

Current status of Bio-Medical Waste Management in hospitals of Lucknow city



Amina Jafri

Asst. Professor
Deptt. of Environmental Sci.
Integral University
Lucknow



M.J.A. Siddiqui

Professor
Deptt. of Environmental Sci.
Integral University
Lucknow

Asif Jafri

Research Scholar
Lucknow University
Lucknow

Abstract

The proper management of Bio-medical waste (BMW) is very important. There are worldwide well defined rules for handling BMW. Unfortunately due to lack of awareness and proper training these rules lead to worthless. In this study awareness about hospital waste management rules in some important health care centers in Lucknow city has been evaluated. In the present study, health care centers are categorized into four group i.e. Government hospitals, Semi Government hospitals, private health care centers and corporate health care facilities. Random sampling technique was taken at all the four different levels for sampling. After random sampling, total fourteen health care centers from all level were selected. Time to time visit was made to analyze awareness about management of bio-medical waste among staff of all the fourteen health care centers. To make it authentic, a written questionnaire form was prepared for various group of working staff in the hospital/health care centers. To increase the sample size best efforts were made to collect data from maximum number of working staff and their regarding management of biomedical waste were noted down. The results pointed towards lack of awareness towards legislations on management of bio-medical waste even among qualified hospital staff. As a result there is mismanagement practice of BMW handling, so they are exposing themselves and general public to health and environment related problems.

Keywords: BMW management, Random sampling.

Introduction

The health care centers provide a various range of health care facilities which may consist of from general, specialist hospitals, municipal dispensaries and diagnostic centers etc. All these facilities are the Integral part of our society and which have a responsibility to reduce health problems and provide a healthy environment. In the course of curing health problems the health care sector produce huge amount of bio-medical waste which may be hazardous to all those who come in contact with this waste.

Hazardous waste management is a concern for every health care organization. Within waste management (WM), the health care waste management (HCWM) is a process that helps to ensure proper hospital hygiene and safety of health care workers and communities. Health care workers have an important opportunity to manage the environmental effects of their practice. Their efforts may seem small, but each step builds a base of sound behavior and thinking that are necessary for the success of the whole. For proper management of bio-medical waste the Ministry of Environment and Forests has promulgated the Bio-Medical Waste (Management and Handling) Rules, 1998. These rules are meant to improve the overall waste management of health care facilities in India. It has been emphasized that for the proper disposal of bio-medical waste, introduction of laws is not sufficient enough. The awareness of these laws among the general public as well as development of these policies and enforcement that respect those laws is essential. The present study tries to find out the real state of affairs of the awareness, knowledge, attitude and practices of the health care personnel of fourteen medical centers of Lucknow regarding BMW management.

Material and Methods:

In the present first of all an extensive pilot study was carried out at sixteen health care centers of the above mentioned levels of hospitals which were selected by random sampling techniques.

The pilot study provided the basic data on which the biomedical waste management system was premeditated, designed and operated in each facility. Every waste producing unit was identified and categorized as

Asian Resonance

per the standard classification i.e. Bio-medical waste management and handling rules, 1998.

A questionnaire was prepared to evaluate the knowledge and how outlook and management practices of employees towards disposal of waste.

The information were collected by questionnaire and verified by means of personal observations. An assessment was made regarding planning of health care facilities, education to health and publicity on waste management.

Measure were taken to know staff participation in the planning and a review on training programmes of working personnel by hospital authorities was done.

Results and Discussion:

The present study was divided into four levels i.e. the government hospitals, Government and non government hospitals, private health care facilities and corporate health care centers.

At each level selection of health care facilities was done by random sampling techniques by which representative sample from all the study level was taken up with an effort cover a minimum of 25 % of health care facilities in all the level.

Three health care facilities viz. Bal Chikitsa Aspatal, Balrampur hospital and civil hospital were randomly selected in the first level (Government hospitals).

Four health care facilities viz. Fatima hospital, St. Joseph hospital, Integral Hospital of Medical and Research and Vivekanand were randomly selected in the second level (Government and non government hospitals).

Four health care facilities viz. Green Cross Hospital, Neera Nursing Home, Sahara Hospital and Era Nursing Home were randomly selected in the second level the sample for (Private health care facilities centers).

