The Open Public Health Journal

Content list available at: https://openpublichealthjournal.com

Knowledge, Attitudes and Health-seeking behaviour among Patients with Tuberculosis: A Cross-sectional Study

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Abstract:

Background:

South Africa is hugely overburdened with the cases of Tuberculosis (TB); individual's lack of knowledge, attitude towards the disease and delays in health-seeking behaviour, are indirectly associated with death. This study assessed the knowledge, attitude and treatment of TB, and further examined the health-seeking behaviour of TB patients.

Methods:

This cross-sectional study involved 327 conveniently selected participants with TB from three community health centres in Nelson Mandela Bay Health District, Eastern Cape, South Africa. A close-ended questionnaire was used to collect demographic details, knowledge, attitude and health-seeking behaviour variables. Descriptive and multivariate logistic regression analyses were performed. Statistical significance was considered at alpha <0.05 and a confidence interval of 95%.

Results:

The majority of these TB patients indicated that cold air (76.5%), a dusty environment (85.9%), TB bacteria in the air (88.4%), and smoking (84.7%) had caused the disease. About 87.2% of the respondents indicated that TB treatment duration took six months or longer. Participants thought that follow-up sputum tests are an important part of TB treatment (70.6%); non-adherence to TB treatment might lead to drug-resistant TB or death (80%); TB disease could turn into HIV if not properly treated (77.4%) and that individuals with TB disease have HIV (59.9%). About 56.9% participants felt that TB treatment is difficult, takes a long time, is unpleasant, interferes with work or marriage, and people who drink and smoke are to blame for its spread (60.6%). The majority of the participants (74.0%) disagreed with TB being an African disease and 53.5% did not associate TB with poverty. The majority of the participants (92%) indicated that follow-ups at clinics were avoided because of stigmatisation. In the multivariate logistic regression analysis, the informal housing scheme was a statistically significant (p<0.05) factor determining the correct knowledge of TB (AOR=0.556; 95% CI: 0.316-0.977). There was a statistically significant association among TB knowledge, attitude and health-seeking behaviour.

Conclusion:

The participants generally had good knowledge about TB; however, there were misconceptions regarding its spread by cold air and dusty environments. The majority of participants did not attend follow-up TB treatment because of fear of stigmatisation. Formal settlements are associated with the correct knowledge of TB. Measures aimed at addressing the misconceptions about TB and its treatment are needed.

Keywords: Knowledge, Attitude, Health seeking behaviour, Tuberculosis treatment adherence, Sputum test, *Mycobacterium tuberculosis*.

1. INTRODUCTION

Tuberculosis (TB) is an airborne, infectious disease caused by organisms of the *Mycobacterium tuberculosis* complex [1].

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It mostly affects the lungs, and its symptoms include a persistent cough lasting for more than 3 weeks, chills, fever, night sweats, loss of appetite and fatigue. In the worst cases, blood is also found in the sputum, and patients complain of chest pain [1, 2]. Tuberculosis is among the top ten causes of death globally [3 - 5]. Tuberculosis remains a major health problem in South Africa, even though its rate of spread has

declined over the years, after reaching a peak in 2009 [3]. The Directly Observed Treatment Short-course (DOTS) is one of the principle programmes initiated by the World Health Organization (WHO) for the management and treatment of TB [6]. The DOTS is effective in escalating successful treatment results and lowering drug resistance by treating patients with a conglomerate of drugs for at least six months [7]. Many countries worldwide have adopted the DOTS programme, including South Africa.

