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Assessing Tuberculosis Knowledge, Attitudes, Practices, and Health-Seeking Behaviours of Students at a Selected University in South Africa

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Abstract: Tuberculosis (TB) remains a public health concern in South Africa, particularly among young adults. This study aimed to assess and investigate the attitudes, practices, and health-seeking behaviours of students at the University of KwaZulu-Natal (UKZN) regarding TB. The research provides valuable insights into the awareness of TB among students, their preventive practices, and their healthcare-seeking behaviours related to the disease. A cross-sectional design was employed, utilising a structured questionnaire to collect data from a representative sample of UKZN students on the Howard College campus. Data analysis involved descriptive statistics, such as frequencies and percentages, to summarise responses. Inferential statistics, including chi-square tests, were used to explore associations between variables and assess the knowledge, attitudes, and health-seeking behaviours of respondents. The study, which included 221 postgraduate and undergraduate students, revealed that participants were well aware of the symptoms, causes, and modes of TB transmission. The descriptive analysis indicated that 97.7% of respondents exhibited good knowledge about TB, with a total mean score of 0.977 and a standard deviation of 0.149. However, regarding health-seeking behaviours and practices, 53.4% of respondents demonstrated poor health-seeking behaviours, in contrast to 46.6% who exhibited good practices, with a mean score of 0.466 and a standard deviation of 0.499. Although all respondents indicated they would visit health facilities if they suspected they had TB, there was evidence of low screening practices and suboptimal health-seeking behaviours. Based on these findings, the study suggests leveraging social media to disseminate knowledge about TB to promote its prevention and treatment.

Keywords: Tuberculosis, knowledge, attitudes, health-seeking behaviour, university students.

1. Introduction

Before the onset of the coronavirus (COVID-19) pandemic, Tuberculosis (TB) was the leading cause of death among infectious diseases, surpassing HIV/AIDS, and primarily affecting adults, thereby constituting a major global public health concern (Abu-Humaidan et al., 2022). In South Africa, TB remains a significant public health issue, with the country experiencing a high burden of TB cases and associated mortality rates (Onyango et al., 2020). KwaZulu-Natal (KZN), one of South Africa's provinces, reported a cumulative total of 16,173 cases of multidrug-resistant TB (MDR-TB) diagnosed between 2012 and 2016, rendering it the province most burdened with TB and MDR-TB in the country (South African National AIDS Council, 2022).

Several factors contribute to the ongoing TB epidemic in South Africa. As highlighted by Kigozi, Heunis, Engelbrecht, van Rensburg, et al. (2017), the knowledge, attitudes, and practices (KAP) of TB patients and their surrounding communities significantly influence the spread and control of the disease. This KAP triad plays a crucial role in the persistence of TB in South Africa (Kigozi et al., 2017). Furthermore, TB remains prevalent among adults, underscoring the necessity for targeted

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public health interventions (Abu-Humaidan et al., 2022). The World Health Organization (2008) asserts that addressing the risk factors that render individuals vulnerable to TB infection is vital for effective TB control. Despite this, there has been limited focus on exploring whether the knowledge, attitudes, and practices of the youth in KZN contribute to the high burden of TB in the province.

For successful TB prevention and control, it is essential to understand and raise awareness of medical treatment, as highlighted by Pengpid and Peltzer (2019). Adherence to TB treatment is crucial, as failure to do so can lead to the development of multidrug-resistant TB (MDR-TB) and extensively drug-resistant TB (XDR-TB), both of which remain unacceptably high in South Africa (Reddy et al., 2022). MDR-TB, defined as resistance to the commonly used first-line therapeutic drugs rifampicin and isoniazid, poses a significant threat to TB control efforts, as resistance renders these medications ineffective (Raviglione & Sulis, 2016). Additionally, the lack of knowledge, negative attitudes toward TB, and delays in health-seeking behaviour are indirectly linked to an increased risk of death (Onyango et al., 2020).

The conceptual framework guiding this study is based on the premise that knowledge, attitudes, and practices (KAP) towards TB significantly influence health-seeking behaviour and ultimately affect TB control efforts (Craciun et al., 2023). University students, as a vulnerable population, play a critical role in the transmission and control of TB (Onyango et al., 2020). Therefore, assessing their knowledge, attitudes, practices, and health-seeking behaviour regarding TB is essential for developing effective interventions and strategies for the prevention and control of the disease. By identifying gaps in knowledge, promoting positive attitudes, and encouraging appropriate health-seeking behaviour, the burden of TB among university students and the broader community can be reduced. The purpose of this study is to explore the knowledge, attitudes, and practices related to TB among students at the University of KwaZulu-Natal (Howard College).

