Prevalence of Depression and it's Associated Factors among Inmates

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ABSTRACT

Background: Depression can cause suicidal attempts among prisoners and it is intimidating to speculate the deteriorating mental status of them. Since, there is very limited research on the depression of prisoners in Nepal and as prisoners have rights to health care without any discrimination, this cross-sectional study aimed to assess the prevalence of depression and its associated factors among inmates.

Methods: An institute-based cross-sectional study was employed on 352 inmates selected by a systematic random sampling method from July 15 to August 15 2022. Face-to-face interview was conducted using the Centre for Epidemiological Studies Depression Scale (CESD). Data were entered into Epi - data version 3.1 and analysed using SPSS version 17.

Results: The prevalence of depression among the inmates was 54.3%. About 4.3% reported suicidal ideation during imprisonment. Depression was significantly associated with previous occupation, drug use, duration of incarceration, number of prisoners per cell, family support, social support and suicidal thought during imprisonment.

Conclusions: More than half of the prisoners have depressive symptoms & thus recommended for the confirmatory diagnosis and treatment of mental issues drawing the attention of concerned authorities toward prisoner's mental health.

Keywords: CESD; depression; inmates; Nepal

INTRODUCTION

Among imprisoned people, depression is the leading mental illness and a major public health concern.[1] Suicide is the main leading cause of death among inmates as they are out of contact with social life.[2,3] Studies have shown that a prisoner's risk of developing depression increases if they have a history of mental illness, have been incarcerated before, lack social support, have a chronic condition, or have been in prison for a long period.[4-6] The first study conducted in Jhumka Regional Prison, the largest prison in eastern Nepal showed a higher rate of prevalence of depression among inmates which was 35.3% and 2.3% of inmates reported suicidal ideation during the period of imprisonment whereas 0.9% has attempted suicide inside the prison.[7] This study aimed to find out the prevalence of depression and identify factors associated with it among inmates.

METHODS

Conducted from July 15 to August 15, 2022, this institutional cross-sectional study took place at Nakkhu and Central Prisons in Lalitpur and Kathmandu, Nepal. Ethically approved from Institutional Review Committee (IRC) of Annapurna Neurological Institute & Allied Science, it included 1367 male prisoners in Nakkhu and 3249 (2862 male, 387 female) in Central Prison. Written and verbal informed consent was obtained, privacy was maintained, and eligible participants were aged 18-75, with ≥3 months in prison and no release within six months.

The sample size was calculated by using the statistical formula of Fisher for calculating sample size. Here, at 95 percent confidence level (i.e., Z=1.96), proportion was taken from the study conducted among male prisoners in Dillibazar prison i.e., 45.6 %[8], and the allowable error (d) was considered 0.05 (or 5%). Thus, the estimated sample size (n_o) was 381. There were 1367 inmates at Nakkhu Jail and 3249 in Central Jail, for a combined total of 4616 inmates. Again, considering the formula for finite population, $n = n_o / [1 + \{(n_o-1)/N\}]$, the sample size was arrived at 352 where n_o = estimated sample size

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for unknown population & N = total population

From Kathmandu and Lalitpur districts, Nakkhu and Central Prisons were purposively selected among three. Probability proportional to size determined respondent count. Eligible inmates were chosen systematically from official lists. Semi-structured self-administered questionnaires gathered socio-demographic and imprisonment data. The Centre for Epidemiological Studies – Depression (CESD) 20 - item scale, previously used in Pokhara, was employed after Nepali translation and pretesting on 10% of Dillibazar Prison inmates (excluded from main analysis). CESD's author-approved Nepali version was used for depression screening. The cut-off value for CES-D used in this study was 16 which means 16 or greater than 16 indicates depression and less than 16 indicates no depression.[9,10] The internal consistency of the tool was found to be 0.834 of modified Nepali version CES - D.

Data was entered in Epidata 3.1 and data were exported to SPSS 16 for analysis. Data were analysed in SPSS to generate the descriptive table of all variables. Logistic regression followed assumption testing (linearity, normality, collinearity, homoscedasticity) using SPSS. Chi-square described the association between categorical variables. P<0.05 was considered significant & such variables proceeded to multivariate logistic regression for the final association.

