Perceived occupational risk of infection among mortuary attendants in Nyanza Province, Kenya

Article · June 2014

CITATIONS
2

READS
825

4 authors, including:

Rose Kakai
Maseno University
47 PUBLICATIONS **366** CITATIONS
SEE PROFILE

Charles O Obonyo
Kenya Medical Research Institute
46 PUBLICATIONS **1,747** CITATIONS
SEE PROFILE

INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH & STUDIES

IJIRS

Perceived Occupational Risk of Infection among Hospital Mortuary Attendants in Nyanza Province, Kenya

ISSN 2319-9725

Jackline Mosinya Nyaberi
BSc MPH Maseno University, School of Public Health & Community Development, Maseno, Kenya
Rose Kakai
MSc PhD Maseno University, School of Public Health & Community Development, Maseno, Kenya
Charles O. Obonyo
MSc PhD Kenya Medical Research Institute, Kisumu, Kenya
Doreen Othero
RN MPH PhD Maseno University, School of Public Health & Community Development, Maseno, Kenya

Abstract: Introduction: *A high proportion of the estimated 1.7 million people who die annually in Kenya occur in hospital settings and are laid in a mortuary before burial. Nyanza Province has a high morbidity and mortality rate, due to infectious diseases. Consequently, the mortuary facilities are overstretched and staff manning them may be exposed to occupation risk of infection. The aim of this study was to investigate the perceived occupational risks of infection among hospital-based mortuary attendants in Nyanza Province.*

Methods: *Descriptive cross-sectional study of 42 attendants purposively sampled from 30 hospital mortuaries (8 public and 22 private) in Nyanza Province. Quantitative data was collected using a pre-tested semi-structured questionnaire and observational checklist, while qualitative data was collected by key informant interviews. Quantitative data was analyzed using the SPSS package.*

Results: *The mean age of the attendants was 38.5 years (range = 25 – 63 yrs). Thirty five (83.3%) were male and 7 (16.7%) females. Only 12 (28.6%) attendants had received in-service training on infection prevention, 19 (45%) thought that dead bodies are not infectious, 37 (88%) perceived themselves at risk of occupationally-acquired infection and none had been immunized while in employment. All the attendants recognized the importance of wearing protective clothing while handling dead bodies. Overall, only 14% of the mortuaries had running water. There were no written infection control policies in any of the mortuaries surveyed.*

Conclusion: *We recommend continuous medical education (CME) on infection prevention, establishment of formal training and strengthening the supervision for mortuary attendants.*

1. Introduction:

Annually, 56 million people die globally; 85% of these deaths occur in developing countries (Singer and Bowman, 2002). Four out of 10 leading causes of death are infectious diseases in low- and middle-income countries (WHO 2008a). In Kenya alone, about 1.7 million people die each year, with about one third dying in hospitals. A high proportion of those who die are laid in a mortuary awaiting burial (Singer and Bowman, 2002). Health Care Workers (HCWs) in general are potentially exposed to infections by pathogens such as HIV, tuberculosis and hepatitis from needle stick injuries and contact with body fluids (Healing *et al.*, 1995; Knight and Bodsworth, 1998; Demiryurek *et al.*, 2002, Sterling *et al.*, 2000; Lauzardo *et al.*, 2001). Although, the dead are not regarded as being a health hazard, mortuary workers are at increased risk of occupational hazards when handling the bodies (Morgan, 2004). Contact with blood and other body fluids on mucous membranes and aerosolized particles can be sources of infection. When a person dies, the environment in which the pathogens live can no longer sustain them but this does not happen immediately, and transmission of infectious agents from a cadaver to a living person may occur (Demiryurek *et al.*, 2002; Morgan, 2004, Sterling *et al.*, 2000; Lauzardo *et al.*, 2001). In sub-Saharan Africa, especially with the threat of HIV and AIDS, these occupational risks are real and significant (Knight and Bodsworth, 1998).

