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Short communication

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ABSTRACT Awareness and knowledge of biomedical waste practices is very important for any health care setting. This study aimed to determine the knowledge, attitudes and practices (KAP) about biomedical waste among health professionals in primary health care centres in Hail City, Saudi Arabia. The study included 135 of 155 professionals who dealt with biomedical waste from 16 out of 26 primary health care centres. Data were collected using a structured questionnaire. Overall 54.8%, 48.9% and 49.6% of the participants had good knowledge, attitudes and practices scores respectively. Profession, education and age were significantly associated with KAP level (P

Évaluation de la gestion des déchets biomédicaux dans les centres de soins de santé primaires en Arabie

saoudite : étude sur les connaissances, attitudes et pratiques

RÉSUMÉ la prise de conscience et la connaissance des pratiques concernant les déchets biomédicaux sont très importantes pour tous les milieux de soins. La présente étude avait pour objectif de déterminer les connaissances, attitudes et pratiques concernant les déchets biomédicaux parmi les professionnels de la santé dans les centres de soins de santé primaires à Hail (Arabie saoudite). L'étude incluait 135 des 155 professionnels de la santé qui prenaient en charge des déchets biomédicaux dans 16 centres de soins de santé primaires sur 26. Les données ont été collectées au moyen d'un questionnaire structuré. Au total, 54,8 %, 48,9 % et 49,6 % des participants avaient des bons scores pour les connaissances, attitudes et pratiques respectivement. L'occupation, l'éducation et l'âge étaient significativement associés au niveau des connaissances, attitudes et pratiques (p

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Introduction

Biomedical waste poses a high risk not only to doctors, nurses, technicians and ancillary staff working in hospitals and health centres but also to patients, visitors, the community and the environment because of arbitrary management of such waste (1). A study conducted in a tertiary care hospital in Rajkot, India concluded that the lack of proper and complete knowledge about biomedical waste management affected practices of appropriate waste disposal (2). Another study concluded that there was a need to improve the knowledge, skills and competency of hospital staff by providing advanced facilities and on-job training in order to develop standard operating procedures for biomedical waste management (3). The lack of knowledge among nurses and multipurpose workers regarding segregation and colour coding of waste was highlighted in other research (4).

A lack of good knowledge, attitudes and practices (KAP) regarding safe segregation, collection, storage, treatment, transport and disposal of biomedical waste is one of the main reasons for the poor management of biomedical waste. In this context, we sought to evaluate the awareness of biomedical waste management among health professionals working in primary health care (PHC) centres in Hail City, Saudi Arabia. The specific objective of the study was to

assess the KAP of the doctors, nurses and other professions (laboratory technicians and PHC managers) who dealt with biomedical waste and its management in the PHC centres.

Methods

This study was conducted from June to December 2015. A non-probability purposive sampling method was used to select professionals working in PHC centres in Hail City who dealt with biomedical waste and its management. There are 26 PHCs in Hail City, of which 16 were selected based on simple random sampling. Of the 155 professionals working with biomedical waste and its management in the 16 PHCs, 135 agreed to participate (87% response rate).

Data were collected using a structured self-completed questionnaire developed by the investigators. Information was collected on: sociodemographic characteristics of the respondents; their KAP of biomedical waste; and suggested ways to improve biomedical waste practices in their PHC centre. The questionnaire was in both English and Arabic. Cronbach alpha was used to assess reliability (0.620).

For each KAP component, there were 10 items; if the respondent's score was 6 or more, he/she was categorized as having good knowledge, attitudes or practices and if the respondent's score was less than 6, he/she was categorized as having poor knowledge, attitudes or practices.

The data were coded and entered in SPSS, version 21.0 for analysis. The chi-squared test was used for to evaluate differences according to the variables of interest (sex, age, education and profession).

Approval to conduct the study was obtained from the Ministry of Health, Saudi Arabia (Log number 15-471E) and approval to conduct training and data collection was obtained from the Ministry of Health in Hail City. Informed consent was obtained from all the participants.

Results

Socioeconomic characteristics of the respondents: 51.1% of the respondents were women. Out of the 135 respondents, 54.8% were aged 26-35 years, 24.4% were 36-45 years, 17.8% were 46-55 years and 3% were 56 years and over. With regard to educational qualifications, 54.1% were degree holders, while 45.9% had diploma certificates. With regard to profession, 51.9%

were doctors and 48.1% were other health professionals such as nurses, laboratory technicians and PHC managers.

Table 1 shows the level of overall knowledge of the respondents and their knowledge according to demographic characteristic. Overall, 54.8% of the respondents were categorized as having good knowledge about biomedical waste management. The mean (standard deviation) score for overall knowledge was 3.89 (0.50).

There were statistically significant differences between those with good knowledge compared with poor knowledge related to biomedical waste management according to profession, education and age (P

Table 2 shows the overall attitudes of the respondents and their attitudes according to demographic characteristic. Overall, 48.9% of the respondents were categorized as having good attitudes about biomedical waste management. The mean (standard deviation) score for overall attitude was 3.84 (0.50).

There were statistically significant differences between those with good compared with poor attitudes related to biomedical waste management according to profession, education and age (P

Table 3 shows the overall practices of the respondents and their practices, according to demographic characteristic. Overall, 49.6% of the respondents were categorized as having good practices about biomedical waste management. The mean (standard deviation) score for overall practice was 3.82 (0.50).

There were statistically significant differences between those with good compared with poor practices related to biomedical waste management according to profession, education and age (P

There was a strong correlation between knowledge and attitudes, knowledge and practices, and attitudes and practices ($r = 0.769$, 0.723 and 0.837 respectively, $P < 0.05$).

Discussion

The results of our study show that there were highly significant differences in overall knowledge, attitudes and practices of the respondents in relation to their educational level and profession.

A study conducted in Lucknow in India found that a greater proportion of doctors had high knowledge levels and positive attitudes towards biomedical waste management than nurses (5). A study in Nainital, India concluded that for effective implementation of biomedical waste management practices every hospital needed mandatory periodic sensitization and continuous training programmes, especially focusing on the paramedical staff (6). A study undertaken using the Kayakalp assessment tool found that poor knowledge on segregation and collection of waste put at risk all health professionals as well as the patients visiting the hospital for treatment. This study concluded that unsafe disposal or improper disposal could adversely affect the community and environment (7).

We found that there was a positive correlation between knowledge and attitudes, knowledge and practices, and attitudes and practices. Training plays important role in enhancing knowledge of professionals dealing with biomedical and this will help to improve attitudes towards biomedical waste and in turn will result the best biomedical waste practices in the PHCs.

Although this study had a limited sample size, we believe it provides useful information on the KAP regarding biomedical waste practices among professionals in PHCs in Hail City. Our results suggest that there is a need for training for all PHC staff on biomedical waste not just the people who are dealing with biomedical; waste.

Conclusion

There is a need for frequent training programmes in all PHCs for all staff about biomedical waste management.

The Saudi Arabian Ministry of Health should develop a separate biomedical waste manual exclusively for the country which includes biomedical waste policies and procedures for hospitals and PHCs.

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Supplement 1. PubMed Search strategies applied in this study for the corresponding EMR countries (CSS: Classical search strategy; PSS: "Pitfall" search strategy, EMRSS: Eastern Mediterranean Region search strategy).

Supplement 1 Parts 1 2 3 4

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