There was no multi-collinearity, and the Hosmer Lemeshow goodness of fit chi-squared test showed that the model is fit (chi-square = 9.000, df = 8, p = 0.342).

RESULTS

There was a cent percent response rate since all 352 participants took part in the interview without any coercion. Based on the CES-D, 54.3% of inmates had symptoms of depression (Table 1).

Table 1. Distribution of the respondents based on CESD score classifying depression		
Variables	Frequency (n=352)	Percentage (%)
CESD score		
<15 (No Depression)	161	45.7
16 and above (Depression)	191	54.3

Only 4.5% of inmates had a family history of mental illness of which 68.8% were depressive, 18.8% was anxious and 12.5% had other disease like dementia and stress disorder as responded by inmates. Similarly, 4.3% of inmates had a history of mental in the past. Also, 16.8% of inmates had a history of physical or clinical illness. About three fourth (73.6%) of inmates had frequent follow-ups with healthcare providers for both physical and mental illness. More than one-fifth (21.6%) reported the loss of their weight while in the prison and around 16% reported having current health problems within them. (Table 2)

Table 2. Distribution of respondents based on the clinical history of inmates.		
Variables	Frequency (n=352)	Percentage (%)
Family History of Mental Illness	16	4.5
History of Mental Illness among inmates	15	4.3
History of Physical Illness among inmates	59	16.8
Ongoing follow-up with health care provider	259	73.6
History of Weight loss while imprisonment	76	21.6
Current health problem	58	16.5

Around 7 % had prior incarceration experiences. The duration of incarceration varied, with 4.8% serving less than a year, 48.9% serving 1 to 5 years, 28.4% serving 6 to 10 years, and 17.9% serving over 10 years. The types of crimes leading to incarceration were diverse. Notably, 22.7% were imprisoned for rape, 17.0% for murder, and 24.4% for drug-related offenses. Other crimes included robbery (7.1%), corruption (2.3%), theft (5.7%), and "others" (20.7%). Regarding prison conditions, cells accommodated varying prisoner counts. Specifically, 14.8% had 1-12 prisoners, 21.6% had 13-25, 25.3% had 26-38, and the largest group, 38.4%, had over 39 prisoners per cell. Concerning post release perspectives, 45.5% thought life would be challenging after imprisonment. Incidents of bullying (1.1%) and violence (1.7%) were reported. Involvement in prison work was noted for 51.7%. Family support stood at 69.3%, and 34.1% received social support beyond their families. Lastly, 4.3% had contemplated suicide during their imprisonment. This study found a serious issue that 4.3% of inmates had a thought of suicidal ideation (Table 3).

Table 3. Distribution of respondents based on Imprisonment Characteristics.

Variables	Frequency (n= 352)	Percentage (%)
Previously incarcerated	26	7.4
Duration of incarceration		
<1 year	17	4.8
1-5 years	172	48.9
6-10 years	100	28.4
>10 years	63	17.9
Types of crime that led to incarceration		
Rape	80	22.7
Murder	60	17.0
Corruption	8	2.3
Robbery	25	7.1
Related to Drugs	86	24.4
Theft	20	5.7
Others	73	20.7
Number of prisoners per cell		
1-12	52	14.8
13-25	76	21.6
26-38	89	25.3
>39	135	38.4
Thought that life will be difficult after release from prison	160	45.5
Experienced bullying inside prison	4	1.1
Experienced violence inside prison	6	1.7
Involved in work inside the prison	182	51.7
Family support	244	69.3
Social support	120	34.1
Thought of committing suicide during imprisonment	15	4.3

Certain prisoner factors are linked to depression: Business-related occupation (UOR=2.511, p=0.014), daily wage earning (UOR=6.580, p<0.0001), lower risk of depression with secondary education (UOR=0.385, p=0.014), higher risk with family history of mental illness (UOR=3.84, p=0.038), clinical illness history (UOR=1.98, p=0.024), history of drug use (UOR=1.892, p=0.006), longer incarceration (6-10 years UOR=4.677, p=0.011; >10 years UOR=6.057, p=0.004). Also, poor/satisfactory prison meal perception is linked to likelihood of experiencing depression (bad UOR=3.200, p=0.021; satisfactory UOR=2.436, p<0.0001), lack of family support (UOR=6.521, p<0.0001), and suicidal thoughts (UOR=12.655, p=0.015). (Table 4)

