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Perceived Stress and Associated Factors among Adults residing in a Rural Community of Nepal: A Community-based Study

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ABSTRACT

Introduction

Stress contribute to disorganized working capacity of adult's life that leads to various comorbidity. The burden like stress-related common mental disorders are on the rise in Nepal. The aim of the study was to estimate stress level and its associated factors among adults.

Methods

A community based, cross-sectional survey was done among 600 adults aged >18 years, residing in Prasauni Rural Municipality, Nepal. Respondents were interviewed in local language using WHO STEPs questionnaire and prevalence of stress was determined by using perceived stress scale. The data was analyzed using IBM SPSS version 20. Odds ratio was calculated to identify the independent predictors of the outcome variable.

Results

Almost equal portion of the participants were male (47.7%) and female (52.3%). Most of the respondents were of age less than 35 years. Regarding the level of stress, 508 (85.2%) respondents were having low level and 88(14.8%) respondents were having moderate level of stress. Respondents' age was associated with perceived stress level ($p<0.05$). Poor sleep quality tends to increase stress 4 times more (OR 4.04, CI 2.257-7.25). Although not significant, tobacco use, physical inactivity, tobacco and alcohol use, and increased blood pressure had higher odds for stress level.

Conclusion

Stress symptoms were prevalent in low to moderate level among adults of rural community in Nepal. Poor sleep quality was a significant predictor of increase stress level. Further exploratory investigations are needed.

Keywords

Adults; mental health; rural community; stress

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INTRODUCTION

Stress is deeply personal experience and a significant factor for overall health.[1] Previous studies reported approximately 12.1% people in community experience stress. Several factors increase the risk of stress including being female, working in agriculture, having poor economic status, having poor health, and smoking. These findings highlight the need for community-based program that offer mental health screening, and promoting mental wellbeing by addressing both risk and protective factors.[2]

Nepal is experiencing an epidemiologic transition from infectious disease to non-communicable diseases (NCDs).[3] Stress is a significant contributor of mental health and NCDs. In fact, high stress levels can increase the likelihood of high blood pressure by 2.52 times.[4-6] The rise in hypertension among adults in low- and middle-income countries is due anxiety and stress.[7,8] further about 20% of patients with NCDs experience stress which can negatively impact their adherence to medication.[9] Low educational status, inadequate social support,[10] unemployment, increasing age, and chronic medical problems are primary contributors of psychological stress among Asian populations.[11] Thus, if population are screened earlier, chronic problems can be prevented later on. For this, we need population based data on distribution of stress and its associated factors. This study intended to assess the prevalence of stress and to measure associated factors among rural community people of Nepal.

METHODS

Design of the study was cross-sectional. All male and female, greater than 18 years of age and were came in contact at the period of data collection were the study population. Prasauni Rural Municipality of Bara district of Nepal was the study setting. This setting was selected because this was one of the rural community of the plain region of Nepal. We used $n=z^2pq/l^2$ formula to calculate the sample size. With prevalence 50% (as unbiased estimator) and absolute error 4%, at 95%confidence interval, estimated sample size for this study was 600. Population proportionate to size technique was employed to enroll the sample from all seven wards of the study settings. Ethical approval was taken from Ethical Review Board of Nepal Health Research Council (Reference number: 381). Formal permission for data collection was obtained from the Prasauni Rural Municipality Office. Written informed consent was taken from the study participants prior to interview. Respondents were interviewed by trained nurses and health assistants in Nepali and Bhojpuri languages. Data were collected from August 23, 2021 to January 23, 2022, using an in-person interview technique.

The Perceived Stress Scale (PSS), developed by Cohen et al. (1988) was tool for data collection. This scale assess the degree of stress perceived by people in their lives. The feeling of being unpredictable, uncontrollable, and overloaded in the previous month was measured by total ten questions ranging from frequency of never to very often (five-point rating scale). The scores of the scale ranged from 0 to 40 with higher scores indicating higher the stress. The scores ranging from 0-13 were considered low stress, 14-26 scores were considered moderate stress and 27-40 scores were considered high stress.[12] Information on age, sex, education, ethnicity, marital status, occupation, persons in family, tobacco use, alcohol use and physical activity, was obtained using WHO STEPs questionnaire. People who consumed either smoking or chewing tobacco product at least once in the past 30 days were considered as tobacco users. Alcohol users were considered as people who consumed any alcoholic beverages at least once in the past 30 days. Physical activity was measured by assessing use of bicycle for transportation, work related or exercise related vigorous and moderate-intensity activities. To measure sleep quality, Pittsburg's sleep quality index was used. We analyzed data using Statistical Package for Social Sciences version 20. Chi-square test was used to assess variables associated with the stress and also their odds ratio was calculated.

