy drugs can affect any body system, but the following are most susceptible: anemia, thrombocytopenia-cardiomyopathy, arrhythmia, nausea and vomiting, appetite changes, constipation, diarrhea, hair loss, pain, weakness, numbness, changes in libido and sexual function, fertility problems, urine and bladder changes and kidney problems, lose some bone mass (Aslam, Naveed, Ahmad, Abbas, Gull, Athar, 2018). Cancer patients experience negative changes in their quality of life, and some of them can have physical side effects and mental health problems(Hwang and Nho, 2019). A healthy lifestyle leaves the patient fit, energetic and reduced risk for disease, good nutrition, daily exercise and

adequate sleep are the foundations for continuing good health. Managing stress in a positive way instead of through smoking or drinking alcohol, reduces wear and tear on your body at the hormonal level (Clarke, 2017), moreover, lifestyle changes related to exercise and nutrition improve the health of these cancer patients not only physically but also mentally. Therefore, lifestyle intervention programs must be carefully examined, developed and implemented, so the aim of this study was to carry out a life style guideline for patients undergoing chemotherapy in Port Said City.

AIM OF STUDY

The aim of this study was to develop health lifestyle guideline for cancer patients undergoing chemotherapy in Port Said City.

Objectives of the study:

1. Assess health promoting lifestyle behaviors of cancer patients undergoing chemotherapy about before and after guideline implementation.
2. Design health lifestyle guideline for cancer patients undergoing chemotherapy.
3. Implement health lifestyle guideline for cancer patients undergoing chemotherapy.
4. Evaluate the effect of the health lifestyle guideline on cancer patients' health promoting lifestyle behaviors.

Research Hypothesis:

To fulfill the aims of the study the following research hypotheses are formulated

H 1: The Knowledge of the patients undergoing chemotherapy will be improved after implementation of health life style guideline

H 2: The behaviors of cancer patients undergoing chemotherapy will be improved after implementation of health life style guideline.

SUBJECTS AND METHOD

Research design:

A quasi-experimental design (one-group pretest-posttest) was used for the current study.

Study Setting:

The present study was conducted in the chemotherapy center in El-Tadamon hospital affiliated to health insurance at Port Said City. It's located at 23rd of July St., Al-Manakh District, in front of Sadat Academy for Administrative Sciences.

Subjects:

A Purposive sampling technique was be used. The total number of cancer patients undergoing chemotherapy treatment was (66) all of them were receiving chemotherapy treatment at El-Tadamon hospital. ***Inclusion criteria***: Patients who accepted to participate in the study**. *Exclusion criteria***: Patients who had health conditions not allow them to participate in the study.

Sample size

The study sample was chosen according to the following calculation formula **(Araoye, 2003).**

$$N = \frac{2Z^2pq}{d^2}$$

Where,

N=sample size,

Z= standard normal deviate at 95% confidence level whose value is 1.96,

p= proportion of target population estimated to have cancer globally (0.02 used based on the findings of a previous study) (***Rose and Ritchie, 2018***).

q= 1-p

d= degree of accuracy (0.05)

q =1-(0.02) =0. 98

$$N=\frac{2(1.96)^2 \times 0.02 \times 0.98}{(0.05)^2} = 60$$

Assuming a 10% attrition rate:

10% of 60 = 6

60+ 6 = 66

The final sample size of this study was **66 cancer patients**

Tool of data collections: Data of this study was gathered by the following tool:

One tool was used to collect data for this study in pre & posttests. **Health Promotion**

Lifestyle Profile II (HPLPII) developed by Walker, Sechrist & Polerecky, 1998, was used to collect data for this study, it translated from English language by experts to Arabic language to suit the studied sample, it consisted of **two parts**:

Part I: Socio demographic data:

It contained items related demographic characteristics of the studied sample as (age, sex, level of education, social status).

Part II: Health-Promoting Lifestyle Profile II (HPLPII)

It included of 52 sub-items related to lifestyle of patients undergoing chemotherapy, it used to measure behaviors in the theorized dimensions of health-promoting lifestyle of cancer patients undergoing chemotherapy, it consisted of six subscales as follow: A) responsibility for health (9 items) such as report any unusual signs or symptoms, read or watch TV shows about improving health, ask health experts to understand their instructions etc.....,B) physical activity (8 items) such as follow a planned exercise program, vigorously exercise , do moderate physical activity etc....., C) nutrition (9 items) such as choose a diet low in fat, limit of the use of sugars, take portions etc..... , D) spiritual growth (9 items) such as feel and changing in positive ways, think my life has a goal, looking forward to the future etc....., E) personal relationships (9 items) such as discuss my problems and concerns with people close to me, easily praise others, maintain meaningful and satisfying relationships with others etc....., F) stress management(8 items) such as get enough sleep, take some time to relax every day, accept those things in my life that cannot change etc.......

