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Effect of Symptom Navi Program on Outcomes for Patients Receiving Cancer Treatment: A quasi-experimental study

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Abstract
Evidence suggests that healthcare professionals should provide supportive care to cancer patients to address their informational, practical, emotional, and psychosocial requirements, therefore Symptom Navi program is a nurse-led program that helps patients with cancer better control their symptoms. The **aim** of the current study was to evaluate the effect of implementing the Symptom Navi© program on outcomes for patients with cancer. A quasi-experimental research **design** was applied to two groups (study & control), **Sample:** purposive sample120 patients for each group were selected from the outpatient clinic of Mansoura Oncology Center, Egypt. Five **tools** were used to gather data: The Demographic and patients' medical history datasheet, The Monroe Dunaway Anderson Symptom Inventory, the Self-Efficacy for Managing Chronic Diseases 6-item Scale, the Single-Item Linear Analog Scale Assessment (LASA), and the patient-reported chemotherapy indicators of symptoms and experiences. **Results:** The mean scores of MDASI and symptoms interfere with life of the study group decreased significantly (73.23 & 33.1) in posttest compared to (101.28 & 44.3) respectively in pretest ($p<0.001$). There were also highly significant statistical differences in mean scores of self-efficacy and LASE scores of the study group (18.26 & 20.83 in pretest) instead of (28.68 & 22.39 in posttest). **Conclusion**: Implementation of the symptoms Navi program had a significant impact on reducing the severity of symptoms experienced by patients with cancer, promoting self-efficacy, in addition to enhancing the patient-reported chemotherapy indicators of symptoms and experiences, thus enhancing the overall quality of life, that can be adopted as a standard model of care. **Recommendations:** The SN©P is recommended to be applied within daily routines care and self-management implementation of patients with cancer.

Keywords: Cancer, Patients' outcome &Symptom Navi© program

Introduction
Globally, cancer is a major health issue that affects around 2 million people a year and has a fast-increasing incidence and fatality rate. In many countries, it is the second most common cause of mortality before the age of 70, accounting for around 10 million fatalities in 2020 **(WHO, 2020).** The **Cancer facts and figures, (2020)** reported that there were over 600,000 deaths in the United States in 2020**.** A patient everyday life is affected by cancer, and it may also make it more difficult for them to cope with the side effects of their therapy and the sickness itself **(Hedenstrom, et al., 2021).**

People with cancer have a wide range of symptoms because of their illness and the medications used in treatment, Ineffective symptom management affects how effectively a patient functions physically, psychologically, and in terms of their quality of life. The development and testing of psycho-educational therapies to improve patients' symptom self-management has been a part of efforts to lower the prevalence and severity of cancer symptoms **(Ream. et al., 2020).**

The complexity of cancer treatment is rising because of new oncological drugs that support systemic anticancer therapies. As a result, patients deal with a variety of symptoms and side effects that need to be identified, tracked, and managed. A nurse-led intervention that helps patients manage their symptoms on their own is called the Symptom Navi Program (SNP). It includes semi-structured discussions, written patient information booklets (Symptom Navi (SN) Flyers), and a training manual. Prior qualitative research involving patients and experts demonstrated that SN-Flyers were well-received and useful, and that patients were satisfied with nurse-led consultations **(Bana, 2020).**

In response to requests from cancer patients for additional information regarding symptom management, nurses at a Swiss hospital launched the (SN©P) in 2011 for patients undergoing anti-cancer therapy. Several Swiss cancer hospitals have expressed interest in implementing the SN©P program **(Bana, et.al, 2019 & Dubey et al., 2015).**

The SN©P is a nurse-led initiative that uses symptom-specific information brochures to support

cancer patients in managing their symptoms. The program includes semi-structured discussions. Patient education concepts that are successful in treating patients with chronic illnesses, such as forming a relationship with patients, concentrating on their needs, and teaching them self-management techniques, served as the foundation for the development of the SN©P **(Howell, et.al, 2017)**.

Self-efficacy is a subjective belief that a person can achieve a planned task or action, even if it becomes challenging **(Bandura, 1997).** According to the previous research, individuals with higher levels of self-efficacy had higher chemotherapy self-management scores than participants with lower levels of self-efficacy. This suggests that self-efficacy plays a substantial role in explaining variance in chemotherapy self-management scores. **(Papadakos, et al. 2022).** Because oncology nurses work closely with cancer patients, helping patients express their needs, values, and preferences during chemotherapy. They also support cancer patients who are ambulatory by helping them manage their symptoms, lessen the severity or burden of their symptoms, increase their self-efficacy, and improve their self-management behaviors **(Charalambous et al., 2018 & Coolbrandt, et al., 2018).**

Significance of the study

All patients diagnosed with cancer necessitate relevant information, emotional support, effective communication, and assistance in symptom management. In contrast to other medical experts, nurses more regularly and closely monitor patients' symptoms, thereby enhancing the management of their illnesses, the side effects of therapies, and disruptions to their daily lives. Fostering patient self-efficacy is a crucial foundational component as it affects patients' self-management behaviors and serves as a mediator for their ability to learn these actions and manage symptoms. Therefore, (SNP) implementation augmenting self-efficacy which is essential for the efficiency of self-management therapy and improving overall quality of life.