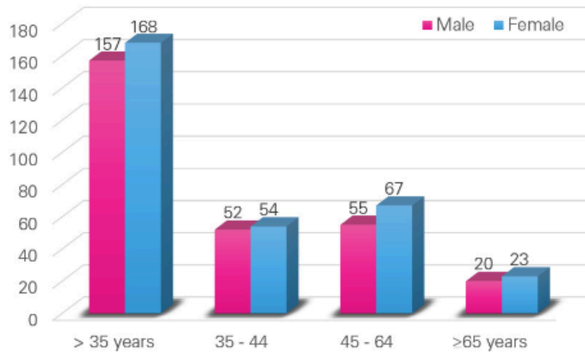
RESULTS

A total of 600 respondents were surveyed, four were excluded from analysis due to incomplete data. There was no sex difference of the respondents and most of them were of age less than 35 years

Among the respondents, 33.7% were employed, 27.2% were current tobacco users, 38.6% were passive smokers. Out of 160 alcohol users of last year, 120 (75.0%) were current alcohol takers. 53.5% respondents were taking vegetables and 79.5% were eating vegetables daily. They involved in vigorous intensity (62.0%) and moderate intensity (77.9%) physical activities. (table 1)

Regarding respondents' response on perceived stress scale, 231 (38.8%) of the respondents answered "Never" upset because of something that happened unexpectedly. A significant portion of the respondents 224 (37.6%) felt they could not control the crucial things in their lives. In comparison, a smaller proportion 65 (10.9%) felt confident about their ability to handle their problems. Most of the respondents 252 (42.3%) felt that they could not cope with everything they had to do and that difficulties were piling up. (table 2)

As presented in the figure 2, the proportion of



respondents' meeting criteria for low stress level (score between 0-13) were 508 (85.2%), moderate stress level (14-26) was 88 (14.8%) and none of the respondents had severe level of stress.

Respondents' age ($p<0.05$) was associated with perceived stress level. Sleep quality was associated with stress of the respondents. Poor sleep quality tends to increase stress 4 times more (OR 4.04, CI 2.257-7.25). Although not significant statistically tobacco use, not performing physical activities, tobacco and alcohol use, and having high blood pressure have higher odds for increasing stress level. (Table 3)

DISCUSSION

A total of 600 respondents were surveyed, four were excluded from analysis due to incomplete data. There was no sex difference of the respondents and most of them were of age less than 35 years. Similarly, 29% were alcohol users, and 27.2% were tobacco users. This study has given insight on stress perception among rural community dwellers. Overall, it was observed that most of respondents 85.2% were having low stress level, very few 14.8% were having moderate stress level and no respondents had severe stress level. We used self-report method data collection which might be affected the stress prevalence reporting. However, this outcome is in line with Bhelkar[6] who claimed that 13.2% of adults were having moderate level of

Table 1. *Respondents' Behaviour related Information (n = 596)*

Variables	No.	%
Employment Status		
Employed	201	33.7
Unemployed	395	66.3
Current tobacco users	162	27.2
Second hand smoking	230	38.6
Current alcohol users (n=160)	120	75.0
Eating vegetables daily (n=546)	319	53.5
Eating fruits daily (n=519)	474	79.5
Vigorous intensity activity	359	60.2
Moderate intensity activity	464	77.9
Blood Pressure		
Normal (≤130/85)	515	86.4
Raised (>130/85)	81	13.6

Table 2. *Respondents' perception of stress (n= 596)*

Statements	No. (%)				
	1	2	3	4	5
Upset as something happened unexpectedly	231(38.8)	161(27.0)	194(32.6)	9 (1.5)	1 (0.2)
Unable to control the important things of life	144(24.2)	202 (33.9)	224 (37.6)	25 (4.2)	1 (0.2)
Felt nervous and stressed	131(22)	214 (35.9)	192 (32.2)	59 (9.9)	0
Felt confident and able to handle personal problems	65(10.9)	202 (33.9)	223 (37.4)	91 (15.3)	15 (2.5)
Felt that things are going my way	73(12.2)	191 (32)	209 (35.1)	89 (14.9)	34 (5.7)
Felt couldn't cope with all the things that I had to do	79(13.2)	173 (29)	252 (42.3)	82 (13.8)	10 (1.7)
Been able to control irritations in life	62(10.4)	147 (24.7)	252 (42.3)	96 (16.1)	39 (6.5)
Felt that I was on top of things	80(13.4)	173 (29)	207 (34.7)	110 (18.5)	26 (4.4)
Angry because things were outside of control	76(12.8)	204 (34.2)	211 (35.4)	92 (15.4)	13 (2.2)
Due to piling up difficulties I cannot overcome them	81(13.6)	236 (39.6)	222 (37.2)	45 (7.6)	12 (2)

Table 3. Factors Associated with Perceived Stress (n =596)

