

EFFECTS OF SOLID CLINICAL WASTE ON THE HEALTH OF HEALTHCARE PROVIDERS, A SOCIOLOGICAL PERSPECTIVE

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ABSTRACT

Health care of the “care givers” is vital to continue health services. A huge responsibility shouldered by hospitals as a social institution; play a significant role to keep the people active physically and mentally. The Solid waste management is challenge to handle and protect the healthcare providers in the hospital. Focus of this study is to examine the solid waste management practices by hospitals and to assess its effects of clinical waste on the health of service providers. The researcher used population based sampling technique to select the sample of healthcare providers because due to Covid-19 mostly healthcare provider do not willing to cooperate. The total population was 292 and universe consists of 168 healthcare providers from WAPDA hospital in Lahore city. Researcher use survey technique, and developed questionnaire for data collection for data, analysis used Chi-square and simple linear regression. According to findings of this research, solid waste management has significant effects on health of healthcare providers. Although majority of healthcare providers of this hospital have good knowledge about solid waste management and following the “Sops” (Standard Operation procedures) but still there is need of more awareness. This study argues to apply Good clinical practices; are essential in hospitals. It is responsibility of hospital administration to consider health of healthcare providers in the hospital by providing all kind of facilities and equipment for their health & safety and provide comfortable environment to ensure the well-being of staff.

Keywords: *Healthcare providers, Solid waste management, health & safety, hospitals as social institutions.*

Introduction:

Social functions of hospitals extend beyond their role in cure and care of patients. Sociology of health care has a great focus as best known work of the roles and performance of this hospitals. (Stevens Rosemary A. 1991). Hospital waste states that all the hazard and non-hazard material that is disposed and not for reuse and such as “Pathological, infectious, hazardous chemicals, radioactive waste, blood and blood products, pharmaceutical wastes” in addition to food service, cleaning miscellaneous wastes (USEPA, 1989B). “Many infectious diseases including human immunodeficiency virus (HIV), hepatitis B and C and many more can spread through improper dealing of healthcare waste” (Ahmed,2004). In addition, that solid waste management effects on health of healthcare providers in the hospital, waste management reflects the physical, mental, social and working life of workers. Due to work in hospital and mishandling the solid waste, they face infectious disease in workplace.

Similarly, during the training of healthcare workers, some practices are very necessary for the health of her and patients, during practices they follow some alerts for the health of patients and she/he risk of infections and hygiene (e.g. Wear the proper gloves, do not let your uniform attach with, the bed and floor not to contaminate yourself. Use clean equipment is for treatment and services to the patients, after that disposes of gloves and wash hands). Research is undertaken to evaluate healthcare providers with the respect to “HCW” (Healthcare waste) management and effect of hazard and non-hazard material on the health of healthcare providers. Knowledge and attitude regarding healthcare waste management practices among various member of healthcare, team of developing countries is deficient (Hageman,2002; Uysal & Tinmaz,2004).

Current research related to healthcare providers because when hospital waste drums will be outside of hospital or may inside of the hospital and if do not dispose waste properly, due to that all healthcare providers affected by improper waste management that harmful for their health and they face different diseases. Studies shows that only small amount of overall medical waste considered as toxic waste and main source of hazardous waste also are clinical and hospital. Representation by “WHO” (World Health Organization) that (85%) of healthcare material are harmless and (10%) of infectious and 5 percentage of hazardous waste. (WHO, 1994). But it varies country to country studies explains in the united states only 15% waste considered infectious waste and in India varies and considered it 15 to 35% similarly Pakistan also varies proximately 20% of hospital waste

considered as toxic or infectious waste (Akter, 2000). One study conducted by “WHO” (World Health Organization) they stated (22) countries of developing regions shows (18% to 64%) of HC management do not use correct clinical waste handling and dumping technologies (WHO, 2005).

Problem statement

Solid waste management means that produced by the hospital using different instruments and techniques that check the patients and doing different kind of test. There are some categories of medical and solid waste generated at hospitals wards: medical wards generated infectious waste includes “Dressings, gloves, sticking plaster, bandages, contaminated needles and syringes and other disposal medical waste. Surgical wards include anatomical waste such as tissues, fetuses, body parts, organs, laboratories generated pathological” and anatomy materials such as “pieces of tissues, radioactive and chemicals, blood, other body fluids. Dental& clinical offices” generated infectious waste sharps and high metal content. Similarly, the physicians’ offices generated infectious waste and some kind of sharps, according to studies if all the hospital or medical waste mix. Than it is more harmful, hazards for human beings and animals, and destroy the environment and mental, social and working life of healthcare providers. Therefore, it is necessary to dispose properly and avoid the infectious atmosphere of hospital and outside of the hospital. Present study focus on the solid waste management by government hospital, and how solid waste effects in the health of healthcare providers.