Aim of the study:

The overall aim of this study is to evaluate the effect of implementing a symptom Navi© program on outcomes for patients receiving cancer treatment

Specific objectives:

1. Evaluate the effect of the SN©P on the severity of symptoms experienced by patients receiving cancer treatment.
2. Explore the effect of the SN©P on Self-Efficacy for Managing Chronic Diseases of patients receiving cancer treatment.
3. Evaluate the effect of the SN©P on the overall quality of life of patients receiving cancer treatment.
4. Evaluate the effect of the SN©P on the patient-reported chemotherapy indicators of symptoms and experiences (PR-CISE) of patients receiving cancer treatment.

Research hypothesis:

- Implementation of the Symptoms Navi program will decrease the severity of symptoms experienced by patients with cancer using the MD Anderson Symptom Inventory (MDASI).
- Implementation of the Symptoms Navi program will improve Self-Efficacy for Managing Chronic Diseases for patients receiving cancer treatment.
- Implementation of the Symptoms Navi program will enhance the overall quality of life
- Implementation of the Symptoms Navi program will enhance the patient-reported chemotherapy indicators of symptoms and experiences (PR-CISE) for patients receiving cancer treatment

Subjects and Methods

Research Design:

The research employed a quasi-experimental design to achieve its objective. Quasi-experimental design is a research methodology utilized to examine the impact of independent factors on dependent variables when full experimental control is impractical or unethical in real-world contexts.

Setting:

The research was conducted at the outpatient clinic of Mansoura Oncology Center in Egypt. The outpatient area serves as the primary entry point for patients visiting clinics and is equipped with seating, lighting, and ventilation, essential for enhancing service quality. This space is typically designated as the waiting area for patients undergoing cancer treatment, receiving reports, or undergoing follow-up investigations. Consider the optimal location for data collection, ensuring that patients have sufficient time for program implementation.

Subjects:

A purposive sample consisting of 120 adult patients for each group (study & control), based on the size achieved from the pilot study conducted on 12 patients which equaled 0.76, the sample size has been calculated at 95% power and the patients for each group (study & control), were selected based on the following criteria:

Inclusion criteria:

- Adult patients who were 20 years of age or older.
- Those who were receiving new diagnoses of cancer, regardless of whether it progressed or metastatic (who gave informed consent within 15 weeks).
- Patients who were slated to receive first-line anticancer treatment.

- The patient's functional status ranges from normal without complaints to disabled; requires special care and assistance based on the Karnofsky Performance Scores.

Exclusion criteria:

- Patients who received surgical or radiational therapy or who had recurrent cancer.
- Patients who were under the care of qualified palliative care.
- Patients who were already taking part in an additional psychosocial research study.
- The patient's functional status ranges from Severely disabled to Moribund based on The Karnofsky Performance Scores

The Karnofsky Performance Scale Index

The Karnofsky Performance Scale (KPS) is a standardized instrument for evaluating a patient's functional status, especially in individuals with chronic or terminal illnesses. It is an 11-point scale that correlates to percentage values from 100% (no evidence of disease, no symptoms) to 0% (death). The percentage indicates the patient's capacity to engage in daily activities and their degree of independence or requirement for care (**Altilio & Otis-Green (1993)**. This study was done before data collection to determine the patient's functional status according to inclusion and exclusion criteria.

Tools for data collection:

Five tools were used to gather the data:

Tool I: Consisted of two parts:

Part (1): The demographic data sheet: Including age, gender, residence, marital status, educational level, and occupation.

Part (2): The patients' health-related medical history sheet (cancer diagnosis, status, stage, treatment, and associated chronic diseases).

Tool II: The Monroe Dunaway Anderson Symptom Inventory (MDASI): Adapted from Nejmi, et.al. (2010), including two dimensions:

First Dimension: A quick, multi-symptom assessment tool that has been psychometrically validated and evaluated 18 symptoms (pain, fatigue, nausea, sleep disturbance, anxiety, shortness of breath, memory problems, appetite loss, drowsiness, dry mouth, sadness, vomiting, and numbness) that frequently linked to cancer or its treatment. On a 10-point scale, with 0 representing no symptoms and 10 being the worst possible experience, patients ranked the intensity of each of these symptoms over the last 24 hours.

Second Dimension: Included six items with a numerical rating system from 0 (Didn't interfere) to 10 (Interfered Completely) that assessed interference symptoms throughout the last 24 hours.

Tool III: Self-Efficacy for Managing Chronic Diseases 6-item Scale: (Ritter, Lorig, (2014): Adapted from Self-Management Research Center, **(Lorig, et al., (2001)**. The validated German version of the Self-Efficacy for Managing Chronic Disease questionnaire (SES6G) was used to measure perceived self-efficacy. Questions include 'How confident do you feel that you can control your symptoms, fatigue caused by disease, emotional distress, other tasks needed, taking medication or other symptoms interfere to be able to do activities you would like to do?' is a new question we introduced. The more specialized SES6G items (such as self-efficacy for managing pain or weariness) were supplemented with this broad question on perceived self-efficacy.

