Prevalence and Factors Associated with Workplace Stress among Worker Population in Thimphu, Bhutan: A Cross-sectional Study

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Abstract:

Background: Workplace stress is a major public health problem worldwide. The impact of workplace stressors contributed to risk behaviors, poor family relationship, severe diseases. Several factors are associated with workplace stress i.e. health condition and job satisfaction.

Objective: This study aims to estimate the prevalence of workplace stress and to determine factors associated with workplace stress among the working population in Thimphu, Bhutan.

Method: A cross-sectional study was conducted to collect the information using a validate questionnaire and the Workplace Stress Scale (WSS) to assess stress levels from the worker who lived in Thimphu district, Bhutan. Multiple logistic regression was analyzed to assess the association between variables at a significance level of $\alpha = 0.05$.

Results: A total of 415 workers were recruited into the study. The most participant were 56.4% males with a majority (43.9%) ranging between 19 to 30 years. There were 54.0% completed their high school education, 32.3% hold a bachelor's degree, 10.6%, have received primary level education, and 3.1%, have no formal education. 92.8% of the participants were Buddhist followed by Hindu (5.3%), and Christianity (1.9%) respectively. The overall prevalence of workplace stress was 48.2% of which 39.3% experienced moderate stress, 8.4% experienced severe stress and 0.5% experienced potentially dangerous level of stress. Eight factors were found to be associated with workplace stress, including cannabis use, COVID-19 infection, kidney disease, diabetes, chronic diseases in the family, severe mental health problems among family members, job position, and job satisfaction. The specialists, professional, and managers experienced higher levels of stress compared to operational level.

Conclusion: Workplace stress associated with cannabis use, COVID-19 infection, kidney disease, diabetes, chronic family illnesses, severe mental health problems among family members, job position, and job satisfaction. Individuals with moderate to high stress levels should be referred for further evaluation and treatment. These findings emphasize the

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importance of implementing targeted interventions in the workplace, with a focus on training workers in stress management skills to mitigate these stressors effectively.

Keywords: Workplace; Stress; Factors; Job satisfaction; Mental health; Prevalence

Introduction

Workplace stress is one of a significant problem in public health issues worldwide and it has become a major mental health problem in both developed and developing countries.[1] Stress is a part of mental health definition defined by WHO 2022 stated that "mental health is a condition or a state of well-being in which an individual realizes his or her own capacities, can manage normal stresses of life, can work productively, and is suitable to make a contribution to his or her community".[2] This is a significant global public health challenge contributing to financial hardship on individuals and households and elevated rates of deaths and disability.[3] The prevalence of workplace stress varies widely across occupations and regions, with studies reporting rates ranging from 12.6% to 50.6% globally.[4] Bhutanese adults with hypertension demonstrate a high stress levels.[5]

Workplace stressors influence a wide-ranging effect on many aspects of an individual's life, including work productivity[6], psychological health[7], family relationships[8], and job satisfaction.[9] Several factors contributed the workplace stress, including high job demands, poor work-life balance, lack of control over job tasks, and poor interpersonal relationships.[1] Moreover, the COVID-19 pandemic has introduced additional stressors, such as job insecurity and health concerns.[10] Studies have shown that workplace stress can lead to reduce the efficiency of work, this may affect to the worker and organization performance. The persistent stress can lead to other mental health symptoms such as anxiety, depressive syndrome, and job burnout. Stress can disrupt a family issue in term of serious relationship and the emotional exhaustion. Moreover, job dissatisfaction can lead to lower motivation, reduced commitment, and higher turnover rates.

However, there needs necessary for further studies on stress burden on working population to better understanding the causes and consequences of workplace stress. These are crucial for developing effective interventions aimed at improving employee well-being and enhancing organizational performance. There were limited studies focused on workplace stressor in Bhutan, and it required more better understanding a prevalence and impact on worker well-being. This study was to estimate the prevalence of workplace stressor, and identify the key factors associated with workplace stress among Bhutanese workers. By addressing this gap, the findings would be contributed to a better clarify of workplace stress in Bhutan and inform the development of targeted interventions and policies to improve worker health, productivity, and job satisfaction.

Methodology

Study design

A cross-sectional study was conducted to collect the information from the worker who lived in Thimphu district, Bhutan.

Study setting

This study was carried out in Thimphu district, the capital city of Bhutan, situated in the western region of the country. It was chosen because Thimphu district is considered as one of the developed districts

in the country having a significant presence of both private and government sector organization.

Study population and eligible population

The study population comprised individuals who were employed, aged between 18 and 60 years, and actively working in both government and private sectors within the Thimphu district, Bhutan. The participants were required to have a minimum of 1 year of work experience in their respective sectors and express their willingness to take part in the study. The study excluded employee's individuals who did not provide their consent to take part in the study were excluded from the research.

