10.18686/mhr.v2i2.4126

# The Relationship between Core Knowledge of Tuberculosis and Mental Health: a Cross-sectional Study among University Students in Tibet

**Zengyan Li[1], Labasangzhu[*2, 3]**

**1. Tibet University, Lhasa, Tibet, China**

**2. Department of Preventive Medicine, Tibet University Medical College, Lhasa, Tibet, China**

**3. High Altitude Medical Research Center (High Altitude Health Science Research Center) of Tibet University, Lhasa, Tibet, China**

***Abstract:*** The relationship between core knowledge of TB and mental health among students in a university was investigated. The results showed that the overall knowledge rate of core knowledge of tuberculosis was 71%. The main effects of coping style and standard level on mental health, anxiety, and self-denial were significant. In terms of mental health, the results had borderline significant, and the positive attitude of the "not up to standard" participants was conducive to a good mental state. This suggests that schools should not only strengthen the education of students on TB prevention and control but also cultivate positive attitudes among students.

***Keywords:*** Awareness rate; Mental health

## 1. Introduction

Tuberculosis is mainly respiratory transmitted and is a tuberculous lesion that occurs in the lung tissue, trachea, bronchi, and pleura [1]. To effectively curb the prevalence of tuberculosis, China's 13th Five-Year Plan for the Prevention and Control of Tuberculosis aims to achieve a public awareness rate of more than 85% of the core knowledge of tuberculosis prevention and control. In June 2017, The Code of Practice for Tuberculosis Prevention and Control in Schools (2017 Edition)[2] (hereinafter referred to as the Code), which standardizes the core knowledge of TB health education in schools into eight articles. so this study first explored the knowledge of college students about the core knowledge of TB health education in the Norms.

Mental health is not only the absence of mental illness or psychopathy, but also the ability of an individual to recognize his or her potential [3][4]. Individuals who use positive coping have higher levels of psychological health[5]. In the current study, the participants were selected from classes in which they had a history of TB or were found to have TB in previous screenings, and schools are characterized by high population density and mobility, so the level of knowledge about tuberculosis may affect their mental health status. In addition, considering that different coping styles may also affect mental health [5], different coping styles may lead to different levels of mental health in cases where subjects are unable to determine whether they have been diagnosed with TB and have little knowledge of this area.

## 2. Subjects and methods

### 2.1 Investigation subjects

A questionnaire based survey was conducted among university students in Tibet reported tuberculosis cases or had been diagnosed with tuberculosis in a tuberculosis screening.

### 2.2 Investigation content

The questionnaire includes the following four aspects: (1) general information; (2) Eight core knowledge items of TB; (3) Simple Coping Style Questionnaire (SCSQ): The scoring converts the scores of negative coping and positive coping into Z-scores, and a positive coping tendency is positive if the standard score of positive coping is subtracted from the standard score of negative coping, and negative coping if the opposite is true [6]. (4) The General Health Questionnaire (GHQ-20), including three subscales: the Self-Affirmation Scale, the Anxiety Scale, and the Depression Scale[7]. Self-affirmation scores were reverse scored to create self-denial scores. The anxiety score, depression score,

and self-denial score were added to obtain the mental health score, and the higher the total score, the lower the level of mental health.

### 2.3 Statistical analysis

SPSS 25. 0 statistical software was used to analyze the data.

## 3. Results

### 3.1 Basic information

A total of 287 questionnaires were distributed, and the actual number of valid copies collected was 269 (93. 7%)

### 3.2 Univariate analysis of the core knowledge of tuberculosis prevention and treatment that affects the "up to standard"knowledge

The significant differences were statistically significant (P < 0. 05) when comparing students' professional field, area of origin, whether they have received TB-related health education, and whether they have read information about TB prevention. See Table 1.

