ASSESSMENT OF HEALTH-RELATED QUALITY OF LIFE AMONG TUBERCULOSIS PATIENTS WITH AND WITHOUT DIABETES IN WESTERN REGION OF NEPAL

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ABSTRACT

Introduction: Currently Tuberculosis is a great public health importance globally especially in developing countries due to the converging epidemics of communicable diseases. Quality of life is important for people with diabetes and TB and their health care providers for several reasons. Objective of the study was to assess status of quality of life among tuberculosis patients with and without diabetes.

Methods: This research was health facility based cross sectional study and carried out among TB patients registered under directly observed treatment short course therapy and receiving treatment from health facilities of Western Region of Nepal. Interview schedule was used to collect the data. Quality of life was assessed by using Nepali version of WHOQOL-BREFF questionnaires. Data was entered in Epi Data software and analysis was performed with the help of the statistical package for social science version 20.

Results: A total 390 TB patients were participated in this study. The overall prevalence of diabetes mellitus among TB patient was 10.8%. More than half of participants were 15-40 years of age. WHOQOL-BREF measure overall quality of life of TB patients was 68.82±10.79 and it was poor levels of quality of life. Among different socio-demographic variables such as older people, married and illiterate participants had poor QOL than others. HRQoL is affected by age, sex and marital status. TB with diabetes patients had lesser overall quality of life (88.1%) than the TB without diabetes patients (94.4%).

Conclusion: The finding suggests that to improving for TB Patients of Health literacy and counselling are promoted to achieve optimum levels of QOL.

Key words: Diabetes, Tuberculosis, Quality of Life, Western Nepal

INTRODUCTION

Tuberculosis (TB) remains a considerable global public health concern, mainly affecting poor and vulnerable populations. Every year, more than 9 million people fall ill with this infectious disease, and close to 2 million die from it[1].According to the World Health Organization, there were an estimated 8.8 million incident cases of TB globally in 2010[2]. Tuberculosis (TB) remains a major public problem in Nepal. In 2017/18, the total of 32,474 cases of TB were notified and registered at NTP[3]. Health-related quality of life (HRQOL) provides a multidimensional perspective that encompasses a patient's physical, emotional, and social functioning[4].

The World Health Organization defines quality of life (QOL) 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.

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It is a broad-ranging concept affected by an individual's physical health, psychological state, and level of independence, social relationships, and their relationship to salient features of their environment[5]. Health-related quality of life (HRQOL) provides a multidimensional perspective that encompasses a patient's physical, emotional, and social functioning[4].Quality of life is important for people with diabetes and TB and their health care providers for several reasons.

This study was conducted with objective to assess quality of life among tuberculosis patients with and without diabetes in western region of Nepal.

METHODS

Study design

This study was carried out as an institutional based cross sectional study design in DOTS centres of western region of Nepal.

Study period

The study period was from September 2016 to June 2018.

Study setting

The study was conducted in DOTS centres of Nawalparasi, Tanahun and Kaski of western development region of Nepal.

Sample size and sampling procedures

The sample size was determined by assuming latest diabetes among TB patients for adults in Nepal by 2015. So the prevalence was 9.1% [6].

The sample size was determined by using the formula

$n = z2pq/d2$

Where:

n = Desired sample size

z = Standard normal deviate, usually set at 1.96 which corresponds to 95% confidence level

p = 0.09

d = Permitted error (5%, if the confidence level is 95%); 0.05

q = 1 – p; (1-0.09 =0.91)

Therefore no = (1.96)2*0.09*0.91

(0.05)2

= 126

Design effect for cluster sampling = 3 (126*3=378)

Required sample = 390 (Adding for 12 participants because easy to divide in different districts and clusters)

A total required number of participants were 390, which was obtained from thirty cluster sampling. Thirteen participants were selected from each cluster (DOTS centre) from selected districts.

The sample was selected by cluster sampling techniques.

First Stage: Three districts (Nawalparasi, Tanahun and Kaski) were chosen from two ecological zones (Flat and Hilly) as randomly. Second Stage: Total no. of DOTS Centers functioning in each district, list was prepared. DOTS Cnters from each district were selected by cluster method. Thirty clusters (equal number of DOTS centre was selected from each district) sampling techniques was applied for the selection of the DOTS Centers from three districts. Third Stage: Participants from each DOTS centre was recruited as proportioned basis upon the total number of patients registered under DOTS Centers in each district. A total 390 participants were selected from 29 clusters of three districts.

Study population

Study population was the tuberculosis patients under DOTS therapy.