Study sample and sample size

The sample size was calculated according to the following standard formula of a cross- sectional study[11]: $n = [Z^2\alpha/2*P*(1-P)]/e^2$, wherein Z is the value from the standard normal distribution corresponding to the desired confidence level (Z = 1.96 for 95% CI), P = the prevalence of workplace stress scale from a previous study, and e = the accepted deviation to the predicted prevalence of the study, which was set at 4.2%. A previous study in Bhutan reported the prevalence of psychological stress in Bhutan was 75.2%.[5] So, 415 participants were included in this study, with adding 10.0% error throughout the study.

Research instruments

Data on the socio-demographic characteristics, behavioral factors, physical health information, and work-related factors of the participants were collected using a validated self-administered questionnaire. This study applied the Person-Environment (P-E) Fit Theory as a conceptual framework.[12] The workplace stress questionnaire was utilized to assess the prevalence and association of workplace stress scale. The questionnaire includes questions into the following section:

Part 1: The participants completed a validated self-administered questionnaire, which was divided into four sections. Section One: Socio-demographic information for each subject was collected using a researcher-designed questionnaire such as age, gender, educational attainment, religion, marital status, a number of children, the total number of family members, conflicts with the partner, the frequency of conflicts with the partner, conflicts with other family members (including children), and debt information including total debt. Section two (behavioral factors): The information regarding the participants' drinking behaviors was collected using four questions, while an additional four questions were used to gather information on tobacco and drug use. Section three (physical health information): The participants were asked seven questions to gather information about their physical health, including whether they had tested positive for COVID-19, had kidney disease, hypertension, diabetes, any chronic diseases in their family, severe mental health problems among their family members or any disabled family members. Section four (work-related factors): Fourteen questions were used to collect information related to work including the working sector, occupational sector, employment type, position at work, monthly salary, work experience, working hours per week, the total number of workers in the department, satisfaction with the current job, supervisors understanding towards job problems and needs, help and support from the supervisor, supervisor willingness to listen to the work-related problem, relationships with the supervisors and finally relationships with the co-workers.

Part 2: Workplace stress scale (WSS), the Marlin Company, based in North Haven, CT, USA, in collaboration with the

American Institute of Stress in Yonkers, NY, USA, developed the workplace stress scale (WSS) in 2001. The workplace stress scale consists of eight items, and it aims to assess how frequently a respondent experiences emotion towards their job. Scoring assigns, a score to each item on a five-point Likert scale, ranging from 1 (indicating never) to 5 (indicating very often). The scores for item numbers 6, 7, and 8 are reversed. Increased scores are indicative of elevated levels of job-related stress. Interpreting the scores of the respondents: The scoring system categorizes individuals with scores of 15 and below as relatively calm, scores of 16-20 as fairly low, scores of 21-25 as moderate levels of work stress, scores of 26-30 as severe levels of work stress, and scores of 31-40 as potentially dangerous levels of work stress (The Marlin Company, 2001).[13] In our study, we employed a cut-off point of > 20 to ascertain the prevalence of workplace stress among the participants. Scores workplace stress level ≤ 15 is chilled out and relatively calm, 16-20 is fairly low, 21-25 is Moderate stress, 26-30 is Severe, and 31-40 is stress level is potentially dangerous. In our study, we reported a Cronbach's alpha reliability coefficient of 0.601 for the entire scale WSS. The scale's internal consistency, assessed using Cronbach's alpha, was 0.762 (Xhakollari et al., 2020).[14] Soltan et al. (2020)[15] conducted a study and found that the entire scale of WSS had a Cronbach's α coefficient values of 0.80. A study conducted by Mekonen et al., 2021[16], among bank workers in Gondar city, Northwest Ethiopia, determined a Cronbach's α reliability coefficient of 75.7%.

Data collection

The researcher employed a stratified random sampling method to select employees from various agencies in both the private and government sectors. The government offices were 51 health sectors, 45 finance sectors, 79 education sectors, and 35 engineering sectors, and the private sectors were 69 construction sectors, 46 tourism sectors, 80 hoteliers, and 10 others. The data collection took place from August to September 2023. After receiving ethical approval from the Human Research Ethical Committee at Mae Fah Luang University and the heads of different sectors, the researcher personally approached the participants and obtained their informed consent. A total of three data collectors were chosen, with two employed in the government sector and one in the private sector. They underwent a two-day training session that covered various topics, including participant engagement, research methodology, questionnaire contents, and key concepts and definitions. The data collectors received comprehensive training on the utilization of the questionnaire to accurately record responses and transmit them to the principal researchers. Data collectors underwent a simulated interview and training session to familiarize themselves with the sequence of the questions. We carefully evaluated and deliberated upon the feedback and opinions from the mock interview to ensure consistency during the actual data collection process.

The research procedure commences with data collection from employees employed in various government and private sectors in Thimphu, conducted by data collectors. The survey questionnaires were printed, and the participants were instructed to complete all the questions. After obtaining the necessary authorization and agreement from the relevant establishment, we individually approached and conducted direct, face-to-face interviews with each eligible participant. We requested the participants to complete the survey questionnaire while ensuring the

confidentiality of their personal information. All participants met the inclusion criteria and consented to take part in the study. After completing the questionnaire, the researchers carefully examined all the completed questionnaires to verify the completeness of the data. The data collectors then forwarded all the hard copies of the questionnaires to the principal researcher. The data were inputted into Excel, encoded, and analyzed using SPSS.

