Effect of Clinical Nursing Pathway on Heart Failure Patients' Outcomes Rates in Cardiac Care Units and Early Readmission

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ABSTRACT

Background: Heart Failure (HF) is a complex, fatal illness with high expenses, major morbidity and mortality, and poor capacity for function as well as quality of life. **Aim:** To evaluate the effect of clinical nursing pathway on anxiety and satisfaction among heart failure patients. **Subjects and method: Design:** A Quasi-experimental design was used. **Setting:** This study was conducted in Cardiac Care Units at Port Said Governorate affiliated to Egypt Healthcare Authority hospitals: El-Salam Hospital, Al-Hayat Hospital, El-Zohoer Hospital, and Al-Shifa Medical Complex Hospital. **Subjects:** A purposive sample of 145 heart failure patients was included. **Tools of data collection**: Three tools were used, heart failure patient assessment**,** heart failure patient anxiety level assessment, and heart failure patient satisfaction with the caring process. **Results:** There was a statistically significant difference (P=0.000**) between pre- and post-applying nursing pathway intervention related to the anxiety level of studied heart failure patients with a mean anxiety level of (63.51), and (37.95) respectively. and there was a significant difference (P=0.000**) between pre- and post-applying nursing pathway intervention regarding the satisfaction level of studied heart failure patients with a total mean (of 2.85), (3.69) respectively. **Conclusion**: Applying the clinical nursing pathway improved the anxiety and satisfaction levels of heart failure patients. **Recommendations**: Application of a clinical nursing pathway intervention for patients with heart failure was recommended, rather than traditional care.

Keywords: Anxiety level, Clinical nursing pathway, Heart failure, Satisfaction level.

INTRODUCTION

Heart failure is an incurable disease when the cardiac muscle fails to circulate enough blood to meet the body's needs for both blood and oxygen. Essentially, at first, the heart attempts to compensate by enlarging. The heart expands to contract stronger and pump more blood. This leads to the heart expanding over time. Increasing muscle mass. The growth in muscle mass happens as the heart's contracting cells grow larger. This allows the heart to pump more strongly at first. Pumping more quickly. This contributes to an increase in cardiac output (Davis, Hobbs & Lip, 2020).

Since the 1990s, cardiovascular disease (CVD) has been the leading factor in early mortality in Egypt. Less than half of Egypt's overall mortality in 2017 was caused by CVD. Heart failure (HF) is a significant and increasing public health burden, especially given the aging of the population and the success in prolonging the survival of people who have had coronary events. (Hassanin, Hassanein, Bendary & Maksoud, 2020).

The primary reason for hospitalization and readmission in older people is heart failure. It is a frequent, expensive, and potentially fatal condition. It had an impact on approximately 50 million people worldwide in 2021. Overall, Heart failure affects about 2% of adults nationwide, and it affects 6–10% of people over 65. Rates are anticipated to rise. The risk for mortality is approximately 35% in the first year following diagnosis, but for those who survive, it is less than 10% by the second year. This level of mortality risk is comparable to that of several tumors (Mahtani et al., 2022).

Critical pathways (CPs), also referred to as critical paths, critical pathways are management plans that list goals for patients and specify the order and timing of actions that must be taken to accomplish these goals as effectively as possible. In response to growing competition in the healthcare sector, managers have adopted critical pathways as a strategy to standardize care, use less resources, and perhaps even enhance healthcare quality (Von Lueder, Atar & Krum, 2022).

Clinical nursing pathway (CNP) aim to enhance the quality of life by ensuring that medical decisions are decided on the most current evidence that increased patient involvement leads to higher patient satisfaction and that the clinical nursing pathway enable improved follow-up, which leads to reduced re-admission and complications. Apart from these economic considerations, CNP can contribute to the optimization of

health quality management, as well as to the enhancement of medical staff and patient satisfaction. Second, increase overall care safety; understandable action plans minimize the margin of error; action plans might contain crisis scenarios (Mohamed, Alaa, Ali & Ibrahim 2019).

Nurses play a crucial role in the clinical nursing pathway during the care of patients with heart failure. The specialist care provided by HF nurses in outpatient settings, with a planned follow-up focusing on therapy optimization and self-care teaching, has been shown to reduce the incidence of hospital readmission. Nurses in an inpatient setting providing clinical nursing care to a patient with heart disease must apply their knowledge of the illness process (Joseph, Gopichandran, Seth & Tirwa, 2020).