2. Literature Review

Numerous studies have been conducted to assess the knowledge, attitudes, and practices (KAP) of university students concerning tuberculosis (TB) across various contexts (Abu-Humaidan et al., 2022; Mekonnen et al., 2020; Rana et al., 2015; Uchenna et al., 2014; Yusuf et al., 2021). For instance, Musakwa et al. (2021) conducted a study among first-year university students in Johannesburg, South Africa, aimed at exploring the perceived barriers to the uptake of general health services, including HIV testing and TB screening services. This study underscored the challenges faced by HIV-positive students in accessing care and emphasised the necessity of addressing these barriers to improve health outcomes.

In Bangladesh, a study by Rana et al. (2015) found that 30% of non-medical university students mistakenly believed that TB was a non-communicable disease, and approximately 14.8% were unfamiliar with the distinction between communicable and non-communicable diseases in the context of TB. These misconceptions highlight the need for improved TB education among university populations, even in academic settings. Similarly, a study among TB patients in South Africa revealed that while respondents generally possessed good knowledge about TB, there were persistent misconceptions, such as beliefs that TB could be spread by cold air and dusty environments (Onyango et al., 2020). This suggests that even in populations with access to health information, misunderstandings about TB transmission can persist.

One might expect that university students, as part of an educated demographic, would exhibit higher levels of TB knowledge compared to the general population. However, research indicates that this is not always the case. A global literature review conducted by Yusuf et al. (2021) found that in 8 out of 12 studies, university students demonstrated low levels of TB knowledge. This reveals a significant gap in TB awareness and emphasises the need for targeted educational interventions to provide accurate information about TB transmission and prevention among this population.

Further studies conducted in Ethiopia and Malaysia among non-health science university students have similarly highlighted the necessity for educational programmes to improve TB knowledge and attitudes (Laiby et al., 2022; Mekonnen et al., 2020). These findings suggest that despite the high burden of TB in university settings, there remains a substantial gap in both knowledge and attitudes towards TB among students, which could hinder effective disease prevention and control efforts. Beyond knowledge and attitudes, it is crucial to evaluate the health-seeking behaviour of university students concerning TB. Abu-Humaidan et al. (2022) conducted a study in Jordan that found a significant association between TB knowledge and health-seeking behaviour among university students. This underscores the importance of promoting positive health-seeking behaviour through effective education and awareness campaigns, which can lead to improved health outcomes and reduced transmission of TB within the student population.

3. Materials and Methods

This study was conducted at the University of KwaZulu-Natal (UKZN), Howard College campus. UKZN is recognised as one of South Africa's leading research-focused institutions, comprising five campuses: Edgewood, Howard College, Nelson R Mandela School of Medicine, Pietermaritzburg, and Westville. The Howard College campus encompasses four colleges: the College of Agriculture, Engineering and Science, the College of Health Sciences, the College of Humanities, and the College of Law and Management Studies. The total student population at Howard College is 46,520. The campus offers a wide array of programmes, including undergraduate, honours, master's, and PhD degrees, thereby providing a diverse setting for collecting information on tuberculosis (TB) knowledge, attitudes, and practices from students from various backgrounds.

The survey employed a cross-sectional design, and data was collected through a self-administered questionnaire that assessed participants' knowledge about TB signs and symptoms, transmission, and cure. To ensure the reliability and validity of the data, a standardised questionnaire and a probability sampling method were utilised, minimising potential biases in the study findings (Akpa-Inyang et al., 2022). The study adapted existing instruments into a new questionnaire sourced from a research report by Select Research (PVT) LTD, Zimbabwe. The report is titled "*Knowledge, Attitudes and Practices (KAP) on TB, HIV and Silicosis Among Key Populations Aged 15 to 59 Years in Southern Africa*" (Select Research (PTY) LTD, 2017). The questionnaire was pre-tested on randomly selected individuals from the survey area who did not participate in the main study to ascertain its validity and reliability.

