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Effect of Training Program on Internship Nurses' Performance Regarding Congestive Heart Failure' Patients

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Abstract:
Background*: Providing clinical nursing care to patients with cardiac failure requires the application of the knowledge of the disease process and improves the nursing intervention among internship nurses for improving their practice. Therefore, the training program for the internship nurses' regarding congestive heart failure patients enables them to build a solid professional career.*
Aim of the study*:this study was aimed to investigate the effect of a training program on internship nurses' performance regarding congestive heart failure' patients.*
Research design*: Time series quasi-experimental research design was utilized in this research.*
Setting:*The study was conducted at the Cardiac Care Units of Badr and Zagazig University Hospitals, Egypt.*
Sample: *A purposive sample of 100 internship nurses who regularly works with Heart Failure patients.*
Tools*:Knowledge Assessment Structured Questionnaire and an observation checklist for nurses' Practice were used.*
Results*: There was a good improvement in the mean knowledge and practice' score of the internship' nurses after the implementation of the training program compare to pre-implementation. Also, a positive correlation was detected between knowledge and practice' score of the internship' nurses before and after implementation of the training program with statistical significance difference (r=0. 032& r=516) at P-Value (0.032* and 0.001**) respectively.*
Conclusion*: The training program regarding the care of the patients with Congestive Heart Failure (CHF) achieved its aim by improving the internship nurses' performance. In addition, the majority of the CHF patients were satisfied with internship nurses' performance after the implementation of the training.*
Recommendations*: Continuous evaluation is needed to evaluate internship nurses' performance in Cardiac care settings, especially for patients with CHF.*
Keywords:*Coronary Care Units, Checklist, Humans, Heart Failure, Internship,In-service Training, Residency,Surveys and Questionnaires*

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I. Introduction

The nursing internship program provides tremendous opportunities for the nurses' intern to successfully transfer from the educational lecture theater to the clinical setting. Under one -year supervision, the nurses' intern is guided toward mastery of nursing skills and improved patient service. In addition, internship' training guide their experience with a gradual increase in the responsibility to make the new graduate be a self-assured practitioner, provide a unique opportunity for professional and personal development, gain a greater understanding of the organization requirements, test career choices, and develop important proactive workplace skills (1, 2).

The training internship' program promotes strategies for new graduate enrolment and retention, provide an opportunity to consolidate clinical nursing knowledge in new areas of practice, provide an opportunity to be competent in technological skills and processes related to the peculiarity in which they are doing, allows for the application of sound clinical judgment and critical thinking throughout the nursing process. Also, the Internship program increases new graduate confidence in knowledge and improves clinical skills and decision making (3-5).

Congestive heart failure (CHF) is a life-long, potentially fatal, costly condition, which is associated with recurrent hospital readmissions, poor quality of life, and high mortality rates especially among developing countries (6, 7). In the case of CHF, the heart is unable to pump sufficient to maintain blood flow to meet the bodies needs that result in various manifestations as: chest pain, dyspnea, excessive tiredness, fatigue, anorexia, leg swelling, and weight gain. The shortness of breath is usually worse with exercise or while lying down, and

may wake up the person at night. All those manifestations enforce Patients to seek professional help (8). Treatment of CHF focuses on improving the symptoms, preventing the progression of the disease, and modification of the underlying causes as: infection, alcohol ingestion, anemia, thyrotoxicosis, arrhythmia, and hypertension. Also, treatments include lifestyle and pharmacological modalities; and occasionally various forms of device therapy and rarely cardiac transplantation (9)**.** In addition, psychological, social support and occupational rehabilitation are needed to improve health-related quality of life (10).

Patients with CHF are needed for early diagnosis; close monitoring, and comprehensive management provided by skilled heart failure' team that include: specialist nurses, cardiologists, psychologists, and sociologists. This mean CHF management requires a multidimensional management regimen (11-13)**.** Therefore, the nursing interventions are designed for monitoring of vital signs, modification of patient's lifestyles, administration of medications and oxygen therapy, and the coordination of the diagnostic examinations and the provision of health education to the patient and his family. Also required an expanded skill set that enables the nurse to perform a clinical examination to identify signs of congestion, and set the accurate nursing care plan (14).