Significance of the study

Clinical pathways are new ideas in the delivery of healthcare. These pathways work best when a team of specialist nurses and doctors, in addition to a multidisciplinary approach, provide inpatient education, proper discharge planning, and dedicated care routes. Reducing readmission also involves providing the patient's main care physician with excellent discharge instructions and improving primary care follow-up. To improve care, a multidisciplinary strategy makes use of case management, nursing, pharmacy, patient education, and medical management (Thaker et al., 2022). When patients receive well-coordinated care tailored to their individual needs, they may experience reduced anxiety and higher satisfaction levels (Thompson, Cook, Masterman, Parkinson, & Bainbridge, 2022).

In Egypt, from clinical experience, observations, reviewing the medical records, and statistical data made in the cardiac care unit, the researcher concluded that there were more heart failure patients being referred to emergency rooms and readmitted and that this trend was correlated with the population's aging. So, it is important to evaluate the effect of implementing a clinical nursing pathway on anxiety and satisfaction among heart failure patients at cardiac care units.

AIM OF THE STUDY

The study aim was to evaluate the effect of clinical nursing pathway on anxiety and satisfaction among heart failure patients.

Study Hypotheses

H1: Heart failure patients who participated in the clinical nursing pathway will have lower anxiety score post-implementation than pre-implementation score.

H2: Heart failure patients who participated in the clinical nursing pathway will have a higher satisfaction score post-implementation than pre-implementation score.

Operational Definition

- **Anxiety:** is linked to fear and manifests as a future-oriented mood state that consists of a complex cognitive, affective, physiological, and behavioral response system associated with preparation for the anticipated events or circumstances perceived as threatening. Pathological anxiety is triggered when there is an overestimation of perceived threat or an erroneous danger appraisal of a situation which leads to excessive and inappropriate responses (Chand, Marwaha & Bender, 2021).

- **Anxiety** is operationally defined as a self-reported score of 20 or higher on the State-Trait Anxiety Inventory (STAI). The STAI is a widely used psychological assessment tool consisting of 20 items designed to measure both temporary (state) and long-standing (trait) anxiety levels. Participants are asked to rate their feelings on a 4-point scale, ranging from 'Not at all' to 'Very much so.' A score of 20 or higher on the STAI indicates a significant level of anxiety." (American Psychological Association, 2011).

- **Satisfaction** is the emotional and cognitive state that reflects an individual's overall assessment of contentment, fulfillment, or gratification resulting from an experience, interaction, product, service, or situation." (Oliver, 2014).

- **Satisfaction** is operationally defined as a score of 4 or higher on a 5-point Likert scale, where patients rate their level of contentment with the medical care, communication, treatment outcomes, and overall experience related to their management. A score of 4 or higher indicates a significant level of satisfaction." (Anderson, Krallman, Montgomery, Kline-Rogers & Bumpus, 2020).

SUBJECTS AND METHOD

A. Technical design

Study design

A Quasi-experimental design (one group pre and post-test) was utilized in this study.

Study setting

This study was conducted at Cardiac Care Units in governmental Port Said general hospitals were named; Al-Salam Hospital, Al-Hayat Hospital, El-Zohoer Hospital, and Al-Shifa Medical Complex Hospital. Al-Salam Hospital the Cardiac Care Unit (CCU) contains 19 beds divided into two main units: The first CCU and the second care unit. Al-Hayat Hospital contains 8 beds in the CCU unit. El-Zohoer Hospital contains 8 beds in the CCU unit. Al-Shifa Medical Complex Hospital contains 4 beds in the CCU unit, which recently named Egypt of Healthcare Authority hospitals in Port Said Governorate.

Subjects

A purposive sample of 145 adult patients with heart failure were included. The following heart failure patients were included:

- Class I, Class II, and Class III heart failure according to the New York Heart Association Classification
- Adult patients.
- Able of communicating.
- Emotionally stable, no psychiatric conditions.

Sample size

On openepi.com, the sample size was computed. To compute epidemiologic statistics, one might utilize the free, open-source program known as Openepi.com (Dean, Sullivan & Soe, 2013). Utilizing the following formula:

Sample size n= [DEFF*Np (1-p)]/ [(d2/Z21-α/2*(N-1) +p*(1-p)].

