MMPI-2Dx restructured clinical scale-based psychopathology among opioid dependence inmates in class IIA correctional facility Denpasar

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Abstract. Substance users, especially those with dependence, have been demonstrated to have a high rate of mental disorder comorbidities. The substance used might have significant effects on the occurrence of psychopathology. This research aimed at describing opioid users psychopathology based on the MMPI-2 Dx restructured clinical (RC) scale and its correlation with dependence among inmates of Class IIA Correctional Facility Denpasar. An analytic observational research with a cross sectional design was conducted. A number of 70 inmates presented to the Class IIA Correctional Facility clinic who met the inclusion criteria were enrolled in this study. They were screened with MMPI-2Dx. Chi Square test was conducted to determine the correlation and the amount of psychopathology in the opioid dependent and non-dependent groups. Significant difference was set at P of <0.05. Significant opioid dependence was found to correlate with psychopathology as revealed by MMPI-2Dx restructured clinical scale, and this included the subscales RC4 (p 0.00), RC7 (p 0.002), RC8 (p 0.0014), RC9 (p 0.026) dan RCd (p 0.037). No significant correlation was found for other subscales such as RC1 (p 0.339), RC2 (p 0.393), RC3 (p 0.216) and RC6 (p 0.127). Opioid dependent subjects had 7.6 times higher chance (OR 7.667) of having psychopathology compared to non-dependent ones. These psychopathologies included demoralization, antisocial behavior, aberrant experiences, dysfunctional negative emotions dan hypomanic activation.

1. Introduction
Substance and alcohol abuse is a long standing phenomenon that has been correlated to multiple health, social, economical and legal problems worldwide. The symptoms and disorders developed in relation with substance abuse vary highly, hence the necessity to apply a multidimensional approach for its management.

It was estimated that 35.4% adults in the US have a history of substance abuse and dependence in their lives, while in Indonesia, a number of 3.5 million people is estimated to use psychoactive substances. [1,2] Substance use contributes significantly the occurrence of psychopathology. A research among Iranian prisoners revealed that more than 30% users experienced clinical symptoms that met the axis I criteria for psychotic disorder, while 60% met the criteria for axis II personality disorder including antisocial, narcissistic, and borderline personality disorders. [3] Determining the psychological characteristics that underlie one’s substance abuse or the effect substance abuse exerts on these characteristics might be of importance in planning the management of this problem [4,5].
Determining the psychopathology of substance users within correctional facilities might be of importance. As an entity established with facilitating inmates’ social reintegration as its purpose, correctional facilities carry the burden of leading the inmates to realization of their criminal or civil misconducts, and of developing a more positive behavior in the inmates. In general, correctional facilities in Indonesia currently experience overcapacity and other problems, hence the facilities’ limited ability to properly manage with the inmates’ mental health, especially inmates who abuse substances. [6,7] Inmates are also vulnerable to HIV transmission due to the use of injected narcotics and unsafe sexual behavior. In 2006, the Bali Province AIDS management commission estimated that a number of 50 people in the correctional facilities in Bali were HIV infected. This comprised 1.2% of the total estimation of HIV-infected population in Bali at that time [8].

Class IIA Correctional facility Denpasar is the biggest correctional facility in Bali and it hosts male and female inmates as convicts or detainees. This facility does not specifically host inmates with drug-related crimes, but these cases are the cause of detention for a significant proportion of inmates. The data obtained in 27 February 2008 noted that almost half of the inmates (n=416; 49.94%) were detained due to drug-related cases and injected narcotics were used in 16.6% (n=69) of those cases. The survey conducted by Hartawan et al. (2009) on 82 respondents who admitted to have used narcotics revealed that heroine was the most popular drug used by injection drug users. On the other hand, shabu-shabu (43; 52.4%), ecstasy (40; 48.8%) and cannabis (38; 28.8%) were the three most popular substances among non-injection drug users [9].

All those above-mentioned factors in addition the frequently occurring arguments, play role in the occurrence of psychopathology among inmates in correctional facilities. Determining the characteristics of psychopathology is therefore important to provide data and advices for the management of inmates, especially in relation to their mental health.

2. Methods
This cross sectional analytic research was conducted in Class IIA Correctional Facility Denpasar during a period that lasted from July to November 2011. Subjects were male inmates presented to the facility’s clinic aged 18 or more with a minimum education of junior high school and good comprehension of Indonesian who were willing to participate in the research. Consecutive sampling was employed in this research. Subjects were grouped into the opioid dependent and non-dependent groups. They have provided informed consent before completing the January 2011 edition of MMPI-2Dx test. This instrument had been translated and validated in Indonesian. The presence of psychopathology was determined by the T scores of ≥65 [10].

