



Shendi University
Graduate College and scientific Research
Master of Nursing Sciences



Nurses Competence Regarding Vascular Access Care in Dongola Renal Center -2017

*A thesis submitted as partial fulfillment for the requirement of
master degree of medical surgical nursing*

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2017

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

إِنَّ رَبَّكَ يَعْلَمُ أَنَّكَ تَقُومُ أَدْنَىٰ مِنْ ثُلُثِي اللَّيْلِ وَنِصْفَهُ وَثُلُثَهُ وَطَائِفَةٌ
مِنَ الَّذِينَ مَعَكَ وَاللَّهُ يُقَدِّرُ اللَّيْلَ وَالنَّهَارَ عَلِمَ أَنْ لَنْ تُحْصُوهُ فَتَابَ
عَلَيْكُمْ فَاقْرَأُوا مَا تيسَّرَ مِنَ الْقُرْآنِ عَلِمَ أَنْ سَيَكُونُ مِنْكُمْ مَرْضَىٰ
وَأَخْرُونَ يَضْرِبُونَ فِي الْأَرْضِ يَبْتَغُونَ مِنْ فَضْلِ اللَّهِ وَاخْرُونَ يُقَاتِلُونَ
فِي سَبِيلِ اللَّهِ فَاقْرَأُوا مَا تيسَّرَ مِنْهُ وَأَقِيمُوا الصَّلَاةَ وَآتُوا الزَّكَاةَ
وَأَقْرِضُوا اللَّهَ قَرْضًا حَسَنًا وَمَا تُقَدِّمُوا لِأَنْفُسِكُمْ مِنْ خَيْرٍ تَجِدُوهُ عِنْدَ
اللَّهِ هُوَ خَيْرًا وَأَعْظَمَ أَجْرًا وَاسْتَغْفِرُوا اللَّهَ إِنَّ اللَّهَ غَفُورٌ رَحِيمٌ (20)

سورة المزمل

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Dedication

To my mother who gave me her life and sacrificed for our family and have never scrimp with her time and fitness and provided me with affection and love .To the spirit of my father who teaches me his wisdom ,illuminated the way for me, gave me life, hope and optimism and encourage me to learn nursing .
To my brothers and sisters who support me all the time.

To all patients on dialysis, I submit this research to relieve them of suffering we seek their happiness and satisfaction.

Acknowledgement

I would like to express my gratitude to kidney dialysis centre for great help they gave me.

I am very thankful for my ever cooperative supervisor Dr Higazi and any credit of this thesis is mainly result of his advices and discussion. And any defect that remain is my inability to follow directions

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مستخلص البحث

نسبة لانتشار الفشل الكلوى بصورة متزايدة وحوجة المريض الى غسيل دموى بصورة مستمرة لابد من الاهتمام بطرق سحب الدم من الاوعية الدموية لانها اهم ركيزة لنجاح عملية الغسيل الدموى والاستفادة من التقنية لاستخلاص الجسم من السموم والاملاح والماء الزايد لذا لابد من رفع مستوى المعرفة والخبرات للفئة العاملة في مراكز غسيل الكلى مرتكزة فى الممرضين للمحافظة على الاوعية الدموية لتعمل بصورة جيدة على مدى العمر خاليا من حدوث مضاعفات او توقف عملها هذا استنادا على المصادر والمراجع المتوفرة فى هذا المجال.

هدفت هذه الدراسة الى تقييم معرفة الممرضين العاملين فى مراكز غسيل الكلى عن العناية بالاعوية الدموية من فستولا وقرافت وقسطرة لمريض الغسيل الكلى الدموي .

هذه الدراسة الوصفية المقطعية اجريت بمركز غسيل الكلى بمدينة دنقلا شملت الدراسة 17 ممرضا تم جمع البيانات بواسطة استبيان وقائمة تحقق ثم تم تحليل البيانات يدويا بالطرق الاحصائية البسيطة ومن ثم عرضها في جداول واشكال

توصلت الدراسة الى عدة نتائج اهمها : مستوى معرفة الممرضين كانت جيدة فيما يخص انواع عمليات الاعوية الدموية لغسيل الدموى من ناسور او قسطرة وريدية و اماكن وضع ابر الغسيل المناسب مع العملية وتقنية ادخاتها فى الوريد لسحب الدم منه كانت معرفتهم ضعيفة فى كيفية جاهزية الاعوية بعد العملية للاستعمال فى الغسيل وعدد مرات المسموح لمحاولة حقن المريض اذا لم تنجح من المرة الاولى و ايضا معرفة المضاعفات التى تحدث للاعوية وكيفية تفاديها

اما عن مستوى المهارات لديهم فكانت جيدة فى تقييم الاعوية قبل استعمالها و مدى صلاحيتها لتعمل بصورة جيدة او بها اي التهابات وبينما كان مستوي مهارتهم ضعيفة فى استعمال الجونئات المعقمة وعمل النظافة للقسطرة بطريقة سليمة وصحيحة

توصلت الدراسة الى عدة توصيات اهمها استمرارية التعليم عبر توفر دورات تدريبية وورش عمل وتوفر الانترنت لمعرفة احدث التطورات فى هذا المجال عمل بحوث فى مجال غسيل الكلى .

Abstract

Backgrounds: According increased raising end stage renal disease and Patient with acute or chronic kidney failure require dialysis an appropriate vascular access for HD . Vascular access is needed allowing needles to be inserted in order to remove and return blood during haemodialysis .

Objectives in the study assess nurses competence regarding vascular access care in dongle HD unit

Methodology :this descriptive cross sectional study done in Dongla Renal Centre among 17 nurses .the data was collected by questionnaire and check list during the period from April to August 2017. Analyzed by simple manual statistic technique and presented in tables and figures

Result : The study concluded that, nurse's have good knowledge regarding type of fistula ,and arterial and venous needle point and cannulation technique ,and time inserted tow needle in mature. fistula ,while they show poor knowledge regarding maturation fistula and role 6 maturation and time of first cannultion of graft and trial number, exit site dressing and complication (thrombosis , blood leak stenosis).

Combering then performance they have good performance assess vascular access before start dialysis and disconnect patient and poor performance regarding us gloves and dressing central venues heamodialysis catheter

Recommendation :continuous agreement training courses and work shops at level of contrary or national kidney canter in Sudan and continuo education by seminars or lectures at level of professional in the unit,providing continuo education regarding vascular access by study scholarships to interchange information and acquire experience because most available curses about application of machines, the government and manager should pout plane to improve the quality of services and continues monetary and encourage good performance, availability resource for continue education like internet to communicate another canter and international kidney to convoy nouvelles,and encourage research and study about vascular access in HD (infection control ,pt satisfaction about services)

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List of abbreviation

AVF	– arterio venous fistula
AVG	- arterio venous graft
BFR-	blood poumb flow rat
CKD –	chronic kidney diseases
CRF-	chronic renal; failure
ESRD	-end stag renal disease
HD	-hemodialysis
KDOQ	–kidney disease out come qualityninitiative
Kt \ v	dialysis adequacy calculation or clearance exprssedasa
NP	–nurse practitioner
NS-	normal saline
URR	–urea reduction ratio

Chapter one

Backgrounds

Patient with acute or chronic kidney failure require dialysis an appropriate vascular access for HD . vascular access is needed high blood flow to allow blood on extra corporeal circulation system with a blood pump connected to dialysis filter then need for vascular access temporary or permanent ¹.A functioning VA represent a key issue in the management of pt needing HD however AV surgery intervention role to preservation .HD pt increasing aging HD population with more and more ¹

Epidemiology VA History of AV HD

First VA used in HD glaze needle cannula acquire blood the radial artery and re venting it to cubical vein –(1-14)And then trial external Arterio-venous shunt constructed to Teflon un fortunately infected and thrombosis then AV surgery wa achieved by biracial cimino they created side to side anastomosis According statistic 2.358.000.People under gone HD in the world unit VA techniques such as Arterio enous fistula or graft or HA catheter maintaining proper functioning10 -26%in this population for graft and fistula lose their efficiency and pt need Hospitalization catheter lead to death to lack access Another report of the renal registry 2014 is in 24 canter were 2-3 stander deviation blew 65% 2011 31-39 center below 85%In 11 center total us AVF and AVG 80% in 7 countries including UK us catheter 8-6% in uk 17% IN Japan 18% in united states 11 First HD in Sudan 1970 with 56 pt in KTH Pt in HD increasing 500 case be year totak moor than 16 thousand 26 canter in Khartoum 31 in states total 75 canter HD don by AVF 83% AVG 65% 7-3% tunneled catheter 9.1%non tunneled (2)HD canter start in Dongola at 2006 by 1:2 pt increasing to 2017 125 pt 96 by AVF 30 permanent catheter 1pt temporary nurses is 17 (3)ROL OF NUIRS about VA By planning assessing caring Educating pt Evaluation: 1-select VA medalists to long term access Reang of VA to start first dialysis 40% AVF 15 AVG 9-39% tunneled cathrter 12-20% non tunneled

