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Minnesota Multiphasic Personality Inventory 2 (MMPI 2) examination in patients with benzodiazepine addiction in Yogyakarta

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ABSTRACT

Addiction is a major health problem in Indonesia. The prevalence and pattern of drugs addiction shifted according to changes in personality, stressors, or increasing responsibility as people grow. Individual personality will affect their tendency to develop drug addiction. Benzodiazepines abuse has steadily increased. Unlike other type drugs of abuse, the characteristics of benzodiazepine abusers are greatly varied. Therefore, the personality traits and social economic factors involved in the benzodiazepine addiction are unique. In this study we evaluated the personality traits of patient with benzodiazepine addiction in Yogyakarta using Minnesota Multiphasic Personality Inventory (MMPI) 2 test. This study was a descriptive analytic study with a cross sectional design. Subjects were 39 benzodiazepine addicts obtained from private psychiatrist practices in Yogyakarta. The instruments used were questionnaire for personal information and MMPI 2. Statistical analysis was conducted with SPSS ver. 17 and significance level was defined at $p < 0.05$. MMPI 2 test revealed a low total mental capacity index and a low basic personality index (OCEAN: openness, conscientiousness, extraversion, agreeableness, and neuroticism). The clinical profiles examination showed profile of somatic symptoms due to psychological disturbances, clinical symptoms of overt suspiciousness, overt negative emotionality, clinical symptoms of depression, symptoms of psychopathic behaviours (antisocial), emotional difficulty in interpersonal relationship, clinical symptoms related to overt emotion, and weird and bizarre psychological experiences. There are certain personality variables that may be important predictors for benzodiazepine addiction identified in this study.

ABSTRAK

Ketergantungan obat merupakan masalah kesehatan utama di Indonesia. Prevalensi dan pola ketegantungan obat berubah sesuai dengan perubahan kepribadian, penyebab stres, atau meningkatnya tanggung jawab seiring dengan usia seseorang. Kepribadian seseorang akan mempengaruhi tendensi seseorang menjadi ketergantungan obat. Penyalahgunaan benzodiazepin terus meningkat. Oleh karena itu ciri-ciri kepribadian dan faktor sosial yang berperan dalam ketergantungan benzodiazepin sangat unik. Dalam penelitian ini telah dikaji ciri-ciri kepribadian pasien keergantungan di Yogyakarta menggunakan uji Minnesota Multiphasic Personality Inventory (MMPI) 2. Penelitian ini merupakan penelitian diskriptif analitik dengan rancangan potong lintang. Subjek adalah 39 pasien ketergantungan

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benzodiazepine dari praktek dokter di Yogyakarta. Instrumen yang digunakan adalah kuesioner untuk informasi individu dan MMPI 2. Analisis statistik menggunakan SPSS versi 17 dengan tingkat kepercayaan $p < 0,05$. Uji MMPI 2 diperoleh indeks kapasitas mental total rendah dan indeks personal dasar rendah (OCEAN: keterbukaan, kesadaran, ekstravet, keramahtamahan dan neurotisisme. Pemeriksaan klinik menunjukkan adanya gambaran gejala somatik karena gangguan psikologi, gambaran klinik kecurigaan yang berlebihan, emosi negatif yang berlebihan, gejala klinik depresi, gejala klinik yang berkaitan dengan emosi yang berlebihan, dan pengalaman psikologi yang aneh-aneh. Terdapat beberapa jenis kepribadian tertentu yang mungkin bias digunakan sebagai prediktor ketergantungan benzodiazepine yang diperoleh dalam penelitian ini.

Keywords: addiction – benzodiazepine – personality – MMPI 2 – drug ubuse

INTRODUCTION

Substance abuse is worldwide problems. The major drugs of abuse were heroin, cocaine, LSD, and amphetamine.[1] Substance abuse leads to drug addiction, a chronic neurobiological condition characterized by compulsion to seek and use a substance, loss of controlover consumption, and the emergence of a negative emotional state when access to the substance is prevented.[2,3] The prevalence and pattern of drugs addition seems to have shifted according to changes in personality, life circumstances, or increasing levels of responsibility as people grow.[2] Economic uncertainty, socialdislocation, isolation, and inequalities are modern stressful stimuli that pose the risk of addiction. Stress systems greatlycontribute to the addiction cycle of drugcraving and withdrawal, pushing theaddicted individual toward compulsivedrug taking.[4] How people adapt and adjust to stressors is affected by individual personality, which might affect their tendency to develop drug addiction.