Internship' Nurses are need for continuous training to prepare them for providing competent, safe, and effective nursing care and also teach graduates how to apply therapeutic communication, critical thinking, professionalism, and legal and ethical skills in the clinical area. Continuous training is required to assist the interns in the application of the practical process, which may include helping the interns find an appropriate internship site and create viable field-specific learning objectives (15, 16). In this field, few studies were conducted to investigate the effects of training programs on internship nurses' performance regarding congestive heart failure' patients. Among Egyptian interns' nurse, there are no researches conducted to investigate the effectiveness of the training program on their performance regarding CHF patients.Therefore the researchers decided to conduct this research**.**

Aim of the study:

The current study was conducted to investigate the effect of training program on internship nurses' performance regarding congestive heart failure' patients. Hopefully the findings of the current study will help in improving Internship Nurses' performance regarding CHF patients and providing evidence based data that can develop the internship nursing practice and research.

Research hypothesis:

H1: Internship Nurses' performance regarding CHF patients will be improved after implementing a training program.

Operational definition

Internship nurses: A recent graduate nurses undergoing supervised practical training.

Performance: is the actual directing of activities to meet tasks according to standards. It is an indication of what is done and how well it is carried out.

Training program: It is an organized tool for the development of specific skills to the desired standard with the help of information, instruction, guidance, and practice.

II. Methods

Research design:

Time series (one group pre-post-test) quasi-experimental research design was utilized in this study to accept or reject the research hypothesis and achieve the aim of the study.This design is used to explain relationship, clarify certain events happened or both.

***Study variables*:**

The independent (cause) variable in this study is the developed training program, while the dependent variables (effects) are: internship nurses' knowledge and practices. The present study was represented under topics as the following; Technical design, operational design, administrative design, and statistical design**.**

Technical design:

Sample

A purposive (Non-Probability) sample of 100 internship nurses who regularly works with patients diagnosed with heart failure. The participants were selected according to the following **inclusion criteria**: work with congestive heart failure patients, and both sexes. Internship nurses selected from two setting Badr and Zagazig University Hospitals. Cardiac Care Units (CCUs) in each hospital was selected based on high annual volumes of heart failure patients. Also, 100 patients with HF were selected to investigate the effectiveness of the training program for internship nurses about them and ensure their satisfaction about the nurses' performance. They are selected according to the inclusion criteria: Age range between 18 to 65 years, diagnosed with HF,

both sexes. The study's sample size was calculated through Rao-soft based on a response rate of 50 %, at a confidence level 95% with a 5% margin of error and design effect 1 to be 100 nurses intern.

Exclusion criteria: the researcher excluded internship nurses' who are on sick leave.

Setting:

The study was conducted at Cardiac Care Units at Badr and Zagazig' University Hospitals, Egypt.

Study's Instruments:

Two tools were used to collect the necessary data.

***Tool I:Knowledge Assessment Structured Questionnaire*: -** It was developed by the researcher after review the related literature. It divided into two parts.

Part 1: used to assess social demographic data of internship nurses as: age, sex, marital status, qualification, years of experiences, and attendances of training programmers. Patient demographic sheet to assess age, sex, vital signs, BMI, satisfied about internship nurses' performance or not, etc.

Part 2:Pre/post-test structured interview questionnaire sheet designed to assess nurses' knowledge about HF and care provided to patients with heart failure (17). For example, definition of HF, Risk factors of HF, Immediate management when patients arrive at CCU, Pain management, etc. The questionnaire consists of 20 questions. The total scores of internship nurses' knowledge were classified as follows: the score of ≥70 % was considered a good level of knowledge. A score from ≥50 to less than 70% was considered a fair level of knowledge. A score of less than 50% was considered a poor level of knowledge.

