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ORIGINAL ARTICLE

Community Awareness and Delay in Diagnosis of Pulmonary Tuberculosis

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ABSTRACT

Background: Pulmonary TB is a significant health issue amongst the developing nations. Early detection and timely intervention are necessary to manage transmission and enhance patient outcomes. Nonetheless, inadequate community awareness and delays in seeking medical services usually result in late diagnosis of the illness.

Objective: To assess community awareness and its association with delay in the diagnosis of pulmonary tuberculosis.

Methodology: This is a cross-sectional research carried out in the period between March 2023 and August 2023 at Department of Internal Medicine, Liaquat National Hospital, Karachi. Eighty-two patients with a diagnosis of pulmonary tuberculosis were used through a consecutive sampling method. The questionnaire used to collect data contained structured questions that captured the demographic, knowledge about tuberculosis, health seeking behaviour, and the period between the development of the symptoms and their diagnosis. Diagnostic delay was determined as 30 days or below or >30 days. Issues were analyzed with the help of SPSS 26. The Chi-square test was used to determine the relationship between awareness level and diagnostic delay with a p-value of 0.05 being a statistically significant value.

Results: Among the 82 participants, 59.8% were male and 62.2% resided in rural areas. Overall awareness regarding tuberculosis was poor in 59.8% of participants. A total of 64.6% of patients experienced diagnostic delay greater than 30 days. Patients with poor awareness were significantly more likely to experience delayed diagnosis compared with those with good awareness ($p = 0.002$).

Conclusion: Community awareness regarding pulmonary tuberculosis was limited and diagnostic delay was common among patients. Poor awareness was significantly associated with delayed diagnosis. Strengthening public health education and community awareness programs may help promote early health-seeking behavior and reduce diagnostic delay.

Keywords: Pulmonary tuberculosis, community awareness, diagnostic delay, health-seeking behavior, tuberculosis control.

INTRODUCTION

Tuberculosis (TB) is considered to be one of the most widespread infectious diseases on the planet and it still presents an important epidemic threat to the global population, especially in low- and middle-income nations. Recent estimates in the whole world have indicated that millions of new cases of tuberculosis are reported annually with pulmonary tuberculosis being the most popular form of disease spread within the society. Delays in diagnosis can be identified as one of the biggest obstacles to successful tuberculosis management even despite the presence of efficient diagnostic technologies and treatment protocols[1-3].

Timely treatment and early diagnosis of TB are also very important elements of prevention programs. In the event of late diagnosis, the infected persons would keep spreading the disease to other people, which implies that the burden of infection in the household and community is increased. Some of the factors that may cause diagnostic delay include the unawareness regarding symptoms of tuberculosis, social stigma, financial problem as well as accessibility of healthcare facilities. These aspects may have an impact on patient behavior when it comes to the time and place of seeking medical attention[4-6].

Community awareness is an important factor in the prompt identification of symptoms of tuberculosis and prompt healthcare-seeking behavior. Information on generic symptoms including persistent cough, fever, night sweats, and weight loss will make people seek medical assessment at a younger age. Nonetheless, research studies were carried out in different areas, which indicated that there was poor population education regarding disease transmission of tuberculosis, its symptoms and availability of treatment. A lack of understanding and misconceptions usually lead to the delayed diagnosis and extended disease spread[7-9].

Informal health care providers, pharmacies, and traditional healers might be the first stop of the patients in most of the developing nations before they reach a qualified healthcare facility. These health seeking behaviors also lead to delays in diagnosis and initiation of treatment[10-12]. Ensuring better community awareness by education campaigns and public health intervention is thus seen as one of the prominent measures in the reduction of diagnostic delay and better outcome of tuberculosis control.

Given the importance of early diagnosis, it is necessary to understand the level of community awareness and the factors associated with diagnostic delay among tuberculosis patients. Therefore, the present study was conducted to assess community awareness and delay in the diagnosis of pulmonary tuberculosis among patients.

METHODOLOGY

This cross-sectional descriptive study was conducted to assess community awareness and delay in the diagnosis of pulmonary tuberculosis among patients presenting to the department of Internal Medicine, Liaquat National Hospital, Karachi. The study was carried out over a period of one year from March 2023 to August 2023. The aim of the study was to evaluate the level of community awareness regarding pulmonary tuberculosis and to determine its association with delays in seeking diagnosis and treatment.

All participants were informed about the purpose of the study, and written informed consent was obtained before their inclusion. Confidentiality and anonymity of the participants were maintained throughout the study.