Data analysis was conducted with SPSS version 17.0. To determine the psychopathology correlations within the dependent and non dependent groups, Chi square test was employed. The difference was considered significant at P<0.05 with 95% confidence interval. Spearman analysis was used to determine the correlation between psychopathology and several factors that might play role. This research was approved by the Ethical Committe, Research and Development Unit Sanglah Hospital/Faculty of Medicine Udayana University, Denpasar.

3. Results
A number of 90 subjects participated. Forty subjects were in the dependent group and fifty were in the non-dependent group. Characteristics of the research subjects are presented in table 1.

Significant opioid dependence (p<0.05) is correlated to several RC scale psychopathology including RC4 (antisocial behavior, p=0.00), RC7 (dysfunctional negative emotions, p=0.002), RC8 (aberrant experiences, p=0.0014), RC9 (hypomanic activation, p=0.026) and RCD (demoralization, p=0.037) (Table 2). Most dependent subjects (65.7%) had five or more psychopathology while the value was only 20% in non-dependent subjects. Further analysis showed that dependent subjects had a significantly higher odd of having psychopathology than non-dependent ones (OR=7.667; p=0.00) (Table 3). In addition, Spearman’s correlation analysis revealed that the duration of opioid use had inverse weak correlation the number of occurring psychopathology (p 0.047) (Table 4).
Table 1. Comparison of characteristics of opioid dependent and non-dependent subjects (n=70)

| No. | Characteristics (n=70) | Non-dependent | Dependent | P   |
|-----|-----------------------|---------------|-----------|-----|
| 1.  | Age:                 |               |           |     |
|     | < 30 years           | 16 (66.7%)    | 8 (33.3%) |     |
|     | 30-34 years          | 6 (30.0%)     | 14 (70.0%)| 0.079|
|     | 35-39 years          | 5 (38.5%)     | 8 (61.5%) |     |
|     | 40-44 years          | 4 (50.0%)     | 4 (50.0%) |     |
|     | >44 years            | 4 (80.0%)     | 1 (20.0%) |     |
| 2.  | Marital Status:     |               |           |     |
|     | Married              | 24 (61.5%)    | 15 (38.5%)|     |
|     | Widowed              | 1 (14.3%)     | 6 (85.7%) | 0.043|
|     | Non-married          | 10 (41.7%)    | 14 (58.3%)|     |
| 3.  | Education:          |               |           |     |
|     | Junior High School  | 14 (60.0%)    | 9 (39.1%) | 0.428|
|     | Senior High School  | 18 (43.9%)    | 23 (56.1%)|     |
|     | Diploma/University   | 3 (50%)       | 3 (50%)   |     |
| 4.  | Type of crime:      |               |           |     |
|     | Narcotics            | 0 (0%)        | 28 (100%) | 0.000|
|     | Non narcotics        | 35 (83.3%)    | 7 (16.7%) |     |
| 5.  | Duration of detention: |           |           |     |
|     | < 12 months          | 16 (55.2%)    | 13 (44.8%)|     |
|     | 12-23 months         | 10 (47.6%)    | 11 (52.4%)|     |
|     | 24-35 months         | 3 (42.9%)     | 4 (57.1%) | 0.951|
|     | 36-47 months         | 4 (50.0%)     | 4 (50.0%) |     |
|     | > 47 months          | 2 (40.0%)     | 3 (60.0%) |     |

Table 2. MMPI-2Dx Restructured Clinical Scale-based psychopathology among research subjects

| Psychopathology | RCd Freq (%) | RC1 Freq (%) | RC2 Freq (%) | RC3 Freq (%) | RC4 Freq (%) | RC6 Freq (%) | RC7 Freq (%) | RC8 Freq (%) | RC9 Freq (%) |
|----------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Non-dependent  | 20          | 15          | 10          | 10          | 17          | 20          | 8           | 8           | 2           |
| Dependent      | 29          | 20          | 6           | 16          | 34          | 27          | 22          | 19          | 10          |
| P value        | 0.037       | 0.339       | 0.393       | 0.216       | 0.00        | 0.127       | 0.002       | 0.014       | 0.026       |