Scoring system:

The subject's response ware rated on a four-point Likert scale: never (1), sometimes (2), often (3), routinely (4). The total of the HPLP-II scale was calculated by averaging all the responses given to the six subscales. Overall, the score for health-promoting lifestyle and behavioral aspects was calculated using the mean of responses for all 52 items and each subscale (eight or nine items). The higher mean scores indicating more frequent use of the described behavior.

Validity & Reliability:

Construct validity was supported by factor analysis that confirmed a six-dimensional structure of health-promoting lifestyle, by convergence with the Personal Lifestyle questionnaire (r = .678), and by a non-significant correlation with social desirability. Criterion-related validity was indicated by significant correlations with concurrent measures of perceived health status and quality of life (r's = .269 to .491). The alpha coefficient of internal consistency for the total scale was .943; alpha coefficients for the subscales ranged from .793 to .872. The 3-week test-retest stability coefficient for the total scale was .892.

Pilot study:

A pilot study was carried out on 7 cancer patients who represent 10% of the total sample who were not included in the main study and selected randomly to test the reliability

and applicability of tools before starting data collection. They had no difficulty understanding and completing the instrument. Completion of the tool took about 15-20 minutes.

Administrative design:

Before conduction of study, an official letter explaining the aim of the study issued from the Dean of the faculty of Nursing, Port Said University to director of El-Tadamon Hospital to obtain his permission to conduct the study. Contacted and informed the manager of the hospital to obtain permission to include the patients on the present research. Also, agreement to participate in the current study took from the patients themselves, after an explanation of the purpose of the study for each of them.

Fieldwork:

The current study includes four phases (Assessment, planning, implementation and evaluation phase).

Phase I (Assessment phase):

Before starting of the guideline design and implementation. The researcher explains the purpose of the study to each patient and interviewed them to complete it, after take their agreement to participate in the study. The tool was filled by the researcher, it took about (25-30) minutes.

Phase II (program planning):

The guideline of this study aimed to improve the promoting healthy lifestyle behaviors of the patients undergoing chemotherapy in El-Tadamon hospital in Port Said city toward a healthy lifestyle. It included content related to general knowledge & behaviors about a healthy lifestyle as a definition of a healthy lifestyle and their aspect as (diet, exercise, rest and sleep, stress management). The lifestyle guideline developed based on the identified needs and demands of patients gathered in-phase (I), and in the light of the most recent pertinent literature. The guideline planning phase lasted for two weeks.

Phase III (guideline implementation):

- The lifestyle guideline was carried out in El-Tadamon Hospital.
- The patients were divided into ten groups; each group contained (6-7) patients
- The guideline implemented for each group of a subject, two days per week for two continuous weeks, and the total were four sessions for each group, each day contained one

session, and the session took about an hour. The collection of data and application of the guideline were lasted over five months, started from 1st February to 1st July, 2019.

- The guideline presented in a clear and concise form, and focused on the point of learning, using different teaching methods such as lectures, group discussions, booklet and video.

The following table contains the objectives of health promotion lifestyle guideline for patients undergoing chemotherapy

Educational objective	Content	method of learning	Evaluation methods	Time
Define of chemotherapy	Definition of chemotherapy	Lecture + discussion	By asking a question and waiting for an answer	3 Minutes
Enumerate the side effects of chemotherapy	Side effects of chemotherapy	Lecture + discussion	By asking a question and waiting for answer	5 Minutes
Lists the most important instructions followed after chemotherapy	Instructions followed after chemotherapy	Lecture + discussion	By asking a question and waiting for an answer	5 Minutes
Identify the importance of chemotherapy	The importance of chemotherapy	Lecture + discussion	By asking a question and waiting for an answer	2 Minutes
List the said effect of chemotherapy.	The said effect of chemotherapy.	Lecture + discussion	By asking a question and waiting for an answer	5 Minutes
develop a positive attitude towards a healthy lifestyle for patients undergoing chemotherapy	Healthy lifestyle for patients undergoing chemotherapy	Lecture + discussion	By asking a question and waiting for an answer	5 Minutes
Explain the key points for maintaining proper and healthy nutrition during chemotherapy.	Maintaining proper and healthy nutrition during chemotherapy.	Lecture + discussion	By asking a question and waiting for an answer	8 Minutes
Illustrate the importance of exercising while receiving chemotherapy	The importance of exercising while receiving chemotherapy	Lecture + discussion	By asking a question and waiting for an answer	7 Minutes
Identify the most important benefits that can be obtained when stopping smoking and mentions some aids to stop smoking.	The most important benefits that can be obtained when stopping smoking and mentions some aids to stop smoking.	Lecture + discussion	By asking a question and waiting for an answer	6 Minutes
Lists the most important principles used to improve sleep pattern	The most important principles used to improve sleep pattern	Lecture + discussion	By asking a question and waiting for an answer	6 Minutes
Mention the means that can be used to overcome the stress of life	Means that can be used to overcome the stress of life	Lecture + discussion	By asking a question and waiting for an answer	8 Minutes

Phase IV (Evaluation phase):

The guideline outcome evaluated after three months from its implementation using the same tool in pre implementation.

Ethical consideration:

- Obtain a research ethics committee approval.

