

Impact of Palliative Care Program on Nurse's Knowledge and practice Regarding care of Patients with End-Stage Renal Disease

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Abstract

Background: The palliative care program considers most effective and important nursing role for improving the patients' quality of life. It has significant impact on patient's outcome. **The aim of this study** was to evaluate the effect of palliative care program on nurse's knowledge and practice regarding care of patients with End-Stage Renal disease at Zagazig University Hospitals. **Subjects and methods:** **Research design:** A quasi experimental research design was used. **Setting:** The study was conducted in Hemodialysis Unit at Zagazig University Hospitals. **Subject:** all nurses working in Hemodialysis Unit (35) nurse and purposive sample of (35) patients with ESRD. **Tools of data collection:** First tool was an interviewing questionnaire sheet for patients. The second tool was an interviewing questionnaire sheet for nurses. The third tool was an observational checklist nurse's practice regarding palliative care for the most health problems for patients. **Results** revealed that the most common health problems are fatigue, GIT symptoms, itching and dyspnea. There were highly statistically significant relations in severity of them with mean score in pre-program as well as highly statistically significant relations in study phases were found in nurse's knowledge and their practice throughout program phases. **Conclusion:** palliative care program had a positive effect in improving nurse's knowledge and practice as well as improving patient outcome. **Recommendations:**-The importance of developing palliative care evidence –based program which should be available in all hospital to be followed by all nurses.

Key words: End Stage Renal Disease, Palliative program, Nurses ,knowledge ,practice

Introduction:

Chronic kidney disease (CKD) is defined as structural or functional abnormalities of the kidney for ≥ 3 months as determined by either pathologic abnormalities or markers of damage including abnormalities in blood or urine tests, histology, imaging studies or history of kidney transplantation or glomerular filtration rate (GFR) <60 ml / min 1.73m for ≥ 3 months ⁽¹⁾.

Kidney disease is wide spread and endemic disease. End Stage Renal Disease (ESRD) is extreme form of renal failure diagnosed in 117,000 people in the US yearly, there are 86,000 people waiting kidney transplantation and 355,000 on form for dialysis ⁽²⁾.By 2030 the

number of people who will need dialysis increase to 5.4 million most of which will be in the developing countries of Asia and Africa ⁽³⁾.

ESRD may be caused by systemic diseases, such as diabetes mellitus (leading cause); hypertension; chronic glomerulonephritis; pyelonephritis; obstruction of the urinary tract; hereditary lesions, as in polycystic kidney disease; vascular disorders; infections; medications; or toxic agents⁽⁴⁾.

The prognosis of patients with chronic kidney disease is guarded as epidemiological data has shown that all-cause mortality (the overall death rate) increases as kidney function

decreases the leading cause of death in patients with chronic kidney disease is cardiovascular disease, regardless of

whether there is progression to stage⁽⁵⁾.

The patient with ESRD facing several health problems such as fatigue, pain, muscle cramps, anorexia, nausea, pruritus, shortness of breath, restless legs, sleep disturbances and anxiety⁽⁶⁾.

Palliative care aims to improve the quality of patients' and their families' life facing life threatening illness through the prevention and integrated treatment of symptoms whether physical, psychological or spiritual. It also incorporates care given during the last few hours or days of patient's illness termed end of life care⁽⁷⁾.

Palliative nursing reflects whole person care and integral to all nursing care. While providing palliative care depends on the nurse having strong interpersonal skills and clinical knowledge is informed by respect for the person and the ethical principles of autonomy, beneficence and justice⁽⁸⁾.

Significance of the study:

Chronic kidney diseases are presenting a major cause of morbidity and mortality worldwide. The prevalence of chronic renal failure (CRF) is expected to rise over the next years. The prognosis of survival for patients with chronic organ failure is even poor than that for many common malignant diseases⁽⁹⁾. Prevalence of dialysis patients in Egypt have increased from 10/million population (pmp) in 1974 to 225/ million points to an increasing trends accounting for 483/ million population in 2004. The estimated number of ESRD patient in Egypt was 14,636 in 1998 and increase to 35,751 in 2010.⁽¹⁰⁾ The patients with CRF suffer from several health problems so that the nurse play an important role to reduce

and improve their health problem through applying palliative care as well as improve their knowledge and practice.