Another strategy initiated by WHO in the fight against TB is the 'End TB' with its proposed milestones for 2020 and 2025 plus targets for 2030 and 2035 to reduce TB cases and deaths [5]. This strategy is focused on integrated person-centred care at all levels, expanded access to preventive treatment, maximal use of limited resources and roll out plus uptake of innovations [4]. The targets for 2030 are a 90% drop in TB deaths and an 80% decrease in the TB incidence rate (new cases per 100 000 population per year) compared with levels in 2015; 35% reduction in the number of TB deaths and a 20% reduction in the TB incidence rate [5]. Accordingly, the South African National Department of Health adopted the DOTS programme with strict guidelines and the `End TB' strategy to combat the TB scourge in the country. In addition to the TB guidelines, the National Strategic Plan for HIV/Sexually transmitted infections /TB initiated measures aimed at addressing the societal norms and behaviours that fuel, amplify and trigger TB and HIV spread in South Africa, especially in the marginalised, poor and informal settlements [8]. Notwithstanding this, South Africa is among the eight countries accounting for two-thirds of TB prevalence globally [5, 8 - 10]. In addition, TB is the leading cause of death in South Africa; the incidence rate for active TB was estimated at 322,000 in 2017, with 60% co-infected with HIV [11]. Worryingly, the Eastern Cape is one of the highly TB burdened provinces [11], and Nelson Mandela Bay Health District has one of the highest TB caseloads in the Eastern Cape Province [12]. The province also ranks third with the TB treatment defaulters and forms part of the ten worst regions in South Africa with TB-related deaths, poor TB cure and treatment success rates [13].

The high incidence of active TB infection, high proportion of latent infection and Human Immunodeficiency Virus (HIV) comorbidity, poor or high-risk infection control practices or non-adherence to treatment by patients has greatly thwarted effective TB control in South Africa [14]. Although DOTS is the most effective global TB programme, its effectiveness is related to the patients' knowledge of TB, their ability to identify symptoms, as well as their attitudes and health-seeking behaviour, and timely accessibility to health services [6, 8, 15]. Moreover, the effectiveness of DOTS depends on the willingness of the patient to accept and comply with its principles [10]. Studies conducted in the low- and upper-middle-income countries have shown that patients with TB have a significant deficit in the levels of knowledge of causal agents of TB, transmission, poor attitudes and health-seeking behaviour [6, 15]. In the Pacific island nation of Vanuatu, TB was attributed to the smoking of cigarettes; the consumption of kava; a mildly intoxicating drink found across the Pacific made from the roots of a certain plant; alcohol consumption; eating of contaminated food; the sharing of eating utensils and witchcraft [16]. In rural

Uganda, smoking, an inherited consumptive tendency, witchcraft, heavy manual work, and sharing of food and eating utensils with a TB patient were factors associated with the cause of TB [17].

Anecdotal evidence has shown that patients with TB recognise symptoms of TB when they experience them; they find them worrisome, so they feel compelled to seek medical help. Studies conducted in the low- and upper-middle-income countries revealed that all patients with TB have good knowledge of TB symptoms, such as loss of appetite, weight loss, night sweats, fever, tiredness and a productive cough endured for more than a few weeks, where at times it is accompanied by blood in the sputum [6, 15, 16, 18].

Regarding transmission, patients with TB have misconceptions. In India, people perceive TB to be transmitted through droplets, food sharing utensils and by touching a person with TB [15]; in Ethiopia, inhaled droplets, exposure to dust and cold and drinking of raw milk are blamed [19]; and in Brazil, inhaled droplets; wearing the same clothes; sharing eating utensils; having sexual intercourse with the infected person and drinking contaminated water are deemed the common modes of transmission [20].

Concerning attitudes, few patients with TB disclose their TB status freely to family and friends. Most of them believe that there are many treatments available, and one can stop TB treatment if one feels better [17 - 19]. The reasons for patients with TB not disclosing freely is the fear of being isolated by the family because of the fear of airborne infection, the fear of being labelled as having HIV and subsequent stigmatization of the whole family [17]. Lack of knowledge of a causal agent, the transmission of TB and an attitude of unwillingness to disclose TB delay and affect proper health care. In such instances, TB patients would first seek care from a traditional healer with the belief that traditional medicine is the ideal treatment for TB; medical consultation will be the last option when patients are presenting the worst TB symptoms [15, 16, 18, 19]. The delay in seeking health care by TB patients might negatively impact the management of TB.