Statistical analysis

The data collected was encoded, inputted, and processed using SPSS software Version 20.0. Descriptive statistics were analyzed using frequency (mean, maximum, minimum, and standard deviation) and percentages. Inferential statistics were chi-square tests and fisher exact tests (more than 20% of cells have expected cell counts less than 5) are employed to ascertain if there is a statistically significant relationship between independent variables and outcome variables, with a significance level of $\alpha = 0.05$. A logistic regression analysis was conducted to identify the risk factors associated with workplace stress.

Results

General characteristic

A total of four hundred fifteen (415) workers working in different sectors in Thimphu participated in the study. The most participant were 56.4% males with a majority (43.9%) ranging between 19 to 30 years. The majority of participants (54.0%) have completed their high school education, 32.3% hold a bachelor's degree, 10.6%, have received primary level education, and 3.1%, have no formal education. 92.8% of the participants were Buddhist followed by Hindu (5.3%), and Christianity (1.9%) respectively. The most participants were 70.4% married, 22.4% single, 7.0% divorced, and 0.2% widowed. The most participants were having three or more family members and having two children. There were 30.6% experiencing conflicts (disagreements) with their partners, reported encountering conflicts on a weekly basis, and 33.5% indicated that they did not experience any conflicts with their family members, including their children. Approximately 16.4% of the study participants were discovered to have accumulated debt, with 89.2% of these individuals had debt amounts below 50,000 BTN, which is roughly equivalent to 600 USD. The percentage of participants who reported never using cannabis was 90.8%, whereas 5.3% reported using it on a daily basis, and 3.9% reported using it sometimes. (Table 1)

The majority of the participants (78.1%) had tested negative for COVID-19 test, while 3.9% were uncertain about their COVID-19 test results, while 18.1% tested positive for the virus. The findings of the study indicate that a significant proportion of the participants (84.8%) do not exhibit history of kidney disease, whereas 6.5% have been diagnosed with kidney disease. Approximately 8.7% of individuals lack knowledge regarding their kidney disease status. A majority of the individuals (75.7%) did not have hypertension, but a smaller proportion (7.7%) expressed uncertainty regarding their hypertensive status. Approximately 16.6% of the population have been diagnosed with hypertension. Similarly, it was found that 85.1% of the participants said that they did not have diabetes, whilst 7.7% of the participants were unaware of their diabetic status, and 7.2% of the participants reported suffering from diabetes. 84.3% of the respondents reported that none of their family members are diagnosed with such conditions. In contrast, a total of 9.2% of respondents indicated that their family members have chronic diseases, and 6.5% of respondents

claimed being unaware of any chronic diseases among their family members. Approximately 6.0% of respondents reported the presence of severe mental health issues among their family members, whereas 85.5%, claimed the absence of any family member experiencing severe mental health problems. A total of 8.2% of respondents indicated a lack of knowledge regarding the subject matter. The majority (94.5%) of the respondents indicated that they do not have any family members with disabilities, whereas 5.5% reported having impaired family members.

The majority of participants were employed in the government sector (50.6%), while 49.5% worked in the private sector. The most occupation sectors were hotels (19.3%), education (19.0%), construction (16.6%), healthcare (12.3%), and tourism (11.1%). In terms of job positions, 52.8% were operational-level positions, 26.3% were in supervisory or support positions, 15.2% occupied professional positions, and 5.8% were executives or specialists. Participants had a wide range of work experience, from 1 to 35 years, with a mean of 19.27 years (SD = 9.30). Nearly half (49.2%) had worked for 20–29 years, followed by 22.7% (10–19 years), 20.2% (1–9 years), and 8.0% (≥ 30 years). Most participants (63.2%) had regular employment, while 34.7% were contract workers, and 2.2% were temporary employees. The majority of the participant's monthly income was between 12,000 to 20,000 BTN (37.1%) which is approximately equal to 144-240 USD.

The majority of participants (59.8%) reported that they worked between 60 and 69 hours per week, whereas 10.1% reported working between 70 and 79 hours per week. The participants provided information regarding the number of workers in their respective departments. They reported total number of workers ranged from one to one hundred fifty, with an average of 16.48 workers (SD = 16.02). Approximately 81.0% of participants reported having between less than or equal to twenty-nine workers in their department, while 17.6% reported having between thirty to fifty-nine workers. The study found that 44.1% of participants were satisfied with their job, with 5.5% being extremely satisfied, while 10.9% reported dissatisfaction. Regarding supervisory support, 76.1% perceived their supervisors as somewhat understanding of their job-related problems and needs, and 6.0% believed their supervisors lacked understanding entirely. Supervisor support was reported as sometimes (58.3%), while 32.5% always support the job issues. Additionally, 51.1% stated that their supervisors occasionally listened to work-related concerns, whereas 39.0% always to listen the job problems. Most participants were good relationships with their supervisors (59.8%) and coworkers (60.0%).