Three health care centers viz. Fortis, Religare, Myo and Zainnix situated at Gomti Nagar Lucknow were randomly selected in the fourth stratum (corporate health care facilities).

In the first level (in government hospitals) total 1071 staff was in position, out of which 470 (48.89%) responded to questionnaires, which constituted sample for the study.

In the second level (Government and non government hospitals) total 491 Employees were in position, out of which 172 (33.03%) responded to questionnaires, which constituted the sample for the study. In the third level (private health care facilities) total 157 people were in position, out of which 86 (50.93%) responded to questionnaires, which constituted the sample for the study. In the fourth level 29 Personnel were in position, out of which 14

(31.06%) responded to questionnaires, which constituted the Sample for the study (Table-1)

The methodology of data collection with the help of questionnaires is in accordance with the study performed in different locations of Lucknow hospitals.

In the first level (The government hospitals), out of total 154 Persons who responded the questionnaire, only 200 (36.97%) employees were aware of biomedical waste (Management & handling) Rules, 1998.

In the second level (Government and non Government hospitals), out of 227 Total staff who responded to the questionnaire only 84 (37%) were aware of biomedical waste (Management & Handling) Rules, 1998.

In the third level (private health care facilities) out of 70 personnel who responded to the questionnaire 15 (26.43%) were aware of biomedical waste (Management & Handling) Rules, 1998. In the fourth level (corporate health care facilities), out of 20 Staff members who responded to the questionnaire 3(8.33%) were aware of Biomedical Waste (Management & Handling) Rules, 1998. (Table-2).

In a similar study, it has been tried to assess the knowledge and practices of biomedical waste management and control among sweepers and lower level worker of hospitals reported lack of awareness on biomedical waste (Management & Handling) Rules, 1998.

In the first level (Government hospitals), out of total 80 waste handlers/ sweepers, only 32(40.00%) waste handlers were aware of the risk involved in bio-medical waste handling, 10(12.50%) received any special training on this topic. 11(13.75%) waste handlers suffered with infection/ injury in the past six months but no one reported to higher authorities.

In the second level (Government and non Government hospitals), out of total 58 waste handlers and sweepers, only 26 (44.83%) waste handlers were aware of risk involved in biomedical waste handling 06 (10.34%) reported to receive special training on biomedical waste handling. 15(25.86%) waste handlers suffered with infections and in the past six months 2 (3.45%) reported to higher authorities.

In the third level (private health care facilities), out of total 15 waste handlers/ sweepers, 5(33.33%) waste handlers were aware of the risk involved in bio-medical waste handling, 2(13.33%) received any special training to handle and manage biomedical waste. 8(53.33%) waste handlers suffered with injury and infections in the past six month 1(6.67%) reported to higher authorities.

In the fourth level (corporate health care centers), out of total 5 waste handlers and sweepers etc., none of them was aware of the risk involved in handling of biomedical waste at the same time did not received any training. 4(80%) waste handlers suffered with infections and injuries in the past six months 2(40%) reported to higher authorities (Table-III).

The information collected by means of questionnaire was also verified by personnel

observation of the waste management techniques of the staff members and it was concluded that neither the government funded nor the private health care centers in Lucknow were working in accordance with the biomedical waste management and handling rules, 1998.

Due to absence of proper monitoring agencies on them, they were evading the rules. This heartless work of the responsible sections of the society which has posed a threat to the safety of public as well as the environment. On the basis of this study it is recommended that the Government should launched the programs which generate awareness regarding serious environmental and health hazards of bio-medical waste.

Workshops, seminars and exhibition etc must be organized from time to time which inform the public and BMW management workers/personnel about rules and regulations regarding BMW management and risks involved due to improper disposal of biomedical waste. Information about the risks associated to hospital waste can be displayed by

poster exhibitions at health care units, strategic points such as locations of waste bins and instructions giving on waste segregation. These posters should be made in such a way that illustrations and diagrams may convey the message that could be understood by all people.

All the Governmental bodies, private health care sectors in collaboration with Lucknow authorities, local help groups and general public should work together to find a proper management bio-medical waste and handling procedures, which should be in accordance with the Bio-medical waste (Management & Handling) Rules, 1998.