Recognising that there are several international studies exploring the Knowledge, Attitudes and Practices (KAP) regarding TB [21 - 23], and in the socio-economic perspective; and TB awareness has been explored in South Africa, little information exists on community-based context. Whether late uptake of treatment, poor cure rate and treatment success rates are responsible for the prevalence and death rate from TB or not is speculative; our research is responding to the high defaulter and death rates in Nelson Mandela Bay Health, Eastern Cape, South Africa. The study seeks to ascertain whether TB control and management are influenced by 1) a lack of knowledge and an inability to identify symptoms, 2) negative attitudes and unwillingness to accept, disclose, and comply with DOTS principles and 3) a delay in health-seeking behaviour among patients with TB. Such information may be useful for designing health facility interventions for TB control and management in this setting with high TB rates.

2. MATERIALS AND METHODS

2.1. Study Design

This cross-sectional study took place from June 2018 to October 2018. It followed a descriptive, non-experimental research design with a quantitative approach to investigate knowledge, attitudes and health behaviour of TB patients in Nelson Mandela Bay Health District, Sub-District C. Nelson Mandela Bay Health district was purposively selected because of high records of TB patient numbers and concurrent poor treatment outcomes. In 2011, Nelson Mandela Health District declared TB a health crisis, and it ranked among the ten worst metros in the country for deaths caused by TB.

2.2. Population and Sample

The target population was TB patients in the three community health centres in Nelson Mandela Bay - Sub District C (PE Central Community Health Centre, West End clinic and Gqebera clinic) as they experience larger volumes of patients compared to other clinics in the sub-district. According to Nelson Mandela Bay Health District, the three clinics combined from July 2016 to January 2017 had received 496 patients with TB (Gqebera clinic 238 patients, West End clinic 157 patients and PE Central Community Health Centre 101 patients).

The sample consisted of 327 conveniently selected TB patients from the Nelson Mandela Bay Health District, Sub-District C clinics. Participants were TB patients over 18 years of age and they had been on treatment for at least one month for both pulmonary or extrapulmonary TB, bearing in mind the economic and relationship impact of tuberculosis therapy. These patients were recruited regardless of how they were diagnosed. The pulmonary TB patients were mostly diagnosed through bacteriological confirmation tests of the sputum like GeneXpert (70% of the patients), smear microscopy and culture. Chest x-rays were done in some patients who could not produce sputum or who had negative GeneXpert results and were HIV positive, and where extrapulmonary TB (such as pleural effusions and pericardial TB) was suspected. The x-ray findings interpretation was made in light of the patients' history and other clinical findings. Extra-pulmonary TB investigations included ultrasound examination for abdominal or pericardial TB, culture of tissue or fluid from fine needle aspirate or biopsy and histological examination of tissue. Visiting patients not registered in the three community health centres, but collecting treatment from those facilities, were excluded. This was to reduce the chances of receiving information from patients outside the Nelson Mandela Bay Health District, sub-district C catchment area.

2.3. Instrument Design and Measures

The questionnaire was based on previous literature and TB experts' (TB nurses) input. The questionnaire was divided into four sections. Section A focused on the demographic profiles (age, gender, level of education, marital status, employment and housing). These demographic indicators formed the indepen-dent variables. Section B of the questionnaire concentrated on the knowledge of TB patients regarding TB (dependent variable); while section C dwelt on the attitude of TB patients regarding TB (dependent variable). Section D focused on the health-seeking behaviours of TB patients (dependent variable). The format of the questionnaire was a 5-Likert scale ranging from strong agreement to strong dis-agreement of statements (1 = strongly agree, 2 = agree, 3 = I don't know, 4 = disagree and 5 = strongly disagree) with a provision for uncertain answers for all the dependent variables. Thirteen items were used to measure patients' knowledge about TB disease, causes, treatment and importance of adherence. Patients' attitudes were measured using ten items where they were required to indicate their views regarding treatment duration, treatment effects on marriage and work, community perception of TB patients and how they acquire and spread TB, perceptions of community reaction to their TB status. For health-seeking behaviour, patients were required to indicate their views regarding their perception of their early TB symptoms, use of alternative treatment, treatment follow-up and treatment location. TB stigma was measured by asking the participants how TB patients are being perceived or supported.

