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Prevalence of Depressions and Its Association with Symptoms among Convicted Male Inmates at District Jail Attock

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Abstract

Depressive disorders are characterized by sadness, loss of interest, feelings of guilt or low self-worth, disturbed sleep or appetite, feelings of tiredness, and poor concentration. Mental disorders, including depression, are prevalent globally, particularly in prison populations, where conditions exacerbate existing issues. This study aims to assess the level of depression among convicted male prisoners aged 18-50 years in Attock prison using the Beck Depression Inventory (BDI).The primary objective is to find out the prevalence of depression and examine the association between depression and somatic symptoms and sociodemographic variables. A cross-sectional survey was conducted with 109 prisoner samples calculated through Open-Epi and selected through Convenience Sampling with random selection technique. A validated structured questionnaire was prepared which contains three sections i.e. demographic data, somatic symptoms of depression, and BDI. SPSS version 29 was used for data analysis where Chi-square, phi, and p-values were calculated to assess the statistical significance of the association between depression and various factors. A level of $p < 0.05$ was used to assess significance. The prevalence of depression was Normal (11.9%), Mild-mood disturbance (19.3%), Border-line depression (22.9%), Moderate depression (35.8%), Severe depression (7.3%), and Extreme depression (2.8%).Changes in appetite, lethargy, suicidal thoughts, mood changes, and sleep disturbances were strongly correlated with the severity of depression scores $p < 0.05$ while others like loss of interest and use of drugs/alcohol show only moderate association. Thus, study findings reveal also that 68.8% of inmates suffer from depression with 22.9% falling in the range of borderline clinical depression. There is an urgent need for targeted interventions to reduce depression rates among prisoners for societal well-being. The BDI proves to be an effective tool for measuring depression in this population

1. Introduction

Mental Health is an active state of body equilibrium that enables a person to use their power harmoniously with the shared principle of humanity (1).

According to the WHO, Depressive disorders are marked by sadness, diminished interest or pleasure, sense of guilt or low self-worth, disruption in sleep or appetite, chronic fatigue, and difficulties with concentration (2).Prisoners mental health is a serious problem that must be addressed in Pakistan and many other nations. The Pakistani jail system lacks the fundamentals of the mental health concept for inmates. This study aims to raise awareness among authorities to recognize the importance of mental health among Pakistani inmates (convicted only) and the association of symptoms along with it.

Studies have shown that prisoners behind bars are suffering from different types of agony and mental disorders(3).Prison population tend to be marginalized from community benefits, leading to psychological

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distress i.e. depression. Based on study, 4 out of 10 prisoners have depression and the estimated depression was 36.9% (4).Past research associated with our study on why depression is prevalent in prison settings showed the prevalence rate by (5) 59.4%, (6) 39.7%, (7) 56.5%,(8) 45.5%, (9) 55.5%, (10) 37.6%.There prevalence of depression is a higher among prisoners compared to the non-prisoner's population (85%), the majority reside in low- and middle-income earning countries (11).

Both men and women and their vulnerability towards various psychopathologies indicated that the majority of male prison inmates possessed introverted personalities, had emotional instability and poor social skills (12).Similarly in May 2008 at the Central Prison in Peshawar, the depression prevalence among women inmates using the Hamilton Scale showed that out of the 64 participants, 38 (59.4%) were suffering from depression. Middle aged women (31–40 years), urban (60.5%) and low income earning (64.5%) prisoners were mainly affected (5).A study on 22,790 inmates concluded a serious depression prevalence of 11.4% among convicts, highlighting significant mental health issues in prisons (13).In 195 male prisoners the prevalence of depression was found to be 45.6%, with 28% experiencing severe depression (14).Over 50% of federally incarcerated individuals in the U.S. have experienced chronic medical illnesses, with 64.3% of those aged 45 and older reporting health issues at the time of a 2004 survey (15).