Aim of the study:

This study was aimed to evaluate the effect of palliative care program on nurse's knowledge and practice regarding care of patients with End-Stage Renal disease at Zagazig University Hospital. Through the following objectives:-

- Assess the most common health problems for the patient with ESRD.
- Assess the nurse's knowledge and practice toward palliative care program for patients with ESRD.
- Based on patient's assessment develop and implement palliative care program for most common patient problems.
- Evaluate the effect of palliative care program on nurse's knowledge, practice and patient's outcomes.

Research hypothesis:

To achieve the aim of this study the following hypothesis is formulated:-

H1- palliative care program will have a positive effect of nurse's knowledge and practice toward care for patient with ESRD.

H2- palliative care program Will have a positive effect of patient outcomes (reduce the most common health)

Subjects and Methods:

Research design: A quasi experimental research design

Research setting:

The study was conducted in Hemodialysis Unit at El-batna hospital at Zagazig University Hospitals.

Study Subjects:

The study subject was included all nurses working in Hemodialysis Unit at Zagazig University hospitals (35) nurse and (35) patients.

Tools for data collection:

Data was collected by researcher by using the following tools:-

Tool 1: Patient Structure Interview Questionnaire sheet: - Data of patient assessment was collected by using an interviewing questionnaire which designed by the researcher after reviewing related literature includes bio sociodemographic covered the following 3 parts to collect the necessary data:-

Part (1): -.

Biosocio demographic characteristics

Concerned with assessment of socio-demographic characteristics of the patients⁽¹¹⁾, it was contained eleven questions (Q1 to Q11) as the following: Age, Gender, Marital status, Educational level, Work, Financial income, Area of residence, number of family members crowding index, attendance dialysis session by himself and taken training program.

Part (2):-

Patient Health History Assessment

It concerned with assessment of past and present medical history of patients (12).

A- Past medical history: Concerned with past patients medical data, it was contained causes of renal failure which included 12 items and every item answered by yes symbol by (1) or No symbol by (0) in data entering, this items was diabetes, renal stone, congenital renal deformity, chronic nephritis, urinary tumor, polycystic kidney, anemia, hypertension, coronary artery disease, immunological disease, prostatic disease, Others causes lead to occurring renal failure.

B- Present medical history:

Concerned with present patients medical information after renal failure occurs. Which included 13 items and every item answered by yes symbol by (1) or No symbol by (0) in data entering, this items as in past history plus to type of viral hepatitis.

C- Present medical history from patient sheet: it contain 8Q (Q1 – 8) present medical diagnosis, time of disease onset, numbers of dialysis session, duration of session, laboratory investigation such as (Hemoglobin, Blood ph, sodium, potassium, calcium, Blood urea and Creatinine) vital signs (Blood pressure, pulse, respiration, temperature, color of the skin and level of consciousness), patient measurements (weight, height) and patient medication

D-Patient compliance with dialysis regimen: It consists of seven questions (Q1-7) compliance with nutrition, dialysis session, medication follow up, exercises, activity daily levels and personal hygiene. Every item answered by never=1, some time=2 or always=3.

Tool 2:- Dialysis symptom index to assess common health problems in patient with ESRD. Adopted by Weisbord, ⁽¹³⁾ to assess the common and severity of symptoms or health problems in patients undergoing hemodialysis, it was contained (30Q). Enrolled patients were asked to report the presence (yes/no) of each symptom at any time during the previous 7 days. Using a five point Likert scale (1 = not at all to 5 = very much),

Tool 3: Nurse Structure Interview Questionnaire sheet: -was designed by the researcher after reviewing the related literature and opinions of 7 expertises for content validity and included the following 2 parts to collect the necessary data:

Part (A): Demographic characteristics: Concerned with assessment of the demographic characteristics of the nurses it was consisted of eight open ended questions (Q1 to Q8) as the following Age, Gender, level of education, marital status, years of general nursing experience, years of experience in hemodialysis, training course, time of training course and benefits from training course.

Part (B): nurse's Knowledge Questionnaire:- Concerned with assessment of nurses' knowledge regarding palliative care for patients with end-stage renal diseases for developing the booklet of educational program, it was designed by researcher in Arabic form to avoid misunderstanding and applied as pre, post and follow up test for study subjects. It consisted of 37 questions as MCQ; True or False and matching question covered the following items: Nurse's knowledge about urinary system, renal failure and about palliative care.