Tool IV: The Single-Item Linear Analog Scale Assessment (LASA): (Locke, et.al., 2007) Referred to as the Cancer Linear Analog Scale or CLAS. It was created in 1976 by **Priestman and Baum**, it comprised five individual items (how you rate your physical well-being, emotional well-being, spiritual, intellectual well-being, and overall well-being over the last week). wellbeing Although it could be applied to patients with different cancers, it was created to assess the subjective effects of treatment in women with advanced breast cancer. Likert scales run from 0 (as bad as it can be) to 10 (as good as it can be). Thus, higher ratings suggest higher QOL.

Tool V: The patient-reported chemotherapy indicators of symptoms and experiences [PR-CISE]: Adopted from Armes, et.al., 2014, used to evaluate the feasibility, acceptability, and early efficacy in clinical practice whenever used in ambulatory chemotherapy settings. The five aspects that PR-CISE addressed were symptom awareness, severity, management, practical advice to manage symptoms, and confidence in managing the symptoms the patient was experiencing. Five items on patient's experience of nurse-led supportive care, the patient response by Yes; somewhat; no.

Validity of the tools:

A panel of five specialists in Medical-Surgical and Community Health Nursing reviewed the study tools to ensure that they were clear, relevant, understandable, and applicable for use in practice. They made the appropriate adjustments by their judgments.

Test reliability:

The reliability of the proposed tools was assessed using Cronbach's alpha test, indicating high reliability for **Tool II, III, IV, and V** in both groups: (0.862) for the control group and (0.815) for the experimental group.

Pilot study

Twelve patients (10%) out of the study subjects participated in a pilot study that tested the instruments' accuracy, suitability, and clarity and made the required adjustments. An estimation of the time required to

complete data collection tools was also given. Adjustments were made considering the findings. The study sample did not include patients who took part in the pilot study.

Ethical Considerations:

The Ethics and Research Committee of the Faculty of Nursing at Mansoura University approved to conduct of the study (No. 0582). In addition, oral consent was obtained from all participants after explaining the study objectives. They were also allowed to withdraw at any time or decline to answer any question without providing a reason. The researcher is confident in protecting subject data confidentiality and anonymity.

Field Work

The actual fieldwork started in October 2023 and extended through March 2024. The following phases were included in the study:

Preparatory Phase

The preparatory phase was established from the beginning of October 2023 to the end of December 2023 (three months). It included developing the structured tools and (SN Flyers), which are brochures customized for symptoms according to the needs, priorities, and anticipated results that were determined. Colorful pamphlets with an illustrated format were created to provide patients with a comprehensive reference to all relevant data on services,

Implementation Phase

Start from January 2024 to March 2024. The program was fulfilled in three months including pretest, program implementation, and post-test, three days a week (Saturday, Monday, and Wednesday) from 10.00 am to 2.00 pm. For pretest researchers met the participants in the outpatient clinic, where they followed up with their physicians. The researcher collected data using a hardcopy questionnaire after explaining the study's purpose and introduction before enrolling research. which began with a permission form (consent), the time needed to fill out the questionnaire was 30 to 40 minutes. For the implementation phase collect from 3-5 patient in group with similar side effects especially with the same diagnosis then patients received complimentary SN©Flyers that were tailored to their specific needs and symptoms

Implementation of Symptom Navi© Program for study group

The framework of the implementation of the Symptom Navi© Program consists of six main components which were achieved through face-to-face meetings, the first meeting included:

The first consultation, which was customized to the therapy protocol, took place soon after the center's initial anticancer treatment. Assessing the patient's motivation and willingness to participate in the consultation was the **second** component. It involved gauging the patient's level of focus and readiness to participate in the discussion.

The third component was educating patients about typical side effects associated with SN Flyers and emphasizing their capacity to utilize SN Flyers at home and figure out how to relieve symptoms when they arise.

The fourth component was addressing symptom self-management, which included talking about symptoms and at-home symptom-relieving activities. The patient also received individual support for their perceived self-efficacy in managing their symptoms.

The fifth component involved helping patients to manage their symptoms on their own by teaching them different strategies for handling difficult circumstances and referring them to supplementary healthcare providers when necessary.

The sixth component entailed using SN Flyers to record the consultation, finishing assessments, establishing goals for the patient, setting up follow-up appointments based on the patient's progress toward pre-established goals, acknowledging and validating the patient's goals, and offering continuous support and encouragement for self-management.

Results

Table (1): Percentage Distribution of the Study and Control Groups based on their Demographic Data

Demographic data	Study (n = 120)		Control (n = 120)		Test of sig.	P
	No.	%	No.	%		
Age in years						
20-30	11	9.2	17	14.2	χ^2= 7.422	0.060
>30-40	12	10.0	23	19.2		
>40-50	41	34.2	40	33.3		
>50	56	46.7	40	33.3		
Min. – Max.	22.0 – 63.0		22.0 – 62.0		t= 1.738	0.083
Mean ± SD.	47.20 ± 11.15		44.80 ± 10.22			
Gender						
Male	52	43.3	67	55.8	χ^2= 3.750	0.053
Female	68	56.7	53	44.2		
Residence						
Rural	97	0.8	85	70.8	χ^2= 3.274	0.070
Urban	23	19.2	35	29.2		
Marital status						
Single	9	7.5	4	3.3	χ^2= 2.674	0.445
Married	78	65.0	87	72.5		
Divorced	18	15.0	16	13.3		
Widowed	15	12.5	13	10.8		
Level of education						
Read & write	22	18.3	12	10.0	χ^2= 5.783	0.055
Secondary	69	57.5	65	54.2		
University	29	24.2	43	35.8		
Occupation						
Worker	43	35.8	51	42.5	χ^2= 4.904	0.086
Not worker	30	25.0	38	31.7		
Housewife	47	39.2	31	25.8		

