Evaluation of Factors Effect on Infection Control and Safety Measures Among Health Care Providers at Hemodialysis Unit in Government and Private: Comparative Study

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Abstract---Background:- Illness control policies and practices are employed in hospitals and other human and animal health care facilities to limit the risk of infection spread. Infection control is a term that is commonly used in the health-care profession and is an important aspect of it. It is responsible for all aspects of health, welfare, and staff safety. In the early 1950s, infection control became a formal institution in the United States. A small number of hospitals had begun to detect healthcare-associated infections (HAIs) and implement infection-control techniques by the late 1950s and early 1960s. Objective:- To investigate of Factors effect on infection control and safety measures among health care providers and to compare Factors effect with related to infection control and safety measures among health care providers at hemodialysis unit in government and private, and to discover the relationship between charactristics of demographic with infection control and safety measures among health care providers. Method of study:– The research was conducted out using a comparative study design. These study to investigate of Factors effect on infection control and safety measures among health care providers.

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***Keywords*---**health care, hemodialysis, infection control, nasocomial infection, safety measures.

Introduction

Infection is the most common reason for hospitalization and the second most prevalent reason for hemodialysis hemodialysis patients, trailing only cardiovascular illness. Bloodstream infections and localized infections of the vascular access, blood-borne diseases such as hepatitis C virus (HCV), hepatitis B virus HBV, HIV, and airborne infections such as tuberculosis (TB) are all hazards for hemodialysis patients. Infection might be spread through contaminated water, devices, and environmental surfaces in the treatment area, as well as individuals with infections who endanger other patients being treated in the dialysis unit. [1]

Healthcare-associated infections pose a significant danger to both sick people and employee safety. inasmuch for frequent and extended exposures to several potential pollutants in the Center of dialysis, hemodialysis patients and dialysis workers are prone to risk of healthcare- associated with disease. The elevated risk is mostly related to: Close closeness to other patients in the HD facility during treatment. Dialysis patients' immunocompromised state, frequent and extended blood exposure during daylasis treatments, Also interaction with healthcare providers, Dialysis tools and devices [2]

The goal of infection control is to reduce the risk of hospital-acquired infections. Infection control systems including as surveillance, isolation, outbreak management, environmental cleanliness, employee health, education, and infection prevention can help achieve this. Infections that were not present or incubating when a patient was admitted to the inpatient wards are known as nosocomial infections (Hospitals or the dialysis center). These infections are easily detected in individuals who looked to be free of infection signs and symptoms at arrival and then developed infection - for example, a surgical incision leaking pus. [4] The health care providers Knowledge, attitudes, and performance in infection prevention and control can all have an impact on a patient's health environment. [5]

The health-care professionals Infection prevention and control skills, attitudes, and performance can all have an impact on a patient's health environment. The framework below shows how nurses influence the environment (infection prevention and control) and hence the patient's sickness profile (knowledge, attitudes, and behaviours in infection control procedures). Orientation refers to how you imagine, feeling, and perform on something; in this example, it refers to the attitude toward infection prevention and control [6]

In general, the causes that increases the risk of hospital acquired infection among haemodialysis patients low level of immunity in patients, frequent and prolonged contact to blood, more patients in a small treatment space, frequent contact to health care providers, frequent visits to health care settings and improper implementation of recommended preventive practices. Similarly, summarises the

sources of infection into four categories the patient, the healthcare provider, the equipment and the environment. [7]

Standard Precautions are a collection of measures that should be adopted in the care and treatment of all patients, regardless of whether they are infected with a transmissible pathogen or are suspected of being contaminated. Standard Precautions are designed to break the infection chain. [6]