The overall prevalence of work-related stress among the working population in Thimphu, Bhutan was 48.2% of which 39.3% experienced moderate stress, 8.4% experienced severe stress and 0.5% experienced potentially dangerous level of stress. (Table 1)

Table 1 The general characteristics of the participants

Characteristics	n	%
Total	415	100.0
Sex		
Male	234	56.4
Female	181	43.6
Age (years)		
19-30	182	43.9
31-40	179	43.1
41-50	51	12.3
> 50	3	0.7
Mean = 32.4, Median = 31.0, Minimum = 19, Maximum = 57, SD = 6.6		
Education level		
No education	13	3.1
Primary school	44	10.6
High school	224	54.0
Bachelor degree and higher	134	32.3
Religion		
Buddhism	385	92.8
Hinduism	22	5.3
Christianity	8	1.9
Marital Status		
Single	93	22.4
Married	292	70.4
Divorced	29	7.0
Widowed	1	0.2
Number of Children		
None	123	29.6
One	101	24.3
Two	124	29.9
Three or more	67	16.1
Total number of family members		
1	40	9.6
2	107	25.8
3 and more	268	64.6

Table 1 The general characteristics of the participants (con.)

Characteristics	n	%
Conflicts with the partner		
Yes	127	30.6
No	288	69.4
Frequency of conflict with the partner (n = 128)		
Every day	16	12.5
Once a week	62	48.4
Twice a week	32	25.0
More than twice a week	18	14.1
Conflicts with family members including children		
Never	139	33.5
Rarely	123	29.6
Sometimes	138	33.3
Often	15	3.6
Debt		
Yes	68	16.4
No	347	83.6
If yes, how much debt do you have? (n=68)		
< Nu. 50,000	23	33.8
Nu. 50,000-150,000	29	42.6
> Nu. 150,000	16	23.6
Mean = 148,782, Min = 10,000, Max = 800,000, SD = 178,043.38		
Cannabis (marijuana) use		
Yes	22	5.3
Sometimes	16	3.9
No	377	90.8
COVID-19 positive		
Yes	75	18.1
Do not know	16	3.9
No	324	78.1
Kidney disease		
Yes	27	6.5
Do not know	36	8.7
No	352	84.8

Table 1 The general characteristics of the participants (con.)

Characteristics	n	%
Hypertension		
Yes	69	16.6
Do not know	32	7.7
No	314	75.7
Diabetes		
Yes	30	7.2
Do not know	32	7.7
No	353	85.1
Chronic disease among family members		
Yes	38	9.2
Do not know	27	6.5
No	350	84.3
Severe mental health problems among family members		
Yes	25	6.0
Do not know	34	8.2
No	356	85.8
Disabled family members		
Yes	23	5.5
No	392	94.5
Working Sector		
Government sector	210	50.6
Private sector	205	49.4
Occupational Sector		
Education sector (Teachers)	79	19.0
Engineer	35	8.4
Finance sector	45	10.8
Health sector (Nurses/doctors)	51	12.3
Construction sectors	69	16.6
Tourism sector	46	11.1
Hoteliers	80	19.3
Others (call center)	10	2.4

Table 1 The general characteristics of the participants (con.)

Characteristics	n	%
Position at work		
Executives and Specialist	24	5.8
Professional and management	63	15.2
Supervisory and support	109	26.3
Operational	219	52.8
Employment type		
Regular	262	63.1
Contract	144	34.7
Others (temporary)	9	2.2
Monthly salary (Ngultrum)		
Less than Nu.12,000	64	15.4
Nu.12,000-Nu. 20,000	154	37.1
Nu. 20,000-Nu. 30,000	92	22.2
More than Nu. 30,000	105	25.3
Duration in the current job (work experience) (years)		
1-9	84	20.2
10-19	94	22.7
20-29	204	49.2
> 30	33	8.0
Mean = 19.27, SD = 9.30, Min = 1, Max = 35		
Working hours per week		
Less than 30 hrs/week	29	7.0
30-39 hrs/week	31	7.5
40-49 hrs/week	28	6.7
50-59 hrs/week	29	7.0
60-69 hrs/week	248	59.8
70-79 hrs/week	42	10.1
More than 80 hrs/week	8	1.9
Total numbers of workers in the department		
≤ 29	336	81.0
30-59	73	17.6
60-89	5	1.2
> 90	1	0.2
Mean = 16.48, SD = 16.02, Min = 1, Max = 150		

Table 1 The general characteristics of the participants (con.)