**: Statistically significant at p ≤ 0.05* *Statistically insignificant at p ≥ 0.05*

Table (2): The Percentage Distribution of The Medical Health History of the Study and Control Groups

Current medical history	Study (n = 120)		Control (n = 120)		χ^2	P
	No.	%	No.	%		
Cancer diagnosis #						
Gastric	18	15.0	9	7.5	3.380	0.066
Esophageal	8	6.7	6	5.0	0.303	0.582
Colon Rectal	53	44.2	59	49.2	0.603	0.438
Pancreatic	9	7.5	13	10.8	0.801	0.371
Hepatobiliary	36	30.0	36	30.0	0.000	1.000
Cancer status						
No evidence of disease	0	0.0	2	1.7	4.292	0.094
Local or regional	99	82.5	106	88.3		
Metastatic	21	17.5	12	10.0		
Cancer stage						
I (1st)	91	75.8	81	67.5	5.683	0.058
II (2nd)	11	9.2	24	20.0		
III (3rd)	18	15.0	15	12.5		
IV (4th)	0	0.0	0	0.0		
Current cancer treatment status #						
Chemotherapy	73	60.8	79	65.8	0.646	0.422
Surgery	22	18.3	33	27.5	2.854	0.091
Radiotherapy	62	51.7	72	60.0	1.690	0.194

**: Statistically insignificant at p ≥ 0.05*

Table (3): Percentage Distribution of the patient's functional status according to the Karnofsky Performance Scores of the Study and Control Groups before the study.

The Karnofsky Performance Scale	Study (n = 120)		Control (n = 120)	
	No.	%	No.	%
Moribund; fatal processes progressing rapidly M	0	0.0	0	0.0
Very sick; hospitalization necessary; requires active support treatment	0	0.0	0	0.0
Severely disabled; hospitalization indicated although death not imminent	0	0.0	0	0.0
Disabled; requires special care and assistance	34	28.3	33	27.5
Requires considerable assistance and frequent medical care	30	25.0	36	30.0
Requires occasional assistance, but is able to care for most personal needs	31	25.8	34	28.3
Cares for self; unable to carry on normal activity or do work	12	10.0	7	5.8
Normal activity with effort; some signs or symptoms of disease	13	10.8	10	8.3
Able to carry on normal activity; minor signs or symptoms of disease	0	0.0	0	0.0
Normal; no complaints; no evidence of disease	0	0.0	0	0.0
χ^2 (p)	2.406 (0.662)			

**: Statistically insignificant at p ≥ 0.05*

Table (4): The mean score of MDASI of symptoms of the Study and control groups in pre-and post-tests

Part I: M. D. Anderson Symptom Inventory(MDASI)	Study (n = 120)		Control (n = 120)		t (p_1)	t (p_2)
	Pre	Post	Pre	Post		
Total Score (18 – 180)						
Min. – Max.	82.0 – 112.0	48.0 – 103.0	82.0 – 109.0	82.0 – 116.0	1.952 (0.052)	19.965* (<0.001*)
Mean ± SD.	101.28 ± 8.27	73.23 ± 12.02	99.32 ± 7.31	97.76 ± 6.04		
Average Score (1 – 10) (Mean ± SD.)	5.63 ± 0.46	4.07 ± 0.67	5.52 ± 0.41	5.43 ± 0.34		
t_0 (p_0)	21.704* (<0.001*)		1.756 (0.082)			

Statistically insignificant at p ≥ 0.05
H S at p < 0.001

Table (5): The Mean Score of The Symptoms Interferes with the Life scores of The Study and Control Groups in Pre-and Post-Tests.

Part II: Symptoms Interfere with Life	Study (n = 120)		Control (n = 120)		t (p_1)	t (p_2)
	Pre	Post	Pre	Post		
Total Score (6 – 60)						
Min. – Max.	36.0 – 51.0	22.0 – 44.0	33.0 – 51.0	33.0 – 51.0	0.592 (0.554)	17.773* (<0.001*)
Mean ± SD.	44.34 ± 3.67	33.10 ± 5.42	44.06 ± 3.74	43.85 ± 3.81		
Average Score (1 – 10) (Mean ± SD.)	7.39 ± 0.61	5.52 ± 0.90	7.34 ± 0.62	7.31 ± 0.63		
t_0 (p_0)	20.183* (<0.001*)		1.826 (0.070)			

**: Statistically insignificant at p ≥ 0.05*
H S at p < 0.001

Table (6): The Mean score of the Self-Efficacy Scores of the Study and Control Groups in Pre & Posttests.