Scoring System for nurse's Knowledge Questionnaire

Each question is scored zero for the incorrect answer and one for the correct answer, and these points are counted for each nurse. The general nurses' knowledge is classified into satisfied knowledge if the score is $\geq 90\%$ from the maximum score and unsatisfied knowledge if it is $< 90\%$.

Tool 4: Observational Checklists for palliative Care:-

It was adapted from Perry & Potter⁽¹⁴⁾, Bullock, et al⁽¹⁵⁾, and modified by the researcher to assess nurses' practice regarding palliative care before and after the program then in follow up. It was contained four checklists for the most common health problems for patients with

ESRD (checklist for dyspnea (shortness of breathing), gastrointestinal symptoms, fatigue and pruritus (itching).

- A- **Checklist for dyspnea:** it contained 18 items to assess nurse's practice about dyspnea.
- B- **Checklist for gastrointestinal symptoms:** it contained 10 items to assess nurse's practice about GIT symptoms.
- C- **Checklist for fatigue:** - it contained 12 items to assess nurse's practice about fatigue.
- D- **Observational checklist about pruritus:** - it contained 10 items to assess nurse's practice about purities.

Scoring System for nurse's Observational Checklist:

Nurse observational checklist for palliative care: Each item is scored zero for not done and one for done and these points are counted for each nurse. The general nurses' practice is classified into satisfied practice if the score is $\geq 90\%$ from the maximum score and unsatisfied practice if it is $< 90\%$.

Preparatory phase:

It included reviewing of literature related to the impact of palliative care program on nurse's knowledge and practice regarding care of patients with end-stage renal disease and the theoretical knowledge about various aspects of problem using books, articles periodicals, scientific journals, research and the internet was done in order to get a clear picture of all aspects related to the palliative care, as well as, to develop the study tools the palliative care program.

Validity and Reliability

Content validity was used for the modified tools and the designed booklet to determine whether the tools covered the aim or not. It developed by a jury of seven experts;

5 persons from nursing staff and 2 urologist of medical staff members.

Field work:

The implementation phase for data collection started as following:

The selection of patients and nurses, the collection of data and the implementation of the palliative care program lasted over a period of 16 months, started from January 2013 to April 2014, which classified as following: 2 months pre test (from beginning of January 2013 to end of February 2013), 8 months implementation the program and post test (from March 2013 to October 2013), 4 months after post test follow up test was done (from beginning of March to end of April 2014). The patient questionnaires filled by the researcher. Nurse questionnaires filled by the nurse and observational checklist filled by researcher. Data were collected four days a week from the Hemodialysis Unit at Zagazig University Hospital for patients with ESRD from 9:00 am to 1:00.

Program development:

It explains the purpose of the study to the subjects. The researcher assured that the data collected and information will be confidential and would be used only to improve their health and care provided to patients. Also, the data was collected by the researcher using simplified Arabic language.

The program consisted of (18) sessions one session of them to identify the objective and the importance of the program. Six sessions (6) were theoretical, and twelve (12) were practical. Each group interview took approximately 30 minutes in each theoretical session and 45 minutes in each practical session.

The sessions began with one session for a formative assessment to show the patient's condition (interviewing the patient regarding personal data and identification), and one session for demonstrating the importance of the palliative care program and for assessing the nurse's knowledge and practice by filling nurse's knowledge and practice questionnaire before the program.

In each session, ten minutes pre and post are directed for re-demonstration and implanted in simplified way by using paper board, pictures, videos and booklet, through group discussion, to identify self-reflection, evaluate with feedback and oral exam.

In practical session the researcher had demonstrated the care of dyspnea, skin care for pruritus, care of fatigue, care of gastrointestinal symptoms, relaxation technique and care of fistula using real materials within 30-45 minute; and explained the rationale for each item in the procedure to avoid complication to the patients. To identify self-reflection, evaluate with re-demonstration and post-test.

In the 18th session (post-test) included the reassessment of nurse's knowledge, practice regarding palliative care applying the program. Questionnaire about knowledge were filled by nurses through observation of the researcher; for the observational checklist of palliative care was filled by the researcher within 20-30 minute and patient's questionnaire filled by researcher within 20 minute.