2- asses access to proved quality assessment to performance improvement by quality gaid line by inspection any sing of infection dis colors ecchymosed aneurysms Palpate thrill Intervention by cannulation technique and maintain vessel integrity and appropriar management complication Educate pt to maintain VA (4)

Research questions

1. What are the level of nurse's knowledge about the aintenance and privation of VA complication at selected setting
2. What are the level of nurses performance on the VA

Objectives

a. General objective

To study nurses competence regarding vascular access care in dongle HD unit

b. Specific objective

- 1- To Assess nurses level of knowledge about how to care of vascular access
- 2- To determine nurses skills while caring of vascular access

Rational

Progressive raise in the number patient end stage renal disease and therapy by renal transplantation or dialysis . some pt select for HD because there no chance for transplant economically or health condition pt with HD need continues adequate HD that sussed by several factor the man factor is vascular access that need knowleabl and high expertise nurses staff about access and management properly and decrees complication to lead failure chains to dialysis and death

An affective HD treatment depend on well VA and easy cannulation to draw blood for artificial kidney. AVF and AVG provide the best access for longevity and lowest morbidity and mortality bout possible complication 9 (stenosis thrombosis infection) pt need cvc HD to start dialysis bout moor complication (infection and dead pt .This study in Dongola HD center pt start dialysis always by urgent dialysis us temporal catheter and then refer to Khartoum to insert permanent access catheter moor problem infection such maturation fistula and this last my be complicated and failure cannulation

Nurse in HD should be provide proper care and monstrence VA by solve potential complication and reduced cost tearful the nurse performance under high quality stander by full training about anatomy any tape of access how to monitoring and surveillanc VA and diagnosis stenosis thrombosis' infection and leak catheter and known how to intervention for bleeding or dislocation or sloped and known cannulation technique

Chapter Two

Literature review

This literature result ridding sum book ,study and article about vascular access in hemodialysis to increased alter performance nurses' working in unit dialysis potential optimal out comes

Vascular access for purposes of hemo dialysis is the patient life line it has been started each time there is a real or potential threat to the pt ,technical description of devise to perform long term HD reliable access to the blood circulation is required a fully functional and patent access of a ways for each of following access there or various modification types (5) temporary or permanent access

Type of permanent

Fistula graft and semi permanent cuffed tunneled catheter

Site inserted

- Radio cephalic AV fistula
- Brachia cephalic AV fistula
- Saphaneous vein for arm grafts
- Upper arm autogous saphaneous vein graft
- PTEE graft (7)
- Catheter in jugular vein with exit site on the anterior chest wall

Detention Arterio –venous fistula : it is surgical creation anastomosis between an artery and vein allowing arterial blood to flow through the vein .engorgement and enlargement allowing large bore needles to do inserted for HD patient(6) .chronic HD pt should be ideally referred to surgeon for access when they reach stage 4 of CKD their are 3 type of sugary1- artery and vein connected in their natural position either with a side to side or side artery to vein end anastomosis

Arteriovenous Graft

A synthetic graft implanted subcutaneously and interposed between an artery and a vein allowing needles to be inserted in order to remove and return blood during haemodialysis. It is an alternative form of access for patients with inadequate vessels for the creation and maturation of an arteriovenous fistula where the vein is moved to connect to an artery in end to site .the policies and procedure should address the purpose and function use safety facture monitoring preventive measures pt education and related documentation handling complication management anti coagulant therapy .care post operatively as well as before during and after dialysis .Monitoring and evaluation daily Inspection :the device and connector for damage. Leaks .whole or partial occlusions . etc . verify access patency and flow direction .confirm the use of aseptic technique .monitor anti coagulant and arterial and venous pressures and blood flow rat and assess sing of complication educate pt (6)

1. Watch for signs of bleeding or infection at the site.
2. Listen for a bruit at the site by placing the diaphragm of a stethoscope gently on the site. A bruit is a swishing sound made as the blood passes through the access site.
3. Gently palpate the site for a thrill, which is a buzzing or pulsing feeling that indicates good blood flow through the access site.
4. **Do not take blood pressure, use a tourniquet** draw blood, or start any intravenous lines in the affected arm. Injections should be avoided if possible
5. Teach the patient to keep the site clean and not to bump or cut it.
6. Teach the patient not to lift heavy objects or carry a purse on the access arm.
7. Teach the patient to avoid wearing constrictive clothing or jewelry over the site.
8. Teach the patient to avoid prolonged bending or sleeping on the arm with an access.
9. Notify the physician if signs of bleeding, reduced or infection occur in the access (8)

educate pt during maturation period arm exercises after healing anastomosis to increase maturation and good blood flow **monthly monitors** . complication associated with puncture eg infection or mechanical failure thrombosis dislodgements and hemorrhage .aneurysm arterial insufficiency definitions Graft; it is synthetic graft implanted sub cutaneously and interposed between an artery and vein allowing needle material graft may be straight looped or curved configuration . AVF – AVG suitable for cannulation by adequate flow .wall thickness .diameter

Maturation of fistula by 6 rule

Be a minimum of 6 mm in diameter with discernible margins when a tourniquet is in place. Be less than 6 mm deep . Be evaluated for nonmaturation 4–6 weeks after surgical creation if it does not meet the above criteria . Sutures to be removed 7-10 days post AV Fistula Formation.. Allow the arteriovenous fistula to mature for 3-4 months after formation and before cannulation. . Allow AVG 3-6 weeks after placement before cannulation, this will allow swelling to subside. Ensure the patient information leaflet has been given to the patient. Educate the patient on exercises which will enhance maturation of arteriovenous fistula. These exercises will increase the rate of AVF maturation by increasing blood flow causing the vein to engorge and arterialise.

care and management AVF---AVG :

A-assess pt access by .observation. redness. Edema. sites

B-P palpation: track of the access .thrill. Pulse

C-Auscultation: bruit .listen to entire access with stethoscope every treatment until the cannulation regimes established not changes is sound .characteristics bruit

well functioning or obstructed .stenosis may have adiscontinuous and pulse like . and osculate direction of flow

D-cannulation:skin prepration

Pt should wash their hand and access with anti bacterial soap and water before coming to their bed Nurse use aseptic technique cleanse skin by using cline wipes

Do not touch skin after cleaning area with un gloved hand .use local anesthetic .emlea cream in me tap should be applied to the access

Needle size selection and select arterial needle pointing

Anti grade in the direction of blood flow Retrograde - arterial needle pointing toward the arteril anastomosi It is the direction of the blood flow that determines the needle placement. Thisi s why the venous needle must always point toward the venous retan Ultrasound mapping for depth and size maybe considered prior cannulation

Securing/Supporting the Access:

Use the “three point technique” – Stabilize the access with the thumb and

Fore finger. Pull the skin taut towards always insert needle bevel up black eye of the needle facing the cannulator by angles of ent20-35 in AVF and 45 in AVG or carefully assess debth by palpat and nous and use tourniquet adjust cannulation angle according assess Pout blood flow mor than 300 ml/mi with needle 17 g300-350 in 16 g 350-450 in 15 g

Cannulation technique: 2 type

Rope leader technique . cannulation site are rotated up and down the AVF tu use it entive longh . it is classic technique used in most centers . straight areas of least for each cannulation site avoid aneurysm and flat or thinned out areas enal Insert the needles into the arterial and venous sites you have chosen, using an angle of 20 – 35 degrees. When flashback is observed, level out your needlea nd advance into the centre of the vessel. Never flip needles; this may lead to enlargement of the entrance site. Secure needles: Place tape over the wings and insertion site. Ensure Bloodlines are taped to the patient’s wrist or arm. **AV Fistula needles must be visible throughout dialysis.** Confirm good flows with a syringe.

Continue “Connection” procedure as per hospital policy. Map the fistula and cannulation sites used, report any problems

NEEDLING THE NEW AVF

Before Cannulation

Ensure the patient has washed their hands & access with antibacterial soap Prepare your trolley for the insertion of the AV fistula needles.

Check the most recent INR result, if patient is on warfarin. If none available send a blood sample (stat) to3 .7.1 Patient that has no other access: For the **first week** Use two 17g needles. Always stay at least 1.5-2” from the anastomosis. Ensure arterial and venous sites are 1.5” apart Keep the blood flow between 200-250mls/min as tolerated Remove needles at the same angle as insertion. **Week two** If the first week is successful, cannulate with a 16g needle Try to achieve blood flow between 250-300 mls/minm **Week three:** Cannulate with 16g needles Insert two needles selecting new arterial and venous sites Ensure arterial and venous sites are 1.5” apart Follow the procedure for the rope ladder technique after week three using 15Gneedles. Report any problems to the nephlogist /team check the patients .ProcedureNeedling the mature AVF Follow the procedure for the rope ladder.3.7.4. Accepted attempts at

needling a patient's fistula Refer to step 3.4 in assessing the patient's access. It is each nurse's responsibility to ascertain their ability in cannulating each patient's fistula.