Tool II: Nursing Practices Observation Checklist:

It was adapted from various referencesand modified by the researcher after reviewing the literature to assess internship nurses performance regarding the patients with congestive heart failure e.g. Interaction when the patient arrives, Put in cardiac bed, Insert IV lines, Take blood sample for investigations, catheterization of the patient, etc. (12, 18)

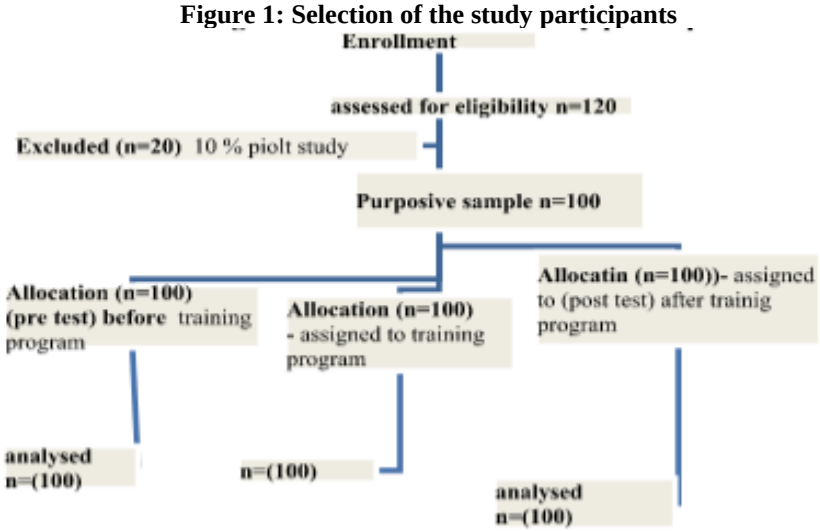
Each item was observed, categorized, and scored as follows: two for each step that was done correct and one for each step done incorrectly, and zero for a step that not done. The total scores of nurses' practice were calculated and classified as follows: A score of ≥75 % was considered good practice. From 65 to less than 75% were considered fair practice. The score of less than 65% was considered poor practice.

Operational design:

Pilot study

A pilot study was carried out on 10% of sample size (20 internship nurses) to ensure the clarity, applicability of the tools, test feasibility of the study and estimate sample size and the time needed for data collection. Also, to check the participants understand the instructions and what they are required to do. The result of pilot study confirmed that the study was feasible. The sample of the pilot study was excluded from the total sample size.

Figure 1: Selection of the study participants



Procedure:

The study was carried out on the following phases:

1- Preparatory phase: A review of past and current, international, and national related literature in the different aspects of the problems using books, articles, and journals was done. The proposed study setting was assessed for the number of nurses and patients. These phases ended with preparing the study instruments and applya pilot study.

Validity and reliability

Tools of the study were submitted to a panel of five experts in the field of Medical-Surgical Nursing and Nursing Administration to examine the content validity that covering, clarity, wording, length, format, and overall appearance. A minor modification was performed.A valid and reliable professional tool (Cronbach alpha was 0.82).

***2- Planning phase*:** Based on the findings of the pilot study results, and applying pretest, the training program was developed, after an extensive literature review considering internship nurses' needs and their levels of understanding. After that, the training was conducted.

3- Implementation phase:

At the initial interview, the researcher introduced herself to initiate a line of communication, explain the nature and purpose of the training program. Privacy and confidentiality were protected. Internship nurses were reassured that obtaining information was confidential and used only for the purpose of the research. Preliminary assessment first and second, tools were used to assess internship nurses' performance, which revealed poor knowledge and practice related to care provided to patients with congestive heart failure in both hospitals.

The study was carried out in the morning, and afternoon shifts. Internship nurses' knowledge was assessed using (Tool I). Internship nurses' practices were assessed by using an observation checklist (Tool II). Developing a training session based on obtaining data from preliminary assessment, the researcher developed training sessions to improve internship nurses' knowledge and practice related to care provided to patients with congestive heart failure.

Implementation of a training program was conducted for all internship nurses in both study settings using a package of teaching methods such as small lecture, discussion, simulation, audio-visual materials, and power points to facilities their learning. In each hospital, the internship nurses divided into 10 groups, each group included 5 internship nurses. The training sessions were done in three sessions per week. The duration of each session was 30-45 minutes, including 10 minutes of conversation and feedback. The theoretical session's conducted through group discussion using a very simple language. Practical sessions started by using power point presentations followed by demonstration and re-demonstration by using real materials and instruments. The data were collected from June to September 2020 from the previously mentioned settings.

The theoretical sessions covered the topics of:

- Material about Congestive Heart Failure (definition, causes, risk factors, clinical manifestations, and diagnostic tests)
- Pharmacological treatment, lifestyle modifications, follow-up schedule, and potential complications of Heart failure.
- Lecture about documentation, therapeutic communication, work within organized team, and time management.