A survey conducted in Mexico shows the production and consumption of illicit drugs at populations with low education, unemployment, and dysfunctional families that contribute to a cycle of drug use and unemployment (16).Drug related and personality related mental disorders have been identified in over 71% of prisoners (17).Factors such as substance abuse, previous psychiatric history, and specific demographic variables were associated with higher rates of psychiatric morbidity (18).The depression, hopelessness and suicidal ideation among prisoners identified as vulnerable are a significantly higher risk for severe issues regarding mental health compared to the general prison population. Although the focus on vulnerable prisoners that restrict the generalization of the findings to the broader prison population (19).

Prevalence of depression was found to be 20.6% ethnically white females, having a history of mental illness, not receiving any visits, smoking, and not performing physical activities, these were identified as risk factors for anxiety and depression (20).Also, isolation, lack of basic needs and constant mental distress, lead to emotional and behavioral symptoms in inmates (21).A Meta analysis and systematic review show that the average expected prevalence of depression was 31.74%, in the subgroup analysis the total prevalence was higher than 40.Among them 12% were in developing countries(22).

A Cross-sectional study was carried out among inmates in Nepal(Gandaki) in which 18.8% were suffering from Depression. Inmates with health problems, suicidal ideation during imprisonment, and previous suicide attempts show imprisonment had statistically significant relationship with depression (23).

A large-scale epidemiological study was performed in Brazil on 1192 men and 617 women prisoners selected through stratified random sampling to look for psychiatric disorders. Lifetime and 12-month prevalence of any mental disorder was 56.1% and 22.1% among men (24).The study of prevalence of depression was 93% and identified effects of depression such as frequent tiredness and low self-esteem were significantly higher in depressed than nondepressed inmates (25).

Depression is collection of complex relation of social, psychological, and biological elements. People who had been through harsh life events(joblessness, grief, psychological trauma) are more likely to develop depression. Depression mainly in Men was associated with the sanction, in enduring relationship, medical problems and record of offenses during youth (26).Understanding the prevalence of depression and its association with somatic symptoms is crucial for tailoring effective interventions and improving mental health outcomes as diseases are nothing but collections of symptoms. In the case of depression, the hypothesis suggests that if the somatic symptoms were intervened and controlled there may be a significant decrease in the severity of depression.

Up until now, there was a significant research gap in Pakistan, especially in the Attock region which shows demographic relation and Symptoms association with depression among Inmates.

2. Materials and Method

A Cross-sectional design was employed in our study. The study was based in the Central Jail District Attock, Punjab, Pakistan. The prevalence of depression and

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association of symptoms in prison were investigated, while mentioning some demographic details to analyses depression. The electronic bibliographic data base used for review was Google Scholar and PubMed.

A validated questionnaire was prepared based on Beck's depression scale, which is among the most used self-rating scales for measuring depression. Reason of selection of the scale are its high internal consistency, validity in differentiating between depressed individual and non-depressed individual, scale sensitivity to change, and global circulation(27).Because of these attributes of reliability and validity, this instrument is presented as a useful tool for a research study of depression and is a step forward in the direction of placing psychiatric diagnosis on a quantitative basis (28).The questionnaire contains 21 questions and was consider as a tool to predict the prevalence of depression among inmates of District Jail Attock. The questionnaire contains three sections; i.e. demographic data, somatic symptoms and Beck's inventory.

The main objectives of study were to determine the total prevalence of depression in Convicted Male Prisoners, association of some socio-demographic variables with depression and association of symptoms with depression. Male Inmates at District Jail Attock, ranged between the age of 18 to 50 years. Convicted Inmates incarcerated for 6 months or more were included while Inmates having comorbid diseases or handicaps and any medical treatment history for specific conditions/diseases were excluded. The total number of inmates in the sample population was 1180. By applying the inclusion and exclusion criteria the convicted inmates were

150 in number. These inmates were selected through Convenience Sampling with random selection technique. By assessing through Open-Epi, Version 3, opensource calculator, the result was 109 inmates with a 95% confidence Interval. Data was collected in the office of Psychologists in the presence of two trained Psychologists who instructed the interviewer beforehand about dealing with prisoners. Consent was obtained from each participant before interviewing them in such a manner that prisoners who were willing to participate could be interviewed.