The patient should not have more than two needle attempts by the same nurse at the one site .New fistulas should be cannulated by experienced staffs who demonstrate best practice technique **ANTICOAGULATION MANAGEMENT.**

Heparin & Inohep/Clexane should be administered as prescribed. Patients on warfarin should have their INR results monitored weekly or more frequently as required Heparin bolus and infusion should be decreased to half the dose for the first week to prevent bleed into the surrounding tissues.Document any clotting of the dialyser and venous chamber post dialysis, liaise with the nurse in charge/medical team in altering the anticoagulation dosage. Document any side effects the patient may experience while having the anticoagulation on dialysis and notify the medical team. Heparin free dialysis may be initiated pre and post surgery & as directed by the medical team. Flush the circuit hourly with a 100mls of normal saline, observing the dialyser and venous chamber for signs of clotting. Allow for this extra fluid in the ultrafiltration calculations.

CVC REMOVAL INSTRUCTIONS

Once the patient has six successful treatments (getting two needles in, no infiltrations and reaching the prescribed blood flow throughout treatment for six treatments) with the AVF, refer to team for catheter removal.□Liase with the medical team in organising an appointment in the renal day care unit for removal of the CVC.

□Should removal of the CVC coincide with the patient's dialysis day, ensure the patient has a heparin free dialysis. Take pre procedure bloods, CBC, U&E, INR, type & Screen. Liase with the patient's transport

2 –type cannulation technique Button hole technique No new patients to be started on buttonhole technique. The guidelines are to guide practice for patients who have been permitted by the consultants to remain onbuttonhole

technique.What is the Buttonhole technique Buttonhole technique is when we cannulate the patient's AV Fistula in the exact same spot using the exact same angle and dept every time the needles are inserted **3.10.1 Before Cannulation**Gauze, 10ml syringes x2, saline solution for priming needle tubing, bare cannula, adapter if blood samples are required. Tape to secure the needles. **3.10.2 Establish the track**□Same cannulator for approx 8 cannulations for non-diabetic patients and 12 sessions for diabetic patients. (during this period sharp needles are used)□Always cannulate using the exact same spot, same angle and dept for each cannulation.□When the track is established, change to blunt needles – then other staff cannulat Procedure .aseptic technique and good assessing access For the first cannulation choose your arterial and venous site.□**Scab removal:** Ensure scabs are removed prior to cannulation Soak the patient's scab, by soaking gauze in saline and leave for 2 minutes, gently rub the patient's skin to remove the scab.2. Encourage the patient to tape an alcohol swab to their scab prior to arrival into the dialysis unit and remove on arrival.□Disinfect your hands using Hibiscrub or using the alcohol gel.□Put on sterile gloves.□Cleanse the patient's arterial and venous sites with the solution used as per hospital policy, and allow drying.□Prime the AVF needles with the saline solution.□*Always use a tourniquet.*□Using the 3 point technique, stabilize the access: pull the skin taut

towards the cannulator while compressing the dermis and epidermis. This allows for easier cannulation and temporary pain interruption

. **For the first cannulation:** Insert the needles into the arterial and venous sites you have chosen, using an angle of 20 – 35 degrees, noting the depth. When flashback is observed, level out your needle and advance into the centre of the vessel. **On each alternative cannulation:** Insert the needles into the exact same spot, using the exact same angle and depth. When flashback is observed, level out your needle and advance into the centre of the vessel. **Never flip needles;** this may lead to enlargement of the track causing blood to seep out around the needle.

Troubleshooting

If the sites you have chosen are not working, abandon the site and choose a new site. If, after the weekend, you have trouble with blunt needles, switch back to sharp needles for a couple of treatments being careful you stay in the track. If you have to use a different site (other than buttonhole) stay at least 3/4" away from the buttonhole site to prevent damage to the buttonhole track (If the patient is hospitalized in a different hospital) Bleeding around the needles during dialysis could be caused by stretching the track or by cutting the track with sharp needles during cannulation.

6 Advantages to the patient Less painful for the patient. Fewer infiltrations Fewer missed cannulations. No aneurysms. Decreasing these problems can extend the life of the AVF. Cannulation AVG by angle 45 bevel up all pt with AVG cannulat by rope leader utilis the entire length ao access **.do not use toarniquet .**

POST ANGIOPLASTY (AVF/AVG)

Observe the area for swelling, pain, & infection.

Needle remove : **Apply gauze dressing without pressure.** **Remove needle at insertion angle.** **Apply pressure with two fingers.** **Do not apply excessive pressure.** **Hold for 10 – 12 mins. No peeking.** **Apply adhesive bandage.**
isposed needle in sharp continuer (6)

Problem and complication of AVF and VGNEVRE DISARM THE ARTERIAL PRESSURE TRANSDUCER b/c leede to

hemolysis .decreased delivered blood flow and inadequate dialysis ***Infiltration of a new AVF:*** If the fistula infiltrates let it rest for 1 week then go back to smaller gauge needles. If resting is not possible, the next cannulation should be above the site of infiltration. Notify /Nephrologist Educate patient on understanding that infiltration & haematoma could occur most likely during the first two week of using the access. Educate patient regarding limiting arm movement while on hemodialysis. If it infiltrates a second time rest for 2 weeks and then reduce needle size. To prevent further damage to fistula, and allow healing. Notify/Nephrologist If infiltration occurs a third time, notify , Nephrologist & Surgeon. Consecutive infiltration could signify a problem with the fistula which requires radiological or surgical intervention

Infiltration of the mature AVF: If infiltration occurs before dialysis remove the needle If Infiltration occurs after heparinisation, leave the needle in place and

place another needle above the infiltrate site. □ Place ice on the site while patient is on haemodialysis. Apply a poultice dressing post dialysis. ***Infiltration of the AVG:*** □ Remove the needle immediately. □ Apply ice. □ Contact the nephrology team. □ Administer analgesia as prescribed. □ Need for vascular consult sent urgent □ Apply a poultice dressing post dialysis

How to prevent infiltration □ Check for flashback and aspirate □ Flush with NSS to ensure the needle flushes with ease and there are no signs or symptoms of infiltration □ Saline causes much less damage and discomfort than blood if an infiltration



(9)

2. Needle dislodgement

□ Stop the blood pump. □ Direct the patient to apply pressure to the needle dislodgement site with gauze. □ Use the PPE as per Standard precautions. Dispose of the needle in the sharps bin. □ Assess the blood loss. Check the patient's vital signs. □ Put the dialysis blood lines into recirculation. □ Ask for assistance if required. Resite a needle into same spot if possible, if not hold needle site until bleeding has stopped and insert a needle into a new site. □ Send a stat CBC to the lab and type & screen depending on blood loss. Inform the patient's medical team. □ Re-Educate patient on the dangers

Poor flows □ Defined as arterial pressure <250mmhg. Poor flows may be as a result of blood volume depletion, outrule hypotension. Check the patient's vital signs. May be due to location or position of needle(s). May need to change direction of arterial needle. □ Stop blood pump, manipulate arterial needle. □ Establish cause of poor blood flow □ Assess, auscultate and palpate AVF. □ Determine a new site which will give good blood flows, insert an AV F needle. □ If unable to establish a new site, contact the medical team & obtain a U&E. □ Liase with the medical team in rganising the patient for a Doppler ultrasound and temporary access if required.

4 Blood leak around the needle. May be caused by flipping of the needles post insertion, this should be avoided. Note the amount of blood loss, place gauze/Kaltostat around the needle to absorb the soakage. □ Select new needle sites next dialysis

. POST CANNULATION COMPLICATIONS Stenosis



(9)

.1 Monitoring for stenosis

Stenoses should be treated if the diameter is reduced by >50% and is accompanied with a reduction in access flow or in measured dialysis dose

Causes of Stenosis (9) Turbulence Pseudo aneurysm formation Needle stick injury to vessel wall. Singes of stenosis clotting of extra corporeal circulation 2 or moor time/month .persisting swollen access extremity . changes in bruit or thirell became pulse like blood squirts out during cannulation .chang KT/V and URR , recirculation .prolong post dialysis bleeding ,frequent episode of access thrombosis . difficult needle placement .elevated venus pressure

Management of stenosis Liaise with team in arranging the patient for corrective treatment:ercutaneous trans-luminal angioplasty is the first treatment option for venous outflow stenosis .Radiological intervention Surgical revision.Temporary access

2-steal syndrome?



(9)

Decreased blood supply to the hand. Causes hypoxia (lack of oxygen) to the tissues of the hand resulting in severe pain. Neurologic damage to the hand can occur. □ In steal syndrome, the extremity will be cold, capillary refill will decrease, and the radial artery will not be palpable

Diagnosis of Steal Syndrome □ Clinical investigation –Allen test. □ Non invasive imaging tests: measurement of digital pressures, access flow measurements, Ultrasonography of forearm arteries. □ Angiography

Management of Steal Syndrome: □ Early referral to the medical team.

