

Assessment of Self-Management Behavior and Psychological
Adjustment Practices Among Drug-Sensitive Tuberculosis Patients at
BRAC DOTS TB Center in Dhaka City: A Cross-Sectional Study

Summative Learning Project (SLP)
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Abstract

Introduction: the study used a cross-sectional study design to assess the self-management behaviors and self-efficacy practices of drug-sensitive TB (DS-TB) patients at the BRAC TB DOTS center Kamrangirchar located in Dhaka South City Corporation (DSCC). The primary goal of this study was to assess and evaluate DS-TB patient's self-management behaviors and psychological adjustment practices with a focus on socio-demographic factors.

Method: The study was conducted among the 121 DS-TB patients with validated tools self-management scale for tuberculosis patients (SMSTP) & tuberculosis self-efficacy scale (TBSES). The study tool consisted of 24 questions within 4 domains including adherence to treatment, support behavior, disease transmission prevention behavior, and psychological adjustment. Data analysis was conducted using descriptive and inferential statistics including chi-square and t-tests to examine the associations between self-management behaviors, self-efficacy, and socio-demographic characteristics.

Findings: The study found variability across each domain of self-management behaviors and self-efficacy practices. The findings indicate the majority of the participants (51.1%) have moderate self-management behaviors followed by 25.7% with low self-management behaviors and 23.1% with high self-management behaviors. Gender-based findings were particularly significant, with females exhibiting moderate and higher self-management 80.6% compared to male patients 66.7%. In addition, education level and occupation of the patients have also been found to be influencing factors, 83.54% of patients with secondary or higher education have moderate and high self-management compared to 57.14% uneducated or primary education completed. Students 94.12% and homemakers 82.05%, have higher self-management behaviors. Additionally, larger household sizes impact the psychological adjustment negatively as 76.92% of patients with 7 or more family members have lower psychological adjustment score.

Conclusion: The study found gender as one influencing factor that is important to be considered for gender-specific interventions addressing health education, mental health support, and community-based awareness to improve the effectiveness of the DOTS intervention through self-management behaviors and self-efficacy practices in urban Bangladesh. The findings emphasize the need for community-based interventions and policy development to address the gap in self-management and psychological adjustment to achieve the targeted goal of the End TB strategy and National Tuberculosis Program (NTP).

1. Introduction

1.1 Background

Tuberculosis (TB) remains one of the top ten causes of mortality from infectious diseases globally. According to the WHO 2024 Global TB Report, by 2023 around 10.8 million people were diagnosed with TB and 1.25 million deaths were recorded. Among 30 high TB burden countries which include South Asian countries such as India, Pakistan, and Bangladesh with estimated TB burden percentages of (26%), (6.3%), and (3.5%) respectively where highlights one of the barriers in diagnosis and treatment gap as the financial cost for people diagnosed with the TB and the household expenditure cost (WHO, 2024, P. 2, 8). Considering various factors influencing the implementation of TB treatment intervention structured by the WHO (TB_DOTs) program, we may find multiple factors such as age, gender, place of residence, education level, socioeconomic status, occupation, accessibility of health services, universal health coverage, and acceptability of the intervention by locals whereas the gender plays a vital role in all chronic disease. Fifty-five percent of the 2023 TB cases were recorded from the male population whereas women accounted for only 33% of the TB cases worldwide (WHO 2024, P. 2). The difference in the TB cases among males and females shows the male population being more impacted by TB worldwide.

Bangladesh is one of the South Asian countries with a high burden of TB has its specific factors that contribute to increasing cases of TB each year. According to USAID Bangladesh TB roadmap overview 2024, 379000 TB incidents were recorded in 2022 with 42000 deaths. Despite a well-established National Tuberculosis Control Program (NTCP) the TB treatment program has not achieved the End TB strategy and the National Tuberculosis Program (NTP) goal specifically in urban regions like Kamrangirchar. Kamrangirchar is located in Old Dhaka under the jurisdiction of Dhaka South City Corporation (DSCC), comprising three wards (55, 56, and 57). It is a densely populated area situated along the banks of the Buriganga River, covering approximately 3.63 square kilometers. According to the 2022 census, Kamrangirchar has a population of 372,302 residents, resulting in a remarkably high population density of about 25,785 people per square kilometer (Census, 2022). The area is marked by low health literacy, limited healthcare infrastructure, high population density, and limited healthcare access. Though NTP strategies emphasize Directly Observed Treatment Short-course (DOTS) for TB treatment the studies by Harandi et al. (2021) highlight the importance of patient-centered approaches

where the intervention should include the empowerment of the TB patient through a self-management program. Although self-management is considered a key behavior for the effective implementation of chronic disease treatment interventions such as the TB DOTS program, there is no research assessing the status and determinants of self-management behaviors among DS-TB patients in Bangladesh.

1.2 Research Gap

Infectious diseases require self-management behaviors to be successfully cured, including the patient's adherence to treatment, preventive measures taken to curb disease transmission, and supportive behaviors to help an individual complete treatment procedures. Studies by Bao et al. (2022) and Allegrante et al. (2019) highlight the importance of behavioral self-management (SM) in infectious disease treatment and prevention while factors such as stigma, health literacy, and socioeconomic impact the behavioral and SM practices of a patient that affect the treatment outcome. In addition, statements by Jauhar et al. (2018) and Setiyowati et al. (2020), to improve treatment adherence and overall quality of life, structured SM interventions are needed. Some researchers have developed research tools and scales and validated where they have included these factors to analyze and find the self-management practices among TB patients such as Li et al. (2022) and Kailun et al. (2023) but there is no evidence of the tool implication in the Bangladesh context. Moreover, while many studies highlighted the importance of self-management factors such as treatment adherence, support behavior, preventive practices, and psychological adjustment there is no data found on these factors being studied under any other topic or tool that can provide evidence of each factor being ever analyzed particularly in densely populated areas like Kamrangirchar.

1.3 Justification

Self-management practices have been highlighted as a critical determinant of effective TB treatment that directly impacts the DOTS intervention outcome and End TB Strategy 2035 goals. Considering the area of study as a unique socio-economic and cultural context with a dense population that poses significant challenges in the management of TB among Kamrangirchar residents required a context-based intervention where the needs of locals should be tailored. By using the validated scale from Li et al (2022), this study aims to fill the literature gap by

providing comprehensive data on self-management practices and their associated factors among DS-TB patients in Kamrangirchar. The study findings will be helpful for the policymakers and healthcare providers for developing effective interventions improving treatment adherence, prevention practices, supportive behaviors, and adjusting the individual patient psychologically for complete and effective treatment in similar contexts and across Bangladesh.

1.4. Research Question

What is the current status of self-management practices among drug-sensitive tuberculosis (DS-TB) patients at the BRAC DOTS center in Dhaka city?

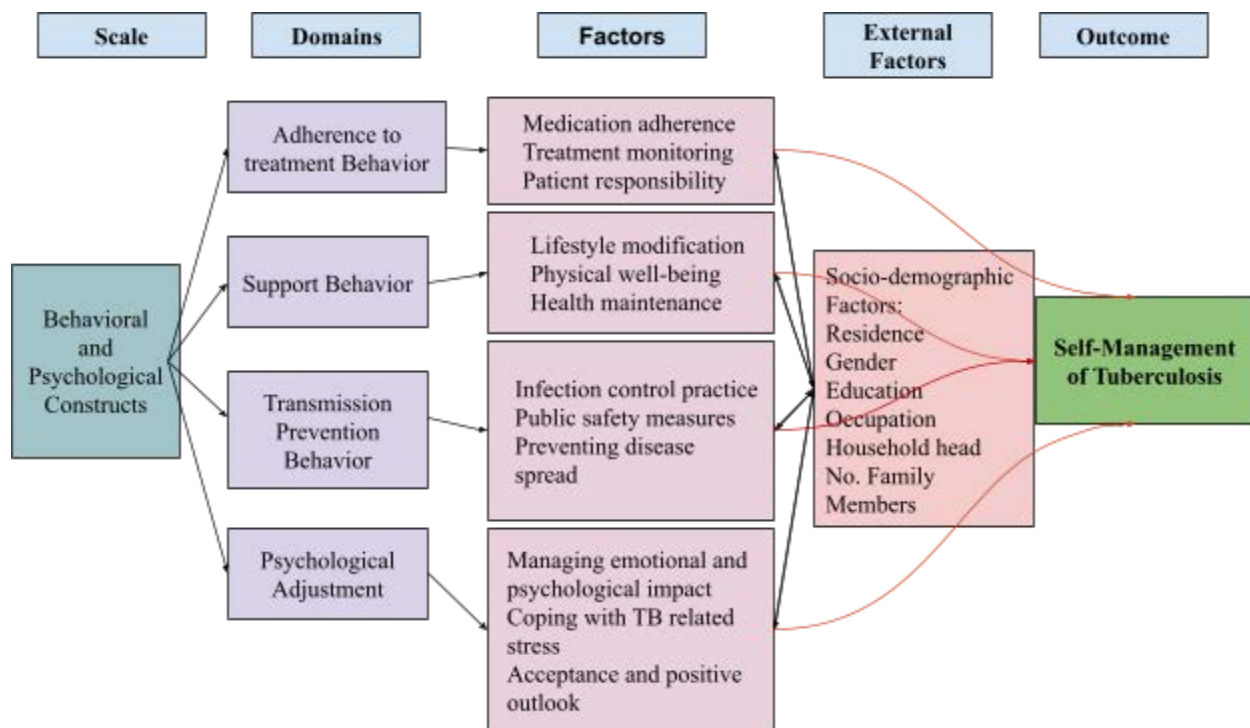
1.4.1. Research Objectives

To assess the current status of self-management among DS-TB patients at BRAC DOTS TB center in Dhaka city.

