

The Relationship of Socio-Economic Status on Contraction of Tuberculosis among TB Patients in Windhoek District, Namibia: A Public Health Practice Perspective

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The purpose for this study was to identify the risk factors of inpatients infected with Tuberculosis at Katutura Intermediate Hospital in Windhoek district, Namibia. A quantitative descriptive study was conducted among patients from the Windhoek district who were on first-line treatment for Tuberculosis at Katutura Intermediate Hospital, during the period of the study (June-August 2011). The universal sampling method was used and all 38 inpatients with Tuberculosis participated in the study. The socio-economic factors which are conducive to the transmission of Tuberculosis infection among the participants were identified and described. The findings revealed that the highest rate of TB infection was among the participants of the most productive age of 21-50 years. Moreover, the majority (70%) of the participants were the residents of the severely poverty stricken informal settlements in the Windhoek district. Consequently, the results concluded that lack of education, subsequent unemployment, low wages, poor housing and poor nutrition, alcohol abuse, smoking among the participants seem to fuel the high rate of infection with Tuberculosis, while stigma that is associated with the disease delays seeking of treatment.

Key word: Tuberculosis, socio-economic status, poverty, Katutura Intermediate Hospital, Namibia.

INTRODUCTION

Tuberculosis (TB) remains a major global health problem. In 2012, Mycobacterium tuberculosis infection accounted for an estimated 8.6 million new cases of TB and 1.3 million deaths globally [1,2]. In 2012, Namibia had one of the highest case-notification of 655 per 100,000, and 8,869 new cases for all forms of TB [3,4]. As a result, an average of 1200 people was reported to have died of Tuberculosis each year in Namibia [5]. The Windhoek district, with a population of 325, 460 and a home to Katutura Intermediate Hospital had a total of 2, 363 TB cases in 2009, thus bearing the highest burden of the reported TB cases for the year 2009 in Namibia [6]. Most of the statistics of tuberculosis cases were from the

economic disadvantaged people. The evidence supports a postulation by the literature that the socially and economic disadvantaged urban poor are the most vulnerable to Tuberculosis because of poor living standard which enhance the transmission of TB infection [7-10]. Moreover, after infected with the Mycobacterium tuberculosis, the urban-poor endures lack of social support and rather experiences stigmatization, an experience which can potentially lead to delays of people to come to terms with the illness and seek medical care. The result is poor treatment outcomes and the re-infection of the contacts [11,12]. The Windhoek district which has the biggest population of the urban-poor in Namibia may not be an exemption. However this claim cannot be extrapolated that all or most of the inpatients that are treated for TB at the Katutura Intermediate Hospital in Windhoek district contracted TB due to the exposure to the factors stated above.

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To date there is no research-based evidence in Windhoek district that the presupposed socio-economic factors which predispose to Tuberculosis diseases are also responsible for the highest rate of Tuberculosis for the cases of inpatients that are treated at the Katutura Intermediate Hospital in the Windhoek district. The purpose of this study was therefore to identify the socio-economic factors for Tuberculosis among the inpatients that were on first-line TB treatment at the Katutura Intermediate Hospital at the time of the study. The specific objectives were to identify and describe the socioeconomic factors that contribute to contraction of tuberculosis among TB inpatients at the Katutura Intermediate Hospital in Windhoek district. The research-based evidence of the relationship between the socio-economic factors and TB infection would be informative to the policies to address the socio-economic factors which predisposes to TB infection among the urban-poor of the Windhoek district of Namibia [13].