- Informed consent was obtained from patients to participate in the study after explaining the purpose and the importance of the study.

- The study subjects were informed that their participation is voluntary and they have the right to withdraw from the study at any time.

- Ensuring the confidentiality of the information collected and anonymity is guaranteed.

Statistical design:

All information was gathered, coded, classified and subjected to factual investigation. Factual examination is performed by measurable Package SPSS all in all (form 23.0). Quantitative factors are depicted by the Mean, Standard Deviation (SD), while subjective unmitigated factors are portrayed by extents and rates. Chi-square and P-esteem test used to test connection-correlation. Statistically significant was set at $p < .0.5$.

RESULTS:

Table (1): displays that (69.7%) of the patients were female and (40.9%) of them age range from 40 to less than 50 years old. Moreover, (65.2%) were married, and (50 %) of them get secondary education.

Table (2): illustrates that (74.2%) of the patients are suffering from pain and loss of appetite as a side effect of chemotherapy treatment followed by (68.2%) of patients suffering from diarrhea, (62.1%) of them complained of fatigue, and (54.5%) of them had wasting and weakness as a general.

Table (3): illustrates that the total mean in pre guideline implementation was (109.08±12.44), the highest mean score was found in interpersonal relations domain (24.17±3.23) followed by spiritual growth (22.06±2.70). On the opposite side, physical activity was the lowest mean score (10.12±1.85). Moreover, the total mean score in post guideline implementation was (143.38±12.65). Where, the interpersonal relations gained the highest mean score (29.23±3.64) followed by responsibility for health (26.38±2.94). Meanwhile, the physical activity was the lowest mean score (13.65±3.42). Table also revealed a highly statistically improvements from   pre to post implementation of guideline in

all domains and overall scores of lifestyle, where p=<0.001*, <0.001*, <0.001*, <0.001*, <0.001*, <0.001*respectively.

Table (4): illustrates the relation between domains of lifestyle of the studied sample and different parameters pre implementation of the guideline. As revealed in the table, there were a statistically significant associations between age and domains of physical activity, nutrition, spiritual growth, interpersonal relations, overall, of lifestyle as p=0.035*, 0.027*, 0.001*, 0.001*, 0.003* respectively. Moreover, a statistical association were found between gender and domain of spiritual growth as p=0.034*.

Also, table shows statistically significant associations between marital status and domains of nutrition, spiritual Growth, stress management, overall, of lifestyle asp=<.001*, 0.001*, 0.004*, <.001*respectively. Whereas, a statistical association were found between level of education and domains of physical activity, spiritual growth, stress management as p=<.001*, 0.001*, 0.014* respectively.

Furthermore, the table declares a statistically significant associations between date of diagnosis of cancer and domains of physical activity, nutrition as p=0.045*, 0.040* respectively. Additionally, a statistical association were found between diagnosis (type of cancer) and domains of responsibility for health, physical Activity, nutrition, interpersonal relations as p= <0.001*, <.001*, 0.027*, 0.014* respectively.

The table also reveals a statistically significant associations between type of chemotherapy and domain of interpersonal relations as p=0.011*. Whereas, a statistical association were found between date of first dosage of the chemotherapy and domains of physical activity, nutrition, stress management, overall, of lifestyle asp=0.013*, 0.005*, 0.016*, 0.028* respectively. Finally, a statistically significant associations between schedule of chemotherapy and domains of nutrition, stress management were found as p=0.022*, 0.033* respectively.

Table (5): illustrates the relation between domains of lifestyle of the studied sample and different parameters post implementation of the guideline. As revealed in the table, there were a statistically significant associations between age and domains of physical activity, nutrition, interpersonal relations, overall, of lifestyle as p=0.002*, 0.022*, <.001*, 0.010*

respectively. Moreover, a statistical association were found between gender and domains of responsibility for health, interpersonal relations as p=<0.0010*, <.001*.

Also, table shows statistically significant associations between marital status and domains of responsibility for health, physical activity, nutrition, spiritual Growth, overall, of lifestyle asp=<0.001*, 0.001*, 0.003*,0.018*, <.001* respectively. Whereas, a statistical association were found between level of education and domains of physical activity, spiritual growth, stress management as p=<.001*, 0.002*, 0.017* respectively.

Furthermore, the table declares that statistically significant associations between date of diagnosis of cancer and domains of physical activity, nutrition, spiritual growth, interpersonal relations, stress management, overall, of lifestyle as p=0.015*, 0.024*,0.002*,0.002*, 0.010*, 0.004*, respectively. Additionally, a statistical association were found between diagnosis (type of cancer) and domains of responsibility for health, physical Activity, nutrition, interpersonal relations, overall, of lifestyle as p= <0.001*, 0.003*, 0.002*, 0.006*, 0.033* respectively.