Methodology of study

A comporative study design was complete of the study. These study to investigate of Factors effect on infection control and safety measures among health care providers , and to compare Factors effect about infection control and safety performance among health care providers at hemodialysis unit in government and private. A total of health care providers are 25 unit that work in hemodialysis unit for government of clinic at the Teaching AL-Hussain Hospital karbla and in privat 25 unit that work (AL-Kafeel and Zain AL-Abadeen Hospital) were selected by purposive sample for the study during the period (March 17/2021 – March 23/ 2021). The ethical review committee of the Faculty of Nursing at the University of AL-Ameed and Karbala health director Permission for data and sample collection was obtained from the AL-Hussain Teaching Hospital and others hospitals. The data collection process was started on February 1st, 2021, and will go through March 23rd, 2021. The data collection is in progress. Several questions on this questionnaire were altered and developed in order to improve the instrument's validity and make it more relevant for attaining the goals of the current study. The research instrument was made up of two pieces, which were as follows: Demographic data and surveys relating to impact factors (knowledge and attitude) are based on (Guide to the Elimination of Infections in Hemodialysis, 2010). For the selected items, the following responses were used: (Yes, uncertain, No). The information gathered was from a self-test for samples.

Results of the Study

Table 1
Distribution of the studied group according to sociodemographic characteristics.

Demographic Data	Groups	Private/n=25		government /n=25	
		Freq.	%	Freq.	%
Age / Years	20 to 30	17	68.0	20	80.0
	31 to 40	8	32.0	2	8.0
	41 to 50	0	0	3	12.0
	Total	25	100.0	25	100.0
Gender	Male	15	60.0	11	44.0
	Female	10	40.0	14	56.0
	Total	25	100.0	25	100.0
Education level	Secondary	0	0	2	8.0
	Institute	9	36.0	8	32.0
	College	16	64.0	15	60.0
	Total	25	100.0	25	100.0
	1 to 9	19	76.0	24	96.0

Demographic Data	Groups	Private/n=25		government /n=25	
		Freq.	%	Freq.	%
Years of experience	10 to 19	5	20.0	0	0
	20 to 29	1	4.0	1	4.0
	30 to 39	0	0	0	0
	Total	25	100.0	25	100.0
	Course	2	12.0	0	0
	Middle School	0	0	2	8.0
	Institute	8	32.0	8	32.0
Type of the job	College	9	36.0	10	40.0
	Laboratory	3	12.0	3	12.0
	Pharmacist	1	4.0	1	4.0
	Specialist	1	4.0	1	4.0
	Total	25	100.0	25	100.0
	No	7	28.0	9	36.0
Have you participated in educational / related to infection control measures	Yes	18	72.0	16	64.0
	Total	25	100.0	25	100.0

This table show that the distribution for demographic data that indicate male in private, female in government, and years old within most age of (20-30). In addition, the study results explain the level of education among private and government are college and have at less (1-9) year in this job and most of the study sample participated in training session within infection control for private and government.

Table 2
Summery statistics overall assessment for knowledge among study sample private and government

'knowledge	Groups	Private				government			
		Freq.	%	mean	S.d	Freq.	%	mean	sd
	Fail	8	32.0	2.38	.151	20	80.0	2.43	.176
	Pass	17	68.0			5	20.0		
	Total	25	100.0			25	100.0		

This table shows that the study results reveal that the majority of their responses are passed between the private and government samples in terms of general understanding of infection control.

Table 3
Summery statistics overall assessment for attitude among study sample private and government

	Groups	Private				government			
		Freq.	%	mean	sd	Freq.	%	mean	sd
Attitude	Low	0	0	2.29	.159	0	0	2.39	.202

Moderate	16	64.0	9	36.0	
High	9	36.0	16	64.0	
Total	25	100.0	25	100.0	

This table shows that the study results reveal that the overall assessment of knowledge of infection control for the government and public samples is moderate, with the majority of private and government responses being moderate.

Table 4
Statistical summery by ANOVA test indicate parameters for different and correlation among variable and knowledge

ANOVA	government		Private	
	F	Sig.	F	Sig.
Age	1.999	.118	2.146	.093
Gender	1.245	.349	1.852	.142
Educational level	.611	.790	1.288	.323
Type of the job	1.209	.368	1.497	.238
Years of Experience	.611	.790	3.528	.016
Participated in educational	.718	.705	1.520	.230

This table explain the relationship between by their demographic date and overall assessment for knowledge that indicate most variables are no- a significance for government and private between demographic data and overall knowledge except for years' experience is significance for private at p. value less 0.05.

