

Practice and Perceived Barriers among Health Care Workers to Control Infection in Dialysis Unit

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Abstract

Aim: Study investigated the practices and perceived barriers towards infection control measures among healthcare workers in the dialysis unit.

Method: Descriptive survey design was adopted. Data was collected by administering checklist on barriers towards infection control measures in dialysis unit among 50 healthcare workers and 602 events on infection control measures in dialysis unit was observed using observation checklist.

Findings: The study findings revealed that majority of healthcare workers perceived that wash basin for hand washing is away from patient area, lack of appropriate staffing, high work load, washing agents cause irritation to my hands, nobody checks, too busy, not following infection control measures in dialysis unit as the barrier and healthcare workers were not following all the infection control measures in dialysis unit.

Conclusions: This study indicates that majority healthcare workers did not follow infection control measures in dialysis unit. It is alarming and mandates the need for reinforcing the healthcare workers to follow the infection control measures which can prevented healthcare associated infections in the unit. Healthcare associated infection are the most common cause preventable infections in patients undergoing dialysis.

Key words: Infection Control nursing, dialysis, practice, barriers, healthcare workers, hand hygiene, hospital infection management, reuse.

Introduction

Patients on dialysis treatment has an increased risk for acquiring an infection because of the nature of complex dialysis process requiring frequent use of vascular access. Dialysis patients have weakened immune system which increases their risk for infection¹. Approximately 2,250,000 patients worldwide are on maintenance dialysis². In 2013, there were 9,09,000 Asians on dialysis³. Total admission rate in dialysis

patient among Asians is 1,248. Mortality rate by primary cause of mortality in Asians septicemia is 6.5%, viral infections is 0.1% and 1.0% are other infections⁴. Dialysis patient and Healthcare Workers in the dialysis unit are at greater risk of blood borne pathogens such as Hepatitis C, hepatitis B and human immunodeficiency virus. As the disease is not a curative but life sustaining patients undergoes dialysis in same centre for years repeatedly and also patients usually may have to be dialysed in three or four shifts everyday were in the unit of healthcare workers also go through the periods of extreme activity during which after termination of one shift of patients the next shift have their treatment would be initiated. In most of the dialysis unit the dialysis machine and patient bed are placed in proximity to each other along the walls and also the hand washing basins are usually located at a distance in the facility hence the

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risk of transmission of these blood borne pathogens is more outpatient dialysis centres⁵. Therefore, the present study was conducted to assess the practices and barriers regarding infection control measures among healthcare workers in dialysis unit which in turn helps to reduce the transmission of infections by enhancing their awareness regarding infection control measures to be followed in dialysis unit which will also help to bring down the infection rate.

Material and Method

After approval from Institutional ethics committee with informed consent, 602 events of practice towards infection control measures in dialysis unit were observed and the barriers were assessed among all the health care workers available during data collection. The total number of events required for the observation of practice was calculated using estimation of proportion formula. The study was registered with the clinical trials registry - India (CTRI) No CTRI/2017/03/008109. The inclusion criteria were healthcare workers working in dialysis unit during period of data collection and willing to participate in the study. The checklist was validated and tested for reliability. The reliability obtained for observation checklist (0.97), resource checklist (0.93) and perceived barriers checklist was (0.96) thus the tools were reliable.

The researcher observed the practices among healthcare workers of dialysis unit regarding infection control measures using an observation checklist and resources necessary to practice infection control measures in the dialysis unit using resource checklist. Self-administered checklist was used to assess the barriers on infection control measures in dialysis unit after obtaining the informed consent. To interpret the collected data descriptive statistics were used. The data were analysed using Statistical Package for the Social Sciences (SPSS) version 16.