The data was analyzed using SPSS version 29, and several statistical methods were employed to achieve these objectives. The initial step in the analysis involved entering data and calculating descriptive statistics for the Beck Depression Inventory scores. Frequency distribution was created to categories the participants into different severity levels of depression based on their BDI scores. Chi square tests of independence employed for examining relation between categorical demographic detail and depressive symptoms. This statistical test assesses whether there is a significant association between the variables. A level of $p < 0.05$ was used as statistically good. The calculated Cronbach's alpha for the BDI in this study was 0.818 and for the semi structured questionnaire was 0.719, indicating a high level of internal consistency and reliability of the instrument in assessing depressive symptoms among the prisoner population.

A research proposal was written to the Department of Community Medicine for considering the study and preceding research on it. After that, Ethical approval was granted by the Ethical review board and concerned authorities of Nowshera Medical College. A permission letter was written to the Superintendent of District Jail Attock. It was approved by S.P. District Jail Attock after a meeting, thus granting us a final permission letter for interviewing prisoners in the presence of a proper body which consisted of two psychologists, interviewers, and the Head of security of District Jail Attock, to maintain harmony and calmness while interviewing them.

3. Results

Beck's depression inventory category used in the present study show the prevalence of depression was Normal (11.9%), Mild mood disturbance (19.3%), Borderline clinical depression (22.9%), Moderate depression (35.8%), Severe depression (7.3%) and Extreme depression (2.8%) in male inmates of district jail Attock Table1.

Table 1: Distribution of depression scales.

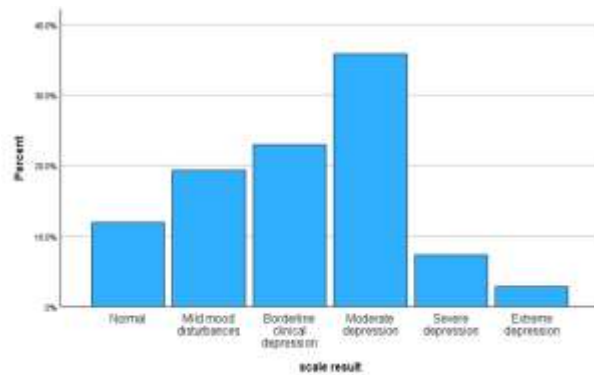| Scale	N	%
Normal	13	11.9%
Mild mood disturbances	21	19.3%
Borderline clinical depression	25	22.9%
Moderate depression	39	35.8%
Severe depression	8	7.3%
Extreme depression	3	2.8%

Also shown in the given Bar Chart:

Figure 1: Bar chart for scale result

Frequency Table2 show, the prevalence of depression among different age groups, localities, occupations, education levels, and marital status. It also specifies depression in people concerning how much time they are incarcerated (minimum: 6 months) and the reason for their incarceration. The relationship between the variable i.e. symptoms before incarceration and the severity of depression as measured by Beck's Depression Inventory was examined using a chi-square test as shown in 3.The Normal and Mild mood disturbances were categorized as non-depressed while the Moderate, Severe and Extreme are all point to be depressed in 3.

The relationship between various physiological factors and the severity of depression among incarcerated individuals was assessed using chi-square tests in conjunction with Beck's Depression Inventory. A significant association was found between changes in appetite before incarceration and depression severity, with a Chi-Square statistic of 30.0, a phi coefficient of 0.529, and a p-value of less than 0.001.Similarly, the relationship between drug and alcohol use before incarceration and depression severity yielded a Chi-Square statistic of 7.99 and a phi coefficient of 0.271, with a p-value of 0.157, indicating that these factors do not significantly correlate with depression severity. Further significant associations were observed for lethargy, suicidal thoughts, changes in mood and changes in sleep since incarceration.

The Chi-Square statistic for lethargy was 16.3 (phi = 0.387, p = 0.006), and for suicidal thoughts, it was 11.5 (phi = 0.335, p = 0.04), both indicating moderate and significant relationships with depression severity. Additionally, changes in mood (Chi-square = 18.8, phi = 0.415, p = 0.002) and changes in sleep (Chi-Square = 16.844, phi = 0.393, p = 0.005) were significantly

associated with depression severity. These findings highlight the substantial impact of psychological changes on depression severity among prisoners, warranting further investigation and targeted interventions.

