Assessment of Physical and Psychological Effect of Constant Site and Different Sites of Puncture on Haemodialysis Patients

Thesis

Submitted for Partial Fulfillment of Master Degree
"In Medical Surgical Nursing"

By

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List of Contents

Subject *Page No.*

List of Tables ..... **ii**

List of Figures ..... **iii**

List of Abbreviations ..... **iv**

Abstract ..... **v**

Introduction **1**

Aim of the Study **6**

Review of Literature **7**

Anatomy of the kidney **7**

Chronic renal failure **12**

- Definition of renal failure **12**
- Types of renal failure **13**
  - Acute renal failure **13**
  - Chronic renal failure **16**

    1) Acute renal failure .....
    - Etiology of acute renal failure **14**
    - Manifestation of acute renal failure **14**
    - Management of acute renal failure **14**
    - Complications of acute renal failure **15**

    2) Chronic renal failure .....
    - Stages of chronic kidney disease 16
    - Etiologies 17
    - Manifestation 18
    - Laboratory and diagnostic tests of chronic renal failure 20
    - Management ofchronicrenal failure 21
- Dietary and fluid management 21
- Dialysis therapy 22

- Definition, types, principals of dialysis 23
- Nursing management for hemodialysis patient 27
- Renal replacement.....34

Vascular access **35**

- Introduction.....35
- Definition.....36
- Classification 34

A: Temporary access (different sites).....36

- (Definition, important, types, technique, complications, precautions **37**
- Nursing role in management of vascular access.....37

B: Permanent access (constant site) 40

- (Definition, important, types, technique, complications, precautions 40

Subjects and Methods.....**51**

Results **61**

Discussion.....**81**

Conclusion **92**

Recommendations.....**93**

Summary.....**94**

References.....**100**

Appendices.....**129**

Protocol ..... **—**

Arabic Summary..... **—**

List of Tables

Table No.	Title	Page No.

Tables of Review

Table (1): Classification and Action Plan for Chronic Kidney Disease 16

Table (2): Dietary restriction for patient with renal failure 22

Table (3): Types of hemodialysis access 46

Tables of Results

Table (1): Patients demographic characteristic in both groups under study 63

Table (2): Medical and surgical history of the patients in the both groups in the in the constant and different sites ofpuncture 64

Table (3): Patients total satisfactory level of knowledge regarding renal failure, arterio venous fistula in both groups 66

Table (4): Patients total satisfactory level of knowledge regarding pre,post precautions measures of the dialysis session in both groups 68

Table (5): Assessing level of pain during puncture either in constant or different sites groups based on Numeric pain rating scale 70

Table (6): Assessing level of anxiety during puncture (either in constant or different sites based on Hamilton anxiety rating scale 71

List of Tables (cont..)

Table No.	Title	Page No
Table (7):	Assessing level of depression during puncture either in constant or different sites groups based on beck's scale of depression	72
Table (8):	Physical assessment of the arterio venous fistula complications regarding constant sites and different sites puncture technique in both groups	73
Table (9):	Relation between patients total satisfactory level of knowledge regarding their demographic characteristics in constant and different sites puncture groups	75
Table (10):	Relation between patient's pain level and demographic characteristics in the both groups	76
Table (11):	Relation between patient's anxiety level and demographic characteristics in the both groups.	77
Table (12):	Relation between patient's depression level and demographic characteristics in the both groups	78
Table (13):	Relation between patient's complications of the arterio venous fistula regarding their demographic characteristics in the both groups	79
Table (14):	correlation between patient's total knowledge with pain, anxiety and depression in both groups	80
Table (15):	Correlation between patient's total knowledge and complications	80

List of Figures

Figure No.	Title	Page No

Figures of Review

Figure (1): Anatomy of the Kidney 7
Figure (2): Glomerulo nephritis.....9
Figure (3): Components of the Nephron.....9
Figure (4): Function of the kidney.....11
Figure (5): Normal and diseased kidney.....12
Figure (6): Circuit of blood in HD.....24
Figure (7): Schematic of a hemodialysis circuitr.....26
Figure (8): An arteriovenous fistula or A-V fistula.....41
Figure (9): Arterio-venous graft 42