Table 5
Statistical summery by ANOVA test indicate parameters for different and correlation among variable and attitude

ANOVA	Government		Private	
	F	Sig.	F	Sig.
Age	2.213	.097	2.628	0.048
Gender	2.281	.089	.700	.711
Educational level	.804	.650	1.215	.359
Type of the job	2.023	.125	1.637	.194
Years of Experience	2.281	.089	3.149	0.025
Participated in educational	1.493	.256	.665	.739

This table explain the relationship between by their demographic date and overall assessment for attitude that indicate most variables are no- a significance for government and private between demographic data and overall attitude except in years' experience and age groups is significance for private at p. value less 0.05.

Table 6
Summery statistics by in depended t. test for different mean parameters among (government –private) infection control measures

Infection	Mean	In depended t.	p. value	Std.	Std. Error

control	test			Deviation	Mean
different	2.4177	2.24	0.019	0.13721	0.02691
	2.3325			0.11062	0.02258

This table depict that there is significant different between government and private for infection control at p. value less than 0.05.

Discussion

After analysis of demographic of the interviewed health care providers. Show that the distribution for demographic data that indicate most age categories, the average age is 20-30 years old, with males in the private sector and females in government.In addition, the study results explain the level of education among private and government are college and have at less (1-9) year in this job and most of the study sample participated in training session within infection control for private and government.

This finding was supported by (Dawood et.al,2016) which finding their study Socio-demographic characteristics of the study of geriatric patients, [8] by Eid et.al,(2013) which finding their study Socio-Demographic Characteristics of Studied Staff Nurses,[9] by (Younis,2018) which finding their study Sample distribution according to age,[10] gender and type of health care provider) , by tabashet al. 2018) which finding their study Distribution of respondents based on sociodemographic factors, by Saqer et,al.(2014) which finding their study Sample distribution according to age,[12] gender and social status And by El Attar et,al. (2016) which finding their study the frequency distribution of study respondents Age, gender, Marital status and health care providers, [13] and by Gezie, Hailemariam, et al.2019.) which finding their study Sociodemographic characteristic of health workers at Dessie referral hospital, North East Ethiopia.[14]

Dpict that the study results indicate by their responses overall assessment about knowledge and attitude of infection control for government and public sample most their responses are pass among private and government. This results were similar to the result obtained from study done by Kamunge 2013.[15] Which finding their study Comparison of Attitudes between Novice and Experienced Registered Nurses. Gulilat et,al.2014. which discovered their research Bivariate and Multivariate Analysis of Factors Affecting Respondents' Infection Prevention Knowledge and Attitude, as well as Bivariate and Multivariate Analysis of Factors Affecting Respondents' Infection Prevention Attitude,[16] by Kadium, 2015. which finding their study Participants Knowledge Level on the Posttest .[17]

Which finding their study Nurses' knowledge about hospital-acquired infections before the intervention program and attitudes about infection control measures before the intervention program, by Unakal ey,al. 2017. [18] Which finding their study Knowledge on infection prevention among healthcare workers and Attitude towards infection prevention among healthcare worker, (Wahabet,al. 2019) which finding their study Distribution of Health care providers at Damanhour Fever Hospital according to their level of knowledge about standard infection control precautions, (Uoda, B., 2019. which identifies the distribution of sample members in their study based on their understanding of infection prevention procedures

and demonstrates the research personnel's efforts to decrease the risk of infection, by Radzak et,al. 2021.[20]

which revealed their research Respondents' Overall Knowledge of Infection Control Practices and Respondents' Overall Attitudes of Infection Control Practices, by which their study was discovered. Knowledge of infection prevention among health care professionals in Dubti referral hospital and attitude of infection prevention among health care employees in Dubti referral hospital, and by Otovwe,2017.[21] which finding their study Knowledge of standard precaution among the respondents and Attitude of the respondents towards standard precaution.