Standard guidelines on handling dead bodies and ensuring safe working conditions have been proposed (HASC, 1991; COSHS, 2000; Bakhshi, 2001). Universal precautions are simple infection prevention measures that reduce the risk of transmission of disease pathogens in the healthcare settings (Sadoh *et al.*, 2006). Universal blood and body fluid precautions require all body fluids to be treated as infectious regardless of the source person's diagnosis. They mandate barrier protection whenever there is potential contact between the health care worker and non-contact skin mucous membranes, blood and other body fluids (Knight and Bodsworth, 1998). The risk of infection for health workers depends on the prevalence of disease in the patient population and the nature and frequency of exposures. Universal precautions include; hand washing after any direct contact with body fluids, safe collection and disposal of sharps, wearing of gloves before contact with body fluids, non-intact skin and mucous membranes, wearing a mouth mask, eye protection mask, and a gown if blood or other body fluids might splash, covering cuts and abrasions, cleaning up spills of blood and other body fluids and safe system for hospital waste management and disposal (WHO 2008).

All dead bodies are potentially infectious and universal precautions should be regarded as safety measures to be implemented for every case (Saene et al., 2003). A safe working environment is the greatest safeguard against infections (Bakhshi 2001). It is important to provide mortuary workers with information on hazard safeguards when handling dead bodies irrespective of the cause of death (Byard et al., 2006). Not many studies have evaluated occupational risks among mortuary and funeral workers (Healing et al., 1995; Davidson and Benjamin, 2006). In Kenya, as in many other developing countries, mortuary premises are relatively underdeveloped, underfunded, and poorly staffed compared with other service providing units within the health system. During disaster outbreaks, violence and accidents, the operational capacity of public mortuaries are overstretched, making these premises occupationally unsafe and pose health risks for both the staff and clients. The aim of this study was to establish the perceived occupational risks of infection among mortuary attendants working in Hospitals within Nyanza Province.

2. Methodology:

Study Area: The study was conducted between July and August 2008 in 30 hospital mortuaries located in Nyanza Province, at the shores of Lake Victoria, with a population of 4,392,196 persons as at 1999 census (GOK, CBS, 1999).

Study Design: This was a descriptive cross-sectional design using both quantitative and qualitative methods to collect data from mortuary attendants and other hospital departmental in-charges respectively. Data collection and analysis: The study population comprised of mortuary attendants who had worked for at least three months in public or private hospitals in Nyanza Province were included in the study.. The Province, participating hospitals and mortuary attendants were selected by purposive sampling due to the high prevalence of infectious diseases (WHO, 2004). Data was collected from 42 mortuary attendants who gave informed consent, using a pre-tested interviewer administered semi-structured questionnaire regarding demographics, knowledge, attitude and perceived occupational risk of infection. Hospital departmental in-charges were interviewed as key informants on safety practices. These included 19 (34.5%) nursing officers, 16 (20.1%) hospital administrators, 9 (16.4%) public health officers, 4 (7.2%) mortuary supervisors, , 4 (7.2%) medical superintendents, and 2 (3.6%) laboratory technologists.

3. Results:

Variable	Frequency (N=42)	Proportion (%)
Sex		
Female	7	16.7
Male	35	83.3
Marital Status		
Married	36	85.7
Single	3	7.1
Widow	1	2.4
Widower	2	4.8
Education		
Primary	18	42.9
Secondary	22	52.4
College	2	4.8
Age groups		
30 and below	9	21.4
31-35	13	31
36-40	9	21.4
41-45	2	9.5
46-50	2	9.5
51-55	4	4.8
56-60	2	9.5
60 and above	1	2.4

Table 1: Socio-demographic characteristics of mortuary attendants

Factor	Comparative Categories	RR	95% CI		p-value
			LL	UL	
Gender	Female vs Male	1.17	1.02	1.34	0.287
Age	≤ 30 vs > 30 (Years)	1.18	1.02	1.36	0.213
Education	<Secondary vs ≥ Secondary	1.14	0.17	7.67	0.891
Experience	< 5 vs ≥5 years	0.90	0.73	1.10	0.292
Training	Trained vs Untrained	1.69	0.17	16.91	0.651

Key: RR = Relative risk for category of those who perceived themselves to be at risk of infection. LL = lower limit, UL = upper limit.

