

# Work-Related Stress and Associated Factors Among Textile Factory Employees in Northwest Ethiopia: A Cross-Sectional Study

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**Background:** Work-related stress is becoming an alarmingly growing public health concern worldwide. Textile factories are among the most common manufacturing industries that have a higher rate of work-related stress. Investigating the prevalence and factors associated with work-related stress will help planners and decision-makers at every level in planning, managing, and evaluating the health status of the employees. Research evidence is limited for work-related stress in Northwest Ethiopia. Therefore, this study was aimed to assess work-related stress and associated factors among textile factory employees in Northwest Ethiopia.

**Methods:** A cross-sectional study design was employed among 403 employees in Bahir Dar Textile Factory. Data were collected using an interviewer administered questionnaire, then entered into EpiData version 3.1, and analyzed using SPSS version 22 software. Descriptive statistics, bivariate and multivariate logistic regressions were carried out. In logistic regression analysis, adjusted odds ratio (AOR), along with 95% confidence interval (CI), was used to identify the associated factors of work-related stress. A  $P$ -value  $< 0.05$  was considered as statistically significant.

**Results:** The prevalence of work-related stress was 45.2%, with 95% CI=40.0–50.1%. Working in rotational shifts (AOR=2.33, 95% CI=1.34–4.03), current substance use (AOR=5.67, 95% CI=3.38–9.52), poor and medium social support (AOR=3.75, 95% CI=1.71–8.21 and AOR=3.26, 95% CI=1.39–7.64) were significantly associated factors with work-related stress, respectively.

**Conclusion and Recommendation:** Near to half of the study participants had work-related stress. Work shift, substance use, and social support were among the factors which affect work-related stress. Thus, interventions that could reduce work-related stress such as stress management programs should be considered.

**Keywords:** prevalence, work-related stress, textile factory, employee, Ethiopia

## Introduction

Work-related stress is an alarmingly growing public health problem that could result in serious social and economic consequences that could be prevented if appropriate measures are taken.<sup>1,2</sup> The World Health Organization (WHO) broadly defines work-related stress as

the reaction people may have when presented with work demands and pressures that are mismatched to their knowledge and abilities that challenges their ability to cope<sup>3</sup>.

The working environment has a major influence on the mental health and behavioral well-being of individual employees.<sup>4,5</sup> In the current modern and turbulent

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working environment, making the employees work with high stress and pressurized conditions could lead to risk for a variety of mental health problems in which work-related stress is amongst the first line problem.<sup>6,7</sup> Work-related stress is one of the leading contributors of global burden of disease in terms of its adverse emotional, psychological, and physiological impact of workers across the world and more impactful for those living in developing countries.<sup>1,7,8</sup> Thus, work-related stress has resulted in a substantial multifaceted impact to employees and decrement in organizational productivities.<sup>9,10</sup> Unless work-related stress (WRS) has been monitored at the beginning, it can lead to a considerable decrease in employee performance to the success of the organization in terms of higher turnover number, repeated absenteeism from duties, and link to misbehavior in employees such as psychoactive substance misuse and sleep disturbance.<sup>11,12</sup> When an employee's performance decreased, it resulted in reduction of productivity, accident and injury, compensation, and treatment costs for injured workers.<sup>13,14</sup>

The prevalence of work-related stress has been reported in a wide range of differences across the globe. It has been found to be 25% in India,<sup>15</sup> 27.5% in Thailand,<sup>16</sup> 21.3% in Iran,<sup>17</sup> 28% in the Democratic Republic of Congo,<sup>18</sup> and 40.4% in Ethiopia among employees in a shoe manufacturing factory.<sup>19</sup> Work-related stress is also common among healthcare professionals working in different public healthcare facilities in Mekele and Bahir Dar, Ethiopia that revealed the prevalence to be 48.6%<sup>20</sup> and 46.9%,<sup>21</sup> respectively.

Previous research findings reported that the risk of work-related stress, its severity, and impacts have been varied depending on cultural orientation, nature of the work, and working environments. Some of the factors that lead employees to WRS were working in shift,<sup>22</sup> psychoactive substance use,<sup>23</sup> social support,<sup>24,25</sup> socio-professional factors, and demographic factors such as age.<sup>18</sup>

Although the impact and burden of WRS is huge, there is a limited study available in Ethiopia regarding magnitude and associated factors of WRS among employees in the textile factories.