During follow-up (after 4 months of post- test), the patients questionnaire filled by researcher. Nurse's questionnaire filled by researcher and observational checklist of palliative care was filled

by the researcher within 20-30 minute.

Pilot study

A pilot study was carried out on five patients and five nurses within selected criteria to test the tools for clarity, relevance, comprehensiveness, understanding, applicability and ease for implementation. The results of the data obtained from the pilot study helped in modification of the tools, item were then corrected or added as needed. Those who shared in the pilot study were excluded from the main study sample.

Administrative & Ethical consideration:

To carry out this study, the necessary approvals were obtained from the Faculty of Nursing was submitted to general director of Zagazig University hospitals manager then to the director of El batna hospital that included in the study. Permission to carry out the study was obtained from the director of chosen setting after explanation of the purpose of the study. At the initial interview, each potential subject was informed about the nature, purpose, benefits of the study, and informed that his/her participation is voluntary. Confidentiality and anonymity of the subjects were also assured through coding of all data. The researcher assured that the data collected, and information will be confidential and would be used only to improve their health and improved care provided for them, for the purpose of the study.

Statistical analysis:

All collected data were organized, categorized, tabulated, entered, and analyzed by using SPSS (Statistical Package for Social Sciences); a software program version 14, which was applied to frequency tables and statistical significance. The statistical significance and associations were assessed using, the arithmetic mean, the standard deviation (SD), Wilcoxon Signed Ranks test (Z test), Pearson chi-square test (X^2) and Pearson Correlation (r) to detect the relation between the variables. Statistical significance was considered at P-value <0.05 , not significant at P >0.05 , and highly significant at P < 0.001 .

Results:

Table (1): Illustrated Socio-demographic characteristics for the patients with ESRD 51. 4% of study subjects were male is 50 years of age. With mean \pm SD 48.11 ± 13.36 . On other hand 62.9% and 77.2%. of study subjects were unemployed and came from rural areas and 62.9% of the study subjects had enough financial income enough and 74.3% and 71.4% were married and attendance for hemodialysis by other.

Table (2): This table illustrated the relation between laboratory investigation for patients with ESRD throughout the study phases Highly Statistically significant relation were found in investigation among patients undergoing hemodialysis in hemoglobin, S. calcium, blood urea and S. Creatinine, respectively through pre and post intervention ($P < 0.00$).

Table (3): show the relation between the most common health problems according to dialysis symptoms index for patients with ESRD throughout the study phases highly statistically significant relations

between mean score of the most common symptoms fatigue, nausea, itching and dyspnea ($p < 0.01$).

Table (4): Illustrated demographic characteristics of nurse's in hemodialysis unit 45.7% of the study subjects between 25-30 years of age .and 62.9% high education. 91.4% of study subject were married. 74.3% of the study subjects had less than 10 years of nursing experience .and 57.1% of the study subjects had more than 5 years of hemodialysis experience.

Table (5): Total nurse's knowledge regarding palliative care throughout the study phases. 94.3% of study subjects had unsatisfactory total knowledge regarding palliative care in pre program phase, while they had a statistical significant satisfactory knowledge in post & follow up phase 91.4%, 85.7% ($p = 0.000$) for each.

Table (6): illustrated relation between the study total nurse's practices regarding palliative care throughout the study phases. 97.1% of study subjects had unsatisfactory total practice regarding palliative care in pre program phase, while in post program phase 80% of study subjects had satisfactory total practice regarding palliative care in follow up program phase. Also there was highly statistically significant relation between pre – post program phase regarding palliative care. and highly statistically significant relation between pre- follow up phase regarding palliative care at ($p < 0.01$).

Table (7): illustrated highly statistically significant relations between Patient's outcome throughout the study phases. pt out com pre/ post and pt out com pre/fu at $p < 0.01$ respectively.

Discussion:

Nurses must become knowledgeable about palliative care and developed continuing education programmer which support palliative care and hospice nursing

competencies Cherny et al⁽¹⁶⁾ Therefore, the aim of current study was to: evaluate the effect of palliative care program on nurse's knowledge and practice regarding care of patients with End-Stage Renal disease at Zagazig University Hospital.

