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Awareness of Medical Staff for Vein Saving in the Patient with Chronic Kidney Disease in King Abdul-Aziz Specialist Hospital, King Faisal Hospital and Ajyad General Hospital, Makkah Almukarramah, Saudi Arabia 2021

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Abstract:

Background:

Public knowledge and awareness regarding chronic kidney disease (CKD) and for vein saving in the patients is an important factor influencing the successful implementation of CKD prevention and treatment programs. Hence, we explored the knowledge of medical staff CKD about vein saving the Kingdom of Saudi. Chronic kidney disease (CKD) is defined by kidney damage or impairment in kidney function for three or more months irrespective of the cause . End-stage renal disease (ESRD) is the late stage of CKD that requires renal replacement therapy by either hemodialysis (HD) or peritoneal dialysis (PD) in ambulatory patients. In Saudi Arabia, the prevalence of ESRD is estimated to be 604 cases per million population as per the Saudi Center for Organ Transplantation. Well-established risk factors

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for CKD and ESRD are advanced age, hypertension, and diabetes mellitus (DM), which has become the leading cause of ESRD in recent decades. Blood glucose control is challenging in hemodialysis (HD) patients. The prevalence of CKD has been on the rise over the past several decades making it a significant burden on healthcare systems worldwide at present

Aim of the study: Toassessment awareness of medical staff for vein saving in the patient with CKD in King Abdul-Aziz Specialist Hospital, King Faisal Hospital and **Ajyad General** Hospital in Saudi Arabia.

Method: Cross sectional study will be conducted to determine the awareness of medical staff for vein saving in the patient with CKD in Taif hospitals our total participants were 200 medical staff (doctor , nurses).

Results:show Regarding the level of awareness about Patient with history of CKD our study shows that there is a significant relation was the p-value <0.001and X^2 38.48 the most of participants (53.0%) have Weak awareness about Patient with history of chronickidneydisorder While among ' Average,' the participants were (28.0%) **.**

Conclusion :CKD is a growing problem in the KSA the prevalence in KSA the incidence of dialysis was 150 new cases per million populations this study evaluated the CKD knowledge among the medical staff for vein saving in the Saudi patient. Our study results highlight the need for conducting targeted educational activities among the medical staff for vein saving with lower educational and economic status

Keywords:awareness, medical staff , vein , saving , patient , CKD, Makkah **,**Saudi Arabia

Introduction

Background

Chronic kidney disease (CKD) is a non-communicable disease characterized by persistent abnormality in the structure or function of kidneys for more than 3 months.[1]Chronic kidney disease has become up an important health problem of Saudi Arabia within recent Decades fit to numerous factors which hold contributed in imitation of the accelerated occurrence of it disease . The health problem of people within every stage about Chronic kidney disease is unfamiliar within Saudi Arabia, or that is similar to most other countries. In some Western nations 10-12% of the populations are estimated according to Chronic kidney disease, making it of the majority known chronic ailments. [2]The prevalence of Chronic kidney disease has been on the rise over the past several decades making it a significant burden on healthcare systems worldwide at present.[3]A recent meta-analysis has estimated the worldwide prevalence of CKD at 13.4%.3 The global prevalence of CKD was estimated to be

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9.1% in 2017 and 1.2 million deaths were attributed to it.[4]Hemodialysis is an essential life-saving procedure in sufferers with acute kidney injury (AKI) or chronic kidney disorder CKD). About 25% concerning sufferers receive dialysis using catheters in imitation of start together with which are continuously eliminated among patients with AKI.[5]

among patients with CKD stage four and 5, arm or upper-arm veins suitable for placement regarding vascular access should not be used for because venipuncture yet because the placement regarding intravenous (IV) catheters, subclavian catheters, yet peripherally inserted central catheter traces (PICCs) . In run-on the "Fistula First" initiative promote construction on arteriovenous fistulas (AVF) , concentrated on at least 68% use among prevalent patient on dialysis as this access documented to improve patient on dialysis as entry to documented in accordance with improve on dialysis as [6]

Studies reported 17-fold higher mortality among patients with end stage kidney disease (ESKD) compared with age- and gender-matched healthy individuals.5 The number of deaths due to Chronic kidney disease has been projected to be 2–4 million by 2040.[7]Apart from the potential to lead to ESKD and premature death, Chronic kidney disease has also been recognized as an independent risk factor for cardiovascular disease; 7% of the total cardiovascular disease burden being attributed to impaired kidney function.5 In the Kingdom of Saudi Arabia, Chronic kidney disease has been recognized as a major health problem in recent decades due to the growing incidence and prevalence of ESKD among the Saudi population.[8]The three very important risk factors for Chronic kidney disease – diabetes, hypertension and obesity – are highly prevalent in the Saudi population.[9]