Therefore, the aim of this study was to assess the prevalence and associated factors of work-related stress among Bahir Dar textile share company employees in Northwest Ethiopia.

## Materials and Methods

### Study Design and Period

An institutional-based cross-sectional study design was employed from March to April 2019, at Bahir Dar textile share company, Northwest Ethiopia.

### Study Setting

The study was conducted in Bahir Dar city which is the capital city of Amara regional state. Bahir Dar is located 570 km Northwest of Ethiopia. Bahir Dar Textile Share Company was established in 1961 in Bahir Dar and it was a government owned integrated mill manufacturing 100% woven cotton fabric. In 1989, the factory rehabilitated its spinning and weaving section, replacing most of the machines and renovating the rest. As of September 30, 1999, the factory changed from a public enterprise to a share company. The share company comprises 480,000 square meters, of which 39,200 square meters are covered by buildings. The share company currently has 1,431 employees, of which 799 are males and 632 are females. Seventy-nine percent of the company employees work in the main product sections. The remaining 21% of employees are under support process sections.

### Study Participants

All employees working in Bahir Dar textile factory were the source population. Employees who were available in their workplace during the study period and those included in the sample were the study population. Employees who were currently engaged in the textile factory and had worked for more than 6 months prior to the data collection were included in the study. Those employees who were seriously ill or on annual leave during the data collection period were excluded from the study.

### Sample Size Determination and Sampling Procedure

The sample size required for the study was calculated using a single population proportion formula by considering an estimated prevalence of work-related stress to be 50% (since there is no previous published study among textile factory workers in Ethiopia), a 5% margin of error, a 95% confidence interval, and 10% non-response rate. The final calculated sample size was 423.

A simple random sampling technique was used to select all 423 samples which were proportionally allocated for each working section.

## Data Collection Procedures and Tools

The data were collected using a structured interviewer-administered questionnaire adapted from previously conducted studies<sup>19,26</sup> through a face-to-face interview to assess sociodemographic, perceived relative wealth, substance use, suicidal behavior, psychosocial and clinical factors, organization and job-related factors, and work-related stress. Other previously validated and reliable tools employed for the purpose were the workplace stress scale (WPSS), job content questionnaire (JCQ),<sup>27</sup> and the National Institute for Occupational Safety and Health (NIOSH) generic job stress questionnaire,<sup>28</sup> which were used to assess organizational and job content factors. Data on work-related stress was collected using the workplace stress scale (WPSS) which is a 20-item standard questionnaire with a 5-points Likert scale. The score ranges from 1 (never) to 5 (very often).<sup>26,29</sup> These instruments were used in a previous study conducted among shoe factory employees in Ethiopia and it is valid and reliable.<sup>19</sup>

## Operational Definition

Workplace stress scale: A sum score below 60 was classified as having a work-related stress among participants.<sup>20</sup>

The Oslo-3 Social Support Scale (OSS-3): A three-item scale exploring the number of close friends, perceived level of concern from others, and perceived ease of getting help from neighbors was used to assess the level of social support. A score 3–8, 9–11, and 12–14 was considered to have low, medium, and high social support, respectively.<sup>30</sup>

Suicidal behavior was assessed by using the mini international neuropsychiatric interview and was set based on Diagnostic and Statistical Manual of mental disorders-IV criteria. Based on the instrument, if the participant responded “yes” to one of the six questions, they were considered as a risk for suicidal behavior.<sup>24</sup>

Substance use: Current and ever substance uses were considered when participants had use of at least one of the specified substances in the last 3 months and use of at least one of the specified substances in a lifetime, respectively, by using the adopted alcohol, smoking, and substance involvement screening test (ASSIST).<sup>31</sup>

Perceived relative wealth: This was assessed by simply asking the participants what they perceived about their

wealth to be in relation to other people in the neighborhood (poor, average, or well-off) and participants were asked to level their own income by comparing with others as less than others; similar to others and better than others. Following previously published work,<sup>32,33</sup> we applied the method of principal component analysis to these variables.