Table 3. The number of psychopathology among subjects

| State of dependence | Categorical amount of psychopathology | OR* | 95% CI | p |
|---------------------|--------------------------------------|-----|--------|---|
|                     | <5                                   | 5 or more                |     |
| Non-dependent       | 28                                   | 7                           | 80.0% | 20.0% |     |
| Dependent           | 12                                   | 23                          | 7.667 | 2.595-22.646 | 0.00** |
| Total               | 40                                   | 30                          | 57.1% | 42.9% |     |


Table 4. Correlation of other variables with the number of psychopathology among dependent subjects

|                      | Correlation coefficient | Sig. (2-tailed) | N  |
|----------------------|-------------------------|-----------------|----|
| 1. Age of first opioid use | .042                    | .811            | 35 |
| 2. Number of substances previously used | -.161                  | .354            | 35 |
| 3. Duration of opioid use | -.338                  | .047            | 35 |

4. Discussion

This research demonstrated that opioid dependence was correlated to antisocial behavior (p=0.00). High score of RC4 subscale (antisocial behavior) is usually characterized by antisocial, aggressive, angry, and argumentative tendency, problems with complying with the rules, high risk of drug use and free sex, and the tendency of experiencing conflicts with other people. Someone with opioid dependence might conduct crimes to obtain money to meet his or her need for substance; or conduct crimes under the effect of the substances used [3].

Other scales with significant correlations were the dysfunctional negative emotions (RC7) and the demoralization (RCd) scales (p values 0.002 and 0.037, respectively). RC7 is an indicator of negative emotions demonstrated by anxiety, anger, excessive worry, and feeling of insecurity. On the other hand, RCd is an indicator of unhappiness and dissatisfaction that reflects the presence of anxiety, depression, and tension. The feeling of insecurity, pessimism, low self-esteem, and higher suicide risk might indicate one’s inability to cope with the situation. A research conducted in New York revealed that 60-80% subjects with opioid dependence experienced anxiety and depression. [11] While opioid might actually reduce symptoms of anxiety and depression, these symptoms might re-appear when opioid is no longer used or stopped. [12] Some subjects in this research were in methadone maintenance program and were in the phase of dose reduction.

Aberrant experiences (RC8) was also significantly correlated with opioid dependence (p=0.0014). This scale is an indicator of bizarre thoughts and experiences. A high score indicates a schizotypal characteristic and a really high score might indicate the presence of schizophrenia, delusional disorder, or schizoaffective disorder. Some clinicians have observed these symptoms in patients with methadone maintenance therapy especially during or after dose reduction. [12] Psychotic disorders dominated by hallucination and delusion might present especially during intoxication or withdrawal [13].

Hypomanic activation (RC9) is an indicator of hypomanic symptoms. A high score indicates highly increased self esteem, highly energetic “sensation-seeking” tendency, extreme bravery to do high risk acts, aggressivity, impulsivity, euphoria, increased speed of thoughts and decreased need of sleep; while a really high score might indicate a manic or hypomanic episode (might indicate the presence of bipolar disorder). These behaviors, especially “sensation-seeking” behavior, bravery, aggressivity, and impulsivity, were highly correlated to the substance use. [11] Patients with opioid dependence tend to experience the psychotic tetrad (paranoid, psychasthenia, schizophrenia and mania) at a rate higher than the neurotic triad (hychondriasis, depression, and hysteria) [14].

Several other factors that might correlate to the number of psychopathology were further analysed, but only the duration of opioid use that was found to be inversely correlated (p=0.047). This result is different from the research conducted by Polimeni et al. (2010) that revealed a positive correlation of opioid use and the number of psychopathology. Other studies proposed that the severity might be better correlated with opioid use than the number of psychopathology [10, 15].

The research has a limitation in terms of its inability to conduct analysis on the severity of each psychopathology scale since not all RC scales have determinants for severity. For example, for RCd, RC1 RC8 and RC9 scales, a division to high score (≥65) and really high score (≥75) was evident, while for RC, RC1, RC4, RC6 and RC7 scales, only high score cut off point of ≥65 was available.
5. Conclusion
The state of opioid dependence among inmates had showed significant correlations for several pathology based on MMPI-2Dx Restructured Clinical Scale and this includes RC4 (antisocial behavior), RC7 (dysfunctional negative emotions), RC8 (aberrant experiences), RC9 (hypomanic activation) and RCd (demoralization) scales. Inmates with significant opioid dependence had more psychopathology than those without dependence, and severity might better explain the correlation than the number of psychopathology.

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