There are much acknowledged methods to attain this goal like express referral on Chronic kidney disease patients in conformity with nephrologists formerly in imitation of the start of hemodialysis in conformity with permit sufficient era because construction on AV access , presence of expert and trained access surgeon working as a part of vascular access team and veins saving . The Association because Vascular Access (AVA) then the American Society regarding Diagnostic then Interventional Nephrology (ASDIN) realized the importance of vein saving in chronic kidney sickness sufferers [10]

An epidemiological study conducted in 2010 in the Kingdom of Saudi Arabia found that the overall prevalence of Chronic kidney disease was 5.7%.7 There were around two million cases of CKD and 3818 deaths due to Chronic kidney disease in Saudi Arabia in 2017.[11] A recent study also reported the overall prevalence of Chronic kidney disease stages 3 to 5 was 4.4% among the Saudi population.[12] However, there is a clear lack of attention from policymakers and researchers regarding this emerging challenge in the Arab world, especially

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Saudi Arabia, and limited resources are being allocated towards the prevention and management of Chronic kidney disease and its risk factors.[13]

Literature review:

[14]Okoro, et al. (2019) report conducted a pilot community-based screening program to detect Chronic kidney disease in Saudi Arabia and demonstrated that it is feasible and relatively inexpensive.[14][15] Pearce et al. (2019) Considering the significant morbidity and very high rate of mortality among patients with ESKD, efforts are made worldwide in the prevention and early detection of CKD. Prevention, early detection and adequate treatment of major risk factors of Chronic kidney disease such as diabetes, hypertension and obesity together constitute an important public health strategy in this regard and it is critically important in the Arab world where these risk factors are highly prevalent.[15]

It has been estimated that successful prevention of these risk factors by public health interventions at population level can result in a reduction of up to 40% in the incidence of CKD.[16] Screening of individuals with risk factors to detect and treat Chronic kidney disease early is another important strategy adopted by various countries for delaying of Chronic kidney disease progression.[12]

[17]Studies conducted in both developed and developing countries have shown that the public understanding of Chronic kidney disease and its risk factors are relatively poor.[17] A recent Australian study found limited knowledge among participants regarding the physiological role of the kidneys, and less than half of the participants correctly identified hypertension as a risk factor.[18] A study conducted during 2010 among the population of Saudi Arabia showed that less than 7.1% of patients with early CKD reported awareness of their CKD status and there was poor awareness regarding CKD symptoms among the study cohort.[19] However, another recent study from Saudi Arabia exploring knowledge and awareness about CKD using a non-validated questionnaire found that more than half of the participants correctly identified HTN and DM as risk factors of CKD, indicating that the knowledge regarding CKD among the Saudi population is relatively increasing.[20] To the best of our knowledge, there are no studies conducted among the Saudi population to explore the public knowledge of CKD

Rationale

The burden of the common chronic, preventable disease and their serious outcomes make the determine awareness of medical staff vein saving in the patient with CKD topic enormously essential. Up to our knowledge there are very few studies have been performed to assess

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awareness of the importance of vein saving in patients with chronic kidney disease among medical staff .In this study; we will evaluate the knowledge of the medical staff for preserve the vein in patients with CKD in our city (Makkah) as there is no study in the literature about it in.Thus investing in this topic well fulfills the researcher's aim

Aim of the study:

To assessment the awareness of medical staff for vein saving in the patient with CKD in King Abdul-Aziz Specialist Hospital, King Faisal Hospital in Makkah city, Saudi Arabia.

Objectives :

- Assessment the awareness of medical staff for vein saving in the patient with CKD in King Abdul-Aziz Specialist Hospital, King Faisal Hospital inMakkah city, Saudi Arabia

METHODOLOGY

STUDY DESIGN:

Cross sectional study has be conducted to assessment the awareness of medical staff for vein saving in the patient with CKD in Makkah.

STUDY AREA:

This study has been conducted in Makkah hospitals, which has a large number of different nationalities and different cultures. Out of these, in King Abdul-Aziz Specialist Hospital, King Faisal Hospital in Makkahcity, Saudi Arabia. Where the researcher has been conducted study after all medical staff (physicians and nurses) caring patients with CKD has been contacted during the study duration between medical staff .