Inclusion criteria and Exclusion criteria

Tuberculosis patients were receiving medication under DOTS therapy and completed intensive phase and aged 15 years and above were considered as the study participants. Patients who were unavailable on the day of data collection were excluded.

Data collection tools and techniques

Data were collected through interview using an interview schedule, and also through review of

patient's treatment cards for necessary information. Interview schedule was divided into three sections. First section included the socio-demographic characteristics of the participants. Second section focused about life style and related behaviors of participants. Third section focused on the quality of life which was assessed using Nepali version of WHOQoL-BREF questionnaires. Data was collected by face to face interview method using an interview schedule. WHO-BREF provides a multidimensional perspective that encompasses a patient's physical, psychological, social and environmental functioning.

Nepali version of WHO quality of life questionnaire (WHOQOL-BREF) which was a 26 item questionnaire which is closed ended and options were given in Likert scale. The 5-point Likert scale ranges from 1 through 5. Higher scores indicate a better quality of life. The WHOQoL-BREF contains four specific domains which include: (a) physical health, (b) psychological well-being, (c) social relationships and (d) environment. The raw scores for each domain of WHOQOL-BREF were calculated by adding values of single items. Raw scores were transformed on the scale ranging from 0 to 100, where 100 is the highest and 0 the lowest health related quality of life.

The Glucometer instrument was used for the purpose of estimation of Blood Glucose levels and status of disease condition such as Diabetes Mellitus to the TB patients. For self reported diabetes condition, if patients were able to show their medication slips or patient cards or diagnosis slips with blood glucose level that ensure the confirmation of diabetes mellitus. Height was measured by using stadiometer and weight was measured by using bathroom scale and calibrate this machine was followed by every day at starting phase.

DM status was assessed through the Glucometer instrument for the estimation of Blood Glucose levels and status of disease condition such as Diabetes Mellitus to the TB patients. Participants whose random blood sugar level ≥140 mg/dl at the time of the study and it was tested by using glucometer (CLEVER CHEK TD-4279 Blood Glucose Monitoring) system was considered to have diabetes.

Statistical information

Data were entered in Epi Data software and analysis was performed with the help of the statistical package for social science (SPSS) version 20. Frequency distribution and cross tabulation between dependent and independent variables was used to describe and summarize the basic background and characteristic of participants. Descriptive statistics (i.e., frequency, percentage, mean and standard deviation) was applied to calculate the mean scores of the overall QoL. Logistic regression was applied to identify the factors associated between dependent and independent variables.

Ethical Considerations

Ethical approval was obtained from the Institutional Review Committee of Pokhara University Research Center. Administrative permission obtained from regional health directorate office, Pokhara, kaski. Participants were fully informed regarding study objectives and written consent was obtained prior to the initiation of the data collection. Informed consent was taken from participants whose age was equal and more than 18 years, but for those less than 18 years of age assent was also taken from their guardian.

RESULTS

A total 390 TB patients were participated in this study. Table 1 showsMore than half of participants were 15-40 years of age. Majority (64.61%) of participants were male. Jointand extended family was common among participants. Majority (28.20%) of participants were upper caste groups. Based on religion, most (81.3%) of them were Hindu. Majority (78.97) of participants were from urban area

Table 1: Socio-demographic characteristics of the participants		
Characteristics	**Frequency**	**%**
Age		
15-40 years	218	55.9
41-64 years	122	31.3
65-92 years	50	12.8
Mean: 40.67, SD: 17.912		
Gender		
Male	252	64.61
Female	138	35.38
Family Type		
Nuclear	125	32.05
Joint and Extended	265	67.94
Ethnicity		
Dalit	62	15.89
Disadvantaged non-dalitTerai caste	46	11.79
Disadvantaged Janajatis	80	20.51
Religious minorities	37	9.48
Upper caste groups	110	28.2
Relatively advantaged Janjatis	55	14.1
Religion		
Hindu	317	81.3
Islam	4	1
Buddhist	58	14.9
Christian	11	2.8
Marital Status		
Unmarried	105	26.92
Married	242	62.05
Divorced	4	1.02
Widowed	11	2.82
Bidur	28	7.17
Temporary Residence		
Urban	308	78.97
Rural	82	21.02

Table 2: Socio-economic characteristics of the participants		
Characteristics	**Frequency**	**%**
Educational Status		
Illiterate	72	18.46
Non-formal	101	25.89
Primary & Lower secondary level	79	20.25
Secondary & higher secondary level	114	29.23
Bachelor& above	24	6.15
Currently Employed		
Yes	92	23.58
No	298	76.41
Occupation		
Agriculture	71	18.20
Job	38	9.74
Business	40	10.25
Household works	68	17.43
Daily wages/ labor	23	5.89
Unemployment	150	38.46

Table 2 shows that Illiteracy was quite high (18.46%). Only 23.58% of participants were currently employed while majority (76.41%) of them was unemployed whereas 18.20% were engaged in agriculture and 17.43% household works.