Specific Objectives:

- a. To assess the level of adherence to tuberculosis treatment among DS-TB patients in Kamrangirchar.
- b. To assess support behaviors exhibited by DS-TB patients in managing their condition.
- c. To assess transmission prevention behavior practiced by DS TB patients to prevent the spread of TB.
- d. To assess the psychological adjustment levels of DS-TB patients using the Tuberculosis Self-Efficacy Scale (TBSES).
- e. To assess the relationship between self-management and self-efficacy practices with the socio-demographic characteristics among DS-TB patients.

1.5. Conceptual Framework



Description: This framework demonstrates the relationship between self-management and self-efficacy factors in evaluating the behaviors and practices of DS-TB patients. It focuses on 3 key domains from self-management: treatment adherence behavior, support behavior, and disease transmission prevention behavior, and one key domain from self-efficacy practices, the psychological adjustment. Each of the domain is consist of specific factors with relevant questions that assess self-management behaviors and self-efficacy practices, influenced by socio-demographic characteristics. Collectively, these factors contribute to the study's outcome as improved self-management behaviors of tuberculosis patients.

2. Methodology

2.1 Study design

The study used a cross-sectional quantitative design to assess and evaluate the status of self-management and self-efficacy of DS-TB patients by focusing on four key dimensions: adherence to treatment, support behavior, transmission prevention practices, and psychological adjustment. In addition, the study examined factors associated with self-management including; gender, residence, education, household head, and occupation.

2.2 Study Setting

The study was conducted in the BRAC DOTS center Kamrangirchar main office and the Lalbagh sub-office. Selected patients were invited to the main and sub-offices for interviews. Kamrangirchar is a densely populated urban area located in the western part of Dhaka and falls under the jurisdiction of Dhaka South City Corporation (DSCC), Bangladesh.

2.3 Study Population

The study participants were DS_TB patients who have currently enrolled in the treatment program by BRAC DOTS program in Dhaka city. Considering our inclusion and exclusion criteria, we had 5 exclusion cases where the participants were aged, ill, and unable to provide the data on her/his own, had not confirmed TB treatment, or were under the age category (18+).

2.4 Sample Size

The sample size calculated and considered in this study was 121 in total due to time and resource constraints by considering a 95% confidence level, 10% margin of error, 50% expected proportion, and 20% non-response rate. The following formula had been used for sample size calculation.

$$\text{Sample size (n)} = [Z^2 * p(1 - p)] / (d^2)$$

2.5 Sampling Technique

From 37 BRAC DOTS centers, Kamrangirchar BRAC DOTS center was selected purposively based on the highest patient load (531 cases out of a total of 8227 cases under the BRAC DOTS program) and geographic location (encompasses both urban and sub-urban population). This sampling strategy was chosen for its feasibility and cost-effectiveness, taking into account the study's time constraints and budget limitations.

Patients were randomly selected from the registration list by BRAC DOTS field organizers. To maintain confidentiality, we did not have access to the full list of patients; instead, we received only the selected patients identified by the field organizers.

2.6 Data Collection

The study used two validated tools for data collection: the Self Management Scale for TB Patients (SMSTP) and the psychological adjustment domain of the TB self-efficacy scale (TBSES). TBSES had some other items similar to SMSTP that were not included to avoid the repetition of the questions. SMSTP assesses the self-management of patients by considering the various aspects including treatment adherence, supportive behavior, and transmission prevention behavior which reflect the patient's commitment to completion of their treatment and control of the transmission of disease to others. TBSES particularly measures the psychological adjustment of the patient by focusing on their confidence in managing the emotional and psychological challenges related to the disease such as coping with stress, and alleviating and maintaining motivation during treatment. The combination of these two tools offered a comprehensive understanding of self-management behaviors and self-efficacy practices of patients which is crucial for evaluating factors that impact the effective DOTS implementation in such a context.

2.7 Operational Definition of Variables

The study has two dependent variables (SMSTP, TBSES) and six independent variables such as gender, residence, education, household head, occupation, and number of family member.

The dependent variable SMSTP is to assess the self-management of the patients and TBSES consists of many parts but one domain is used in this study which is the psychological adjustment of the patients with the treatment procedure and social challenges. Independent variables are chosen based on the importance of their influence on the dependent variable or based on the previous studies such as gender, residence, head of household, education, and occupation shown below:

Table 1: Variables Information			
Variable Name	Type	Values	Code
Self-management (SMSTP)	Ordinal	Range: 62 to 94	total_smstp
Self-Efficacy (TBSES)	Ordinal	Range: 5 to 20	total_tbses
Gender	Nominal	1 = Male 2 = Female	gender

Residence	Nominal	1 = Urban 2 = Sub-urban	residence
Education	Ordinal	1= No Formal Education/Primary (0-5 years schooling) 2 = Secondary or Above (Above 5 years of schooling)	edu_gp2
Household Head	Nominal	1 = Male 2 = Female	household_head
Occupation	Nominal	1 = Employed 2 = Unemployed	occ_2
No. of Family Members	Ordinal	1 = 1-3 members 2 = 4-6 members 3 = >7 members	family_no

2.8 Data Collection Procedure

The study tools were pre-tested and evaluated before the field data collection and then we conducted in-person surveys from the DS-TB patients in two offices of the BRAC DOTS center located in the Kamrangirchar area.

2.9 Data Management and Analysis

Firstly before analyzing the data, we dropped the missing values if exist. Secondly, we performed descriptive and inferential statistical methods using STATA 17. To summarize the demographic characteristics of the participants and the responses from TBSES and SMSTP, we used descriptive statistics such as frequency, percentage, mean, and standard deviation. All the domains such as adherence to treatment, supportive behavior, transmission prevention behavior, and psychological adjustments have been assessed individually to understand the patient's self-management practices and psychological adjustment behaviors. In addition, to examine the relationship and association between patients' psychological adjustment and self-management behaviors and their demographic characteristics, we performed inferential statistics such as chi-square and t-tests. The performed analysis provided a comprehensive understanding of the factors influencing the self-management and self-efficacy levels of the patients.

The status of self-management has been categorized based on response scores as follows; 27 percentiles of the score (Low self-management), 28 - 73 percentile (Moderate self-management),

and the 73-100 percentile (High self-management). The overall score for the SMSTP from minimum to maximum is 20-100 and for the TBSES is 4 - 20. For performing various statistical methods (chi-square test), we have further categorized the self-management practice into binary groups as moderate and high (76 and above scores) and low (below 76 scores) based on the mean score of total response (80) as a cut point. Also, the TBSES (psychological adjustment) has been categorized into binary as moderate and high (above 15 scores) and low (15 and below score) considering the 27 percentile psychological adjustment (15) as the cut-off point. Many other independent variables have been further categorized into smaller groups such as education No formal education or primary education (0-5 years of education) secondary or above (above 5 years of education), and occupation as employed (skilled salaried worker, semi-skilled, unskilled), unemployed (unemployed, student, and homemaker).

2.10. Ethical Considerations

The study obtained ethical approval from the BRAC James P. Grant School of Public Health Internal Review Board before proceeding to the data collection. In addition, the study objective have been explained to the participants at the beginning of the survey and then their consent have been taken on the consent forms. To ensure anonymity and confidentiality, the study's ethical considerations have been explained. Participants' data including name and contact information will be kept confidential and only the primary investigators and the respective supervisor and mentors will have access to the data. Moreover, in the case of taking photos, the consent of participants has been obtained beforehand or the photos do not show the faces of the participants.

3. Findings

Table 2 in Annex shows the socio-demographic information of 121 DS-TB patients in Kamrangirchar, Dhaka. All participants were above 18 years old, 40.5% were between 18-25 years old, followed by 30.58% aged 26-35, 22.31% aged 36-45, and the rest 6.61% were above 46 years old. Among the participants, 44.63% were male, and 55.37% were female. Considering education, 34.71% had no formal education or only completed primary school (1-5 years of schooling), while 65.29% had secondary education or higher. Most participants (75.21%) lived in urban areas, while 24.79% were from suburban areas. The occupations of participants were divided into six groups: skilled workers, semi-skilled workers, unskilled workers, unemployed

individuals, students, and homemakers. These were further grouped as employed (50.41%) and unemployed (49.59%). In most households (80.99%), the head of the household was male, while in 19.01%, it was female. Regarding the household financial situation, 10.74% of participants reported a surplus (income more than expenses), 46.28% had a breakeven income (income equal to expenses), 20.66% faced a deficit (expenses higher than income), and 22.31% experienced a severe deficit. The majority of participants (76.03%) live in households with 4-6 family members, followed by 13.22% with 1-3 family members, and 10.74% with 7 or more family members.

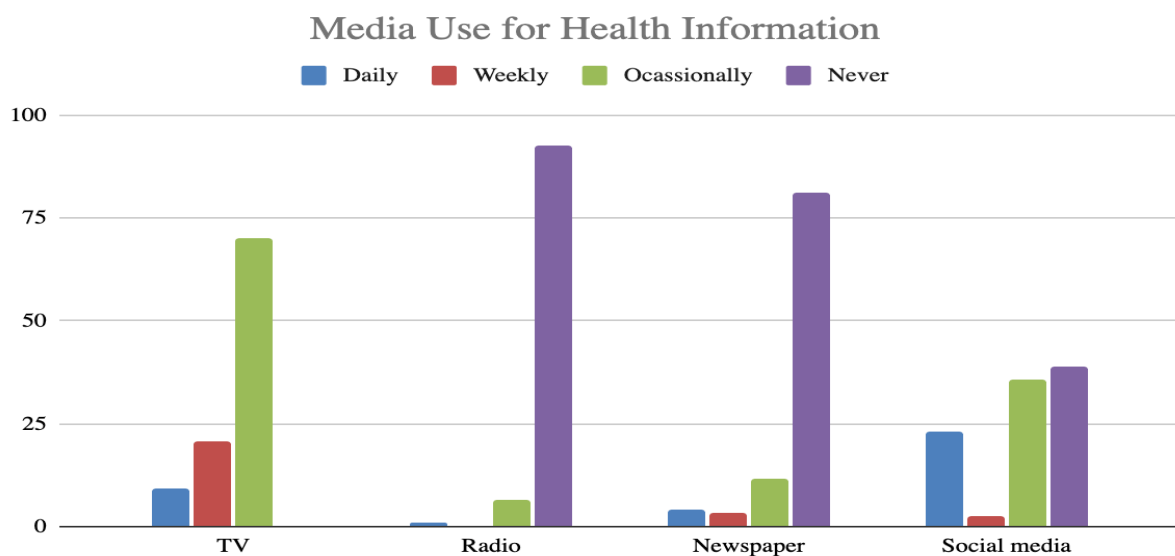


Figure 1: Media use for health information

Figure 1 illustrates DS-TB patients' use of media for health information. Most respondents (70.25%) occasionally use television for health information. Social media platforms such as Facebook and Instagram are used occasionally by 35.54% of respondents, while 23.14% use them daily, and 38.84% (never). In contrast, 92.56% of participants never use the radio for health information, and 80.99% never use newspapers for health-related purposes.