The practical sessions covered certain topics as:

- Connect patient to Cardiac monitor & Monitor Heart rhythm
- Check VS &Measuring Cardiac output.
- Administration of Humidifier oxygen.
- Perform physical examination.
- Put patient in correct high fowler' position.
- Insert IV lines & Withdrawn Laboratory blood tests.
- Take Arterial Blood Sample.
- Do 12 leads ECG Correctly.
- Insert urinary catheters properly.
- Perform reassurance the patient, psychological support.
- Assessment of pain, anxiety level.
- Check prescribed drugs

4- Evaluation phase: The effect of the training program on the internship nurses' performance was reached through comparing the level of nurse's knowledge and practice pre and post-implementing the training sessions has been evaluated by using the same first and second tools.

Administrative & Ethical consideration

Prior to data collection and conducting the study, an official permission was obtained from the research scientific board of the hospital, the head of CCUs from the selected hospitals, and from the administrator of Faculty of Nursing, Zagazig and Helwan University. The internship nurses gave informed, verbal consent prior to their participation in the study. Participation was voluntary and confidentiality of data was ensured. A clear explanation was given to them about nature, aim, and expected outcomes of the current study.

Statistical design and Data analysis

The Statistical Package for the Social Science (SPSS) version 20 was utilized for data entry, tabulation, and analysis. Data were presented in frequency tables, number, percentage, mean, and standard deviation (SD). Pearson correlation was done to measure the correlation between quantitative variables. P-value considered statistically significant at $P < 0.05$.

III. Results:

Table (1): Internship nurses' socio demographic Characteristics (n=100)

Characteristics	No	%
Gender		
Male	40	40.0
Female	60	60.0
Age		
22 years	58	58.0
23 years	25	27.0
24 years	11	11.0
25 years	6	6.0
Mean±SD (range)	22.65±0.92 (22-25years)	
Marital status		
Un married	85	85.0
Married	15	15.0
Residence		
Rural	74	74.0
Urban	26	26.0
Previous training		
N0	89	89.0
Yes	11	11.0
working in private hospital with CHF patient		
N0	85	85.0
Yes	15	15.0
Months in CCU		
1 Month	71	71.0
2 Months	29	29.0

Data presented in number, percentage, Mean±SD, range, Cardiac Care Unit (CCU)

Table 1 illustrates that, 39% of internship nurses were aged 23 years of age, with the mean age was 23.13±0.92, and 60% of them were female. More than 85% were unmarried and 89% of them didn't receive a previous training program about CHF. Only 15% of them worked in a private hospital. Regarding residency, 74% of them were from a rural residency. A majority of participants were in the first month in CCU units (71%).

Table (2): Socio demographic characteristics for patients with congestive heart failure (n=100)

Characteristic	No.	%
Sex		
Male	62	62
Female	38	38
Marital status		
Single	8	8
Married	70	70
Divorced	4	4
Widow	18	18
Age (years)		
Mean±SD (range)	59.83 ± 9.98 (36–73 years)	

Educational		
Illiterate	6	6
Primary	18	18
Secondary	14	14
Diploma	26	26
Bachelor and above	36	36
Occupation		
Employed	54	54
Un Employed	10	10
Retired	36	36
Life style		
Alone	10	10
Wife and children	64	64
Children	14	14
Others	12	12
Smoking		
Yes	58	58
No	42	42
previous chronic illness		
Hypertension	75	75
Diabetic mellitus	52	52
Ischemic heart disease	30	30
Myocardial infarction	36	36
disease' s years		
1-3 years	71	71.0
More than 3 years	29	29.0
Mean ± SD (range)2.8 ±1.16 (1-5 year)		

Data presented in number, percentage, Mean±SD, range.

Table 2 presents that 62% of CHF patients were male and 70% of them were married, their age ranged from (36–73 years) with a mean age of 59.83 ± 9.98 years. About 36% of them had a Bachelor education. Toward lifestyle, 64% of the patients were living within their family (wife and children). Also, 58% of them were smokers. It was clear that 75% of the patients were suffering from hypertension while 30% had ischemic heart disease. About 71% of them had congestive heart failure from one to three years with a mean (2.8±1.16) years.