STUDY POPULATION:

This study has towards All medical staff (physicians and nurses) caring patients with CKD will .

Inclusion criteria:

- Willing and able to participate in the study .

Exclusion Criteria:

- No specific exclusion criteria .

SAMPLE SIZE :

The researcher has used 50%, moreover, based upon a confidence level 95% and margin of error of 5%. The sample size calculated using the Raosoft calculator will be 200 medical

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staff (physicians and nurses) , which has be increased by 10% to overcome the non-respondents.

SAMPLING TECHNIQUE:

The researcher has used simple randomization between all medical staff (physicians and nurses) caring patients with CKD.

Has been contacted during the study duration between medical staff to cover the sample size .

2.8 DATA COLLECTION TOOL:

The researcher has used a self-administrated questionnaire. The questionnaire has included; socio-demographic data, a checklist about the level of the awareness of medical staff for vein saving in the patient with CKD . The researcher has constructed and has put the questionnaire between the hands of Scientific Research Center Research Ethics Committee consultants for validation.

2.9 Data Collection technique:

The researcher has been distributed the questionnaire personally to all medical staff (physicians and nurses) caring patients with CKD in department after approval from higher authorities acquired, during the working hours, specifically between the break time. Where a short introduction about the research and its importance were presented . Afterward, the researcher has handled the questionnaire to the available medical staff (physicians and nurses) at the department . The response rate was high .

DATA ENTRY AND ANALYSIS:

The researcher has used the statistical program for social sciences SPSS software 24.0 for data entry and analysis. Necessary statistical tests such as Chi- square T-test and other appropriate tests had been used. A p- value of less than 0.05 has been adopted for statistical significance.

PILOT STUDY/PRETESTING:

The questionnaire has been applied to 10% of the sample size over the medical staff which has deal in the patient with chronic kidney disease Makkah city.

ETHICAL CONSIDERATIONS:

- Approval from the Scientific Research Center Research Ethics Committee consultants for validation .
- Written consent has been obtained from the participants.

Annals of R.S.C.B., ISSN:1583-6258, Vol. 25, Issue 7, 2021, Pages. 2385 - 2401
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- All information will remain confidential and will not be accessed except for scientific research.
- The researcher has submitted a recommendation out of this study to higher authorities.
- Acknowledgment for all the supervisors, advisors, helpers, facilitators, and participants for their contribution.

BUDGET

Self-funded study

Result

Table (1)the distribution of Socio-demographic data in study group

	N	**%**
Age		
<25	46	23
25-35	70	35
35-50	58	29
>50	26	13
Sex		
Female	128	64
Male	72	36
Working years		
<5	70	35
5-10.	40	20
>10	90	45
Job title		
Medical doctor	80	40
Nurse	120	60
Institute		
King Abdul Aziz Specialist hospital	50	25
King Faisal Medical Hospital	68	34
Ajyad General Hospital	62	31
Other	20	10

Regarding the age majority of the study groups were in the age range of (25-35) years were (35.0%). Regarding the sex many of the respondents were female (64.0%) while male were (36.0%).Regarding the working years the majority of respondents heave experience duration >10 had (33.3),regarding the job title, the majority of participant were nurse (60.0) while

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medical doctor were (40.0 %). Regarding the institute many of the respondents were in King Abdul Aziz Specialist hospital were (25.0%) while King Faisal Medical Hospital were(34.0) but theAjyad General Hospital were(31.0%) while other were (10.0) .

Table (2) Description the general awareness of the participants (medical staff) for vein saving in the patient with CKD

	N	%
Do you think a vein preserve is important to renal patients?		
Yes	170	85
No	10	5
I don't know	20	10
Why vain preserve is important in renal disease patient?		
To avoid infection.	38	19
Possible AV fistula creation in future	132	66
To avoid bleeding	16	8
I do not know	14	7
Do you have a vein saving protocol for renal disease patients at risk in your institute?		
Yes	112	56
No	30	15
I don't know	58	29
If you answered yes, to the previous question, how often do you follow this protocol		
All the time	48	42.86
Most of the time	26	23.21
Some time	25	22.32
Rarely	3	2.68
Never	10	8.93
How to recognize renal disease patients who require vein preservation protocol?		
By creatinine level	76	38
By GFR (Glomerular Filtration Rate)	58	29
Family history of renal disease	20	10
I don't know	46	23
At which stage of chronic kidney disease patients needs vein preservation protocol?		
Starting from stage 1	46	23
Starting from stage 2	22	11
Starting from stage 3	38	19
starting from stage 4	30	15
Only after hemodialysis initiation	26	13
I don't know	38	19