Cronbach alpha coefficients, measuring internal reliability for the items, were 0.628 for TB knowledge variables, 0.828 for TB attitude variables and 0.719 for health-seeking behaviour variables. A content validity index (CVI) was compiled by requesting two TB focal persons in two clinics to indicate to what extent they considered every item relevant to the TB policy implemented at their clinic on a 5-point scale. In each case, 1 indicated no relevance and 5 indicated complete relevance. Twenty-nine items scored a CVI of 5, three items scored a CVI of 4.5, and only one item had a CVI of 2.5, so it was discarded. Overall, the instrument had a CVI of 98.6%. The questionnaire was piloted at a primary health care facility outside the study setting for practicality and was modified prior to distribution amongst the targeted patients.

The primary outcome used in this study is the proportion of respondents who had knowledge, attitudes and health-seeking behaviour concerning tuberculosis. The covariates measures were age, gender, level of education, marital status, employment and housing.

2.4. Ethics

The Human Research Ethics Committee of the University of Fort Hare gave approval for the researchers to conduct the study (Reference number: GOO211SONY01). Before administering each questionnaire, the participants were provided with information on the aim and nature of the study. Participation was voluntary and participants were required to sign an informed consent form. Anonymity and confidentiality of the information provided were assured. Participants' iden-tities were concealed.

2.5. Data Collection Procedure

Data collection took place between June and October 2018. The study involved three research assistants who were community care workers based at each clinic; these assistants were able to speak English, Xhosa and Afrikaans. Three community health care workers were trained on obtaining participants' consent, administration of questionnaires, hand-

ling of data and ensuring quality data. A pilot study was conducted at Central clinic (Rose Street), Nelson Mandela Bay Sub-District C with 10 participants, who did not form part of the main study. The pre-test lessons learned from the pilot study helped to validate and further improve the questionnaire.

2.6. Data Collection Procedure

Data was collected in the TB waiting rooms. The aim and nature of the study were explained to the patients. Willing patients were provided with informed consent forms to sign before administering the questionnaires to them. Assistance was offered by the research assistants to those having difficulty reading or understanding the questionnaire. The questionnaires were completed and collected on the spot.

2.7. Data Analysis

Descriptive statistics, such as frequency counts and percentages, were used to analyse knowledge and attitudes towards TB causes, treatment, adherence to treatment and health-seeking behaviour. Each correct answer on knowledge, attitude and health-seeking behaviour scored one point and an incorrect answer scored zero. The questions included a 'don't know' option, coded as zero, which indicated that a participant did not have the correct knowledge, attitude or health-seeking behaviour. Higher scores for each variable indicated greater knowledge, better health-seeking behaviour and more positive attitudes towards TB treatment and adherence, respectively. Multivariate logistic regression analysis was used to examine the influence of demographic variables on the knowledge, attitude and health-seeking behaviour towards TB. A p-value of 0.05 was set for statistical significance. All statistical analyses were performed using Statistical Package for Social Sciences (SPSS) version 24.0.

3. RESULTS

3.1. Demographic Characteristics of the Participants

Of the 327 participants, the majority of the patients (191/58.4%) were 35 years and older, 54.1% were males, 63.0% had secondary education, 55.4% were unemployed, 70.9% were single and 53.8% had formal housing (Table **1**).