List of Abbreviations

Abb.	Full term
ATN	Acute Tubular Necrosis
VA	Vascular Access
AVF	Arterio-Venous Fistula
CVC	Acentral Venous Catheters
BUN	Blood Urea Nitrogen
CKD	Chronic Kidney Disease
CRF	Chronic Renal Failure
ESRD	End Stage Renal Disease
GFR	Glomerulo Filtration Rate
HARS	Hamilton Anxiety Rating Scale
HD	Hemodialysis
NRS	Numeric Rating Scale
PD	Peritoneal Dialysis
RF	Renal Failure
RL	Rope Ladder
BH	Buttonhole

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ABSTRACT

End stage renal disease should have replacement therapy for lifelong either hemodialysis or peritoneal dialysis and transplantation .Patient who will be managed by hemodialysis is as a lifelong treatment need vascular access (arterio venous access). Arterio venous access should be punctured every session either in constant or different sites and the both technique will affect the quality of dialysis session and purification of the blood.

The aim of this study is to assess the physical and psychological effect of constant site and different sites of punctures of hemodialysis patients. **Design:** descriptive comparative design was used. **Setting:** this study was conducted in hemodialysis unit at El Demerdash hospital, Ain shams university **subjects:** composed of 100 hemodialysis patients,50 were receiving constant site puncture and another 50 receiving different sites punctures **Tools:** two tools were used for data collection 1- An interview questionnaire: it's composed of six parts demographic data, medical and surgical history, patient knowledge regarding (arterio venous fistula), Assessing pain level, anxiety level and depression level 2-Physical assessment sheet for assessing the local complications of arterio venous fistula as infections ,open sores at the site of puncture, itching, warmth, aneurysm, stenosis, edema, and change the skin shape. The Observation also include the survival of the fistula. **Results**: the study showed statistically difference in preferred type of insertion, Number of survival fistula, and Total number of arterio venous fistula complications in the both groups either in constant site or different sites during puncture. The result showed also Positive correlation and significant between total satisfactory knowledge with pain, anxiety and depression in constant site puncture group. **Conclusion** Changing the site of puncture resulted in: A shorten fistula survival, feeling of anxiety and depression for the patients and also felling of pain during insertion, while using constant site puncture leading to more local complications at the site of insertion. **Recommendations:** psychological support for the haemodialysis patient during puncture if it was from constant site or different sites is needed, follow up continuously.

Key word: Hemodialysis, constant, different sites, puncture, effect.

Introduction

Hemodialysis (HD) is one of the three renal replacement therapies for Chronic Kidney Disease (CKD) (the other two being renal transplantion; PD). It is a medical procedure that uses a special machine (a dialysis machine) to filter waste products from the blood and to restore normal constituents to it. This shuffling of multiple substances is accomplished by virtue of the differences in the rates of their diffusion through a semi-permeable membrane (a dialysis membrane) ***(Bae, Kim, Kim, Jin, Song, Choi, Kim, Kim, Kang, Kim, Yang and Kim, 2015).***

Hemodilaysis (HD) is a medical treatment in which the blood is removed from the body and run through a filter to remove waste products before being returned to the body. This treatment is commonly used to treat people who are experiencing kidney failure, as normally the kidneys perform this function. Depending on the patient and the situation, HD may be performed on an emergency or long-term basis ***(Poch, 2013).***

End stage renal disease is gaining more attention not only in Egypt but worldwide as well .Knowing the fact that the prevalence of ESRD in Egypt is one of the highest in comparison to other countries ***(Campbell-Crofts and Roden, 2017).***

