

# Depression and its Associated Factors among Faculties of Academic Institutions

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## ABSTRACT

**Background:** Depression is one of the common mental disorders occurring frequently in the community. The study aimed to find out the prevalence and correlates of depression among faculties of academic institutions in Pokhara Metropolitan, Kaski, Nepal.

**Methods:** A cross-sectional study was conducted among 416 faculties selected from six academic institutions of Pokhara Metropolitan. A self-administered structured questionnaire method was applied to assess depression and explanatory variables among respondents. Beck Depression Inventory (BDI) was used to measure depression. The BDI score was classified into normal, mild, moderate and severe depression using the standard classification; and the depression levels were dichotomized into “absent” and “present”. Descriptive statistics, bivariate analysis and multivariate logistic regression analysis were computed. Level of significance was set at 5%.

**Results:** Of the total, 21.6% of respondents had depression including 6.7% moderate and 2.9% severe type depression. The likelihood of reporting depression was significantly higher among those who had physical health problems (AOR, 2.88; 95% CI, 1.16-7.13), consumed vegetables less than 2 times a day (AOR, 2.34; 95% CI, 1.07-5.08), had limited access to teaching aids in workplace (AOR, 2.00; 95% CI 1.19-3.33), had higher job stress and higher COVID-19 fear. Depression did not differ by the socio-demographic characteristics of the respondents and type of institution.

**Conclusions:** Improving physical health conditions, promoting vegetable consumption, ensuring access to basic facilities, and creating an enabling environment at workplace may help to address depression among faculties. Regular screening programs may help for timely identification and management of the cases.

**Keywords:** Academic institutions; depression, faculties; job stress

## INTRODUCTION

Depression is a common mental disorder; it is estimated that 5% adults globally suffer from it.<sup>1</sup> Depression is one important mental health condition and one of the major contributors to public ill health in Nepal.<sup>2</sup> Findings from the pilot study by Nepal Health Research Council found that prevalence of mental disorders among adults was 13.2%; and another study stated that 16.8% of adult attending primary health care had depression.<sup>3-4</sup>

Teaching is one of the most stressful jobs.<sup>5</sup> Very few studies were found on depression among faculties working in academic institution. Depression is linked to social, biological behavioral, environmental and physical health condition.<sup>1</sup> It is essential to generate evidence on the burden and factors associated with

depression to inform the concerned authority to initiate preventive interventions. Therefore, the study aimed to assess the prevalence and correlates of depression among faculties working in academic institutions in Pokhara Metropolitan, Kaski, Gandaki Province.

## METHODS

A cross-sectional study was conducted among faculties of higher academic institutions in Pokhara Metropolitan of Gandaki Province. The study included three public and three private/community academic institutions of the metropolitan. Fulltime faculties who had been involved in teaching profession since at least one year were the study population. The study was conducted from 22 July 2021 to 30 June 2022. The sample size was calculated by using the formula recommended for the

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prevalence study,<sup>6</sup> where Z is the value of confidence interval at 95% ( $Z = 1.96$ ;  $P = \text{prevalence}$  ( $p=0.50$ ) (50% was taken due to lack of previous study in the target population); and  $d=\text{permissible error} = 0.05$ . Therefore, the calculated sample size was 384; it became 422 with the non-response rate of 10%. A total of 416 samples were included in the study after excluding incomplete samples.

For the study, three public academic institutions and three private/community institutions situated in Pokhara Metropolitan were selected conveniently. Among the six institutions, one was University, one was public campus, one was nursing campus, one was community college, and two were medical colleges. List of the faculties was prepared in all selected institutions. The required number of faculties from each institution was determined proportionately based on the required sample size, total number of faculties in six institutions and number of faculties in each institution. Respondents from each institution were selected randomly from the list of each institution. When the selected faculty could not be contacted for consecutive two visits or were found on long leave, the next faculty was selected conveniently as respondent from the same institution. Some faculties were found working in two institutions as different shift faculties; those repeated faculties were excluded in the list of second institution and replaced by others.

A self-administered questionnaire method was applied to assess depression and independent variables. Beck Depression Inventory (BDI) is one of the most widely used measure in both research and clinical practice for assessing depression.<sup>7</sup> The Nepali version of BDI has been proven as good instrument in Nepal.<sup>8</sup> BDI was used to assess the level of depression. BDI has 21 items, each is rated on the 4-point scale, ranging from 0 to 3. Total score can range from 0 to 63, with higher scores indicating more depression.<sup>7-9</sup> BDI score was categorized according to the previously used standards.<sup>10</sup> The BDI score was classified into normal (0-13), mild (14-19), moderate (20-28) and severe (29-63) depression as per the standard. For analysis, depression levels were dichotomized into absent and present, present including all types of depression.

