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A STUDY OF HOSPITAL WASTE MANAGEMENT STATUS IN HEALTH FACILITIES OF AN URBAN AREA.

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ABSTRACT

Objectives: Purpose of study was to highlight certain aspects of hospital waste management status in health facilities providing health care in an urban area. This study is focused on awareness of health facilities about CPCB(Central Pollution Control Board) rules, hospital waste management training status, maintenance of records and accident reporting system and proper disposal of hospital waste.Methods: All the health facilities registered with CMO (Chief medical officer) office of urban Noida are included in the study.Results:It was observed that of the 71 health care facilities under study, only 42.2% health care facilities were registered with State Pollution Board for biomedical waste management. It was observed that only 46.4% study units were aware of existence of Central Pollution Control Board Rules on Biomedical Waste Management. Only 4.2% of the health care facilities had trained staff; 39.4% of all health care facilities were maintaining records; none of the facilities had any type of accident reporting system.Conclusion:Hospital waste management issues remain a challenge yet to be addressed as the present study reveals gross inadequacies in most of the health facilities of the study area.

Key Words: **Hospital waste management, Urban Area, Health facilities**

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INTRODUCTION

Biomedical waste is the waste generated in the diagnosis, treatment or immunization of human beings or animals, in research or in the production of testing of biological products including all categories of infected and toxic waste that is a potential threat to human beings and the environment. [1]About 75% to 90% of the waste produced by health-care providers is non-risk or General health-care waste, which is comparable to the domestic waste. It comes mostly from the administrative and housekeeping functions of health-care establishments and may also include waste generated during maintenance of health-care premises.[2] Biomedical waste forms 1 to 2% of the total municipal waste. Less than 10% of this waste is infectious while another 5% is non-infectious but hazardous. The greatest risk is from the infectious and sharp component of the waste because people associated with handling of the waste are at risk of getting injuries from infected sharps or needle prick injury and can contract HIV, Hepatitis B and C. Risk in hospitals and health care settings is highest.[3] Medical related waste is disposed off illegally with municipal waste. Scavengers pick up used syringes and needles, soiled cotton, IV bottles, tubes, urine bags etc. and sell them for recycling. In the process they may contract infections or sharp injuries. Also, contaminated and improperly sterilized disposables may come for resale in the market.[4] Municipal workers are also getting needle prick injuries while collecting waste from bins near health care facilities and are at high risk of HIV, Hepatitis B or C infection.Besides high infectivity of biomedical waste, its toxicity and radioactivity has increased public concern.Veterinary institutions involved in routine pathological work and production of vaccines produce microbiological and biotechnological wastes. These are highly infectious and hazardous for both animals and humans. They need to be autoclaved, microwaved or incinerated as per requirement. Laboratory animals like mice, rabbits and guinea pigs after death must be incinerated or buried deep as per standard norms.[5] Effective methods have been developed to reduce exposure to toxic and infectious biomedical waste. Proper segregation of waste at the level of production, disinfection, containment and incineration followed by land filling eliminates the hazard.The management of biomedical waste is still in its infancy all over the world. There is a lot of confusion among the generators, operators, decision makers and the general community about the safe management of biomedical waste. Biomedical waste management is a special case wherein the hazards and risks exist not just for the generators and operators but also for the general community.[5] Biomedical waste management is a complex problem with detrimental effect and one has to implore the intricacies of management and practices by health care personnel.So this study is being under taken with the objective to identify and analyze various factors related to biomedical waste management and to evaluate existing facilities for biomedical waste management and suggest improvements.

METHODOLOGY

The present study was carried out on all health care facilities of Noida City. All the Government, Charitable, Private Hospitals/Clinics/Diagnostic centers were included to find out the existing practices of biomedical waste management. It is located in the state of Uttar Pradesh at the fringes of Delhi, the national capital. Noida has all the key advantages of Delhi without having its disadvantages. The development area encompasses about 20, 316 hectares of land consisting of 81 villages of district GautamBudhNagar. The study was carried out over a period of one year from August 2007 to October 2008. It's a Cross –sectional; Institution based study.