Personality is an important component for the management of addiction. Cognitive behaviour approaches are grounded in social learning theoriesand principles of operant conditioning. The efficacy this approach is highly affected by personality and adaptive coping skills. People with better coping skills will have better control of their behaviour and can effectively employ these strategies.[5] Addiction to illicit drugs remains a clinical and social problem, in part owing to the lack of effective treatment. The challenges of coping with addiction extend to the bench, pulling researchers to continue exploring the origins of addiction and the molecular and structural changes in the brain driving lack of self-control and impulsivity in people suffering from addiction or relapses. Researchers are also seeking to what they called endophenotypes, individual characteristics that incline individuals toward addictions, including personality traits.[6] Personality traits are thought to be responsible for the development and addiction. The partial heritability of these personality traits might also responsible for the heritability of addiction.[7,8]

Addiction potential is defined by beliefs and attitudes towards drug use and perception of related consequences as either negative or positive. The tendency to use drugs is directly related to the attitudes of individuals regarding the legality and the scale of social acceptance of drugs, the harm resulting from drug use, or the pleasant consequences of using drugs. These factors are pre-determined particularly

by personality traits.[9] MMPI (Minnesota Multiphasic Personality Inventory) can be used to assess the presence of personality traits vulnerable to addiction. The five factor model for basic personality profile measured with MMPI fits well with the measurement required to assess and predict addiction.[10] Benzodiazepine has become popular drugs of abuse, partly due to its cheap price. The prevalence of benzodiazepine abuse, based on visits to psychiatrist in Yogyakarta, is increasing. Unlike other type drugs of abuse, the demographic characteristic of benzodiazepine abusers is greatly varied. Therefore, unlike other drugs of abuse, the personality traits and social economic factors involved in the development of benzodiazepine addiction are somewhat unique. Understanding these unique characteristics is an important determinant to better treat patients with benzodiazepine addition. The use of benzodiazepine to relieve withdrawal symptoms significantly contributes to the increased prevalence of benzodiazepine addiction. Patients on methadone maintenance therapy often report frequent use of benzodiazepine. Based on above explanation, it is clear how personality have impacts on the tendency to develop addiction and the efficacy of approaches to manage addiction. Therefore, in this study we examined the association between personality profiles based on MMPI 2 test and benzodiazepine addiction.

MATERIALS AND METHODS

Study Design

This study is a descriptive analytic study with a cross sectional design. After the subject is diagnosed as addicted to benzodiazepine, MMPI 2 profile is then checked for each subject.

Study Subjects

The subjects of this study were patients who chronically abused benzodiazepine in Yogyakarta. Subjects were obtained from psychiatrist practice in Yogyakarta. The reason we use private practice is that most of drug abusers refrained from visiting hospitals or clinics. They feel safer to visit private practice. By using private practice, we reduced the level of psychological stressors the subjects have to face due to fears of being watch by the authority, being arrest by the police. The inclusion criteria were diagnosed as having benzodiazepine addiction by at least two psychiatrists, provide informed consent, and age between 20-40 years old. Subjects with severe mental disorders and those who did not complete the MMPI test and/or the questionnaire were excluded from this study. Subjects were randomly selected by using clustered simple random sampling.

Instruments

Instruments used in this study were informed consent and subjects information forms; questionnaire for personal and demographics information; and MMPI 2 Indonesian version.

Data analysis

Distribution of demographic characteristics will be presented as frequency tables.The MMPI 2 test results will be descriptively presented as parameters. T score will be analyzed with correlation analysis with demographic characteristics using SPSS ver. 17 software. Level of significance was defined at $p < 0.05$.

RESULTS

In our study, 39 subjects were included which almost all were male (97.4%). The

average age was 33.3 ± 6.7 years old. More than half of our subjects (66.7%) were married. Most of the subjects were highly educated (82.0%), graduated from high school or higher. To our surprise, only 1 subjects (2.6%) who were unemployed and more than half (51.3%) had income higher than minimum provincial wage (TABLE 1).Most of our subjects were smoking (89.7%) and consumed alcohol (56.4%). Most of our subject claimed that they have benzodiazepine addiction for more than 3 years (82.1%). A number of 7 subjects (17.9) had been admitted to hospital previously due to addiction related problems. Most of our subjects (92.3%) had also attempted to stop their addiction but failed (TABLE 2).

