Comparing the psychological profiles of Iranian population based on clinical and validity measures of Minnesota multiphasic personality inventory

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Abstract

According to the necessity of screening and identifying the people exposed to mental disorders to determine the prevalence of these disorders in order to taking preventive actions and developing a treatment plan, this study was aimed to compare psychological profiles of people based on Minnesota Multiphasic Personality Inventory (MMPI-2) according to gender and marital status in a sample of Iranian general population. Statistical population included all of Iranian people between 18 to 80 years old that had passed at least 8 years of education and had no history of mental illness and brain injury. 1418 participants were selected by multi-stage cluster sampling method and were assessed by MMPI-2. Results showed that there was significant difference between males and females in the subscales of F, K, Hs, D, Hy, MF, Pt, Ma, and Si and also between single people and married people in the subscales of L, F, Pd, Pa, Pt, Sc and Ma. In general, findings of present study suggest that males have different patterns of mental disorders than females and married people have a different pattern of mental disorders in comparison of single people and they have different types of mental health problems. But, regarding males' higher scores in F and K validity scales and higher scores of married people in L validity scale in acceptance the findings of this study should be more cautious.

Keywords: Gender, Marital Status, Mental Health, MMPI

Introduction

Mental disorders affect large part of society's people [1]. More than 46% of adults who live in the United States struggle at least once in lifetime to one of mental disorders [2]. About half of people in their lives report recognizable symptoms of mental disorders [3]. Annually, 26% of adults in the United States experience one of mental disorders and 6% of them experience a severe one [4]. Unfortunately, serious mental disorders and mental illnesses become more prevalent [5]. Only, between 2009 and 2010 in the United States, 90,000 new cases of diagnostic of severe mental disorders were added in comparison of previous year

[6]. Mental disorders are associated with high social and economic costs. The mental health expenditures in the United States has been estimated 300 billion dollars annually which is more than double the cost of mental disorders in this country in the past decade. Moreover, it is estimated that mental disorders devote 6% of the total annual budget to the health sector [7]. These costs are in addition to the personal and social costs of mental disorders which were imposed to community [1]. Prevening mental disorders by early diagnosis and treatment is one of the priorities in public health programs today according to high prevalence of mental disorders and its astonishing economic and social effects.

Demographic variables and psycho-personality characteristics are important in the process of predicting health status, identifying weaknesses at the earliest possible time, planning for a well-timed prevention and treatment and preventing the exacerbation. Studies have indicated that gender is one of important determining factors of syndromes and psychological signs. Although, the risk of developing some of mental disorders have been reported with equal gender ratio, nevertheless the prevalence and the risk of developing large number of various psychological disorders are different in each gender. Ghuloum, Bener and Abou-Saleh [8] found in their study that depression and anxiety disorders are the most common mental disorders and compared to men, women are more prone to the risk of mental disorders. According to the Institute of Mental Health America rate of hospitalization for mental disorders in women and men is roughly equal. However, the kinds of disorders that men and women are hospitalized because of them are different [9]. Often men are hospitalized more than women due to drug abuse. But, hospitalizations of women are more than men due to mood disorders. Surveys in Iran showed that there is gender differences in the prevalence of mental disorders and most of reports stated that the mental disorders are more prevalent in women [9, 10].

Marital status is one of the other effective variables in diagnosing and identifying disorders in psychopathology. Some studies results indicate that married people display better mental health than singles and report less physical and anxiety symptoms, sleep disorders, depression symptoms and social dysfunction [10]. Married individuals take advantages of financial supporting and social benefits of marriage [11]. They have lower mortality rate and they have more physical and more mental health [12]. Dundenive, Sleep and Johnson [13] in their study about mortality and psychological health concluded that well-being arise from likely intimacy and close contact with close friends and especially spouse. They also claimed that the quality of this relationship has great influence on health. Berkman [14] attributed the cause of lower prevalence of mental disorder in married people than single individuals to the spouse's caregiving. So, marital relationships determine mental health of married people than single people. If couples involved in marital conflict, not only they do not have better mental health than singles, but also the stress arises from these conflicts could lead them to a poorer level of mental health.