Enhancement of arterial inflow, access flow reduction and/or distal revascularization procedures are the therapeutic options. □ Liaise with the team in conducting surgical revision of access. □ When all above methods fail, access ligation should be considered. Liaise with the team in effective patient pain control. □ □ Encourage patient to wear a glove on affected extremity

3-Infection



(9)

prevent by hand wash before ,after and between pts symptoms: redness .pyrexia ,swelling .exudate tender ness .pain

Management: maintain aseptic and avoid cannulation in inflamed areas tak swab for C/S notify nephrologist tak CBC to WBCS .re educate pt important hygiene .if pt symptomatic administer anti biotic for 2 week excision AVF requird infected thrombosis or embolism in AVG should be admitted and treated anti biotic IV 2 week and continuo orally 4 week Pt Asymptomatic infected without fever observe access and treated 2 week

Thrombosis:



(9)

early cause .surgical, and technical issues late cause poor flow ,hypotentons hyper coagulability .pt compressing while sleeping Signs : absence of thrill and brui Management: inform nephrologists intervention thrombolysis or surgical thrombectomy

Aneurysms & Pseudoaneurysm Aneurysm?

An aneurysm is a weak spot in the wall of the access. Aneurysms can occur if needles are inserted too often into the same area of a fistula pseudoaneurysm?

Pseudoaneurysm is a collection of blood in the tissue surrounding an access.

Can occur if improper control of bleeding after the dialysis needles are removed or access damaged by repeated cannulation in the same area.

Management of an Aneurysm & Pseudoaneurysm:

Avoid cannulating the patient near an aneurysm or pseudoaneurysm.

Liase with the nephrology team in arranging a Doppler ultrasound.

Liase with the surgical team if surgical revision is deemed necessary.

Central venous catheter for HD

The second

extension tube is to facilitate the return of blood to the body. The catheter will be dual lumen, having two extension tubes. One extension tube is for the removal of blood from the body (red-arterial). The second extension tube is to facilitate the return of the blood to the body as it is treated (blue-venous). tube is for the removal of blood from the body (red-arterial). The blood to the body as it is treated (10) Double lumened uncuffed non tunneled soft catheters inserted in the Internal Jugular vein should be the temporary access of choice either when 1. A permanent access has been created and is expected to mature 2 The 2006 National Kidney Foundation Dialysis Outcomes Quality Initiative (K/DOQI) guidelines recommend, after internal jugular or subclavian vein insertion, identifying radiographically any potential complications and confirming tip placement prior to either anticoagulation or catheter use. Nowadays, the subclavian catheters should be generally avoided because of the high incidence of vein stenosis and thrombosis. The maximum blood flow with this class of catheters is usually blood pump speeds of 300 mL/min, with an actual blood flow of 250 mL/min or less. Femoral catheters have to be at least 18 to 25 cm in length in order to have lower recirculation. The routine use-life (12) of these catheters varies depending on the site of insertion. Generally speaking, internal jugular catheters are suitable for two to three weeks of use, while femoral catheters are usually used for a single treatment (ambulatory patients) or for three to seven days in bed bound patients. However, the KDOQI guidelines suggest that non-cuffed, non tunneled catheters should be used for less than one week. Tunneled catheters should be (10) placed for those who require dialysis for longer than one week trans hepatic catheter only use in pt with a not other medical option, not primary means of cvc long term HD cannulation of the inferior venacava, common in children, risk hepatic vein thrombosis and dislodgment cardiac tamponade (11) Non cuffed □□temporary • Chest x-ray needed to confirm placement. • Emergent start. • Needs sutures at all times • Higher infection rates than cuffed catheters. • Dressing change every run, occlusive preferred (10). Tunneled central vein catheters are often used as temporary accesses for hemodialysis. Tunneled catheters can be placed at several sites. The preferred site is the right internal jugular vein. Other sites often used are the left internal jugular vein and femoral vein. Subclavian vein is accessed only if the possibility of placing an ipsilateral permanent

□□The catheter will be dual lumen, having two extension tubes. One extension tube is for the removal of blood from the body (red-arterial). The second extension tube is to facilitate the return of the blood to the body as it is treated (blue-venous). tube is for the removal of blood from the body (red-arterial). The blood to the body as it is treated (10) Double lumened uncuffed non tunneled soft catheters inserted in the Internal Jugular vein should be the temporary access of choice either when 1. A permanent access has been created and is expected to mature 2 The 2006 National Kidney Foundation Dialysis Outcomes Quality Initiative (K/DOQI) guidelines recommend, after internal jugular or subclavian vein insertion, identifying radiographically any potential complications and confirming tip placement prior to either anticoagulation or catheter use. Nowadays, the subclavian catheters should be generally avoided because of the high incidence of vein stenosis and thrombosis. The maximum blood flow with this class of catheters is usually blood pump speeds of 300 mL/min, with an actual blood flow of 250 mL/min or less. Femoral catheters have to be at least 18 to 25 cm in length in order to have lower recirculation. The routine use-life (12) of these catheters varies depending on the site of insertion. Generally speaking, internal jugular catheters are suitable for two to three weeks of use, while femoral catheters are usually used for a single treatment (ambulatory patients) or for three to seven days in bed bound patients. However, the KDOQI guidelines suggest that non-cuffed, non tunneled catheters should be used for less than one week. Tunneled catheters should be (10) placed for those who require dialysis for longer than one week trans hepatic catheter only use in pt with a not other medical option, not primary means of cvc long term HD cannulation of the inferior venacava, common in children, risk hepatic vein thrombosis and dislodgment cardiac tamponade (11) Non cuffed □□temporary • Chest x-ray needed to confirm placement. • Emergent start. • Needs sutures at all times • Higher infection rates than cuffed catheters. • Dressing change every run, occlusive preferred (10). Tunneled central vein catheters are often used as temporary accesses for hemodialysis. Tunneled catheters can be placed at several sites. The preferred site is the right internal jugular vein. Other sites often used are the left internal jugular vein and femoral vein. Subclavian vein is accessed only if the possibility of placing an ipsilateral permanent

arteriovenous access in the upper extremity is unavailable. The risk of developing central vein stenosis is very high with a subclavian vein catheter. Rarely, tunneled catheters are placed in the inferior vena cava through a translumbar or transhepatic approach.(14) Cuffed • Temporary bridge to an alternate access site• Permanent use when no other access option exists. • Cuff acts as a barrier to infections. • Connective tissue grows into the cuff & anchors the catheter in place (fibroses). • After a period of time sutures are not needed to keep catheter anchored. • Once the tunnel is well healed, a transparent dressing may be used for up to 7 days at a time. • Softer CVC material creates less tissue stress & better longevity. • Usually inserted under fluoroscopy for exact placement. Inform the dialysis nursing staff as early as possible that the patient will require haemodialysis Ensure that the patient has received the patient information leaflet 'Insertion of a femoral dialysis line'. In general, the right or left femoral vein should be used. If these are not suitable / possible, the next best choice is the right internal jugular vein. Ensure recent blood tests are performed prior to procedure, including U+E, CBC, Coag & T+S. Prepare the sterile trolley for the procedure (See appendix Chloraprep solution to be used to cleanse the insertion site, allow to air dry. The nurse will assist the Renal Registrar throughout the procedure.

Ultrasound guidance should be used to direct insertion of the catheter and to locate the vein and minimise insertion-related complications. The Ultrasound Note: For permanent catheter insertion the site of choice is the internal jugular but the subclavian and femoral veins are also used depending on the needs of the patient.