Table 3 shows that raw scores for each domain of WHOOQL-BREF was calculated by adding the value of single item and all scores were transformed to reflect 0–100 for each domain with higher scores corresponding to a better QOL. Total score, mean score, minimum, maximum and standard deviation were calculated. Domain wise mean score and standard deviation for physical domain was 63.01±12.56, for psychological domain was 66.45±12.52, for social domain it was 74.34±13.83, for environment domain was 71.70±14.76 and for overall QOL, it was 68.82±10.79

Table 3: Descriptive statistics of transformed score of QOL of patients with TB					
Domains	**Total score**	**Minimum**	**Maximum**	**Mean**	**Stand. Deviation**
Physical	100	13	94	63.01	12.56
Psychological	100	13	94	66.45	12.52
Social relations	100	0	100	74.34	13.83
Environment	100	0	94	71.50	14.76
Overall QOL	100	8	90.75	68.82	10.79

Table 4 shows that Participant with the score of 50 and above were classified as having good QOL and less than 50 score as having poor QOL. It was seen that majority (94.4%) of TBNDM participants had good overall quality of life whereas TBDM participants (88.1%) had good overall quality of life. Domain wise among TBNDM, 90.3% had good physical QOL, 93.3% had good psychological QOL, 96.9% had good social QOL and 95.4% had good environmental QOL. Among TBDM, 83.3% had good physical QOL, 83.3% had good psychological QOL, 97.6% had good social QOL and 95.2% had good environmental QOL.

Table 5 shows that association between socio-demographic variables and domains of QOL. Among different socio-demographic variables, age was associated with all domains except social domain and overall QOL. Similarly, marital status of participant was associated with physical, psychological and overall QOL while educational level was associated with physical domain, psychological, social domain and overall QOL.

Table 4: Categories of quality of life based on scores

Domain	TBNDM		TBDM	
	Good Scores (≥50)	Poor Scores (< 50)	Good Scores (≥50)	Poor Scores (< 50)
Physical QOL Score	90.3%	9.7%	83.3%	16.7%
Psychological QOL Score	93.3%	6.7%	83.3%	16.7%
Social QOL Score	96.9%	3.1%	97.6%	2.4%
Environment QOL Score	95.4%	4.6%	95.2%	4.8%
Overall QOL Score	94.4%	5.6%	88.1%	11.9%

Table 5: Association between Socio-demographic characteristics of participants and domains of Quality of Life among TB patients

	Physical Domain		Psychological Domain		Social participation		Environment Domain		Overall facets	
Variables	P-value	OR (C.I.)	P-value	OR (C.I.)	P-value	OR (C.I.)	P-value	OR (C.I.)	p-value	OR (C.I.)
Age 15-40/ 41-92	0.001*	0.370 (0.238-0.576)	0.001*	0.291 (0.170-0.499)	0.074	0.456 (0.224-0.965)	0.001*	0.415 (0.226-0.763)	0.001*	0.326 (0.185-0.577)
Gender Male/ Female	0.362	0.72 (0.36-1.44)	0.610	1.25 (0.52-2.95)	0.445	1.66 (0.44-6.26)	0.49	1.44 (0.50-4.14)	0.719	1.18 (0.47-2.97)
Ethnicity Upper caste group/Others	0.627	1.19 (0.581-2.46)	0.229	1.65 (0.72-3.75)	0.802	0.84 (0.22-3.17)	0.621	1.28 (0.47-3.52)	0.698	1.20 (0.47-3.03)
Religion Hindu/Non-Hindu	0.206	0.61 (0.28-1.32)	0.652	1.28 (0.429-3.85)	0.349	2.58 (0.32-20.37)	0.397	1.88 (0.42-8.39)	0.947	1.03 (0.34-3.16)
Marital Status Unmarried/ Married	0.016*	0.29 (0.10-0.84)	0.022*	0.21 (0.04-0.91)	0.140	0.24 (0.03-1.87)	0.121	0.32 (0.07-1.44)	0.015*	0.12(0.01-0.91)
Temporary Residence Urban/Rural	0.678	1.19 (0.50-2.83)	0.219	2.12 (0.622-7.261)	0.707	1.34 (0.288-6.24)	0.642	1.34 (0.38-4.77)	0.381	1.73 (0.50-5.99)
Education Status Illiterate/ Literate	0.035*	2.06 (1.04-4.09)	0.026*	2.51 (1.09-5.80)	0.030*	3.91 (1.04-14.68)	0.051	2.62 (0.96-7.13)	0.006*	3.58 (1.37-9.36)