Tool III: Self-Efficacy for Managing Chronic Disease	Study (n = 120)		Control (n = 120)		t (p_1)	t (p_2)
	Pre	Post	Pre	Post		
Total Score (6 – 60)						
Min. – Max.	13.0 – 26.0	21.0 – 37.0	12.0 – 26.0	13.0 – 26.0	0.349 (0.727)	14.931* (<0.001*)
Mean ± SD.	18.26 ± 3.24	28.68 ± 4.61	18.12 ± 3.04	19.30 ± 5.10		
Average Score (1 – 10) (Mean ± SD.)	3.04 ± 0.54	4.78 ± 0.77	3.02 ± 0.51	3.22 ± 0.85		
t_0 (p_0)	26.294* (<0.001*)		1.637 (0.104)			

**: Statistically insignificant at p ≥ 0.05*
H S at p < 0.001

Table (7): The Mean Score of Linear Analogue Self-Assessment (LASE) Scale of The Study and Control Groups in Pre & Posttests.

LASE Scale for emotional wellbeing	Study (n = 120)		Control (n = 120)		t (p_1)	t (p_2)
	Pre	Post	Pre	Post		
Total Score (0 – 50)						
Min. – Max.	5.0 – 28.0	16.0 – 28.0	14.0 – 33.0	10.0 – 33.0	1.833 (0.068)	2.307* (0.022*)
Mean ± SD.	20.83 ± 3.23	22.39 ± 6.22	19.69 ± 4.30	20.93 ± 6.18		
Average Score (0 – 10) (Mean ± SD.)	4.17 ± 0.65	4.48 ± 1.24	3.94 ± 0.86	4.19 ± 1.24		
t_0 (p_0)	2.284* (0.024*)		1.655 (0.100)			

**: Statistically significant at p ≤ 0.05*
Statistically insignificant at p ≥ 0.05

Table (8): The mean score of patient-reported chemotherapy indicators of symptoms and experiences (PR-CISE) of the Study and Control Groups in Pre & Posttests.

(PR-CISE)	Study (n = 120)		Control (n = 120)		t (p_1)	t (p_2)
	Pre	Post	Pre	Post		
Total Score (0 – 10)						
Min. – Max.	9.0 – 10.0	9.0 – 10.0	9.0 – 10.0	9.0 – 10.0	1.794 (0.074)	2.280* (0.024*)
Mean ± SD.	9.76 ± 0.43	9.97 ± 0.18	9.85 ± 0.36	9.89 ± 0.31		
Average Score (0 – 2) (Mean ± SD.)	1.95 ± 0.09	1.99 ± 0.04	1.97 ± 0.07	1.98 ± 0.06		
t_0 (p_0)	5.596* (<0.001*)		1.679 (0.096)			

**: Statistically significant at p ≤ 0.05*
Statistically insignificant at p ≥ 0.05

Table (9):Correlation between different Study Scales

	Study (n = 120)				Control (n = 120)			
	Pre		Post		Pre		Post	
	r	P	r	p	r	p	R	p
MDASI Vs. Self-Efficacy	0.015	0.872	0.535*	<0.001*	-0.165	0.072	0.144	0.117
MDASI Vs. LASE Scale	0.018	0.847	0.259*	0.004*	0.008	0.933	-0.132	0.150
MDASI Vs. PR-CISE	0.104	0.256	-0.132	0.150	0.070	0.450	-0.032	0.730
Symptoms Interfere with Life Vs. Self-Efficacy	-0.285*	0.002*	-0.151	0.099	-0.206*	0.024*	0.080	0.386
Symptoms Interfere with Life Vs. PR-CISE	-0.027	0.768	0.210*	0.021*	-0.037	0.686	0.022	0.815
Self-Efficacy Vs. LASE	-0.073	0.427	0.158	0.084	0.064	0.485	-0.050	0.589
Self-Efficacy Vs. PR-CISE	-0.045	0.623	-0.175	0.056	-0.069	0.457	-0.159	0.083

r: Pearson coefficient
**: Statistically significant at p ≤ 0.05*

Table (10): Relationship between the demographic Data of the Study subjects with mean scores of MDASI's and Symptoms Interfere with Life.

Socio-demographic data	Anderson Symptom Inventory (MDASI)		Part II: Symptoms Interfere with Life	
	Pre	Post	Pre	Post
Age in years				
20-30	102.36 ± 2.01	75.27 ± 9.95	44.91 ± 4.78	36.64 ± 5.24
>30-40	102.00 ± 5.06	77.08 ± 6.35	42.50 ± 4.46	34.33 ± 5.23
>40-50	101.15 ± 8.48	73.10 ± 12.97	44.44 ± 3.32	32.22 ± 5.41
>50	101.02 ± 9.46	72.11 ± 12.61	44.55 ± 3.47	32.79 ± 5.32
F(p)	**0.113 (0.952)**	**0.675 (0.569)**	**1.175 (0.323)**	**2.259 (0.085)**
Gender				
Male	100.54 ± 8.21	72.42 ± 11.51	43.81 ± 3.19	32.58 ± 6.08
Female	101.85 ± 8.34	73.85 ± 12.45	44.75 ± 3.96	33.50 ± 4.87
t(p)	**0.862 (0.391)**	**0.644 (0.521)**	**1.442 (0.152)**	**0.924 (0.358)**
Residence				
Rural	101.12 ± 8.54	72.94 ± 11.79	43.97 ± 3.42	33.00 ± 5.36
Urban	101.96 ± 7.16	74.48 ± 13.16	45.91 ± 4.29	33.52 ± 5.80
t(p)	**0.433 (0.666)**	**0.551 (0.583)**	2.329*(0.022*)	**0.413 (0.680)**

