Quality of Life among African Refugees with Tuberculosis in Greater Cairo

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Abstract

Background: Refugees are at particularly high risk of developing Tuberculosis which is a persistent problem in many developmental countries; and that is no doubt that disease has a serious impact on performance and quality of life among refugees with tuberculosis. **Aim:** The aim of this study was to assess quality of life among African refugees with tuberculosis in Greater Cairo. **Design:** A descriptive design used to conduct this study. **Setting:** The study was conducted in two setting; at outpatient clinics of Abbassia Chest Diseases Hospital and Refuge Egypt TB clinics in Zamalek which is a non-governmental organization. **Sample:** A purposive sample of 240 of African refugees were included in this study which selected as recently diagnosed with confirmed tuberculosis in last six month and their age between 18 to 45 years. **Tools:** The data were collected using a self-administered questionnaire form which consisted of 6 parts to assess socio-demographic data for African refugees, their medical history, knowledge, attitude, and practices towards prevention of Tuberculosis and refugee's quality of life scale. **Results:** The study result shows that 52.5% of the studied refugees were males, and 47.5% females, 45.4% of had poor knowledge, 34.2% of had negative attitude, and 77.1% of them had inadequate level of practices about prevention of tuberculosis. Also 46.2% of study sample of African Refugees suffered from low level of quality of life related to physical domain and 65% to psychological domain also 55.8% to social relationships and 52.1% to environmental domain while 33.4% of them suffer from low level of total quality of life. **Conclusion:** There was a statistically significant relation between quality of life and refugees' educational level, home crowding index, their knowledge about tuberculosis. While insignificant statistical relation with their attitude and practices toward prevention of tuberculosis with p value >0.05. **Recommendations:** Designing and implementing of educational program for African refugees to increase awareness, knowledge, practices, and attitude regarding TB disease.

Key words: Quality of Life, Refugees, Tuberculosis

Introduction

Even though tuberculosis (TB) is a treatable and preventable disease, it is continuing to play a significant role in global morbidity and mortality, affecting over 10 million people and causing 1.3 million deaths annually ***(WHO, 2018)***. Tuberculosis (TB), an infectious disease primarily affecting the lung parenchyma, is most often caused by Mycobacterium tuberculosis. It may spread to almost any part of the body, including the meninges, kidney, bones, and lymph nodes. TB is strongly associated with poverty, malnutrition, overcrowding, substandard housing, and inadequate health care ***(Brunner & Suddarth's, 2016).***

A refugee is described according to the United Nations High Commissioner for Refugees (UNHCR), as someone who has been forced to flee his or her country because of persecution, war, or violence. A refugee has a well-founded fear of persecution for reasons of race, religion, nationality, political opinion, or membership in a particular social group ***(WHO, 2018).*** Refugees are vulnerable to TB in their countries of origin because their health status depends on the availability of and access to quality health systems, overall socioeconomic conditions as well as the occurrence of national emergencies such as famines and political conflicts. During migration, mobile populations are at risk for TB, particularly if travel occurs under precarious conditions including limited access to healthcare, incidents of violence or being kept in detention centers ***(Somerset et al., 2015)***. Coexistent illness and the poor nutritional status of many refugees weaken their

immune system and make them more vulnerable to developing TB. The crowded living conditions of most refugee camps facilitate the transmission of TB from infectious patients (***WHO 2021).***

Currently in Egypt, the right to TB treatment regimens for all non-Egyptian populations is ensured, regardless of their legal status. Treatment is provided free-of-charge by the National TB Program (NTP) and non-governmental organizations (NGOs) with the support of United Nations High Commissioner for Refugees (UNHCR), provide first-line drug treatment and implement a WHO-modified directly observed therapy (DOT). These clinics request patients visit the clinic every 2 weeks to meet with a dedicated physician and to receive medication ***(Lohiniva et al., 2016).***

Quality of Life is defined as an individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns, It is a broad ranging concept affected in a complex way by the person's physical health, psychological state, personal beliefs, social relationships and their relationship to salient features of their environment ***(Ferdiana et al., 2018).*** With the development of effective treatment strategies, the focus of TB management has shifted from the prevention of mortality to the avoidance of morbidity. As such, there is increased interest in the quality of life (QoL) experienced by individuals being treated for TB ***(Marra et al., 2014)***.