3.1 Study design and sampling procedure

This study employed a cross-sectional design, utilising a structured questionnaire to collect data from a representative sample of UKZN students at the Howard College campus. A simple random sampling technique was applied throughout the research process to ensure an unbiased selection of participants. A proportional allocation sampling method was used to ensure that the sample adequately represented each college and level of education. This approach ensures that the sample reflects the population distribution across the different colleges, thereby enhancing the generalisability of the study findings (Singh & Masuku, 2013). Specifically, faculty administrative lists and student attendance records were utilised to form a sampling frame. A simple random sampling technique was then employed to select 269 participants. This method was chosen to minimise selection bias and to provide each student with an equal chance of being included in the study, which is crucial for maintaining the validity of the research (Popovic & Huecker, 2021). The distribution of participants across colleges was as follows: 64 from the College of Agriculture, Engineering, and Science, 60 from the College of Health Sciences, 80 from the College of Humanities, and 65 from the College of Law and Management Studies. It is important to note that the College of Humanities is the largest college on the UKZN Howard College campus, which justifies its higher representation in the sample. The use of proportional allocation in this study is justified by the need

to ensure that each college within the university is represented in proportion to its size, which is crucial for drawing valid conclusions about the entire population (Martínez-Mesa et al., 2016). Additionally, the simple random sampling technique was chosen because it is one of the most effective ways to achieve unbiased samples, thus increasing the reliability and validity of the research findings (Levy & Lemeshow, 2013). By avoiding purposive sampling, the study maintains its objectivity and reduces the risk of researcher-induced bias, which is essential for the credibility of the study's outcomes.

- **Inclusion criteria:** The criteria for eligibility to partake in the study required that students be registered at the time of data collection in 2017. The study also targeted both male and female students at the UKZN Howard College campus who were over 18 years old.
- **Exclusion criteria:** The exclusion criteria included staff and students who were not registered at the time of data collection, as well as students who were under 18 years of age.

3.2 Sample size calculation

The equation below was used to calculate the sample size with a margin of error of 5%, employing a 90% confidence level and a 50% response distribution (Raosoft, 2020).

Equation 1: RAOSOFT Sample Size Calculation

$$X = Z\left(\frac{c}{100}\right)^2 r(100 - r)$$

$$n = \frac{Nx}{(N-1)E^2 + x}$$

$$E = \sqrt{\frac{(N-n)x}{n(N-1)}}$$

Where:

- N specifies the population size,
- r is the fraction of responses that the study is interested in,
- $Z(c/100)$ is the critical value for the confidence level given as c.
- E is the margin of error
- n specifies sample size

With these equations, the sample size for the population is 269, based on a total population of 46,520, a confidence level of 90%, and a margin of error of 5%. These sample size calculations were reviewed and approved by a qualified statistician.

3.3 Data collection

Following the determination of the sample size, the data collection instrument was pretested to ensure that the questions were clear and comprehensible to the respondents. Based on the feedback from the pretest, minor adjustments were made to refine the instrument. This included pre-health questions to ascertain whether respondents were aware of screening facilities near them. These questions addressed whether respondents had access to chest X-rays, HIV testing, sputum testing, and general treatment facilities nearby. The final version of the instrument was designed to capture data on key variables, including demographics, health services at the nearest health centre, TB knowledge and awareness, sources of TB information, TB attitudes, stigma and practices, and TB health-seeking behaviour. The data collection exercise was conducted in October and November 2019. The researchers collaborated with librarians, department administrators, lecturers, tutors, and class representatives to facilitate the administration of the questionnaire. Appointments were scheduled via email and personal communication on campus, and the questionnaires were distributed to students in the library, after lectures, and during breaks to ensure maximum participation.

3.4 Data analysis

During the field exercise, a total of 280 questionnaires were distributed, and 260 were returned to the researchers. After screening and capturing the returned questionnaires, it was found that 39 were either incomplete or incorrectly completed due to the self-administered nature of the survey. Given the time and resource constraints, the researchers were unable to revisit the field to collect additional data, resulting in a total of 221 valid questionnaires for analysis. Respondent responses were allocated codes, which were then captured for statistical analysis (Akpa-Inyang et al., 2022). Data entry and analysis were conducted using IBM SPSS v26 (2019). Categories with small frequencies were combined to create larger categories suitable for statistical analysis. For instance, most respondents were aged 18 to 24 years, while few were in the 25 to 29 and 30 to 34 age categories; thus, these categories were combined to create a larger age group. The same approach was applied to religion. The analysed data were then reviewed and approved by a qualified statistician to ensure accuracy and reliability. The majority of the data collected were ordinal in nature, with a smaller portion being nominal. Descriptive statistics were employed to analyse the data, focusing on frequency distributions of key items related to TB knowledge, attitude, and behaviour/practice among students at the University of KwaZulu-Natal (UKZN) Howard College campus. Multiple response analysis was utilised for questions with multiple response options regarding TB knowledge, attitude, and behaviour. Additionally, chi-square tests were applied to examine the relationships between variables, a common method for exploring associations in categorical data (Pallant, 2020).