Multivariate analysis revealed associations between occupation and depression: business (AOR=5.333, p=0.002), private jobs (AOR=4.275, p=0.014), students (AOR=3.280, p=0.040), but not government job holders or laborers. Drug history showed higher depression odds (AOR=2.315, p=0.007). Incarceration for >10 years for heightened depression risk (AOR=5.527, p=0.039), while no significance for 1-5 or 6-10 years. No family support linked to heightened depression (AOR=5.002, p<0.0001), and lack of social support also heightened risk (AOR=2.897, p=0.002). High prisoner count (≥39) per cell associated with depression (AOR=3.339, p=0.012), using 1-12 prisoners as reference. (Table 5)

Table 4. Bivariate analysis.

Variables	Unadjusted Analysis		Variables	Unadjusted Analysis	
	UOR (95% CI)	P-Value		UOR (95% CI)	P-Value
Previous Occupation			**Educational Status**		
Agriculture	1		Illiteracy	1	
Business	2.511 (1.206 -5.228)	0.014*	Basic education (1-8)	0.864 (0.387 - 1.928)	0.721
Private job	2.132 (0.921 -4.935)	0.077*	Secondary education (9-12)	0.385 (0.180 - 0.825)	0.014*
Government job	1.066 (0.300 -3.788)	0.921	Bachelors	0.480 (0.195 - 1.179)	0.109
Students	1.546 (0.708 -3.378)	0.275	Above	0.720 (0.251 - 2.069)	0.542
Daily wages	6.580 (2.362 -18.328)	<0.0001*	Family history of Mental illness		
Labor	0.731 (0.161 -3.209)	0.678	Yes	3.84 (1.07 - 13.74)	0.038*
Others	2.481 (1.106 -5.567)	0.028*	No	1	
History of Drug use			**History of Clinical Illness**		
Yes	1.892 (1.197 – 2.993)	0.006*	Yes	1.98 (1.09 – 3.57)	0.024*

No	1		No	1		
History of Mental Illness			**Duration of incarceration**			
Yes	12.65 (1.646 -97.327)	0.015	<1 year	1		
No	1		1-5 years	3.326 (1.043 -10.609)	0.42	
No. of prisoner per cell			6-10 years	4.677 (1.424 -15.364)	0.011*	
1-12	1		> 10 years	6.057 (1.762-20.817)	0.004*	
13-25	0.548 (0.268 -1.121)	0.100	**Thought life will be difficult after jail**			
26-38	0.380 (0.188 -0.768)	0.007*	Yes	1.532 (1.002-2.341)	0.049*	
>39	1.553 (0.799 -3.018)	0.194	No	1		
Involved in work inside prison			**Perception of Prison meal**			
Yes	1		Good	1		
No	1.721 (1.126 -2.629)	0.012*	Bad	3.200 (1.190 -8.608)	0.021*	
			Satisfactory	2.436 (1.513 -3.921)	**<000.1***	
Family support			**Social Support**			
Yes	1		Yes	1		
No	6.521(3.737 -11.380)	<0.0001*	No	6.803(4.132 -11.201)	**0.001***	
Suicidal Thought during imprisonment						
Yes	12.655 (1.64 -97.327)	**0.015***				
No	1					