The universe of sampling frame consists of the following:

1. All the Government Hospitals, Dispensaries and Research Institutes.
2. All Hospitals, Nursing Homes, Clinics run by Private sector and Charitable trusts.
3. All Dental Hospitals/Clinics.
4. All laboratories and Radiological Diagnostic centers.
5. All Veterinary Hospitals.
6. All Medical Practitioners without any formal Qualification (Quacks) are included.

Every healthcare facility generating biomedical waste, of Noida City was included in the present study. A purposive/ feasible, non-probable sampling technique was taken for the Study. The entire universe was taken for this study.Superintendent/In-charge of the health care facility generating biomedical waste of Noida Cit Biomedical waste auditing questionnaire of the Central Pollution Control Board was taken and modified to form a questionnaire. The questionnaire was pretested (in Noida) and administered to collect information about knowledge of biomedical waste disposal, including section for observation of collection, segregation, and disposal of biomedical waste.All health care facilities of Noida, generating biomedical waste, which do not cooperate or do not respond to questionnaire or found closed at the time of collection of data were not included in the study. Data was tabulated on Microsoft Excel sheet and analyzed using Epi-Info version-6 software.

OBSERVATIONS

Table 1

Registration of health care facility, with State Pollution Control Board, awareness of CPCB rules, training status in hospital waste management, status of maintenance of records and Presence of Accident reporting system

S. NO.	VARIABLE	NUMBER	PERCENT
1.	Registration		
	Registered	30	42.2%
	Not Registered	20	28.1%
	Not aware of Registration Rules	21	29.5%
2.	Awareness of CPCB rules		
	Aware	33	46.4%
	Not Aware	38	53.5%
3.	Training for HWM		
	Trained	3	4.2%
	Untrained	68	95.7%
4.	Maintenance of records		
	Maintained	28	39.4%
	Not Maintained	9	12.6%
	No Awareness	34	47.8%
5.	Accident reporting system		
	Present	0	0%
	Not Present	36	50.7%
	Not Aware	35	49.2%
	Total	**71**	**100**

Table 2
Characteristics of Black Bags, Yellow Bags, Use of Needle destroyer, Disposal of used Syringes and Gloves among 28 health facilities where hospital waste was segregated

S.NO	CHARACTERISTIC	NUMBER	PERCENT
1.	Black Bags		
	Located at the right place	28	100%
	Placed on stand	28	100%
	Contain only non-infected waste	17	60.7%
	Not torn	28	100%
	Available sufficiently	28	100%
	Collected daily	28	100%
2.	Yellow Bags		
	Located at the right place	28	100%
	Placed on stand	28	100%
	Contain only infected waste	20	71.4%
	Not torn	28	100%
	Available sufficiently	28	100%
	Collected daily	28	100%
3.	Use of Needle destroyer		
	Present	11	39.2%
	Not Present	17	60.8%
4.	Disposal of syringes		
	Are in bucket for disinfection	3	10.8%
	No disinfection done	25	89.2%
5.	Disposal of Gloves		
	Disposed in the bleaching solution	0	0%
	Available in sufficient quantity	28	100%
	Available in appropriate size	28	100%

DISCUSSION

The present study was undertaken to study the biomedical waste generation, segregation process and it's handling as practiced in Noida, and to identify and analyze various factors relating to biomedical waste management. A total 71 health care facilities generating biomedicalwaste participated in the study. 56 centers Medical care, 13 Diagnostic centers, 1 Research Facility and 1 Veterinary Facility formed the study group. A total of 43qualified medical practitioners 28 practitioners without any recognized medical qualification (by MCI) responded to the questionnaire. Of the 71 health care facilities under study, only 30 health care facilities were registered with the State Pollution Board for biomedical waste management and 41 health care facilities were not registered. 69.7% among qualified medical practitioners and none among unqualified medical practitioners. 46.4% Study units were aware of existence of Central Pollution Control Board rules on biomedical waste management. 0% awareness was observed among unqualified medical practitioners, and76.7% of qualified medical practitioners were aware of existence of Central Pollution Control Board Rules on biomedical waste management. Of the health care facilities, participating in the study, only 4.2% had trained staff in biomedical waste management including health and safety measures. 6.9% and 0% of staff of health care facilities of qualified medical practitioners and unqualified medical practitioners as trained respectively. These