Moreover, the table reveals a statistically significant associations between type of chemotherapy and domain of stress management as p=0.007*. Whereas, a statistical association were found between date of first dosage of the chemotherapy and domains of physical activity, nutrition, spiritual growth, interpersonal relations, stress management, overall of lifestyle asp=0.003*, 0.005*, 0.035*, 0.004*, <.001*, <.001*respectively. Finally, a statistically significant associations between schedule of chemotherapy and domains of nutrition, stress management as p=0.001*, <.001* respectively.

Table (1): Distribution of the studied sample according to personal data (n = 66)

Personal data	No.	%
Age		
30-<40	19	28.8
40-<50	27	40.9
50-60	20	30.3
Gender		
Male	20	30.3
Female	46	69.7
Marital status		
Single	10	15.2
Married	43	65.2
Widowed	13	19.7
Level of education		
Preparatory	10	15.2
Secondary	33	50.0
Bachelor	23	34.8

Table (2): Distribution of the studied patients according to their complains of side effects of chemotherapy (n = 66)

*Side effects of chemotherapy	No.	%
Fever	20	30.3
Nausea and vomiting	45	68.2
Diarrhea	16	24.2
Constipation	6	9.1
Hair loss	27	40.9
Loss of appetite	49	74.2
Wasting and weakness of the general	36	54.5
Fatigue	41	62.1
Mouth ulcers	17	25.8
Pain	49	74.2
Bruising	8	12.1
All of the above	17	25.8

* Multiple answers

Table (3): Comparison between total mean scores pre& post health lifestyle guideline implementation for the studied sample

Lifestyle of patients undergoing chemotherapy	Pre Mean ± SD.	Post Mean ± SD.	t	p
Responsibility for health				
Total mean score	3.34±18.64	2.94±26.38	36.165*	<0.001*
% score	12.35±35.69	10.91±64.37		
Physical Activity				
Total mean score	1.85±10.12	3.42±13.65	12.644*	<0.001*
% score	7.72±8.84	14.24±23.55		
Nutrition				
Total mean score	4.28±17.45	3.34±26.05	32.819*	<0.001*
% score	15.85±31.31	12.37±63.13		
Spiritual Growth				
Total mean score	2.70±22.06	3.73±26.36	10.184*	<0.001*
% score	10.0±48.37	13.82±64.31		
Interpersonal Relations				
Total mean score	3.23±24.17	3.64±29.23	11.962*	<0.001*
% score	11.95±56.17	13.47±74.92		
Stress Management				
Total mean score	2.26±16.64	2.45±21.71	22.693*	<0.001*
% score	9.43±35.98	10.23±57.13		
Overall				
Total mean score	12.44±109.08	±143.38 12.65	32.998*	<0.001*
% score	7.97±36.59	8.11±58.58		

t: Paired t-test

p: p value for comparison between **pre** and **post**

*: Statistically significant at p ≤ 0.05

Table (4): Relation between life style domains of the studied sample pre implementation of lifestyle guideline and different parameters (n= 66)