Explain the relationship between by their demographic date and overall assessment for knowledge that indicate most variables are no- a significance for government and private between demographic data and overall knowledge except for years' experience is significance for private at p. value less 0.05 and explain the relationship between by their demographic date and overall assessment for attitude that indicate most variables are no- a significance for government and private between demographic data and overall attitude except in years' experience and age groups is significance for private at p. value less 0.05.

This finding was supported by Hajizadeh et,al.2015.[22] which finding their study Distribution of Mean Rank of Knowledge & Mean and Std. Deviation of Attitude Score by demographic variable, (Mesfin et,al. 2013) which finding their study Comparisons of Demographic Characteristics and Mean Knowledge and Practice Score of participants,[23] (Shebeb et,al.(2006). which finding their study An intervention study for prevention of HCV infection in some hemodialysis units in alexandria.[24] and (Al-Yateem, 2021.) which finding their study Association between Participants' Demographics and their Knowledge. [25]

Conclusions

- Half of the study group was middle-aged, according to the findings., mostly males in the private sector, while most of them were females in the government sector. Most of the samples were college graduates.
- Most of the workers in this unit were nurses. Most of the staff in this unit had participated in educational courses related to infection control procedures. Most of the samples had been vaccinated against hepatitis B within a period of less than 5 years.
- Through a comparison between the government and private sector in the dialysis unit and the study and study of infection control factors in the dialysis unit, we found that the knowledge information and behavioral attitudes in the private sector are better by a very small percentage, approximately less 0.05 in the public sector, as a result of the years of experience they have.
- There was a significant correlation between knowledge level and years of experience.

Recommendation

- Directors and the infection control teams should schedule educational and training sessions on a regular basis. (evedence based pracrice)EBP.
- Educate health care providers on how to prevent infection and the different disease-specific infection control methods that can be used in a hemodialysis unit.
- Assess all workers participating in the work and the implementation of multiple interventional strategies on a regular basis for knowledge of and adherence to guidelines.
- Hand hygiene compliance in the hemodialysis unit can be improved with a behavioral hand hygiene program.

References

1. El-Kady, R. A. E. H., Waggas, D., & AkL, A. (2021). Microbial repercussion on hemodialysis catheter-related bloodstream infection outcome: a 2-year retrospective study. *Infection and Drug Resistance*, *14*, 4068.
2. Weiner-Lastinger, L. M., Abner, S., Edwards, J. R., Kallen, A. J., Karlsson, M., Magill, S. S., ... & Dudeck, M. A. (2020). Antimicrobial-resistant pathogens associated with adult healthcare-associated infections: summary of data reported to the National Healthcare Safety Network, 2015–2017. *Infection Control & Hospital Epidemiology*, *41*(1), 1-18.
3. Esmat, S. M., Aboulfotouh, M. R., Ezzelarab, M. H., Abdalgeleel, S. A., & Tolba, D. A. (2021). The Role of Infection Control Measures in Ophthalmology: Do They Prevent COVID-19 Infection Among Ophthalmologists in Egypt? A Survey-Based Study. *Clinical Ophthalmology (Auckland, NZ), 15*, 4347.
4. Abbasi, S. H., Aftab, R. A., & Chua, S. S. (2020). Risk factors associated with nosocomial infections among end stage renal disease patients undergoing hemodialysis: A systematic review. *PloS one*, *15*(6), e0234376.
5. Abbas, A. H., Lefta, R. M., & Saeed, A. A. (2009). Assessment of Health Protective Behaviors among Patient with Thalassemia at the Women's and Children's Hospital in Al-Muthanna City.
6. Chia, P. Y., Sengupta, S., Kukreja, A., Ponnampalavanar, S. S., Ng, O. T., & Marimuthu, K. (2020). The role of hospital environment in transmissions of multidrug-resistant gram-negative organisms. *Antimicrobial Resistance & Infection Control*, *9*(1), 1-11.
7. Mohammed, A. Q., Badr, S. H., & Muslem, M. S. (2018). Assessment of Caregivers' Awareness about Home Care of Neutropenia among Children with Leukemia at Oncology Wards in Baghdad City. *Indian Journal of Public Health Research & Development*, *9*(12).
8. Dawood, R., El-Sebai, L., Salem, Y.M. and Hussein, R. Effect of implementing a protocol of nursing care on hemodialysis patients' safety outcomes. IOSR Journal of Nursing and Health Science, 5(5), 2016,pp.31-43.
9. Eid, N., & Abd El Aziz, L. Proposed developed standards: staff nurses compliance at dialysis unit. Greener Journal of Medical Sciences, 3(5), 2013,pp179-183.