Regarding to Sociodemographic of the of patients with end stage renal disease, the current study revealed that, the highest percentage of sample more than half of the studied patients at the age ranged from 50 to 60 years. This finding was agreed with Youssif⁽¹⁷⁾ in Ain Shams University and Mohammed⁽¹⁸⁾ in Zagazig University who reported that, approximately two fifths of patients undergoing hemodialysis were in age group ≥ 50 years old years. and this finding was similarly with. Figueiredo et al⁽¹⁹⁾ who reported that, mean age was 51 ± 13 years. This finding may indicate that ESRD is more common among the middle adulthood persons.

As regards to gender, the current study results revealed that more than half of patients were males. This finding is agreed with. Sabry⁽²⁰⁾ in Zagazig University who reported that, males patients' ratio is higher than the female one. In the same contexts, Tabloski⁽²¹⁾ also reported that gender differences had widened since 1990, with greater increases in men than women.

In relation to residence, the current results showed that, about three quarters of the studied patients were from rural areas. This finding matched with. Mohamed⁽²²⁾ in Ain Shams University who found that geographic location affects the incidence of the ESRD and patients' residing in rural area have the highest risk. In my opinion this finding may be due to such a group of patients at high risk for developing ESRD due to following unhealthy food habits, lack of medical care and lack of follow up plan. Whereas the patients' residing near the health care settings comply with

follow up plans than those residences living far from health care settings

According to laboratory investigation the current study revealed that there were highly statistically significant relations among the study patients regard to levels of blood urea and serum Creatinine level in pre and post intervention. This finding is in accordance with. Ahmed ⁽²³⁾ in Menoufiya University who said that the mean blood urea and serum Creatinine post 6 months of teaching module in experimental group was decreased than pre program as compared to control group.

Present study, results documented that, there were highly statistically significant relations among the study patients regard to hemoglobin level in pre and post intervention. This finding was in agreement with. Mohammed ⁽²⁴⁾ who reported that there were statistically significant relations between the study patients regard to levels of hemoglobin investigation in pre and post intervention. As regarding to serum calcium the present study showed that statistically significant relation between the study patients regard to levels of serum calcium investigation in pre and post intervention. This finding was in agreement with. Fareed ⁽²⁵⁾ and who reported that statistical significant in serum calcium of studied patient after implementing the educational program.

According to dialysis symptoms index, the current study revealed that highly statistically significant differences among the study patients regard to most common health problems and total dialysis symptoms(patient outcome) for patient with ESRD throughout study phases. This finding demonstrates that, the dialysis symptoms can be controlled and it's severity can be

decrease to minimal level, and this proved that palliative care program had benefit effects in caring ESRD symptoms and improved patient outcome throughout study phases .This finding was in agreement with Mohammed ⁽²⁴⁾ who reported that, there were highly statistically significant relations were found in severity of cramps, fatigue, itching, total most common symptoms and total dialysis symptoms throughout the study phases.

Regarding years of experience a majority of them had experience less than 10 years. These agree with Hafez ⁽²⁶⁾ who reported that more than half of the nurses had experience less than 10 years. As well as more than half of the nurses had more than 5 years of hemodialysis experience similarly with Mahmoud ⁽²⁷⁾ who mentioned that two third of study subject had more than 5years of specialty experience

As regards to the studied subjects' total knowledge score throughout the study phases, the results of present study revealed that, the most of study subjects had unsatisfactory knowledge level in pre program phase, while the most of them in post program phase and the majority of them in follow up phase had satisfactory knowledge level. Also the results of present study revealed that, there was a highly statistically significant difference between pre / post and pre / follow up program phase as regarding to the total score for studied nurse's knowledge about palliative care and this indicating the improvement of nurse's knowledge based on palliative care program. This result was in agreement with Rogers ⁽²⁸⁾ who stated that nursing education is important part in palliative care.

In the present study, there was a significant improvement of mean score of nurse's knowledge regarding

palliative care. This finding was also in the same line with El-Nagar & Lawend⁽²⁹⁾ who found in her study at menoufiya university about "impact of palliative care education on nurses' knowledge ,attitude and experience regarding care of chronically ill children" that there was significant difference in nurses' knowledge pre-post intervention regarding care of chronically ill children who found that palliative care education can make difference in nurses knowledge and provide information help them to increase their confidence in dealing with the ethical and legal issues they experience.