Community health nurse role is to enhance the public's health and decrease the incidence of communicable diseases such as TB. They demonstrate the ability to use a shared vision, model excellence in public health nursing, overcome challenges through problem solving, enable action, and inspire others to act in the best interests of people and communities ***(Pirog et al., 2012)***.

Significance of the study:

Egypt hosts 273,152 refugees and asylum-seekers from 65 countries of origin. Most refugees and asylum-seekers are located in urban areas of Greater Cairo.

Tuberculosis (TB) is a leading cause of global morbidity, yet there is limited information regarding its impact on quality of life and health status. In Egypt, the estimates of the TB burden in 2017 according to WHO were 0.42 for mortality rate and 13 cases per 100,000 populations ***(WHO, 2018)***.

Refugees are considered a vulnerable population, several factors that adversely influence access to healthcare by refugees. Lack of knowledge about refugees' rights, low socioeconomic status, language barriers and poor understanding of a host country's healthcare system may influence their quality of life, as community health nurse role toward caring of specific population and prevention of communicable diseases as TB this study will conduct to assess quality of life among African refugees with tuberculosis in greater Cairo.

Aim Of The Study

The aim of this study is to assess quality of life among African refugees with tuberculosis in greater Cairo through:

1.Assessing knowledge of African refugees with tuberculosis about the disease process.

2.Assessing Attitude of African refugees with tuberculosis toward prevention and control of the disease process.

3.Assessing practice of African refugees with tuberculosis toward care of themselves.

4.Assessing quality of life domains such as (Physical, psychological, social, emotional, and spiritual) among African refugees with tuberculosis.

Research questions:

I. Is there a relation between quality of life of African refugees and their socio-demographic characteristics?

II. Is there a relation between quality of life of African refugees and their knowledge about TB?

III. Is there a relation between quality of life of African refugees and their attitude toward prevention of TB?

IV. Is there a relation between quality of life of African refugees and their practice toward care of TB?

Subjects and Methods

I- Research design:

A descriptive study design will be used to conduct this study.

Setting:

I. The study was conducted in two settings; at outpatient clinics of Abbassia Chest Diseases Hospital which affiliated to the Ministry of Health that is the specialized hospital for chest diseases and apply national tuberculosis program while covers a large number of refugees. The second setting at Refuge Egypt TB clinics in Zamalek. It is a non-governmental organization (NGO) with the support of The United Nations High Commissioner for Refugees (UNHCR), which provide first-line drug treatment and implement a WHO-modified directly observed therapy (DOT). Which considered the first point for refugees before and after diagnosed of tuberculosis, also, referred the patient to Abbassia chest hospital for investigations.

Subjects:

A purposive sample of 240 of African refugees were included in this study. And selected according to these criteria; all male and female African refugees who recently diagnosed with confirmed tuberculosis in last six month, aged between 18 to 45years.

Sample size:

The sample size was 240 of African refugees which calculated using Epi-Tool, with estimated Proportion = 0.3, desired precision of estimate =0.05, and confidence level 0.95.

II-Technical design

Tools of data collection:

Self-administered questionnaire form was developed by the researcher, based on reviewing related literatures and experts' opinions, written in English language to be easily understood by refugees. It included the following five parts:

Part I: To assess the socio-demographic characteristics of refugees included ten closed ended questions such as, gender, age, education, marital status, nationality, education level, monthly income, kind of accommodation, living with whom, and home crowding index.