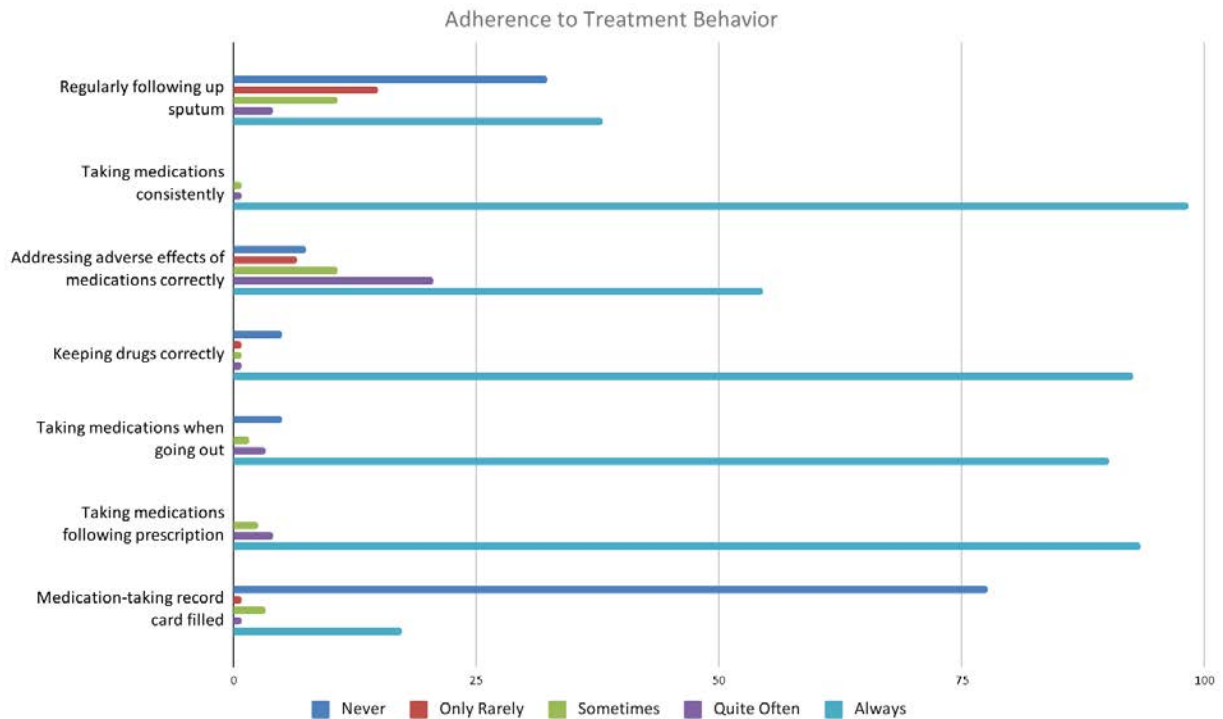


Figure 2: Treatment Adherence Behavior (SMSTP)

Figure 2 illustrates adherence to treatment behaviors measured using seven items on a 5-point frequency scale. High adherence was observed for consistently taking medications, with 98.35% of respondents reporting 'Always,' followed by adherence to taking medications as prescribed (93.39% 'Always'), proper storage of drugs (92.56% 'Always'), and taking medication when going out (90.08% 'Always'). However, addressing adverse effects of medication showed mixed adherence, with 54.55% of respondents reporting 'Always,' but notable responses in other categories: 20.66% (Quite often), 10.74% (Sometimes), 6.61% (Only rarely), and 7.44% (Never). Regular sputum follow-up was reported by 38.02% of respondents, while 32.23% indicated they never follow up regularly. Notably, adherence to filling the medication card after taking medicine was very poor, with 77.69% of patients reporting (Never) filling it.

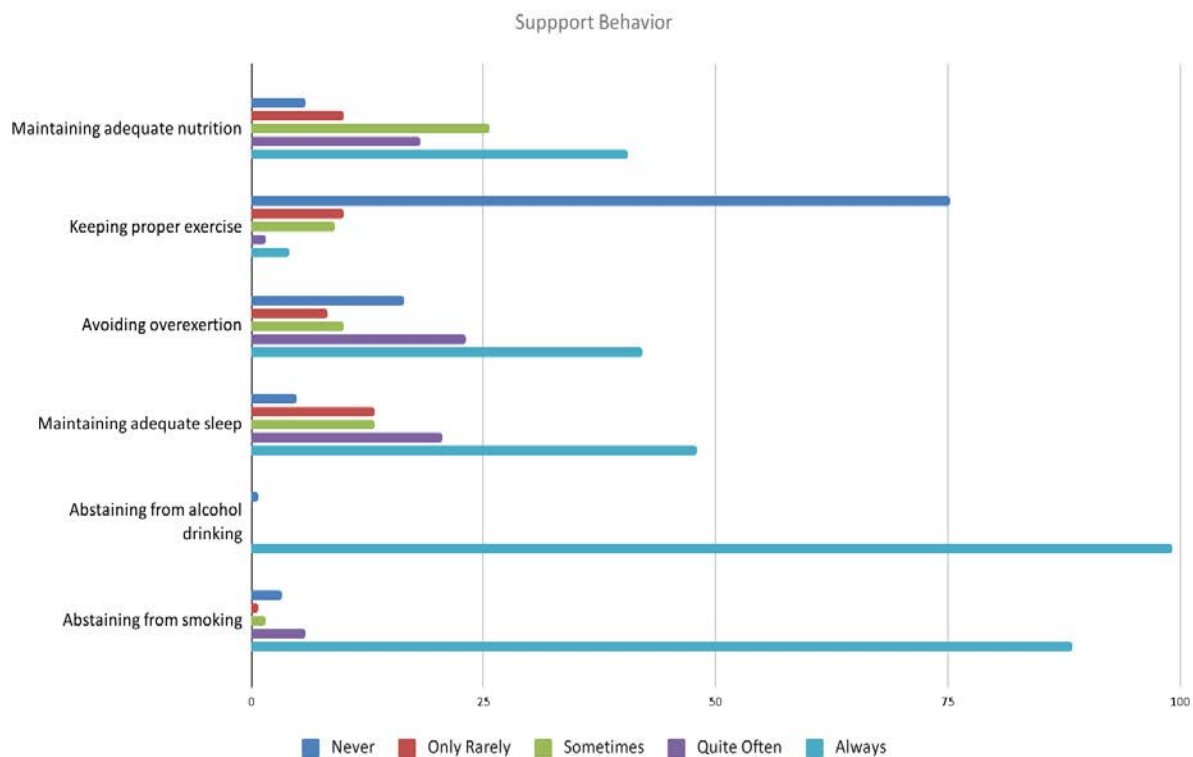


Figure 3: Support Behavior (SMSTP)

Figure 3 illustrates support behaviors measured using six items on a 5-point frequency scale. High support behaviors are evident in always abstaining from drinking alcohol 99.17 % of participants followed by always abstaining from smoking 88.43% of respondents. However, 47.93% of participants always maintain adequate sleep 20.66% quite often, 13.22% sometimes, 13.22% only rarely, and 4.96% of respondents never maintain adequate sleep. Always avoiding overexertion was reported by 42.15%% of respondents, while 16.53% indicated they never avoid overexertion. Maintaining adequate nutrition has variability which is reported by 40.5% of respondents (always), 18.18% (quite often), 25.62% (sometimes), 9.92% (only rarely), and 5.79% of respondents reported (never). Notably, keeping proper exercise is reported very poor 75.21% of participants reported (Never).