Regarding to nurses practice about palliative care in this study, there was a significant improvement of mean score of nurse's practice regarding palliative care. This finding was also in the same line with El-Nagar & Lawend⁽²⁹⁾ who found that there were statistically significant difference in pre/ post education relating to symptom management as nausea, vomiting and constipation.

The current study illustrated that, highly statistically significance of nurse's practice regarding palliative care throughout the study phases. This agreed with the study conducted by Young-Ran et al⁽³⁰⁾ who reported the systematic professional training that provides opportunity for education of nurses and palliative care education brought positive effects on the practice of nursing students towards terminal patient care. The present study revealed that, highly statistically significance of nurse's practice regarding palliative care.

Regarding the correlation between nurse's knowledge and practice and patient outcome throughout program phases, the present study showed that there was no statistical significant correlation between level of nurse's

knowledge and practice and patient outcome. This result agreed with Hamad⁽³¹⁾ found that there was no statistical significant correlation between level of knowledge and practice. On the contrary, Metwaly⁽³²⁾, who found a strong positive correlation between nurses' knowledge and their practice. Also, the study of Hussein⁽³³⁾ showed a strong positive correlation between participants' knowledge and their practice in post and follow up periods.

Conclusion:

There were statistically significant differences between nurse's knowledge related to palliative care after program implementation either immediately and 6 months later. Statistically significant differences were found concerning nurse's practice related to palliative care after program implementation either immediately or 6 months later. Statistically significant differences were found concerning patient outcome after program implementation either immediately or 6 months later. The palliative care program to nurses has a profound effect on improving their knowledge and practice as well as improving patient outcome.

Recommendations:

Based on the results of the study the following recommendations were suggested:

- In service training for newly recruited nurses will help to update their knowledge and improve their practice.
- Ongoing end of life education is essential to meet the needs of nursing staff.
- Continuing education in palliative care and collaboration with other organizations and institutions.
- The importance of developing palliative care evidence-based program which should available in

all hospital to be followed by all nurses.

Table (1): Frequency and percentage distribution of Socio-demographic characteristics for the patients with ESRD (n=35).

| Socio-demographic characteristics | No | % |
|-------------------------------------|---------------|------|
| Age : | | |
| ▪ 20 | 9 | 25.8 |
| ▪ 35 | 8 | 22.8 |
| ▪ ≥50 | 18 | 51.4 |
| Mean± SD: | 48.11 ± 13.36 | |
| Range: | 24-75 | |
| Gender: | | |
| ▪ Male | 18 | 51.4 |
| ▪ Female | 17 | 48.6 |
| Marital status : | | |
| ▪ Single | 3 | 8.6 |
| ▪ Married | 26 | 74.3 |
| ▪ Widow | 5 | 14.2 |
| ▪ Divorced | 1 | 2.9 |
| Education level : | | |
| ▪ Illiterate | 20 | 57.2 |
| ▪ Secondary | 11 | 31.4 |
| ▪ High education | 4 | 11.4 |
| Work : | | |
| ▪ Employed | 13 | 37.1 |
| ▪ Unemployed | 22 | 62.9 |
| Monthly Financial income: | | |
| ▪ Enough | 22 | 62.9 |
| ▪ Not enough | 13 | 37.1 |
| Area of residence: | | |
| ▪ Rural | 27 | 77.2 |
| ▪ Urban | 8 | 22.8 |
| Attendance for hemodialysis: | | |
| ▪ By himself | 10 | 28.6 |
| ▪ By Others | 25 | 71.4 |

Table (2): Relation between laboratory investigation for patients with ESRD throughout the study phases (n=35).