Part 2: To assess the knowledge of African refugees about tuberculosis which included six closed ended questions such as meaning of Tuberculosis, mode of transmission, cause, who are the high-risk groups of TB, preventive measures, and complications untreated TB.

Scoring system:

Each variable was further divided into sub-items. A complete answer was scored (2), incomplete answer was (1) and the incorrect/no answer was (zero). The total score for this tool was 20 marks. All items of the questionnaire were checked and summed up and the refugees' knowledge was evaluated and scored according to three levels:

•Poor knowledge level< 50%.

• Moderate knowledge level 50% < 75%.

• Good knowledge level ≥75%.

Part 3: To assess the attitude of African refugees toward prevention of tuberculosis which included five closed ended questions such as perceptions of stigma, social norms, prioritization of treatment, perceived risk, and self-efficacy.

Scoring system:

The score ranged from one to five, by Likert scale as never =1, rarely= 2, sometimes= 3, often= 4, and always=5

The total score for all items related to assessed of refugees' attitude was summed up and categorized as follow. Negative attitude= < 50%, Moderate attitude= 50%: <75%, and positive attitude=≥ 75%.

Part 4: This part used to assess the practices of African refugees toward

tuberculosis which include main six items of practices such as hand washing, disposal of waste products, universal precautions, healthy nutrients, follow up, and medication compliance.

Scoring system:

Each item was further divided into sub-items. If answer was done = 1 score and if not done scored =zero, then all sub items summed up and categorized into three levels as poor practices = < 50%, average practices = 50%: <75%, and good practices =≥ 75%.

Part 5: scale of quality of life for African refugees with tuberculosis regards Physical, psychological, social, emotional, and spiritual by using standardized questionnaire designed by WHO ***(Singh, et al, 2017).***

Scoring system:

All QOL domains such as physical, psychological, social relationships, environment, overall quality of life, and general health facet were assessed by Likert scale which ranged from 1:5 as never =1, seldom = 2, quite often=3, often =4, and always =5. Each item was further divided into sub-items, then all items were summed up and categorized to three level of quality of life as < 50%, were considered low level of QOL, 50%: <75% was considered moderate level, and =≥ 75% was considered high level of QOL

Validity and reliability of the tool:

Content and face validity were performed by three professors of the community health nursing department and two professors from the chest specialty of Faculty of Medicine, all experts were affiliated to Ain Shams University, Egypt who reviewed the tools for content accuracy. The developed tools were tested for reliability on a sample of 24 subjects. The first, four parts of tools whom the reliability test was done, but the fifth part of QOL tool were slandered. The reliability test of translated version was established by using the Cronbach alpha and Pearson correlation which showed good internal consistency construct validity Cronbach alpha = (0.876).

III. Operational Design:

Preparatory Phase:

A review of literature was done regarding current and past available literature, covering the various aspects of the problem, using textbooks, articles, magazines, and internet sites through research gate. This was necessary for the researcher to get aquatinted with, and oriented about aspects of the research problems, as well as to assist in development of data collection tools.

Ethical consideration:

All ethical considerations were considered for ensuring the refugees' privacy and confidentiality of the collected data during the study. Firstly, the study protocol takes agreement of Ethical Committee affiliated to Faculty of Nursing Ain Shams University. Secondly the purpose and nature of the study were explained for the participants of refugees and written consent was taken to gain participation after explaining the purpose of the study and being informed that each study participant is free to withdrawal at any time through the study. Finally, all selected sample of refugees agreed to participate in the study and were assured that the study would pose no risks or hazards on their social, psychological, or physical health.

Pilot Study:

A pilot study was conducted at the beginning of the study for 24 person of refugees which represent (10% of the total sample) to investigate the feasibility of data collection tools, content, validity, clarity, and simplicity. It took about one month from beginning of November 2021. Then all subjects who included in the pilot study excluded from the actual study sample.