Minnesota Multiphasic Personality Inventory (MMPI) is one of the most practical tests which are used to diagnose psychological disorders in research and treatment centers. Archer's survey [15] showed that MMPI is the most empirical objective method for the psychological assessments. Many studies indicated that MMPI is as widely used evaluative tool. MMPI is used in psychiatric [16,17], medical situations [18] and correctional settings [19, 20] and to assess drug and alcohol abuse [21, 22].

Mootabi and Shahrami [23] declared that MMPI is frequently used for its desirable features and they summarized these characteristics as following: It is an empirically-based assessment, coverage for wide range of disorders and psychiatric symptoms, assessment for screening, criteria for assessing profiles of various groups of patients and normal individuals, simplicity and affordability of performing, obtaining

comprehensive data from evaluation and interpretation, having clinical, supplemental, content, validity subscales; frequent and evidential revising to improve psychometric characteristics of MMPI in American and cross-cultural studies. Advantages of MMPI made it as well-known, reliable and valuable tool in assessments and psychological researches.

Therefore, this study aims to compare the psychological profiles of people based on clinical and validity of MMPI- 2's scales regarding to marital status and gender according to very few studies with comprehensive sample across Iran and using reliable screening assessment like MMPI-2 and necessity of screening and identifying susceptible individuals to psychiatric disorders to determine the prevalence of mental disorders based on demographic characteristic and apply preventive measures and treatment. Thus, we intend to answer the following questions:

Is there any difference between psychological profiles of women and men in the MMPI-2's scales?

Is there any difference between psychological profiles of married and single individuals in the MMPI-2's scales?

Method

The current study is a cross-sectional design. The statistical population consisted all of Iranian individuals between of 18 and 80 years old that had passed at least 8 years of education and had no history of mental disorder and brain injury.1418 participants were selected by multi-stage cluster sampling method among this population. Sampling procedure: at first, the Iran was divided into five large metropolitan areas of capital, center, east, northwest and south; then, Tehran, Isfahan, Mashhad, Tabriz and Shiraz cities were selected for sampling from these areas. In each city, inventory was given to all of those who had criteria for the study and wish to participate in the study (inclusion criteria: between of 18 and 80 years old that had passed at least 8 years of education and had no history of mental disorder and brain injury), in parks, cultural centers and public places. Data were analyzed by multivariate variance analysis (MANOVA) and SPSS-20. The tool of this study was the Minnesota Multiphasic Personality Inventory (MMPI-2) that it is a standard test to obtain scores of self-descriptive scales and give quantitative index of people's phases of emotional regulations and their attitude to participate in the research. The MMPI test included from 504 affirmative statements that have two choices of "True" or "false". Later, the number of statements increased to 566 because of adding the repeated items and Masculinity/Femininity scale and Social/Introversion scale. The MMPI revised in 1989 and standardized again, basic format maintained but some items changed and omitted and some items added to inventory as result the number of questions increased to 567 items. The first MMPI consisted of 13 scales; 3 validity scales and 10 clinical scales or personality indices. The MMPI-2 and MMPI-A are newer MMPI which have 10 clinical/personality scales and 3 validity scales like original MMPI but number of validity scales has been increased [24]. In the Iranian adaptation of MMPI-2 [25] the initial reliability coefficient was 0.84 that after eliminating the number of questions with weak correlation it increased to 0.96. Factor analysis with Oblimin rotation method was used to evaluate the validity of the questionnaire that 13 factor obtained and these factors explained 40.15 percent of total variance. In current study, the first 370 items were administered that make possible to score clinical and validity scales.