3.2. Knowledge of TB Disease, Causes, Treatment and Adherence

Table **2** displays the knowledge of TB disease, causes, treatment and adherence of the patients. The majority of the TB patients indicated that they thought TB is caused by cold air (76.5%), dusty environment (85.9%), TB bacteria in the air (88.4%) and smoking (84.7%). About 87.2% of the respondents indicated that TB treatment duration takes six months or longer. Some 73.1% of the respondents did not agree that people should stop taking TB treatment as soon as they feel better; 74.0% of the patients disagreed that TB treatment makes people sick and should be stopped when sick; 78.6% of the patients disagreed with the statement that it is not necessary to finish TB treatment when one feels better. About 70.6% of the respondents were aware that follow-up sputum tests are an important part of TB treatment. Over 80% were aware that

non-adherence to TB treatment may lead to drug-resistant TB or death. About 77.4% of the respondents thought that TB disease can turn into HIV if not properly treated, and more than half of the respondents (59.9%) thought that everybody with TB disease has HIV.

Table 1. Demographic characteristics of the patients.

Variables	Frequency	Percentage
Age (years)	-	-
<35	136	41.6
≥35	191	58.4
Gender	-	-
Male	177	54.1
Female	150	45.9
Educational Level	-	-
None	31	9.5
Primary	60	18.3
Secondary	206	63.0
Tertiary	30	9.2
Employment	-	-
Formal employment	65	19.9
Self-employed	27	8.3
Menial jobs	54	16.5
Unemployed	181	55.4
Marital Status	-	-
Married	61	18.7
Single	232	70.9
Divorced	22	6.7
Widowed	12	3.7
Housing	-	-
Informal	151	46.2
Formal	176	53.8

3.3. Attitude of Patients Towards TB Disease, Treatment and Adherence

As shown in Table **3**, more than half of the respondents felt that TB treatment is difficult, takes a long time, is unpleasant and interferes with work or marriage. However, the majority (74.3%) did not feel that TB treatment made them feel sick. About 60.6% felt that irresponsible people who drink and smoke are to blame for the spread of TB; and 52.9% believed that people who drink and smoke get what they deserve when infected with TB. About 53.8% felt embarrassed to have to take TB treatment and felt that the community does not respect people with TB. The majority of the participants (74.0%) did not agree that TB is an African disease and 53.5% did not associate TB with poverty.

3.4. Health Seeking Behaviour

As shown in Table **4**, 92% of the respondents indicated that people do not go back to the clinics for follow-up out of fear of what people will say about them. The majority of the respondents (85.6%) agreed that people do not go to the clinics in their catchment area for consultation and follow-up out of fear of what people will say about them. In addition, a majority of 89.9% agreed that most people do not go back to the clinic for their TB results. About 76.1% of the respondents went to

more than one clinic before they could start treatment. Few (18%) participants preferred buying treatment from the pharmacy before going to the clinic for treatment of TB; and 15.9% preferred going to traditional healers before they went to the clinic for TB treatment. More than half the respondents (55.4%) reported that only people with a severe cough should go to the clinic to test for TB. About 47.7% of the respondents reported that they did not take the TB symptoms seriously in the beginning and hoped the symptoms would go away on their own.

3.5. Multiple Logistic Regression for Knowledge of TB Disease, Causes, Treatment and Adherence

Results from the multivariate logistic regression analysis conducted for knowledge of TB patients, together with biographical information of TB patients, are presented in Table 5. None of the variables were statistically significant to determine the TB patients' knowledge of TB disease causes, treatment and adherence. The housing scheme was a statistically significant (p<0.05) factor determining the knowledge of TB causes, treatment and adherence. Compared with the reference group (informal housing scheme), formal housing was a significant predictor of correct TB knowledge (OR=0.556; 95% CI: 0.316-0.977). None of the independent variables were statistically significant in determining the positive attitude of patients towards TB disease, treatment and adherence. Likewise, none of the factors were significant in determining the correct health-seeking behaviour of TB patients.

Table 2. Knowledge of TB disease, causes, treatment and adherence.