Table 2: Perceived risk of infection in relation to demographic characteristics

Factor	Comparative Categories	RR	95% CI		p-value
			LL	UL	
Gender	Female vs Male	1.33	0.50	3.54	0.59
Age	≤ 30 vs > 30 (Years)	0.59	0.16	2.18	0.39
Education	< Secondary vs ≥ Secondary	1.06	0.45	2.50	0.90
Experience	< 5 vs 5≥(Years)	1.05	0.41	2.70	0.92
Hospital	Public vs Private	1.20	0.50	2.87	0.69
Training	Untrained vs. Trained	1.52	0.65	3.54	0.36

Key: RR = Relative risk for those who reported having had needle stick injuries, LL = lower limit, UL = upper limit.

Table 3: Relative risk of needle injuries in relation to demographic characteristics

A total of 30 mortuary facilities were surveyed comprising of 8 (27%) public and 22 (73%) private. Quantitative data was collected from 42 mortuary attendants. Out of these, 29 (69%) worked in private and 13 (31%) in public mortuary facilities. Among the attendants, 35 (83.3%) were male, 36 (85.7%) married, 3 (7.1%) single, 1 (2.4%) widowed, and 2 (4.8%) widowers. The age range of the respondents was 25 to 63 years with a mean of 38.5 (SD±1.6) years. As shown in Table 1, most of the respondents, 13 (31%) were aged between 31 to 35 years and slightly over half, 22 (52.4%), had secondary-level education. Only 2 (4.8%) respondents had college-level education. The average work duration was 5.3 years (SD = 3.9 years, range = 3 months to 7 years) and most of the respondents, 23 (57.5%) had worked for less than 5 years.

Out of the 42 mortuary attendants, 37 (88.1%) perceived themselves to be at risk of infections. The proportions of personnel expressing possible risk of infection was similar between the two categories of hospitals being; 11 (84.6%) in public and 26 (89.7%) private hospitals. Table 2 shows the comparison of perceived risks in relation to demographic characteristics. The perceived risks were not significantly associated with the mortuary attendants' gender (RR; 1.17; 95% CI: 1.02 - 1.34, p = 0.29), age (RR; 1.18; 95% CI: 1.02 - 1.36, p = 0.12), educational level (RR; 1.14; 95% CI: 0.17 - 7.67, p = 0.89), working experience (RR; 0.90; 95% CI: 0.73 - 1.10, p = 0.29) or training on infection prevention (RR 1.69; 95% CI: 0.17 - 16.91, p = 0.65). Only 12 (28.6 %) attendants had undergone training on infection prevention. Of these, 2(16.6%) worked at public and 10 (83.3%) at private mortuary facilities. Though not statistically significant, trained attendants were over 1.5 times more likely to perceive themselves at risk of infection than the untrained.

The respondents were asked whether they had ever experienced any needle stick injuries while working in the mortuaries. Table 3 shows the needle stick injuries. Fourteen (33.3%) of them said they had needle stick injuries, out of which 10 (71.4%) reported the incidents to relevant authorities. Although not statistically significant, mortuary attendants who had not been trained on infection prevention were 1.5 times more likely to be at risk of needle stick injuries compared to those who were trained (RR = 1.52; 95% CI:0.65 - 3.54, p = 0.36). Similarly, the risk of needle stick injuries was not significantly associated with the mortuary attendants' gender (RR = 1.33; 95% CI: 0.50 - 3.54), age (RR = 0.59; 95% CI: 0.16 - 2.18, p = 0.39), educational level (RR = 1.06; 95% CI: 0.45 - 2.5, p = 0.9), work experience (RR = 1.05; 95% CI: 0.41 - 2.70, p = 0.92), or hospital category (RR = 1.20; 95% CI: 0.50 - 2.87, p = 0.69).