4. Discussion

This study shows that prevalence of depression among male inmates using BDI was Normal (11.9%), Mild mood disturbance (19.3%), Borderline clinical depression (22.9%), Moderate depression (35.8%), Severe depression (7.3%) and Extreme depression (2.8%).It concluded that 68.8% of inmates suffer from depression and among them, 22.9% fall in the range of borderline clinical depression which in comparison with general population and other study was quite high.

In comparison with a recent study to investigate depression among convicts in Ethiopia's North Wollo Zone, Patient Health Questionnaire 9 served as the study's foundation. The study's participants had an average age of 31:7 ± 12:83, and concluded that 55.5% of participants had depression which is slightly lower than our study. The high prevalence (45.9%) including borderline (68.9%), may reflect more current societal stressors and prison conditions in men, underscoring the pressing need for mental health intervention. The data emphasizes that the majority does have moderate to severe depression. which is concerning from a mental health perspective.

In line with this, (12) concluded that many male inmates exhibit introverted personalities and emotional instability, making them more vulnerable to depression. These findings reinforce our study's results, which identify specific demographic vulnerabilities, such as age, marital status, and rural background, contributing to higher depression rates among prisoners.

Similarly, in Bahir Dar City, Ethiopia, depression was 45.5% among 402 prisoners, of whom the majority were men (n = 394) (8).The core symptoms of depression include change in appetite, lethargy, suicidal thoughts, mood changes, and sleep disturbances. These were strongly correlated with the severity of depression. Loss of appetite($\chi2$ = 30.5, ϕ = 0.599) was the most significantly associated symptom, indicating that physiological changes, such as disruptions in eating patterns, may serve as a strong indicator of depression severity among inmates. Lethargy($\chi2$ = 16.3, ϕ = 0.387) and suicidal thoughts (χ^2 = 11.5, ϕ = 0.355) also showed

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Table 2: Frequency table of Demography Depression

Source	Category	Normal	Mild mood disturbance	Borderline clinical depression	Moderate depression	Severe depression	Extreme depression	Total	%
Age	18 – 30	4	9	9	15	5	0	42	39
	31 – 40	3	7	8	12	1	3	34	31
	41 – 50	6	5	8	12	2	0	33	30
Locality	Urban	5	9	12	16	2	3	47	43
	Rural	8	12	13	23	6	0	62	57
Occupation	Govt/Army	1	2	5	3	0	0	11	10
	Private work	6	8	12	15	3	1	45	41
	Farmer	2	0	1	3	3	0	9	8
	Student	0	3	0	2	0	0	5	5
	Businessmen	1	2	4	2	0	1	10	9
	Other	3	6	3	14	2	1	29	27
Marital Status	Married	7	10	20	26	4	3	70	64
	Unmarried/Single	6	11	5	13	4	0	39	36
Education	Primary	1	5	11	8	1	0	26	24
	Secondary	4	10	8	13	5	2	42	39
	Higher Secondary	3	2	1	2	1	0	9	8
	Undergraduate	1	1	0	3	0	0	5	5
	Uneducated	4	3	5	13	1	1	27	25
Time since incarceration	6 Months-2 Year	4	9	14	23	4	3	57	52
	2-10 Year	9	11	10	12	3	0	45	41
	10-20 Year	0	1	1	4	1	0	7	7
Time Since Incarceration	Murder	3	3	4	7	2	0	19	17
	Kidnapping	0	0	3	2	1	0	6	6
	Immoral Sex	0	1	2	3	0	0	6	6
	Drugs Offense	8	10	13	22	3	2	58	53
	Conflicts	1	5	2	3	0	1	12	11
	Other	1	2	1	2	2	0	8	7

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Table 3: Statistical Analysis between various Symptoms and Depression