Characteristics	n	%
Satisfaction with the current job		
Very dissatisfied	26	6.3
Dissatisfied	19	4.6
Neutral	164	39.5
Satisfied	183	44.1
Extremely satisfied	23	5.5
Supervisor understands jobs problem and needs		
Not at all	25	6.0
Somewhat	316	76.1
To a great extent	74	17.8
Supervisors help and support		
Never	38	9.2
Sometimes	242	58.3
Always	135	32.5
Supervisor willingness to listen to work-related problems		
Never	41	9.9
Sometimes	212	51.1
Always	162	39.0
Relation with supervisor		
Poor	15	3.6
Fair	152	36.6
Good	248	59.8
Relation with co-workers		
Poor	17	4.1
Fair	149	35.9
Good	249	60.0
Level of workplace stress		
Relatively calm and relaxed	67	16.1
Fairly low	148	35.7
Moderate	163	39.3
Severe	35	8.4
Dangerous	2.0	0.5

Nu. = Ngultrum, the official currency of Bhutan. (1 USD ≈ 83 NU)

Factors associated with workplace stress

For the purpose of analyzing associated factors, workplace stress levels were classified into two categories: relative calm and relaxed to fairly low stress (51.8%) and moderate to dangerous stress (48.2%). Five variables were found to be associated with workplace stress in the multiple regression analysis. Those individuals who use cannabis had 2.32 times (95% CI = 1.09-4.95) greater odds of getting workplace stress than those who did not use. Those individuals who had history of COVID-19 positive had 2.15 (95% CI = 1.18-3.91) times greater odds of getting workplace stress than those who did not. Those individuals who had not know about severe mental health problems in their family had 6.53 (95% CI = 2.47-17.29) times greater odds of getting workplace stress than those who did not have. Those individuals who being executives and specialists and professional and manager had 2.70 (95% CI = 1.03-7.03), and 4.31 (95% CI = 2.21-8.43) times greater odds of getting workplace stress than those individuals who were operational positions, respectively. (Table 2)

Table 2 Factor associated with workplace stress among the workers

Factors	Workplace stress scale				OR	95%CI	p-value	ORadj	95%CI	p-value
	No N (%)	Yes N (%)	Chi-square	p-value						
Total	215(51.8)	200 (48.2)								
Cannabis (marijuana) use			5.19	0.023*						
Yes/Sometimes	13 (34.2)	25 (65.8)			2.22	1.10-4.47	0.026*	2.32	1.09-4.95	0.030*
No	202(53.6)	175 (46.4)			1.00			1.00		
COVID-19 positive			8.32	0.016*						
Yes	29 (38.7)	46 (61.3)			1.98	1.17-3.31	0.009*	2.15	1.18-3.91	0.012*
Do not know	6 (37.5)	10 (62.5)			2.08	0.74-5.87	0.165	0.87	0.25-2.97	0.822
No	180(55.6)	144 (44.4)			1.00			1.00		
Kidney disease			7.47	0.024*						
Yes	16 (59.3)	11 (40.7)			0.79	0.36-1.75	0.558			
Do not know	11 (30.6)	25 (69.4)			2.61	1.24-5.46	0.011*			
No	188(53.4)	164 (46.6)			1.00					
Diabetes			6.03	0.049*						
Yes	15 (50.0)	15 (50.0)			1.17	0.55-2.46	0.687			
Do not know	10 (31.3)	22 (68.8)			2.56	1.18-5.57	0.017*			
No	190(53.8)	163 (46.2)			1.00					
Chronic disease in family			6.29	0.043*						
Yes	18 (47.4)	20 (52.6)			1.30	0.67-2.55	0.437			
Do not know	8 (29.6)	19 (70.4)			2.79	1.19-6.54	0.018*			
No	189(54.0)	161 (46.0)			1.00					

Table 2 Factor associated with workplace stress among the workers (con.)

Factors	Workplace stress scale		Chi-square	p-value	OR	95%CI	p-value	ORadj	95%CI	p-value
	No N (%)	Yes N (%)								
Severe mental health problems among family members			14.77	<0.001*						
Yes	15 (60.0)	10 (40.0)			0.79	0.35-1.81	0.580	0.51	0.20-1.28	0.152
Do not know	7 (20.6)	27 (79.4)			4.57	1.94-10.76	<0.001*	6.53	2.47-17.29	<0.001*
No	193(54.2)	163 (45.8)			1.00	1.00		1.00		
Position at work			23.81	<0.001*						
Executives and Specialist	9 (37.5)	15 (62.5)			2.53	1.06-6.03	0.037*	2.70	1.03-7.03	0.043*
Professional and Management	17 (27.0)	46 (73.0)			4.11	2.21-7.62	<0.001*	4.31	2.21-8.43	<0.001*
Supervisory and support	57 (52.3)	52 (47.7)			1.38	0.87-2.20	0.169	1.32	0.81-2.15	0.259
Operational	132(60.3)	87 (39.7)			1.00			1.00		
Satisfaction with the current job			11.26	0.010*						
Very dissatisfied	8 (30.8)	18 (69.2)			3.27	1.36-7.86	0.008*			
Dissatisfied	9 (47.4)	10 (52.6)			1.61	0.63-4.14	0.320			
Neutral	76(46.3)	88 (53.7)			1.68	1.11-2.54	0.014*			
Satisfied/Extremely Satisfied	122(59.2)	84 (40.8)			1.00					
The supervisor understands the job problem and needs			1.000	0.606						
Not at all	11 (44.0)	14 (56.0)			1.58	0.63-3.94	0.325	2.37	0.84-6.74	0.105
Somewhat	163(51.6)	153 (48.4)			1.17	0.70-1.94	0.554	2.42	1.30-4.52	0.006*
To a great extent	41 (55.4)	33 (44.6)			1.00			1.00		