Population size (for finite population correction factor or FPC) (N): 265

Hypothesized % frequency of outcome factor in the population (p): 29%+/-5

Confidence limits as % of 100 (absolute +/- %) (d): 5%

Design effect (for cluster surveys-DEFF): 1

The final sample size was 145 heart failure patients at a confidence level of 95%.

Tools of data collection

Three tools were utilized to collect data for this study:

Tool I: Heart Failure Patient Assessment

It was established by the researcher in an Arabic language on the basis of a study of recent publications in the field by Hernandez, Barker, and Denise, (2022); Hollenberg et al., (2019); Long et al., (2019); Pobrotyn, Mazur, Kałużna-Oleksy, Uchmanowicz, and Lomper, (2021); Spiegel et al., (2018); Taylor, Moore and O'Flynn, N. (2019); It was used to assess patients' health status. To collect data about studied heart failure patients.

This tool includes two parts:

Part 1: Personal data: It includes data related to sex, age, phone number, educational level, occupation, and marital status.

Part 2: Post-discharge patients' follow-up: It includes data related to the evaluation of patients' post-discharge. It was carried out by the researcher to assess the signs and symptoms of HF after discharge from the hospital.

Tool II: Heart Failure Patient Anxiety Level Assessment

Heart failure patient anxiety level assessment was done using the State-Trait Anxiety Inventory (STAI) by Spielberger et al., (1977) which was translated into Arabic and retranslated to English to ensure clarity and standardized for Egyptians by Abd-Elkhlek, (1992). This inventory assesses two aspects of anxiety: anxiety as a mood and anxiety as a characteristic. Each inventory aspect has 20 items.

Scoring system for Heart Failure Patient Anxiety Level

Participants were asked to rate their feelings on a 4-point scale, ranging from (1) for 'Not at all' to (4) for 'Very much so.' A 20-40 score means low anxiety and an above 40 score means high anxiety. The total score value ranges from 20 to 80; the higher the score, the greater the anxiety level.

Tool III: Heart Failure Patient Satisfaction with the caring process:

This tool aimed to assess patients' satisfaction with the caring process. The tool was developed by Salisburya et al., (2005), in an English language and was then translated into Arabic, and tested for validity and reliability by Rashad, (2011). It consists of 15 items related to the admission process.

Scoring system for Heart Failure Patient Satisfaction

Every participant was asked to express his satisfaction with the caring process on a 5-point Likert scale ranging from 1 to 5; a score of (1) mean very dissatisfied, (2) mean dissatisfied, (3) mean neutral, (4) mean satisfied, and (5) for very satisfied. A score of 4 or higher indicates a significant level of satisfaction.

Clinical Nursing Pathway Protocol:

This protocol was developed by the researcher based on a recent literature review by Morris & Chen, (2019); & American Heart Association, (2018). Then it was adjusted after the agreement of the collaborative pathway team. timetable is organized into the following three phases: phase one at admission to day one, phase two at day 2 to day 3, and phase three at day 4 and at discharge. The activities outlined in rows to cover each phase includes patient outcomes, assessment/monitoring, physical needs, psychosocial needs, and patient/family education and nursing. A discharge criterion is the final item in a pathway that was developed to help staff when a patient is discharged from the hospital. These criteria as follow: performance indicators, assessment, stability in laboratory investigations, medications, and psychosocial support/education.

B- Operational design

The following phases were followed in the study field of work:

Tools' Validity

The validity of (Tool I: heart failure patient assessment and clinical nursing pathway protocol) was tested by seven experts from the faculty of nursing in the field of Medical-Surgical Nursing and cardiologist. The heart failure patient assessment questionnaire was revised according to the experts' opinions and recommendations.

Tools' Reliability

Cronbach's alpha coefficient was used to assess the reliability of the developed tools through their internal consistency. The reliability of the developed tool (Tool I: heart failure patient assessment and clinical nursing pathway protocol) was tested and the correlation coefficient was (0.91).

Field work

The director of each setting and the head of the cardiac care units of the hospitals selected provided official written permission for the study's conduct, and each participant (patient) provided verbal consent after being made aware of the study's nature and purpose.