Post Insertion: Record patient's vital signs as per hospital policy. Inform medical staff of any abnormalities. Observe exit site for any signs of bleeding Apply pressure to exit site if bleeding occurs and inform medical staff. Reassure patient if complication does occur. Observe for verbal and non-verbal signs of pain at exit site and administer analgesia as prescribed. The patient should maintain bed rest for approximately 2 hours post-insertion. Document the type and location of catheter in nursing care plan and on the central venous catheter record sheet. A Chest Xray is only required if temporary access is internal jugular or subclavian

Permanent catheter placement:

The procedure should be explained to the patient and their family, ensure the patient has received the patient information leaflet on 'CVC insertion' Ensure informed consent is obtained by medical staff and signed by the patient. Ensure recent blood tests are performed prior to procedure, including U+E, CBC, Coag & T+S. Fast the patient from 12 midnight. Complete the pre-operative checklist. Patient should be educated on the care and management of their central venous catheter. The patient education leaflet should be provided to the patient prior to procedure. Medical team to Fill in CVC insertion form and document procedure in patients medical notes

Removal of permanent Catheters:

Indications for catheter removal:

Positive blood cultures indicating catheter sepsis. Positive wound swab from the insertion site. Generalised septicaemia. A leaking or damaged catheter (which cannot be repaired). Blockage Termination of therapy, CVC has not been used in 3 months

Working AVF, Remove CVC 2-4 weeks once cannulation has been successfully implemented. Successful kidney transplant so catheter no longer needed. Permanent, cuffed and tunneled catheters are removed by medical personnel ONLY due to the risk of catheter breaking and subsequently resulting in a catheter embolism. The patient is placed in the supine or Trendelenberg position and full aseptic technique is employed. Usually the cuff of the catheter has to be exposed and freed from granulation tissue to facilitate removal. Note 1: Ideally the patient will have been off Clopidogrel (Plavix) or aspirin for 7-10 days before removal of the permanent catheter but this may not be feasible if urgent removal is required (e.g. sepsis) Note 2: Ideally the patient will have INR <1.8 and APTT <50 and platelets >80 before removal of the permanent catheter but this may not be feasible if urgent removal is required. Bathing, showering Patient should be informed that exit site should not be submerged in water. If transparent dressing is intact patient can shower. If patient has dry dressing or no dressing, they can shower after 21 days as follows:

- o Remove dry dressing immediately after showering.
- o Dry exit site after shower using sterile gauze and non – touch technique.
- o Clean exit site as usual & apply new dressing. Swimming is not advised.

Removal of sutures: Depends on the type of CVC in situ. Temporary non tunneled catheter.

- o Must be secured by sutures at all times, as long as the catheter is in situ.

Permanent Tunneled catheter

- o Permanent femoral and transhepatic CVC catheters must be secured with sutures as long as the line is in situ.
- o Permanent Jugular & subclavian Catheters

entry/puncture site: Sutures should be removed in 7-10 days.

Exit site: remove at 21 days options not a primary means of □ For Ashsplit Catheters removed exit site sutures in 6 weeks

Management the CVC for haemodialysis

Masks (patient and nurse) and washes hands.

2. Wears non-sterile gloves and carefully loosens the old dressing. Tries to minimize pulling or tugging of the dressing from around the exit site.

3. Opens gauze around catheter lumens. 3.1. Places sterile 4x8 under catheter lumens and exit site while removes old gauze dressing. Places sterile 4x8 on top of lumens and exit site 3.2. Places prescribed antiseptic on 4x4. Cleans surrounding skin and under lumens as outlined in procedure. Allows to dry completely.

4. Removes gloves and washes hands. Sets up the sterile dressing tray; adds supplies.

4.1. Removes top 4x8 gauze from lumens. Puts on sterile gloves.

4.2. Places sterile barrier under the lumens. (10)

Scrubs exit site using friction to the skin and cleaning in a horizontal (side to side) plane extending 5cm from the catheter exit site, then cleaning in a vertical (up and down) plane, then cleaning the skin beginning at the insertion site with a circular motion (middle to outward) extended in a 5cm radius for 30 seconds, with up to 2 minutes drying time. Allows to dry completely.

5.1. Wraps and cleans catheter bifurcation with 2% chlorhexidine

gluconate/70% Isopropyl alcohol moistened gauze. Air dry completely before applying dressing.

6. Wraps and cleans each catheter lumens and TEGO connector with cleansing solution moistened gauze. Removes gauze. Allows to air dry.

6.1. Ensures CVC lumen clamp is closed. Then using aseptic technique, removes TEGO connector from CVC lumen and attaches new TEGO connector to CVC lumen. 6.2. Applies a thin film of Polysporin® triple ointment to exit site (as prescribed).

7. Applies a transparent or gauze dressing (as applicable) to cover the catheter exit site and hub. Ensures the catheter exit site and hub are visualized in the transparent window of the dressing. Secures the mepore segment of the tegaderm dressing under both catheter lumens by overlapping the mepore edges. Reinforces the mepore segment under the catheter lumens with the reinforcement mepore strips provided with the dressing. Applies to the catheter hub the second mepore reinforcement strip over the top of the transparent dressing at the hub. 7.1. Uses no touch technique throughout the procedure

8. Wraps the catheter lumens with sterile gauze and tape(13)

Disconnecting the CVC from haemodialysis

- Decontaminate hands (Wash hands or use alcohol gel) Decontaminate trolley
 - Prepare trolley for disconnecting the CVC: Off pack **or** dressing pack, 2mls syringes x 2, 10mls syringes x 2, bare cannula, 2% chlorhexidine, NACL x 2, heparin 5000 iu/ml **or Sodium Citrate lock**, access cannula. (Additional syringes if blood samples are required.) Check heparin vial with 2nd nurse.
 - Decontaminate hands and apply sterile gloves Draw up NACL flush in 10ml syringe x 2, **heparin lock or Sodium citrate lock (As per length of each lumen)** Rub sterile gauze soaked with chlorhexidine/Clinell wipes around catheter hubs/Tego Bungs and place catheter on a sterile drape. Stop blood pump using sterile gauze. Clamp arterial lines (HD line and CVC line) Gloves are no longer sterile. Disconnect arterial HD line from CVC line and attach 10mls of NACL to CVC line using a non touch technique, flush CVC line. Attach arterial HD line to the Y connector, open clamps and start blood pump with sterile gauze and commence wash back procedure
 - Stop blood pump using sterile gauze and clamp venous clamps. Remove gloves and decontaminate hands Apply sterile gloves. Treat each lumen separately (10)
- CVC Complications. Post-insertion bleeding Pneumothorax Hemothorax • Air embolus • Cardiac tamponade • Malposition • Kinking CVC Complication: Pneumothorax .*Symptoms:* • SOB • Sharp pain in the chest • Sudden shortness of breath • Painful breathing • Tightness in the chest • Dry coughing • Cyanosis *What to do?* • Supportive treatment as per shock • Oxygen administration • If physician not already in attendance, call STAT

CVC Complication: Hemothorax

Tachypnea • Dyspnea • Cyanosis • Decreased or absent breath sounds on affected side • Tracheal deviation • Dull resonance on percussion • Unequal chest rise • Tachycardia Hypotension • Pale, cool, clammy skin • Possibly subcutaneous emphysema • Narrowing pulse pressure *What to do?* • Supportive treatment as per shock • Oxygen administration If physician not already in attendance, call STAT

CVC Complication: Air Embolus•

Chest pain • Dyspnea • Coughing • Cyanosis Visual problems Confusion • emiparesis • Death *What to do?* • Turn patient on LEFT side with head DOWN (Trendelenberg) Administer 100% oxygen If physician not already in attendance, call STAT

CVC Complication: Cardiac Tamponade

Sharp chest pain, often related to pericarditis, dissipating by the time the more severe cardiac tamponade condition develops • SOB, sometimes as a result of breathing shallowly on purpose to avoid chest pain but usually, once cardiac amponade has developed, related to reduced blood flow • Forward-leaning posture due to pain &/or the need to catch one's breath • Weakness &/or fatigue • Bluish tint to skin (*cyanosis*) • Anxiety Swelling in the abdomen *What to do?* • Supportive treatment as per shock • Oxygen administration • If physician not already in attendance, call STAT This is a medical emergency likely requiring pericardiocentesis & possibly cardiac window

CVC Complication: Malposition

Unable to aspirate from either lumen • May or may not be able to flush lumens

• High arterial pressures; low venous pressures • Kinked catheter curve

What to do? • Do not use at all if visibly malpositioned • Notify VA Nurse or Nephrologist • CXR for position • May run lines reversed if able & clearance adequate • May require new catheter

CVC Complication: Kinking

May present the same as malposition • Aspiration likely sticky or absent from one or both lumens • Flushing likely possible *What to do?* • CXR to confirm placement & identify kinking • Will likely need new catheter • Notify VA Nurse or Nephrologist

CVC Complication: Infection

Febrile Chills & rigor – Redness, tenderness & possibly drainage at CVC site – Elevated WBC – Positive cultures Infection resulted from a reaction to dressing adhesives. Blisters formed & caused erosion of tissue to the depth of the catheter. Patient has severe diabetes & was prone to related complications. *What to do?* • Monitor temperature Give Tylenol • Get blood cultures Careful hygiene & catheter care • Keep patient comfortable – warm blankets Review need for catheter removal

CVC Complication: Recirculation:

Increase in uremic symptoms • Loss of appetite • Malaise • Weakness • Itch • Halitosis • Increase in lab values *What to do* • Rule out possible reasons: – Kinked lines – Thrombus formation: fibrin sheath Malposition – Blood pump too aggressive •tPA • Review need for new catheter – Drop in PRU, Kt/V, IDY

CVC Complication: Thrombus: Intraluminal • Mural • Fibrin tail • Fibrin Sheath *What to do?* • tPA – push/pause method or 60 minute infusion in 1st hour of HD • Review possibility of fibrin stripping – invasive procedure with mixed results • Review need for new catheter **Catheter Degradation** Hub cracks • Clamp failure • Limb crimping • Cuff erosion • Cuff separation • Cuff extrusion • Pin holes *What to do?* Depending on the problem: Change clamps • Change hubs • Have catheter replaced • Visually inspect exit site for cuff extrusion • Ensure correct cleaning solution • Be alert for unusual blood or air leaks

CVC Complication: Stenosis : Long term placement or where CVC is placed can influence the development of upstream (central venous) stenosis. • Stenosis may cause problems with – CVC function – Collateral vessel development Prolonged bleeding – Venous congestion Treatment :- angioplasty – removal of CVC if present;– ligation of affected peripheral vascular access. (9)

Chapter Three

Research Methodology

1. Study Design :

It is a descriptive cross sectional done in **Dongla** Renal Centre to assess performance of nurses regarding vacular access for pt in HD during the period from April to August 2017.