Cannulation of AVF which is done by the traditional rope ladder (RL; also known as sharp needle through different sites) technique, using venepuncture with sharp needles at a new site during each dialysis session, or the buttonhole (BH) also known as blunt needle, through constant sites) technique, involving repeated punctures with blunt needles through established tissue tunnel tracts. The BH technique was initially introduced with hopes of preserving access in short AVFs ***(Krairittichai and Leetrakulpanich, 2012).***

The RL technique usually referred to as site rotation (different site puncture),every time the patient comes in for dialysis, two new sites are chosen for needle placement, cannulation rules for the RL technique include keeping the needles at least 1.5-2 inches apart 1.5 inches from the anastomosis and avoiding the previous sites. There is another cannulation technique called the BH technique (constant site puncture).It requires inserting the needle in to the same sites and at the same depth and angle for each and every cannulation ***(Di Nicolò, Cornacchiari, Mereghetti, Mudoni, 2017).***

The reality is far from this ideal situation but the reliability and efficacy of existing techniques can be improved through the adoption of best practice in care and maintenance. It provides the information needed to educate patients in caring for their vascular access to minimize

infection and other complications ***(Mohamed and Peden, 2017).***

Bacterial infections are the second leading cause of death for patients on dialysis, and renal nurses are ideally placed to detect infection and other complications at an early stage and to make appropriate referrals. They are also best placed to manage patient and staff education and to promote best practice in cannulation and access site care ***(Moore, Besarab, Ajluni, Soi, Peterson, Johnson, Zervos, Adams and Yee, 2014).***

Patient with chronic renal failure are restricted in physical, emotional and social dimensions of life due to their treatment and their comorbid medical conditions. This reduction in the physical functioning of patients with end stage renal failure increases both morbidity and the mortality. In addition this situation reduces the quality of the life of the patients ***(Agarwal and Light, 2011).***

Psychological problems have been observed in HD patients with CRF because of being compelled to follow a dialysis schedule for a long period of time specially, depression and anxiety are so frequently observed, that psychological management is required for most dialysis patients and in many cases, the use of antidepressant or anxiolytic agent is also needed ***(Chan, Cheung, Chan, Chan, Chak andau, 2016).***

Significance of the study

End-stage renal disease (ESRD) is one of the main health problems in Egypt. The HD remains the default therapy for all end stage renal disease (ESRD) and HD continues to have the highest rate of growth of all treatment modalities. Two million worldwide are dependent on dialysis. Moreover, although dialysis can sustain life, it rarely restores health; patients undergoing dialysis have considerable complicationsr ***(Rao, Evans, Wilkie, Fluck and Kumwenda, 2016).***

An AVF is considered the best and most reliable form of access to patient‘s blood supply for HD. However, when compared to other European countries, fewer UK patient start HD with permanent AVF and a smaller proportion of the overall number of HD patients have an AVF ***(Santoro, Benedetto, Mondello, Pipitò, Barillà, Spinelli, Ricciardi, Cernaro and Buemi, 2014).***

Maintaining permanent HD vascular access is an overwhelming problem that has been traditionally considered the major obstacle in dialysis patients. The ideal vascular access would require minimal surgical intervention, would cause minimal physical or psychological dysfunction, that would be consistent in providing effective cannulation and would require little maintenance ***(Parekh, Niyyar and Vachharajani, 2016).***

In Egypt incidence of CRF is 604 patients per million estimated number of patients on dialysis on dialysis is 36400 from the total number of patients with CRF in year 2006,99.1% from this number is on HD, an 0.9% is on PD ***(El-Arbagy, Yassin and Boshra, 2016).***

The prevalence of (ESRD) continue to increases in most countries. It is currently higher than 2000 per million population in Japan, about 1500 per million populationin the United States, and, about 800 per million population in the European Union, 100 per million population in sub Africa and India to about 400 per million population.

More than 600 per million population in Saudi Arabia, and more than 70 percent of patients with ESRD will be residents of developing countries, whose collective economic will account for less than 15 percent of total world economy ***(Soliman, Fathy and Roshd, 2012).***