METHODOLOGY

A quantitative descriptive research design was used to identify and describe the socio-economic risk factors for tuberculosis among TB inpatients at the Katutura Intermediate Hospital. The study population was all thirty-eight (38) patients who were admitted to the TB ward and were on first-line TB treatment at Katutura Intermediate Hospital during June to August 2011. The universal sampling method was used and all 38 TB patients, thus representing 100% of the study population participated in the study. Ninety percent (90%) of the study population were from the Windhoek district and only 10% were from outside the Windhoek district. The inclusion criteria for participation were that only patients who were on first-line TB treatment at Katutura Intermediate Hospital as inpatients between June and August 2011 and those who consented to participate in the study were eligible to participate in the study. The data collection instrument/ a checklist of close-ended and open-ended questions based on the socio-economic factors which predispose to TB infection was developed and include demographic information and the sections on risk factors for tuberculosis as proposed by the literature [14]. In order to ensure the reliability of the findings from the main study, the data collection instrument was pre-tested on five (5) TB patients who received their first-line TB treatment at the Outpatient Department and who therefore did not participate in the data collection of the actual study. After pilot-testing, the time for the completion of one questionnaire was adjusted for 45 minutes per participant to allow collection of sufficient information from the respondents.

The actual data was collected in one week by five final year nursing students. The questionnaire from all the 38 respondents were completed and returned for analysis. Ethical principles as regard the protection of the

participants were observed [15,16]. Therefore the permission to conduct the survey was obtained from the Ethical and Research Committee of the University of Namibia, The Ethical and Research Committee of the Namibian Ministry of Health and Social Services granted an institutional permission to the UNAM's School of Nursing and Public Health for the prime researcher to conduct the study for partial fulfilment of the stud requirement. Verbal informed consent was obtained from the participants prior to the data collection and the participants could withdraw from the study at any time. Anonymity was ensured as the participants were identified by the numbers which ranged from 1 to 38. Confidentiality was also maintained- data collection questionnaires and field-notes were safely stored and discarded after the data analysis was completed.

Data Analysis

The Statistic Package for Social Science (SPSS) was used to analyse the quantitative data. Variables for quantitative data were coded and entered into Microsoft Excel. As a result, the socio-economic factors which seem to cause TB infection among the TB patients at Katutura TB Hospital were analysed. Validity of quantitative data was ensured through universal sampling method.

RESULTS

Under this section, the findings of the survey about the socio-economic factors which predispose to TB infection for the participants are described.

Socio – Economic Status

The variables which describe socio-economic status and therefore which predispose the participants to TB infection are described below.

Demographic Graphical Data of the Respondents

The demographical data of the respondents that were described includes gender, ages and level of education attainment. Of the respondents, 19 (50%) were males and 19 (50%) were females (see Table 1). Thus, males and female ratio was (1:1). The age of the participants ranged from 14 to 50 years. Male participants' ages ranged from 14 to 45 years whereas female participants' ages ranged from 21 to 41 years. Amongst the participants, 2 (5.26%) never went to school and for 36 (94.7%) their highest level of education ranged from grade five to grade twelve.

Home-living Section

The findings indicated that (90% of the respondents were the residents in Windhoek district and only 10% were

Table 1. Frequency of gender of the respondents.

Gender	Frequency	Percentages (%)
Males	19	50%
Females	19	50%
Total	38	100%

from outside Windhoek district. Of all the respondents from Windhoek district, only a few numbers (5%), of the participants were from the average normal living standard and a notable number (15%) stayed in one of the poverty stricken suburb while the majority (70%) of the respondents was from the worst off informal settlement areas. By implication, the 70% of all the respondents who were from Windhoek district, were from the severely poverty stricken socio-economic background. In line with the areas of their residence, the findings indicated that the majority 21 (55%) of the participants from the informal settlements lived in shacks. The remaining 17 (45%) stays in modern brick houses, but with high occupant-space of 3-5 people per room. Therefore, they were vulnerable to TB infection.