Socio-demographic, behavioral and work-related factors were also assessed using standard questions from previous studies.<sup>11-14</sup> Behavioral factors included current smoking, current drinking, fruit consumption, vegetable consumption, physical activity, and involvement in household work. Institution type, years of work experience, availability of teaching

aids, availability of the internet, job stress were occupational related factors. Job stress was measured by 9 item scale with 4 items are related to time stress and 5 items related to anxiety stress.<sup>13,14</sup> The scale is a component of new job stress scale developed by Shukla and Srivastava (2016); the minimum score for each question was 1, and the maximum was 5; the greater the score greater the stress.<sup>14</sup> Fear of COVID-19 was measured using 7 item fear scale. The minimum score possible for each question is 1, and the maximum is 5; a total score ranged from 7 to 35. The higher the score means the greater the fear of COVID-19.<sup>15</sup> The tool is a valid and widely used tool to measure the COVID-19 fear. Similarly, if they had any chronic health problem that required long term medication was asked to measure chronic health problem and if they had been suffering from any health problems since last one week was asked for measurement of current physical health problem in the study.

The tool was developed in English language except BDI scale which was prepared in both English and Nepali Language simultaneously for each option. The structured questionnaire was pretested in the similar population of two non-sampled institutions and minor modifications were done to the questionnaire, especially in the sequence and wording of the questions. Orientation was provided to the enumerators who were Bachelor of Public Health final year students on objectives of the study, study population, sampling method, contents of the tool, pretesting, informed consent and information collection. The enumerators visited the institutions; they met the selected faculties and provided the questionnaires to them with a request to provide their information in the written form. The filled questionnaire was collected on the same day or on the following days. All the faculties also were assured about the confidentiality of the information provided.

Excel was used for data entry; Statistical Package for the Social Sciences version 21.0 was used for data analysis. Descriptive statistics were computed. Chi-square test was applied to measure the association between independent variables and depression and binary logistic regression analysis was computed to find out factors associated with depression. The factors that were significant in bivariate analysis were selected for multivariate analysis except for age and sex; job stress and COVID-19 fear were adjusted in each model as a continuous variable. Model fitness was checked by using Hosmer and Lemeshow Test; the model was fit with the variables entered. Nagelkerke R Square was computed. The significance level of the P value was set at 0.05 for

all analysis.

Ethical approval was taken from Nepal Health Research Council (NHRC) (Reference No. 94; Registration No. 429/2021P). Permission letters were taken from all institutions. Written informed consent was taken from the respondents.

## RESULTS

Among the total study population, 75.5% were males; 50.2% of the respondents were in the age group of 25 to 40 years. Of the total, 57.9% of respondents were from public institutions and 54.1% had more than 10 years of work experience. Similarly, 65.6% had lived in nuclear family and 38.2% respondents had their average monthly family income less than one hundred thousand rupees (Table 1).

**Table 1. Characteristics of the study population (n=416).**

Variables	Options	Number	Percent
Sex	Male	314	75.5
	Female	102	24.5
Age group (in years)	25-40	209	50.2
	≥41	207	49.8
Marital status	Married	391	94.0
	Others	25	6.0
Organization type	Public	241	57.9
	Private	175	42.1
Education	Master	340	81.7
	M Phil/PhD	76	18.3
Family type	Nuclear	273	65.6
	Others	143	34.4
Average monthly family income (Rs.)	< 100 thousands	159	38.2
	100 to 150 thousands	116	27.9
	> 150 thousands	141	33.9
Work experience (in years)	One to five	85	20.4
	Six to ten	106	25.5
	> Ten	225	54.1

Of the total respondents, about one-fifth (21.6%) respondents had depression including 12.0% mild, 6.7% moderate and 2.9% severe depression (Table 2).

**Table 2. Prevalence of depression among faculties.**

Variables	Options	Number	Percent
BDI -II classification (BDI Score)	0 to 13 (normal)	326	78.4
	14-19 (mild)	50	12.0
	20-28 (moderate)	28	6.7
	≥29 (severe)	12	2.9
Depression	Present (≥14)	90	21.6
	Absent (0-13)	326	78.4

Table 3 shows the relationship between socio-demographic characteristics and depression. None of the variables were found significantly associated with depression in the study.