Results

Demographic data (Table 1) stated that among 1418 participants, 510 men (36%), 895 women (63.1%) and 13 participants with unspecified gender (0.9%) participated in this survey. Participants were between 18 to 80 years old. 504 were married (35.5%), 875 were single (61.7%) and 39 had undefined marital status. 83 (5.9%) were at the level of 8 years of formal education, 553 (39%) had high school diploma, 64 (4.5%) had associate's

degree, 584 (41.2%) had bachelor's degrees, 134 (9.4%) had master's or higher educations. From 478 married persons 154 (10.9%) had no children, 104 (7.3%) had one child, 125 (8.8%) had two children, 69 (4.9%) had three children and 26 (1.8%) had four children or more. Age

mean of participants was 36.97 years with standard deviation 9.52.

Multivariate analysis of variance test (MANOVA) was used to investigate the effects of gender and marital status on Lie (L), Infrequency – Psychopathology

Table 1 *Demographic Characteristics of Study Population*

Variable	Level	Freq.	Percent	Variable	Level	Freq.	Percent
Gender	Male	510	36	Marital status	Single	875	61.7
	Female	895	63.1		Married	504	35.5
Education	Middle school	83	5.9	Number of children	No child	154	10.9
	High school diploma	553	39		one child	104	7.3
	Associate's degree	64	5.4		Two children	125	8.8
	Bachelor's degree	584	41.2		Three children	69	4.9
	Master's degree or higher	134	9.4		Four or more children	26	1.8

Table 2 *Descriptive statistics for marital status and gender on MMPI-2's subscales*

Subscale	Gender	Mean	Standard deviation	Marital status	Mean	Standard deviation
L	Male	5.28	2.38	Married	5.55	2.26
	Female	5.21	2.21	Single	5.06	2.60
Fp	Male	13.24	8.52	Married	11.14	6.96
	Female	11.68	7.04	Single	12.80	7.90
K	Male	13.35	4.40	Married	13.22	4.47
	Female	12.87	4.41	Single	12.97	4.39
Hs	Male	10.02	4.73	Married	10.80	4.84
	Female	10.98	4.89	Single	10.53	4.87
D	Male	23.24	5.75	Married	24.73	5.65
	Female	24.97	5.84	Single	24.18	5.99
Hy	Male	23.02	5.60	Married	23.66	5.62
	Female	24.12	5.58	Single	23.79	5.59
Pd	Male	20.97	5.41	Married	19.58	5.32
	Female	20.46	5.70	Single	21.25	5.69
Mf	Male	25.31	4.60	Married	28.28	4.63
	Female	30.06	3.98	Single	28.40	4.91
Pa	Male	14.25	4.51	Married	14.14	4.39
	Female	14.63	4.35	Single	14.66	4.41
Pt	Male	19.58	8.74	Married	19.17	8.69
	Female	20.69	8.77	Single	20.88	8.79
Sc	Male	25.91	11.64	Married	24.01	10.90
	Female	25.39	10.68	Single	26.38	11.20
Ma	Male	21.61	5.14	Married	19.89	5.03
	Female	20.26	5.10	Single	21.18	5.17
Si	Male	29.23	7.28	Married	30.05	7.23
	Female	30.12	7.32	Single	29.67	7.40

(Fp), Correction (K), Hypochondriasis (Hs), Depression (D), Hysteria (Hy), Psychopathic Deviate (Pd), Masculinity/Femininity (Mf), Paranoia (Pa), Psychasthenia (Pt), Schizophrenia (Sc), Hypomania (Ma) and Social Introversion (Si) subscales. Homogeneity of variance-covariance matrices assumption has been violated with Box's M test (F(1670904, 273)=1.56, p<0.001). Nevertheless, MANOVA test is not very sensitive to violation of homogeneity assumption when sample size is large [26]. The results of effects of gender and marital status with Wilk's lambda test on linear combinations of MMPI-2 subscales showed significant effect of gender (F(1358, 13)=37.47, p<0.001) and marital status (F(1358, 13)= 7.89), p<0.001) on MMPI-2 subscales. The univariate analysis of variance was used to study the effects of gender and marital status on every subscales of MMPI-2. Univariate variance showed statistical significant differences in effect of gender (Table 3) on infrequency psychopathology (F(1,137)= 13.94, p=0.001), correction (F(1370,1)=4.24),

Table 3 *Univariate analysis of variance test to study effects of marital status and gender on MMPI-2's subscales*