Figure (2): Distribution of CHF Patient s' satisfaction regarding internship nurses' performance before and after training program (n=100)

Figure 2 shows that 84% of CHF Patients were un-satisfied before the training program while 77% of them were satisfied with internship nurses' performance after the training program with a high statistical significance difference in P-Value 0. 001**.

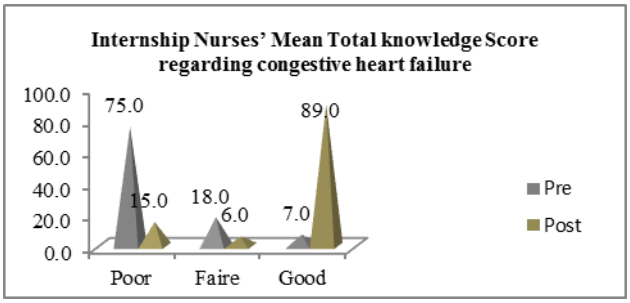


Figure (3): The mean total knowledge score of the nurses regarding CHF before and after training program (n=100).

Figure 3 shows that 75% of the internship nurses had a poor mean total knowledge' score before the training program while 89% had a good total knowledge' score after the training program. In addition, there were highly statistically significant differences between internship nurses' mean total knowledge score before the training program (16.26±2.64) and after the training program (33.76±2.42) at P- Value0. 001**.

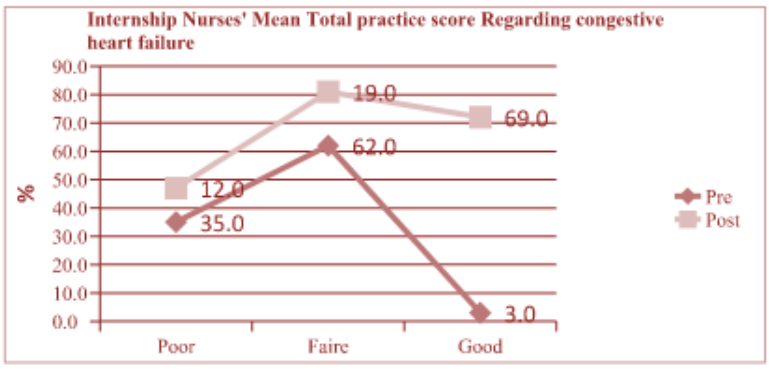
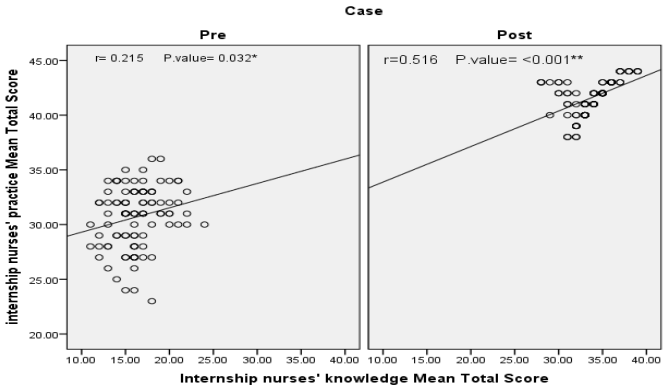


Figure (4): The mean total practice score of the nurses regarding CHF before and after training program.

Figure **4** clarifies that 97% of the internship nurses had poor and fair mean total practice scores before the training programs while 69% of them had a good practice score after the training programs. In addition, it was found that there was a highly statistically significant difference between internship nurses' means total practice score before training program 30.70±2.74 and after training program 41.60±1.52 at P- value 0.001**.



r- Correlation Coefficient, * significant at (P<0.01) ** highly significant at (p < 0.001)

Figure(5): The Relation between the participants' total knowledge score and their practice' score regarding CHFpre-post training.

Figure 5indicates a correlation between the total score of nurses' knowledge and practice regarding CHF before and after the training program. It was clear that there was a positive correlation between knowledge and practice scores of nurses before (weak correlation) and after (moderate correlation) implementation of the program with statistical significance difference (r=0. 032& r=516) at P-Value (0.032* and 0.001**) respectively.