Field work:

The actual process of data collection was carried out in six months consequently the period from the beginning of November 2021 until the end of Abril 2022, two days per week about 5 hours /daily (Saturdays & Tuesdays) in order to collect the total sample of 240 of African refugees. The researcher introduced her

to the two previous mentioned setting directors and the nurse supervisors and the other health team workers that will help her in data collection to save the time and to also gain the trust of patients. The researcher explained the aim of the study to all participants and then interviewing the questionnaire sheet after clear explaining the way to fill it out. The interviewing tools took about maximum 45 minutes for every one of refugee and the QOL scale took about 15 minutes for each one. The researcher met about 4 to 5 patients each day.

Administrative Design:

Formal letter from the Dean of the Faculty of Nursing, Ain Shams University directed to the directors of Abbassia Chest Diseases Hospital which affiliated to the Ministry of Health and Refuge Egypt TB clinics in Zamalek which is considered a non-governmental organization (NGO) with the support of The United Nations High Commissioner for Refugees (UNHCR),

Statistical design:

The researcher analyzed and tabulated the results by using the Statistical Package for Social Science (SPSS) version 21. Qualitative data was presented as number and percentage. Relations between different qualitative variables were tested using Chi-square test (χ^2) and correlation coefficient (r). Probability (p-value) < 0.05 was considered significant and < 0.001 was considered highly significant.

Results

Figure (1) illustrates that 45.4% of study sample of African refugees had poor knowledge about TB while, 36.3% of them had good level of knowledge.

Figure (2) clarifies that 34.2% of study sample of African refugees had negative attitude and 45.4% of had moderate level of attitude toward TB while, 20% of them had positive attitude toward TB.

Figure (3) illustrates that 77.1% of study sample of African refugees had inadequate level of practices about prevention of TB while, only 22.9% of them had adequate level of practices.

Figure (4) explains that 33.4% of study sample of African refugees suffer from low total quality of life level while, only 0.8% of them enjoy high level.

Table (1) reveals that there was a statistically significant relation between quality of life and both educational level where a high school patients felt better about their quality of life for 76.5% of refugees than not educated refugees 55.4%. Furthermore, as shown in this table there were highly statistically significant relation between QOL and kind of accommodation and home crowding index with p value < 0.001.

Table (2) displays that there was significant negative correlation between refugees' attitude toward TB and physical domain of QOL with r-= -0.246. While positive correlation with their practices with r= 0.133. Also, there was positive correlation between attitude and overall quality of life with r=0.183 and negative correlation with practices r= -0.324.

Table (3) demonstrates that there was a significant relation between African refugees' quality of life and their knowledge about TB disease; with P value < 0.001, where refugees with good level of knowledge have a low quality of life 16.3%, out of total patients with poor knowledge have a moderate level of quality of life for 31.7% of patients. While there was insignificant statistical relation between QOL and refugees' attitude and practices.

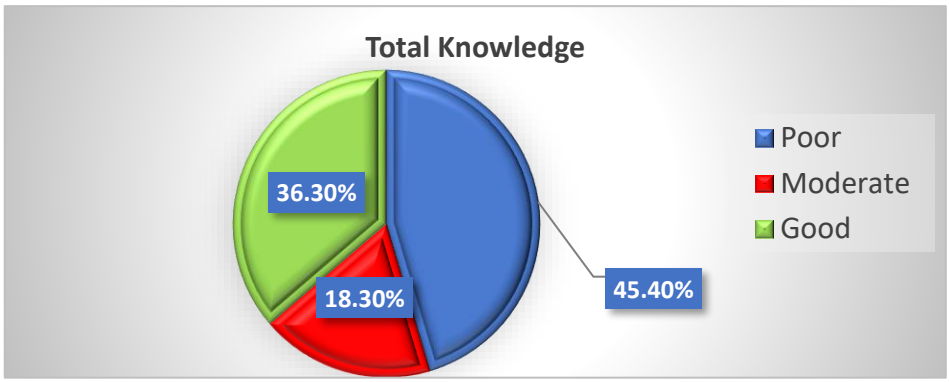

Figure (1): Distribution of total knowledge of African refugees about tuberculosis (n=240).