**Table 3. Association of socio-demographic characteristics with depression among faculties.**

Variables	Depression		χ value	p value
	Absent	Present		
<b>Sex</b>				
Male	249 (79.3)	65 (20.7)	0.659	0.417
Female	77 (75.5)	25 (24.5)		
<b>Age (in years)</b>				
25- 40	165 (78.9)	44 (21.1)	0.084	0.772
>40	161 (77.8)	46 (22.2)		
<b>Family type</b>				
Nuclear	211 (77.3)	62 (22.7)	0.542	0.461
Others	115 (80.4)	28 (19.6)		
<b>Organization type</b>				
Public	190 (78.8)	51 (21.2)	0.076	0.783
Private	136 (77.7)	39 (22.3)		
<b>Education</b>				
Master	272 (80.0)	68 (20.0)	2.933	0.087
M.phil & Ph.D	54 (71.1)	22 (28.9)		
<b>Work experience (in years)</b>				
One to five	70 (82.4)	15 (17.6)	2.063	0.356
Six to ten	85 (80.2)	21 (19.8)		
> Ten	171 (76.0)	54 (24.0)		
<b>Average monthly family income (Rs.)</b>				
Less than 100 thousands	122 (76.7)	37 (23.3)	3.830	0.147
Hundred to 150 thousands	86 (74.1)	30 (25.9)		
More than 150 thousands	118 (83.7)	23 (16.3)		
<b>Marital status</b>				
Married	306 (78.3)	85 (21.7)	0.042	0.838
Unmarried	20 (80.0)	5(20.0)		

Table 4 shows the relationship of having current and chronic physical health problem and depression among faculties. Proportion of having depression significantly differed on the basis of having physical health problem in last week or not.

Table 5 describes the association of behavioral and environmental factors with depression. Frequency of vegetable consumption in a week and access to teaching aids at workplace were significantly associated with depression among faculties in the chi-square analysis. Fruits intake, smoking in last one month, alcohol intake was significant factors with depression among faculties in the study.

**Table 4. Association of physical health problem and depression among faculties**

Variables	Depression		$\chi$ value	P value
	Absent	Present		
<b>Having chronic health problem</b>				
Present	77 (72.0)	30 (28.0)	3.483	0.062
Absent	249 (80.6)	60 (19.4)		
<b>Having health problem in last week</b>				
Yes	15 (60.0)	10 (40.0)	5.292	0.021
No	311 (79.5)	80 (20.5)		

**Table 5. Association of behavioral and environmental factors with depression among faculties**

Variables	Depression		$\chi$ value	p value
	Absent	Present		
<b>Vegetable intake in last week</b>				
< 2 times a day	29 (60.4)	19 (39.6)	10.776	0.005
2 times a day	181 (81.9)	40 (18.1)		
$\geq$ 3 times a day	116 (78.9)	31 (21.1)		
<b>Fruit intake</b>				
< 1 time a day	39 (79.6)	10 (20.4)	0.728	0.695
1 time a day	198 (77.0)	59 (23.0)		
$\geq$ 2 times a day	89 (80.9)	21 (19.1)		
<b>Alcohol in last one month</b>				
Yes	179 (79.6)	46 (20.4)	0.524	0.770
No	81 (77.9)	23 (22.1)		
<b>Smoking use in last month</b>				
Never				
1 to 2 time	24 (68.6)	11 (31.4)	2.16	0.141
$\geq$ 3 times	302 (79.3)	79 (20.7)		
<b>60 minutes PA per week</b>				

0 to 4 days	152 (75.6)	49 (24.4)	1.727	0.189
5 to 7 days	174 (80.9)	41 (19.1)		

**Access to Internet at workplace**

Yes	249 (80.3)	61 (19.7)	2.749	0.097
No	77 (72.6)	29(27.4)		

**Access to teaching aids at workplace**

Always/most of the time	211 (82.4)	45 (17.6)	6.460	0.011
Sometimes/rarely/never	115 (71.9)	45 (28.1)		

**Involvement in household work**

Always/most of the time	171 (82.2)	37 (17.8)	3.630	0.057
Sometimes/rarely/never	155 (74.5)	53 (25.5)		

\*PA: physical activity per week

**Table 6. Logistic regression analysis of factors associated with depression among faculties.**

Variables	Depression	
	AOR (95% CI)	P value
<b>Sex</b>		
Male	0.82 (0.43-1.55)	0.548
Female		1
<b>Age group (in years)</b>		
25 to 40	0.93(0.52-1.65)	0.816
>40		1
<b>Having health problem in last one week</b>		
Yes	2.88 (1.16-7.13)	0.022
No		1
<b>Vegetables intake in last week</b>		
< 2 times a day	2.34 (1.07-5.08)	0.032
2 times a day	0.90 (0.51-1.60)	0.742
$\geq$ 3 times a day		1
<b>Access to teaching aids at workplace</b>		
Always/most of the time		1
Sometimes/rarely/never	2.00 (1.19-3.33)	0.008
<b>Job related stress</b>	1.10 (1.05-1.15)	<0.001
<b>Covid-19 fear</b>	1.06 (1.01-1.12)	0.020
<b>Nagelkerke R Square</b>		0.180
<b>Hosmer and Lemeshow Test (p value)</b>		0.213

The occurrence of depression did not differ across sex and age group. Having physical health problems was significantly associated with depression in the study (AOR, 2.88; 95% CI, 1.16-7.13). Frequency of vegetable

intake in a week is also associated with depression. Odds of depression was 2.34 times (95% CI, 1.07-5.08) higher among those who consumed vegetables less than 2 times a day. Limited access to teaching aids at workplace had 2 fold increased likelihood of depression (AOR, 2.00; 95% CI 1.19-3.33) as compared to those who reported having access to teaching aids most of the time and always. Higher job related stress and Covid-19 fear were also linked with increased occurrence of depression among study population (Table 6).