| Labe investigation | Pre | Post | Pre / Post | |
|--------------------|-------------|-------------|------------|---------|
| | Mean±SD | Mean±SD | t-test | p-value |
| ▪ Hemoglobin | 7.89± 1.17 | 9.32± 0.93 | 9.726 | .000** |
| ▪ Ph of blood | 7.33± .07 | 7.33± .07 | .764 | .450 |
| ▪ S.sodium | 133± 22.5 | 132.9± 22.5 | 1.435 | .160 |
| ▪ S.potassium | 8.8± 22.6 | 8.7± 22.7 | 1.234 | .226 |
| ▪ S.calcium | 9.10± 2.13 | 9.64± 1.69 | 2.224 | .033* |
| ▪ Blood urea | 123,3± 57.7 | 106.8± 26.2 | 6.492 | .000** |
| ▪ S. Creatinine | 9.39± 2.77 | 8.24± 2,02 | 6.095 | .000** |

**** Highly statistically significant at P < 0.01.**

Table (3): Relation between the most common health problems according to dialysis symptoms index for patients with ESRD throughout the study phases (n=35).

| Most common symptoms | Pre | Post | Follow up | t-test | P-value |
|----------------------|------------|------------|------------|--------|---------|
| | Mean±SD | Mean±SD | Mean±SD | | |
| ▪ Fatigue | 3.77± 0.55 | 1.43±0.88 | 2.03± 0.71 | 12.488 | 0.000** |
| ▪ Nausea | 3.74± 0.95 | 0.94± 1.26 | 2.06±0.94 | 11.578 | 0.000** |
| ▪ Itching | 3.37±1.42 | 0.71±1.27 | 2.06± 0.91 | 9.460 | 0.000** |
| ▪ Dyspnea | 3.14± 1.33 | 0.66± 1.24 | 2.06±0.80 | 8.904 | 0.000** |

**** Highly statistically significant at P < 0.01.**

Table (4): Frequency and percentage distribution of demographic characteristics of nurse's in hemodialysis unit (n=35).

| Demographic characteristics | No | % |
|--|--------------------|------|
| Age : | | |
| ▪ 20-25 | 7 | 20.0 |
| ▪ 25-30 | 16 | 45.7 |
| ▪ >30 | 12 | 34.3 |
| Mean± SD: | 29.05 ±4,15 | |
| Range | 21- 42 | |
| Qualification | 11 | 31.4 |
| ▪ diploma | 2 | 5.7 |
| ▪ nursing institute | 22 | 62.9 |
| ▪ bachelorette of nursing | | |
| Social status : | | |
| ▪ Single | 2 | 5.7 |
| ▪ Married | 32 | 91.4 |
| ▪ Widow and divorced | 1 | 2.9 |
| Experience in nursing | 26 | 74.3 |
| ▪ <10 | 9 | 25.7 |
| ▪ >10 | | |
| Experience in hemodialysis unit | | |
| ▪ < 5 | 15 | 42.9 |
| ▪ >5 | 20 | 57.1 |

Table (5): Relation between the study total nurse's knowledge regarding palliative care throughout the study phases (n=35).

| Total nurse's knowledge regarding palliative care | Pre | | Post | | Follow up | | Pre/Post | | Pre/FU | |
|---|-----|------|------|------|-----------|------|----------|-------|--------|------|
| | No | % | No | % | No | % | Z | P | Z | P |
| Satisfactory | | | | | | | | | | |
| Unsatisfactory | 2 | 5.7 | 32 | 91.4 | 30 | 85.7 | | .000* | | 000* |
| | 33 | 94.3 | 3 | 8.6 | 5 | 14.3 | 5.916 | | 5.436 | |

Table (6): Relation between the study total nurse's practice regarding palliative care throughout the study phases (n=35).

| Total nurses' practice regarding palliative care | Pre | | Post | | Follow up | | Pre/Post | | Pre/FU | |
|--|---------|-------------|---------|-------------|-----------|----------|----------|-------|--------|-------|
| | no | % | No | % | no | % | Z | P | Z | P |
| Satisfactory Unsatisfactory | 1 34 | 2.9 97.1 | 32 3 | 91.4 8.6 | 28 7 | 80 20 | 5.965 | .000* | 5.293 | .000* |

**** Highly statistically significant at P < 0.01.**

Table (7): Relations between Patient's outcomes throughout the study phases

| Total dialysis symptoms index (Pt outcome) | Pre/Post | | Pre/FU | |
|--|----------|-------|--------|-------|
| | t-test | P | t-test | P |
| Total dialysis symptoms index (Pt outcome) | 12.681 | .000* | 10.990 | .000* |

**** Highly statistically significant at P < 0.01.**

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