Table 2 showRegarding think a vein preserve is important to renal patients most of participants answer yes the percentage were (85.0%). Regarding Why vein preserve is

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important in renal disease patient majority of the study groups answer Possible AV fistula creation in future the percentage were (66.0 %). Regarding you have a vein saving protocol for renal disease patients at risk in your institute the most of participants answer Yes the percentage were (56.0%) followed by I don't know percentage were (29.0%). Regarding how often do you follow this protocol majority of the study groups answer all the time participants answer (42.86%). Regarding to recognize renal disease patients who require vein preservation protocol majority of the study groups answered wrong answers by creatinine level (38.0%). Regarding which stage of chronic kidney disease patients needs vein preservation protocol majority of the study groups answered wrongstarting from stage 1were (23.0 %)

Table (3) Description the general awareness the participants about know other targeted group for vein saving and educates Patient with history of recurrent kidney stones in the patient with chronickidneydisorder .

	N	**%**
Do you know other targeted group (renal disease group) for vein saving?		
Yes	110	55
No	90	45
Do you educate renal disease patients at risk or check their knowledge about the importance to save vein during medical evaluation?		
Yes	106	53
No	44	22
I don't know	50	25
Do you use an instruction or warning methods (like labels, written paper instructions..etc.) to reinforce vein saving in those risky renal disease patient?		
Yes	84	42
No	78	39
I don't know	38	19
What is the primary site for venipuncture when you obtain blood samples from patients at risk?		
Dorsum of the dominant hand	32	16
Dorsum of the non-dominant hand	46	23
Antecubital fossa of the dominant side	20	10
Antecubital fossa of the non-dominant side	56	28
I do not know	46	23
For patients with AV fistula, Do you Use the fistula limb for venipuncture or an IV infusion or arterial line?		
Yes	20	10
No	112	56
I don't know	68	34

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If a patient requires an indwelling catheter for home antibiotics or other medications, do you insert or order to insert a small bore (<8 French)?		
Yes	74	28
No	133	33
I don't know	108	39
What is the primary site for venipuncture when you obtain blood samples from those patients?		
Dorsum of the fistula site	20	10
Dorsum of the non-fistula site	80	40
Antecubital fossa of the fistula site	16	8
Antecubital fossa of the non-fistula site	38	19
I do not know	46	23
Do you Use the fistula limb for venipuncture or an IV infusion or arterial line?		
Yes	30	15
No	70	35
I don't know	100	50
for patients with AV fistula, Do you Use the fistula limb for blood pressure measurement?		
Yes	26	13
No	132	66
I don't know	42	21

Regarding you know other targeted group (renal disease group) for vein saving the most of participants answer Yes the percentage were (55.0%) followed by answer No the percentage were (45.0%) . Regarding you educate renal disease patients at risk or check their knowledge about the importance to save vein during medical evaluation the most of participants answer Yes the percentage were (53.0%) followed by I don't know percentage were (25.0%). Regarding you instruction or warning methods (like labels, written paper instructions. etc.) to reinforce vein saving in those risky renal disease patient the most of participants answer Yes the percentage were (42.0 %). Regarding What is the primary site for venipuncture when you obtain blood samples from patients at riskthe most of participantantecubital fossa of the non-dominant side were (28.%) but For patients with AV fistula, Do you Use the fistula limb for venipuncture or an IV infusion or arterial line the most of participant answer No were(56.0%). If a patient requires an indwelling catheter for home antibiotics or other medications, do you insert or order to insert a small bore (<8 French) the most of participant I don't know were (39.0%)

Regarding the primary site for venipuncture when you obtain blood samples from patients at risk the participants answered correct Dorsum of the dominant hand percentage were (10.0 %). Regarding patients with AV fistula, Do you Use the fistula limb Do you Use