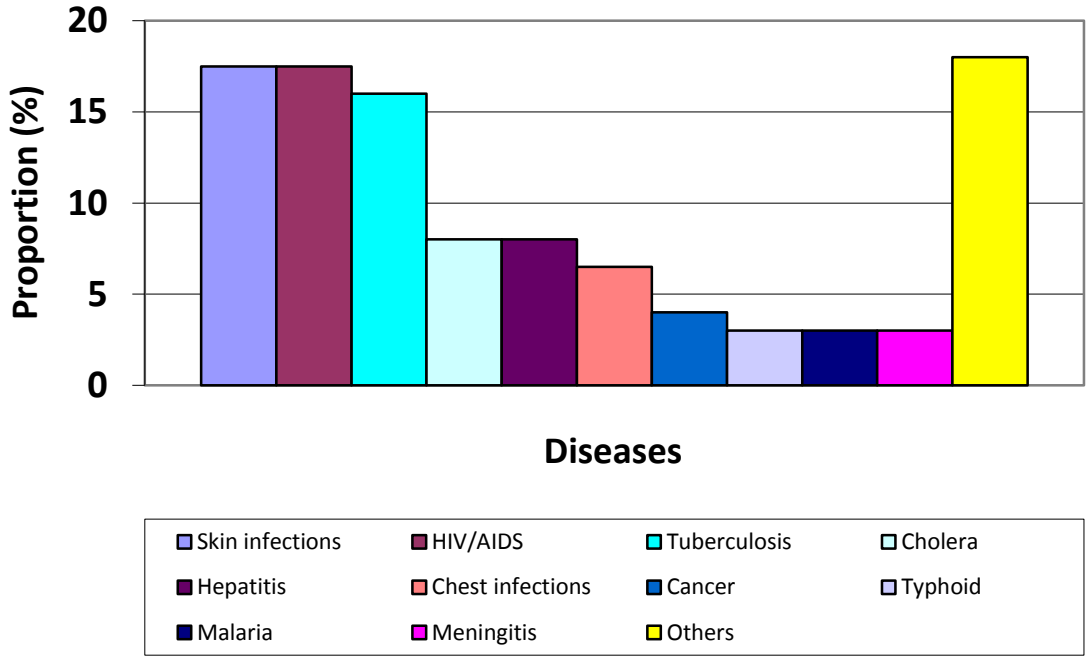

Figure 1: Perceived risk of diseases by mortuary attendants

Fig. 1 shows the perceived risks of infection and diseases mentioned by mortuary attendants. They felt they were at risk of several infections, mainly skin (18%), HIV/ADS (18%) and tuberculosis (16%).

Although all the attendants recognized the importance of wearing protective clothing, 19 (45%) believed that dead bodies were not infectious. Most, 39 (92.8%) of the attendants reported that they received protective clothing. The most commonly received personal protective equipment included gloves, masks, aprons and boots. On the use of protective gear, 40 (95.2%) respondents reported that they always put on gloves when injecting dead bodies, 41 (97.6%) changed gloves after every contact with a dead body, 32 (76.2%) used masks regularly when handling dead bodies, 33 (78.6%) wore gowns while in the mortuary and 35 (83.3%) wore boots when undertaking activities in the mortuary. Whereas most key informants mainly from private mortuary facilities felt that trained mortuary attendants complied with universal precaution procedures on infection prevention and control, others indicated poor compliance giving reasons such as lack of training, unawareness, unprofessionalism, heavy workload, insufficient protective gadgets and negligence. One of the key informant reported, "The mortuary workers want to be supervised and always reminded that they need to use protective gears consistently". However, there were no written infection control policy guidelines in any of the mortuaries surveyed.

At the time of interview, 30 (71.4%) attendants said that none of them or their colleagues had experienced a work related illness in the previous 12 months. The remaining 12 (28%) were ill with most common diseases being skin, chest, eye, throat, tuberculosis and HIV infections, which they thought could be related to their work in the mortuary. Almost all 37 (88.1%) respondents reported that they had not received any immunization against any disease since they started working in the mortuary. The other 5 (12%) had been immunized against hepatitis. Only 6 (14%) mortuaries had running water.