2. Study Area:

Dongola, is the capital of the state of Northern in Sudan, on the banks of the Nile.

Weather: 90°F (32°C), Wind S at 3 mph (5 km/h), 39% Humidity. Population: 13,473 (2010). Number of airports: 1

3. Study Setting :

Dongla Renal Centre

The renal center is of one the departments of Dongla ,Specialized Hospital .which has 4 specializations namely obs&gyn , pediatrics , surgery and medicine which includes GIT , chest and renal.

The renal center was established in 2006 now it served about 125 pt. the center is equipped with 15 dialysis machines one for HBV and one for HCV. It adopts 3 shifts system besides serving the emergency cases. The total number of nurse staff is about 17 plus head nurse and 3 medical officers, psychologist, social worker statistical, medical director in addition to renal medicine consultant.

Also the center has some assets which is one car and one ampulla and: computers, printers.

4. Study population :

All staff working in Dongla Spealized Hospital is included in the study. Excluding criteria are national services and trainees and nurse in holidays

5. Study sampling and sample size

a. Sampling techniques :

All nurses were |role

b. Sample size: 17 nurses participate in the study

6. Data collection:

1. Two tools used questionnaire and check list 1-Questionnaire **used fill closed in end question was developing by the researcher** based in available literature.

Composed of 21 question divided in parts degree of qualifying knowledgably level and skill performance

2- Check list observational

Was mode vied by the researcher in available literature by rat done and not done according facilities .composed .Scoring system by steps

3- Scoring system questioner according knowledge (good.Satisfaction or poor)

Participate answer more than 75% is exultant or good Satisfaction 51-74% Poor lees than 50%

7. Data collection technique :

Data was collection 2week during 3 shift bar day (morning after noon and night shift) during change of shift and rest time

The prepuce study explainsverbal consent to allow or reject to fill questioners and allow observing him /her.

8. Data analysis:

Test the level of knowledge with the experience if it is good or moderate or low. The data was coded simple manually with statistical techniques then using computerizes soft wire. . and percentage and frequency took out tables and figures by excel programs.

Different statistical measures was used (frequency, percentage,

9. Ethical considerations:

- ✓ The proposal was approved by ethical scientists committee.
- ✓ Permission was taken from t he director of the hospital and the head nurse.
- ✓ Verbal permission was taken from the participations and they choose to agree or refuse.