TABLE 1. Demographic characteristics

Variables		N	%
Sex	Male	38	97.4
	Female	1	2.6
Age (years)	33.3 ± 6.7		
Marital status	Single	13	32.3
	Married	26	66.7
Education	Elementary	3	7.7
	Junior high	4	10.3
	Senior high	25	64.1
	College degree	7	17.9
Occupation	Civil servant	1	2.6
	Private	14	38.6
	Self employed	11	28.2
	Labor	8	20.5
	Merchant	1	2.6
	Others	3	7.7
	Unemployed	1	2.6
Income	≥ minimum provincial wage	20	51.3
	≤ minimum provincial wage	19	48.7

TABLE 2. Characteristics of patients with benzodiazepine addiction

Variables		N	%
Smoking habit	Yes	35	89.7
	No	4	10.3
Alcohol consumption	Yes	22	56.4
	No	17	43.6
Duration of addiction	< 3 years	7	17.9
	> 3 years	32	82.1
History of hospitalization due addiction problems	Yes	7	17.9
	No	32	82.1
Attempts to stop	Yes	36	92.3
	No	3	7.7

MMPI 2 results for mental capacity index revealed that our subjects had low total mental capacity index (4.32 + 1.26). The score for performance potential, adaptability, psychological constraint, risk taking behaviour, and mental capacity index were also low (TABLE 3). Basic personality index (OCEAN score) showed that our subjects had low OCEAN score for every sub categories (openness, conscientiousness, extraversion, agreeableness, and neuroticism) as shown in TABLE 4

TABLE 3. Mental capacity index based on MMPI 2

Variables	Mean	±	SD
Performance potential	0.19	±	0.33
Adaptability	1.01	±	0.41
Psychological constraint	1.13	±	0.44
Risk taking behavior	0.79	±	0.41
Moral integrity	1.20	±	0.25
Mental capacity index	4.32	±	1.26

Tabel 4. OCEAN score based on MMPI 2 examination

Skor	Mean ± SD		
Total	4.5	±	2.3
Openness	0.2	±	0.5
Conscientiousness	1.4	±	0.6
Extraversion	1.1	±	0.7
Agreeableness	1.1	±	0.6
Neuroticism	0.6	±	1.5

The clinical profiles examination showed that our subjects showed somatic symptoms due to psychological disturbances, clinical symptoms of overt suspiciousness, overt negative emotionality, clinical symptoms of depression, symptoms of psychopathic behaviours (antisocial), emotional difficulty in interpersonal relationship, clinical symptoms related to overt emotion, and weird and bizarre experience psychological experiences (TABLE 5). We conducted Mann Whitney test on the basic personality index and OCEAN score. We found that education level was significantly associated with performance potential and risk taking behaviours (TABLE 6 and 7).

TABLE 5. Clinical profiles of the subjects based on MMPI 2 examination

Clinical profiles	N	%
Somatic symptoms due to psychological disturbances	34	87.2
Clinical symptoms of overt suspiciousness	36	92.3
Overt negative emotionality	29	74.4
Clinical symptoms of depression	4	10.3
Symptoms of psychopathic behaviours (antisocial)	8	20.5
Emotional difficulty in interpersonal relationship	8	20.5
Clinical symptoms related to overt emotion	5	12.8
Weird and bizarre experience psychological experiences	38	97.4

TABLE 6. *Mann Whitney* test of the Mental capacity index scores to other variables

Variables	Performance potential		Adaptability		Psychological constraint		Risk taking behaviour		Moral integrity		Mental capacity index	
	Z	p	Z	p	Z	p	Z	P	Z	p	Z	p
Marital status	-0.154	0.877	-0.598	0.550	-0.844	0.399	-1.495	0.135	-0.613	0.540	0.274	0.799
Education level	-3.528	0.004	-0.189	0.850	-0.092	0.926	-2.097	0.036	-0.717	0.473	-1.464	0.143
Income	-1.034	0.301	-1.076	0.282	-2.083	0.037	-1.596	0.110	-0.153	0.878	-1.152	0.249
Smoking habit	-1.292	0.196	-0.096	0.924	-0.817	0.414	-1.256	0.209	-0.781	0.435	-1.065	0.287
Alcohol consumption	-0.449	0.653	-0.469	0.639	-0.471	0.637	-0.232	0.817	-1.372	0.170	-0.297	0.769
Hospitalization	-0.286	0.775	-1.314	0.189	-0.665	0.506	-0.049	0.961	-0.158	0.975	-1.174	0.240
Stop attempts	-1.103	0.270	-0.900	0.368	-0.797	0.425	-0.351	0.726	-1.119	0.263	-0.738	0.460

TABLE 7. Mann Whitney test of the OCEAN scores to other variables

	Openness		Conscientious-ness		Extraversion		Agreeableness		Neuroticism		OCEAN	
	Z	p	Z	p	Z	p	Z	p	Z	p	Z	p
Marital status	-1.914	0.056	-0.789	0.425	-0.474	0.635	-0.313	0.754	-0.088	0.930	-0.061	0.951
Education level	-0.685	0.493	-0/134	0.893	-1.027	0.305	-1.051	0.293	-1.124	0.261	-0.147	0.883
Income	-1.242	0.214	-0.029	0.976	-1.126	0.220	0.152	0.879	-0.358	0.720	-0.509	0.610
Smoking habit	-0.971	0.332	-1.117	0.264	-0.289	0.773	-1.179	0.239	-0.671	0.502	-0.769	0.442
Alcohol consumption	-0.764	0.445	-0.906	0.365	-0.839	0.402	-0.460	0.645	-0.509	0.611	-0.128	0.898
Hospitalization	-1.156	0.248	-0.152	0.879	-1.103	0.270	-0.540	0.589	-0.075	0.941	-0.259	0.796
Stop attempts	-0.809	0.407	-1.631	0.103	-0.493	0.622	-0.914	0.361	-1.374	0.169	-1.354	0.176