**Table 1 Awareness of the core knowledge of TB control of participants**

| Type / Number of Participants | up to standard | Not up to standard | $\chi^2$ | P |
|---|---|---|---|---|
| **Gender** | | | 0. 006 | 0. 937 |
| Male(n=138) | 30 | 108 | | |
| Female(n=131) | 29 | 102 | | |
| **Ethnicity** | | | | |
| Tibetan(n=154) | 40 | 114 | 2. 289 | 0. 318 |
| Han ethnic group(n=104) | 32 | 72 | | |
| Other ethnic groups(n=11) | 5 | 6 | | |
| **area of origin** | | | 3. 990 | 0. 046* |
| Countryside(n=202) | 33 | 169 | | |
| City(n=67) | 16 | 41 | | |
| **Grade** | | | 8. 363 | 0. 079 |
| Freshman year(n=37) | 13 | 24 | | |
| Sophomore(n=35) | 6 | 29 | | |
| Junior(n=135) | 25 | 110 | | |
| Senior Year(n=24) | 3 | 21 | | |
| Grand 5th grade(n=38) | 13 | 25 | | |
| **professional field** | | | 11. 298 | 0. 001* |
| Medical category(n=92) | 31 | 61 | | |
| Non-medical category(n=177) | 28 | 149 | | |
| **whether they have received TB-related health education** | | | 5. 189 | 0. 023* |
| Yes(n=215) | 65 | 150 | | |
| No(n=54) | 8 | 46 | | |
| **whether they have read information about TB prevention** | | | 4. 742 | 0. 029* |
| Yes(n=224) | 71 | 153 | | |
| No(n=45) | 7 | 38 | | |
| **whether they have a family history of TB** | | | 0. 011 | 0. 916 |
| Yes(n=5) | 1 | 4 | | |
| No(n=264) | 58 | 206 | | |

### 3.3 The Relationship between Core Knowledge of Tuberculosis and Mental Health

A two-factor ANOVA with 2 (standard level: up to standard, Not up to standard) × 2 (coping style: positive, negative) was conducted with the dependent variables of anxiety scale, depression scale, self-denial scale, and mental health score, respectively.

Firstly. On the anxiety scale, The results found that: the main effect of the standard level was significant $F(1, 266)=4. 558$, $p=0. 034$, $\eta_p^2=0. 017$, and anxiety scores were significantly lower for people who up to standard ($M=0. 356$, $SD=0. 996$) than for those who did not ($M=0.$

938, *SD*=1. 616); the main effect of coping style was significant $F(1, 266)=9.639$, $p= 0.002$, $\eta_p^2=0.035$, and anxiety scores were significantly lower for positive coping (*M*=0. 306, *SD*=0. 970) than for negative coping (*M*=1. 164, *SD*=1. 724); the interaction between standard level and coping style was not significant $F(1, 266)=1.442$, $p=0.231$, $\eta_p^2=0.005$. Secondly, On the depression scale, the main effect of standard level was not significant $F(1, 266)=1.797$, $p=0.181$, $\eta_p^2=0.007$; the main effect of coping style was not significant $F(1, 266)=0.844$, $p=0.359$, $\eta_p^2=0.003$; the interaction between standard level and coping style was not significant $F(1, 266)=0.195$, $p= 0.660$, $\eta_p^2=0.001$. Thirdly, On the self-denial scale, the main effect of the standard level was significant $F(1, 266)=8.598$, $P=0.004$, $\eta_p^2=0.031$, and the self-denial scores were significantly lower for people who up to standard(*M*=4. 610, *SD*=3. 068) than for those who did not (*M*=6. 090, *SD*=2. 921); the main effect of coping style was significant $F(1, 266)=9.459$, $P=0.002$, $\eta_p^2=0.034$, and self-denial scores were significantly lower for positive coping (*M*=4. 766, *SD*=3. 081) than for negative coping (*M*=6. 465, *SD*=2. 762); the interaction between standard level and coping style was not significant $F(1, 266)=1.354$, $P=0.246$, $\eta_p^2=0.005$. Finally, On the mental health scores, the main effect of the standard level was significant $F(1, 266)=19.996$, $P=0.001$, $\eta_p^2=0.070$, and the mental health scores were significantly lower for people who up to standard(*M*=5. 559, *SD*=0. 385) than for those who did not (*M*=7. 516, *SD*=0. 209); the main effect of coping style was significant $F(1, 266)=24.050$, $P=0.001$, $\eta_p^2=0.083$, and mental health scores were significantly lower for positive coping(*M*=5. 464, *SD*=0. 312)than for negative coping (*M*=7. 611, *SD*=0. 307); The interaction between level of attainment and coping style reached borderline significant $F(1, 266)=3.645$, $p=0.057$, $\eta_p^2=0.014$, and further simple effects analysis revealed that for those who did not up to the standard, mental health scores were significantly lower with positive attitudes (*M*=6. 025, *SD*=3. 081) than with negative attitudes (*M*=9. 008, *SD*=2. 053), $t(209)=7.099$, $p=0.001$, *CI*95% [-3. 813, -2. 153]; for those who up to the standard, there was no difference in mental health scores in terms of coping style. As shown in Figure 1.

