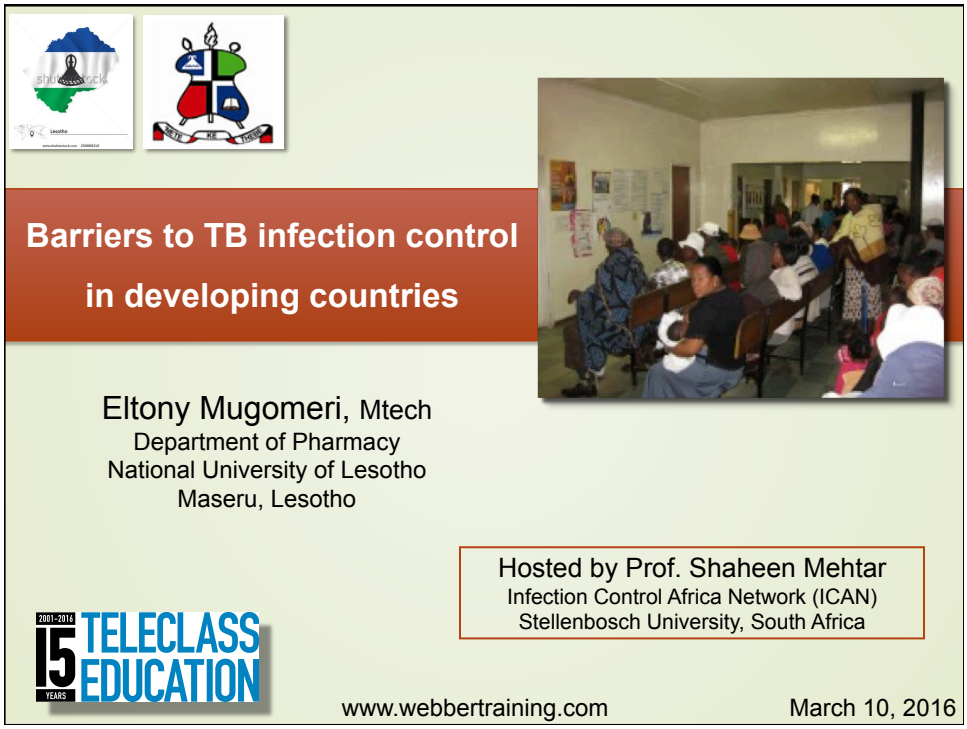
Barriers to TB infection control
in developing countries
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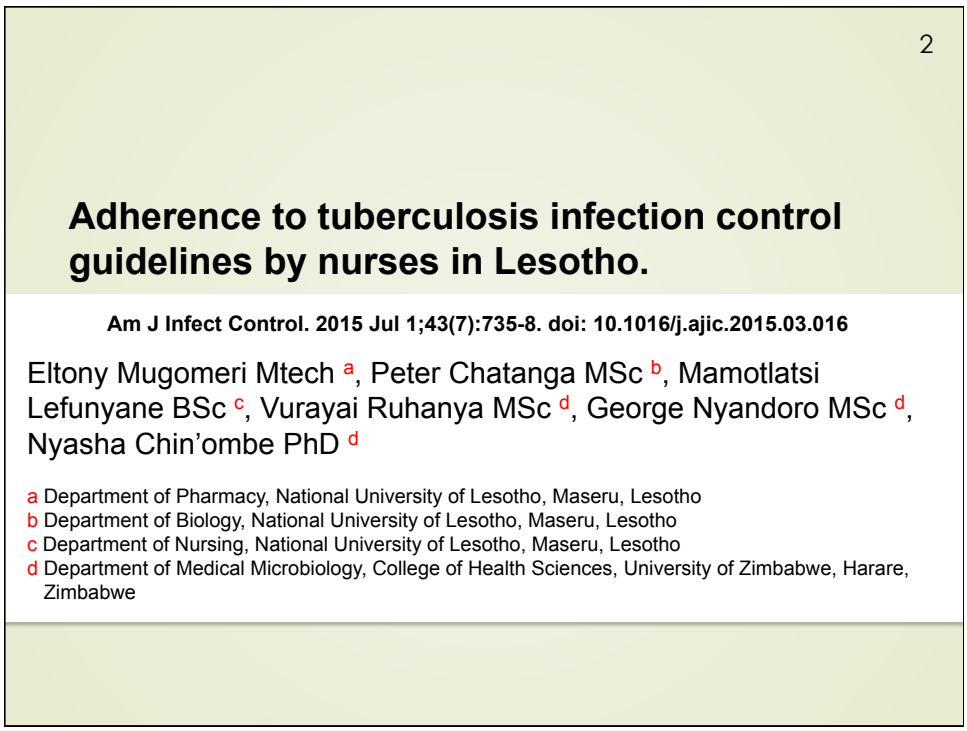
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Adherence to tuberculosis infection control guidelines by nurses in Lesotho.
Am J Infect Control. 2015 Jul 1;43(7):735-8. doi: 10.1016/j.ajic.2015.03.016
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Introduction