	N	Responsibility for health	Physical Activity	Nutrition	Spiritual Growth	Interpersonal Relations	Stress Management	Overall
Age								
30-<40	19	37.43 ±14.44	11.62 ±7.80	35.48 ±17.78	54.39 ±10.41	64.91 ±14.78	35.96 ±11.22	40.59 ±9.90
40-<50	27	38.55 ±12.88	9.41 ±9.43	34.16 ±14.25	48.01 ±9.72	51.03 ±8.86	38.12 ±9.99	37.04 ±6.59
50-60	20	30.19 ±7.14	5.42 ±1.96	23.52 ±13.77	43.15 ±6.72	54.81 ±7.66	33.13 ±5.81	32.18 ±5.34
F (p)		3.080 (0.053)	3.532*(0.035*)	3.812*(0.027*)	7.402*(0.001*)	9.790*(0.001*)	1.640(0.202)	6.402*(0.003*)
Gender								
Male	20	32.41 ±8.82	12.08 ±9.26	32.78 ±14.68	44.44 ±9.84	50.93 ±8.74	36.87 ±11.17	35.32 ±6.37
Female	46	37.12 ±13.44	7.43 ±6.57	30.68 ±16.45	50.08 ±9.68	58.45 ±12.52	35.60 ±8.68	37.14 ±8.58
t (p)		1.435 (0.156)	2.037(0.051)	0.492(0.624)	2.163*(0.034*)	2.439*(0.018*)	0.502(0.617)	0.849(0.399)
Marital status								
Single	10	35.56 ±12.97	8.33 ±0.0	34.07 ±13.39	55.56 ±9.07	63.33 ±10.10	34.58 ±2.01	39.23 ±7.01
Married	43	33.76 ±13.11	8.04 ±7.74	25.84 ±12.87	45.22 ±8.26	53.92 ±12.42	34.01 ±8.86	33.94 ±6.07
Widowed	13	42.17 ±6.33	11.86 ±10.04	47.29 ±16.01	53.28 ±11.67	58.12 ±9.61	43.59 ±11.23	43.29 ±9.94
F (p)		2.409 (0.098)	1.255(.292)	12.67*(<.001*)	7.547*(0.001*)	2.889(0.063)	6.102*(0.004*)	9.467*(<.001*)
Level of education								
Preparatory level	10	40.0 ±12.69	15.42 ±11.96	38.15 ±10.63	45.93 ±11.87	51.48 ±12.52	35.42 ±7.41	38.21 ±7.09
Secondary education	33	35.91 ±13.04	5.18 ±3.30	27.38 ±13.61	44.89 ±7.34	57.24 ±12.90	33.08 ±6.07	34.52 ±6.22
Bachelor	23	33.49 ±11.14	11.23 ±7.48	33.98 ±19.36	54.43 ±10.02	56.68 ±10.20	40.40 ±12.40	38.85 ±9.90
F (p)		0.976 (0.382)	11.07*(<.001*)	2.363(0.102)	7.898*(0.001*)	0.920(0.404)	4.545*(0.014*)	2.337(0.105)
Presence of chronic disease								
High / low blood pressure	23	30.11 ±6.64	5.80 ±2.08	25.76 ±14.10	43.80 ±6.48	54.43 ±7.19	33.70 ±5.61	32.75 ±5.18
Diabetes	24	38.27 ±13.0	3.99 ±3.13	27.93 ±16.24	45.99 ±8.93	56.02 ±8.83	35.59 ±6.61	35.20 ±7.20
Heart disease	3	33.33 ±0.0	0.0 ±0.0	14.81 ±0.0	44.44 ±0.0	40.74 ±0.0	37.50 ±0.0	28.85 ±0.0
Kidney disease	3	22.22 ±0.0	4.17 ±0.0	25.93 ±0.0	40.74 ±0.0	59.26 ±0.0	33.33 ±0.0	31.41 ±0.0
F (p)								
Date of Diagnosis of cancer								
Less than 6 months	20	34.07 ±16.72	6.04 ±3.44	25.37 ±10.97	48.70 ±9.71	58.52 ±9.20	32.50 ±2.90	34.78 ±6.82
More than 6 months/Year	14	38.62 ±10.24	7.44 ±3.72	28.57 ±16.20	49.21 ±12.70	58.20 ±17.52	39.29 ±12.63	37.41 ±8.14
From one year to more	32	35.42 ± 9.95	11.20 ±10.01	36.23 ±17.08	47.80 ±9.14	53.82 ±10.39	36.72 ±10.06	37.36 ±8.60
F (p)		0.566 (0.571)	3.248*(0.045*)	3.384*(0.040*)	0.109(0.897)	1.215(0.304)	2.419(0.097)	0.735(0.484)
Diagnosis (type of cancer)								
Breast cancer	30	41.36 ±12.19	7.78 ±7.79	34.94 ±17.12	49.75 ±9.56	60.74 ±11.86	37.22 ±9.47	39.25 ±8.23
Colon cancer	13	27.64 ±6.70	7.69 ±3.74	28.77 ±16.85	46.72 ±11.37	53.28 ±5.77	40.06 ±12.79	34.42 ±7.79
Bone cancer	7	41.27 ±3.96	20.24 ±11.14	40.21 ±3.96	40.21 ±3.96	46.56 ±11.88	30.95 ±2.23	37.0 ±1.37
Other (lymphoma)	16	29.17 ±12.31	6.77 ±3.36	22.69 ±11.86	50.69 ±10.19	54.17 ±12.96	32.55 ±6.13	33.17 ±8.02
F (p)		7.75*(<0.001*)	7.479*(<.001*)	3.258*(0.027*)	2.277(0.088)	3.811*(0.014*)	2.517(0.066)	2.601(0.060)
Type of chemotherapy								
Injection	15	36.30 ±12.69	9.17 ±10.70	27.41 ±20.94	48.89 ±10.68	62.96 ±16.08	39.17 ±10.06	37.82 ±10.87
Both Injection and tablet	51	35.51 ±12.38	8.74 ±6.73	32.46 ±14.07	48.22 ±9.90	54.18 ±9.77	35.05 ±9.14	36.22 ±7.0
t (p)		0.215 (0.831)	0.145(0.886)	1.087(0.281)	0.226(0.822)	2.612*(0.011*)	1.50(0.139)	0.537(0.598)
Date of first Dosage of the								

chemotherapy								
Less than one year	**40**	34.72 ±14.05	6.56 ±3.39	26.57 ±12.18	47.41 ±10.65	56.85 ±12.62	33.75 ±9.14	34.86 ±7.31
One to five years	**26**	37.18 ±9.22	12.34 ±10.77	38.60 ±18.18	49.86 ±8.90	55.13 ±11.0	39.42 ±8.99	39.25 ±8.36
t (p)		0.858 (0.394)	2.652*(0.013*)	2.969*(0.005*)	0.972(0.335)	0.569(0.571)	2.480*(0.016*)	2.256*(0.028*)
Schedule of chemotherapy								
Session every 2weeks	**29**	33.08 ±10.93	8.76 ±7.90	25.93 ±19.42	49.81 ±9.58	57.47 ±13.34	38.94 ±11.37	36.12 ±9.39
Sessions every 21 day	**37**	37.74 ±13.15	8.90 ±7.68	35.54 ±10.88	47.25 ±10.31	55.16 ±10.83	33.67 ±6.90	36.95 ±6.78
t (p)		1.537 (0.129)	0.068(0.946)	2.387*(0.022*)	1.033(0.305)	0.779(0.439)	2.197* (0.033*)	0.404(0.688)

t: Student t-test

F: **F for ANOVA test**

p: p value for association between different categories

*: Statistically significant at p ≤ 0.05

Table (5): Relation between life style domains of the studied sample post health promotion lifestyle guidelin implementation and different parameters (n= 66)