Data was collected over a six-month period, starting in October 2021 and ending in March 2022. Each hospital's data was collected three times per week (alternating Saturday, Sunday, and Monday at Al-Salam Hospital and Al-Hayat Hospital, and Tuesday, Wednesday, and Thursday at El-Zohoer Hospital and Al-Shifa Medical Complex Hospital) during the morning shift from 8:00 am to 2:00 pm. The study covered all heart failure patients who had been in the cardiac care units within the data collecting period and met the subject selection criteria.

The total subjects consisted of 145 adult patients with heart failure included in the study, they were one group included in two phases of the clinical nursing pathway. The first phase (the preparatory and implementation phase of the clinical nursing pathway) was on admission and during hospitalization, and the second phase (the evaluation phase) was after the patients' discharge from the hospital and during patient's follow-up in outpatient.

- A written questionnaire was used to obtain data from each patient who was questioned individually. The researcher read the questionnaire to the patients and had them fill it out as they provided their responses.

- An assessment of every patient was carried out using Heart Failure Patient Assessment Questioner to evaluate the patient's condition.

- **Heart Failure Patient Anxiety and Satisfaction Level Assessment Questioners** were assessed at admission before clinical nursing pathway implementation and before discharge from the hospital for the studied heart failure patients.

Pilot Study

After the tools have been developed, they were tested through a pilot study, which was carried out on 10.0% of heart failure patients representing 15 patients of the total study sample of patients from the previously mentioned selected settings; it was conducted over a period of one month before embarking on the fieldwork of the study. The final form was developed after the necessary adjustments were made based on the pilot study's findings. The patients selected for the pilot study were included in the main study.

Ethical Considerations

Approval was taken from a faculty of nursing Port Said University ethical committee and the code number is NUR (٢٨) on ٦/٨/٢٠٢٣ which is the approval of hospital directors for the previously mentioned study setting, and patients. Before inviting them to participate in the study, directors, doctors, staff nurses, and patients at the cardiac care units of the involved hospitals were given a brief explanation of its purpose, emphasizing the confidentiality of the data gathered. Each participant (patient) was given verbal consent to participate in the study after being made aware of its nature and purpose. The study confidentially was ensured, and the researcher underlined that participation was completely optional and that each patient had the ability to leave the study at any stage without providing a reason.

C- Administrative design

An official letter was directed from the dean of the Faculty of Nursing, Port Said University to the hospital administrators. After describing the goal of the study and gaining their cooperation during the study period, the directors of each setting and the heads of cardiac care units of the selected hospitals gave written permission to perform the study.

D. Statistical design

Data were sorted, organized, coded, and transferred into specially designed formats for computer entry. SPSS version 28 was used for the statistical analysis. Descriptive statistics were used to display data in the form of frequencies and percentages for qualitative variables and means and standard deviations for quantitative variables. The chi-square test (X2) was used to test whether two categorical variables were related to each other. A comparison of means was performed using a paired-sample t-test. A significant level value was regarded when p-value $\leq$ 0.05, and a highly significant level value was considered when p-value $\leq$ 0.001, whereas p-value > 0.05 indicated non-significant results.

RESULTS

Table (1): states the personal data characteristics of studied heart failure patients indicated that 80% of studied patients were males and 65% were females, 94% of their age ranged from 50 to less than 60 years old. While 21% their age ranged from 40 to less than 50 with a mean age of 55.91 $\pm$ 5.69. Moreover, 64% of studied patients had secondary school, while only 3% were illiterate. Concerning occupation, 53% of studied patients were employed, while 5% had another work. Otherwise, 70% of the studied patients were married, while 16% were single. Furthermore, 47% of studied patients were supported by a husband or a wife, and only 6% were supported by their father.

Table (2): states a statistically significant difference between pre and post applying clinical nursing pathway intervention regarding all signs and symptoms of Heart failure with a p-value ranged from **0.000 to 0.05**.

Table (3): describes a statistically significant difference whereas **(P=0.000**)** between pre and post applying clinical nursing pathway intervention regarding the anxiety level of studied heart failure patients with a mean anxiety level (63.51), (37.95) respectively.

