Management of healthcare waste in circumstances of limited resources: a case study in the hospitals of Nablus city, Palestine

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The objectives of this study were the assessment of healthcare waste management and the characterization of healthcare waste material generated in the hospitals in Nablus city, Palestine, and furthermore, to estimate the prevalence of hepatitis B among the cleaning personnel working in these hospitals. The medical waste generation rate in kg per bed per day was between 0.59 and 0.93 kg bed^{-1} day^{-1}. The waste generation rate in the healthcare facilities of Nablus city hospitals was similar to some other developing countries; however, the percentage of medical wastes in the total waste stream was comparatively high. The density of medical waste at the four hospitals studied ranged between 144.9 and 188.4 kg m^{-3} with a mean value of 166.7 kg m^{-3}. The waste segregation and handling practices were very poor. Other alternatives for waste treatment rather than incineration such as a locally made autoclave integrated with a shredder should be evaluated and implemented. The system of healthcare waste management in Nablus city is in need of immediate improvement and attention. Formulating rules and guidelines for medical waste and developing strategies for overcoming the obstacles related to waste management should be considered as an urgent matter.

Keywords: Medical waste, hepatitis B, management, generation rate, hospital, Nablus, Palestine, wmr 1362–6

Introduction

Healthcare waste generated at hospitals can be classified as follows: general waste; infectious waste, pathological waste; sharps; pharmaceutical waste; genotoxic waste; chemical waste; waste with a high content of heavy metals; pressurized containers; and radioactive waste (Pruss *et al*. 1999, Alagoz & Kocasoy 2008a).

In the literature relevant to the rate of generation of medical waste for different countries (Alvim Ferraz *et al*. 2000, Oweis *et al*. 2005, Tudor *et al*. 2005, Marinkovic *et al*. 2008), it is noticeable that each country has different amounts of medical waste production depending upon its particular medical situations. Generation rates of hospital healthcare waste differ not only from country to country but also within a country (Pruss *et al.* 1999, Mohee 2005). Healthcare waste generation depends on numerous factors such as the established waste management methods, type of healthcare establishment, hospital specialization, proportion of reusable items employed in healthcare and proportion of patients treated on a daily basis (Askarian *et al*. 2004, Da Silva *et al*. 2005, Tudor 2007, Cheng *et al*. 2008). In middle- and low-income countries healthcare waste generation is usually lower than in high-income countries (Qusus 1988, Shinee *et al*. 2008). A typical average distribution of healthcare waste materials is as follows: 80% general domestic waste, 15%

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