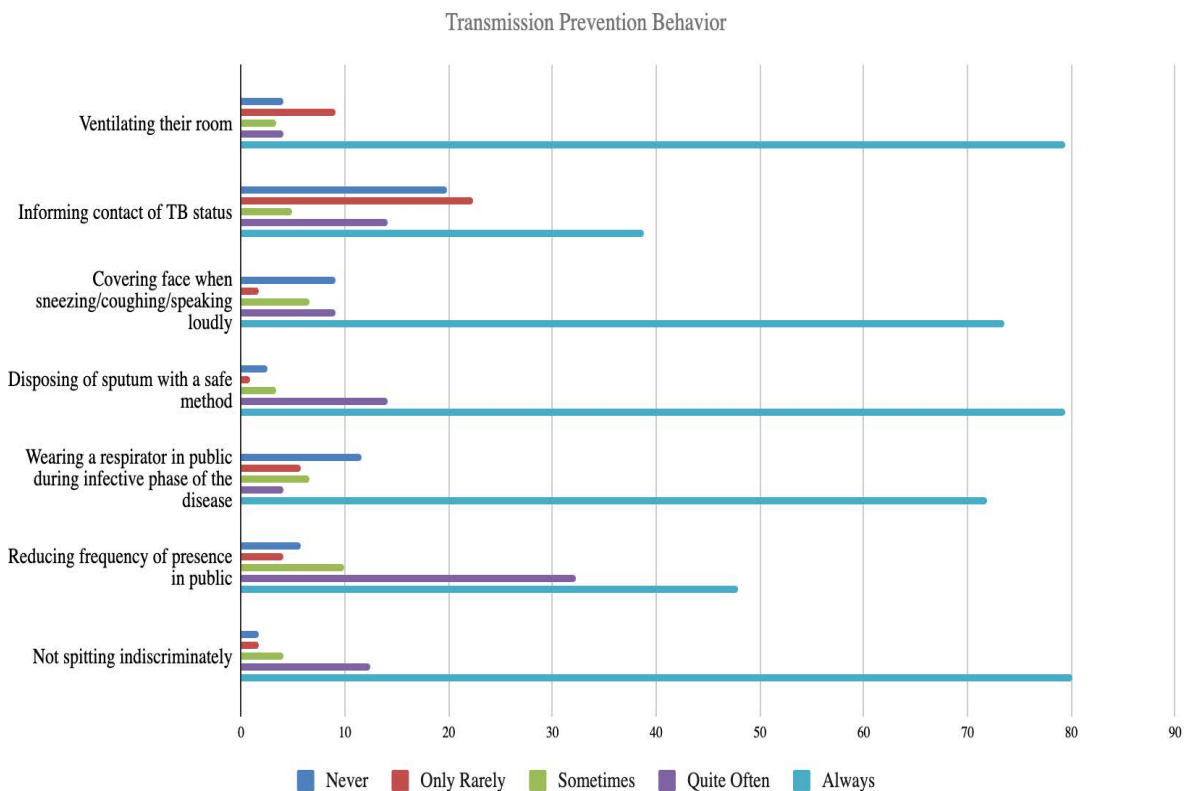


Figure 4: Transmission Prevention Behavior (SMSTP)

Figure 4 illustrates transmission prevention behaviors measured using seven items on a 5-point frequency scale. High adherence to disease transmission prevention behaviors was observed for not spitting indiscriminately, with 80.17% of respondents reporting 'Always,' followed closely by 79.34% who reported always disposing of sputum safely and ventilating their rooms regularly. Additionally, 73.55% of respondents always covered their faces while sneezing, coughing, or talking loudly, and 71.9% always wore a respirator in public during the infectious phase of the disease. The frequency of reducing public presence varied, with 47.93% of participants reporting 'Always,' 32.23% 'Quite often,' 9.92% 'Sometimes,' 4.13% 'Only rarely,' and 5.79% 'Never.' However, informing contacts about their TB status showed lower adherence, with only 38.84% of respondents reporting 'Always,' while 19.83% indicated they 'Never' informed their contacts.

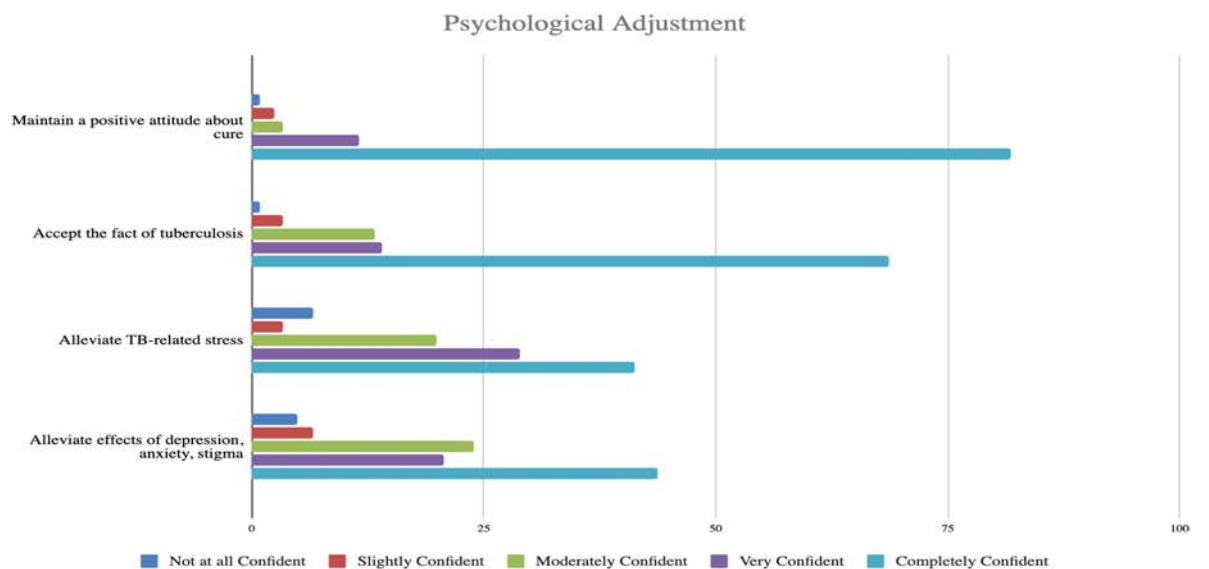


Figure 5: Psychological Adjustment (TBSES)

Figure 5 illustrates psychological adjustment, measured using four items on a 5-point confidence scale. High levels of confidence in psychological adjustment were observed in maintaining a positive attitude and believing the disease can be cured, with 81.82% of respondents reporting being 'Completely confident.' This was followed by 68.6% who reported being 'Completely confident' in accepting being diagnosed with tuberculosis. However, greater variability was observed in alleviating the effects of depression, anxiety, and stigma: 43.8% of respondents reported being 'Completely confident', 20.66% 'Very confident', 23.97% 'Moderately confident', 6.61% 'Slightly confident', and 4.96% 'Not confident at all'. Similarly, variability was noted for alleviating TB-related stress, with 41.32% of respondents being 'Completely confident', 28.93% 'Very confident', 19.83% 'Moderately confident', 3.31% 'Slightly confident', and 6.61% 'Not confident at all'.

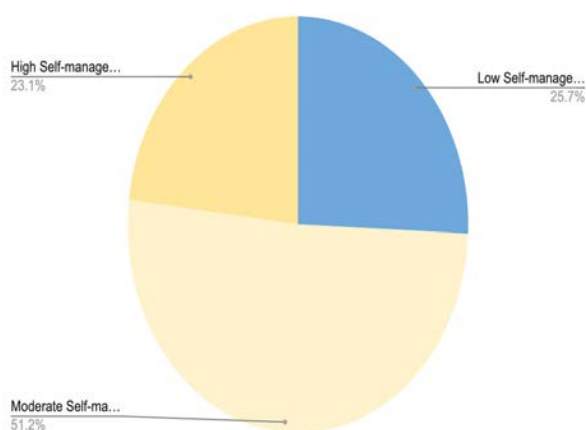


Figure 6: Self-management Status of DS-TB Patients

Figure 6 illustrates the distribution of self-management levels among DS-TB patients in Kamrangirchar. The majority, 51.1%, demonstrate moderate self-management, followed by 25.7% with low self-management, and 23.1% with high self-management.

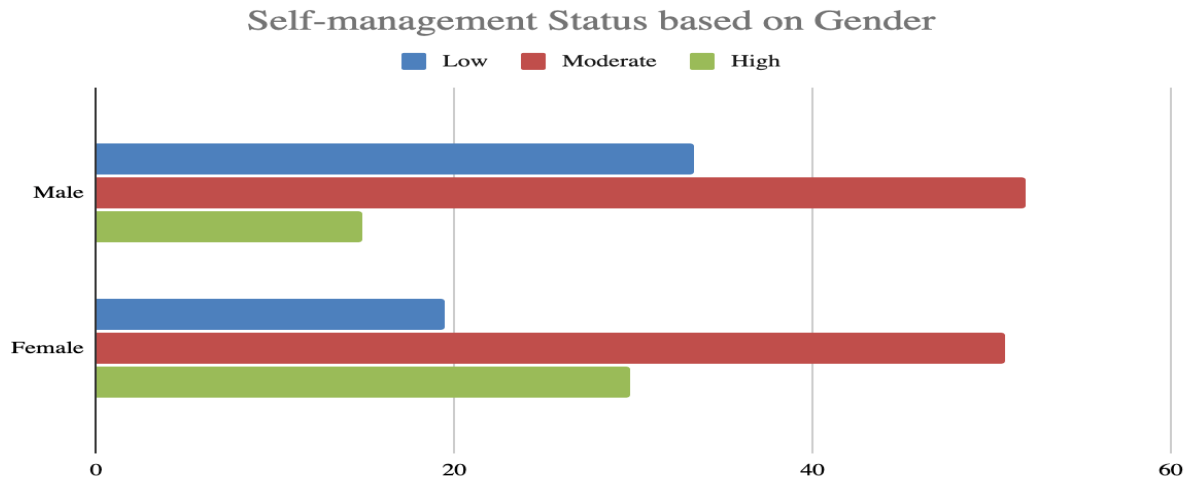


Figure 7: Self-management Status based on Gender

Figure 7 illustrates self-management status based on gender. Female participants demonstrate higher self-management levels, with 29.85% achieving high self-management, 50.75% moderate, and 19.4% low self-management. In contrast, 14.81% of male participants exhibit high self-management, 51.85% moderate self-management, and 33.33% low self-management.

