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Major article

Adherence to tuberculosis infection control guidelines by nurses in Lesotho

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Background: Lesotho has a high prevalence rate of tuberculosis (TB) that has been exacerbated by high prevalence of HIV. Adherence to the TB infection control guidelines recommended by the World Health Organization is pivotal in TB infection control.

Objectives: We assessed the level of adherence to the TB infection control guidelines by nurses in TB wards and outpatient departments and the factors associated with nonadherence to the guidelines in Lesotho.

Methods: This was an analytical study based on a semistructured questionnaire administered on 55 purposively sampled nurses working in TB wards and outpatient departments at Motebang and Mafeteng Hospitals. Logistic regression analysis was used to determine the variables associated with nonadherence to TB infection control guidelines.

Results: Fear of occupational exposure ($P = .026$), female gender ($P = .03$), lack of equipment ($P = .02$), inadequate staff ($P = .005$), and the keeping of guidelines by certain nurses ($P = .02$) were significantly associated with nonadherence. Overall, 43.6% of the respondents had poor adherence to the guidelines. Adherence to the guidelines was not influenced significantly by age, TB ward work experience, and qualifications of nursing staff.

Conclusions: There is poor adherence to World Health Organization TB infection control guidelines by nurses in Lesotho. There is need to improve access to equipment, increase accessibility of guidelines, and ensure adequate staff to increase adherence to TB infection control guidelines.

Infection control is minimizing transmission of infections from medical, surgical, and biologic materials. Infection control includes minimizing transmission from the environment and patients or staff.[1] Good infection control lies in basic professional training, provision of written policies, and further education.[1] Protection of patients and health care providers from nosocomial infections is crucial, hence the need for developing infection control guidelines.[2] Tuberculosis (TB) is a typical nosocomial infection that can easily spread in hospital settings. The prevalence of TB in Lesotho is currently high: 402 cases per 100,000 population of whom 77% are HIV infected.[3] Active TB is the most common infection among HIV-infected individuals due to their immunocompromised condition.[4]

TB is caused by a bacterium called *Mycobacterium tuberculosis* and it spreads from person to person through airborne particles or droplets from the respiratory tract that occur when an infected person coughs, sneezes, talks, or sings. The transmission occurs when the particles enter the respiratory tract of the noninfected person.[5]

Infection control guidelines in many Southern African settings are often not followed, resulting in increase in TB cases with HIV as the main risk factor.[4] Patient and occupational exposure to TB is a possible reality in Lesotho, because compliance among nurses to TB control guidelines is still a challenge.[6] There is need for scrutiny of the availability of infection control guidelines, as well as their relevance, use, and limitations in Lesotho.

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In an effort to address the deficiencies identified in TB control, the Lesotho government developed a 5-year strategic plan for directly observed treatment and strategies to combat the spread of TB. In addition, most health care workers in all facilities have been trained on TB/HIV management,[7] including aspects of TB infection control. Lesotho also adapted the World Health Organization (WHO) TB infection control guidelines.[3] These guidelines aid health care providers in reducing the spread of TB.[8] However, lack of equipment and knowledge, and work overload, remain major constraints to TB infection control.[9]

Lack of isolation facilities and personal protective equipment, unavailability of TB infection control guidelines, inadequate TB training for staff and patients, communication barriers owing to cultural and linguistic differences between staff and patients, and excessive workload of nurses adversely affect TB infection control efforts.[10] Moreover, a study in Malawi[11] showed that TB control guidelines were not uniformly implemented. Consequently, TB infection control guidelines are vital in curbing the spread of TB. Nosocomial infections such as TB can be acquired by both patients and health care workers.[12] A study in Lesotho[13] revealed that the National TB Control Programme has ineffective monitoring and evaluation tools.