	N	Responsibility for health	Physical Activity	Nutrition	Spiritual Growth	Interpersonal Relations	Stress Management	Overall
Age								
(30- <40)	19	67.25±14.09	32.68 ±16.57	65.89 ±9.92	67.25 ±13.93	83.04 ±11.13	58.99 ±13.48	63.16 ±8.97
(41-50)	27	64.33±10.73	21.60 ±11.90	65.84 ±10.79	64.06 ±10.72	67.08 ±7.85	56.94 ±9.60	57.31 ±5.08
(51-60)	20	61.67±6.72	17.50 ±10.61	56.85 ±14.53	61.85 ±17.25	77.78 ±16.03	55.62 ±7.31	55.93 ±9.10
F (p)		1.289(0.283)	7.074*(0.002*)	4.045*(0.022*)	0.745(0.479)	11.12*(<.001*)	0.528(0.592)	4.969*(0.010*)
Gender								
Male	20	58.52±5.71	27.92 ±12.32	63.89 ±14.21	60.56 ±10.36	67.22 ±8.93	57.29 ±6.88	56.41 ±6.14
Female	46	66.91±11.67	21.65 ±14.71	62.80 ±11.63	65.94 ±14.89	78.26 ±13.81	57.07 ±11.45	59.52 ±8.72
t (p)		3.915*(<0.001*)	1.666(0.101)	0.326(0.746)	1.468(0.147)	3.871*(<.001*)	0.099(0.921)	1.443(0.154)
Marital status								
Single	10	68.89±12.97	34.58 ±5.22	66.30 ±13.23	75.56 ±11.48	81.11 ±6.86	54.58 ±9.10	64.23 ±2.38
Married	43	60.29±8.90	18.99 ±10.22	59.69 ±11.38	62.36 ±11.71	72.52 ±12.02	56.88 ±8.28	55.78 ±5.53
Widowed	13	74.36±7.48	30.13 ±22.12	72.08 ±10.32	62.11 ±18.22	78.06 ±19.45	59.94 ±15.82	63.46 ±12.81
F (p)		12.66*(<0.001*)	8.017*(0.001*)	6.269*(0.003*)	4.299* (0.018*)	2.166(0.123)	0.807(0.451)	9.195*(<0.001*)
Level of education								
Preparatory level	10	65.93±13.39	27.92 ±14.57	67.78 ±7.62	58.15 ±4.64	66.67 ±3.02	54.17 ±6.80	57.37 ±6.08
Secondary education	33	64.65±9.54	17.05 ±11.38	62.74 ±13.79	60.61 ±15.32	75.76 ±14.23	54.67 ±9.30	56.68 ±8.92
Bachelor	23	63.29±11.97	30.98 ±13.92	61.67 ±11.80	72.30 ±10.47	77.29 ±14.14	61.96 ±11.26	61.82 ±6.80
F (p)		0.221(0.803)	8.717*(<.001*)	0.879(0.420)	7.167* (0.002*)	2.398(0.099)	4.339*(0.017*)	3.027(0.056)
Do you suffer from any chronic diseases								
High / low blood pressure	23	61.35±6.30	18.48 ±10.19	59.10 ±14.75	64.41 ±17.40	78.74 ±15.12	57.07 ±7.79	57.25 ±9.14
Diabetes	24	68.52±9.65	15.10 ±10.27	60.80 ±14.97	58.80 ±14.95	72.69 ±15.74	54.34 ±9.56	55.82 ±8.68
Heart disease	3	66.67±0.0	8.33 ±0.0	55.56 ±0.0	66.67 ±0.0	66.67 ±0.0	66.67 ±0.0	55.77 ±0.0
Kidney disease	3	55.56±0.0	8.33 ±0.0	59.26 ±0.0	51.85 ±0.0	70.37 ±0.0	45.83 ±0.0	49.36 ±0.0
F (p)								
Date of Diagnosis								
Less than 6 months	20	63.89±13.10	20.42 ±9.83	57.59 ±9.11	69.81 ±15.12	75.56 ±8.78	51.88 ±9.41	57.31 ±5.76
More than 6 months/Year	14	63.49±7.24	16.67 ±9.81	62.17 ±13.72	53.44 ±11.69	64.55 ±13.29	56.85 ±10.41	53.48 ±7.55
From one year to more	32	65.05±11.01	28.52 ±16.50	67.01 ±12.46	65.62 ±11.34	79.05 ±13.88	60.55 ±9.47	61.60 ±8.45
F (p)		0.123(0.885)	4.505*(0.015*)	3.954*(0.024*)	7.221*(0.002*)	6.666*(0.002*)	4.974*(0.010*)	6.049*(0.004*)
Diagnosis (type cancer)								
Breast cancer	30	70.0±9.14	22.50 ±16.58	66.42 ±11.51	63.33 ±13.84	80.37 ±15.29	58.06 ±12.33	60.88 ±9.28
Colon cancer	13	55.56±2.62	20.51 ±8.41	58.97 ±14.62	59.54 ±12.60	65.81 ±10.60	58.97 ±8.13	53.75 ±5.54
Bone cancer	7	64.02±5.94	41.67 ±0.0	73.02 ±7.92	62.43 ±3.96	69.84 ±3.96	54.17 ±0.0	61.36 ±3.77
Other (lymphoma)	16	61.11±13.86	20.05 ±10.67	56.02 ±8.65	70.83 ±15.99	74.31 ±9.70	55.21 ±9.68	56.97 ±7.13
F (p)		7.87*(<0.001*)	5.193* (0.003*)	5.343* (0.002*)	1.868(0.144)	4.625*(0.006*)	0.596(0.620)	3.099*(0.033*)
Type of chemotherapy								
Injection	15	66.67±8.74	22.50 ±21.06	58.52 ±10.68	58.52 ±9.20	77.04 ±15.60	63.33 ±12.62	58.33 ±11.04
Both	51	63.69±11.45	23.86 ±11.79	64.49 ±12.60	66.01 ±14.55	74.29 ±12.88	55.31 ±8.74	58.65 ±7.16
t (p)		0.929(0.357)	0.239(0.814)	1.665(0.101)	1.882(0.064)	0.691(0.492)	2.809*(0.007*)	0.104(0.918)
Date of first Dosage of the chemotherapy								
Less than one year	40	62.50±11.35	18.85 ±9.39	59.72 ±10.41	61.67 ±15.43	70.93 ±11.14	53.65 ±9.54	55.26 ±6.78
One to five years	26	67.24±1.90	30.77 ±17.32	68.38 ±13.47	68.38 ±9.84	81.05 ±14.60	62.50 ±8.98	63.68 ±7.38
t (p)		1.751(0.085)	3.214*(0.003*)	2.936*(0.005*)	2.157*(0.035*)	3.012*(0.004*)	3.770*(<.001*)	4.766*(<.001*)
Schedule of chemotherapy								
Session every 2weeks	29	62.07±8.67	22.41 ±15.73	57.47 ±12.85	65.26 ±9.72	76.50 ±15.82	63.36 ±7.98	58.42 ±7.53
Sessions every 21 day	37	66.17±12.20	24.44 ±13.11	67.57 ±10.08	63.56 ±16.44	73.67 ±11.37	52.25 ±9.14	58.70 ±8.63
t (p)		1.530(0.131)	0.570(0.571)	3.474*(0.001*)	0.523(0.603)	0.812(0.421)	5.178* (<.001*)	0.136(0.892)