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- Good infection control lies in basic professional training, provision of written policies, and continuous education of health care workers.
- Tuberculosis (TB) can easily spread in hospital settings through airborne particles or droplets when an infected person coughs, sneezes, talks, or sings (Motacki, 2011)
- Infection control guidelines in many Africa are often not followed, resulting in increased TB cases (Dagnra, 2011)
- There is need for further scrutiny of infection control in these settings.

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Table 1: TB Notifications in Lesotho, 2006-2011 (GoL, 2013b:20)

Type of TB	2006	2007	2008	2009	2010	2011
New sputum smear positive	2,617	3,723	3,862	3,976	3,600	3,510
New Extra Pulmonary TB	393	2,853	2,692	2,491	2,224	2,089
Relapses	142	555	586	668	521	480
Treatment Failure	46	123	62	100	47	43

Incidence of tuberculosis (per 100;000 people) in Lesotho

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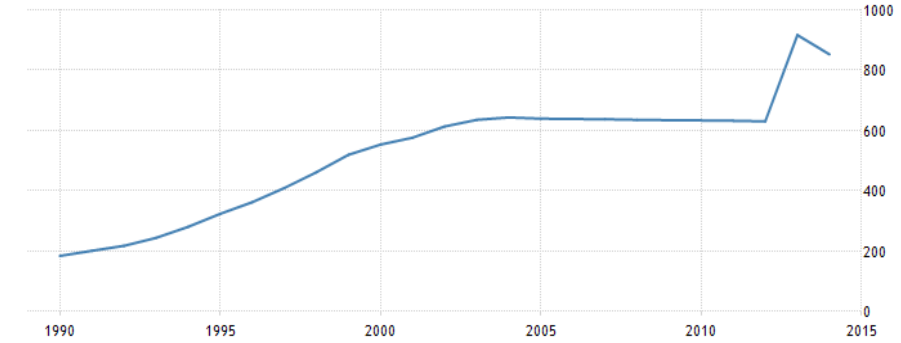

According to the report, the countries with the highest number of TB incidences per every 100, 000 individuals are: Swaziland (1, 382 cases), Lesotho (916 cases), South Africa (860), Namibia (651), Djibouti (619), Mozambique (552), Zimbabwe (532), Timor-Leste (498), Kiribati (497) and North Korea (429).

.... observed that the migration of Basotho to work in South African mines or farms led to loss of follow up of TB patients, thus leading to poor treatment outcomes and failure to meet the MDG target.

The problem of TB infection control in Lesotho

6

- In 2012, the Lesotho Government developed a 5-year strategic plan for improving TB infection control, combating the spread of TB and intensifying the detection of TB cases (GoL, 2012)
- Lesotho adapted the World Health Organization TB infection control guidelines (GoL, 2010). However, constraints remain.
- This study assessed the level of adherence to TB infection control guidelines in healthcare settings in Lesotho and the associated factors.