Variables	Stress level low No. (%)	Stress level moderate No. (%)	χ^2	P	OR	CI
Hypertension						
Yes	68 (84.0)	13 (16.0)	.123	.726	1.102	.642-1.89
No	440 (85.4)	75 (14.5)			ref	
Sex						
Male	247 (87.0)	37 (13.0)	1.301	.254	ref	
Female	261 (83.7)	51 (16.3)			1.304	.825- 2.06
Sleep Quality (n=564)						
Good	443 (88.8)	56 (11.2)	24.700	<.001	ref	
Poor	43 (66.2)	22 (33.8)			4.047	2.257-7.25
Age						
<35	288 (88.6)	37 (11.4)	8.603	.035		
35-44	90 (84.9)	16 (15.1)				
45-64	97 (79.5)	25 (20.5)				
≥65	33 (76.7)	10 (23.3)				
Current tobacco use						
Yes	132 (81.5)	30 (18.5)	2.490	.115	1.386	.927 – 2.07
No	376 (86.6)	58 (13.4)			ref	
Current Alcohol use						
Yes	97 (80.8)	23 (19.2)	2.313	.149	1.404	.912-2.16
No	411 (86.3)	65 (13.7)			ref	
Second Hand smoking						
Yes	190 (86.2)	40 (13.8)	2.053	.157	1.326	.902-1.950
No	318 (86.9)	48 (13.1)			ref	
Vigorous intensity activities						
Yes	303 (84.4)	56 (15.6)	.499	.480	ref	
No	205 (86.5)	32 (13.5)			1.155	.773 – 1.72
Moderate intensity activities						
Yes	394 (84.9)	70 (15.1)	.172	.679	ref	
No	114 (86.4)	18 (13.6)			1.106	.684- 1.78
Daily Vegetable consumption (n=546)						
Yes	200 (88.1)	25 (11.9)	2.971	.085	ref	
No	264 (82.8)	55 (17.2)			1.543	.940 – 2.53
Daily Fruit consumption (n=519)						
Yes	37 (82.2)	8 (17.8)	.441	.507	ref	
No	407 (85.9)	67 (14.10			1.258	.646 – 2.44

stress. Previous research has different prevalence ratio of stress in community settings. In Indian rural community, prevalence of stress was varied from 5% [13] to 21.1%.[14]

Prevalence of stress in our study setting was higher when compared with the study findings of another setting in Nepal,[15] where 0.3% population had severe psychological distress, 1.5% had mild to moderate psychological distress and 98.2% had no psychological distress. However, the prevalence of stress was 26% among women of Gujarat, India which is higher when compared with our estimates.[16] These variations could be because of variations in setting as the present study was done in rural community where sufficient educational opportunities and livelihood opportunities as well as good availability and accessibility of health care facilities is limited. In Ethiopia, the prevalence of perceived stress was 76.1%, [17] which is remarkably

higher than our study. Likewise, the prevalence of psychological distress was higher in study conducted in rural community of Bangladesh,[11] where 9.0% had severe psychological distress, 20.8% moderate and 22.7% had mild psychological distress. Study populations, settings and differences in measurements of those research might be attributable to variance in the prevalence of stress.

In current study, the age of respondents and low level of education was significantly associated with stress level and this finding is in line with previous studies conducted in Nepalese setting [15] where peoples' age has been correlated with psychological distress. Another study reported increasing age and poor level of education significantly contribute to increase stress level.[17] In our study, respondents' sex, alcohol and tobacco use, involved in moderate to vigorous intensity physical activities was not significantly associate with their stress level. In addition to our study, Patel and his friends, [16] reported not significant association between perceived stress level and respondents' sociodemographic variables. However, contrast to these findings, Tadese et al.[17] demonstrated significant association of stress level with large family size, alcohol consumption, smoking and number of traumatic events. Similarly, a study of Sweden also contradicts our findings and claimed that persons with low and medium educational level had a lower risk of psychological distress than persons with high educational level. [18] Differences in result might be country context situation, opportunities and level of job satisfaction, which might effect on mental health of the people.

In this study, sleep quality was associated with stress of the respondents. Poor sleep quality tends to increase stress 4 times more (OR 4.04, CI 2.257-7.25). In line to our finding, Sahfi et al.[19] reported stress as a significant predictor of poor sleep quality. Abdullah et al. [20] is also in line with this report with demonstrating a strong association between stress and poor sleep quality. Although, not significant not performing physical activities, and having high blood pressure had higher odds for increasing stress level. Previous study also reported decreased exercise and physical activity is associated with stress which increase blood pressure.[21] We took in-person interview for data collection, therefore, there might be chances of having socially desirable answers especially in the questions of smoking and alcohol consuming behaviors. At the same time there might be the chances of recall bias, these all limits this study.

CONCLUSION

This study concludes that most of the people residing in studied rural municipality perceive mild stress level and a noticeable portion of the population perceive moderate stress level. Factors including age and low educational status tends to associate with level of perceived stress while poor sleep quality is a significant predictor of increase stress level. Tobacco use, physical inactivity, tobacco and alcohol consumption and increase blood pressure tends to increase stress level but not significant statistically. There is need of community screening for identification of stress, mental health and their risk behavior. Prospective research in future to predict risk of stress is recommended.

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CONFLICT OF INTEREST

The author(s) declare that they do not have any conflicts of interest with respect to the research, authorship, and/or publication of this article.

AUTHOR CONTRIBUTIONS

The first author conceived the study, developed methodology, supervised all project, managed data and develop report. The second author reviewed literature, translated instrument in local language and collected data. The third author entered the data for analysis and made primary data analysis. The first draft of the manuscript was written by the second author, and the first author finalized the manuscript. All authors commented on previous versions of the manuscript. All authors read and approved the final manuscript.

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