Variables	Responses	Normal (%)	Borderline depressed (%)	Depressed (%)	χ^2 (df)	P-value
Change in Appetite	Yes	7.5	28.3	64.2	30.539	<0.001
	No	53.8	17.9	28.6		
Loss of Interest	Yes	22.1	25.4	52.6	7.067	0.216*
	No	42	20	38		
Use of Drugs Alcohol	Yes	26.8	39.9	8.4	7.99	0.157
	No	32.8	21.9	45.2		
Lethargy	Yes	19.1	24.7	56.1	16.3	0.006
	No	55.5	19.4	25		
Suicidal Thoughts	Yes	5.9	29.4	64.8	11.5	0.04
	No	35.8	21.7	42.4		
Change In Mood	Yes	16.4	23	16	18.8	0.002
	No	50	22.9	27.1		
Change In Sleep	Yes	17.5	22.8	59.8	16.844	0.005
	No	46.2	23.1	30.7		

moderate associations, reflecting the emotional and psychological toll of incarceration.

Port Harcourt, South Africa, 59 (14.8%) reported that prisoners exhibited mild depression with somatic symptoms (6).Similarly in Jakarta, 56.5% of female prisoners were diagnosed with depression, with recidivism and age being significant risk factors. These studies emphasize the issue's global nature in Pakistan and reinforce the need for targeted mental health interventions (7).

Interestingly, substance use, while prevalent among prisoners, showed only a moderate association with depression severity ($\chi^2 = 7.99$, $\phi = 0.271$).A survey conducted in Mexico shows the production and consumption of illicit drugs in populations of low education, unemployment, and dysfunctional families that contribute to a cycle of drug use and unemployment (16).Drug-related and personality related mental disorders have been identified in over 71% of prisoners (17).Although drug and alcohol use are not common in our society, it is somewhat consistent with research reporting that while substance use is common among prisoners, it is not always a direct cause of depressive symptoms (11).

In addition to identifying the prevalence of depression, previous research also indicates that prisoners exhibit higher levels of psychiatric commodities, such as neurotic disorders and anxiety. found it (29)that female

prisoners in Karachi suffer more from neurotic disorders

compared to psychotic disorders, with symptoms like insomnia being particularly prevalent. This supports our study's focus on depressive symptoms like sleep disturbances and loss of appetite, which emerged as significant indicators of depression among male prisoners in Attock. Moreover, younger inmates aged (18-30) were affected with a prevalence rate of 69%.This is consistent with findings of other studies suggesting that younger inmates may lack the coping mechanisms necessary to navigate the stresses of incarceration. Those from rural areas and low education is likely more prone because of socioeconomic factors that predate and persist within prison settings.

Marital status also emerged as a significant factor, with married individuals possess the higher rate of depressive symptoms. It is possibly due to separation from families and inability to fulfil their role which exacerbates feelings of hopelessness and despair among married prisoners, making them vulnerable to depression. When it comes to suicidal thoughts and mood changes, the significant p-value suggest its high association among convicts which concur with the study, that prevalence of depression, lack of hope and suicidal thought among prisoners identified as vulnerable are a significantly higher risk for severe mental health issues as in the general prison population (19).Inmates with health problems, suicidal thoughts during prison, and suicide before imprisonment had a statistically significant relationship with depression (30).

In observation of Lethargy, the p value was found to be 0.006 which is lower than the significance level of 0.05, indicating the association is significant. These results

suggest that there is a substantial link between the lethargy since incarceration and depression. It coincides with the study in which the prevalence of depression was 93% and the identified effects of depression such as frequent tiredness and low self-esteem, were significantly higher in depressed than non-depressed inmates (26).Individuals performing no physical activity were identified as having higher risk factors for depression (20). The low self-esteem point toward loss of interest was not significant in our study.

5. Conclusion

This study gives the high prevalence of depression among inmates, with an association of prespecified symptoms and demographic factors. This certainly contributes to the growing literature that indicates a dire need for the implementation of psychological programs in prisons.

6. Limitation

This study lacks to offer information regarding duration and course of depressive symptoms in the prisoners because of its limited Cross sectional study design.

This study was also carried out in a one prison, therefore there is an issue of generalizing it to the other prison populations. This would be resolved if studies with large sample sizes are conducted from multiple prisons to capture variability.

In the end, we apologize for any unintended omissions.

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