Table (3): The relation between Mean Total scores of Nurses 'knowledge, Practice regards CHF and their socio-demographic Characteristics Before and After Training.

Characteristics		**Mean Total knowledge Score**		**Mean Total Practice Score**	
		Before	**After**	**Before**	**After**
Gender	r	0.058	0.105	0.178	0.130
	P	0.563	0.298	0.076	0.196
Age	r	0.051	-0.114	0.136	-0.142
	P	0.612	0.257	0.176	0.158
Marital status	r	0.063	-0.063	-0.066	0.130
	P	0.533	0.535	0.511	0.196
residence	r	-0.002	0.014	-0.098	-0.019
	P	0.988	0.888	0.332	0.853

Previous training	r	0.095	-0.038	-0.089	0.047
	P	0.345	0.707	0.377	0.643
working in private hospital withCHF	r	0.078	-0.063	-0.057	0.088
	P	0.442	0.532	0.572	0.385
Months in CCU	r	0.048	0.085	0.015	-0.120
	P	0.632	0.400	0.886	0.233

r- Correlation Coefficient, Congestive Heart Failure (CHF), Cardiac Care Unit (CCU)

As shown in Table 3, there was no statistically significant difference between internship nurses' mean total knowledge score and their practice regarding CHF with their socio-demographic characteristics before and immediately post-training implementation (p=>0.05).)

IV. Discussion

Through internship year, undergraduate students take their first steps into a Profession and begin to apply the theoretical knowledge acquired during their education to real-life situations. The internship period is considered a traumatic time of changeover among graduate nursing students. They are passing from an atmosphere of theory and academia to one of clinic and practice. Therefore the aim of this study was to investigate the effect of training program on internship nurses' performance regarding congestive heart failure' patients.

Regarding demographic data, the results of the current study showed that more than half of internship nurses were aged 22 years old, according to gender, nearly two third of them were female. In addition, more than three quarters were single, didn't receive previous training program related to congestive heart failure, and did not work in private hospitals. Nearly three-quarters of internship nurses were from a rural residency and were in the first month in CCU units. From the researchers' point of view nursing in Egypt is principally a female profession and very few men are joining nursing programs in the university sector. In agreement with the results of the current study, **Ebrahim and Elsayed (2018)**showed that, the majority of the nursing intern were aged 22 - ≥ 24 years, and lived in rural and don't have previous training courses (1). Also, agree with different studies carried out in Egypt and Sudan that showed most nurses were female gender (19-23).Also **Eldeeb and Bakeer (2016)** revealed that only 15% attend short training on EBP. However, the rest of the sample (85%) didn`t attend any formal training (24).

The current results disagreed with the finding of many studies; that concluded the majority of study nurses were male (25-27)**.** However, a study conducted in Iraq showed a different result, males were 52.6%, while females represented 47.4%**(26).** The possible explanation for this difference contributes to the different target population and the setting of the study

Related to the socio-demographic characteristics for patients with CHF the results of the current study presented that, nearly two-thirds of them were male and about three-quarters of them were married, with a mean age of (59.83 ± 9.98 years). More than one-third of them have had a Bachelor's and above and were retired. Nearly two third of them were lived with their family (wife and children) and more than half of them were smoker. Three-quarters of the patients were suffering from hypertension while less than one-third affected by Ischemic heart disease. Nearly three-quarters of them had CHF from one to three years. In similarity with the results of the current study, the study carried out at University of Adelaideshowed that, the participants in the baseline assessment were primarily male (59.7%), and married (74.3%). Participants' age ranged between 33 and 86 years (Mean 64.73, SD 9.90), While disagreeing regarding the patients' level of education, approximately two-third of the participants had secondary education or less (71.6%) (6).

The result of the current study revealed that three-quarters of the internship nurses had poor mean total score knowledge before the training program while the majority of them had a good knowledge score after the training program. It was found that there were highly statistically significant differences between internship nurses mean total knowledge score before training program and after the training program at (P-Value <0.00). From the researchers' point of view, this finding can be explained by the fact that the highest percentage of nursing interns didn`t attend any formal training in congestive heart failure.