Socio-demographic data	Anderson Symptom Inventory (MDASI)		Part II: Symptoms Interfere with Life	
	Pre	Post	Pre	Post
Marital status				
Single	105.11 ± 2.57	78.00 ± 12.00	45.33 ± 3.91	36.00 ± 5.36
Married	101.62 ± 7.88	73.12 ± 12.64	44.32 ± 3.79	32.72 ± 5.44
Divorced	97.50 ± 8.24	76.11 ± 7.53	44.44 ± 4.12	34.17 ± 5.81
Widowed	101.80 ± 11.19	67.53 ± 11.78	43.73 ± 2.22	32.07 ± 4.59
F(p)	**2.008 (0.117)**	**1.990 (0.119)**	**0.357 (0.784)**	**1.416 (0.242)**
Level of education				
Read & write	98.95 ± 10.23	68.55 ± 11.89	45.55 ± 3.39	33.82 ± 6.22
Secondary	102.65 ± 7.08	74.51 ± 10.66	43.49 ± 3.69	32.19 ± 5.19
University	99.79 ± 8.92	73.76 ± 14.52	45.45 ± 3.34	34.72 ± 5.03
F(p)	**2.338 (0.101)**	**2.126 (0.124)**	**4.623*(0.012*)**	**2.533 (0.084)**
Occupation				
Worker	101.30 ± 5.82	71.65 ± 11.18	43.81 ± 4.26	32.47 ± 6.09
Not worker	100.97 ± 10.33	73.00 ± 11.66	44.20 ± 1.95	33.43 ± 4.90
Housewife	101.47 ± 8.88	74.83 ± 13.00	44.91 ± 3.90	33.47 ± 5.15
F(p)	**0.033 (0.967)**	**0.789 (0.457)**	**1.043 (0.355)**	**0.456 (0.635)**

*SD: **Standard deviation*** ***t: Student t-test***
F: F for One way ANOVA test **: Statistically significant at p ≤ 0.05*

Table (11): Relationship between the Study Group' demographic Data with their Self-Efficacy & LASE Mean Scores.

Socio-demographic data	Self-Efficacy		LASE Scale	
	Pre	Post	Pre	Post
Age in years				
20-30	18.55 ± 3.96	27.82 ± 5.84	23.27 ± 5.53	21.45 ± 2.50
>30-40	19.25 ± 3.77	28.17 ± 5.46	22.00 ± 7.51	22.75 ± 3.79
>40-50	18.49 ± 3.26	28.83 ± 4.11	21.59 ± 7.05	20.61 ± 3.43
>50	17.82 ± 2.97	28.84 ± 4.62	22.89 ± 5.44	20.45 ± 2.99
F(p)	**0.809 (0.491)**	**0.210 (0.890)**	**0.435 (0.729)**	**1.918 (0.131)**
Gender				
Male	18.54 ± 3.53	28.90 ± 4.86	18.54 ± 3.53	28.90 ± 4.86
Female	18.04 ± 3.00	28.50 ± 4.45	18.04 ± 3.00	28.50 ± 4.45
t(p)	**0.828 (0.409)**	**0.473 (0.637)**	**0.828 (0.409)**	**0.473 (0.637)**
Residence				
Rural	18.13 ± 3.26	28.72 ± 4.58	18.13 ± 3.26	28.72 ± 4.58
Urban	18.78 ± 3.16	28.48 ± 4.87	18.78 ± 3.16	28.48 ± 4.87
t(p)	**0.863 (0.390)**	**0.226 (0.821)**	**0.863 (0.390)**	**0.226 (0.821)**
Marital status				
Single	16.89 ± 2.85	26.67 ± 6.44	21.44 ± 7.11	22.67 ± 1.58
Married	18.24 ± 3.33	29.26 ± 4.62	22.36 ± 6.26	20.90 ± 3.27
Divorced	19.39 ± 3.16	27.28 ± 4.51	22.78 ± 6.80	21.61 ± 3.78
Widowed	17.80 ± 2.88	28.53 ± 2.85	22.67 ± 5.18	18.40 ± 1.40
F(p)	**1.383 (0.252)**	**1.557 (0.204)**	**0.101 (0.959)**	**4.525*(0.005*)**
Level of education				
Read & write	17.45 ± 2.54	27.59 ± 4.48	23.18 ± 4.57	18.86 ± 1.46
Secondary	19.03 ± 3.29	29.35 ± 4.28	22.42 ± 6.52	21.01 ± 3.75
University	17.03 ± 3.16	27.90 ± 5.32	21.72 ± 6.66	21.86 ± 2.12
F(p)	**5.024*(0.008*)**	**1.776 (0.174)**	**0.342 (0.711)**	**6.151*(0.003*)**
Occupation				
Worker	18.74 ± 3.82	28.12 ± 5.07	22.40 ± 6.59	21.95 ± 3.12
Not worker	18.63 ± 3.02	29.73 ± 4.18	23.53 ± 4.49	19.90 ± 2.41
House wife	17.57 ± 2.69	28.51 ± 4.42	21.66 ± 6.79	20.38 ± 3.54
F(p)	**1.756 (0.177)**	**1.136 (0.324)**	**0.830 (0.439)**	**4.544*(0.013*)**