Although these bio-medical waste management programmes cannot successfully be implemented without the willingness, devotion, self-motivation, cooperation and participation of all sections of employee of any health care centers. If we want to protect our environment and human health, we must realize the importance of this issue not only in the interest of health managers but also in the interest of community.

Table-1
Total Number of staff and number of persons responded to Questionnaires on Biomedical Waste

S. No.	Designation	First Level			Second Level			Third Level			Fourth Level		
		In position	Responding No.	%	In position	Responding No.	%	In position	Responding No.	%	In position	Responding No.	%
1	Doctor (Specialist)	146	78	53.42	113	41	36.28	26	11	42.31	3	0	00.00
2	Doctor (Resident)	274	90	32.85	2	06	30	5	3	60.00	0	0	00.00
3	GDMO	27	12	44.44	06	2	33.33	1	0	00.00	0	0	00.00
4	Nurse	195	79	40.51	117	35	29.91	30	16	53.33	12	7	58.33
5	Technician	41	24	58.37	60	11	18.33	23	12	52.17	1	1	100.00
6	Pharmacist	22	15	68.18	3	1	33.33	0	0	00.00	0	0	00.00
7	Ward boy	84	36	42.86	26	18	69.23	15	12	80.00	0	0	00.00
8	Peon	38	20	52.63	1	0	0.0	2	2	50.00	4	2	50.00
9	Aaya	42	18	42.86	25	11	44.00	09	7	77.78	3	2	66.67
10	Sweeper	137	61	44.53	102	42	41.18	34	18	52.94	3	1	33.33
11	Clerk and other staff	65	37	56.92	18	05	27.78	12	5	41.67	3	1	33.33
	Total	1071	470	48.89	491	172	33.03	157	86	50.93	29	14	31.06

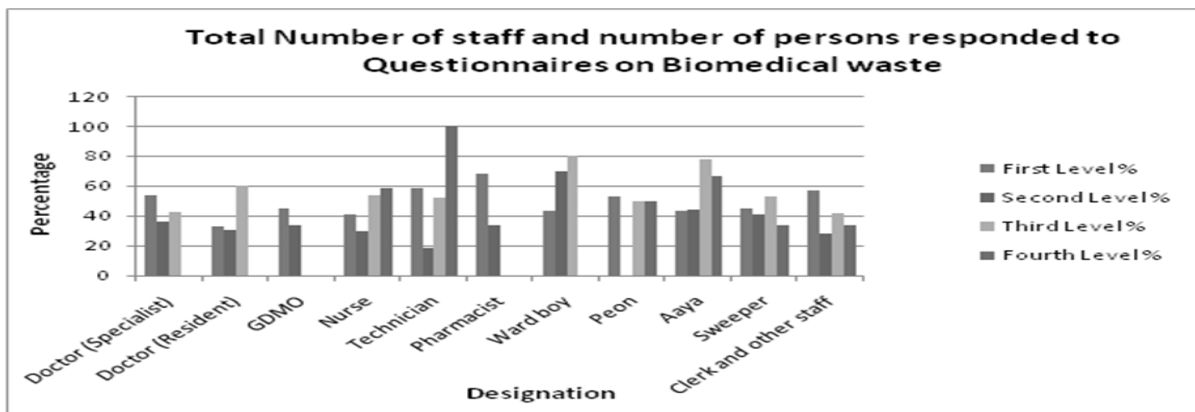
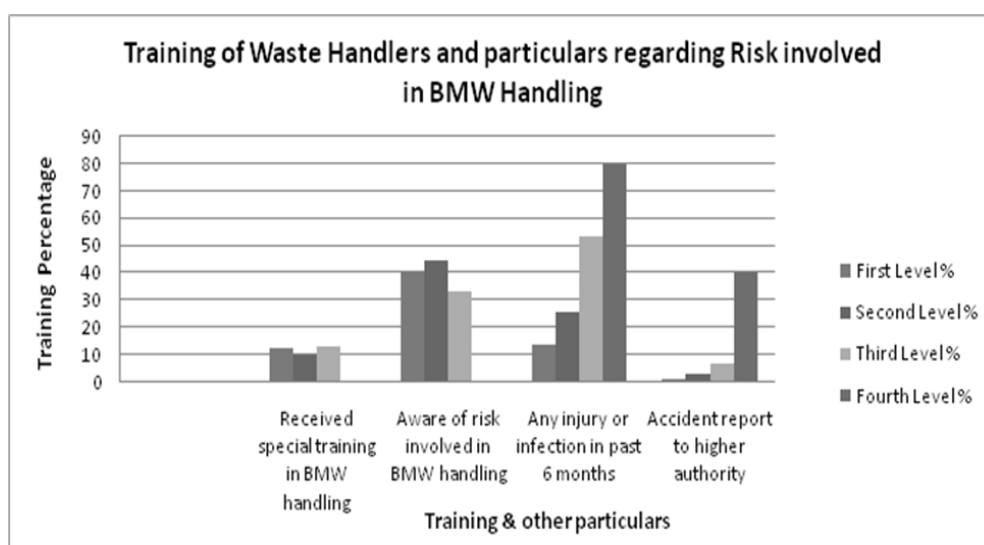


