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SENSITIVITY AND SPECIFICITY OF TUBERCULOSIS SCREENING TOOLS IN PEOPLE WITH DIABETES

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CONFLICT OF INTEREST DISCLOSURE FORM

☑ I have no Conflict of Interest to report.

DOUBLE BURDEN OF DISEASE

South Africa's TB Burden

- 486 cases per 100,000 people (WHO, 2022)
- High burden : Among the top 8 countries with the highest TB burden

Diabetes Mellitus in South Africa

- Prevalence of diabetes in adults is 11.3%. (IDF 2021)
- SA faces a co-existing burden of TB and DM

STUDY OBJECTIVES

Determine TB prevalence in people with diabetes

Evaluate the accuracy of TB screening tools (symptoms and chest X-rays) in people with diabetes

Assess the accuracy of TB screening tools across clinical factors in people with diabetes.

Study design

- Cross sectional study of adults aged 15+ diagnosed with diabetes
- HIV positive and negative participants included

Study setting

- Khayelitsha, Cape town, South Africa
- Attending CHC outpatient clinic for routine diabetes care

Study exams

- Symptom screening and chest X-ray in all participants, regardless of symptoms.
- Collected a single sputum specimen for Xpert Ultra.
- Participants with Xpert positive results were referred to TB clinic for further treatment.

ANALYSIS

Index test:	Reference test
• Any cough • Any TB symptoms (any cough, fever, night sweat, and weight loss) • Chest X-ray:TB suggestive abnormality • Chest X-ray: any lung abnormality • Any TB symptoms or Chest X-ray-TB suggestive abnormality • Any TB symptoms or Chest X-ray- any lung abnormality	A positive X-pert Ultra result

RESULTS

- TB Prevalence= 1.34%
- Obesity was common among participants
- 83.71% of the people had HbA1c level greater than 7%

Characteristics	Total screened (n=673)
Median age (IQR)	54 (IQR 47-60 years)
Female	422 (62.7%)
BMI >30	377 (56.1%)
HIV status	115 (17.9%)
Smoking	25 (3.7%)
Alcohol use	124 (18.42%)
Median HbA1c (IQR)	9.4%(IQR 7.7-11.5%)
Previous TB	116 (17.24%)

- "Any cough" and "TB symptom": showed low sensitivity
- CXR: high sensitivity and high specificity
- TB Symptom+CXR: a modest increase in sensitivity and high specificity

Screening tool	Sensitivity, % (95%CI)	Specificity % (95%CI)
Any cough	22.2 (10.03-25.42)	97.5 (96.0-98.6)
Any TB symptom	22.2 (2.81-60.0)	96.0 (94.2-97.4)
Chest X-ray (TB suggestive abnormality)	55.6 (21.2-86.3)	**95.4 (93.4-97.0)**
Chest X-ray (Any lung abnormality)	55.6 (21.2-86.3)	93.5 (91.1-95.4)
TB symptom+ CXR (TB suggestive abnormality)	62.5(24.5-91.5)	90.3(87.5-92.7)
TB symptom+ CXR (Any lung abnormality)	62.5(24.5-91.5)	88.8(85.8-91.3)

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		Any symptom	
Stratification by		Sensitivity	Specificity
Previous TB	Yes	33.3(0.8-90.6)	93.6(87.3-97.4)
	No	16.7(0.4-64.1)	96.5(94.6-97.9)
HIV	Positive	-	97.3(92.5-99.5)
	Negative	22.2(2.8-60)	95.7(93.6-97.3)
HbA1c	< 7%	-	94.8(88.4-98.3)
	≥ 7%	20(0.5-71.6)	96.8(94.8-98.2)

* P value for difference <0.001

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Stratification by		X-ray TB suggestive	
		Sensitivity	Specificity
Previous TB	Yes	33.3(0.8-90.6)	87.6(79.8-93.2)*
	No	66.7(22.3-95.7)	97.2(95.2-98.5)*
HIV	Positive	-	94.05(86.65-98.04)
	Negative	55.6 (21.2-86.3)	95.5(93.3-97.2)
HbA1c	< 7%	50(1.3-98.7)	97.5(91.2-99.7)
	≥ 7%	60(14.7-94.7)	94.8(92.1-96.7)

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SUMMARY

- Symptom-based screening alone misses a large proportion of TB cases.
- All of the screening methods had a sub-optimal sensitivity with a high specificity.

ACKNOWLEDGEMENT

- Patients and staff
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