Table 4: Bivariate Analysis of SMSTP & TBSES					
Variable Category	Low SMTP	Moderate/High SMTP	Total Freq (N = 121)	Chi	P-Value
	N (%)	N (%)	N (%)		
Age Group					
18-25	13 (26.53)	36 (73.47)	49 (40.5)	0.93	0.819
26-35	8 (21.62)	29 (78.38)	37 (30.6)		
36-45	7 (25.93)	20 (74.07)	27 (22.3)		
>=46	3 (37.5)	5 (62.5)	8 (6.6)		
Residence					
Urban	24 (26.37)	67 (73.62)	91 (75.2)	0.11	0.741
Sub-urban	7 (23.33)	23 (76.66)	30 (24.8)		
Gender					
Male	18 (33.33)	36 (66.66)	54 (44.6)	3.04	0.081
Female	13 (19.40)	54 (80.60)	67 (55.4)		
Education					
No formal education	18 (42.86)	24 (57.14)	42 (34.7)	10.03	0.002
Secondary and above	13 (16.46)	66 (83.54)	79 (65.3)		

Marital Status					
Single	7 (18.92)	30 (81.08)	37 (30.6)	4.5	0.212
Married	22 (27.16)	59 (72.84)	81 (66.9)		
Divorced/separated	1 (50)	1 (50)	2 (1.7)		
Widow	1 (100)	0 (0.0)	1 (0.8)		
Occupation					
Skilled Salaried Worker	3 (30)	7 (70)	10 (8.3)	12.19	0.032
Semi-skilled	13 (30.95)	29 (69.05)	42 (34.7)		
Unskilled	4 (44.44)	5 (55.56)	9 (7.4)		
Unemployed	3 (75)	1 (25)	4 (3.3)		
Student	1 (5.88)	16 (94.12)	17 (14.0)		
Home-maker	7 (17.95)	32 (82.05)	39 (32.2)		
Household Head					
Male	21 (21.43)	77 (78.57)	98 (81.0)	4.75	0.029
Female	10 (43.48)	13 (56.52)	23 (19.0)		
Family size and PA (Psychological Adjustment)	Low PA N (%)	Moderate PA N (%)	Total Freq (N = 121) N (%)	Chi	P-Value
1-3 members	6 (37.50)	10 (62.50)	16 (13.2)		
4-6 members	43 (46.74)	49 (53.26)	92 (76.0)	5.09	0.079
>= 7 members	10 (76.92)	3 (23.08)	13 (10.7)		

Table 4 demonstrates the self-management and self-efficacy relationship with the socio-demographic factors. Among females, 80.6% found with moderate and high self-management behaviors, and only 19.4% had low self-management behaviors whereas, 66.66% of male respondents had moderate and high self-management behaviors, and 33.34% with lower self-management behaviors. Additionally, the data shows a direct relation of education with self-management where 83.54% patients with secondary or higher education levels have moderate and high self-management practices, and 42.86% of patients with no formal education or primary education have low self-management behaviors.

Moreover, occupation groups such as unskilled workers 44.44%, and unemployed 75% exhibit lower self-management behaviors. Conversely, moderate and high self-management scores are observed among students 94.12%, homemakers 82.05%, skilled salaried worker 70%, and semi-skilled workers 69.05%. Significantly, students and homemakers demonstrate the highest level of self-management skills, followed by skilled salaried workers. Furthermore, data indicates that self-management behaviors are higher among the patients with male household heads at 78.57% with a decline of 21.43%. Conversely, 56.52% patients with female household

leaders showed higher self-management behavior whereas, 43.48% found with low self-management behavior. Lastly, the data indicates as the number of family members increases, the psychological adjustment of patients tends to decline. Particularly, 62.50% of patients residing with 1-3 family members exhibit moderate and high psychological adjustment, whereas

76.92% of respondents with 7 or more family members have lower psychological adjustment.

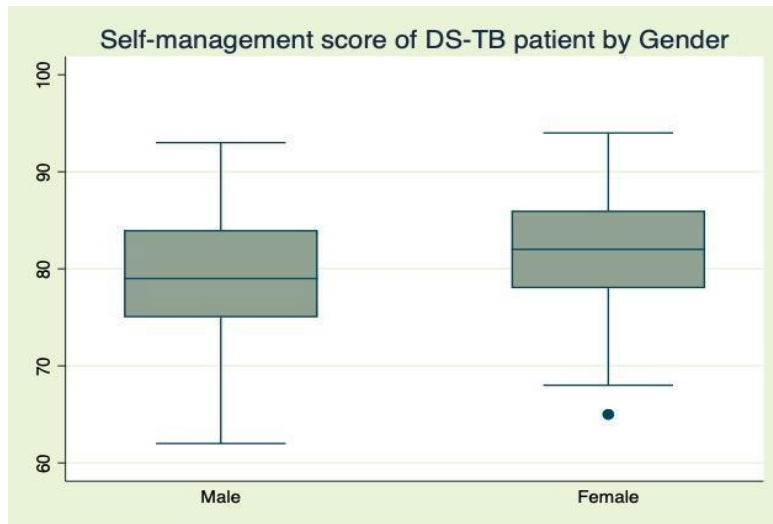


Figure 8: Association of SMSTP Score with Gender

Figure 8 illustrates the association of self-management scores with the gender of DS-TB patients. Female participants had a slightly higher average score (Mean

81.96, SD 6.17) compared to males (Mean 78.96, SD 6.67). However, this difference in self-management between males and females is statistically significant (mean difference of -2.99 and p-value $p < 0.05$).

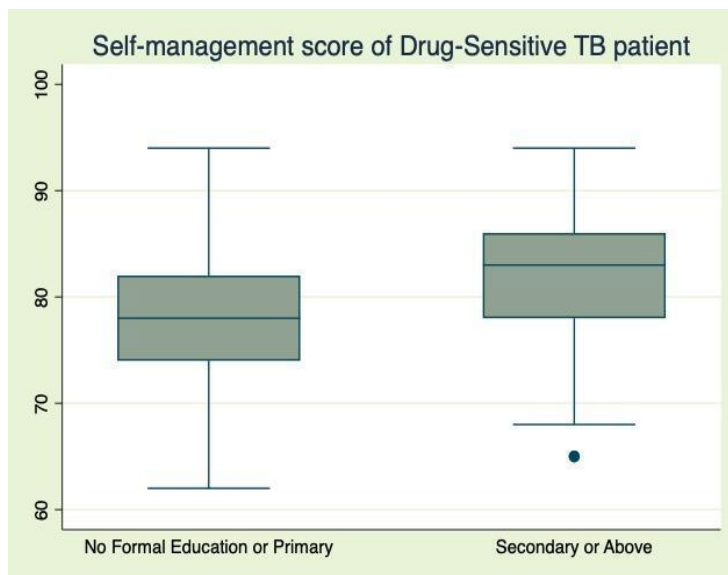


Figure9: Association of Self-management Scores with the Education Level

Figure 9 demonstrates the association of self-management practices with the education level of the DS-TB patients. The data indicates a significant association between education level and the self-management behaviors of the patients with a p-value of 0.0046

($p < 0.05$). Participants with the secondary and above education level have a higher mean self-management score (Mean 81.84, SD 5.56) compared to participants with no formal education or primary (Mean 78.33, SD 7.63).

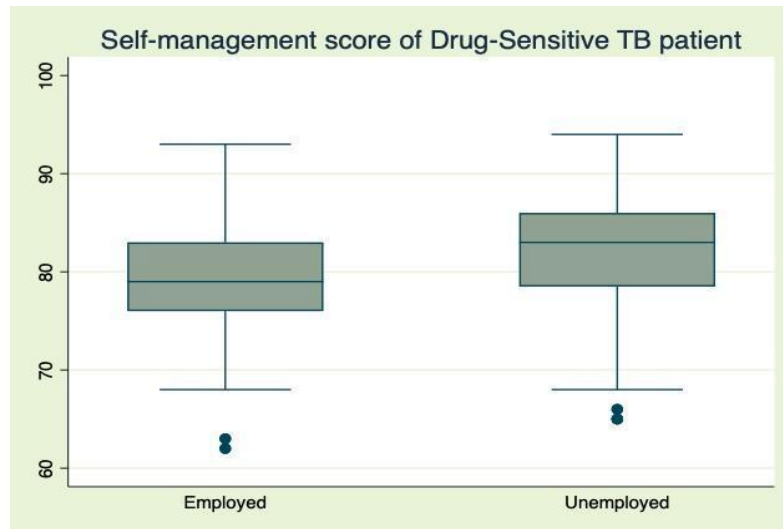


Figure 10: Association of Self-management Score with Occupation

Figure 10 illustrates the association between self-management score and the occupation of the DS-TB patients. The data indicates a significant association between self-management behaviors and

the occupation of the patients with a p-value of 0.011 ($p < 0.05$). Employed participants had lower mean self-management scores (Mean 79.13, SD 6.02) than the unemployed participants (Mean 82.13, SD 6.75).

4. Discussion

The study assessed the self-management behaviors and psychological adjustment of the DS-TB patients at Kamrangirchar Dhaka city focusing on adherence to treatment, support behavior, and transmission prevention behavior. In addition, the study assessed self-efficacy considering the psychological adjustment of patients. The findings indicate the majority of the participants (51.1%) have moderate self-management behaviors followed by 25.7% with low self-management behaviors and 23.1% with high self-management behaviors. Also the self-management status based on gender was highlighted as majority of female participants had moderate and high self management (50.75%, 29.85% respectively) whereas 33.33% of male participant are with low-self-management status. In addition, the variety across the domains have been found. Notifiable data from adherence to treatment is filling the card where 77.69% participants never fill the card and 32.23% of participant never do regular sputum follow up. The other important datas in supportive is that 75.21% participants never maintain proper exercise.