## Data Quality Control

The questionnaire was prepared in English and then translated into Amharic for data collection and re-translated back into English by language experts. Two days training was provided to the data collectors and supervisors on the data collection tools and the data collection procedures. After that, the questionnaire was pre-tested on 5% of the sample size out of the study area to ensure its validity. Data collectors were closely supervised by the supervisors and the principal investigator. Completeness of each questionnaire was checked on a daily basis. Double data entry was done by two data clerks and consistency of the entered data were cross-checked by comparing the two separately entered data.

## Data Processing and Analysis

The collected data were checked for its completeness and cleaned before entry into the computer. Then, data were coded, cleaned, edited, and entered into EpiData version 3.1 and exported to SPSS window version 22 for analysis. Descriptive statistics were presented in frequency, tables, texts, and summary measures.

Bivariate and multivariate analysis were done to see the association between each independent variable and outcome variable by using binary logistic regression. The assumption for binary logistic regression were checked. The goodness of fit was checked by Hosmer-Lemeshow statistic at a  $P$ -value of greater than 0.05. All variables with  $P < 0.25$  in the bivariate analysis were included in the final model of multivariate analysis in order to control all possible confounders.<sup>34</sup> The direction and statistical association were measured by odds ratio with 95% CI. Adjusted odds ratio along with 95% CI was estimated to identify the associated factors with work-related stress by using multivariate analysis in binary logistic regression. In this study, a  $P$ -value  $< 0.05$  was considered as statistically significant.

## Ethical Approval and Consent to Participate

Ethical approval was obtained from the Institutional Health Research Ethics Review Committee (IRB) of

Bahir Dar University, and ethical clearance was granted. In addition, a supporting letter was written to Bahir Dar textile share company. The objective and purpose of the study were verified briefly to the study participants and confidentiality was assured. Finally, written informed consent was obtained from the study participants before conducting the interview. This study was conducted in accordance with the Declaration of Helsinki.

## Results

### Socio-Demographic Characteristics

The response rate was 95.3% (403/423) and, of the 403 respondents, 220 (54.6%) were male. The majority of the participants (83.4%) were Orthodox Christians, and 45.7% of the respondents were married (see Table 1).

**Table 1** Socio-Demographic Characteristics of Respondents in Bahir Dar Textile Factory, Ethiopia, 2019 (n=403)

Variables	Category	Frequency	Percent (%)
Sex	Male	220	54.6
	Female	183	45.4
Age	18–24	117	29
	25–34	184	45.7
	35–44	48	11.9
	≤45	54	13.4
Marital status	Currently unmarried	219	54.3
	Currently married	184	45.7
Educational status	Primary	23	5.7
	Secondary	69	17.1
	Diploma	202	50.1
	Degree and above	109	27.1
Religion	Orthodox	336	83.4
	Muslim	36	8.9
	Protestant	31	7.7
Relative wealth	Low	282	70
	Medium	89	22.1
	High	32	7.9
Current living condition	With family	211	52.4
	Alone	192	47.6
Type of employment	Temporary	174	43.2
	Permanent	229	56.8

### Substance Use, Suicidal Behavior, Psychosocial and Clinical Characteristics

Of the respondents, 178 (44.2%) had a history of any substance use at least once in their lifetime, while 117 (29.0%) were current substance users. Regarding social support, 251 (62.3%), 98 (24.3%), and 54 (13.4%) of the participants had poor, moderate, and strong support, respectively. The prevalence of suicidal behavior was 60 (14.9%) among the total participants and, of these, 23 (38.3%) had attempted, 41 (68.3%) had a suicidal plan, and 46 (76.7%) had suicidal ideation. One hundred and fifty-four (38.2%) participants had reported having chronic medical illnesses such as hypertension (n=87), tuberculosis (n=32), cardiac illness (n=9), diabetes mellitus (n=21), and kidney disease (n=5).

### Organizational and Job-Related Characteristics

There were different work-related problems at the workplace and from the total 77 (19.1%) had reported injury at the workplace, 221 (54.8%) had reported uncomfortable working environment, and 161 (40%) had reported workplace violence (see Table 2).