Exposure to Environmental Pollution for the Respondents

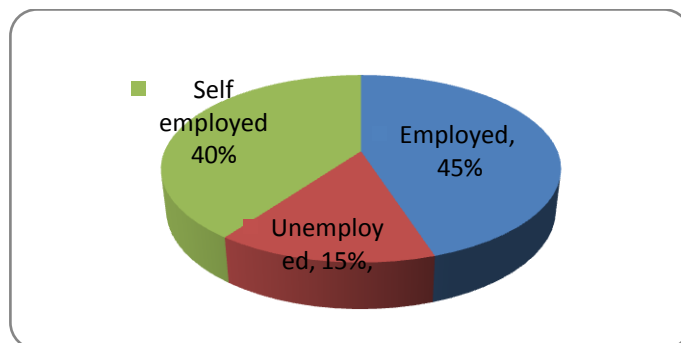
Given the residential areas and the types of houses for the majority of the respondents, the risk for exposure to dust and pollutant as predisposing factors to pulmonary tuberculosis were also explored. The findings indicates that indeed the majority 23 (60%) of the respondents were exposed to dust from the gravel roads and to cigarette smoke by the smokers. The minority 15(40%) of the respondents were not exposed to dust.

Employment of the Respondents and Wages per Moths

The results indicated that 17 (45%) of the respondents were employed, 15 (40%) were self-employed and 6 (15%) were unemployed (see Figure 1). The wages for the employed respondents per month ranged from N\$600 to above N\$10 000, which equates to U\$66-U\$1037.00 per month.

Nutritional status for the Respondents

The wages per months is a significant indicator for the quality of food that is affordable and quantity of food consumed at the specific household. Therefore, the number of meals as the determinants of nutritious status for the respondents were described. The findings revealed that less than 10% of the respondents only afford one meal a day while the majority could afford two to three meals per day. However, the quality of food consumed remains a concern as the respondents

**Figure 1.** Participants employment status.

indicated a lack of consistency in meals and eating a mere left-over as the next meal.

Social Habits of the Respondents

The results indicated that 11 (30%) of the respondents were smokers, who smoke an average of 20 cigarettes per day whereas 27 (70%) were non-smokers. Twenty-five respondents (65%) stated that they drink alcohol moderately to severe whereas thirteen (35%) respondents were not taking alcohol.

HIV Co-infection

The findings indicated that, 45% (17) of the participants were HIV positive, 35% (13) did not know their HIV status, while 20% (8) were HIV negative. The HIV results therefore show a strong link between HIV and TB among the participants.

Ranges of Support System for the Respondents

The final variable that was assessed was the participants' knowledge of Tuberculosis. In that regard, the participants provided qualitative information about their perception of Tuberculosis as a disease. The findings indicated that (60%) could recall all the potential causes for Tuberculosis, while a significant (40%) of the participants lacked the knowledge about the disease.

DISCUSSION

The study was based on the findings from the universal sample of all 38 TB inpatients at Katutura Intermediate Hospital in Windhoek at the time of the survey. In order to determine the association between infection by Tuberculosis and socio-economic status of the participants, the frequencies and percentages of the presupposed predisposing factors which portrayed among the participants were calculated. The findings revealed that the majority (70%) of the universal study sample were from the severely poverty stricken informal

settlements and were characterized by all the variables which predispose to Tuberculosis infection and fuel the TB diseases. The findings also revealed that the highest rate of Tuberculosis was among the participants of most productive age of 21-50 years because they are probably at mostly risks for exposure to the risk factors for tuberculosis [10,14]. Contrary to the findings from other studies which indicate that the prevalence of tuberculosis are high in women than men [17], gender did not make any differences for the rate of Tuberculosis among the participants in this study as both genders were equally affected.

In the analysis, multiple socio-economic factors which predisposed the participants to Tuberculosis were identified. The relationship between contraction of Tuberculosis and poverty was uncovered. The results showed that for the majority of the participants, their highest level of education was grade 12, which is low and as a result, they were less likely to secure employment with sufficient income and all the amenities necessary to live a healthy lifestyle. Therefore, for many of them, their incomes were not sufficient to sustain a big family of 4-8 members. However it should be underscored that in Namibia, the treatment for Tuberculosis is state-funded and the patients do not bear the cost of treatment. Therefore the patients' employment status only determines the availability of supportive measures to treatment at home such as nutrition. Other predisposing factors to Tuberculosis, such as poor housing of shacks and overcrowding as characterized by the high density of three to five people per room in a given household, were strongly portrayed in the findings. In concurrence with the existing literature, this study revealed and confirms an association between poor housing, overcrowding and being a case of Tuberculosis since 55% of the participants lived in the shacks, a living standard which favours the transmission of Tuberculosis [9,10]. In addition, the exposure to environmental pollution and alcohol abuse as customary associated with the shack living standard also contributed to a significant percentage of TB infection among the participants [10]. In concurrence with other studies on the causes of Tuberculosis, HIV co-infection appears among a significant (45%) of the participants [1,8].