Study setting

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- The study was conducted at 2 referral district hospitals in Leribe and Mafeteng districts in Lesotho.
- Each of the 2 hospitals has a single TB ward that is partitioned into male and female wards. At each of these hospitals, there is 1 isolation room.
- The average nurse-population ratio in Lesotho is estimated at 1:400.16

Study design and data collection

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- Semi-structured questionnaires administered by the interviewer.
- 55 nurses systematically sampled from a 120-member nursing staff in the 2 hospitals included in the study.
- **Inclusion:** nurses who had worked in the TB ward and outpatient departments for at least a month.
- Study approved by the Ministry of Health Research and Ethics Committee of Lesotho on January 17, 2012.

Data Analysis & Definitions

9

- Logistic regression analysis used to test for the significance ($p<0.05$) of the variables associated with 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.



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RESULTS

- Demographic distribution of the respondents The respondents' ages ranged from 23-53 years with mean age of 35 years.
- There were more women than men in the study. In addition, diploma holders constituted the majority of the nurses (Table 2)
- Being female was significantly ($p=0.03$) associated with nonadherence. However, note that gender ratio in this study was unbalanced(see Table 2).

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Table 2
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

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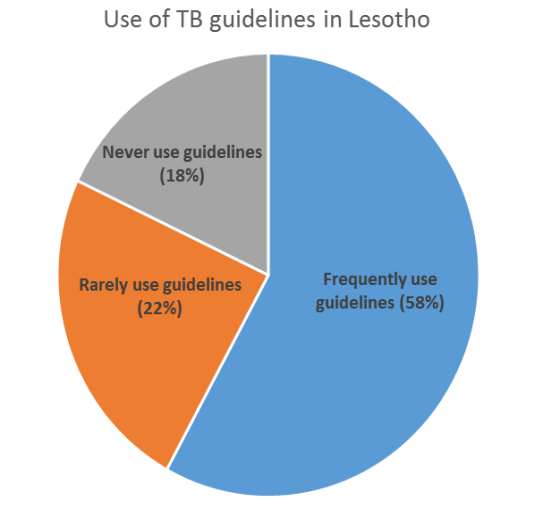
Availability, accessibility, and use of infection control guidelines

- Availability, accessibility, and frequency of use were the main indicators of nonadherence (Table 3)
- Overall, 43.6% of respondents were not adhering to the guidelines.

Table 2
Variables assessed as possible determinants for nonadherence to tuberculosis (TB) infection control guidelines (N = 55)

Characteristic	Nurses responding "Yes"	
Variable	Frequency	Percent
Availability of TB infection control guidelines	52	94.6
Awareness of the availability of infection control committee	52	94.6
Adequate isolation rooms	50	90.9
Disinfection done as required	49	89.1
TB infection guidelines accessible at all times	43	78.2
Gloves available at all times	41	74.6
Gowns available at all times	40	72.7
Availability of adequate staff in TB ward	39	70.9
Fear of occupational exposure to TB	39	70.9
Ventilators available	36	65.5
Frequent use of guidelines (referred to guidelines at least once in the past week)	32	58.2
Disinfectants available at all times	29	57.7
N95 masks available at all times	15	27.3

- A significant proportion never used guidelines (Piechart)



- **Guidelines accessibility:** Not inaccessible to 22%. Inaccessibility significantly (p=0.02) associated with nonadherence (See Table 3).

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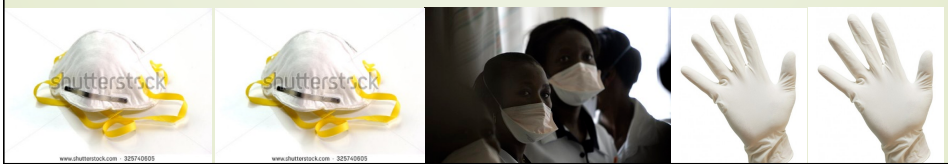
- Personal protective measures, which include N95 masks, gloves, and gowns, were inadequate at the 2 hospitals.
- Lack of at least 1 piece of equipment specified in the TB infection control guidelines was reported by between 10% and 73% of the respondents.
- About 70% of respondents reported fear of occupational exposure. This was a significant (p=0.026) indicator of nonadherence to the guidelines.