### Prevalence of Work-Related Stress

The overall prevalence of work-related stress was 45.2% (95% CI=40.0–50.1%) among textile factory workers. From all the participants who had work-related stress, 46.2% of them had reported workplace violence, while 48.9% of them were current substance users.

### Associated Factors of Work-Related Stress Bivariate and Multivariate Analysis

Table 3 summarizes the results of bivariate and multivariable analyses for associations with work-related stress. In bivariate analysis, the factors that showed a significant association with work-related stress were perceived social support, workplace violence, shift-work, satisfaction with salary, overtime working hours per month, current substance use, injury at workplace, and organizational support (See Table 3).

Finally, after multivariate analysis of work-related stress in relation to all independent variables, rotating shift-work, poor and moderate social support, and current substance use (khat, tobacco, alcohol, and caffeinated beverage like coffee) were found to be statistically significant.

The odds of work-related stress was 2-fold among rotating shift workers as compared to their counterparts (AOR=2.33, 95% CI=1.34–4.03). Current substance use

**Table 2** Organizational and Job-Related Characteristics of Respondents in Bahir Dar Textile Factory, Ethiopia, 2019 (n=403)

Variables	Category	Frequency	Percent
Organizational support	Good	293	72.5
	Poor	110	27.3
Working environment	Comfortable	182	45.2
	Uncomfortable	221	54.8
Working hours per week	≤48 hours	74	18.4
	>48 hours	329	81.6
Salary offered	Satisfied	290	72
	Unsatisfied	113	28
Overtime working hours per month	≤ 20 hours	192	47.6
	>20 hours	211	52.4
Injury at workplace	No	326	80.9
	Yes	77	19.1
Resources	Enough	252	62.5
	Scarce	151	37.5
Workplace violence	No	242	60
	Yes	161	40
Shift-work	No (fixed)	314	77.9
	Yes (rotation)	89	22.1
Conflict at workplace	No	323	80.1
	Yes	80	19.9
Time pressure	Low	209	51.9
	High	194	48.1
Job security	Poor	221	54.8
	Good	182	45.2
Job demands attention	Low	307	76.2
	High	96	23.8
Safety and health training	No	375	93.1
	Yes	28	6.9
Work experience	≤5 years	318	78.9
	>5 years	85	21.1

(alcohol, khat, cigarette, and caffeinated beverages) was a risk to develop work-related stress as compared with non-users (AOR=5.67, 95% CI=3.38–9.52). Poor social support (AOR=3.75, 95% CI=1.71–8.21), and moderate social support (AOR=3.26, 95% CI=1.39–7.64) were higher risk factors for work-related stress than good social support.

## Discussion

In this study, the overall prevalence of work-related stress was 45.2% (95% CI=40.0–50.1). The current study is

consistent with previous studies done in West Sussex (43%),<sup>35</sup> Dukem, Ethiopia among shoe manufacturing employees (40.4%),<sup>19</sup> Bahir Dar, Ethiopia among health-care professionals working in public health care facilities (48.6%),<sup>20</sup> and Mekelle, Ethiopia (46.9%).<sup>21</sup> However, it was found to be higher than those studies conducted in the Congo (28%),<sup>18</sup> India (25%),<sup>15</sup> Thailand (27.5%),<sup>16</sup> Iran (21.3%),<sup>17</sup> and Bangalore city (26%).<sup>36</sup> The current finding was lower than a study conducted in Iran among Nurses (68%).<sup>37</sup>

The reason for this discrepancy might be explained by differences in the sample size, the study setting, the tools used, and the study populations. Moreover, the variation might be socio-economic status, organized safety precaution training, and access to a health facility in developed countries is better compared to in developing countries.<sup>38</sup>

The current study showed that work-related stress was associated with substance use and supported by similar studies on alcohol use<sup>39–41</sup> and smoking cigarettes<sup>42,43</sup> were found to be risk factors for work-related stress. It might be the fact that alcohol use has a strong association with mental distress and common mental disorders such as depressive symptoms and stress among factory workers.<sup>44</sup> The other reason could be the direct effect of substances on the brain and the psychosocial effect of substance on individuals with work-related stress. In addition, unmatched work performance and related rewards can create unintended negative consequences in which these unintended consequences are particularly important to start substance use as coping with work-related stress.<sup>45</sup>