t: Student t-test

F: F for ANOVA test

p: p value for association between different categories

*: Statistically significant at p ≤ 0.05

DISCUSSION:

Globally, cancer is a common disease, especially in developing countries, that causes various problems for patients as they receive various treatments such as radiation therapy, surgery, biological therapy, goal-directed hemodynamic and chemotherapy. Chemotherapy as a long-term treatment includes many cycles and causes various side effects through damaging both normal and cancer cells (Harorani, Davodabady, Farahani, hezave & Rafiei, 2020), and fifty to 96% of patient who receive chemotherapy experience poor quality life during and after treatment (Yufe, Fergus, & Male, 2019).So it is critically for patient undergoing chemotherapy to have a healthy lifestyle to be able to improve their quality of life and have the ability to continue living independently(Witjes,2020). This study aimed to develop health life style guideline for patients undergoing chemotherapy in Port Said City.

The present study findings showed that the majority of patients, in pre guideline implementation, never attend educational programs on personal health care, this might be due to that, the low priority given to educational programs by hospital due to low budget. Wendy Demark-Wahnefried, and Jones 2018, reported that ,oncology care providers can assist their patients by endorsing existing health guidelines and encouraging their patients to take active roles in pursuing general preventive health strategies.

An improvement in post guideline implementation was detected, as the majority of patients mentioned they sometimes attend educational programs on personal health care, this might be due to that, the guideline line presented in suitable time for patients& provide information needed by patients in clear &concise manner. According to Courneya, Segal & Mackey, 2017, timing of interventions is dependent upon the targeted behavior (e.g., diet, exercise, etc.); the channel of delivery (clinic or home-based), treatments received (e.g., surgery, radiation, chemotherapy), side effects (fatigue, pain, nausea, etc.), and desired outcomes (short-term symptom management or overall long-term health). For example, observations from recent studies suggest that interventions involving physical activity may receive better uptake and continued adherence if introduced after primary therapy is complete rather than during active treatment.

