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Nepalese Version of a Questionnaire: Biomedical Waste Management Awareness & Knowledge

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ABSTRACT

The number of healthcare institutions are increasing steadily in Nepal, but the issues related to biomedical waste generation still remains. These wastes pose a major problem because of its infectious potential. In addition, wastes that are generated in a dental setup also causes environmental and health issues. The knowledge of biomedical waste management and its effective disposal goes a long way in reducing the overall burden of infectious diseases among the general population and the healthcare professionals alike. Questionnaires regarding knowledge and awareness of biomedical wastes helps in determining the current status regarding its management. This study was hence designed to create a translated version of a questionnaire in Nepalese language to determine the awareness and knowledge among the dental students, dental auxiliaries, foremen and helpers in a dental college in Eastern Nepal.

KEYWORDS : biomedical waste, dental, Nepalese, questionnaire, translation

INTRODUCTION

Bio-Medical Waste is defined as "any solid, fluid or liquid waste, including its container and any intermediate product, which is generated during its diagnosis, treatment or immunization of human beings or animals, in research pertaining thereto, or in the production or testing of biological and the animal waste from slaughter houses or any other like establishments" (Basu RN, 1995). Dental waste is a subset of hazardous biomedical (BM) waste. It includes various materials like cotton, sharps, extracted teeth etc. which are usually contaminated with body fluids like blood and saliva (Schaefer ME, 1991 and Sharma A, 2013). Dental practices also produce small amount of other types of waste, such as mercury, silver amalgam and various chemical solvents (Khandelwal , 2013). If the manipulation of amalgam and its waste products are not strictly regulated, it could be responsible for environmental pollution as well as occupational exposure (Charania ZK and Ingle NA, 2011).

With the steady increase in the number of health care institutions in Nepal, the amount of health care waste (HCW) generated is also increasing Environment and Public Health Organization, Nepal has reported an average health care waste generation of 1.7 kg/person/day and 0.48 kg/person/day of Health care risk waste (HCRW) at an average bed occupancy rate of around 65% (Rijal K and Deshpande A, 2007) .

A strict adherence to biomedical waste (BMW) rule is required by all those who are involved in generation, collection, transportation, storage, treatment and disposal of BMW in any manner and also to every institution that generate BMW. Inadequate and inappropriate knowledge of handling of healthcare waste has serious health consequences and a significant impact on the environment as well. Lack of awareness can lead to the hospitals becoming a hub of spreading disease rather than working toward eradicating them (Chaudhari K, 2015).

OBJECTIVE:

This study was conducted to obtain a reliable and valid questionnaire in Nepalese language to evaluate the Awareness of Biomedical Waste Management among Dental students, Dental Auxiliaries, Foremen and Helpers of a Dental College in Eastern Nepal.

MATERIALS AND METHODS:

This study was conducted after obtaining ethical approval from the institutional review committee of BP Koirala Institute of Health Sciences, which is a tertiary health care center located in eastern Nepal. This study was conducted using a self-administered questionnaire which included 17 items. A translated version of the questionnaire used by Narang RS et al in there study was obtained in Nepalese language after obtaining prior consent from the concerned author (Narang RS, 2012). The questionnaire was first translated into Nepali language by an individual whose native language was Nepali and who was proficient in English language as well. Certain questions were substituted with questions that were more appropriate in context of Nepal. The questionnaire was again back-translated into English by a different group whose native language was Nepali and had good proficiency in English. This questionnaire was checked for similarity and was resolved for issues in translation.

This questionnaire was administered to a total of 50 individuals which included dental students, dental auxiliaries including technicians & nurses; foremen and helpers employed at this dental college randomly. The data was entered into Microsoft excel sheet version 2007 and statistical analysis was performed using SPSS software version 11.5.

RESULTS:

The internal consistency of the translated version of this questionnaire was measured using the Cronbach's alpha value. It was observed that this questionnaire showed a Cronbach's alpha value of 0.708 which is acceptable. The corrected item correlation and the individual Cronbach's alpha when each item of the questionnaire is deleted has been shown in table 1.

	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Q_1	0.586	0.679
Q_2	0.558	0.69
Q_3	0.117	0.709
Q_4	0.329	0.698

Q_5	0.271	0.699
Q_6	0.151	0.707
Q_7	0.282	0.698
Q_8	0.467	0.686
Q_9	0.368	0.694
Q_10	0.086	0.709
Q_12	0.392	0.692
Q_13	0.51	0.696
Q_14	0.512	0.693
Q_15	0.587	0.686
Q_16	0.554	0.698
Q_17	0.547	0.68

Table 1: Corrected item-total correlation and Cronbach's alpha when each item of the questionnaire is deleted.