Table-2
Awareness regarding BMW Management and Handling Rules 1998

S. No.	Designation	First Level			Second Level			Third Level			Fourth Level		
		In position	Responding No.	%	In position	Responding No.	%	In position	Responding No.	%	In position	Responding No.	%
1	Doctor (Specialist)	82	65	79.27	41	29	70.73	9	5	55.56	0	0	0
2	Doctor (Resident)	94	50	53.19	8	5	62.50	1	1	100.00	0	0	0
3	GDMO	15	6	40.00	1	0	00.00	0	0	00.00	0	0	0
4	Nurse	84	31	36.90	38	12	31.58	14	3	21.43	6	0	0
5	Technician	31	5	16.13	25	5	20.00	10	1	10.00	2	0	0
6	Pharmacist	18	3	16.67	1	1	100.00	0	0	00.00	0	0	0
7	Ward boy	40	2	5.00	21	2	9.52	11	1	9.09	0	0	0
8	Peon	25	2	8.00	2	1	50.00	1	0	00.00	3	1	33.33
9	Aaya	27	2	7.41	26	2	7.69	5	1	20.00	3	1	33.33
10	Sweeper	80	29	36.25	58	26	44.83	15	2	13.33	4	1	25.00
11	Clerk and other staff	45	5	11.11	6	1	16.67	4	1	25	2	0	0
Total		541	200	36.97	227	84	37.00	70	15	21.43	20	3	8.33

Table-3
Training of Waste Handlers and particulars regarding Risk involved in BMW Handling

S. No.	Designation	First Level		Second Level		Third Level		Fourth Level	
		No.	% (n=80)	No.	% (n=58)	No.	% (n=15)	No.	% (n=5)
1	Received special training in BMW handling	10	12.50	6	10.34	2	13.33	0	0
2	Aware of risk involved in BMW handling	32	40.00	26	44.83	5	33.33	0	0
3	Any injury or infection in past 6 months	11	13.75	15	25.86	8	53.33	4	80
4	Accident report to higher authority	01	1.25	2	3.45	1	6.67	2	40



Asian Resonance

Conclusion:

The present study reveals that there is lack of knowledge about the BMW Management Rules, insufficient management of waste and awareness in practice in many health care units in Lucknow city. Collected knowledge and information on different methods of disposal and updated technology should be made available to all levels of health care personnel. The need of standard operative procedures and defined management techniques and timely training programs are the basic demand for BMW handling and disposal units of different health care centers. If the strategies of BMW Management are not effective and target filled it may lead to serious health hazards spreading environmental diseases. Hospital superintendents, Government Health administration and public awareness need to pay their specific attention to this important issue of health and hygiene.

References:

- Adegboye, A.A., Moss, G.B.; Soyinka, f. and Kreiss, J.K. 1994. The epidemiology of needlestick and sharp instrument accidents in a Nigerian hospital. *Infect. Control Hosp. Epidemiol.* 15(1): 27-31.
- Al-Zahrani, M.A.; Fakhri, Z.I.; Al-Shanshoury, M.A. and Al-Ayed, M.H. 2000. Healthcare risk waste in Saudi Arabia. Rate of generation. *Saudi Med. J.* 21(3): 245-250.
- Carmen Aurora V. Bulucea.; Aida V. Bulucea.; Marius C. Popescu. And Anca F. Patrascu. 2008. Assessment of Biomedical Waste Situation in Hospitals of Dolj District. *Int. J. Biol. Biomed. Engg.* 2(1): 19-28.
- Cisse, C.T.; Faye, O.; Ndiaye, G.; Sakho, A.; Faye, E.O.; Maiga, A.; Wade, F.; Sy-Ngom, K.; Gueye, M.; Zino, J.M.; Diadhiou, F. 2000. Prevention of infection in a surgical environment in the regional hospitals of Senegal. *Sante.* 10(3): 189-194.
- Chauhan, Maya Singh and Malviya Kishore. 2002. Existing solid waste management in hospitals of Indore city. *Indian j. Enviro. Sci.* 6(1):43-49.
- Dilly, G.A. and Shanklin, C.W. 2000. Solid waste management practices in U.S. Army medical treatment facilities. *Mil.med.* 165(4): 302-304.
- Fluke, C. 1988. Handling hazardous waste. *J.Healthc. Mater. Manage.* 6(2): 70-73
- Gupta, B. 2007. Ground Realities of Biomedical Waste Management in Healthcare Setups in Greater Mumbai. *J. ISHWM.* 6(1): 5-9.
- [9] Henry, K.; Campbell, S.; Collier, P. and Williams CO. 1994. Compliance with universal precautions and needle handling and disposal practices among emergency department staff at two community hospitals. *Am. J. Infect. Control.* 22(3): 129-137.
- Kishore, J.; goel, P.; sagar, B. and Joshi, T.K. 2000. Awareness about biomedical waste management and infection control among dentists of a teaching hospital in New Delhi, India. *Indian J. Dent. Res.* 11(4):157-161.
- Linde, M.K. 1993. Hazardous materials management and control in clinical laboratories of small hospitals. *Clinic. Lab. Manage. Rev.* 7(6):493-4, 496-9.
- Llorente Alvarez, S.; Acros Gonzalez, P. and Gonzalez Estrada R. 1997. The evaluation of hospital management of sanitary waste in the principality of Asturias. *Rev. esp. Salud. Publica.* 71(2): 189-200.
- McVeigh, P. 1993. OR nursing and environmental ethics. Medical waste reduction, reuse, and recycling. *Today's OR Nurse.* 15(1): 13-18.
- Mosman, E.A.; Peterson, L.J.; Hung, J.C. and Gibbons, R.J. 1999. Practical methods for reducing radioactive contamination incidents in the nuclear cardiology laboratory. *J. Nucl. Med. Technol.* 27(4):287-289.
- Robichaud, R.; Cormier, A. and Gaudet-Leblanc, C. 1995. Survey of food related waste management practices in New Brunswick health establishments. *J. Can. Diet Assoc.* 56(1): 35-39.
- Rutala, W.A. and Sarubbi, F.A. Jr. 1983. Management of infectious waste from hospitals. *Infect. Control.* 4(4): 198-204.
- Rutala, W.A.; Odette, R.L. and Samsa, G.P. 1989. Management of infectious waste by US hospitals. *JAMA.* 262(12): 1635-1640.
- Sharma, S. and Chauhan SVS. 2008. Assessment of bio-medical waste management in three apex government hospitals of Agra. *J. Environ. Bio.* 29(2):159-162.
- Sharma, V.; Sharma, A. and Bansal, R.K. 1993. A study of disposal of hospital wastes in a rural teaching hospital, *J. Acad. Hosp. Adm.* 5(1): 43-46.
- Smith, D.A.; Eisenstein, H.C.; Esrig, C. and Godbold, J. 1992. Constant incidence rates of needle-stick injury paradoxically suggest modest preventive effect of sharps disposal system. *J. Occup. Med.* 34(5): 546-551.
- Summers, J. 1991. Asset disposal: follow company policies or follow the law? *J. Healthc. Mater. Manage.* 9(4): 54-56.
- Sharma, shalini 2010. Awareness about Bio-Medical Waste Management among Health Care Personnel of Some Important Medical Centers in Agra.
- Weltman, A.C.; Short, L.J.; Mendelson, M.H.; Lilienfeld, D.E. and Rodriguez, M. 1995. Disposal-related sharps injuries at a New York City Teaching Hospital. *Infect. Control, Hosp. Epidemiol.* 16(5):268-274
- Yadav, M. 2001. Hospital waste- a major problem. *JK- Practitioner.* 8(4): 276-282.