Also, the findings from transmission prevention behavior shows 38.84% of participant always inform their contacts about their TB status but 19.83% of respondents never inform. However, confidence level was high while 68.6% of patients accept their diagnosis and 81.82% keep positive attitude but 6.61% of participants are not confident at all to alleviate the TB related stress and 4.96% not confident at all in alleviating the depression, anxiety, and stigma which highlights the need for consultation to address this gap. In addition, inferential statistics analysis highlighted the factors significantly associated with self-management behaviors and self-efficacy confidence level of patients such as gender, education level, occupation, household leadership, and number of family members. The self-management score was higher among female participants 80.6% of female compared to males (66.7%) had better self-management scores. Participants with male-headed households had higher self-management scores (78.57%) compared with female-headed households (56.52%). Individuals living in families of 7 members or above have lower confidence in psychological adjustment where 23.1% had moderate and high scores.

The study demonstrates the use of media for health information which have been highlighted previously in the study by Wood 2008 and WHO 2020, mass media and communication sources has critical role in transferring knowledge and awareness about the chronic diseases such as TB. The findings of high treatment adherence scores and disease transmission prevention behaviors are similar to the study by Bao 2022 and Harandi 2021 which highlighted the critical role of these areas in the self-management behavior of TB patients (Bao et al., 2022; Harandi et al., 2021). Although, the studies by Li 2022, and Kailun 2023, reported the socio-economic and mental health challenges that are similar to this study on the lower score of the support behavior such as maintaining diet and alleviating the stress and anxiety (Li et al., 2022; Kailun et al., 2023). In addition, the study by An-kang Liu 2023 highlighted that highly educated patients have higher self-efficacy which indicates the association of self-care with the education level. Moreover, the study by Jauhar 2029 and Li 2021 highlighted the influence of social and cultural roles on health behavior which is similar to the context of this study where female participants have better self-management behavior than male participants, also the findings from WHO 2024 report shows proportion of male population are higher in TB cases which can be due to their low-self-management behavior. Lastly, the influence of occupation on self-management has been highlighted by the previous study by Lao 2018, indicates the

availability of time and perceived responsibility have an impact on the self-care of TB patients as highlighted in this study where unemployed patients such as homemakers have better self-management compared to others.

The study findings have several implications for TB interventions, policy development, and future research. Firstly, considering the support behavior and the psychological adjustment of DS-TB patients, there are need for tailored intervention which can include community and family support programs and mental health support programs (Chen et al., 2020). Secondly, the USAID report of 2024 highlights the importance of socio-economic challenges to be highlighted in contexts such as Kamrangirchar which requires policy development that can address the gender-sensitive approaches to TB treatment and enhance health literacy. Thirdly, the study can be followed further for longitudinal studies and explore the impact of environmental factors, psychological factors, and cultural practices that influence the effectiveness of DOTS implementation over time. Moreover, future studies can explore the impact of digital health interventions on the effective self-management of TB treatment which has been studied by Safdari 2018, in other contexts like Iran and had been successful.

The study has several limitations, including its context-specific focus on location Kamrangirchar that limits the generalizability of the findings to other settings. The small sample size of 121 participants and the exclusion of certain groups, such as elderly or ill patients, may have introduced selection bias and affected representation. While validated tools were employed, the focus on specific domains and potential overlap in measurement items may have constrained the comprehensiveness of the analysis. These limitations highlight the need for further research with larger, more diverse samples and longitudinal designs to improve generalizability and strength.

5. Conclusion

The study assessed the status of self-management behaviors and self-efficacy confidence level of the DS-TB patients at Kamrangirchar Dhaka, Bangladesh. The findings highlight the variability among domains where the treatment adherence and transmission prevention behavior have been found with higher scores and lower scores on support behavior and psychological adjustments of the patients. The study found significant associations between socio-demographic self-management and self-efficacy scores such as gender, education level, occupation, household leadership, and the number of family members of patients. Although the findings highlight the

improvement in the management of TB treatment, there are critical areas that require improvement to achieve a better outcome for the DOTS intervention. This study addressed the gaps to contribute as evidence for designing tailored interventions and policies which focus on the critical regions such as gender-specific approaches and health literacy programs for DS-TB patients in urban Bangladesh.

To improve DOTS implementation and TB treatment outcomes, specific interventions should be developed to address influential factors across various societal sectors, including communication sources, media channels, community groups, educational and healthcare institutions (Tornu, 2023), and government authorities. Given the significant use of mass media by patients, health sectors and relevant authorities can develop targeted advertisements promoting effective self-management of TB. These efforts could be assimilated into DOTS program to influence outcomes positively. Moreover, gender-specific awareness programs can be developed to address the individual concerns of men and women, to ensure tailored interventions for a successful implementation outcome.

Abbreviation

AT: Adherence to Treatment

DOTS: Directly Observed Therapy Strategy

DS_TB: Drug-sensitive tuberculosis is caused by bacteria

PA: Psychological Adjustment

SM: Self-Management

SMSTP: Self-management Scale for Tuberculosis Patient

SB: Support Behavior

TPB: Transmission Prevention Behavior

TB: Tuberculosis

TBSES: Tuberculosis Self-Efficacy Scale

USAID: United States Agency for International Development

Reference

- Allegrante, J. P., Wells, M. T., & Peterson, J. C. (2019). Interventions to Support Behavioral Self-Management of Chronic Diseases. *Annual review of public health*, 40, 127–146. <https://doi.org/10.1146/annurev-publhealth-040218-044008>
- An-kang Liu, Yu-yao Liu, Jin Su, Jing Gao, Li-juan Dong, Qi-yuan Lv, Qiao-hong Yang, Self-efficacy and self-management mediate the association of health literacy and quality of life among patients with TB in Tibet, China: a cross-sectional study, *International Health*, Volume 15, Issue 5, September 2023, Pages 585–600, <https://doi.org/10.1093/inthealth/ihad040>
- Bao, Y., Wang, C., Xu, H., Lai, Y., Yan, Y., Ma, Y., Yu, T., & Wu, Y. (2022). Effects of an mHealth intervention for pulmonary tuberculosis self-management based on the integrated theory of health behavior change: Randomized controlled trial. *JMIR Public Health and Surveillance*, 8(7), e34277.
- Byonanebye, D. M., Mackline, H., Sekaggya-Wiltshire, C., Kiragga, A. N., Lamorde, M., Oseku, E., King, R., & Parkes-Ratanshi, R. (2021). Impact of a mobile phone-based interactive voice response software on tuberculosis treatment outcomes in Uganda (CFL-TB): a protocol for a randomized controlled trial. *Trials*, 22(1). <https://doi.org/10.1186/s13063-021-05352-z>
- Chen, Y., Tan, D., Xu, Y., Wang, B., Li, X., Cai, X., Li, M., Tang, C., Wu, Y., & Shu, W. (2020). Effects of a HAPA-based multicomponent intervention to improve self-management precursors of older adults with tuberculosis: A community-based randomised controlled trial. *Patient Education and Counseling*, 103(2), 328–335.
- Cao, Y., Chen, W., Zhang, S., Jiang, H., Liu, H., Hua, Z., Ren, D., & Ren, J. (2019). Development And Preliminary Evaluation Of Psychometric Properties Of A Tuberculosis Self-Efficacy Scale (TBSES) *Patient Preference and Adherence*, Volume 13, 1817–1827. <https://doi.org/10.2147/ppa.s208336>
- Harandi, T. F., Mahmoodi, Z., Ghavidel, N., & Sharifipour, Z. (2021). Factors affecting self-management in Iranian tuberculosis patients: A path analysis model. *Canadian Journal of Respiratory Therapy: CJRT= Revue Canadienne de La Thérapie Respiratoire: RCTR*, 57, 73.

- Jauhar, M., Nursasi, A. Y., & Wiarsih, W. (2019). Evaluation of impact self-management counseling on health-seeking behavior's self-efficacy pulmonary tuberculosis outpatients. *Enfermeria Clinica*, 29, 482–487.
- Jauhar, M., Yuni Nursasi, A., & Wiarsih, W. (2018). Self-management counseling and physical health status among patients with pulmonary tb in bogor, indonesia.
- Kailun, C., Yumei, L., & Meifang, Z. (2023). A qualitative study on self-management dilemma of newly treated patients with pulmonary tuberculosis. *Journal of Clinical Medicine in Practice*, 27(12), 112–117.
- Li, J., Pu, J., Liu, J., Wang, Q., Zhang, R., Zhang, T., Zhou, J., Xing, W., Liang, S., & Hu, D. (2021). Determinants of self-management behaviors among pulmonary tuberculosis patients: A path analysis. *Infectious Diseases of Poverty*, 10, 1–11.
- Li, Y., Ehiri, J., Hu, D., Zhang, Y., Wang, Q., Zhang, S., & Cao, J. (2014). Framework of behavioral indicators for outcome evaluation of TB health promotion: a Delphi study of TB suspects and Tb patients. *BMC Infectious Diseases*, 14(1).
<https://doi.org/10.1186/1471-2334-14-268>
- Li, J., Zhang, L., Zhou, J., Wang, G., Zhang, R., Liu, J., Liu, S., Chen, Y., Yang, S., Yuan, Q., & Li, Y. (2022). Development and validation of self-management scale for tuberculosis patients. *BMC Infectious Diseases*, 22(1). <https://doi.org/10.1186/s12879-022-07483-3>
- Loa, R. F. (2018). Facilitators and Barriers to Self-Management of Tuberculosis Patients: A Qualitative Study. *International Journal of Integrated Care*, 18(s2), 285.
- Safdari, R., Hasan Nejadasl, H., Rostam Niakan-Kalhari, S., & Nikmanesh, B. (2018). Design and evaluation of mobile based self-management system for tuberculosis. *Payavard Salamat*, 12(3), 230–238.
- Setiyowati, E., Hanik, U., Juliasih, N. N., & Wahdi, A. (2020). Self-management education for the quality of life of patients with pulmonary tuberculosis. *Journal for Quality in Public Health*, 4(1), 10–19.
- Tornu, E., Jordan, P., & McCaul, M. (2023). Best practice guidelines for professional nurses to provide self-management support to adults with tuberculosis-human immunodeficiency virus coinfection: A scoping review. *Plos One*, 18(9), e0291529.
- U.S. Agency for International Development (USAID). (2024). *Bangladesh tuberculosis roadmap 2024*. Retrieved from