To assess respondents' knowledge about TB, the questionnaire included 12 knowledge items designed to evaluate their understanding of the disease. Some questions were reverse-coded as a validation technique, where "positive" items were rephrased in a "negative" manner to check for consistency in responses (Field, 2017). Each correctly answered item was scored as 1, and each incorrectly answered item was scored as 0, resulting in a maximum possible score of 12 points. The 'TB Knowledge' scores were then categorised into "Poor Knowledge" (≤ 5) and "Good Knowledge" (≥ 6). A total score of ≤ 49% represented a poor mean score, while a score of ≥ 50% indicated a mean score above average. Similarly, the respondents' health-seeking behaviour (HSB) was assessed using seven specific questions. Each positive health behaviour or practice was scored as 1, and each negative practice was scored as 0, with a maximum possible score of 7 points. The 'HSB' scores were categorised into "Poor Practice" (≤ 3) and "Good Practice" (≥ 4). A total score of ≤ 49% indicated a poor mean score, while a score of ≥ 50% indicated a mean score above average.

3.5 Ethical consideration

Ethical considerations were thoroughly addressed prior to the commencement of the study. Ethical approval was obtained from the UKZN Ethics Committee, with the reference number HSSREC/00000047/2019. Additionally, a gatekeeper's letter was secured from the University of KwaZulu-Natal Howard College campus registrar, granting permission to conduct the research on campus. Respondents were invited to participate in the study on a voluntary basis, and informed consent was obtained both verbally and in writing. Before participation, all potential risks, benefits, and advantages of the study were fully explained, along with assurances of confidentiality. This ensured that respondents were fully informed and agreed to participate in the study under these conditions.

4. Presentation of Results

The findings of this study were derived from a self-administered survey, which initially recruited 269 respondents. Out of these, 221 returned completed and usable questionnaires, yielding a response rate of 82%. The results are presented in four sections: the first section provides demographic information about the respondents; the second section details the findings on

knowledge of tuberculosis (TB); the third section presents the findings on attitudes towards TB; and the final section examines the practices and behaviours of the students related to TB. The presentation of data on knowledge, attitude, and practice begins with descriptive analysis, followed by chi-square tests to explore the relationships between variables.

4.1 Demographics of respondents

Out of the 221 respondents, 86.0% were under the age of 25, resulting in a mean age of 22.02 years. In this study, female respondents comprised 64.7%, outnumbering male respondents, who made up 35.3%. Additionally, more than two-thirds (68.8%) of the respondents were undergraduate students. Despite the university's urban location, over one-third of respondents, reported that their home was in a rural area (36.7%). Other demographic details of the respondents are presented in Table 1.

Table 1: *Demographic data of respondents (n= 221)*

Demographics	N	Percentage	Demographics	N	Percentage
Age Group			**Religion**		
18 to 24	190	86.0	Christian	167	75.6
25 and older	31	14.0	Others	54	24.4
Total	**221**	**100.0**	**Total**	**221**	**100.0**
Gender			**Marital Status**		
Male	78	35.3	Married	12	5.4
Female	143	64.7	Never Married	206	93.2
Total	**221**	**100.0**	Co Habiting	3	1.4
			Total	**221**	**100.0**
Level of Education					
Undergraduate	152	68.8	**Biological Children**		
Postgraduate	69	31.2	Yes	46	20.8
Total	**221**	**100.0**	No	175	79.2
			Total	**221**	**100.0**
Race					
Black African	174	78.7	**Location**		
Other Race	47	21.3	Rural	81	36.7
Total	**221**	**100.0**	Urban	101	45.7
			Peri-Urban	39	17.6
			Total	**221**	**100.0**

4.2 Knowledge of TB

According to Table 2, only 4.1% of respondents were unaware that TB can be transmitted through the air when an infected person coughs or sneezes, while the majority (90.9%) were aware of this fact. Additionally, respondents demonstrated a good understanding of TB symptoms, with 82.0% recognising that coughing up blood and a persistent cough lasting three weeks or more are key symptoms of TB. The results also indicated that 94.1% of respondents knew that TB could be cured, and 71.6% understood that TB is treatable with specific medicines available at health centres.