Annals of R.S.C.B., ISSN:1583-6258, Vol. 25, Issue 7, 2021, Pages. 2385 - 2401
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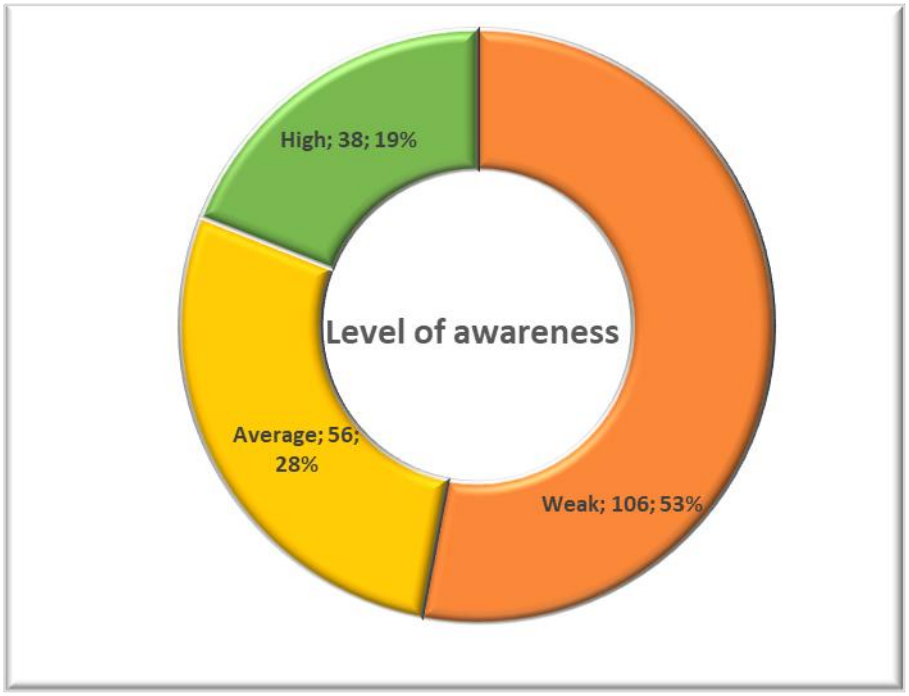
the fistula limb for venipuncture or an IV infusion or arterial line the most of participants answer I don't know the percentage were (50.0%), for patients with AV fistula, Do you Use the fistula limb for blood pressure measurement the most of participants answer No the percentage were (66.0%)

Table (4) Description the Level of awareness

Level of awareness			
		N	**%**
Weak		106	53
Average		56	28
High		38	19
Total		200	100
Chi-square	**X^2**	38.48	
	P-value	<0.001*	

Table 4 show Regarding the level of awareness about Patient with history of CKD our study shows that there is a significant relation was the p-value <0.001and X^2 38.48 the most of participants (53.0%) have Weak awareness about Patient with history of chronickidneydisorder While among ' Average,' the participants were (28.0%)

Figure 1 Description the Level of awareness



Annals of R.S.C.B., ISSN:1583-6258, Vol. 25, Issue 7, 2021, Pages. 2385 - 2401
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Table (5) Describe the relation of the Demographic data (age, six , working years , job title , institute) and Awareness about Patient with history of chronickidneydisorder

Demographic data		N	Awareness		ANOVA or T-test	
			Mean ± SD		Test value	P-value
Age	**<25**	46	2.009 ± 1.429	**ANOVA test**	F=12.488	<0.001*
	25-35	70	2.103 ± 1.564			
	35-50	58	2.205 ± 1.624			
	>50	26	2.665 ± 1.831			
Sex	**Female**	128	2.199 ± 1.566	**T-test**	T=0.798	0.4256
	Male	72	2.395 ± 1.798			
Working years	**<5**	70	1.981 ± 1.622	**ANOVA test**	F=15.761	<0.001*
	5-10.	40	2.274 ± 1.566			
	>10	90	2.888 ± 1.719			
Job title	**Medical doctor**	80	2.530 ± 1.893	**T-test**	T=2.049	0.0418
	Nurse	120	2.048 ± 1.428			
Institute	**King Abdul Aziz Specialist hospital**	50	2.265 ± 1.874	**ANOVA test**	T=0.774	0.8214
	King Faisal Medical Hospital	68	2.433 ± 1.622			
	Ajyad General Hospital	62	2.173 ± 1.459			
	Other	20	2.323 ± 1.741			

As shown in table 5 regarding Age In our study the majority of our participants were noticed that age >50 year with Mean± SD (2.665±1.831) and a statistically significance (F= 12.488 p< 0.001). Regarding six: In our study the our participants were noticed in male were Mean± SD (2.395±1.798) while female were Mean± SD (2.199±1.566) with no statistically significance (T= -0.798 , p =0.4256) . Regarding Working years: In our study the majority of our participants were noticed >10 years with Mean± SD (2.888±1.719) and a statistically significance (F= 15.761, p= 0.001). Regarding Job title: In our study the majority of our participants were medical doctor with Mean± SD (2.530±1.893) while follow by Nurse with Mean± SD (2.530±1.893) and no statistically significance (T= 2. 049, p= 0.0418). Regarding Institute: In our study the majority of our participants were noticed that in the King Faisal Medical Hospital with Mean± SD (2.433±1.622) while in the Other with Mean± SD (2.323±1.741) while no statistically significance (T= 0.774 and p= 0.8214