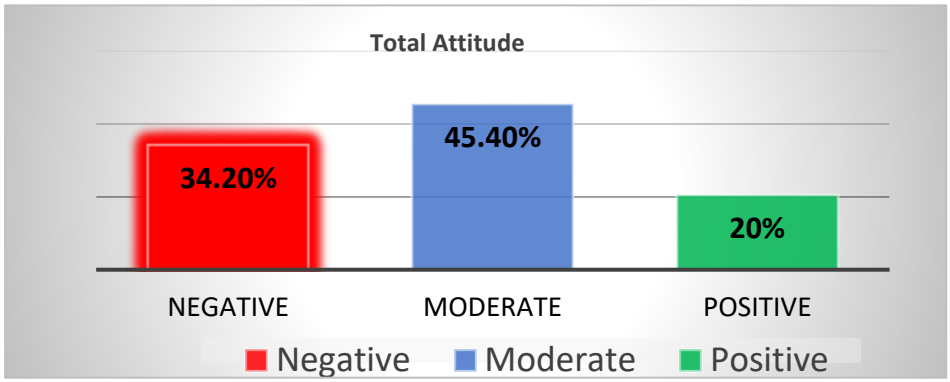

Figure (2): Distribution of total attitude of African refugees toward Tuberculosis disease (n=240).

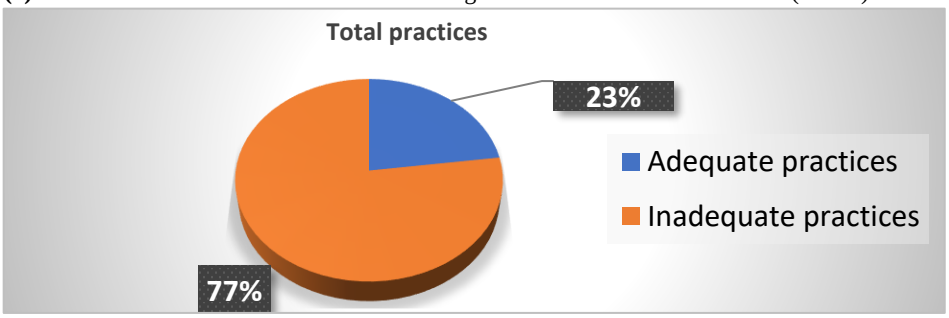

Figure (3): Distribution of total practices of African refugees about Prevention of tuberculosis (n=240).

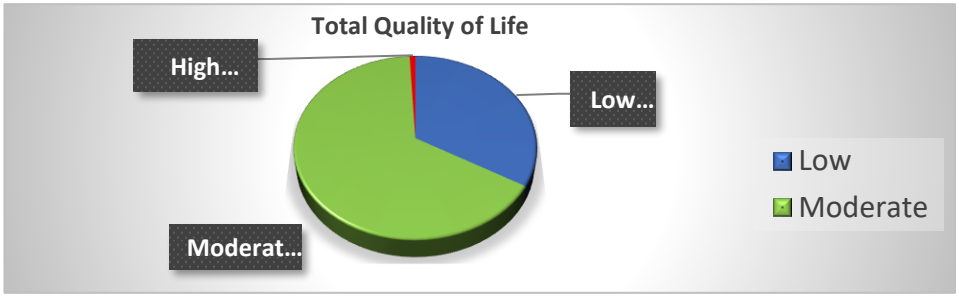

Figure (4): Distribution of total quality of life of African refugees with tuberculosis (n=240).

Table (1): The relation between quality of life of African refugees and their socio-demographic characteristics (n=240).