This study also revealed that poor and moderate social support were significantly associated with work-related stress, which is supported by other previous studies conducted in Thailand<sup>16</sup> and Belgium.<sup>46</sup> Organizational support and close supervisory support have a significant contribution for employees psychological wellbeing in the workplace and are related to job stress.<sup>47</sup> This could be explained by the fact that poor social support is a determinant factor of psychopathology like stress and have negative impacts on the employees quality-of-life.<sup>48–50</sup>

Rotating shift work was associated with work-related stress with the odds of two times and which is supported by studies done in different countries such as Bangladesh,<sup>51</sup> India,<sup>52</sup> USA,<sup>53</sup> Taiwan,<sup>54</sup> and Ghana<sup>55</sup> which have indicated that employees who worked rotating shifts were more stressed than employees who worked fixed shifts. Shift working has a higher stress level than fixed time workers,<sup>56</sup> and this might be due to the fact that



**Table 3** Factors Associated with Work-Related Stress Among Textile Factory Workers in Bahir Dar Textile Factory, Ethiopia, 2019 (n=403)

Variables	Category	Work-Related Stress		COR (95% CI)	AOR (95% CI)
		Yes	No		
Workplace violence	No	98	144	1.00	1.00
	Yes	84	77	1.60 (1.07–2.39)	1.58 (0.99–2.51)
Shift-work	No (fixed)	133	181	1.00	1.00
	Yes (rotation)	49	40	1.67 (1.04–2.68)	2.33 (1.34–4.03)**
Salary offered	Unsatisfied	39	74	0.54 (0.35–0.85)	0.67 (0.40–1.12)
	Satisfied	143	147	1.00	1.00
Overtime working hours per months	≤ 20 hours	74	118	1.00	1.00
	>20 hours	108	103	1.67 (1.13–2.49)	1.52 (0.97–2.38)
Organizational support	Poor	59	51	1.60 (1.03–2.59)	1.57 (0.95–2.59)
	Good	123	170	1.00	1.00
Injury at workplace	No	153	173	1.00	1.00
	Yes	29	48	0.68 (0.41–1.14)	1.21 (0.68–2.15)
Current substance use	No	93	193	1.00	1.00
	Yes	89	28	6.60 (4.04–10.78)	5.67 (3.38–9.52)***
Social support	Low	122	129	4.13 (2.04–8.38)	3.75 (1.71–8.21)***
	Moderate	56	42	2.93 (1.35–6.36)	3.26 (1.39–7.64)**
	High	43	11	1.00	1.00

Notes: 1.00 = Reference, \*\*P-value less than 0.01 and \*\*\*P-value less than 0.001.

rotating shift work affects the normal human circadian rhythm and can lead to numerous psychological and physiological problems.<sup>57</sup>

## Limitation and Strength of the Study

Though this study tried to assess work-related stress, which was not previously studied in this particular working environment, and use a validated and standardized tool to assess variables. One of the limitations of the study was that the nature of the study design could not establish a clear temporal relationship between significantly associated factors and work-related stress.

## Conclusion

It has found that a substantial proportion of employees in a textile factory (45.2%) were suffering from work-related stress. Working on shift-work, substance use, and perceived social support were factors significantly associated with work-related stress. Interventions that focuses on reducing work-related stress due to shift work should be considered. Improving the social support status and preventing substance

use among employees is important to reduce work-related stress.

## Abbreviations

AOR, adjusted odd ratio; CI, confidence interval; JCQ, job content questionnaire; OSSS, Oslo social support scale; NIOSH, National Institute for Occupational Safety and Health; WHO, World Health Organization; WMH, World Mental Health; WPSS, workplace stress scale; WRS, work-related stress.

## Data Sharing Statement

The datasets used and analyzed in the current study are included within the article.

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## Author Contributions

HB, TE, TA, SB, and TB were involved in the conception and design of the study, acquisition of data, analysis and interpretation of data, drafting and revising the article, agreed to submit to the current journal, gave final approval of the version to be published, and agree to be accountable for all aspects of the work.

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## Disclosure

The authors declare that they have no competing interests.

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