Constraints hindering adherence to TB guidelines

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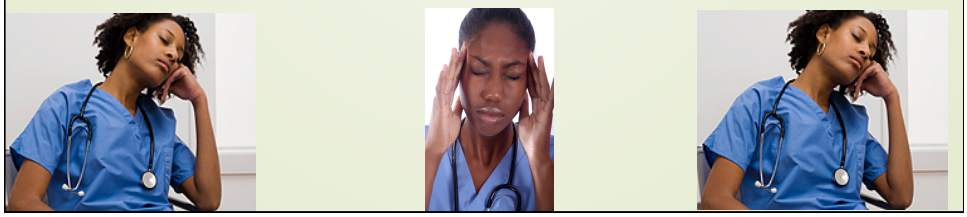
- Overall, 8 constraints to adherence to TB guidelines were identified (Fig 1).
- Lack of equipment (>30%) and inadequate staff (about 30%) were the main indicators of nonadherence.
- Lack of equipment (p=0.02) and inadequate staff (p=0.005) contributed significantly to lack of adherence.
- Insignificant indicators of nonadherence included lack of clarity of the guidelines and allergies to equipment such as N95 masks (see Fig 1).



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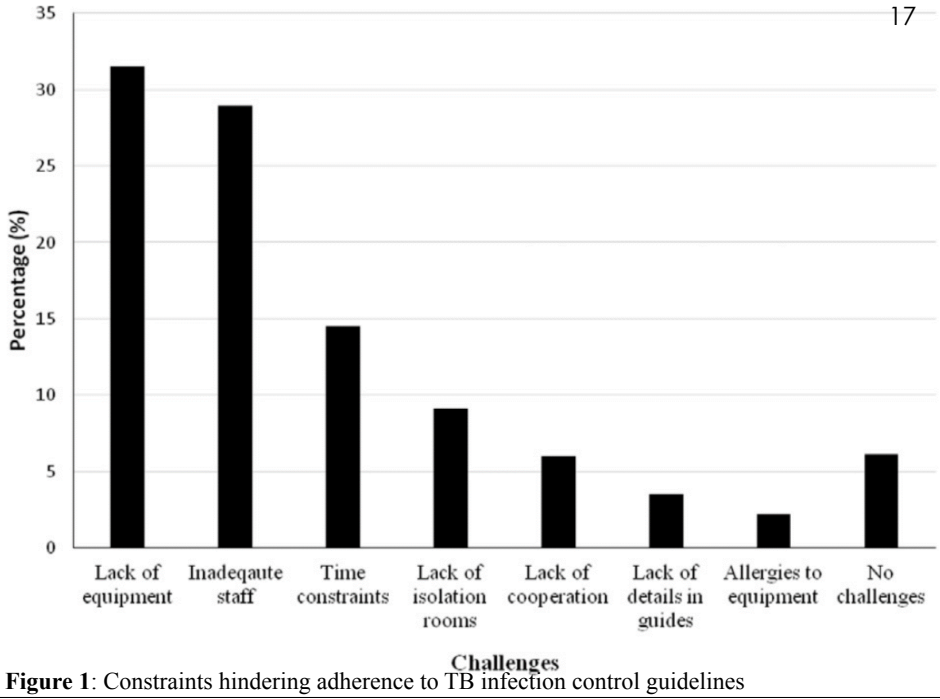

Figure 1: Constraints hindering adherence to TB infection control guidelines

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- Time constraints (15%; n=55) due to shortage of staff were another challenge.
- Nurses gave conflicting responses about the frequency of the infection control committee meetings. About 10% of the respondents did not know about the existence of the infection control committee.
- There may be gaps in the commitment of the administrations to ensure effectiveness of the committees.