Findings

Barriers to infection control measures among healthcare workers were assessed (Table 1). Among 50 healthcare workers, majority of healthcare workers 32 (64%) perceived that wash basin for hand washing is away from patient area was the one of the barrier towards infection control measures in dialysis unit, 30 (60%) perceived that lack of appropriate staffing as the barrier, 29 (58%) perceived that there was high work load, 19 (38%) Washing agents cause irritation to hands, 16 (32%) nobody checks whether I follow infection

control measures or not, 5 (10%) I am too busy, I can't follow infection control measures in dialysis unit as the barriers. Other barriers expressed by the participants were staff shortage, no separate eating room for patients, lack of organisation, more number of patients, less dialysis machines, sometimes forget guidelines and protocols, busy in the night duty, busy due to increased workload, feel uncomfortable to wear goggles during the procedure, adhesive plasters and ointments are not designated to each patients, lack of appropriate staffing due to continuous ward change for senior staff, inadequate slippers, there is no sphygmomanometer for each block, no separate isolation room, no regular classes for newly joined staffs, no needle puncture resistance container for each block.

Practice towards infection control measures in dialysis units were: Out of 92 events of setting dialysis machine, priming of dialyser and tubing, majority 92 (100%) events they did not remove the gloves after setting the machine, 91 (99%) times did not perform hand hygiene after setting machine, 81 (88%) events had put on new, clean gloves before setting the machine, 88 (96%) mask was worn properly and 70 (76%) performed hand hygiene before setting the machine and 67 (72%) performed hand hygiene after priming.

During 92 events of arteriovenous fistula/ graft cannulation and dialysis tubing connection, most 89 (97%) connects cannula to arterio venous tubing aseptically, 65 (71%) contaminated fistula/ graft site after antisepsis and 54 (59%) did not perform hand hygiene before arteriovenous fistula / graft cannulation, and 33 (36%) did not perform hand hygiene after arteriovenous fistula / graft cannulation and dialysis tubing connection.

Out of 92 injectable medication preparation events majority 92 (100%) of the events, medication preparation in bedside medication trolley with sterile tray and medication was not prepared aseptically instead the medication was prepared on the same dressing set which was used for cannulation and decannulation which was placed on the bedside multipurpose cardiac board, 84 (91%) hand hygiene was not performed before injectable medication preparation.

In total of 92 events, majority 72 (78%) disconnects from blood lines aseptically, 66 (72%) do not performs hand hygiene before arteriovenous fistula / graft decannulation, 38 (41%) dressing were not applied aseptically as they did not use sterile gloves and touched

unsterile equipment's before applying dressing with sterile gloves and 41 (45%) did not perform hand hygiene after the arteriovenous fistula / graft decannulation and dialysis catheter disconnection, 15 (16%) of the events they did not put on new, sterile gloves as per the technique instead used the same gloves which was used for arteriovenous fistula / graft cannulation and connection, 15 (16%) times needles were not removed aseptically because they did not use the sterile gloves while removing the needle during arteriovenous fistula / graft decannulation and dialysis catheter disconnection and after removing needles were placed on the bed of the patient which was carried with the gloved hand and disposed in the resistance puncture container in the dialysis unit after the procedure.

During 92 events of termination of dialysis, majority 86 (93%) times priming bucket has not been emptied and the same bucket was used for another patient and 70 (76%) of the events the tubing and dialyzers were not placed in a leak-proof container instead it was carried to reprocessing area with the gloved hand and 44 (48%) hand hygiene were not performed after termination of dialysis.

During 92 events of reprocessing dialyser and tubings, majority 92 (100%) times health care workers wore personal protective gear like gloves and plastic aprons but goggles and mask were not used all the time, 92 (100%) tubings and dialyser was stored in sealed polythene bag and 82 (89%) times dialyser was backwashed for 15 minutes direction of flow reversed in 5 minutes was not done after reprocessing dialyser and tubings, removal of glove and hand washing need to be done after reprocessing of dialyser and tubing of each patient but 77 (84%) times hand hygiene after reprocessing of each dialyser and also tubings was not done instead gloves was removed after each shift and hand hygiene was done and the reprocessing operator as

per hospital policy and guidelines is dialysis technician but reprocessing was done by class four workers and all the tubings and dialyser of different patients which was supposed to be reprocessed separately was not reprocessed separately instead were dumped in the same base and reprocessed.

Out of 25 events of cleaning and disinfection, most 25 (100%) dialysis bed was not disinfected after each patient with 1% hypochlorite, 25 (100%) disinfection of the reusable jugs for sodium bicarbonate using 1:100 dilution bleach at least weekly and priming bucket disinfection with 1:100 bleach were not done, 23 (92%) monitors were not disinfected with virkon 1% 4 times a day, 21 (84%) all high touch surfaces were not cleaned.