Socio-demographic characteristics	Quality of life						X^2	P-Value
	Low (n=80)		Moderate (n=158)		High (n=2)			
	No	%	No	%	No	%		
Gender								
Male	40	31.7	85	67.5	1	0.8	0.312	0.855
Female	40	35.1	73	64	1	0.9		
Age								
18-25	35	27.1	92	71.3	2	1.6	6.222	0.183
26-35	29	4038	42	59.2	0	0		
>36	16	10	24	60	0	0		
Educational level								
High school	27	22.7	91	76.5	1	0.8	12.080	0.002*
Not educated	53	43.8	67	55.4	1	0.8		
Monthly income								
Not enough	47	34.8	88	65.2	0	0	2.794	0.247
Enough	33	31.4	70	667	2	1.9		
Kind of accommodation								
Apartment	15	14.5	86	83.4	2	1.9	30.282	0.000**
Room in apartment	65	47.4	72	52.5	0	0.0		
Home crowding index								
Overcrowded								
Crowded	60	57.6	44	42.3	0	0.0	87.816	0.000**
Not crowded	17	13.7	107	86.3	0	0.0		
	3	25.0	7	58.3	2	20.0		

(*) Statistically significant at p<0.05& (**) highly Statistically significant at p<0.001

Table (2). The Pearson correlation coefficient between quality-of-life domains of African refugees and their knowledge about TB, attitude toward prevention of TB and practice toward care of TB (n=240).

Quality of life	Attitudes	Practices	Knowledge
Physical	-0.246**	0.133*	-0.044
Psychological	0.003	0.076	-0.040
Social relationships	0.156*	-0.101	-0.113
Environment	0.029	-0.001	0.031
Overall quality of life	0.183**	-0.324**	-0.105
General health facet	-0.254**	0.097	0.006

** Correlation is significant at the 0.01 level * Correlation is significant at the 0.05 level

Table (3). The relation between quality of life of African refugees and their knowledge, attitude, and practices level (n=240).

Items of relations	Quality of Life						χ^2	P-Value
	Low		Moderate		High			
	No	%	No	%	No	%		
Total knowledge about TB								
Poor	31	12.9	76	31.7	2	0.8	10.747	0.030*
Moderate	10	4.2	34	14.2	0	0.0		
Good	39	16.3	48	20.0	0	0.0		
Total Attitude								
Negative	2	0.8	0	0.0	0	0.0	10.921	0.091
Moderate	62	25.8	139	57.9	1	0.4		
Positive	16	6.7	19	7.9	1			
Total Practices								
Poor	0	0.0	1	0.4	0	0.0	2.944	0.816
Average	76	31.7	151	62.9	2	0.8		
Good	4	1.7	6	2.5	0	0.0		

Discussion

Tuberculosis (TB) remains a major challenge in the health sector. The Ministry of Health has set targets for the National TB Control Program to reduce morbidity by 80% in 2030 and 90% in 2035 and to reduce mortality by 90% in 2030 and 95% in 2035. The duration of TB treatment and its side effects that has influence the daily life of TB patients, which then affects their quality of life ***(Sartika et al., 2019).*** So, the present study conducted to assess quality of life among African refugees with tuberculosis in greater Cairo.

Regarding socio-demographic characteristics of the African Refugees with tuberculosis the present study result revealed that, more than half of the studied refugees were male, while less than half of them were female. In addition, more than half of them were between the age of 18 – 25 and the lowest percentage was from 36-45.

The present study result disagreement with ***Juliasih et al., (2020)*** who applied study about "Factors Affecting Tuberculosis Patients' Quality of Life in Surabaya, Indonesia" and found that, more than half of the studied subject were female, less than one quarter of them their age between 15-25, more than one fifth of them between (36–45 y). Also disagree with ***Low et al., (2020)*** who reported that in their study entitled "National tuberculosis prevalence surveys in Africa, 2008–2016: an overview of results and lessons learned", the prevalence of TB disease among African refugees increased with age, but the absolute number of cases was usually highest among those aged 35–44 years.