*SD: **Standard deviation*** ***t: Student t-test***
F: F for One way ANOVA test **: Statistically significant at p ≤ 0.05*

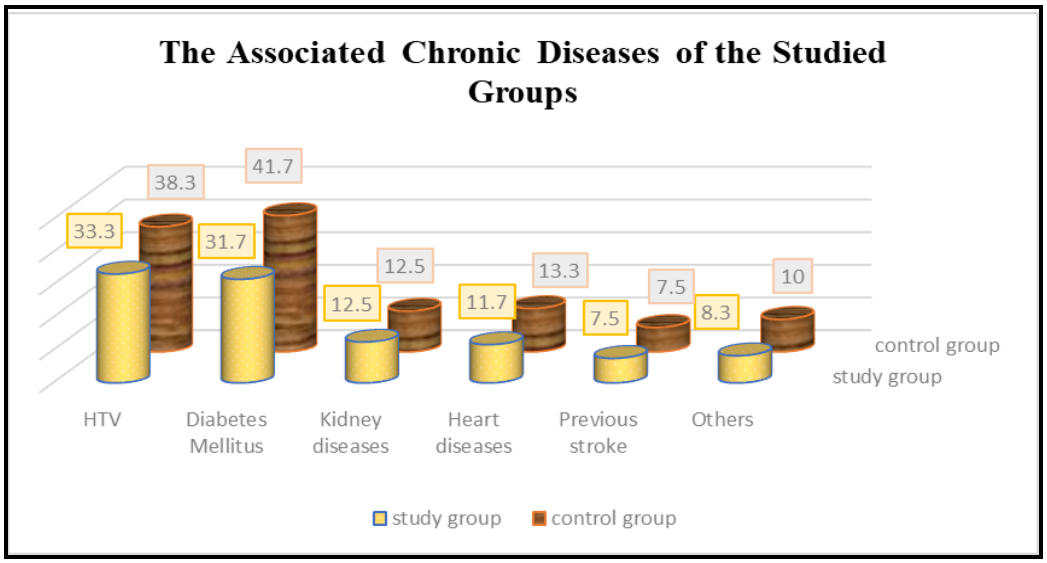

Figure (1): Comparing the Studied Groups Based on Their Associated Chronic Diseases

Table (1): Revealed that; 46.7.0% of the study group and 40% of the control group were over 50 years old, with mean ages of 47.2 & 44.8, respectively. In both groups, the proportion of females was high (56.7 & 44.2). Rural areas represented the highest percentages (80.8 & 70.8) of the study & the control groups respectively. As regards marital status, 72.5% of the control group and 65% of the study group were married. 57.5% of the study group and 54.2% of the control group had a secondary level of education. In terms of occupation, it was observed that there were no significant statistical differences between the study and control groups regarding any of the demographic variables ($p \geq 0.05$).

Table (2): Revealed that colorectal cancer was identified in 44.2% and 49.2% of the study and control groups respectively. For malignancy status, local or regional metastases were presented in 82.5% of the study group and 88.3% of the control group. First-grade cancer accounted for the largest percentage of cases, with 75.8% of cases in the study group and 67.5% in the control group. Chemotherapy is administered to 60.8% of the study group and 65.8% of the control group. There was no significant statistical difference between the study group and the control group regarding the current medical history ($p \geq 0.05$).

Table (3): Revealed that 28.3% of the study group and 27.5% of the control group were disabled and needed special care, 25.0% and 30.0% required considerable assistance and frequent medical care, while only 10.8% and 8.3% of the research groups were normally active as they had some manifestations of the disease. On the other hand, none of the participants had any complaints or had a fatal disease process ($p \geq 0.05$). Based on these results, patients were selected (in both study & control groups).

Table (4): Revealed that, after applying the symptoms Navi program, the mean scores of MDASI study group differed significantly (101.28) in pretest instead of (73.23) in posttest reflecting significant decrease in symptoms ($p<0.001$). However, there was no statistically significant variation in the control group's MDASI mean scores. ($p<0.001$).

Table (5): Demonstrated that there was a highly significant statistical difference in the mean scores of the symptoms interfering with life of the study group after implementation of symptoms Navi program (mean scores had decreased to 33.1 in posttest compared to 44.3 in pretest with $p<0.001$). There was no statistically significant difference observed in the mean scores between both groups for the symptoms that interfere with life in pretest.

Table (6): Revealed that there was a highly significant statistical difference in self-efficacy mean scores between study and control groups regarding managing chronic disease following implementation of symptoms Navi program (18.26 in pretest & 28.68 in posttest) with ($p<0.001$), while no significant statistical change of both groups in pretest.

Table (7): Illustrated a significant statistical difference (improvement) in the mean scores of LASE Scale of the study groups (posttest mean score 22.39 compared to 20.83 in pretest ($p<0.002$). while there was no significant statistical difference in LASA mean scores of the control group after applying the program.

Table (8): demonstrated that there was a statistically significant difference in the patient-reported chemotherapy indicators of symptoms and

experiences mean scores of the study groups following the application of the SN program ($p<0.001$). Even so, there was no statistically significant difference observed in the mean scores in the control group.