- https://www.usaid.gov/sites/default/files/2024-06/Bangladesh_Roadmap_2024_narrative_for_web_V3_%20508.pdf
- World Health Organization. (2024, October 29). *Global Tuberculosis Report 2024*. Retrieved December 8, 2024, from <https://www.who.int/publications/i/item/9789240101531>
- Wood, S., Tsu, V., Pennas, T., Schiegg, N., World Health Organization, Stop TB Partnership, & PATH. (2008). Advocacy, communication and social mobilization for TB control: a guide to developing knowledge, attitude and practice surveys [Guide]. In *World Health Organization*. World Health Organization.
- https://iris.who.int/bitstream/handle/10665/43790/9789241596176_eng.pdf (Original work published 2008)
- World Health Organization. (2018). Chapter 8.: TB research and development. In *GLOBAL TUBERCULOSIS REPORT 2018* (pp. 149–164). World Health Organization. <http://www.jstor.org/stable/resrep27926.13>
- World Health Organization. (2021). Country, territory, and area profiles. In *Global Antimicrobial Resistance and Use Surveillance System (GLASS) Report 2021* (pp. 65–144). World Health Organization. <http://www.jstor.org/stable/resrep35701.10>
- World Health Organization. (2021). *WHO consolidated guidelines on tuberculosis Module 2: screening systematic screening for tuberculosis disease: Web Annex B. GRADE summary of findings tables*. World Health Organization. <http://www.jstor.org/stable/resrep55487>
- World Health Organization. (2020). TB prevention services. In *GLOBAL TUBERCULOSIS REPORT 2020* (pp. 115–128). World Health Organization. <http://www.jstor.org/stable/resrep27863.13>
- World Health Organization. (2020). TB disease burden. In *GLOBAL TUBERCULOSIS REPORT 2020* (pp. 23–70). World Health Organization. <http://www.jstor.org/stable/resrep27863.11>

Annexes

Table 2: Socio_Demographic Table		
Factors	Frequency (N)	Percentage (%)
Age		
18-25	49	40.5
26-35	37	30.58
36-45	27	22.31
>46	8	6.61
Gender		
Male	54	44.63
Female	67	55.37
Completed Years of Education		
No education	13	10.74
1-5 year	29	23.97
6-10 years	32	26.45
more then 10	47	38.84
Completed Years of Education (2 Categories)		
No Formal Education or Primary	42	34.71
Secondary or Above	79	65.29
Marital Status		
Single	37	30.58
Married	81	66.94
Divorced / Separated	2	1.65
Widow	1	0.83
Financial Situation		
Surplus	13	10.74
Breakeven	56	46.28
Deficit	25	20.66

Severe Deficit	27	22.31
Residence		
Urban	91	75.21
Sub-urban	30	24.79
Treatment Period		
0-2 Months	36	29.75
3-5 Months	50	41.32
6-9 Months	35	28.93
Number Family Member		
0-3 Member	16	13.22
4-6 Member	92	76.03
>/7 Member	13	10.74
Occupation		
Skilled Salaried Worker	10	8.26
Semi-skilled	42	34.71
Unskilled	9	7.44
Unemployed	4	3.31
Student	17	14.05
Homemaker	39	32.23
Monthly Household Expenditure		
0-20000	49	40.5
20001-40000	51	42.14
>/40001	21	17.36
Sleep Hours		
0-6	49	40.5
7-9	63	52.07
>9	9	7.44
Sleep Satisfaction		
Yes	63	52.07
No	58	47.93
Household Head		
Male	98	80.99
Female	23	19.01

Income Generating Activity		
Yes	63	52.07
No	58	47.93
Patient Contributes to Household Expenses		
Yes	52	82.54
No	11	17.46

1. Media Exposure of DS-TB Patients Descriptive

Factors	Freq.	Percent (%)
Patients having access to the internet		
Yes	83	68.6
No	38	31.4
Patients use TV for health information		
Daily	11	9.09
Weekly	25	20.66
Occasionally	85	70.25
Patient use Radio for health information		
Daily	1	0.83
Occasionally	8	6.61
Never	112	92.56
Patient use newspaper for health information		
Daily	5	4.13
Weekly	4	3.31
Occasionally	14	11.57
Never	98	80.99
Patient use social media for health information		
Daily	28	23.14
Weekly	3	2.48
Occasionally	43	35.54
Never	47	38.84
The patient has seen a TB treatment advertisement		
Yes	82	67.77

No	39	32.23
The patient has seen Self-management of the TB treatment campaign.		
Yes	43	35.54
No	78	64.46
Patients use mobile for management of TB treatment		
Yes	34	28.1
No	87	71.9

Table 3: Self-management and Self-efficacy Descriptive Analysis

Domains	Items	Never n (%)	Only Rarely n (%)	Sometimes n (%)	Quite Often n (%)	Always n (%)
Adherence to Treatment Behavior	Item 1: Medication-taking record card filled	94 (77.69)	1 (0.83)	4 (3.31)	1 (0.83)	21 (17.36)
	Item 2: Taking medications following prescription	0 (0)	0 (0)	3 (2.48)	5 (4.13)	113 (93.39)
	Item 3: Taking medications when going out	6 (4.96)	0 (0)	2 (1.65)	4 (3.31)	109 (90.08)
	Item 4: Keeping drugs correctly	6 (4.96)	1 (0.83)	1 (0.83)	1 (0.83)	112 (92.56)
	Item 5: Addressing adverse effects of medications correctly	9 (7.44)	8 (6.61)	13 (10.74)	25 (20.66)	66 (54.55)
	Item 6: Taking medications consistently	0 (0)	0 (0)	1 (0.83)	1 (0.83)	119 (98.35)
	Item 7: Regularly following up sputum	39 (32.23)	18 (14.88)	13 (10.74)	5 (4.13)	46 (38.02)
Supportive Behavior	Item 8: Abstaining from smoking	4 (3.31)	1 (0.83)	2 (1.65)	7 (5.79)	107 (88.43)
	Item 9: Abstaining from alcohol drinking	1 (0.83)	0 (0)	0 (0)	0 (0)	120 (99.17)
	Item 10: Maintaining adequate sleep	6 (4.96)	16 (13.22)	16 (13.22)	25 (20.66)	58 (47.93)
	Item 11: Avoiding overexertion	20 (16.53)	10 (8.26)	12 (9.92)	28 (23.14)	51 (42.15)
	Item 12: Keeping proper exercise	91 (75.21)	12 (9.92)	11 (9.09)	2 (1.65)	5 (4.13)
	Item 13: Maintaining adequate nutrition	7 (5.79)	12 (9.92)	31 (25.62)	22 (18.18)	49 (40.50)
Transmission Prevention	Item 14: Not spitting indiscriminately	2 (1.65)	2 (1.65)	5 (4.13)	15 (12.40)	97 (80.17)

Behavior						
	Item 15: Reducing frequency of presence in public	7 (5.79)	5 (4.13)	12 (9.92)	39 (32.23)	58 (47.93)
	Item 16: Wearing a respirator in public during infective phase of the disease	14 (11.57)	7 (5.79)	8 (6.61)	5 (4.13)	87 (71.90)
	Item 17: Disposing of sputum with a safe method	3 (2.48)	1 (0.83)	4 (3.31)	17 (14.05)	96 (79.34)
	Item 18: Covering face when sneezing/ coughing/ speaking loudly	11 (9.09)	2 (1.65)	8 (6.61)	11 (9.09)	89 (73.55)
	Item 19: Informing contact of TB status	24 (19.83)	27 (22.31)	6 (4.96)	17 (14.05)	47 (38.84)
	Item 20: Ventilating their room	5 (4.13)	11 (9.09)	4 (3.31)	5 (4.13)	96 (79.34)
Tuberculosis Self-Efficacy Scale (TBSES)		Not at all confident n (%)	Slightly Confident n (%)	Moderately confident n (%)	Very Confident n (%)	Completely Confident n (%)
Psychological Adjustment	Item 21: I can alleviate the effects of depression, anxiety, stigma, and other negative emotions on my treatment and life.	6 (4.96)	8 (6.61)	29 (23.97)	25 (20.66)	53 (43.80)
	Item 22: I can try to alleviate TB-related stress such as the disturbance of interpersonal relationships, worrying about my prognosis, and worrying about infecting others.	8 (6.61)	4 (3.31)	24 (19.83)	35 (28.93)	50 (41.32)
	Item 23: I can accept the fact that I have tuberculosis.	1 (0.83)	4 (3.31)	16 (13.22)	17 (14.05)	83 (68.60)
	Item 24: I can maintain a positive attitude and believe that my illness can be cured.	1 (0.83)	3 (2.48)	4 (3.31)	14 (11.57)	99 (81.82)

SMSTP & TBSES Items Descriptive (Mean, SD, 95% CI)

SMSTP & TBSES Descriptive					
Domains	Items	Mean	SD	95% Conf. Interval	
Adherence to Treatment Behavior	Medication-taking record card filled	1.79	1.54	1.52	2.07
	Taking medications following prescription	4.91	0.37	4.84	4.97
	Taking medications when going out	4.74	0.91	4.57	4.90
	Keeping drugs correctly	4.75	0.92	4.59	4.92
	Addressing adverse effects of medications correctly	4.08	1.26	3.86	4.31
	Taking medications consistently	4.98	0.20	4.94	5.01
	Regularly following-up sputum	3.01	1.74	2.70	3.32