## DISCUSSION

This study revealed the prevalence and associated factors of depression among faculties. Around one respondent in five had reported some type of depression including 9.6% of moderate to severe type. The result of the systematic review shows that pooled prevalence of depression was 34.1% in 28 studies.<sup>16</sup> The prevalence of depression in the study is lower than the pooled prevalence of the previous study. However, due to the unavailability of such studies among teachers and faculties in Nepal, a comparison of the finding could not be done in a concrete way. A higher proportion of depression was observed in the study as compared to the prevalence found among adult population in different previous studies conducted in Nepal.<sup>2, 4, 17</sup>

The occurrence of depression did not differ significantly by most of the socio-demographic factors such as age, sex, income level, and marital status in the study. However, depression was significantly associated with sex, income and education among adult population in previous studies conducted in Nepal.<sup>4, 17</sup> This finding shows that faculties with different socio-demographic characteristics may have a similar type of likelihood to have depression.

Having health problems currently was significantly associated with depression among respondents in the study. It is evident that physical ill health and depression are linked, as shown by WHO fact as well evidence from Nepal.<sup>1, 17</sup> This finding shows that having physical health problems influence the mental health status of people. Alcohol consumption and smoking were not found associated with depression in the study. However, consumption of alcohol and smoking were identified as significant predictors of depressive symptoms in the different studies conducted in different countries such as Nepal, Ethiopia, South America and Australia.<sup>17, 19</sup> <sup>21</sup> It might be due to the different nature of the study population and study setting. The respondents who consumed vegetables less than 2 times a day were more likely to report depression in the study. The prevalence

of depressive mood was low when fruit and vegetable consumption and fruit consumption were high for the women even with low intensity of physical activity in a previous study done in South Korea.<sup>22</sup> Although the study population was different in these two studies, fruits and vegetables might have a positive effect on overall health including mental health among the population. This also shows that harmful health behaviors not only influence physical health but also they can influence mental illness.

Higher COVID-19 fear was associated with higher odds of reporting depression in the study. It is also found that a high rate of depression was reported among the general population during the COVID-19 pandemic lockdown in Nepal in a previous study.<sup>23</sup> The result shows that the prevalence reported in the study might have been influenced due to COVID-19 pandemic.

In the study, higher Job stress among the faculties is significantly linked with the higher odds of having depression among them. Previous study also suggests that work stress appears to precipitate depression and anxiety in previously-healthy young workers.<sup>24</sup> In addition, enabling work environments such as limited availability of teaching-learning aids at the workplace is associated with higher odds of depression in the study. The work environment is very important for the mental health of teachers.<sup>25</sup> Therefore; interventions improving the work environment may have positive effects on the mental health status of the employee working in the organization as shown by the evidence from Canada.<sup>26</sup>

Conclusively, most of the socio-demographic characteristics were not significant factors to influence depression among university faculties. Some behaviors such as vegetable intake showed protective effects on depression. Enabling environments such as the availability of teaching aids and reducing of job stress were important factors to decrease depression among university faculties. To some extent, COVID-19 fear also has played a role in the occurrence of depression among the study population.

As being a cross-sectional study, it is difficult to ensure cause and effect relationship between dependent and independent variables. In addition, the study was conducted during the time of COVID-19 and clinical faculties were also our study population. The situation might have overestimated the status of outcome variable. However, to minimize the bias, COVID-19 fear was adjusted in the multivariate analysis. As the study was conducted in Pokhara Metropolitan, it may limit the generalization of the study findings. As there was

shortage of studies conducted among faculty members, findings has also been compared with the studies conducted among other study population.

## CONCLUSIONS

Around one in five had some type of depression and one in ten had moderate to severe depression. Having physical health problems, less frequent vegetable intake, limited access to teaching aids, job stress, and COVID-19 fear was associated with depression. Promoting vegetable consumption, ensuring basic facilities, and creating an enabling environment at workplace may help to address the burden of depression. Regular screening program may help timely identification and management of the cases.

## ACKNOWLEDGEMENT

The study was supported by the University Grant Commission, Nepal as Faculty Research Grant (Award number: FRG-2076/77-HS-3).

## COMPETING INTERESTS

The authors declare no competing interest.

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