P value significant at <0.05

Table 5. Multivariate analysis.						
Variables	**Adjusted Analysis**		**Variables**	**Adjusted Analysis**		
	AOR (95% CI)	**P-Value**		**AOR (95% CI)**	**P-Value**	
Previous occupation			**History of Drug Use**			
Agriculture	1		Yes	2.315 (1.255-4.272)	0.007*	
Business	5.333(1.881-15.117)	0.002*	No	1		
Private job	4.275(1.341-13.632)	0.014*	**Duration of Incarceration**			
Government job	1.962(0.326-11.797)	0.462	<1 year	1		
Students	3.280(1.054-10.206)	0.040*	1-5 years	3.355(0.753-14.948)	0.112	
Daily wages	5.548(1.461-21.062)	0.012*	6-10 years	4.675(0.981-22.285)	0.053	
Labor	0.989(0.136-7.214)	0.991	> 10 years	5.527(1.089-30.101)	0.039*	
Others	3.283(1.011-10.659)	0.048*	**Family Support**			
No. of prisoner per cell			Yes	1		
1-12	1		No	5.002(2.355-10.621)	<0.0001*	
13-25	1.325(0.495-3.545)	0.575	**Social Support**			
26-38	0.634(0.228-1.765)	0.383	Yes	1		
>39	3.339(1.307-8.531)	0.012*	No	2.897(1.494-5.619)	0.002*	
Suicidal Thought during imprisonment						
Yes	10.935 (1.114-107.315)	0.040*				
No	1					

P value significant at <0.05

DISCUSSION

In this study, the prevalence of depression was found to be 54.3% among inmates which is quite similar to the study conducted in Tigray, Ethiopia in which the prevalence of depression among inmates was 55.9%. Similarly, a similar study conducted in the Oromia region, Ethiopia, in 2019 revealed a prevalence of depression was 45.1% and also a study in Dillibazar prison, Kathmandu, Nepal revealed the prevalence to be 45.6% which is slightly lower than our research findings.[8,11,12] The higher prevalence in our study could be due to the use of dissimilar depression tools among the studies, different prison dynamics, the use of different inclusion criteria, and, most notably, the fact that this study was done during the period of COVID-19 pandemic.

There was an association between history of drug use and depression in our study. A study done in Ethiopia and Pakistan was similar to the current result whereas a study of Jimma was incongruent where drug use was not associated with depression in the study.[4,11,13] There was a significant association between history of clinical illness and depression (UOR=1.980) in bivariate analysis which is similar to the findings of the study conducted in Jimma Prison and Malaysia.[4,14] However, it was not found while doing the multiple regression analysis. The current study revealed that the number of prisoners per cell was found to be statistically significant with depression as having more than 39 prisoners per cell have more chance to have depression than those who are living with more than 12 prisoners per room in multivariate analysis. This result is contrary to that of the study of Eastern Nepal which may be due to the different settings and facilities provided in the prison. The current study found that inmates having a longer period of stay inside the prison i.e. more than 10 years were associated with depression which is similar to the study of Debre Berhan, Tigray but contrasting to the Eastern, Jimma study.[4,6,7,11] The obvious reason for this might be that the inmates might go through mental anguish having to stay for a longer period of time at prison. Inmates without family support and social support were more likely to experience depression when compared to those who did. This result was supported by the studies from Jimma, Northwest Amhara, and Tigray.[4,5,11] Inmates are most often out of contact with their family and friends, consequently, feeling lonelier which may provoke thoughts of suicidal ideation and other worsts scenarios. This reason was also explained in the study of Tigray. Thus, it can be concluded that family and social support play a vital role in inmates' life.

Suicidal ideation while incarcerated was substantially associated with depression, with an OR of 10.93, & p-value of 0.040, according to multiple regression analysis. This conclusion was consistent with research from Northwest Amhara, Debre Berhan and Eastern Nepal. [7] Generally, suicidal ideation generates due to frustration and the depressed mental state of inmates. In addition, inmates having a longer duration of stay inside prison and even having no social and family support would make them more prone to suicidal tendencies. Studies also revealed that bullying, violence inside prison, childhood abuse and concern about their future add ups to suicidal thoughts.[2-7]

Mental health concerns in inmates must be diagnosed treated, and rehabilitated in combination with psycho-pharmacological interventions immediately by a qualified mental health professional. Further research on depression among inmates should be done exploring the other exotic factors.

CONCLUSIONS

More than half of the inmates were found to have experienced depressive symptoms during the course of this investigation. The factors like the previous occupation of inmates, history of drug use, duration of incarceration, number of prisoners per cell, family support, social support and thought of suicide during imprisonment were found to be associated with depression.

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CONFLICT OF INTEREST

The authors declare no conflict of interest.

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