-	Incorrect n(%)	Correct n(%)
Tuberculosis is caused by cold air	250(76.5)	77(23.5)
Tuberculosis is caused by the dusty environment	281(85.9)	46(14.1)
Tuberculosis is caused by tuberculosis bacteria in the air	38(11.6)	289(88.4)
Tuberculosis is caused by smoking	50(15.3)	277(84.7)
Tuberculosis treatment duration takes six months or longer	42(12.8)	285(87.2)
People should stop taking TB treatment as soon as they feel better	88(26.9)	239(73.1)
TB treatment makes people sick and should be stopped as soon as you feel sick	85(26.0)	242(74.0)
It is not necessary to finish TB treatment if I feel better after two months	70(21.4)	257(78.6)
It is not necessary to give follow-up sputum if I am on treatment	96(29.4)	231(70.6)
Drug-resistant TB occurs when a person does not finish TB treatment	55(16.8)	272(83.2)
Not taking tuberculosis treatment may lead to death	37(11.3)	290(88.7)
TB can change to HIV if not treated properly	253(77.4)	74(22.6)
All people with TB disease are also infected with HIV	131(40.1)	196(59.9)

Table 3. Attitude of patients towards TB disease, treatment and adherence.

Statements	Negative n(%)	Positive n(%)
TB treatment is difficult and takes a long time	186(56.9)	141(43.1)
TB treatment is unpleasant and difficult	179(54.7)	148(45.3)
TB treatment interferes with life commitments like work and marriage	192(58.7)	135(41.3)
Irresponsible people who drink and smoke are to blame for the spread of TB	198(60.6)	129(39.4)
People who drink and smoke get what they deserve when they are infected with TB	173(52.9)	154(47.1)
It is embarrassing to have to take treatment for TB disease	176(53.8)	151(46.2)
People in the communities do not respect people with TB	176(53.8)	151(46.2)
TB is associated with poverty	152(46.5)	175(53.5)
TB is an African disease	85(26.0)	242(74.0)
All TB treatment makes people sick	84(25.7)	243(74.3)

Table 4. Health seeking behaviour.

Statements	Incorrect n(%)	Correct n(%)
Only people with a severe cough should go the clinic to test for TB	181(55.4)	146(44.6)
I did not take the TB symptoms seriously; I was hoping the symptoms would disappear with time	156(47.7)	171(52.3)
People do not go back to the clinics for their TB results	294(89.9)	33(10.1)
People do not make TB follow-up visits because of fear of what people will say about them.	301(92.0)	26(8.0)

(Table 4) contd.....

Statements	Incorrect n(%)	Correct n(%)
Reluctance to visit the clinics in their own area for consultation and follow-up because they fear community rejection	280(85.6)	47(14.4)
I am currently attending a clinic that is outside my catchment area	93(28.4)	234(71.6)
Visiting more than one clinic before starting TB treatment	76(23.2)	251(76.8)
Preferred buying treatment from the pharmacy before going to the clinic for TB treatment	59(18.0)	268(82.0)
Preferred going to traditional healers before seeking medical TB treatment	52(15.9)	275(84.1)
I thought the early TB symptoms would go away on their own	82(25.1)	245(74.9)

Table 5. Multiple logistic regression on knowledge of TB disease, causes, treatment and adherence.

Variables	B	OR (95% CI)	p-value
Age (years)	-	-	-
<35	-	1	-
≥35	0.105	1.111 (0.622-1.984)	0.772
Gender	-	-	-
Male	-	1	-
Female	0.102	1.107(0.637-1.925)	0.719
Educational Level	-	-	-
None	-	1	-
Primary	-.567	0.567 (0.155-2.077)	0.392
Secondary	-.691	0.501 (0.169-1.484)	0.212
Tertiary	-.348	0.706 (0.282-1.771)	0.458
Employment	-	-	-
Formal employment	-	1	-
Self-employed	-.491	0.612(0.292-1.281)	0.192
Menial jobs	0.082	1.085(0.405-2.909)	0.871
Unemployed	-.417	0.659(0.285-1.524)	0.330
Marital status	-	-	-
Married	-	1	-
Single	1.076	2.933(0.550-15.637)	0.208
Divorced	0.595	1.813(0.362-9.072)	0.469
Widowed	0.057	1.059(0.145-7.728)	0.955
Housing	-	-	-
Informal	-	1	-
Formal	-.588	0.556(0.316-.977)	0.041