Table 6: Association of TBNDM and TBDM with domains of QOL and overall QOL					
Domain	TBNDM n(%)	TBDMn(%)	p-value (Chi-square)	OR	C.I.
Physical domain Good QOL Poor QOL	 317(91.1%) 31(8.9%)	 35(83.3%) 7(16.7%)	 0.109	 0.489	 0.201 1.192
Psychological domain Good QOL Poor QOL	 329(94.5%) 19(5.5%)	 35(83.3%) 7(16.7%)	 0.006*	 0.289	 0.113 0.735
Social domain Good QOL Poor QOL	 337(96.8%) 11(3.2%)	 41(97.6%) 1(2.4%)	 0.782	 1.338	 0.168 10.634
Environment domain Good QOL Poor QOL	 332(95.4%) 16(4.6%)	 40(95.4%) 2(4.8%)	 0.962	 0.964	 0.214 4.346
Overall QOL Good QOL Poor QOL	 331(95.1%) 17(4.9%)	 37(88.1%) 5(11.9%)	 0.063	 0.380	 0.133 1.090

TBNDM: Tuberculosis with not Diabetes MellitusTBDM: Tuberculosis with Diabetes Mellitus

Table 6 shows that it was seen that only psychological domain of QOL was associated with TBNDM and TBDM while others were not.

DISCUSSION

This study revealed that Domain wise quality of life score was recorded in social relationship domain of health 74.34±13.83 while the lowest was in the physical domain was 63.01±12.56. The mean transformed quality of life score in the other domains of health included 71.70±14.76for environment domain and 66.45±12.52for psychological domain. This is similar to the study conducted in Africa and KotlinaJeleniogórska, German[7].

The study shows that Age, marital status and educational status influenced the health related quality of life scores in different dimensions. The study conducted in Tehran also shows that there is Sex, marital status, education, job status, place of residence, and cigarette smoking, influenced the HRQoL[8].

This Study assessed domain wise impact in Quality of life and factors associated with them. In this study, it was seen that majority of TBNDM participants had good quality of life while participants with TBDM had poorer quality of life. In the study, age is significantly associated with physical and psychological domains of QOL the younger age group had better quality of life in the physical, psychological and social relationship domains of QOL compared with those with advancing age groups. This is similar to the study conducted in Africa. Males had better QOL than females whereas in study by Adeyeye et al. females were found to have better QOL than males. The reason behind it may be that females in our society are care taker of family members but they are not cared while they are sick or have any type of disease condition. Those with spouses had a better QOL in all the domains of

QOL while those without spouses fared worse in the all domains of quality of life which is contrary to the study by Olufunke O. Adeyeye[9].

CONCLUSION

WHOOQL-BREF measure overall quality of life of TB patients was 68.82±10.79 and it was poor levels of QOL. Domain wise mean score and standard deviation for physical domain was 63.01±12.56, for psychological domain was 66.45±12.52, for social domain it was 74.34±13.83, for environment domain was 71.70±14.76. It was seen that majority (94.4%) of TBNDM participants had good quality of life whereas lesser number of TBDM participants (88.1%) had good quality of life. Among different

socio-demographic variables such as older people, married and illiterate participants had poor QOL than others. HRQoL is affected by age and sex.

ACKNOWLDEGEMENT

We are greatly thankful to University Grants Commission, Nepal for providing us with the research grant. We are indebted to Institutional Review Committee, Pokhara University Research Centre, regional health directorate office, Pokhara, kaski. DPHO,Kaski, DHO, Tanahun, DHO,Nawalparasi, and all the DOTS centers that were given the permission to initiate this study and collect necessary data from participants. We are thankful to the participants who participated in the study without which the study would not have been possible.

CONFLICT OF INTEREST

None

RECOMMENDATIONS

WHOOQL-BREF measure overall quality of life of TB patients was poor and lowest domains are physical and psychological. So, health services would be focused to improve the both dimension of health. Health literacy and exercise are promoted to achieve optimum levels of QOL. Co-morbidity of DM affects the overall quality of life of TB patients, so develop and implement disease management strategies for both disease conditions.

FUNDING

This research was funded by university Grant Commission Nepal.

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