Chapter Four

The result

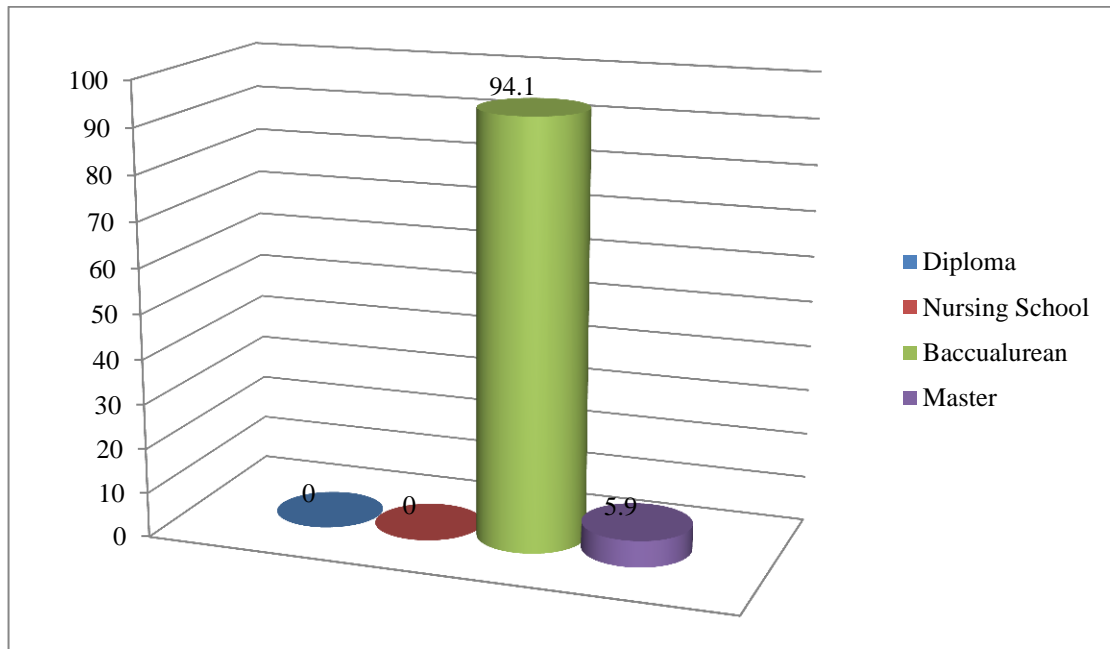


Figure (1) Education level of the study group

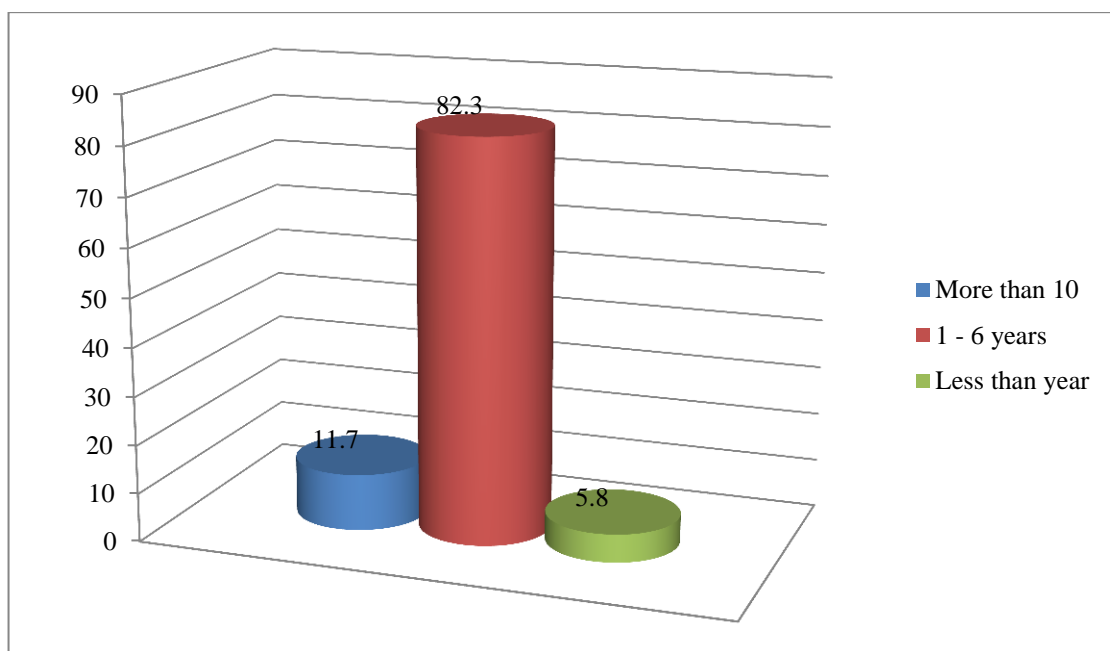


Figure (2) Years of experience of the study group

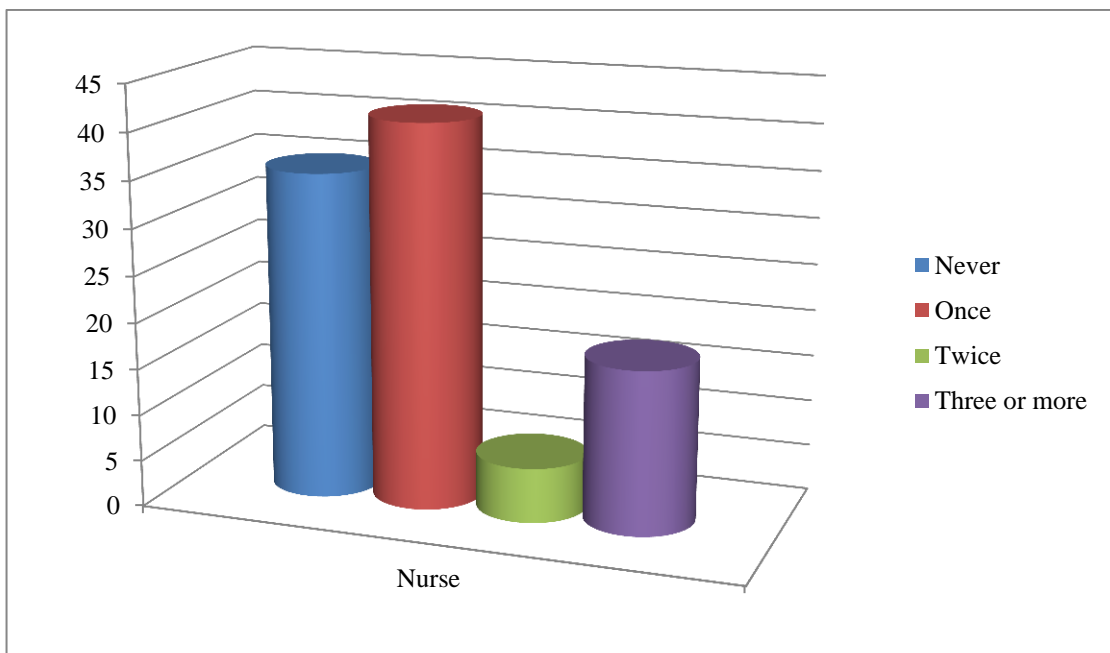


Figure (3) distribution of the study group according to their training course

Table (1) distribution of the study level of knowledge regarding arteriovenous fistula

Item	Level of knowledge					
	Good		Satisfaction		Poor	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
Type of permanent VA	11	60.7%	1	5.9%	5	29.4%
Maturation fistula	3	17.6%	0	0%	14	82.4%
Role 6 Maturation	0	0%	3	17.6%	14	82.4%
Arterial needle point	16	94.1%	0	0%	1	5.9%
venous needle point	14	82.4%	0	0%	3	17.6%

The above table showed that, study group have good level of knowledge about arterial needle point (94.1%) , venous needle point (82.4%) . while showed poor knowledge regarding Role 6 maturation (82,4%) ,and maturation fistula (82.4%).

Table (2) nurses practices and skills regarding cannulation fistula and graft

Item	Level of knowledge					
	Good		Satisfaction		Poor	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
Cannulation technique	12	70.6%	0	0%	5	29.4%
First Cannulation of grafts	6	35.3%	0	0	11	64.7%
After dialysis pressure	16	94.1%	0	0	1	5.9%
first Cannulation of fistula	10	58.8%	0	0	7	41.2%
Time inserted 2 needed	14	82.3%	0	0	3	17.6%
Trial of cannulatoin by same nurse	0	0	0	0	17	100%
Remove CVC after fistula function	16	94.1%	0	0	1	5.9%

The above table showed that, study group have good level of knowledge about Cannulation technique (70.6%) , After dialysis pressure (94.1%), Time inserted 2 needed(82.3%) . while showed poor knowledge regarding First Cannulation of grafts (64.7%) ,and Trial of cannulatoin by same nurse (100%).

Table (3) nurses knowledge regarding complication of VA

Item	Good		Satisfaction		Poor	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
Step of needle dislodgement	13	76.4%	1	5.8%	3	17.6%
Site temporary access	2	11.7%	11	64.7%	4	23.5%
Blood flow CVC	12	70.6%	0	0	5	29.4%
Exit site dressing	4	23.5%	0	0	13	76.5%
Cause thrombosis	3	17.6%	8	47%	6	35.3%
Cause blood leak	3	17.6%	8	47%	6	35.3%
Detect of stenosis	4	23.5%	7	41.2%	6	35.3%

The above table showed that, study group have good level of knowledge about Step of needle dislodgement (76.4%) , Blood flow CVC (70.6%).and they showed satisfied knowledge regarding site temporary access (64.7%). while showed poor knowledge regarding Exit site dressing (76.5%%).

Table (4) nurses performance regarding fistula and graft care

Item	Good		Satisfaction		Poor	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
START	4	23.5%	11	64.7%	2	11.7%
During	8	47%	8	47%	1	5.9%
Disconnect	9	52.9%	8	47%	0	0

The above table showed that, study group have good level of performance about disconnect (52.9%).and they showed satisfied knowledge during hemodialysis session (64.7%).

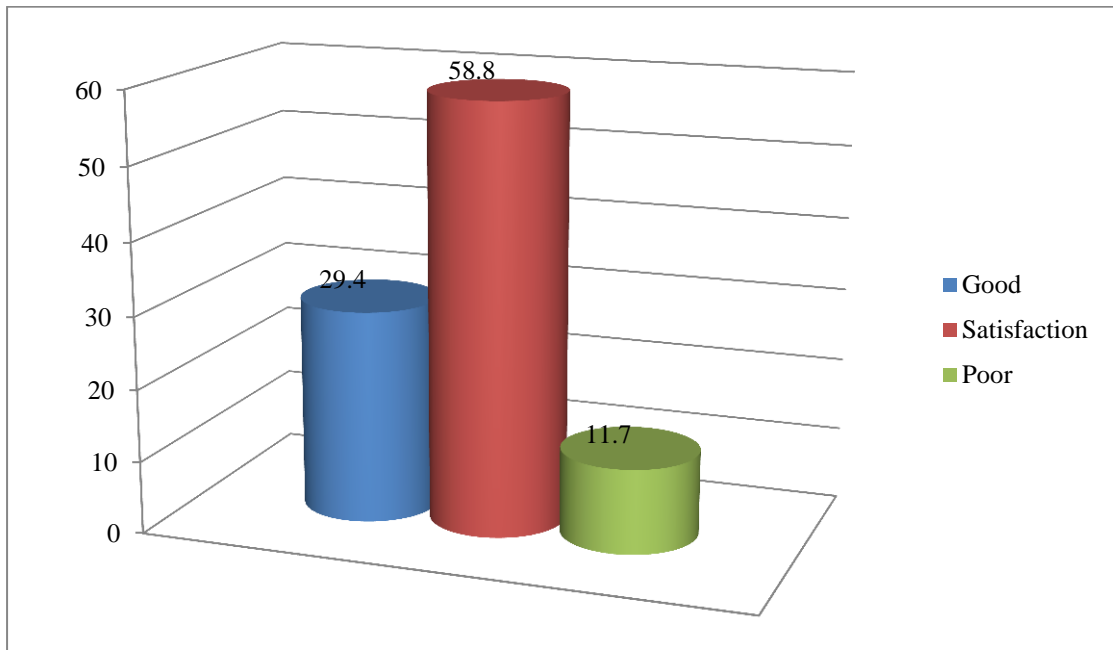


Table (4) nurses practice regarding HD catheter

Chapter Five

Discussion

Vascular access is life line for HD patient so that they should receive proper nursing care to continues wall functioning in Mortimer on pt in HD and transplanted may need dialysis because VA is need high skills and knowledgeable nurses to avoided secondary complication .

Nurses competence regarding vascular access care the result of the study indicated that (945%) of nurses have bachelor degree while only (5.8%) have master. Also the study showed that most of the study group(83.3%) their experience range between (1-6) years and (11.7%)more than 10 years .(35.2%)of them never has training courses compared with the study of stalk in the same domain by Suhir Abdelstat at 2013 in Khartoum stat Sudan in50 nurses 85%is bachelor (11%) post graduate (15%) diploma (84%) has moor than one year experience (52%) moor than 2 years tearing cores there is chance about options of HD machine and water system and access care is(56%) .The study reveal that , the proportion level of education was good but the proportion trainings was drop according year experience.

more over regarding the nurses knowledge about vascular access care the study showed that two thirds of nurses from 17 nurses have good knowledge regarding type of vascular access .(82.4%) Venus needle point (70.6%) have good skills regarding cannulation technique .(94.1%) were know the time to pressure site of injection after removal of needle, (82.3%) were aware about time inserted two needle after maturation access ,(94.1%) remove CVC after fistula well functioning, (58.8%)is known time of first cannulatin of fistula after maturation

in addition to that , the incidence of complication occurred if needle dislodgement they show good intervention by more than more than two third. Because any delayed lead to patient lose blood and infected access . (70.6%) were known ideal blood flow of CVC to prevent complication this result is unsymmetrical with level of education and experience in richer by Suhir 54% is were fully aware of role of nurses regarding VA care technique

Furthermore , nurses showed satisfied knowledge regarding complication of vascular access because (47%) were known cause of thrombosis also same result regarding cause of blood leak and(41.2%)known how to detect stenosis (64.7%) aware site of temporary access that mean most of staff is not capable to parry complication and very dangers to pt in HD

The study reveal that, (82.4%) were have poor knowledge about maturation of fistula and graft and role 6 maturation (4.7%)is not known first cannulation of graft (100%)is not known number of trial cannulation per patient at the same session by same nurse and all nurses neglect this point is very dangerous abut vascular access (76.5%)is poor knowledge exit site dressing that result is very bad and not satisfied with the continuity of care well

Concerning nurses performance to fistula and graft , (52.9%) have good performance during pt disconnect and end dialysis by using aseptic technique and use sterile gloves . while more than two third (64.7%) have satisfied performance regarding patient to

assess access well functioning and for infection and they used sterile equipment and a septic technique to connect patient, (47%) have satisfied performance during patient on session from flow up and monitor BP .bleeding or any complication during patient on session . (11.7%) have poor performance to start dialysis. this result present large number of patient to disconnect before end of time of dialysis because access not well function or patient develop septicemia . 52% of nurses is good assess VA before connect pt and 54% use gloves properly to .that all staff need flow gridline to who to maintain VA.