Figure (1): shows the anxiety level of studied heart failure patients indicated that (76.6%) were suffering from a severe anxiety level upon admission. While (97.2%) were suffering from a mild anxiety level upon discharge and follow up and the difference was statistically significant whereas **(P=0.000**).**

Table (4): illustrates a statistically significant difference between pre and post applying clinical nursing pathway intervention regarding satisfaction level with p-value whereas **(P=0.000**)** with a total mean (2.85), (3.69) respectively.

Table (5): reveals that there was a positive correlation between satisfaction and anxiety level during pre-intervention. Meanwhile, there was a perfect negative correlation between satisfaction and anxiety level during post applying clinical nursing pathway intervention.

Table (6): reveals that there was a positive correlation between satisfaction and clinical nursing pathway and a negative correlation between anxiety level and clinical nursing pathway.

Table (1): Personal characteristics of heart failure patients (n=145).

Personal Data		N	%
Sex	Male	80	55.2
	Female	65	44.8
Age	40- <50	21	14.5
	50- <60	94	64.8
	Geriatric group	30	20.7
	Mean ± SD	**55.91 ± 5.69**	
Level of education	Illiterate	3	2.1
	Read and write	9	6.2
	Basic education	34	23.4
	Secondary school	64	44.1
	University	35	24.1
Occupation	Not-working	28	19.3
	Worker	23	15.9
	housewife	36	24.8
	Employed (officer)	53	36.6
	Others	5	3.4
Marital status	Single	16	11.0
	Married	70	48.3
	Divorced	27	18.6
	Widow	32	22.1
Who supports the patient	None	21	14.5
	Husband/wife	47	32.4
	Father	6	4.1
	Mother	11	7.6
	Daughter	34	23.4
	Son	13	9.0

Table (2): Clinical features of the studied patients pre and post clinical nursing pathway intervention (n=145)

Signs and symptoms of HF	Pre				Post				Test of significance
	Yes		No		Yes		No		
	N	%	N	%	N	%	N	%	
Dyspnea	145	100	0	0	45	31	100	69	X^2=152.6 P=0.000**
Cough	69	47.6	76	52.4	29	20	116	80	X^2=24.6 P=0.000**
Orthopnea	67	46.2	78	53.8	38	26.2	107	73.8	X^2=12.5 P=0.000**
Oliguria	99	68.3	46	31.7	36	24.8	109	75.2	X^2=55.01 P=0.000**
Dizziness, restlessness	71	49	74	51	32	22.1	113	77.9	X^2=22.9 P=0.000**
Altered digestion	32	22.1	113	77.9	18	12.4	127	87.6	X^2=4.73 P=0.03*
Anxiety	52	35.9	93	64.1	26	17.9	119	82.1	X^2=11.85 P=0.001*
Insomnia	57	39.3	88	60.7	34	23.4	111	76.6	X^2=8.47 P=0.004*
Edema of the lower extremities	130	89.7	15	10.3	83	57.2	62	42.8	X^2=39.1 P=0.000**
Hepatomegaly	29	20	116	80	13	9	132	91	X^2=7.12 P=0.008*
Distended jugular veins	71	49	74	51	41	28.3	104	71.7	X^2=13.1 P=0.000**
Ascites	29	20	116	80	13	9	132	91	X^2=7.12 P=0.008*
Weakness	49	33.8	96	66.2	21	14.5	124	85.5	X^2=14.76 P=0.000**
Nausea	43	29.7	102	70.3	12	8.3	133	91.7	X^2=21.56 P=0.000**
Weight gain	145	100	0	0	97	66.9	48	33.1	X^2=57.5 P=0.000**
Fatigue	145	100	0	0	92	63.4	53	36.6	X^2=54.6 P=0.000**