4. DISCUSSION

This present study was designed to assess the knowledge, attitude and treatment of TB, and to further examine the health-seeking behaviour of TB patients attending community health centres in the Eastern Cape, South Africa. The regression analysis exhibited no difference in knowledge, attitude and health-seeking behaviour in relation to age, gender, literacy level, employment status and marital status. This suggests that people in the Nelson Mandela Bay Sub-District C share the same TB knowledge, attitude and health-seeking behaviour. This is similar to a South African study where regression analysis of TB knowledge and attitude toward TB showed no significant difference in age, gender and education [24]. However, a Nigerian study showed that males have a higher level of TB knowledge than females, and the knowledge of TB was higher among participants who were single, married, aged 16-29 years and had tertiary education [25].

Tuberculosis knowledge was generally high among TB patients. While most of the participants knew that bacteria causes TB, there was also a high misconception that cold air and dust cause TB. These findings are similar to an Ethiopian study where 79.9% of the respondents knew the source of TB, yet 62.2% still mentioned exposure to cold air as a cause and 65.4% indicated exposure to dust [19]. In contrast, a study from Vanuatu reported that 96% of the TB patients did not know that TB was caused by bacteria in the air [16]. A misunderstanding of TB causation and a knowledge barrier can influence patients' health-seeking behaviour, adherence to a prescribed treatment regimen and treatment outcome [16]. This calls for concerted efforts to dispel the misconceptions people have on TB causes and treatment; they also need to be enlightened about the wisdom of repositioning their TB health-seeking behaviour. Participants in this present study mis-represented some facts about TB and HIV, respectively: in fact, 77.4% indicated that TB could change into HIV; and HIV infects TB patients. A previous study done in South Africa revealed that 89% of the respondents agreed that only people

who are HIV positive have TB and 60% agreed that all people with TB would develop HIV. This notion can be explained by the fact that South Africa has a high prevalence of HIV and TB is the major source of mortality in people who are co-infected with HIV and TB [11, 25]. The belief that having TB automatically translates to HIV positive provides a potential explanation of why some TB patients hide symptoms, resulting in a delay to seek medical advice and get a diagnosis of the disease [26]. In addition, the threat of HIV stigma and fear or denial also affect early diagnosis and treatment of TB [27]. As such, there is a need to scale up TB programmes focusing on stigma-related perceptions and attitudes, especially regarding patient support and family sensitisation, irrespective of HIV status [27].

Most (70.6%) of the respondents were aware that follow-up sputum tests are important. This perceived benefit is suggestive of good communication of treatment guidelines between health workers and patients. In contrast, a Zambian study revealed that only 57% of the participants knew the importance of follow-up sputum tests [28]. The sputum test results are important to determine the level of treatment required in the future and the outcome.

This study revealed negative attitudes towards the TB disease, treatment and adherence measures. More than half of the respondents felt that TB treatment is difficult and takes a long time. A study in Malawi found that the majority of the participants echoed that TB disease treatment is not easy [27]. The Moroccan study found that 34.1% of the non-adherent TB clients cited that TB treatment took long [29]. In addition, 58.7% of the respondents indicated that TB treatment interferes with work or marriage. Similar findings were noted in Zambia, where 35% of the TB patients reported dismissal from work and divorce [28].

The findings of the study indicated that 53.8% of the participants felt embarrassed taking TB treatment, and felt that the community did not respect people with TB. Similar findings were reported in an Indonesian study where 30% of the TB and ex-TB patients kept their illness a secret because of embarrassment and fear of discrimination [30]. Similarly, 64.2% of participants in a Moroccan study believed that society does not respect patients with TB [31].