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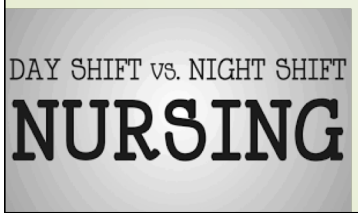
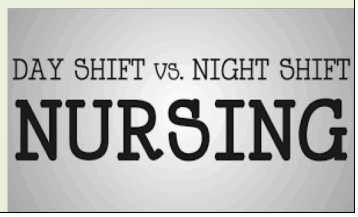
- Staff shortage was strongly reported. About 55% of the respondents indicated that only 1 nurse worked per shift in the night, while about 20% reported that the TB ward was sometimes left unattended at night.
- However, the nurses reported that day shifts were well attended with at least 3 nurses per shift (nurse-patient ratio of about 1:10).
- Most respondents (71%) reported that they educated patients about TB daily.
- However, 10% said they never educated patients about TB.





Conclusion

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- Lack of equipment such as isolation rooms, ventilators, and N95 masks are constraints to nonadherence.
- Sissolak (2011) in Cape Town, South Africa also reported similar findings. Lack of equipment and inadequate staff were among the major factors.
- Substantial attention should be put to the selection, fitting, training, and maintenance of equipment (Ziady, 2004).

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- Nurses need to be trained on appropriate use of equipment (Prieskop, 2004)
- Isolation rooms with negative atmospheric pressure are needed (Gruendemann, 2001).
- A study in Malawi showed that TB control guidelines were not uniformly implemented (Harries, 2002).
- Oladoyinbo (2011) in Lesotho revealed that the National TB Control Programme has ineffective monitoring and evaluation tools.

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-Thank You-

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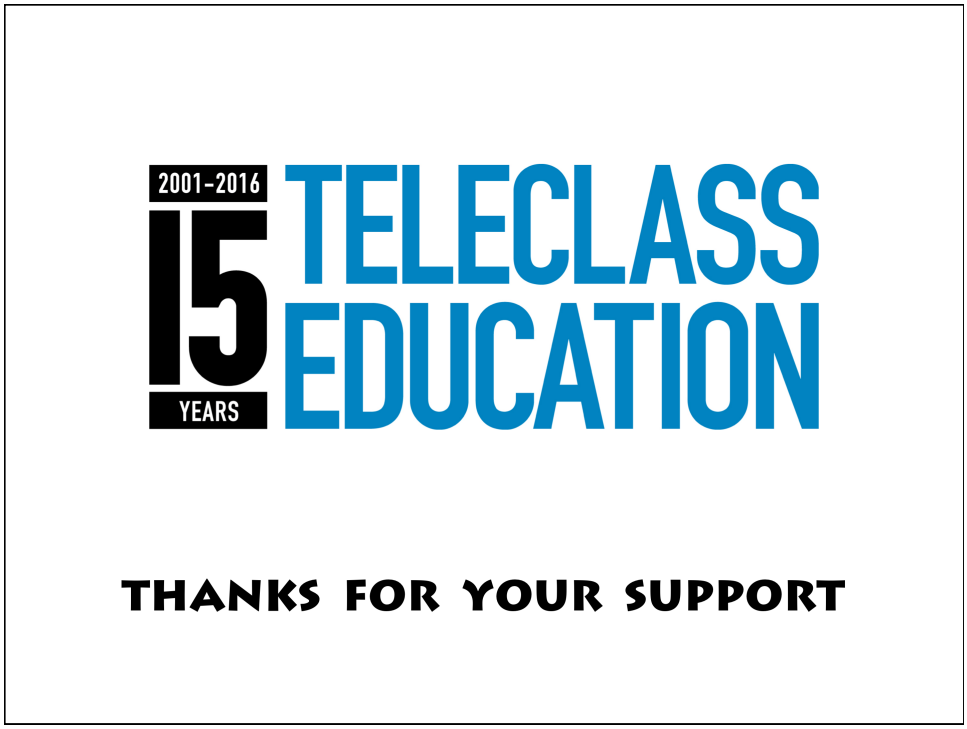
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