This result agree with the study that conducted at Benha Universityrevealed that, the performance of the internship nurses' were poor (36.6%), more than half of them had a good knowledge scores (58.2%) post-program as compared to pre-program with a highly statistically significant differences in the knowledge scores immediate post-program compared to pre-program in all dimensions (1). In similarity also, **Eldeeb and Bakeer (2016)** revealed that, the highest scores percentage of the study subjects had a poor knowledge regarding evidence-based in the pre-test phase (24).

Overall similar to the current results, **Keshk et al., (2018)** demonstrated that an improvement of internship nursing students' knowledge post of educational program implementation, whereas the mean of the

total knowledge scores level was 9.002±7.08 before the program, changed to 17.37±20.01 after program implementation with a highly statistically significant difference (28).

Regarding the nurses' practice toward CHF, our results illustrated the majority of internship nurses had poor and fair mean total practice scores before the training program while more than two-thirds of them had a good practice score after the training program. A highly statistically significant difference between the mean total practice score before and after the training program was shown at P-Value 0.001.

These results agree with **Mostafa et al., (2019**); who stated that the total nurses' performance means score improved from (63.04±7.94) before the implementation of the educational program to (97.92±.39) after its implementation with a highly significant difference at (p 0.001) (29). In the same line, **Keshk et al., (2018)** revealed that there was a statistical improvement in the level of practice among the internship nursing students regarding the steps of nursing processes after the educational program implementation compared with an unsatisfactory level before applying it(28).

The results of the current study contradict with **Alnajjar et al., (2019)** who reported that no statistically significant differences (P = 0.38) were noted between the two groups of nurse interns when assessing the effectiveness of two internship clinical training programs at Saudi Arabia (30).

The result of the current study revealed there was a positive statistical significance difference correlation between knowledge and practice scores of the nurse interns. The weak correlation before implementing the training changed into a moderate correlation after implementing it. This result agrees with that of **Aboshaiqah and Qasim (2018)** who reported a high positive correlation between clinical competence scores and performance in general, professional behavior, and core nursing skills (31).

The result of the current study indicated there weren't differences with statistically significance between the internship nurses' total knowledge score and their practice regarding CHF with their socio-demographic characteristics before and post-implementation of the training. This result agrees with that of **Fateme and Enayatollah (2016)** who showed that no significant statistical relation between the mean of the nurses' performance quality and their sex in special and general wards (32). In the same context, **Al-Ftlawy (2014)** stated there is a non-significant relationship between age, gender, and level of the nurses' knowledge (26)

As regards the training sessions, the results showed that there was a non-significant relationship between the nurses' knowledge level and their previous training sessions. This result comes in agreement with **Ali et al., (2015)** who mentioned that, there was no significant correlations existed between participants' gender, age, years of experience, and their level of knowledge and practice. Except, a negative correlation has existed between the participants' practice and their years of experience regarding cardiac pacing (21). Finally, the training program regarding the care of the patients with CHF cleared an obvious improving in the intern nurses' performance. In addition, the majority of the CHF patients were satisfied with the percentage (77%) to intern nurses' performance after implementation of the training

Limitation of the study:

- Limitation is that the study findings apply only to Badr and Zagazig University interns on only 100 nurses. Such a finding cannot be generalized to other health care facilities.
- Implementation of training sessions during the internship nurses' working hours take long period of time.

V. Conclusion:

The training program regarding the care of the patients with Congestive Heart Failure (CHF) achieved its aim by improving the internship nurses' performance. In addition, the majority of the CHF patients were satisfied with internship nurses' performance after implementation of the training.

VI. Recommendation:

Based on the study results, the following recommendations are suggested:

- The continuous evaluation is needed to evaluate internship nurses' performance in Cardiac care settings, especially for patients with CHF.
- The training program should be included all internship nurses in all hospitals at the level of different governorates of Egypt.
- Encourage internship nurses for updating their knowledge and practice regarding patients with CHF.
- Further researches should be conducted on a large probability sample of internship nurses acquired from various geographical places of Egypt.

Conflict of interests: The author confirms that there is no conflict of interest and the study was not supported by any grant.

Authors' Contribution: L.A, the corresponding author worked on designing the study, interpreting the result, and preparing the manuscript. The co-authors, namely, N.H, played a role in collecting, analyzing and

interpreting the results. Both of them were involved in reviewing, approving the final manuscript and sharing the publication fund.

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