DISCUSSION:

Biomedical waste (BMW) is still a cause of global concern despite the various advances in the field of medicine. Hospitals are a major source of biomedical wastes and as such may become a major cause of community-acquired infection (Babu BR, 2009). Within a health care facility or hospital, the main groups submitted to risks are: 1. Doctors, medical nurses, healthcare unit workers and maintenance staff; 2. Patients; 3. Visitors; 4. Workers in ancillary services: laundry, medical supplies store, those charged with collecting and transporting waste; and 5. Service workers dealing with waste treatment and disposal of health unit (Bokhoree C, 2014). The management of biomedical waste, hence becomes an integral part of infection control and hygiene programs in all the healthcare settings. Among the 35 million health care workers worldwide, it has been estimated that each year about 3 million received hard exposures to blood-borne pathogens, around 2 million of those to Hepatitis B virus (HBV), 0.9 million to Hepatitis virus (HCV), and 170,000 to Human immunodeficiency virus (HIV) (Mastorakis NE, 2011).

The management of bio-medical waste is still in the initial stages in many parts of the world. There is a lot of confusion with the problems among the generators, operators, decision-makers and the general community about the safe management of bio-medical waste. The prime reason being a general lack of awareness in this regard. As such there is a requirement for updated knowledge among the hospital administrators, surgeons, doctors, nurses, paramedical staff and waste retrievers regarding biomedical waste management (Babu BR, 2009).

In the developing countries, the healthcare wastes are frequently disposed along with domestic wastes. Improper healthcare waste management practice is alarming in such countries because of inadequate resources for proper disposal of wastes, and waste management is often delegated to the poorly educated and individuals lacking proper training, who manage the wastes without proper guidance or adequate protection (Sapkota B, 2014). Accordingly to the European laws, every hospital or health care establishment has to achieve a program for qualitative as well as quantitative survey of the biomedical waste generated, depending on the medical activities and procedures followed by it (Mastorakis NE, 2011). The concerned medical establishment should constitute a team of experts, concerned personnel and workers: doctors, chemists, laboratory technicians, hospital engineers, nurses, cleaning inspectors, cleaning staff. Also, separate establishments are required to carry out relevant qualitative and quantitative tests (Kapoor D, 2014). The segregation of waste at source is a key step and facilitates reduction, reuse and recycling of different kinds of wastes. The biomedical waste generated by all the departments has to be collected according to the prevailing practices of collections and then has to be sorted out into the different categories according to the rules of biomedical waste legislation (INCLEN Program Evaluation Network (IPEN) study group, 2014).

The situation regarding biomedical waste management in Nepal is not upto the required standards. Since 1996, the problem of biomedical waste has been considered as a cost cutting issue by the Government of Nepal, resulting in formulation of Medical Waste (Management and Handling) Rules; 2002 (Chaudhary N, 2014). A study assessing the knowledge, attitude and practise of biomedical waste management among various healthcare professionals of the different institutes within the Kathmandu valley suggested that these professionals were aware of the impact of biomedical waste on health and environment. However, it was also observed that nearly 90% of the healthcare institutes relied on municipal services for disposal of hospital wastes and that there was no proper segregation protocols followed during waste disposal (Rijal K and Deshpande A, 2007).

Another study conducted outside the Kathmandu valley in the Narayani Sub-Regional hospital suggested that around 128.4 kg per day of wastes were generated which would amount to around approximately 0.8kg per day per patient. These reflected an attempt to evaluate the problem posed by biomedical waste to some extent, but this was hugely deficient outside the valley (Paudel R and Pradhan B, 2010). The status of biomedical waste generation and management in eastern Nepal is unknown. Hence, this questionnaire was developed to determine the awareness and knowledge regarding biomedical waste in eastern Nepal especially in relation to a dental hospital setup. The questionnaire after certain modifications and translation to Nepali language showed a Cronbach's alpha value of 0.708 which can be considered as acceptable. However, more questionnaires are required to effectively gauge the situation regarding biomedical wastes in this country.

The study conducted on sweepers in Narayani sub-regional hospital suggested that nearly 35% respondents felt the need to handle waste like sharps more carefully. This was reflected by the fact that most of them were literate. However, 65% of the participants never practised waste segregation with 30% of the respondents having no idea regarding waste segregation whereas 19% assumed that collecting different forms of waste together was a good practise (Paudel R and Pradhan B, 2010). Proper waste management system results in the overall reduction of weight & volume of the waste in addition to reducing the chances of infectivity. It is important to determine the overall awareness and knowledge among healthcare professionals regarding biomedical waste to determine deficient areas in this aspect. Hence, training programs should be conducted for individuals who are directly or indirectly involved in biomedical waste generation and disposal for reducing the burden caused by the same. In addition, preparation of a standard protocol for handling biomedical waste along with regular monitoring will be helpful in achieving the target.

CONCLUSION:

Biomedical waste management is an important aspect in healthcare sector. Proper waste management goes a long way in reducing the overall incidence of infectious diseases among the general population and the healthcare professionals alike. This questionnaire would serve as a suitable tool in evaluating the awareness and knowledge among dental students, technicians, nurses, foremen and helpers regarding biomedical waste.

CONFLICT OF INTEREST:

Nil

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