Research Question

- What are the aspects of solid waste management practices by hospitals?
- How solid waste effects on the health of healthcare providers in the hospital?

Literature review

WHO, (2014) examines there are many types of hospital waste and definitions of hospital waste or medical waste that explains by researchers, scientists and different organizations. Studies of “Who” “World Health Organization”, revealed that “Medical waste and Hospital waste” is that produced by health care activities including all materials of hospitals that used “Needles to soiled

dressings, syringes, blood, chemical, body parts, diagnostic samples, medical devices, radioactive medical waste, and pharmaceuticals”.

(Chraiti et al., 2005; Cardoso, Macarena's, Oliveira, 2010) study, reasons of infection and hazard may include “Lack of time, Knowledge, Forgetfulness, Lack of means, Uncomfortable equipment's, Lack of training, Conflict between the need to provide care, self-protection & distance, essential facilities or equipment's” in the hospital.

(Olufunsho Awodola, Aishat A.A, Oparah A.C, 2016) study shown on “Assessment of medical waste management in seven hospitals in Lagos, Nigeria” This research conducted in “Two Public hospitals & five private hospitals” the population of this study consisted of “120” respondents including “Doctor, Nurses, laboratory scientists and domestic workers” from both private & public hospitals. Study researcher evaluates the effects of “LAWMA” “Lagos waste management authority” involvement program. They used “Cross-sectional method” and developed questionnaire and in-depth interview for data collection. The most of (56, (53.3%)) were female. The knowledge of waste management among “HCWs” (Healthcare Workers) has been formed in most hospital through the inventiveness of “Lagos Waste Management Authority”. On the other hands one private hospital “out of 7th hospitals” still mixes “hazardous waste” and one public hospital handle its sharps with a burner. Therefore, the researchers suggested that there is need to retain knowledge and skills of policies and strategies makings.

Watterson A, (2020) research conducted on “COVID-19 in the United Kingdom and occupational health and safety predictable not inevitable failures by government and trade union and non-governmental organization responses” a list has arisen in the United Kingdom of wasted prospects and mismanagement by many “Governmental bodies, Agencies, organizations & Employers” to plain for epidemic. In addition, arrange for healthcare providers with the required “health and safety equipment” also processes to protect them from “COVID-19”. But they offered sufficient guidelines on impact of pandemic for workers and society safety, there many safety threats in the United Kingdom because of lack of preparation. On the other hands United Kingdom strategies years forward for “Military scenarios” besides expends “Millions of pounds” in case of war, no specific reason why the governments cannot plan for pandemic and do not enough spend on “HCWs” and others that provide protection, required equipment for their safety and health. But

many “Trade Unions, Health Professionals Bodies, on-Governmental Organization” acknowledged “COVID-19” dangers by lack of “PPE” “Personal Protection Equipment” provide solutions for “HCWs”.

(Simard et al, 2007) conducted study in U.S and the researchers listed that between healthcare workers on threat of (75%) works take “3 or more than dosages of Hepatitis B vaccine according to study (2.5 million) vaccinated hospital based” healthcare workers. On the other hand, researcher said that the reporting levels were “81%” amongst hospital workers, “Physicians, nurses, also meaningfully lower amongst (phlebotomists 71.1%), nurses’ aides and other hospital staff of patient scare (70.9%)”.

(Lucy Kawira Gitong, 2017) research conduct in Kenya on “factors influencing waste segregation among staff” of in chuka hospital. Researcher developed the questionnaire and sample was 66 respondents but only 61 respondents filed the questionnaire. The questionnaire is distributing by “gender and in which female were at “60%, males were (40%)”. The majority of respondents were nurses at (46%) and clinical offices were at (16%), hospital officers be present as (13%) laboratory technicians were at (11%). Lastly orthopedic physiotherapist was at (8%)”. The findings show that (87%) of respondents were those people who had one-year experience of work in hospital that’s why they were in good position and had knowledge about the aspects of dispose the medical waste in hospital. During study researcher found that (40%) workers were trained about hospital waste management, other (60%) were not trained so it was concluded that for effective understandings, and for safety there should be practices and continuing training program for waste management’s.