Nutrition status plays a significant role in enhancing the body's immunity and prevention of Tuberculosis. The findings from this study revealed conditions that imply the risks for poor nutrition. Even though a significant number of the participants indicated that, they were employed and earned a salary, for the majority (57%), their monthly income were a meagre less than N\$2900.00, which equates to U\$300.00 per month. Thus they were unable to provide food and adequate meals to live healthy. Therefore, in reference to the nutrition, the majority of the participants implied poor nutritional status because their meals were of one type of food stuff, they lacked consistency in meals and some of them indicated that

they ate a mere left-over as the next meal, all because of poverty. The participants' knowledge of Tuberculosis, were assessed. The findings indicated that a lack of education among the study participants was further associated with the inability for them to detect the signs of disease early, seek for medical attention earlier as well as with ignorance to take protective measures to prevent infection with Tuberculosis.

Additionally, an association of other surrogate markers of socioeconomic deprivation which can either facilitate the spread of infection or the development of Tuberculosis disease emerged from this study. These include conditions such as lack of support from family, lack of direct observation therapy (DOT) programme due to lack of manpower in health services, lack of social support grants to facilitate nutrition to enhance treatment efficacy, stigma and discrimination from their employers. The latter risks for dismissal from the employment because the employers fear the potential spread of tuberculosis at the work place. All these surrogate markers of socio-economic deprivation and stigmatization indicate a predisposition to low health seeking behaviours for treatment, poor adherence to treatment among patients with Tuberculosis and as a result, a perpetual spread of Tuberculosis infection among members of the marginalized communities in Windhoek. Finally HIV/AIDS prevailed in the findings of the study, as a significant number of the participants were also infected with the HIV, thus concurring with the WHO affirmation that HIV is indeed co-morbidity to Tuberculosis [2].

Limitations

The small sample size of the participants and the use of inpatient participants only limit the possibility for generalization of the study findings to all patients with Tuberculosis in Namibian. Another limitation of this study is that the study was a univariate to those patients with Tuberculosis who were from the Windhoek informal settlements in Windhoek district only. There was no a correlation study in other district to confirm the relationship of the socio-economic factors which were uncovered among the study participants and Tuberculosis. The socio-economic status and probably the risk behaviors of the study participants may differ from those of the residents of informal settlement in other districts in Namibia. Therefore, the findings may not necessarily be generalized to patients with TB in other district, neither to the entire Namibian population.

Conclusion

The purpose of the study was to identify the socio-economic risk factors for tuberculosis among inpatients with Tuberculosis at Katutura Intermediate Hospital in Windhoek district. Although the data were from a small sample of participants, the findings have demonstrated a

relationship between poor socio-economic status and contracting tuberculosis. The findings therefore demonstrated that some universal risk factors to tuberculosis remain unchanged as regard the situation in Namibia.

Recommendations

The findings revealed a relationship of poor socio-economic status and the prevalence of Tuberculosis infection among the participants. Therefore the recommendations were that in addition to the government's commitments to invest in and support TB diagnoses and treatment programme, there is a need for improvement of the socio-economic status of the marginalized communities. It is discernible that improved socio-economic status inversely influences the risk behavioural of the marginalized communities and therefore can minimize the Tuberculosis infections in the district of Windhoek, Namibia. It is further recommended that it is essential for the district to integrate and intensify the HIV prevention interventions into community health initiative, an initiative which would control spread of HIV infection and minimize stigmatization of people that live with either both co-morbidities.

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