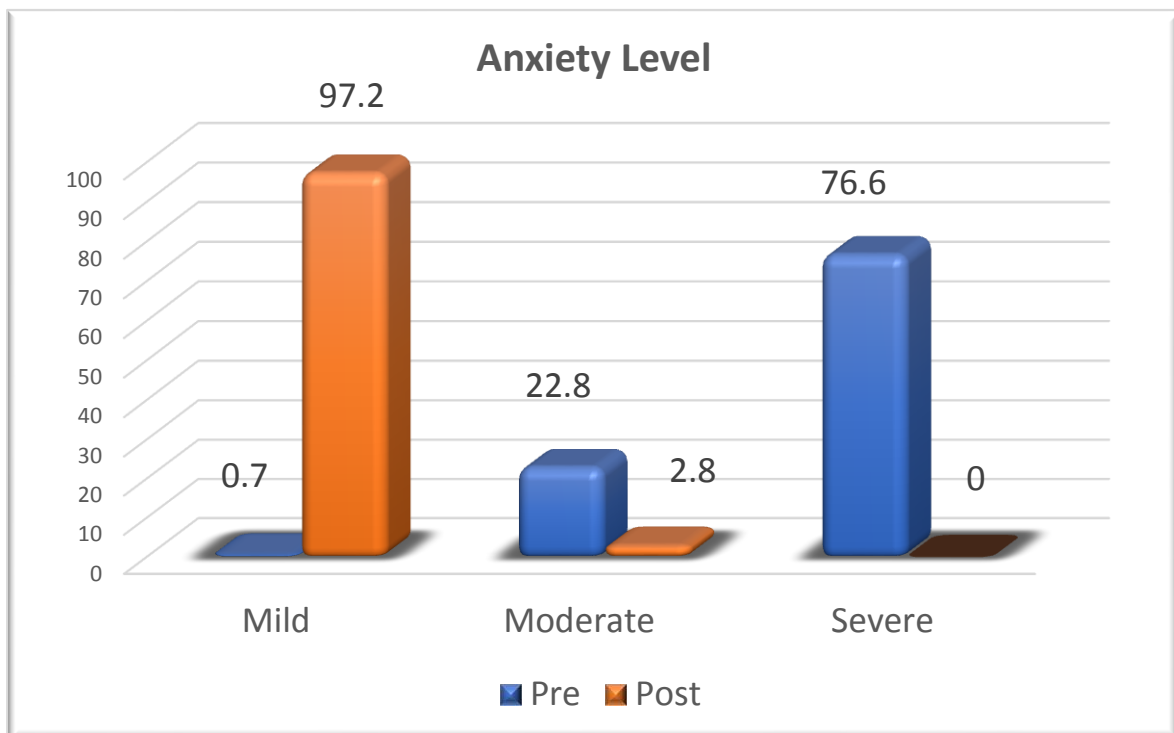*# Not mutual answers were excluded*   *X^2: Chi-Square test*
significant at P≤0.05

Table (3): Comparing Mean anxiety score pre and post clinical nursing pathway among heart failure patients (n=145)

Anxiety level	pre		post		T-test	p
	Mean	**Std. Deviation**	**Mean**	**Std. Deviation**		
	63.51	± 7.58	37.95	± 2.10	**T=12.60**	**P=0.000****

T: Paired t-test   **significant at P≤0.05*

Graph (1): Anxiety level among studied heart failure patients pre and post-applying clinical nursing pathway intervention (n=145)

Table (4): Satisfaction mean score pre and post clinical nursing pathway among heart failure patients (n=145)

Satisfaction level	Pre		Post		T-test	P
	Mean	Std. Deviation	Mean	Std. Deviation		
Admission process (q1-2)	2.25	± 0.77	3.52	± 0.36	T= 17.27	**P=0.000****
Adequacy of information to patients and family; coordination of care (q3-7)	2.62	± 0.33	3.65	± 0.28	T= 27.1	**P=0.000****
Adequacy of nurse and physician knowledge; explanation about the caring process (q8-12)	3.13	± 0.35	3.75	± 0.27	T= 16.67	**P=0.000****
Proper arrangement timing of discharge instruction, and adequacy of overall quality of care and service (q13-15)	3.17	±0.51	3.74	±0.31	T= 12.50	**P=0.000****
Total	2.85	± 0.24	3.69	± 0.14	T= 38.70	**P=0.000****

T: Paired t-test   *significant at P≤0.05   q: question number

Table (5): Correlation between anxiety and satisfaction level among the study group pre and post clinical nursing pathway application (n=145)

Items		Satisfaction level	
		pre	Post
Anxiety level	R	0.30**	-1.00**
	P	0.000	0.000

R: Pearson's correlation coefficient   *significant at P= 1: -1

Table (6): Correlation between clinical nursing pathway among studied heart failure patients regarding their anxiety and satisfaction level pre- and post-applying clinical nursing pathway intervention (n=145)