Methodology

The universe of present study is WAPDA hospital of Lahore city and the researcher studied solid waste management effects on the health of health care providers that included doctors, nurses, housekeeper and paramedical staff. The total population was 292 and universe consists of 168 healthcare providers from WAPDA hospital in Lahore city. The aim of present research was to explore the solid waste management effects in the health of healthcare providers. The finest method of “Data collection” was survey method it is technique of explain the features of a “large population”. The method adopted for data collection is quantitative survey and study design is explanatory. Survey is a better technique for collecting data from large population in very short

time. The researcher prepared the questionnaire and distributed it in the respondents. Data was received from 123 respondents that were willing to provide the information.

Sample Size:

In present study, the researcher used population based sampling technique to select the sample of healthcare providers who were victim by hospital solid waste. Due to the situation of “Covid-19” epidemic, healthcare providers were not willing to face-to-face contact. Therefore, researcher distributed 168 questionnaires in respondents.

Data Analysis:

The present research explores effect of solid waste management in the health of healthcare providers used quantitative research method for data collection. After data collection researcher used “Chi-Square” test for checking the association between two variables, one represents the solid waste and other one represents the health of healthcare providers to find out who more affected by solid waste it could be doctors, nurses, housekeeper, and paramedical staff. In addition, researcher used “Liner regression” for find out relationship between variables

Simple Linear Regression

Simple Linear Regression analyzing between hospital waste and health

Hypothesis

H₁: There is an effect of solid waste management in the health of healthcare providers

H₀: There is a no effect of solid waste management in the health of healthcare providers

Table.1

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.222 ^a	.049	.041	.15165
a. Predictors: (Constant), Hospital Waste				

Table.2

ANOVA ^b						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	.144	1	.144	6.273	.014 ^a
	Residual	2.783	121	.023		
	Total	2.927	122			
a. Predictors: (Constant), Hospital waste						
b. Dependent Variable: Health						

As the ANOVA, value is .014, which is less than 0.05 so the null hypothesis is rejected and alternative hypothesis is accepted. According to the findings of this research, solid waste management has significant effects in the health of healthcare providers. According to study, reasons of infection and hazard may include “Lack of time, Knowledge, Forgetfulness, Lack of means, Uncomfortable equipment’s, Lack of training, Conflict between the need to provide care, self-protection & distance, essential facilities or equipment’s” in the hospital (Chraiti et al., 2005; Cardoso, Mascarenhas, Oliveira, 2010).

Table.3

Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	1.190	.067		17.659	.000
Hospital waste	-.059	.023	-.222	-2.505	.014

a. Dependent Variable: Health

The value of R from Table.1 correlation coefficient is .222 that is statistically reflects the dependent and independent variables are positively correlated and because “R value is near to one”, so researcher explain that the correlation between variables is strong. Therefore, the conclusion is solid waste management effects in the health of healthcare providers and the correlation is very strong as because R-value is positive and near to “one”. In addition, P-value from Table 2 is $.014 < 0.05$ that reflects results are significant.

Chi-Square

Chi-Square test for checking the association between two variables, one represents the hospital waste and other one represents the health of healthcare providers to find out who more affected by solid waste it could be doctors, nurses, housekeeper, and paramedical staff.

Table.4

Occupation			
	Observed N	Expected N	Residual
Doctor	34	30.8	3.2
Nurses	72	30.8	41.2
Attendants	9	30.8	-21.8
Paramedics	8	30.8	-22.8
Total	123		

According to calculation of chi-square doctor have (3.2) and nurses have (41.2) effects on the other hand attendants have (-21.8) effect and paramedical have (-22.8) effects. Its mean the study reflects

that hospital nurse's health are more effected other than staff. It is a responsibility of hospital administration and government of Pakistan to provides the all the related equipment and work for the improvement of healthcare providers in the hospitals. The research suggested that "PPE" (Personal Protection Equipment's) is major procedures of health & safety of nurses because they are direct connect with patients that may lead to serious disease.

The researcher says in developing nations where there are health & safety remain challengeable and "PPE" application well-organized by "Occupational Safety and Health Administration" for healthcare providers to safeguard by infectious sicknesses (Ali, Akhtar, Malik, Mean and Pasha 2010; Akintayo. 2013; Leiss , 2014; Assefa, Kelaya and Tadesse, 2016).