4. Discussion:

Health care workers are exposed to several infections (Knight and Bodsworth, 1998, Sharma and Reader, 2005; Byard et al., 2006). The mortuary environment and routine tasks performed by mortuary workers may place them at a higher risk than usual of exposure to infectious disease agents (Healing et al., 1995). A safe working environment is the greatest safeguard against infections. In Kenya, after the outbreak of post election violence-related deaths in 2007/2008, public mortuaries were starkly neglected, which led to worsening of already deplorable conditions of storage and preservation (Obonyo et. al. 2008). The health belief model states that an individual would be more likely to take up a certain health promoting practice if they perceived themselves to be at risk of infection (Janz and Becker, 1984). In our study, the respondents felt they were at risk of several infections mainly skin, HIV/AIDS and tuberculosis but most of them reported that there was no occurrence of work related infection by their colleagues. Despite the high risk perception some attendants believed that dead bodies were not infectious. This is a good opportunity for promoting positive behavior change among the mortuary attendants. This is consistent with a study in a Birmingham hospital in which mortuary attendants had relatively higher risk of infection perception compared to other groups (Stein et al., 2003).

Previous studies found unsatisfactory levels of knowledge accompanied by frequent episodes of poor compliance with universal precautions among nurses and doctors (Stein et al., 2003; Lymer et al., 2003). Similar to our study, mortuary attendants are likely to have lower educational status, to be poorly supervised, less likely to have exposure on universal precautions and lack of psychological support (Bakhshi 2001). Inadequate knowledge, negative attitudes, lack of proper guidelines and essential supplies, and environmental factors could contribute to enhance the impact of such risks. Furthermore, none of the mortuary

attendants had undergone formal education on mortuary services. Previous studies have established that in other hospital departments, most staff are adequately trained with supervision being offered at various levels (Stein et al., 2003; Lymer et al., 2003). This study poses the critical question of these workers' ability to perform effectively and safely given the observed lack of training for the mortuary attendants. The perceived risk was less among attendants who had not been trained on infection prevention. This could be a possible indicator of lack of training and low level of education on the part of mortuary attendants (Demiryurek et al 2002, Morgan 2004). Thus their perceived risks could be pegged mostly on misinformation and myths. Giving conflicting information to mortuary workers on handling dead bodies with infection can result to inappropriate practice that increases the chances of mortuary workers to be at risk (Bakhshi 2001).

Compliance with universal precautions among mortuary attendants could be influenced by several factors some of which operate independently. Most of the attendants indicated a relatively positive attitude towards various safety practices. This is consistent with studies conducted among other HCWs (Stein et al., 2003). This is a good sign of willingness to comply among the mortuary attendants. However, it should not be construed to be actual compliance as observed in the study. Some respondents were observed and reported by key informants not to comply with the universal safety precautions allegedly due to heavy work load or negligence. The risk of transmission of HIV, hepatitis and other blood borne diseases in health care settings is a result of poor practices, non-compliance, inadequate knowledge and negative attitudes of health care workers (CDC, 1988; Wisner, 2002). Simple measures like use of protective gears, hand washing, use of gloves and protective clothing are known to be effective and vital for infection control and prevention in hospitals as well as mortuaries (Stein et al., 2003, Berhe et al., 2005).

The design of the mortuary and its environment is an important predisposing factor. Specifically, the availability of adequate space, ventilation, safe water supply, adequate lighting, hand washing facilities, waste management, and precautions to control rodents and other disease vectors, should be ensured (Berhe et al., 2005). Our findings indicate that only a small proportion of the mortuaries had running water.

Most of the mortuary attendants lacked training on infection prevention. There is need to strengthen supervision and CME on occupational risks of infection and safe practices at the

work place in order to improve mortuary attendants' practices and compliance with universal precautions.

5. Conflict Of Interest:

The authors declare that they have no conflict of interest to declare.