Items		Pre		Post	
		Satisfaction level	Anxiety level	Satisfaction level	Anxiety level
Clinical nursing Pathway	R	-0.04	0.06	0.25**	-0.26**
	P	0.63	0.44	0.002	0.002

R: Pearson's correlation coefficient   **significant at P= 1: -1*

DISCUSSION

Heart failure (HF) is a global pandemic that affects more than 64 million people globally and is becoming increasingly common. Heart failure is a multifaceted and potentially fatal illness marked by severe morbidity and mortality, inadequate capacity for functioning as well as quality of life, and high costs (Savarese et al., 2022). On other hand, Clinical pathways, aim to enhance patient outcomes, patient safety, quality of care, risk, patient satisfaction, length of stay and costs, and resource optimization (Tanjung, & Nurwahyuni, 2019).

In regards to personal data characteristics of the studied heart failure patients were married males and most of them were supported by their wife. While their age group falls between 50 and 60 years old, and more than half of the studied patients had secondary school certificates and employed (office work). This may be caused cardiovascular diseases with the increase of the progressive aging of the Egyptian population.

This result was obtained goes in agreement with the study performed by Mohamed, Alaa EL-Deen, Ali and Ibrahim, (2017) who found that the most of the studied patient were married males and their age approximately 50 years old. While half of them were employed and had secondary school certificate. Gorlicki et al. (2020) reported that the mean age of the study subject was 78 years and less than half of them were women. According to Zhang et al. (2021) cardio vascular diseases is the leading cause of disability and death in people aged from 50 to 60 years. First, because older

people have unique needs, it's important to pay attention to any psychological changes and may be experiencing and actively take action to address them. Second, health education is challenging for the elderly because frequently have diminished comprehension and learning capacity.

Concerning signs and symptoms among studied heart failure patients, the current results found a significant difference between pre and post applying clinical nursing pathway intervention regarding all signs and symptoms of heart failure. According to the researcher's view, these could be related to the execution of multidisciplinary procedures such as pulmonary and psychological rehabilitation practices, coughing and breathing exercises, and information and instructions given to the patients under study. This result was obtained goes in agreement with the studies performed by Lawson et al. (2018) and; Wagenaar et al., (2019), which found that the studied patients had improved heart failure signs and symptoms. Furthermore, the study by Mohamed et al. (2017) revealed a significant difference between the study and control group patients concerning their signs and symptoms post-intervention; however, during follow-up, it was discovered that only a small portion of the study group had dyspnea, whereas all of the patients in the control group had dyspnea. In the same line, it was found that less than one-fifth of study patients had orthopnea, but more than two-thirds of control patients had orthopnea

Concerning anxiety level among studied heart failure patients, the present results illustrated that there was a significant difference between pre and post applying clinical nursing pathway intervention in relation to anxiety level items of self-confidence and feeling nervous. This may be due to decreased painful symptoms and more given attention through the application of clinical nursing pathway interventions.

Additionally, Lawson et al. (2018) research found a direct correlation between pain and poorer patient ratings of health as well as between depression or anxiety and worse patient ratings of health. This showed that in order for the health of heart failure patients to improve, pain and depression or anxiety management must be a regular aspect of care that is guided by guidelines. Furthermore, Mohamed, Alaa EL-Deen, Ali and Ibrahim, (2018) who discovered that the study group patients experienced a significant improvement in decreasing anxiety levels on the fourth- and sixth-days following intervention is noteworthy.

Concerning satisfaction level with caring process among studied heart failure patients, the present study found a significant difference between pre- and post-applying clinical nursing pathway intervention regarding all aspects of patient satisfaction with caring process.

The current findings are consistent with previous studies demonstrating that the clinical pathway's application improved patients' satisfaction with heart failure patients. According to Tanjung and Nurwahyuni (2019), the use of the clinical nursing pathway led to an increase in patient satisfaction with the caring process. Additionally, the current study's findings supported with Mohamed et al., (2018) that reported a significant difference between the control and study patients group regarding all aspects of patient satisfaction. Furthermore, there was a significant improvement in psychological status and a reduction in anxiety level, both of which contributed to enhanced patient satisfaction with the caring process.