Concerning their nationality, more than two fifths of them were from Eritrea and less than one quarter of them were from Sudan. This result disagreed with ***Low et al., (2020)*** who reported that, the prevalence of bacteriologically confirmed pulmonary TB disease in those ≥15 years varied from 119 per 100 000 population in Rwanda and 638 per 100 000 population in Zambia. The male: female ratio was 2.0 overall, ranging from 1.2 (Ethiopia) to 4.1 (Uganda). Prevalence per 100 000 population.

From the point of view, the inconsistency between the results of the research and this other research is due to the fact that it was conducted on twelve countries in Africa during several years from 2010 to 2016 and on a large number of each country, but our research was conducted on refugees who came to Egypt during.

Regarding knowledge of the African Refugees about TB the present study result denoted that, more than half of the sample understand the correct meaning of tuberculosis, less than half of subjects are aware of the proper method of disease transmission, nearly most of patients are aware that bacteria are the cause of tuberculosis. More than two fifths of them stated that children/young people are the most vulnerable to disease. There are three preventive methods for TB infection, according to less than one third of respondents. Furthermore, more than one third of them have stated that they are aware of all three consequences of discontinuing medications on their own. We can conclude that the sample has a fair understanding of tuberculosis. This result may be due to miscommunication related to different language and different culture or patients unaware about place of services.

The current study result supported with ***Mahmud et al., (2022)*** who conducted study entitled " Knowledge, Attitude, Practices, and Determinants of Them towards Tuberculosis in Bangladesh" and demonstrated that, less than half of the respondents knew the common symptoms of TB infection (cough for more than three weeks, persistent fever, nighttime sweating, and weight loss) while, less than half of the study participants showed sufficient knowledge, good practices, and favorable attitudes towards TB

While this result disagrees with ***Huddart et al., (2018)*** who applied study about "Knowledge about tuberculosis and infection prevention behavior: A nine city longitudinal study from India" and mentioned that two thirds knew that TB is communicable disease, half of the patients could identify cough the major symptom of TB, One third of the patients knew fever was a symptom of TB. Three quarters of patients could identify a mode of transmission. Additionally, most patients knew that drugs were available to treat TB.

Also, disagreement with ***Gautam et al., (2021)*** who applied study about "Knowledge on tuberculosis and utilization of DOTS service by tuberculosis patients in Lalitpur District, Nepal" and demonstrated that, most of patients had knowledge of tuberculosis.

The study noted that the majority of study sample of African refugees had moderate level of attitude toward TB. While the most of them had average level of practices about prevention of TB.

These findings are contrary with studies done ***by Angelo et al., (2020)*** who conducted their study in southwestern Ethiopia entitled "Knowledge, Attitude, and Practices Towards Tuberculosis Among Clients Visiting Tepi General Hospital Outpatient Departments" and reported that fifty-three percent of the participants were having a favorable attitude towards tuberculosis. Also, the majority (85%) did not cover their mouth while coughing, while 79.5% did not screen for tuberculosis and 82% of participants have not received any health education about TB. Overall, 44.6% practiced TB prevention.

Overall, participants of African refugees with good practice in the

prevention of TB was little which is in contrary with studies done in Iran in which 42.6% had a good practice by ***Ayele et al., (2019).*** However, this finding is below than studies conducted in Mecha district conducted by ***Amiri et al., (2017)*** where 48% had good preventive practices.

Regarding relation between quality of life of African refugees and their socio-demographic characteristics the present study result revealed that there was a statistically significant relation between quality of life and both educational level and type of tuberculosis; more than three quarters of high school patients felt better about their lives than more than half of illiterate refugees. Furthermore, there were highly statistically significant relation between QOL and kind of accommodation and home crowding index with p value < 0.001.