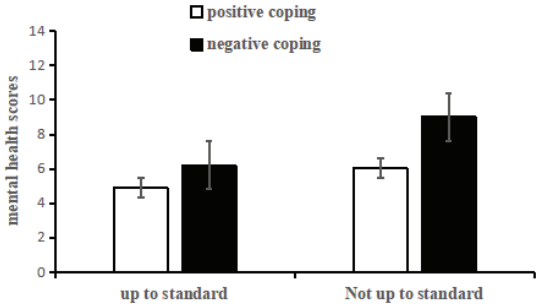


**Figure 1. Mental health scores at the different standard levels under different coping styles**

## 4. Discussion

From the analysis of this survey, the overall standard of core knowledge of TB prevention and treatment in this group was 72%, which did not reach the target of “public knowledge of TB prevention and treatment reaching over 85%” proposed in the 13th Five-Year Plan. This suggests that schools should further strengthen the dissemination of core knowledge about TB prevention and treatment to raise the awareness of students.

Our other concern is the effect of core knowledge of TB prevention and control on mental health. The main effects of standard level and coping style were found to be significant in the ANOVAs for the anxiety scale, the self-denial scale, and the total mental health scores. In terms of coping style, the results are consistent with previous studies [6], which also found lower anxiety scores and self-denial scores among active copers in the current study. possibly because individuals are more optimistic and more sure of themselves when adopting a positive attitude. Importantly, the standard levels of core knowledge of TB control were also found to influence self-denial and anxiety. This may be related to our choice of the group, as the participants had contact with the TB patients in the class and therefore became worried. At this point, when the participants had more knowledge about the core knowledge of TB control, they were able to reduce their worries, anxiety, etc. to some extent and were able to live their lives normally as usual. On the contrary, they worry about whether they are infected and thus become more upset.

However, on the depression scale, there were no differences in standard levels or coping styles. We speculate that this may be related to the content of the scale, such as "I would feel like a useless person", which may not be experienced in the current context.

It is interesting to note that in the overall mental health scores, there is a significant borderline between the coping style and the level of standard. For those who did not up to the standard, mental health scores with positive attitudes were lower than negative attitudes, suggesting that even though knowledge of core TB control knowledge did not up to the standard, adopting attitudes such as learning from others' approaches to similar difficult situations, seek advice from relatives, friends or classmates, etc. , may be able to motivate individuals to make up

for their knowledge about TB and thus reduce their bad feelings.

## 5. Shortcomings

The current study questionnaire was collected before the PPD results were known, so it may have influenced the results, and in addition, considering the specificity of the participants group, it is necessary to continue to validate the results of this study in the next study by considering the above two reasons together.

## References

[1] Diagnostic criteria for tuberculosis(WS 288—2017). *Electronic Journal of Emerging Infectious Diseases,* 2018 (01), 59-61.

[2] Announcement on the issuance of norms for the prevention and control of tuberculosis in schools (2017version). *The National Health and Family Planning Commission of the People's Republic of China Bulletin*, 2017 (06), 45-50.

[3] World Health Organization. Constitution of the World Health Organization, Reprinted in Basic Documents, 37thed[R]. Geneva: World Health Organization, 1946.

[4] Xiaolan Fu, Kan Zhang. China's national mental health development report [M]. Beijing: *Social Science Literature Press*, 2019: 1-55.

[5] Ling DING, Guangsheng SUN, Yiqiao ZHANG, et al. Correlation analysis between work stress, coping style as well as anxiety and depression level among nurses in the emergency department. *Nursing Practice & Research,* 2019 (08), 12-14.

[6] Yaning Xie, Xiaoyang Dai. (2006). Practical Psychometric Tests [M]. *China Medical Science & Technology Press.*

[7] Hong Li, KAM Weng Boey. (2002). Assessing Psychological Well-being of College Student: Psychometric Properties of GHQ-20. *Psychological Development & Education*(01), 75-79

**Acknowledgments:** Fund Project:Everest Discipline Construction Project of Tibet University (ZF21003001); Tibet University High-level Talent Training Project (zdbs202214); Tibet University Medical College Medical Education special project