However, only 48.6% of respondents were aware that TB treatment typically lasts 5 to 6 months, while the remaining 51.4% lacked this knowledge.

Furthermore, as shown in Table 2, a multiple-response analysis revealed that 51% of the respondents first learned about TB through instructors, family members, or other sources. Additionally, 75% of respondents felt that the media would be the most effective platform for disseminating information about TB. The overall descriptive analysis of respondents' scores on TB knowledge yielded a mean score of 0.977, with a standard deviation of 0.149, indicating that 97.7% of respondents have a good level of knowledge about TB.

Table 2: *Knowledge of TB (n=221)*

How one can get TB	N(multi-response cases)	percentage
Through handshakes	27	12.3%
Through the air when a person with TB coughs or sneezes	200	90.9%
Through sharing dishes	10	4.5%
Through sexual intercourse	9	4.1%
Through eating from the same plate	13	5.9%
Living in the same house or working together with someone with TB	122	55.5%
Through touching items in public places (doorknobs, handles in transportation, etc.)	28	12.7%
Inhalin dust	51	23.2%
Living in a crowded household	51	23.2%
Do not know	9	4.1%
Total		100%
Duration		
5 to 6 months	106	48.6%
Incorrect	115	51.4%
Total		100%
First knowledge of TB		
Media	171	39.0%
Health Workers	46	10.0%
Teachers, family, and other	222	51.0%
Total		100%

The majority of respondents, both male (97.0%) and female (92.0%), were aware that TB could be cured, with no significant association between gender and this knowledge ($X^2 = 2.3974$, $p = 0.121534$). However, male respondents (60.0%) were more likely to know that TB treatment typically lasts 5 to 6 months compared to female respondents (42.0%). This difference is statistically significant, as demonstrated by the chi-square test, which, at a 95% confidence interval, shows a significant association between gender and knowledge of TB treatment duration ($X^2 = 6.579$, $p = 0.015367$).

4.3 Attitude towards TB

The results indicate that a significant majority of respondents (90.0%) are aware that anyone can contract tuberculosis (TB). However, more than half (53.1%) expressed the personal belief that they themselves are not at risk of contracting TB, as they do not reside with anyone diagnosed with the disease, as illustrated in Table 3. Furthermore, 88.5% of respondents acknowledged that individuals living with HIV are more susceptible to developing TB, which corresponds with the finding that 90.0% of respondents felt that people living with HIV should exhibit heightened concern regarding TB.

When queried about whom they would consult if diagnosed with TB, 81.0% indicated that they would seek advice from a doctor or healthcare professional, while 67.9% would approach their parents (see Table 3). This inclination likely reflects the emotional and practical support that students anticipate receiving from their families. In contrast, only 37.6% reported that they would confide in a close friend, possibly attributable to the stigma associated with TB and a desire to limit the number of individuals aware of their condition.

The study further revealed that 45.7% of respondents would not conceal their TB status, whereas 44.8% indicated that they would. This hesitance to disclose TB status may arise from concerns regarding its potential impact on social relationships (67.0%) and academic life (64.3%).

Moreover, 54.3% of respondents conveyed compassion and a willingness to assist those affected by TB, despite 70.7% indicating that they would experience fear if they were to contract the disease themselves. This inclination to support others may be influenced by the fact that 69.2% of respondents reported knowing someone who has experienced TB.

Table 3: *Knowledge of why one cannot get TB (n=221)*

Why one cannot get TB	N	Percentage
Am HIV negative	23	16.1%
Do not stay with anyone with TB	76	53.1%
Do not abuse alcohol or use illegal drugs	24	16.8%
Had TB and was treated	8	5.6%
Was vaccinated	53	37.1%
I can get TB Because anyone can	17	11.9%
Why people with HIV should be concerned with TB *(n=221)*		
A person with HIV is more likely to develop TB	193	88.5%
Do not know	25	11.5%
Missing	3	
Who people would speak to if they had TB *(n=221)*		
A doctor or other medical worker	179	81.0%
Spouse	13	5.9%
Parent	150	67.9%
Child(ren)	5	2.3%
Other family member	69	31.2%
Close friend	83	37.6%

Religious leader	8	3.6%
No one	3	1.4%
Would TB affect social relations? *(n=221)*		
Yes	99	44.8%
No	101	45.7%
Do not know	21	9.5%

Cross-tabulation analysis between religion and respondents' feelings towards people with TB revealed that 57.0% of Christians and 46.0% of those from other religious groups expressed compassion and a desire to help. Interestingly, almost half (48.0%) of respondents from non-Christian faiths reported feeling compassion but preferred to distance themselves from TB patients. However, the chi-square test indicated that religion is not significantly associated with respondents' feelings towards TB patients ($X^2 = 38.8446$, $p = 1.82642$).