In 1987, barrier nursing was developed as a model that entails isolation of patients with specified diseases.[2] Florence Nightingale emphasized that the first requirement of any hospital is that it should do the sick no harm.[14] For that reason, infection control is 1 primary requirement for all patients who are in need of care. The protection of all hospital staff against the risk of injury or disease is the second requirement of health care settings.[14] The protection against infections is achieved through the availability of guidelines, equipment, and facilities. The infection control committee in a health facility is an important part of a quality control managing program.[14,15] The role of the committee includes the design and appropriate use of hospital facilities. According to the WHO,[8] the committee also conducts surveillance of infectious diseases among health care workers.

We assessed the level of adherence to TB infection control guidelines and the factors associated with nonadherence to the guidelines in Lesotho. Nurses' awareness on the importance of adhering to infection control measures was also evaluated.

METHODOLOGY

Study setting

The study was conducted at Motebang Government Hospital in Leribe District and Mafeteng Government Hospital in Mafeteng District. Each of the 2 hospitals has a single TB ward that is partitioned into male and female wards. In each hospital, there is 1 isolation room that does not have negative pressure. According to the Bureau of Statistics of Lesotho,[16] Motebang Hospital serves about 300,000 people and Mafeteng Government Hospital serves about 200,000 people. Both hospitals are referral district hospitals. The population of the 2 districts is approximately 26% of the total population of Lesotho. The average nurse-population ratio in Lesotho is estimated at 1:400.[16]

Study design and data collection

This was an analytical study based on a semistructured questionnaire administered by the interviewer. The study purposively sampled 55 nurses from a 120-member nursing staff in the 2 hospitals included in the study. The sample consisted of all nurses from the 2 hospitals who were willing to participate in the study. This consisted of nurses who had worked in the TB ward and outpatient departments for at least a month. Nurses who had worked for less than a month in a TB ward, those not willing to participate, and those who were either on leave or off duty were excluded. The research was approved by the Ministry of Health Research and Ethics Committee of Lesotho on January 17, 2012.

Table 1
Gender, qualifications, and tuberculosis (TB) work experience for the respondents

Variables	Frequency (N = 55)	Percent
Gender		
Male	13	23.64
Female	42	76.36
Qualifications		
Certificate	18	32.73
Diploma	32	58.18
Undergraduate degree	4	7.27
Master's degree	1	1.82
TB ward experience, y		
< 1	16	29.09
1-2	22	40.00
> 2-6	13	23.64
> 6-15	4	7.27

Statistical analysis

All analyses were done using STATA version 12 (StataCorp, College Station, Tex). Cross tabulation and testing of proportions were performed to test for the significance of the differences between adherence to infection control measures and nonadherence. Nonadherence to TB infection control guidelines was defined as lack of TB infection control guidelines, inaccessibility of the guidelines, and rare use of guidelines. Logistic regression analysis was performed to test for the significance of the variables associated with nonadherence to TB infection control guidelines. The significance level used was .05.

RESULTS

Demographic distribution of the respondents

The respondents' ages ranged from 23-53 years with mean age of 35 years. The work experience of the nurses ranged from 1-32 years with a mean of 9 years. However, their experience in TB ward work ranged from <1-15 years with a mean of 2 years. The respondents' information on gender, qualification, and work experience in TB ward work is presented in Table 1. The results revealed that there were more women than men in the study. In addition, diploma holders constituted the majority of the nurses. About 70% of the respondents had 2 years or less of TB ward working experience. However, adherence to TB infection control guidelines was not influenced significantly by age, TB ward work experience, and qualifications of nursing staff. Female gender was significantly ($P = .03$) associated with nonadherence. However, the effect of gender on nonadherence needs to be studied further because the gender ratio in this study was skewed toward males (see Table 1).

Availability, accessibility, and use of infection control guidelines

Table 2 illustrates variables assessed as possible determinants of nonadherence to guidelines as reported by the respondents. Availability, accessibility, and frequency of use were the main determinants of nonadherence. Overall, 43.6% of respondents were not adhering to the guidelines. The difference between the proportion adhering and the nonadhering proportion was