10. Younis, M.A. Assessment of Health and Safety Risk among Health Care Providers in Governmental Primary Health Care Centers in South area of Gaza Strip. Doctoral dissertation, Master Thesis, The Islamic University of Gaza, 2018,pp39-40.

11. Saqer, Adeeb Mahmoud. "Assessment of Health and Safety Risk among Health Care Providers in European Gaza Hospital." (2014).

12. El Attar, Shrif M. "Assessment of health and safety risk among health care providers at Al Shifa Medical Complex." (2016).

13. Gezie, Hailemariam, et al. "Health care workers knowledge, attitude and practice towards hospital acquired infection prevention at Dessie referral hospital." Clin J Nurs Care Pract 3 (2019): 059-063.

14. Kamunge, E.W. Exploring knowledge, attitudes and practices of registered nurses regarding the spread of nosocomial infections.(2013).

15. Gulilat, K. and Tiruneh, G. Assessment of knowledge, attitude and practice of health care workers on infection prevention in health institution Bahir Dar city administration. Sci J Public Health, 2(5), 2014, pp.384-3.

16. Kadium, M.J. Improving nurses' knowledge to reduce catheter-related bloodstream infection in hemodialysis unit, 2015.

17. Unakal, C.G., Nathaniel, A., Keagan, B., Alexandria, B., Lauralee, B., Varun, C. and Akpaka, P.E. Assessment of knowledge, attitudes, and practices towards infection prevention among healthcare workers in Trinidad and Tobago. International Journal of Community Medicine and Public Health, 4(7),2017, pp.2240-2247.

18. Uoda, B. Knowledge, attitudes and practices for dialysis nursing staff regarding personal protection means from hospital acquired in Mousl hospital. Mosul Journal of Nursing, 7(2), 2019,pp.91-99.

19. Otovwe, A. and Adidatimi, P.O. Knowledge, Attitude and Practice of standard precaution among health care workers in Federal Medical Centre Yenagoa, Nigeria. IOSR Journal of Pharmacy and Biological Sciences (IOSR-JPBS), 2017,pp.79-86.

20. Hajizadeh, E. and Hassanshahi, G. Knowledge and Attitude of Rafsanjan's Nursing Personnel Regarding Standard Precautions. 4(4),2015,pp.103-109.

21. Mesfin, Y. M., & Kibret, K. T. Assessment of knowledge and practice towards hepatitis B among medical and health science students in Haramaya University, Ethiopia. PloS one, 8(11), 2013, e79642.

22. Shebeb, A. M., Kotkat, A. M., Abd El Reheim, S. M., Farghaly, A. G., & Fetohy, E. M. An intervention study for prevention of HCV infection in some hemodialysis units in alexandria. J Egypt Public Health Assoc, 81(1-2), 2006,119-41.

23. Al-Yateem, I.S.A. Knowledge, Behavior and Attitude of Nurses Regarding Prevention of Central Line Associated Blood Stream Infections (Doctoral dissertation, Royal College of Surgeons in Ireland) ,2021.