findings are consistent with findings of ManyeleSamwel V which concludes that, a need exists for further education on the nature of the risks posed by medical waste and methods for their proper handling and management for healthcare workers, other workers at risk, and the general public.[6] Hemchandra[7] in his paper recommends,each and every hospital must have well planned awareness and training programme for all categories of personnel including administrators (medical, paramedical and administrative). Training should be conducted to all categories of staff in appropriate language/medium and in an acceptable manner.39.4% of the health care facilities were segregating waste into the prescribed colored container. 65.5% of qualified medical and none of unqualified medical practitioners.Hemchandra[7] in his paper recommends Segregation is the essence of waste management and should be done at the source of generation of bio-medical waste e.g. all patient care activity areas, diagnostic services areas, operation theatres, labour rooms, treatment rooms etc. The responsibility of segregation should be with the generator of biomedical waste i.e. doctors, nurses, technicians etc. (medical and paramedical personnel). The biomedical waste should be segregated as per categories mentioned in the rules.65.1% of qualified medical practitioners were maintaining records, 20.9% were not maintaining records and 13.9% were not aware of regulation on maintenance of records. Among unqualified medical practitioners 100% were not aware of regulation on maintenance of records. As per Central Pollution Control Board guidelines all health care facilities are required to maintain records in relation to biomedical waste management [8].39.4% of health care facilities were segregating waste into waste sharps and 60.6% of health care facilities did not have classification for waste sharps. 65.1% of qualified medical practitioners had classification of waste sharps where as 0% of unqualified medical practitioners had classification of waste sharps. HollieShaner et al[9]in their Eleven Recommendations for Medical waste Management states that of the 10 percent or less portion of the waste stream that is potentially infectious or hazardous, the most immediate threat to human health (patients, workers, public) is the indiscriminate disposal of sharps (needles, syringes, lancets, and other invasive tools). Proper segregation of these materials in rigid, puncture proof containers, which are then monitored, for safe treatment and disposal is the highest priority for any health care institution. If proper sharps management were instituted in all health care facilities most of the risk of disease transmission from medical waste would be solved. This would include proper equipment and containers distributed everywhere that sharps are generated (needle cutters and needle boxes), a secure accounting and collection system for transporting the contaminated sharps for treatment and final disposal, and proper training of all hospital personnel on handling and management of sharps and personal protection.The present research work was undertaken on Health care facilities to study the biomedical waste management of Noida.

CONCLUSIONS

There is a significant number of unqualified (Quacks) practicing in Noida urban not following any norms of Hospital waste management. Registration with State Pollution Board for biomedical waste management and its knowledge is lacking in significant proportion.

Majority of health facilities are not conducting any training sessions regarding hospital waste management. Hospital waste segregation and utilization of offsite treatment facilities is happening in only two-third of health facilities (among qualified practitioners), which is grossly inadequate.

RECOMMENDATIONS

All institutions generating biomedical waste must be registered with central/state pollution control boards.All health care personnel involved in the generation, segregation or handling of biomedical waste must be trained in biomedical waste management including health and safety measures.All institutions generating biomedical waste must segregate waste into the prescribed colored containers. Legislation should be implemented in its strict sense.Regulation of labeling of biomedical waste containers should be implemented.Use of offsite treatment facility for disposal of biomedical waste should be encouraged.Accident reporting system for accidents related to the handling or transportation of biomedical waste should be implemented.Sharp waste should be disinfected before disposal and should be containerized in Blue/White puncture proof container as per regulation.

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