Findings Discussion:

In this study researcher investigated the solid waste management effects on health of healthcare providers. Solid waste includes all the hazards or non-hazard materials use by healthcare providers also other infectious things in the hospital such as needles, gloves, mask, bandage, plastic bags and any kind of sharps, body parts, human tissues, blood etc. According to researchers the main source of hospital waste is generate by healthcare providers especially in hospitals (Sabour et al., 2007, Wong et al., 1994). The health of healthcare providers related to all the characteristics of working life of healthcare providers such as "Physical, psychological, social" impacts of life and health and safety at workplace.

The study revealed on "Human immunodeficiency virus" sick patients that patients generate indications for that they pursue precaution and take vaccinations. We consistent that, globally, mostly vaccinations are given to "Out-patients in primary are facilities for-profit clinics cooperated by (Physicians), (Nurses), or (Unqualified Personnel) governmental health cents" services run by nonprofit making organizations, out-patients management of hospitals. In many "HC" departments, for example, patients admitted in a hospital ward, the "HIV" occurrence is more than in the overall people as results by researcher. That outcome, while not as much of noticeable similarly exists in "Primary settings" even if considerable portion of their ratio relates to kids. Because "Human immunodeficiency virus sick kids are also more probable to go to our patient's facilities than the negative test result (seronegative), moreover, in few major care institutions a significant portion of the case load comprises of patients with "Sexually transmitted infections", more increasing "Human immunodeficiency virus occurrence (Reid S, 2009).

Especially current situation of all over world, global disease of Covid-19, in which many healthcare providers died due to corona virus and present study shows that (29) healthcare providers suffered from corona virus in the WAPDA hospital Lahore. Proper waste management is necessary for employee and institution give safe and healthy environment to their workers. But lack of management in hospital waste and because of hazards and non-hazards risks, which affects the healthcare provider's health. It is the responsibility of administration and establishment of hospital provides health safety and satisfactory environment for healthcare providers in the hospital. On the other hands United Kingdom have strategies for year for "Military scenarios" and expends millions of pounds in case of war, no specific reason why the governments can't plan for pandemic and do not enough spend on "HCWs" and others that provide protection, required equipment for their safety and health. But many "Trade Unions, Health Professionals Bodies, on-Governmental Organization" recognized "COVID-19" dangers from poor "PPE" "Personal Protection Equipment" provide solutions for "HCWs" (Watterson A,2020).

It is the important for the health of healthcare providers to give education and training how to use "PPE" (Personal protection Equipment's). According to calculation of chi-square doctor have (3.2) and nurses have (41.2) effects on the other hand attendants have (-21.8) effect and paramedical have (-22.8) effects. It is a responsibility of hospital administration and government of Pakistan to provide all the related equipment and work for the health of healthcare providers in the hospitals.

Conclusion:

Present research focus on solid waste effects in the health of healthcare providers of WAPDA hospital of Lahore city. Hospital waste means any hazard or no-hazard materials used by the healthcare workers in the hospital. During study when researcher reviewed the literature related to this research and studied at national and international level it was found hospital waste issue is not only prevailing in Pakistan or developing countries, it's a global problem due to lack of management and lesser following the strategies given by government and World Health Organization. Many studies revealed that nurses are more affected among doctors, nurses, paramedical and attendants because they directly in contact with patients while treating them. Similarly, present research also finds out, solid waste affects more on nurse's health rather than other staff. We are concerned waste management, if there are lack of awareness, and knowledge about solid waste management, "HCWs" may faces many physical, social, psychological phases

of working and personal life of the individuals. It is the responsibility of hospital staff to handle the waste after the generation of waste. There should be proper segregation at the stage of production. During data collection doctors said we have all “PPE” (Personal protective Equipment’s) in hospital. However, staff is not using properly due to lack of awareness. Due to Covid-19 pandemic, many healthcare workers died due to unseen and sudden spread of this disease in various countries including Pakistan. As 29 healthcare providers also caught the virus in WAPDA hospital Lahore.

Recommendation:

It is recommended to follow good clinical practices to stay safe while working in health facilities. Laboratory staff and operation theaters should follow the protective measures strictly. It is responsibility of hospital administration to consider health of healthcare providers in the hospital by providing all kind of facilities and equipment for their health & safety and provide comfortable environment to ensure the health of staff. On the other hand, it is responsibility of healthcare providers to ensure their health & safety during work shift at hospital, they should use all the equipment that provided by hospital such as “Gloves, Mask, safety dress, etc.

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