Discussion

The nearly half of working populations in Thimphu, Bhutan were experienced workplace stress. One-third were neutral of satisfaction with the current job. Two-third were had supervision understand job problems and needs and supports. More than half had good relationship with supervisor and co-workers. Cannabis use, COVID-19 positive, kidney disease, diabetes, chronic disease in family, severe mental health problems among family members, position at work, satisfaction with the current job were associated with workplace stress.

This study found that 48.2% of worker populations experienced moderate to severe workplace stress. These findings align with systematic review study on teacher stress in China, Brazil, the United States, India, and Spain, where the prevalence of workplace stress ranged from 12.6% to 50.6%.[4] The variation in stress prevalence across studies may be influenced by differences in occupational demands, work environments, and socio-cultural factors. Compared to a study on healthcare workers in Singapore,[17] where 33% reported workplace stress, our findings suggest a higher prevalence. The high stress levels observed in this study emphasize the need for targeted workplace interventions, such as stress management programs, mental health support, and organizational policy improvements, to mitigate the impact of workplace stress on worker well-being and productivity.

Our study showed a job satisfaction in medium level, this was similar to the systematic review study reported a neutral level of satisfaction from China, South Korea, Egypt, and the United States.[9] The study on job satisfaction among Austrian pediatricians showed that gender and working hours were found to be associated with job satisfaction.[18] One key factor influencing job satisfaction is supervisory support[19] and leadership style.[20] Our findings revealed that while worker received consistent support from their supervisors and understand the job issues. These would suggest that workers feel heard and supported from the supervisor, their job satisfaction tends to increase, whereas a lack of understanding and responsiveness may contribute to workplace dissatisfaction and stress reported by Radulović AH, et al.[21]

This study highlighted the association between COVID-19 positive, chronic diseases (such as kidney disease and diabetes), family history of chronic illness, and workplace stress. The findings suggest that individuals with health conditions and a family history of chronic diseases may be more vulnerable to higher stress levels, which could affect both physical and mental health outcomes. A case-control study in Iran reported that workplace stress is high in the outbreak of COVID-19 situation[22] and aligned with the study in Japan focusing on job stress and loneliness among desk workers, with a focus on the impact of remote working in a world pandemic of COVID-19.[23] The study of the association between metabolic syndrome and job stress in Iran revealed that an association between job-related stress in the presence of metabolic syndrome among the medical university staff.[24] Several studies have also reported a link between metabolic syndrome and job stress. For instance, Chandola et al.[25] identified a prolong exposure to workplace stress over a 14-year period and an increased risk of metabolic syndrome. Several studies reported that the impact of kidney diseases associated with stress,[26] low health conditions[27, 28] and poor quality of life.[29, 30] Individuals with kidney disease often experience declined physical function, which can negatively impact their work performance and job-related activities. Additionally, patients with have family member's kidney disease are more susceptible to workplace stress.

Our study found that cannabis use associated with workplace stress. A study of cannabis uses and stress response[31] and another study in the United State[32] showed that cannabis use associated with stress response. The individuals who use cannabis may reduce their workplace stress level. The odds of getting stress more likely to be those who had experienced a positive COVID-19 that align with a study in Corrente M, et al,[33] and the study in Brazil.[10] The COVID-19 pandemic has contributed to increased workplace stress globally. Individuals who were unaware of severe mental illness in their family were more likely to experience workplace stress. This may be due to a lack of mental health awareness, making it difficult for them to manage their own stress. A study from Hong Kong emphasized the importance of comprehensive assessments of family members' psychosocial needs to guide appropriate interventions and strengthen coping skills.[34]

This study found that specialists, professional, and managers experienced higher levels of stress compared to operational level. This could be attributed to greater job responsibilities, decision-making pressures, and high-performance expectations associated with these roles reported by a study in Japan that job stress of managers was significantly higher than that for general workers.[35] Therefore, targeted workplace interventions and stress management strategies should be implemented to mitigate the impact of workplace stress among specialists, professionals, and managers.

A few limitations were found in this study. The study was conducted within the working population of Thimphu, the capital city of Bhutan. However, it is important to note that the findings are applicable solely within this specific setting. Furthermore, it is worth noting that the sample of occupational categories chosen for this study is limited, perhaps resulting in a lack of representativeness for the broader working population inside the country.

Conclusion

The working population in Thimphu, Bhutan, experienced workplace stress, while one-third expressed neutral job satisfaction. Two-thirds reported that their supervisors understood job-related issues and provided support, and more than half had good relationships with their supervisors and co-workers. Eight factors were found to be associated with workplace stress, including cannabis use, COVID-19 infection, kidney disease, diabetes, chronic diseases in the family, severe mental health problems among family members, job position, and job satisfaction. These findings highlight the need for targeted workplace interventions to provide the training of stress management skills, improve job satisfaction, promote the health campaign in prevention of chronic diseases, enhance supervisory support in high positions.