Furthermore, as shown in Table 4, 91.0% of undergraduate students and 87.0% of postgraduate students acknowledged that they are at risk of contracting TB. Despite this, the level of education was not significantly associated with their perception of risk regarding TB ($X^2 = 1.0677$, $p = 0.301456$).

Table 4: *Level of education and if respondents think they can get TB (n=221)*

		When Respondents were asked if they thought they could get TB		
		Yes	No	**Total**
Respondents' level of education				
	Undergraduates	91.0% (139)	9.0% (13)	**100.0% (152)**
	Postgraduates	87.0% (60)	13.0% (9)	**100.0% (69)**

In addition, 88.0% of female respondents knew TB to be a serious disease, while 3.0% of male respondents said TB is not a very serious disease. With X2 =3.9632, p = .137847, gender is not statistically significant with how seriously respondents take TB.

4.4 Practices and behaviour of students

The results revealed that only 83 respondents (37.0%) had previously been tested for TB, while a significant majority (63.0%) had never undergone testing. As indicated in Table 5, all respondents stated that they would visit a health facility if they had TB. However, only 69.2% would seek treatment as soon as they recognised TB symptoms. The 37.6% of respondents who had been tested for TB may have been influenced by factors related to their knowledge, attitudes, and practices regarding the disease.

Table 5: *Where respondents would go if they had TB (n=221)*

What one would do if they had TB	N	Percentage
Go to a health facility	221	100.0%
Go to pharmacy	23	10.4%
Go to a traditional healer	2	0.9%
Go to the church leader	3	1.4%
Pursue other self-treatment options (herbs, etc.)	3	1.4%

As previously mentioned, all respondents indicated that they would seek care at a health facility if they exhibited TB symptoms. However, 34.0% noted that cost could deter them from doing so, primarily due to the socio-economic background of many students, particularly those from rural areas. Interestingly, the results (as seen in Table 6) show that more than half of the respondents from rural areas had been tested for TB, compared to just 26.0% of those from urban areas. There was a significant association between the location of respondents and their likelihood of having been tested for TB ($X^2 = 16.0146$, $p = .000333$).

Further analysis revealed gender differences in TB testing, with 53.0% of male respondents having been tested for TB compared to 29.0% of female respondents. This was supported by a significant association between gender and TB testing ($X^2 = 11.577$, $p = .000668$). When assessing health-seeking behaviour, it was found that the majority of respondents (53.4%) exhibited poor health-seeking behaviours, compared to 46.6% who demonstrated good practices. This was reflected in a total mean score of 0.466 with a standard deviation of 0.499, highlighting the need for improvement in TB-related health-seeking behaviours among the study population.

Table 6: *Where the respondents grew up and their response to have ever been tested for TB (n=221)*

	When respondents were asked if they had ever been tested for TB	Yes	No	
Where the Respondent Grew up	Rural	54.0%(44)	46.0%(37)	100%(81)
	Urban	26.0%(26)	74.0%(75)	100%(101)
	Pre-Urban	33.0%(13)	67.0%(26)	100%(39)
Respondents' level of education	Undergraduates	91.0%(139)	9.0% (13)	100%(152)
	Postgraduates	87.0% (60)	13.0% (9)	100%(69)

5. Discussion

This study revealed a high level of knowledge about the symptoms, causes, and transmission mechanisms of TB among students at the University of KwaZulu-Natal's Howard College campus. This aligns with findings from a study conducted in Limpopo, where the majority of respondents also exhibited good knowledge of TB (Seloma et al., 2023). Similarly, previous studies have demonstrated that students generally possess an awareness of TB signs, causes, and transmission methods (Salleh et al., 2018; Sanusi et al., 2017). For example, in Malaysia's Kedah province, 93.1% of respondents recognised a persistent cough lasting over two weeks as a symptom of TB (Salleh et al., 2018), an achievement attributed to TB control initiatives that focus on training healthcare professionals. Programmes such as occupational health training have also been effective in equipping healthcare professionals to identify and treat TB (Churchyard et al., 2014).