But regarding performance central Venous catheter(29.4%) just have good (58.8%) satisfied performance (11.7%) have poor . this finding is correlated compared to their educational level and experience and may present patient to lose a chance with efficient dialysis session.

Conclusion

The study concluded that, nurse's have good knowledge regarding type of fistula ,and arterial and venous needle point and cannulation technique ,and time inserted tow needle in mature. fistula ,while they show poor knowledge regarding maturation fistula and role 6 maturation and time of first cannulation of graft and trial number, exit site dressing and complication (thrombosis , blood leak stenosis).

Combering then performance they have good performance assess vascular access before start dialysis and disconnect patient and poor performance regarding us gloves and dressing central venues heamodialysis catheter

Recommendation

1.continuous agreement training courses and work shops at level of contrary or national kidney canter in Sudan and continuo education by seminars or lectures at level of professional in the unit

2 .providing continuo education regarding vascular access by study scholarships to interchange information and acquire experience because most available curses about application of machines

3 the government and manager should pout plane to improve the quality of services and continues monetary and encourage good performance

4. availability resource for continue education like internet to communicate another canter and international kidney to convoy nouvelles

5.encourage research and study about vascular access in HD (infection control .pt satisfaction about services)

Appendices

References

- 1-IVICA MALETA BOZIDER VUJICIC \$ SNGIN RACKI department of nephrologists and dialysis university hospital rjeka Croatia
Title ,world largest science technology and medicine open access book
10.5772/48787 publisher 2013 downloaded from <http://www.internationaljournalofscienceandtechnology.com/book/aneurysm> update 2015 chapre 22 23 14 bag 459-463.
- 2- R repa therenby sarra elamin wafa aberd Hassan abo aisha Arab journal of nephrogyn and trance plant in Sudan 2009 -2010 3-2 31-6 Special article
- 3- صحيفة الخرطوم صفحة --= كاتبة هاشم حسن محجوب ال دنقل 7 سبتمبر ال
- 4- IBTISSAM msobbah learners university Faculty of public health branches Quality of nursing practice in arterio-venus fistula care Publication 2253033090 -lebanese university -5-10-2012 update 2017 <https://www.researchgate.net>
- 5- Sally burrows Hudson quality assurance guide lines for hemodialysis devices HHspublication FDA 914161 dougla lu check febr 1990 Us department of health and human services -public health service Food and drug administration -center for devices and radiological health -walter E gundaker -chapter 9 vascular access
- 6- Donia George transplant urology and nephrology directorate Review date jun2014 bag 1-28 Guide line on the management of AVF-AVG
- 7 work group chair Mohan Raja purkor \$ director b g studies Rajeer Annigert consultant nephrology for HD -indian journal of nephrology -india society of nephrology Quid lines for HD units IssNO 9771-4065-offical publication of undia society of nephrology free full textal -www,Indian neph, org
- 8.Linda s Williams .pauled ttopper D hopper -under standing medical surgical nursing -CD enclosed -thir education Phiudelpia pai 9103 4-2007 .www fadavis.com co by ringht FADavis chapter urinary system bag 803
- 9-developed by risluscombe vascular access nurses -vasculae access work shop BCVA educators group -provider catheter care Laurie bates -renal education inteerior -health authority August 2010 revised june 2015rluscomb@ providence health bc.,ca
- 10- Department of nephrology ,dialysis and transplant the management of hemodaylasis central venous catheter Deument numbers 5 recent data 23-nep 2010 erview date nova 2012 2014 .Bag 33
- 11-trans hepatic placement of HD catheter -Abigail falk MD F AIR American access care -newyork - ASDIN 6TH SEIENTIFIC MEETING
- 12 Ubd irone gropes - vascular access hemodaylisis -see discussion stat and other profile for publication of Chapter4 deca 2011 -Dol.5772,22834 sourceim teaghm On appri 2014 <https://www.resar.net/policic>
- 13-capital health,learning module for catheter care of the tunneled HD central venous catheter post entry level competency for eusplans cc50-50 Developed jun 1998 revision apr 2014 bag 2-33

Faculty of Nursing sciences

Questionnaire about Assess nursing performance about vascular access in hemo dialyses patients

Put sign for the right answer:

1. education level:

- Diploma ()
- Nursing school ()
- baccalaurean ()
- Master ()

2. years of experiences:

- Less than year ()
- from 1-6 ()

3. Training course:

- Never ()
- ones ()
- Twice ()
- three or more ()

4. Type of permanent of vascular access:

AVfistula() AV graft() tunnel catheter()

5. Maturation fistula suitable for connotation by :

- Adequate flow()
- wall thickness()
- diameter()

6.Role 6 to assess maturation :

- Proper use of AV fistula 6 week from the time of creation ()
- Liens diameter 6mm clearly deep6mm ()
- Canulation length 6 cm for anastmosis()
- Flow 600 ml per min ()
- Depth not more than 6 mm from the skin()

7.Arterial needle pointing toward the arteries anastemosis retrograde ()

8. Venues needle pointing a way from the ansetmosis ()

9.we recommend railroading technique than a button hole for Canulation ()

10. Fist cannulation of grafts after2 weeks by needle 17g flown:

- 200-250 low dose heparin()
- 160-180 low dose heparin()

11. after dialysis pressure in site of the puncture to stop bleeding 10-15 min ()

12. first cannulation AV fistula flow

- 160-180 ()
- 200-250 if tolerated ()

13. inserted tow needle AV fistula after 4-6 week first puncture ()

14. the patient should not have more than 3 needles by same nurse at one shift ()

15. -remove CVC after six scenes dialysis by fistula 2 needle ()

16. -step intervention with needle dislodgement

- Stop blood pump ()
- Pressure needle site ()
- Assess blood loss()

- But blood line in recirculation()
- Check vital signs ()
- 17. site temporary access:**
 - right internal jugular vine()
 - femoral vine ()cub clavian()
- 18. ideal blood flow of CVC more than 300 ml/m()**
- 19. -exit site dressing shod be done once/week()**
- 20. – cause thrombosis in HD -VA**
 - Surgical ()
 - Technical issues()
 - Poor flow()
 - Hypotension()
 - 20-cases of blood leak around needle
 - Filliping needle()
 - Button hold technique()
 - Needle size ()
- 21. -how to detect Steno sis**
 - Clotting 2 and moor /month ()
 - Squire blood out during cannulation ()
 - Swelling access extremity ()
 - Recirculation (low KT /V URR) ()
 - Difficult cannulation ()
 - Chang thrill ()

Thank you for your good cooperation

Check list for fistula

Name :

Date:

1. before procedure:
 - use aseptic technique
 - Use mask patient and nurse
 - washed hand
 - wash skin over access with soap anwater
 - evaluate access
 - look any sing up normal
 - palpate thrill functioning
 - cannulaion site need change between scion
2. START
 - Apply anti septic to skin over cannulation
 - Insert needle by angel 30-45
 - Tap needle to secure over wings
 - DURIN observe needle (dislocated –bleeding –hematoma
 - Monitor BP every 30 min
3. End dialysis (disconact)
 - Aseptic
 - Us cleaning gouze
 - Pressure site needle after remove hold for
 - Use stethoscope to check thrill after stop
 - Apply adhesive bandage
 - Dispose needle in sharp container
 - Use designated equipment
 - Thatch pt to maintain access

Check list for catheter

1. Aseptic technique
2. Observe any signs of infection
3. Use non-sterile gloves to opening catheter
4. Open cap around catheter
5. Change gloves by surgical
6. Apply syringe
7. Cleaning exit site horizontal side to side extending 5cm
8. Then clean lumen vertical up and down
9. Attach syringe by holding
10. Open the clamp and draw 5ml discharge blood to remove heparin
11. Flushes with 10 ml NS
12. Wrap the catheter lumen with sterile gauze and tape
13. Close clamp until connected
14. Start blood pump after open clamp
15. Disconnect pt under aseptic
16. Open catheter with heparin 5000 unit
17. Teach pt to prevent infection