Competing Interests

The authors declare that there is no conflict of interest associated with this study.

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Author contributions

TT and PS designed the study, reviewed the literature, collected data, analyzed data.

PS drafted final version of the manuscript. PS and PW conceived and designed this study, analyzed and interpreted data, drafted and approved the final version of the manuscript. All authors contributed to the writing and approved the final manuscript.

References

1. Naveed S, Waqas A, Chaudhary AMD, Kumar S, Abbas N, Amin R, et al. Prevalence of Common Mental Disorders in South Asia: A Systematic Review and Meta-Regression Analysis. Front Psychiatry. 2020; 11: 602062. doi: 10.3389/fpsyt.2020.602062. eCollection 2020.
2. World Health Organization. World mental health report: Transforming mental health for all. Geneva; 2022.
3. Hailemichael Y, Hanlon C, Tirfessa K, Docrat S, Alem A, Medhin G, et al. Mental health problems and socioeconomic disadvantage: a controlled household study in rural Ethiopia. International Journal for Equity in Health. 2019; 18: 121 https://doi.org/10.1186/s12939-019-1020-4
4. Silva DFO, Cobucci RN, Lima SCVC, de Andrade FB. Prevalence of anxiety, depression, and stress among teachers during the COVID-19 pandemic: A PRISMA-compliant systematic review. Medicine (Baltimore). 2021; 100 (44): e27684. doi: 10.1097/MD.0000000000027684.
5. Gyeltshen D, Deenan A, Wacharasin C. Predictors of Psychological Stress in Bhutanese Hypertensive Adults. J Health Sci Med Res. 2021;39 (4): 263-72. doi: 10.31584/jhsmr.
6. Bui T, Zackula R, Dugan K, Ablah E. Workplace Stress and Productivity: A Cross-Sectional Study. Kans J Med. 2021; 14 (1): 42-5. doi: 10.17161/kjm.vol1413424.
7. Wang H, Jia R, Zhang M, Fan W. The influence of stress on mental health among Chinese college students: The moderating role of psychological suzhi. Heliyon. 2024; 10 (5): e26699. doi: 10.1016/j.heliyon.2024.e26699.
8. Siddiqui MA, Rathi L, Pattojoshi A, Garg S, Tikka SK. Stress management in family environment. Indian J Psychiatry. 2024; 66(Suppl 2): S245–S254. doi: 10.4103/indianjpsychiatry.indianjpsychiatry_600.
9. Le VNT, Dang MH, Kim JG, Yang YM, Lee DW. Dentist Job Satisfaction: A Systematic Review and Meta-analysis. Int Dent J. 2021;71(5):369-377. doi: 10.1016/j.identj.2020.12.018
10. Loreto BBL, de Azevedo SC, da Silva AG, Malloy-Diniz LF, Ornell F, Trés LMAM, et al. Well-being at work, productivity, and coping with stress during the COVID-19 pandemic. Trends Psychiatry Psychother. 2022: 44: e20210250. doi: 10.47626/2237-6089-2021-0250.
11. Charan J, Kaur R, Bhardwaj P, Singh K, Ambwani SR, Misra S. Sample Size Calculation in Medical Research: A Primer. Ann Natl Acad Med Sci (India): 2021; 57:74-80. DOI https://doi.org/10.1055/s-0040-1722104.
12. Xiao Y, Dong M, Shi C, Zeng W, Shao Z, Xie H, et al. Person–environment fit and medical professionals' job satisfaction, turnover intention, and professional efficacy: A cross-sectional study in Shanghai. PLoS One. 2021; 16 (4): e0250693.
13. The Work Place Stress Scale (WSS) (2001). The Marlin Company, North Haven, Connecticut and The American Institute of Stress, Yonkers, New York.
14. Xhakollari L, Kakija A, Xhakollari E. Emotional intelligence and workplace stress of Albanian academic staff. Sociol Soc Work Rev. 2020; 4 (2): 6-23.