A total of 82 patients diagnosed with pulmonary tuberculosis were included in the study using a non-probability consecutive sampling technique. Patients of either gender aged 18 years and above who were newly diagnosed with pulmonary tuberculosis and were willing to participate were included in the study. Patients who had previously completed tuberculosis treatment, those with extra-pulmonary tuberculosis, and individuals who were severely ill or unable to respond to the questionnaire were excluded from the study.

A structured questionnaire was used to gather data by providing information on socio-demographic, clinical symptoms,

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community awareness in relation to tuberculosis, health-seeking behavior, and delay in diagnosis. The awareness element had questions on the awareness of the spread of tuberculosis, symptoms, whether the disease can be cured, and whether the patient is aware of the services of treatment. The delayed diagnostic was measured by evaluating the period between the beginning of the symptoms and the diagnosis of tuberculosis. Delay in patients was the duration of time between the onset of the symptoms and the initial meeting with a healthcare worker, whereas the delay in the health system was the delay between the initial meeting and the diagnosis.

The collected data were entered and analyzed using Statistical Package for Social Sciences (SPSS) version 26. Descriptive statistics were used to summarize the data. Frequencies and percentages were calculated for categorical variables, while means and standard deviations were used for continuous variables where appropriate. The association between community awareness and diagnostic delay was assessed using the Chi-square test, and a p-value ≤0.05 was considered statistically significant.

RESULTS

Eighty-two participants diagnosed with pulmonary tuberculosis were enrolled in the study. The demographic factors of the respondents were distributed unequally in terms of age, sex, location, and level of education. The majority of the respondents were men and were living in rural regions with a significant proportion of the respondents being of low educational status.

The clinical symptoms that the participants had before the diagnosis were also evaluated. The most frequent symptom reported was persistent cough, which was followed by fever and weight loss. Less percentage of the patients complained of hemoptysis and night sweats.

The awareness about tuberculosis was also assessed in the community to identify the knowledge of respondents about the disease. Despite the fact that the majority of the participants had heard about tuberculosis, there was a lack of information about the methods of its spread and free treatment facilities. Total awareness rates were rated as either good or poor on the response.

The health-seeking behavior was studied to identify the initial intervention made by the patients when the symptoms appeared. Quite a significant percentage of the patients first turned to the clinics or pharmacies privately before they visited the government health provision centers. There were also cases of self-medication and delayed visit to professional medical consultation.

The health-seeking behavior was studied to identify the initial intervention made by the patients when the symptoms appeared. A significant number of patients first visited the services of the private clinic or pharmacy and did not visit state health care institutions. There were also cases of self-medication and delayed visit to professional medical consultation.

The correlation between the community awareness and diagnostic delay was also analyzed. The poorly aware patients had the higher risk of delay in diagnosis than the well aware patients. There was a significant statistical correlation between the level of awareness and time taken to make the diagnosis.

Table 1. Demographic characteristics of study participants (n = 82)

Variable	Category	Frequency (n)	Percentage (%)
Age group	18–30 years	21	25.6
	31–45 years	27	32.9
	46–60 years	20	24.4
	>60 years	14	17.1
Gender	Male	49	59.8
	Female	33	40.2
Residence	Urban	31	37.8
	Rural	51	62.2
Education level	No formal education	28	34.1
	Primary	24	29.3
	Secondary	20	24.4
	Higher	10	12.2

Table 2. Clinical symptoms among pulmonary tuberculosis patients (n = 82)

Symptom	Yes n (%)	No n (%)
Persistent cough (>2 weeks)	70 (85.4)	12 (14.6)
Fever	56 (68.3)	26 (31.7)
Weight loss	49 (59.8)	33 (40.2)
Night sweats	38 (46.3)	44 (53.7)
Hemoptysis	17 (20.7)	65 (79.3)

Table 3. Community awareness regarding tuberculosis (n = 82)

Variable	Category	Frequency (n)	Percentage (%)
Heard about TB	Yes	61	74.4
	No	21	25.6
Knowledge of TB transmission	Correct	38	46.3
	Incorrect/Don't know	44	53.7
Awareness TB is curable	Yes	52	63.4
	No	30	36.6
Awareness of free TB treatment	Yes	36	43.9
	No	46	56.1
Overall awareness level	Good	33	40.2
	Poor	49	59.8

Table 4. Health-seeking behavior of participants (n = 82)