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DISCUSSION

the awareness of medical staff for vein saving in the patient with CKD The purpose of this is to help physicians and nurses be better stewards of finite health care resources.[21] The study strongly reflects a focus on high-quality of awareness of medical staff for vein saving in the patient with CKD and all patients with chronic kidney disease (CKD) the objective of the study is to determine the awareness of medical staff for vein saving in the patient with Chronic kidney disease in King Abdul-Aziz Specialist Hospital, King Faisal Hospital in Saudi Arabia and awareness of medical staff for vein saving in patient with Chronic kidney disease in Makkah city. The study was designed to encourage the medical staff to be awareness of important of vein saving in the patient with Chronic kidney disease.The study aim to determine the awareness of medical staff for vein saving in the patient with Chronic kidney disease in Makkah city , Saudi Arabia .

The dorsal veins on the imperious limb ought to remain chronic because encampment about peripheral venous access when possible. Central Venous Access Placement of a non-tunneled central venous catheter (CVC) , particularly within the subclavian vein, must stand avoided among every patients with Chronic kidney disease, salvo possible. If unavoidable, the preferred website online because middle venous get entry to between lowering kilter is the intimate jugular vein, external jugular vein then ultimately the femoral vein.[22]. The study included 200 of medical staff in King Abdul-Aziz Specialist Hospital , King Faisal Hospital Makkah city Saudi Arabia follow up and were enrolled in this study.

The aim of awareness for medical staff for vein saving in the patient with CKD when patients starting dialysis is to save their veins. Central veins are the lifeline for sufferers on hemodialysis. Creation on a successful arteriovenous fistula because of dialysis depends regarding the central veins existence healthy. Use concerning average attitude catheters might also enlarge the hazard concerning central pose stenosis induced through scarring then infection. Once the central vein is stenosis, creating a functioning arteriovenous fistula will be more difficult. [23]

Current estimates on CKD Awareness indicate that each provider-level cognizance remain unacceptably low. Awareness over CKD, among these together with CKD phase ranges three and 4, also with albuminuria is lower than most appropriate yet has now not been improving over the last decade.[24]

In any other study via Mahmudpour et al. 2020, the authors concluded as bad cultures were more frequent with catheters having frequent dressings and then the authors emphasised stringent precautions to stay observed in HD center to reduce CRBSI.[25]

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In one prospective , an affiliation into nephrology referral yet larger preservation about renal characteristic in diabetic sufferers including express CKD was once noted; the benefit was largely mediated by better blood pressure control and more extensive use of angiotensin-converting enzyme inhibitors and angiotensin receptor blockers . [26]

The importance of CKD awareness at earlier stages of disease for implementation of evidence-based medication regimens cannot be underestimated. Additional studies examining the effect of increased provider awareness on patient awareness of CKD and patient behavioral changes are key. In addition, the effects of earlier CKD diagnosis on subsequent progression of kidney dysfunction and cardiovascular outcomes are essential to document and understand. Potential negative outcomes associated with increased provider awareness of CKD cannot be neglected. [27]

Vein preservation important to Patients with chronic kidney disease (CKD) may be on hemodialysis (HD) or may need HD in the future. The best way for administering HD is through a fistula choice A fistula or graft has a much lower rate of complications than a catheter.Venipuncture, peripheral IVs or PICC lines can damage veins and jeopardize future fistula construction or function. Preservation of arm and central veins needs to start before the patient needs an access. If already on HD, need to preserve all remaining veins.[28]

Conclusion

Awareness and Renewed and innovative efforts should be made to increase awareness of medical staff among vein saving in the patient with chronic kidney disease and successful creation of native AVFs are largely dependent on the availability of good quality upper limb veins. The initial AVF is preferentially created in the anterior forearm of the non-dominant hand using the cephalic vein at the wrist. Maintaining the integrity of these vessels remains important for adequate drainage from any forearm vascular access and construction of the arterial portion of any upper arm fistula . Implementation of a multifaceted intervention including a vascular access nurse and an algorithm to prioritize surgery significantly increased the proportion of patients starting dialysis therapy with an AVF by improving the overall coordination of the surgical waiting list.

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