Resources present in the dialysis unit were observed (Table 2).In dialysis unit hand rub solutions were available at every patients bed side, disinfectants gluteraldehyde solution, hypochlorite solution, virkon solutions, hydrogen peroxide were available all the time 25 (100%), wash basins to wash hands available near the entrance of dialysis unit with two wash basins and are adequate as they was no overcrowding found near wash basins for washing hands, sufficient supply of hand washing solutions as hand washing solutions were present all the time 25 (100%), sterile gloves supplied adequately, mask, cap, gown, goggle for eye protection, disposable syringes, hand rub available in the medication trolley sufficient sterile dressing packs adequately supplied 25 (100%), 13 (52%) times hand rub was not present in all medication trolley, 23 (92%) times povidin iodine was not present in all medication trolley, 20 (80%) AHD solution not present in all medication trolley, 7 (28%) times spirit solution present in all medication trolley biomedical waste bins were in every cubical but puncture resistant container to dispose fistula cannula was not present in all cubicles.

Table 1: Frequency and percentage of barriers towards infection control measures in dialysis unit

N=50

Barriers towards infection control measures in dialysis unit	Yes		No	
	(f)	(%)	(f)	(%)
Washing agents cause irritation to my hands	19	38	31	62
Forget to follow infection control measures	4	8	46	92

Cont... Table 1: Frequency and percentage of barriers towards infection control measures in dialysis unit**N=50**

Lack of knowledge of guidelines and protocol	2	4	48	96
High work load in Dialysis unit	29	58	21	42
Wash basin for hand washing is away from patient area	32	64	18	36
My colleagues also do not follow infection control measures	4	8	46	92
Nobody checks whether I follow infection control measures.	16	32	34	68
I am too busy, I can't follow infection control measures.	5	10	45	90
Lack of appropriate staffing	30	60	20	40
Interference with practice of care.	2	4	48	96
Insufficient supply of resources	5	10	45	90
I wear protective equipment while performing reprocessing of dialyser tubings	49	98	1	2

Table 2: Frequency and percentage of the resources necessary to practice infection control measures in the dialysis unit
N=25

Resources necessary to practice infection control measures in the dialysis unit	Yes		No	
	(f)	(%)	(f)	(%)
Hand rub available at every patients bed side	25	100	0	0
Disinfectants gluteraldehyde solution available	25	100	0	0
Disinfectants hypochlorite solution available	25	100	0	0
Disinfectants virkon available	25	100	0	0
Wash basins to wash hands available and are adequate	25	100	0	0
Sufficient supply of Hand washing solutions	25	100	0	0
Sterile Gloves supplied adequately	25	100	0	0
Mask supplied adequately	25	100	0	0
Cap supplied adequately	25	100	0	0
Gown supplied adequately	25	100	0	0
Goggle for eye protection is adequately supplied	25	100	0	0
Disposable syringes adequately supplied	25	100	0	0
Hand rub available in the medication trolley	12	48	13	52

Cont... Table 2: Frequency and percentage of the resources necessary to practice infection control measures in the dialysis unit **N=25**

Sufficient Sterile dressing packs	25	100	0	0
Povidin iodine in all medication trolley	2	8	23	92
AHD solution present in all medication trolley	5	20	20	80
Spirit solution present in all medication trolley	18	72	7	28
Disinfectant hydrogen peroxide available	25	100	0	0
Biomedical waste bins for every cubical	25	100	0	0
Adequate supply of bicarbonate cans	25	100	0	0

Conclusion

The study found that majority healthcare workers did not follow infection control measures in dialysis unit though they had good knowledge. Hence, it is essential and necessitates the need for reinforcing the healthcare workers to follow the infection control measures to prevent healthcare associated infections in the unit as healthcare associated infection which are the biggest cause of avoidable harm and unnecessary death in the health system. The policy for infection control measures need to be strictly followed in the dialysis unit. All the facilities and equipment that are required for applying infection control measures should be available in the setting. It is very much essential to assess the barriers which hinders the healthcare workers in practicing infection control measures which in turn helps in reducing the practice of care and prevent the healthcare associated infections in the dialysis unit.

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