Table (9): Reflected a highly significant positive correlation between the MDASI, self-efficacy, and LASE mean scores of the study group. In addition, symptoms interfering with Life correlated also positively with the PR-CISE scores of the study group in the post-test. In contrast, there was a negative correlation between the symptoms interfering with life and self-efficacy in the pre-test of both groups.

Table (10): Showed a significant relation between the study group's mean scores on symptoms interfering with life with their residence and the level of education ($p < 0.05$).

Table (11): Presented a significant statistical difference in LASE scores of the study group in concerning marital status, residence, and occupation. Furthermore, a statistically significant relationship was discovered between the study group's self-efficacy scores and their level of education ($p < 0.05$)

Figure (1): Shows that 33.3% & 38.3% of the study and control group had hypertension, while only 7.5% of the patients of both groups with the same percentage had previous stroke.

Discussion

The aim of the current study was to evaluate the effect of implementing a symptom Navi© program on outcomes for patients with cancer. Regarding the demographic data, there were no significant statistical differences in characteristics between the study and control groups, which indicates homogeneity among subjects of both groups. These findings align with **Coolbrandt et al., (2018) & Lim et al., (2021)** who found that there were no significant changes in sociodemographic characteristics between the control and intervention groups.

The present study revealed a significant statistical difference in the mean scores of the MDASI scores of the study group after implementing the symptoms Navi program (Table 4). This finding is supported by **Jernigan et al. (2020),** who found that symptom severity and interference ratings on the MDASI varied significantly amongst the study groups, with symptom severity gradually decreasing over time. Also, **Farahat et al. (2020)** found that there was a significant decrease in physical and psychological symptoms, including pain, fatigue, nausea, drowsiness, appetite, shortness of breath, depression, anxiety, and anemia, compared to pre-test levels. As well, **Zheng et al. (2021),** stated that targeted nursing interventions for advanced gastric cancer patients can alleviate pain, anxiety, and depression, increase treatment compliance, and enhance quality of life. These findings highlight the essential role of nurses in teaching patients how to effectively self-manage their symptoms.

The results indicated that there was a highly significant statistical decrease in the mean scores of the symptoms interfering with life after the implementation of the Symptoms Navi program (Table 5). A similar finding by **Williams et al, (2016) reported** that cancer diagnosis led to worsening self-rated health compared to controls over time and cancer survivors had poorer overall health and well-being compared to individuals without a diagnosis. In addition, **Elshahat et al., (2020)** found that the total mean of daily activity interference decreased after one month and three months of implementing the guideline, and there was a highly significant connection between pain interference and occupation. Moreover, **Doege et al., (2021)** highlighted the importance of developing a comprehensive survivorship care program to address and treat potential long-lasting consequences of cancer.

Regarding the self-efficacy for managing chronic disease, there was a significant highly statistical difference in the self-efficacy mean scores of the study subjects after the implementation of symptoms Navi program (Table 6). This study's findings revealed a relationship with **Razi et al. (2018),** who stated that after one and three months of intervention, the recipients of the intervention had significantly greater mean self-efficacy scores than the control group. As well, **Mahboobeh et al. (2021)** found that the intervention group's mean self-efficacy score rose significantly after one week of the intervention and reduced one month later. Additionally, **Gong et al. (2021),** revealed in the systematic review and meta-analysis that therapies based on the self-efficacy theory had favorable impacts on Colorectal Cancer Patients, and these consequences were considerably greater than those of non-self-efficacy theory-based interventions.

The present study presents a significant highly statistical improvement in the mean scores of the LASE Scale of the study group after implementation of symptoms Navi program (Table 7). This result is in the same line with **Tuominen et al., (2019) & Ream et al., (2020)** who suggested in the review that such therapies help improve cancer-related symptoms, including depressive symptoms, fatigue, and emotional discomfort. Furthermore, **Xu et al. (2022),** reported that the intervention group had significantly higher mean scores for physical, social/family, emotional, and functional well-being, and other concerns compared to the control group.

The present study revealed that there was a significant relation between the mean scores of the symptoms

interfering with the life of the study group and their residence as well as the level of education **(Table 10).** This result is in the same line with **Zhang et al., (2015**) who stated that the severity of symptoms linked to living in a suburban area and being females. A significant statistical relation was also found between the level of education and self-efficacy scores of the study group **(Table 11).** A similar finding by **Hashem et al., (2020) stated that** the patient's educational level and the overall score on the general self-efficacy scale both before and three months after the program were positively correlated. Also, **Eroğlu & Özkan, (2023)** found that the educational level had an impact on sexual self-efficacy of patients with prostate cancer.

Conclusion:

The SN©P was an effective nurse-led intervention that is significantly enhanced self-efficacy in managing chronic diseases, improved mean scores for emotional well-being and symptom interference with daily life, reduced the severity of symptoms in cancer patients, and upgraded patient-reported chemotherapy indicators regarding symptoms and experiences. Consequently, it improved the overall quality of life and could be adopted as a standard model of care used to improve the routine care procedures in the outpatient cancer context and to assist patients in managing their own symptoms.

Recommendations:

Based on the study findings:

- The SN©P is recommended to be applied within daily routines care and self-management implementation of patients with cancer as it could make changes in nursing practice at oncology units.
- Develop training program for nurses about application of the SN©P involved in the context of care of patient with cancer.
- Future study about facilitator and barriers encountered nurses during implementation of the SN©P.

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