The majority of the respondents (84.7%) concurred that smoking can cause TB. Smoking is a predisposing factor for TB [32]. This result is suggestive of high awareness of perceived susceptibility to tuberculosis if one is a smoker. In the Moroccan and Vanuatuan studies, only 15.7% and 26% of the respondents respectively, knew that smoking predisposes one to TB [16, 30]. More than half of the population (52.9%) of respondents voiced that people who acquire TB through smoking and drinking were getting what they deserved. A similar study in South Africa revealed that 74% of the respondents agreed that people who smoke and get TB deserve their punishment [30]. This notion can create fear of judgement by the community that can hinder health-seeking TB treatment and compliance. Most of the respondents (60.6%) in this present study acknowledged that reckless people who drink and smoke are to blame for the spread of TB. Similarly, 90% of the study respondents in a South African study agreed that

irresponsible drinkers and smokers are to blame for the spread of TB [24].

Almost half (47.7%) of the respondents in this study did not initially take their symptoms seriously and more than half of the respondents were of the opinion that only people with a severe cough should seek medical attention. This is consistent with a Zambian study where (66%) did not associate their symptoms with TB beforehand [28]. This implies distorted personal susceptibility and that disease severity is the major cue to seeking health care. Patients waiting until a cough is severe leads to a delayed diagnosis and treatment commencement. This implies that there is a need for community sensitisation programmes to emphasise that any cough could indicate TB infection, not only a severe one.

5. LIMITATION OF THE STUDY

The present study focused only on three community health centres in Nelson Mandela Bay Health District, Sub-District C. Therefore, the results cannot be generalised to the entire province or country. A structured questionnaire was used for data collection; consequently, no in-depth information could be obtained about the TB patients' lived experiences while suffering from TB in Nelson Mandela Bay Sub-District C. Notwithstanding these limitations, the study provides insights into the knowledge, attitudes and health-seeking behaviour among patients suffering from TB in an understudied region with a high TB prevalence rate. Such information may be useful to inform health policy interventions on TB management.

CONCLUSION

The patients showed good comprehension of the causes of TB, duration of treatment and importance of treatment completion. Nevertheless, some patients had misconceptions about TB being caused by cold air and dust; untreated TB may convert to HIV and that having TB translates to HIV infection. As for attitudes towards TB, most patients regarded TB treatment as unpleasant, difficult, being a disease that interferes with work/marriage and endures too long. In addition, the patients expressed sentiments of community disrespect. With respect to health-seeking, it was revealed that patients had a low regard for the follow-up of TB test results and treatment. Disease severity was also the main driver for seeking medical assistance. There was no significant influence between socio-demographic variables (except for formal housing) and knowledge, attitude and health-seeking behaviour. These findings prompt the need for primary health care facilities in Nelson Mandela Bay and similar settings to strengthen health education solidarity in fighting stigmatisation; it would be advisable to build strong TB patient support groups in order to address prevailing difficulty experienced by patients while on treatment. Additionally, health education in these facilities should put more focus on tackling prevailing misconceptions about TB and to correct misinformation that might encourage social isolation of TB patients together with promoting health-seeking behaviour.

LIST OF ABBREVIATIONS

AOR	=	Adjusted Odds Ratio
CI	=	Confidence Interval
DOTS	=	Directly Observed Treatment Short course
HIV	=	Human Immune Virus
TB	=	Tuberculosis
WHO	=	World Health Organization

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

The Human Research Ethics Committee of the University of Fort Hare, South Africa approved the study (Ethics Number: GOO211SONY01).

HUMAN AND ANIMAL RIGHTS

No animals were used in this research. All human research procedures followed were in accordance with the ethical standards of the committee responsible for human experimentation (institutional and national), and with the Helsinki Declaration of 1975, as revised in 2013.

CONSENT FOR PUBLICATION

The nature and purpose of the study was explained to the participants who provided their consent to participate in the study.

AVAILIBILITY OF DATA & MATERIALS

Data supporting the findings of this study are available within the article.

FUNDING

CONFLICT OF INTEREST

The authors declare no conflict of interest, financial or otherwise.

ACKNOWLEDGEMENTS

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