DISCUSSION

The results of this study have shown that the MMPI profile of drug abusers is distinctive. The results of the present study support previous reports that substance abuse is associated with disordered thoughts and emotions and cognitive derangement.[9]People with addiction have numerous problems related to social skills, judgment ability, and logical thinking as shown by clinical profiles on MMPI examination. We found that our subjects showed somatic symptoms due to psychological disturbances, clinical symptoms of overt suspiciousness, overt negative emotionality, and weird and bizarre experience psychological experiences.

Benzodiazepines are widely used in clinics and for recreational purposes, which lead to addiction in vulnerable individuals. Most addictive drugs increase dopamine level and trigger long-lasting synaptic adaptations in the mesolimbic reward system. It remains unclear whether these mechanisms account for the addiction liability of benzodiazepines, which are positive modulators of $GABA_A$ receptor function. The neurobiological basis for the addictive nature of benzodiazepines remains elusive.[11]The prevalence of addiction is higher in adolescent and is tend to decline with age. This "maturing out" phenomenon may be due to changes in personality, life circumstances, or increasing levels of responsibility. For those who go on to develop addiction to adulthood and old age however, the binge/intoxication stage generally leads to the withdrawal/negative emotional affect stage.[2] The abuse of benzodiazepine in old age would also significantly increase the risk for falls accidents.[12]

The reward system is believed to be particularly sensitive during adolescence. Research suggests that immaturities in the reward system may lead adolescents to wrongly assess the risks which accompany an action or stimulus. For example, an adolescent whose reward system is not fully developed may decide to engage in risky actions, such as taking drugs, stealing, or driving drunk, in order to activate an otherwise sluggish reward system. However, other research suggests that the adolescent reward system is over active and results in increased impulsivity and novelty seeking.[13]Immature personalities and coping skills in adolescent significantly contribute to addiction in this age group.

Personality trait are significant endophenotypes contribute to addiction. Personality traits are partially responsible for the development of addiction and predict relapse.[7]Impulsive behaviour is associated with most forms of drug-taking behaviours and addictions. Impulsivity can be expressed in a number of responses, including aggression. Both impulsivity and aggression are often considered to be a product of impaired cognitive control and could potentially affect several aspects of the addictive process, including compulsive drug-seeking and relapse.[12]In this study we found that higher risk taking behaviour was associated with lower educational level. It supported the finding that people engaging risk taking behaviours have impaired cognitive. All of these would eventually make them unable to perform well in their job and thus have low performance potential.

Risk taking is characterized by behaviours performed under uncertainty, with or without inherent negative consequences, with or without any possible or probable harm to oneself or others, and without robust contingency planning. Novelty seeking, often defined as one aspect of risk taking, with potentially high reactivity to novel stimuli, can alternately be considered a personality

trait. Both are parts of a constellation of traits observed in individuals with a propensity to experiment with novel stimuli, including those produced by drugs of abuse.[7] Personality traits are among the important causalities in the tendency toward risk-taking behaviours, including drug abuse.[9]

One current focus in optimizing treatment involves identifying individual differences related to addiction treatment outcome to guide the selection of therapies. Approaches that considered individual differences from a different perspective as important targets for treatment development might provide a potentially better outcome. Endophenotypes like impulsivity or compulsivity, developmental stages, sex differences, stage of the addiction process may represent important considerations when targeting or matching specific treatments to specific individuals.[14] Endophenotypes represent particularly attractive therapeutic targets as they may associate more closely to biological mechanisms than do heterogeneous psychiatric disorders like addictions.[15,16] According to results of the present study, there are certain personality variables that may be important predictors for addiction. Since personality traits are robust and rooted from childhood, interventions for prevention of drug abuse should start from childhood. Therefore, personality profiles are important measured to provide comprehensive methods to overcome addiction.

CONCLUSION

We found that benzodiazepine addicts had distinct personality profiles when examined with MMPI II test. We cannot conclude that our results were specific for benzodiazepine addicts since similar results could also be obtained with other substance abuse. Nevertheless our results provide a background for personality profiling in benzodiazepine abuse which can further be incorporated in the management of benzodiazepine addictions.

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