15. Soltan MR, Soliman SS, Al-Hassanin SA, ElSherief WA, Elnaggar MS, Gohar SF. Burnout and work stress among medical oncologists: Egyptian multi-centric study. Middle East Curr Psychiatry. 2020; 27 (1): 40. doi: 10.1186/s43045-020-00046-9
16. Mekonen E, Workneh BS, Seid M, Abegaz BF, Mekonnen TH, Kabito GG. Prevalence of work-related stress and its associated factors among bank workers in Gondar city, Northwest Ethiopia: A multi-center cross-sectional study. Int J Afr Nurs Sci. 2021; 16: 100386. doi:10.1016/j.ijans.2021.100386
17. Teo I, Chay J, Cheung YB, Sung SC, Tewani KG, Yeo LF, et al. Healthcare worker stress, anxiety and burnout during the COVID-19 pandemic in Singapore: A 6-month multi-centre prospective study. PLoS One. 2021; 16 (10): e0258866.
18. Kohlfürst DS, Zöggeler T, Karall D, Kerbl R. Workload and job satisfaction among Austrian pediatricians: gender and generational aspects. Wien Klin Wochenschr. 2022; 134: 516-521. https://doi.org/10.1007/s00508-022-02050-x
19. Aloisio LD, Coughlin M, Squires JE. Individual and organizational factors of nurses' job satisfaction in long-term care: A systematic review. Int J Nurs Stud. 2021: 123: 104073. doi: 10.1016/j.ijnurstu.2021.104073.
20. Specchia ML, Cozzolino MR, Carini E, Di Pilla A, Galletti C, Ricciardi W, et al. Leadership Styles and Nurses' Job Satisfaction. Results of a Systematic Review. Int J Environ Res Public Health. 2021; 18 (4):1552. doi: 10.3390/ijerph18041552.
21. Radulović AH, Varošanec AM. Work-related stress in specialists in occupational health in Croatia: a pilot study. Arh Hig Rada Toksikol. 2020; 71 (4): 375-80. doi: 10.2478/aiht-2020-71-3421.
22. Shirali GA, Amiri A, Chanani KT, Silavi M, Mohipoor S, Rashnuodi P. Job stress and resilience in Iranian nurses during the COVID-19 pandemic: A case-control study. Work. 2021; 70 (4):1011-20. doi: 10.3233/WOR-210476.
23. Miyake F, Odgerel CO, Hino A, Ikegami K, Nagata T, Tateishi S, et al. Job stress and loneliness among desk workers during the COVID-19 pandemic in Japan: focus on remote working. Environ Health Prev Med. 2022: 27: 33. doi: 10.1265/ehpm.22-00107.
24. Eftekhari S, Alipour F, Aminian O, Saraei M. The association between job stress and metabolic syndrome among medical university staff. J Diabetes Metab Disord. 2021; 20 (1): 321-7. doi: 10.1007/s40200-021-00748-9.
25. Chandola T, Brunner E, Marmot M. Chronic stress at work and the metabolic syndrome: prospective study. BMJ. 2006; 332 (7540): 521–5. doi: 10.1136/bmj.38693.435301.80.
26. Bruce MA, Griffith DM, Thorpe RJ. Stress and the Kidney. Adv Chronic Kidney Dis. 2015; 22 (1): 46-53. doi: 10.1053/j.ackd.2014.06.008.
27. Wilund KR, Thompson S, Viana JL, Wang AYM. Physical Activity and Health in Chronic Kidney Disease. Contrib Nephrol. 2021: 199: 43-55. doi: 10.1159/000517696.
28. Odden MC, Whooley MA, Shlipak MG. Depression, Stress, and Quality of Life in Persons with Chronic Kidney Disease: The Heart and Soul Study. Nephron Clin Pract. 2005; 103 (1): c1-c7. doi: 10.1159/000090112.
29. Brown EA, Zhao J, McCullough K, Fuller DS, Figueiredo AE, Bieber B,

et al. Burden of Kidney Disease, Health-Related Quality of Life, and Employment Among Patients Receiving Peritoneal Dialysis and In-Center Hemodialysis: Findings From the DOPPS Program. Am J Kidney Dis. 2021; 78 (4): 489-500.e1. doi: 10.1053/j.ajkd.2021.02.327.

30. Hussien H, Apetrii M, Covic A. Health-related quality of life in patients with chronic kidney disease. Expert Rev Pharmacoecon Outcomes Res. 2021; 21 (1): 43-54. doi: 10.1080/14737167.2021.1854091.
31. Al'Absi M, Allen AM. Impact of Acute and Chronic Cannabis Use on Stress Response Regulation: Challenging the Belief That Cannabis Is an Effective Method for Coping. Front Psychol. 2021; 12: 687106. doi: 10.3389/fpsyg.2021.687106.
32. Al'Absi M, Nakajima M, DeAngelis B, Grant J, King A, Grabowski J, et al. Blunted opioid regulation of the HPA stress response during nicotine withdrawal: therapeutic implications. Stress. 2021; 24 (5): 529-40. doi: 10.1080/10253890.2020.1823367.
33. Corrente M, Park J, Akuamoah-Boateng H, Atanackovic J, Bourgeault IL. Work & life stress experienced by professional workers during the pandemic: a gender-based analysis. BMC Public Health. 2024; 24:1441. https://doi.org/10.1186/s12889-024-18677-6.
34. Chui WY, Chan SW. Stress and coping of Hong Kong Chinese family members during a critical illness. J Clin Nurs. 2007; 16 (2): 372–81. doi: 10.1111/j.1365-2702.2005.01461.x
35. Kawada T, Otsuka T. Relationship between job stress, occupational position and job satisfaction using a brief job stress questionnaire (BJSQ). Work. 2011; 40 (4): 393-9. doi: 10.3233/WOR-2011-1251.