The study further revealed that the majority of respondents (51%) first learned about TB from teachers, family, and others, with media cited as the second most common source of information (39%). This finding mirrors a study by Jamaludin et al. (2019) at the International Islamic University Malaysia, where most students received their initial TB knowledge from teachers (62.3%) and family (48.1%). This underscores the importance of education in households and classrooms in increasing TB awareness. Additionally, the media was considered a reliable tool for TB education by 75.0% of respondents, consistent with findings from Salleh et al. (2018) in Malaysia, where government-led awareness campaigns significantly boosted public knowledge. Wakefield et al. (2010) emphasised the media's role in shaping public perceptions and behaviours related to disease prevention and control, further illustrating its potential impact on TB awareness.

Demographic factors such as age, gender, and educational attainment are typically associated with TB knowledge. Previous studies (Bati et al., 2013; Luba et al., 2019; Pengpid et al., 2016) have

identified gender as a significant factor, with males generally being more knowledgeable about TB than females. This study also found a gender-based disparity in knowledge about TB treatment duration, with males being more informed, possibly due to differing levels of exposure and access to information among groups.

In terms of attitude, the study found that most respondents had positive attitudes towards TB. A majority (90.0%) recognised that anyone could contract TB, which aligns with findings from the International Islamic University Malaysia, where 96.9% of respondents held the same belief (Jamaludin et al., 2019). Many students expressed compassion and a willingness to assist TB patients, likely because they personally knew someone affected by TB. Similar positive attitudes were observed in other studies, such as those by Smolovic et al. (2012), where 78.3% of students at universities in Belgrade and Malaysia expressed a willingness to visit TB patients. These findings suggest that informed university students are likely to hold compassionate and positive attitudes towards TB patients.

A significant finding of this study was that most respondents believed their social and school relationships would be affected if they had TB, likely due to stigma and discrimination. This is consistent with other studies (Ayub & Tariq, 2017; Salleh et al., 2018; Uchenna et al., 2014), which suggest that high TB knowledge does not necessarily reduce stigma. Fear of infection continues to drive discrimination, as demonstrated by many respondents in this study who expressed fear of contracting TB. Similar sentiments were reported in southwestern Ethiopia, where 69.3% of respondents feared having TB (Tolossa et al., 2014). Likewise, a South African study revealed that half of the respondents would feel embarrassed about their TB status (Kigozi et al., 2017), further supporting the persistence of TB-related stigma. In regions like Kashmir Valley, India, TB is perceived as shameful (Ayub & Tariq, 2017), contributing to the tendency of respondents in this study (44.8%) to keep their TB status secret, fearing the potential impact on their education (64.3%).

The majority of respondents also indicated they would consult a medical practitioner if they suspected they had TB, aligning with findings from southwestern Ethiopia, where 66.3% would seek medical advice (Tolossa et al., 2014). This reliance on healthcare professionals is likely due to the ethics of confidentiality upheld by medical practitioners (Akpa-Inyang & Chima, 2021). The Health Professions Council of South Africa (HPCSA) highlights the importance of confidentiality and informed consent in maintaining patient trust (2006). Many respondents also mentioned they would talk to their parents, likely because parents serve as a crucial support system and offer discretion in handling sensitive health issues such as TB.

Additionally, most respondents believed that individuals with HIV should be more concerned about contracting TB. This perception likely stems from South Africa's high HIV prevalence, which increases susceptibility to diseases like TB. Churchyard et al. (2014) describe South Africa as having one of the worst TB epidemics globally, primarily driven by the HIV epidemic. Similar views were found in Shinile Town, Eastern Ethiopia, where respondents also believed that people with HIV/AIDS should be particularly concerned about TB (Bati et al., 2013).

Furthermore, this study found no significant relationship between religious affiliation and attitudes toward TB patients. This result might reflect South Africa's constitutional commitment to equality and non-discrimination across religious lines (Benson, 2011). Both undergraduate and graduate students believed they could contract TB, with a slightly higher percentage of undergraduates holding this view. However, this finding differs from other studies that examine the relationship between education level and attitudes toward TB. For example, a study in southwestern Ethiopia found that a higher education level correlated with more positive attitudes towards TB patients, including responses to questions such as whether TB patients should feel ashamed or if respondents would share meals with TB patients (Bati et al., 2013).

Both male and female respondents in this study acknowledged that TB is a serious disease, with no significant gender differences in how seriously they viewed TB. This finding aligns with studies conducted in Somalia and Eastern Ethiopia, where both male and female respondents shared similar attitudes about the seriousness of TB (Tolossa et al., 2014). However, other studies have found gender differences in attitudes toward TB. In southwestern Ethiopia, for instance, 74.9% of females had a positive attitude compared to 48.2% of males (Bati et al., 2013), indicating that gender dynamics in attitudes toward TB can vary by context.