Variable	Category	Frequency (n)	Percentage (%)
First healthcare contact	Government hospital	28	34.1
	Private clinic	30	36.6
	Pharmacy/self-medication	16	19.5
	Traditional healer	8	9.8
Number of visits before diagnosis	1–2 visits	31	37.8
	3–4 visits	34	41.5
	≥5 visits	17	20.7

Table 5. Diagnostic delay among tuberculosis patients (n = 82)

Variable	Category	Frequency (n)	Percentage (%)
Patient delay (symptom onset to first consultation)	≤30 days	35	42.7
	>30 days	47	57.3
Health system delay (first visit to diagnosis)	≤14 days	46	56.1
	>14 days	36	43.9
Total diagnostic delay	≤30 days	29	35.4
	>30 days	53	64.6

Table 6. Association between community awareness and diagnostic delay (n = 82)

Awareness level	Delay ≤30 days	Delay >30 days	Total	p-value
Good awareness	19	14	33	
Poor awareness	10	39	49	0.002

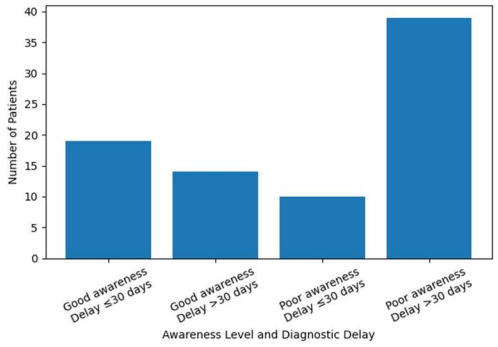

Figure 1. Association between community awareness and diagnostic delay in pulmonary tuberculosis (n = 82). Patients with poor awareness showed a higher proportion of diagnostic delay (>30 days) compared with those having good awareness.

DISCUSSION

This study assessed the level of community awareness and its association with delay in the diagnosis of pulmonary tuberculosis

among patients. The results showed that a significant percentage of the patients reported with diagnostic delay with over half of the participants presenting with medical care after a period of over 30 days after they started having the symptoms. The late diagnosis of tuberculosis is a major health issue of concern to the population, as it reinforces the spread of the disease to the rest of society and the chances of getting complications and death.

Majority of the participants in the present study were aware of tuberculosis, although limited information was obtained on how it is transmitted, its symptoms and availability of free treatment services. Less than 50 percent of the participants had a low level of general knowledge on tuberculosis. The same findings have been reported in recent studies carried out in developing countries where people still have poor knowledge about tuberculosis especially the people who are less educated. Low health literacy may make people unable to realize early symptoms and early access medical services[13-16].

The other critical study finding was the trend of healthcare-seeking behavior. A large number of patients used to seek the services of private clinics, pharmacies and even as self-medicated instead of accessing the services of government health facilities that provide services on tuberculosis diagnosis. These practices are related to delayed diagnosis and treatment. Other studies in the past have also pointed out that people tend to treat the symptoms or seek the informal healthcare practitioners before they seek the formal healthcare thus extending the diagnostic process[17,18].

It was also shown that community awareness and diagnostic delay are significantly related. There was an increase in patients who had poor awareness and therefore taking a long time to diagnose compared to patients who had good knowledge about tuberculosis. This observation explains why it is correct to assume that awareness is very important in motivating early health-seeking behavior. Whenever people become aware of the development of the symptoms characteristic of tuberculosis, including sustainable cough, fever, and weight loss, there is a high possibility that they will visit the doctor in time[19].

These findings also support the need to enhance community-based education on tuberculosis. Knowledge on symptoms of tuberculosis and spread and access to treatment can be enhanced by social campaigns, community outreach effort and engagement of primary healthcare professionals in programs that promote awareness. The enhancement of awareness can potentially minimize the delay in diagnosing and help in the improved control of tuberculosis[20].

Despite providing useful insights, this study has some limitations. The data were also gathered in one center, which may not be very representative of the general populations and the sample size is also not very large. Furthermore, data on the symptoms onset were also dependent on the recalling of patients, which can present recall bias. It is suggested that further research using larger multicenter samples should be conducted in the future to investigate more factors that cause diagnostic delay in tuberculosis.

CONCLUSION

The study concluded that community awareness regarding pulmonary tuberculosis was relatively low, and diagnostic delay was common among patients. Poor awareness was significantly associated with longer delays in seeking diagnosis. These findings highlight the need for improved public health education, early symptom recognition, and accessible tuberculosis diagnostic services. Strengthening community awareness programs and promoting timely healthcare-seeking behavior may help reduce diagnostic delays and improve tuberculosis control efforts.

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