Supportive Behavior	Abstaining from smoking	4.75	0.82	4.60	4.90
	Abstaining from alcohol drinking	4.97	0.36	4.90	5.03
	Maintaining adequate sleep	3.93	1.26	3.71	4.16
	Avoiding overexertion	3.66	1.50	3.39	3.93
	Keeping proper exercise	1.50	1.02	1.31	1.68
	Maintaining adequate nutrition	3.78	1.24	3.55	4.00
Prevention Transmission Behavior	Not spitting indiscriminately	4.68	0.78	4.54	4.82
	Reducing frequency of presence in public	4.12	1.12	3.92	4.33
	Wearing a respirator in public during infective phase of the disease	4.19	1.43	3.93	4.45
	Disposing sputum with a safe method	4.67	0.80	4.53	4.81
	Covering face when sneezing/coughing/speaking loudly	4.36	1.25	4.14	4.59
	Informing contact of TB status	3.30	1.63	3.00	3.59
	Ventilating their room	4.45	1.17	4.24	4.66
Psychological Adjustment	I can alleviate the effects of depression, anxiety, stigma and other negative emotions on my treatment and life.	3.92	1.18	3.70	4.13
	I can try to alleviate TB-related stress such as the disturbance of interpersonal relationships, worrying about my prognosis and worrying about infecting others.	3.95	1.16	3.74	4.16
	I can accept the fact that I have tuberculosis.	4.46	0.90	4.30	4.63
	I can maintain a positive attitude and believe that my illness can be cured.	4.71	0.72	4.58	4.84

Table 4: Bivariate Analysis						
Variable Category	No	Yes	Fre (n=121)	%	Chi	P-Value
Age Group					0.93	0.819
18-25	13	36	49	40.50		
26-35	8	29	37	30.58		
36-45	7	20	27	22.31		
>=46	3	5	8	6.61		
Residence					0.11	0.741
Urban	24	67	91	75.21		
Sub-urban	7	23	30	24.79		

Gender					3.04	0.081
Male	18	36	54	44.63		
Female	13	54	67	55.37		
Education					10.03	0.002
No formal education	18	24	42	34.71		
Secondary and above	13	66	79	65.29		
Marital Status					4.50	0.212
Single	7	30	37	30.58		
Married	22	59	81	66.94		
Divorced/separated	1	1	2	1.65		
Widow	1	0	1	0.83		
Occupation					12.19	0.032
Skilled Salaried Worker	3	7	10	8.26		
Semi-skilled	13	29	42	34.71		
Unskilled	4	5	9	7.44		
Unemployed	3	1	4	3.31		
Student	1	16	17	14.05		
Home-maker	7	32	39	32.23		
Household Head					4.75	0.029
Male	21	77	98	80.99		
Female	10	13	23	19.01		
Patient has access to internet						
No	12 (38.71)	26 (28.89)	38	31.4		
Yes	19 (61.29)	64 (71.11)	83	68.6		
How often do Patients use TV for health information?					0.13	0.938
Daily	3 (9.68)	8 (8.98)	11	9.09		
Occasionally	7 (22.58)	18 (20)	25	20.66		
Never	21 (67.74)	64 (71.11)	85	70.25		
How often Patients use Radio for health information					0.35	0.839
Daily	0	1 (1.11)	1	0.83		
Occasionally	2(6.45)	6 (6.67)	8	6.61		
Never	29 (93.55)	83 (92.22)	112	92.56		
How often do Patient use Newspapers for health information?						
Daily	1 (3.23)	4 (4.44)	5	4.13		
					6.61	0.086

Weekly	2 (6.45)	2 (2.22)	4	3.31		
Occasionally	0	14 (15.56)	14	11.57		
How often Patient use Social Media for health information					2.39	0.495
Daily	6 (19.35)	22 (24.44)	28	23.14		
Weekly	0	3 (3.33)	3	2.48		
Occasionally	10 (32.26)	33 (36.67)	43	35.54		
Never	15 (48.39)	32 (35.56)	47	38.84		
Occupation					3.32	0.069
Employed	20	41	61	50.41		
Unemployed	11	49	60	49.59		
TBSES Bivariate (Psychological Adjustment)						
Family Number Group	No	Yes	Total	%	Chi	P-value
1-3	6	10	16	13.22	5.09	0.079
4-6	43	49	92	76.03		
>= 7	10	3	13	10.74		

Table 5: SMSTP & Socio-demographic T-test							
Group	Freq (N)	Mean	SD	95% CI	Diff. Mean	t-Value	p-Value
Gender							
Male	54	78.96	6.67	[77.14, 80.78]	-2.99	-2.56	0.0118
Female	67	81.96	6.17	[80.45, 83.46]			
Education							
No Formal Education	42	78.33	7.63	[75.96, 80.71]	-3.5	-2.89	0.0046
Secondary Education	79	81.84	5.56	[80.59, 83.08]			
Location							
Urban	91	80.51	6.69	[79.11, 81.90]	-0.46	-0.34	0.739
Sub-Urban	30	80.97	6.15	[78.67, 83.26]			
Household Head							
Male	98	81.02	6.57	[79.70, 82.34]	2.11	1.39	0.1653
Female	23	78.91	6.29	[76.19, 81.63]			
Occupation							
Employed	61	79.13	6.02	[77.59, 80.67]	-3	-2.58	0.011
Unemployed	60	82.13	6.75	[80.39, 83.88]			

Table 6: T-test with Domains						
Adherence to Treatment and socio-demographic T-test						
Group	Mean	SD	[95% CI]	Mean Diff	t-value	p-value
Gender						
Male	28.17	3.58	27.19, 29.14	-0.16	-0.2646	0.7917
Female	28.33	3.14	27.56, 29.09			
Combined	28.26	3.33	27.65, 28.85			
Education						
No Formal	28.10	2.90	27.19047, 29	-0.25	-0.3865	0.6998
Secondary	28.34	3.55	27.55, 29.14			
Combined	28.26	3.33	27.66, 28.86			
Residence						
Urban	28.24	3.41	27.53, 28.95	-0.06	-0.0828	0.9342
Sub-Urban	28.30	3.13	27.13, 29.46			
Combined	28.26	3.33	27.65, 28.85			
Household Head						
Male	28.36	3.34	27.68, 29.03	0.53	0.6872	0.4933
Female	27.83	3.33	26.38, 29.26			
Combined	28.26	3.33	27.66, 28.85			
Occupation						
Employed	28.30	3.22	27.47, 29.12	0.08	0.1291	0.8975
Unemployed	28.22	3.46	27.32, 29.11			
Combined	28.26	3.33	27.66, 28.85			
Support Behavior and socio-demographic T-test						
Gender						
Male	22.89	2.93	22.09, 23.69	0.55	0.9449	0.3466
Female	22.34	3.33	21.53, 23.15			
Combined	22.59	3.16	22.01, 23.15			
Education						
No Formal	21.74	3.62	20.61, 22.86	-1.30	-2.1906	0.0152
Secondary	23.04	2.80	22.41, 23.66			
Combined	22.59	3.16	22.02, 23.15			

Residence						
Urban	22.40	3.39	21.68, 23.10	-0.77	-1.1621	0.2475
Sub-Urban	23.17	2.26	22.32, 24.01			
Combined	22.59	3.16	22.02, 23.15			
HH_Head						
Male	22.76	3.19	22.12, 23.39	0.89	1.2134	0.2274
Female	21.87	2.97	20.58, 23.15			
Combined	22.59	3.16	22.02, 23.15			
Occupation						
Employed	22.23	3.21	21.41, 23.05	-0.72	-1.2586	0.2107
Unemployed	22.95	3.09	22.15, 23.74			
Combined	22.59	3.16	22.02, 23.15			
Transmission Prevention Behavior and Socio-demographic T-test						
Gender						
Male	27.91	4.46	26.69, 29.12	-3.38	-4.7867	0
Female	31.28	3.29	30.48, 32.09			
Combined	29.78	4.19	29.02, 30.53			
Education						
No Formal	28.50	4.46	27.10936, 29.89064	-1.96	-2.4943	0.007
Secondary	30.46	3.91	29.58096, 31.33043			
Combined	29.78	4.19	29.02193, 30.53179			
Residence						
Urban	29.87	4.04	29.02748, 30.70878	0.37	0.4155	0.6607
Sub-Urban	29.50	4.70	27.74377, 31.25623			
Combined	29.78	4.19	29.02193, 30.53179			
HH_Head						
Male	29.91	4.18	29.06979, 30.74653	0.69	0.7094	0.7603
Female	29.22	4.30	27.35991, 31.07487			
Combined	29.78	4.19	29.02193, 30.53179			
Occupation						
Employed	28.61	4.25	27.51868, 29.69443	-2.36	-3.2127	0.0008
Unemployed	30.97	3.82	29.98044, 31.95289			
Combined	29.78	4.19	29.02193, 30.53179			
Psychological Adjustment and Socio-demographic T-test						

Gender						
Male	17.02	2.54	16.3262, 17.71084	-0.04	-0.0804	0.936
Female	17.06	2.99	16.32932, 17.79008			
Combined	17.04	2.79	16.53949, 17.54316			
Education						
No Formal	16.79	2.78	15.91912, 17.65231	-0.39	-0.7339	0.4645
Secondary	17.18	2.80	16.55005, 17.80438			
Combined	17.04	2.79	16.53949, 17.54316			
Residence						
Urban	17.23	2.77	16.6549, 17.80664	0.76	1.3056	0.1942
Sub-Urban	16.47	2.83	15.41173, 17.5216			
Combined	17.04	2.79	16.53949, 17.54316			
HH_Head						
Male	17.06	2.86	16.48703, 17.63542	0.10	0.1614	0.872
Female	16.96	2.50	15.87758, 18.03546			
Combined	17.04	2.79	16.53949, 17.54316			
Occupation						
Employed	17.16	2.72	16.46695, 17.86092	0.25	0.4862	0.6277
Unemployed	16.92	2.87	16.1748, 17.65853			
Combined	17.04	2.79	16.53949, 17.54316			