This study found that all respondents would visit health facilities if they had TB, with 69.2% seeking treatment as soon as they recognised symptoms. This finding aligns with a study from South Africa, where 67.3% of TB patients sought care from health facilities (Makgopa & Madiba, 2021). The seriousness with which respondents approach TB may stem from various TB awareness programmes, such as South Africa's 2011 screening programme targeting high-risk populations (Churchyard et al., 2014). However, only 37.6% of respondents in this study had ever been screened for TB, similar to findings in North Mecha, Ethiopia, where 19.4% had been tested (Kasa et al., 2019). This low figure might be due to students not perceiving themselves as part of a high-risk group. According to WHO (2013), risk groups have significantly higher TB prevalence, such as those living with active TB patients, which 53.1% of respondents believed did not apply to them.

Gender was significantly associated with TB practices and health-seeking behaviour, with more males than females having been tested for TB. This trend corresponds to global data, which shows higher TB incidence among men, promoting better prevention practices and health-seeking behaviours. In 2018, TB prevalence among men was nearly double that of women.

The study revealed that most respondents had good TB knowledge, with a mean score of 0.977 and a standard deviation of 0.149, indicating a strong understanding of TB transmission, prevention, and treatment. However, 53.4% exhibited poor health-seeking behaviours despite their knowledge. This is concerning, as delays in seeking care can worsen TB outcomes and increase transmission (Munro et al., 2007).

Addressing barriers to care, such as stigma, lack of awareness, and financial constraints, is essential for improving health-seeking behaviour. Efforts should focus on reducing misconceptions and stigma while ensuring TB services are accessible, integrated, and well-coordinated (Munro et al., 2007). Educational campaigns targeting university students should emphasise the importance of early diagnosis and treatment, ultimately promoting more proactive health behaviours.

6. Conclusion and Recommendations

The study revealed that while university students at the University of KwaZulu-Natal, Howard College campus possess a substantial understanding of TB, there exists a critical need to enhance health-seeking behaviours and practices within this demographic. Addressing barriers to healthcare access, mitigating stigma, and promoting education and awareness are essential steps in developing interventions that encourage timely and appropriate health-seeking behaviours. These efforts are vital for preventing the spread of TB and improving treatment outcomes among university students and the wider community. Additionally, the study identified that the majority of students acquired their information about TB from their parents; however, they expressed a preference for receiving more information through media channels. It is, therefore, advisable to implement measures that enhance the dissemination of educational messages via mass media to effectively promote TB knowledge. By removing obstacles to media-based educational initiatives, it is possible to cultivate a more informed and proactive approach to TB prevention and treatment among university students and the broader South African population.

Based on the results of this study, several recommendations were made to improve TB knowledge, attitudes, practices, and behaviour among students and the broader South African population. Given

the ongoing threat of TB in South Africa, it is crucial to disseminate health information effectively to foster positive changes in attitudes, enhance knowledge, and encourage health-seeking behaviour.

- **Utilise social media for TB awareness:** The study highlights the importance of public health information through the media. Social media platforms should be leveraged to disseminate TB knowledge widely. This approach can promote TB prevention and treatment by reaching a broad audience quickly and efficiently.
- **Equip teachers and parents with TB Information:** Since many participants received their initial TB knowledge from teachers and parents, it is essential to equip these key influencers with accurate and comprehensive information about TB. This can be achieved through targeted training programmes and informational resources that enable teachers and parents to effectively educate others about TB.
- **Support health education campaigns:** Continuous support is needed to maintain the quality and sustainability of health education campaigns. These campaigns can play a critical role in reducing TB stigma and discrimination. Public health campaigns should be designed to provide accurate information, dispel myths, and encourage supportive attitudes toward TB patients.
- **Subsidise healthcare and improve accessibility:** Subsidised healthcare and increased availability of health services, especially in rural areas, can encourage more people to visit healthcare centres when they exhibit TB symptoms. Improving access to affordable healthcare can lead to earlier diagnosis and treatment, reducing the spread and impact of TB.
- **Enhance TB screening programmes:** TB screening programmes should be enhanced and made more accessible to high-risk populations. Regular screening can help in the early detection and treatment of TB, thereby preventing its spread and reducing the disease burden.

5. Declaration

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