The present study found a significant difference between pre- and post-applying clinical nursing pathway intervention in relation to patient satisfaction level and anxiety. This conclusion is largely related to the instructional session in which the researcher explained all aspects of the care process. The current study's findings supported with Mohamed et al., (2018) who revealed a statistically significant difference in patients' levels of satisfaction with anxiety between the study and control groups. Breathett et al. (2018) demonstrated that with nursing education and multi-disciplinary clinical pathway treatments, patient satisfaction increased and heart failure explanations improved. As a result, patients' anxiety levels are reduced.

Regarding the relation between anxiety and satisfaction level with the clinical nursing pathway among studied heart failure patients, the current result illustrated a positive correlation between patient's satisfaction level and the clinical nursing pathway was found. Which indicates that patients who had a higher level of satisfaction with the clinical nursing pathway tended to have a more positive overall experience with their care.

In contrast, the study found a negative correlation between patients' anxiety level and the implementation of clinical nursing pathway. Which indicates that the implementation of clinical nursing pathway may help reduce heart failure patients'

anxiety level. Clear guidelines, better symptom management, and enhanced communication within the pathway can contribute to patients feeling more supported and less anxious about their condition

This result contrasted with Han et al. (2019); and Zhang et al. (2021) who illustrated that there was a positive correlation between clinical pathway interventions and the level of heart failure patient anxiety, patient satisfaction level, and improving patient outcomes. In these studies, patients who underwent clinical pathway interventions experienced reduced anxiety levels, higher satisfaction with their care process, and improved patient outcomes.

CONCLUSION

According to the study's findings, it can be concluded that:

Applying the clinical nursing pathway improved the anxiety and satisfaction levels with the caring process of patients with heart failure.

RECOMMENDATIONS

According to the study's findings, the following recommendations were suggested:

- Providing comprehensive patient education programs within the clinical nursing pathway to empower heart failure patients with knowledge about their condition, self-care strategies, and ways to manage anxiety related to their illness.
- Assess the level of patient satisfaction from admission to discharge from the hospital. Use patient feedback to identify areas for improvement and implement necessary changes.

Recommendations for further research:

- Study the impact of computerized clinical nursing pathway on patients' health outcomes and anxiety level.
- Study patients' satisfaction and cost-effectiveness post the establishment of the clinical nursing pathway.

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تأثير المسار التمريضي السريري على مرضى مستوى القلق والرضا بين مرضى الفشل القلبي

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الخلاصــــة

الفشل القلبي هو مرض معقد ومميت، يؤدي إلى ارتفاع معدلات المرض والوفيات بالإضافة إلى ارتفاع التكاليف. لهذا تهدف الدراسة الحالية إلى تقييم تأثير المسار التمريضي السريري على مستوى القلق والرضا بين مرضى الفشل القلبي. تم استخدام تصميم بحثي شبه تجريبي لإجراء الدراسة في وحدات عناية القلب في أربعة مستشفيات تابعة للتأمين الصحي الشامل بمحافظة بورسعيد: مستشفى السلام، مستشفى الحياة، مستشفى الزهور، ومستشفى الشفاء الطبي المركزي. وقد اشتملت عينة الدراسة على ١٤٥ مريض من مرضي الفشل القلبي. هذا وقد تم جمع البيانات باستخدام ثلاثة أدوات: تقييم مريض الفشل القلبي، وتقييم مستوى القلق لمريض الفشل القلبي، ورضا مريض الفشل القلبي على الرعاية المقدمة له. وقد أظهرت نتائج الدراسة وجود فروق ذات دلاله إحصائية بين قبل وبعد تطبيق المسار التمريضي السريري فيما يتعلق بمستوى القلق لدى مرضى الفشل القلبي الخاضعين للدراسة مع متوسط مستوى القلق (٦٣.٥١) و (٣٧.٩٥) على التوالي. وكان هناك أيضًا تحسن كبير في مستوى الرضا لدى مرضى الفشل القلبي الخاضعين للدراسة مع متوسط مستوى الرضا (٢.٨٥) و (٣.٦٩) على التوالي. وقد أوصت هذه الدراسة بتطبيق المسار التمريضي السريري لمرضى الفشل القلبي.

الكلمات المرشدة: مستوى القلق، المسار التمريضي السريري، الفشل القلبي، مستوى الرضا.