References:

1. Abbasi K (2001). Death under funded - the mortuary service needs resources not resignations. British Medical Journal, 322: 186.
2. Bakhshi SS (2001). Code of practice for funeral workers. Managing infection risk and body bagging. Communicable Disease and Public Health 4: 283-7
3. Brysiewicz P (2006). The lived experience of working in a mortuary. Accident and Emergency Nursing, 15: 88-93.
4. Byard R, Cooke W and Leditsche J (2006). Practical issues involved in setting up temporary mortuaries after mass disasters. Forensic Science, Medicine and Pathology, 2: 59-61.
5. Davidson SS, Benjamin WH (2006). Risk of infection and tracking of work-related infectious diseases in the funeral industry. American Journal of Infection Control, 34: 655-60
6. Demiryurek D, Bayramoglu A and Ustacelebi S, (2002). Infective agents in fixed human cadavers: a brief review and suggested guidelines. Anatomical Record, 269: 194 - 197
7. Goyet C (2004). Epidemics caused by dead bodies: A disaster myth that does not want to die. Rev Panam Salud Publica 15(5): 297-299.
8. Healing TD, Hoffman PN, Young SEJ (1995). The infection hazards of human cadavers. Communicable Disease Report, 5: R61-68
9. Health Services Advisory Committee (HSAC, 1999). Safe working and the prevention of infection in the mortuary and post-mortem room. Safety in Health Service Laboratories, HSE Library and Information Services UK.
10. Knight VM and Bodsworth NJ (1998). Perceptions and practice of universal blood and body fluid precautions by registered nurses in a major Sydney teaching hospital. Journal of Advanced Nursing, 27: 746-751.
11. Lauzardo M, Lee P, Duncan, Hale Y (2001). Transmisión of Mycobacterium tuberculosis to a funeral director during routine embalming. Chest, 119: 640-6422.
12. Lymer UB, Richt B, Isaksson B (2004). Blood exposure: Factors promoting health care workers' compliance with guidelines in connection with risk. Journal of Clinical Nursing, 13: 547-554
13. Morgan O. (2004). Infectious disease risks from dead bodies following natural disasters. Rev Panam Salud Publica 15 (5), 307 - 312.

14. Obonyo CO, Omondi DSA, Mwinzi PN (2008). Public-health crisis after the election violence in Kenya. Lancet, 371: 1319 – 1321.
15. Occupational Safety and Health Service (OSHS, 2000). Managing health and safety risks in New Zealand mortuaries. Guidelines to promote safe working conditions. http://www.osh.govt.nz/order/catalogue/pdf/autopsyguide.pdf (Accessed on 10/9/2007)
16. Sadoh WD, Fawole AO, Sadoh AE, Oladimeji AO and Satiloye OS (2006). Practice of universal precautions among healthcare workers. Journal of the National Medical Association, 98 (5): 722-726.
17. Saene Van HKF, Silvestril L and Dela Cal MA (2003). Precautions for handling dead bodies. Infection control unit. 2nd Edition, Springer Verlag INC. Milan; New York.
18. Singer AP and Bowman WK (2002). Quality of end-of-life care: a global perspective. British Medical Journal, 324: 1291-2
19. Sharma BR and Reader MD (2005). Autopsy room: A potential source of infection at work place in developing countries. American Journal of Infectious Diseases, 1 (1): 25-33.
20. Sterling TR, Pope DS, Bishai WR, Harrington S, Gershon RR, Chaisson RE (2000). Transmissión of Mycobacterium tuberculosis from a cadaver to an embalmer. New England Journal of Medicine 342: 246-248..
21. Stein AD, Makarawo TP and Ahmad MFR (2003). A study of doctors' and nurses' knowledge, attitude and compliance with infection control guidelines in Birmingham teaching hospitals. Journal of Hospital Infection, 54: 68-73.
22. WHO (2008a). Global Health Observatory. http://www.who.int/entity/gho/en/ (Accessed on 14/6/2011).
23. WHO (2008b). Health care workers safety. http://www.who.int/injection . (Accessed on 14/4/2008).