Furthermore, the study revealed a highly statistically significant improvement from pre and post implementation of guideline in overall scores of lifestyles. As this improvement could be attributed to the varieties of educational methods which used by the researcher and Arabic guideline which distributed to every patient, guideline is best used when they are

brief, written in plain language, focus on counseling, full of good pictures and when they are used to back- up other forms of education. Nady, El-Sherbiny, Youness, & Hassan, (2018) indicated that lifestyle of the patient undergoing chemotherapy have been enhanced under the influence of educational program and this improvement has not been only related to the total score of the lifestyle. This enhancement attributed to the improvement of women's knowledge regarding healthy lifestyle

According to Jones , Demark-Wahnefried, 2016, Healthy lifestyle behaviours that encompass regular exercise, weight control, healthy nutrition, and some complementary practices--eg, support groups, imagery--have the potential to greatly reduce cancer-treatment-associated morbidity and mortality in cancer survivors and can enhance quality of life.

Caan, Sternfeld, Gunderson, Coates, Quesenberry & Slattery 2015, found that, most earlier research suggested that the practice of healthy lifestyle behaviors was higher among cancer survivors than in the general population; however, recent large-scale studies now indicate that few health behavior differences exist between cancer survivors and healthy populations or non-cancer controls.

Regarding the relation between pre lifestyle guideline and different parameters, the study finding presented that, there were a statistically significant differences between overall life style of the studied patients and their age, marital status and date of the first dosage of the chemotherapy of Bellizzi, Rowland, Jeffery, & Neel, (2016), who studied the effect of a contemplative self-healing program on quality of life in women with breast and gynecologic cancers alternative therapies in health and medicine, in USA, confirmed that patients who were married, and with longer duration of illness had higher quality of life.

On contrary the study of Mohammed, Shahin, Youness, & Hassan, (2018) who studied the survivorship in women undergoing gynecological and breast cancer treatment in Upper Egypt: the impact of quality of life improvement educational program, stated that regarding the relationship between the studied women quality of life and socio-demographic data in both breast and gynecological cancer, there is no significant except on the control group of gynecological cancer; there was a significant negative correlation with rural residences after implementation of the program.

As regard, relation between post lifestyle guideline and different parameters, the study illustrated that there were a statistically significant differences between gender and domains of responsibility for health, interpersonal relations; Dehkordi, (2018), who studied health-promoting lifestyle among people without heart disease in Isfahan, stated that comparison of overall mean score of health-promoting lifestyle and its domains-based personal characteristics of participants showed significant differences about physical activity and interpersonal relations between males and females. The result showed that females were significantly less involved in physical activities than males but participation in interpersonal relations in female was more than male.

A statistically significant association between level of education and domains of physical activity, stress management and spiritual growth, were detected in the present study, in agreement with Heidari, Khan Kermanshahi &Vanaki (2017)who studied the effect of a supportive health promotion program on the lifestyle of pre-menopausal, in Iran indicated that a significant difference on spiritual growth subscale by educational level, mean score of physical activity for people with college education was greater than others by increasing the level of education and physical activity would increase. Moreover, result of study showed that by increasing educational level, the total score of health-promoting lifestyle and the score of all dimensions were improved.

A statistically significant association between date of diagnosis of cancer and domains of physical activity, nutrition, spiritual growth, interpersonal relations, stress management, & overall score of lifestyles. As same the study of Kostopoulou, & Katsouyanni, (2016) who studied the truth-telling issue and changes in lifestyle in patients with cancer, in Athens, Greece, indicated that most patients with cancer reported making changes in lifestyle to improve their health and well-being after a diagnosis of cancer. These data are consistent with a survey of 536 cancer survivors, which also showed that about 70% of the patients reported making changes in lifestyle: 40% made dietary changes and 20% added physical activity.

CONCLUSION:

In the light of the main study findings, it had been concluded that a highly statistically improvements from pre to post implementation of guideline in all domains(responsibility for health, physical activity, nutrition, spiritual growth, interpersonal relations, stress management) and overall scores of lifestyle for the studied patients, furthermore, in post

guideline implementation, a statistically significant associations between age and domains of physical activity, nutrition, interpersonal relations, overall of lifestyle, also, a statistical significant associations were found between level of education and domains of physical activity, spiritual growth, stress management.

RECOMMENDATIONS:

In the light of the results of the contemporary study, the subsequent recommendations were proposed:

1. Develop health awareness teams within the chemotherapy departments of hospitals in order to spread health awareness about healthy life style.

2. Designing and applying health education program for patients undergoing chemotherapy to improve maximum quality of life.

3. Create effective communication channels between the nursing team and patients to identify the most important problems and errors in the patients' lifestyle, to plan with patients to improve it.

4. Encourage patients & their families to participate in awareness programs about healthy lifestyle and explain its importance and their impacts in improving patients' health.

5. Replication of this guideline with larger sample size for confirmation and improvement of its procedures and content.

6. Further researches needed to assess the impact of such guidelines on patients' health.

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