The present study result disagrees with ***Juliasih et al., (2020)*** who indicated that, sex did not significantly affect quality of life, and only age significantly affected the general health domain (P = 0.018). The level of education significantly affected the physical functioning domain (P=0.016) and role limitation due to physical health (P=0.020). Comorbidity had a significant effect on general health (P=0.029), pain (P = 0.026), physical functioning (P=0.012), role limitation due to physical health (P=0.001), and role limitation due to emotional problems (P=0.024). Moreover, mental distress significantly affected the quality of life of TB patients in all domains. Working status, and monthly income, did not affect quality of life in every domain.

From my point of view, there is a statistical relation between the quality of life and the rate of household overcrowding, as the higher the rate of overcrowding in the house or place of residence, the higher the rate of spread of tuberculosis infection, which leads to a poor quality of life among patients.

Regarding relation between quality of life of African refugees and their knowledge about TB the current study result showed that, there was a significant relation between African refugees' quality of life and their knowledge of tuberculosis; where less than half of the refugees with high knowledge have a low quality of life, more than two thirds of the patients with low knowledge have a moderate level of quality of life.

The present study result disagreement with ***Malik et al., (2018)*** who applied study about "Health related quality of life among TB patients: question mark on performance of TB DOTS in Pakistan" and mentioned that TB patients had poor QoL in spite of the new therapeutic strategies and free availability of medicines. The disease had a negative impact on QoL of TB patients across all domains

Regarding relation between quality of life of African refugees and their attitude toward prevention of TB the current study result showed that, there is no significant correlation between quality of life and their attitude toward prevention of TB.

As respect to ***Hussein et al., (2019)*** who conducted study about "Tuberculosis knowledge, attitudes and practices: a cross-sectional study in the Somali population living in Finland" and illustrated that, those with high knowledge are twice more likely to have a

favorable attitude towards TB (adjusted OR, 2.21; 95%CI, 1.32–3.69).

Concerning relation between quality of life of African refugees and their practices toward care of TB the present study result mentioned that there is no significant correlation between quality of life and practices.

The present study result contrasted with ***Mohammad, (2020)*** who applied study about " The Effectiveness of Tuberculosis Education Program in Kelantan, Malaysia on Knowledge, Attitude, Practice and Stigma Towards Tuberculosis among Adolescents" and showed that, there was no significant difference between attitude and practice score, (P = 0.210 and P = 0.243, respectively).

Also, in disagreement with ***Balogun et al., (2019)*** who conducted study about "Predictors of tuberculosis knowledge, attitudes and practices in urban slums in Nigeria" and mentioned that good knowledge was a predictor of good practice.

Conclusion

In the light of the current study findings, it can be concluded that:

There was one third of study sample of refugees with TB suffer from low quality of life level and there was a statistically significant relation between quality of life and both educational levels furthermore, a highly statistically significant relation between QOL and kind of accommodation and home crowding index with p value < 0.001.

Also, there was a significant statistical relation between quality of life and their knowledge about TB disease while insignificant statistical relation with their attitude and practices of prevention of TB with p value <0.05. Also, the study proved that there was significant negative correlation between refugees' attitude toward TB and physical domain of QOL with r-= -0.246. While positive correlation with their practices with r= 0.133.

Recommendations

Based on the current study finding the following recommendations were proposed:

- Educational programs to increase awareness, knowledge, practice, and attitude regarding TB are essential for preventing and managing the disease. These programs should be tailored to the specific needs of the target audience of refugees and delivered in a variety of formats.
- Developing standards /guidelines to intensify TB preventive measures in refugees' clinics to increase their awareness of modes of transmission
- Community-based campaigns conducted to educate all refugees about TB disease.

Further Research

- More research needs to be conducted to establish programs and interventions to improve knowledge, attitudes, and practices about TB
- A further study is necessary to identify effects of educational program on African refugees' knowledge, practices, and attitude regarding TB.

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