Source of changes	Dependent variable	df	F	Significance level	η2
Gender	L	1	0.39	0.530	0.001
	Fp	1	13.94	0.000	0.008
	K	1	4.25	0.040	0.002
	Hs	1	12.97	0.000	0.011
	D	1	27.43	0.000	0.018
	Hy	1	13.26	0.000	0.011
	Pd	1	2.19	0.140	0.001
	Mf	1	417.04	0.000	0.227
	Pa	1	2.41	0.121	0.001
	Pt	1	5.49	0.019	0.003
	Sc	1	0.68	0.409	0.001
	Ma	1	22.32	0.000	0.016
	Si	1	4.83	0.028	0.004
Marital status	L	1	14.70	0.000	0.010
	Fp	1	14.53	0.000	0.011
	K	1	0.99	0.319	0.001
	Hs	1	1.05	0.305	0.001
	D	1	2.86	0.091	0.002
	Hy	1	0.20	0.659	0.001
	Pd	1	28.12	0.000	0.019
	Mf	1	0.63	0.427	0.001
	Pa	1	4.86	0.028	0.003
	Pt	1	12.19	0.000	0.008
	Sc	1	14.22	0.000	0.010
	Ma	1	20.22	0.000	0.012
	Si	1	0.95	0.331	0.001

hypochondriasis (F(1,1370)=12.94, p=0.001), depression (F(1,1370)=27.42, p=0.001), hysteria (F(1,1370)=13.26, p=0.001), masculinity/ femininity (F(1,1370)=417.04, p=0.001), psychasthenia (F(1,1370)=5.49, p=0.019), hypomania (F(1,1370)=22.32, p=0.001) and social introversion (F(1,1370)=4.83, p=0.028). According to univariate analysis of variance, there was a statistical significant differences in lie (F(1,1370)=14.69, p=0.001), infrequency−

psychopathology (F(1,1370)=14.52, p=0.001), psychopathic deviate (F(1,1370)=28.12, p=0.001), paranoia (F(1,1370)=4.86, p=0.028), psychasthenia (F(1,1370)=12.19, p=0.001), schizophrenia (F(1,1370)=14.22, p=0.001) and hypomania (1,1370)=20.22, p=0.001).

Discussion

The results of multivariate analysis of variance demonstrated that there is significant effect of gender and marital status variables on linear combination of MMPI-2's subscales and this significant effect can be seen between women and men in subscales of infrequency–psychopathology, correction, hypochondriasis, depression, hysteria, masculinity/femininity, psychasthenia, hypomania and social introversion. There is a significant difference between single individuals and married persons in Lie, infrequency–psychopathology, psychopathic deviate, paranoia, psychasthenia, Schizophrenia and hypomania subscales.

Men had higher scores in subscales of infrequency–psychopathology, correction, psychasthenia and hypomania and women had higher scores in subscales of hypochondriasis, depression, hysteria and masculinity/femininity that had significant difference between women and men in them. Generally, results of clinical scales showed that women had higher scores than men, thus women had poorer mental health than men. These findings are consistent with Danesh's [8] and Khalilzadeh's studies [9] that implied the higher prevalence of mental disorders among women. Furthermore, higher scores of hypochondriasis, depression and hysteria subscales among women is aligned with epidemiologic studies of mood disorders and psychosomatic disorders [27]. Higher scores of Hypomania subscale among men are matched to epidemiology of bipolar disorder [27] that shows higher prevalence of bipolar disorder among men. Higher scores of Psychasthenia among men could arise from job stress and pressures from men's role and responsibility.

Data from validity scales indicated higher scores of infrequency–psychopathology and correction subscales among men. This immaturity of men

arise from attempting to show a good image of themselves and correction than women which can demonstrate that women were more comfortable to talk about their issues and fill out the questionnaire more carefully; therefore women's questionnaires are more reliable than men's.

In the subscales that found significant differences between singles and married people, single individuals had higher scores in infrequency–psychopathology, psychopathic deviate, paranoia, psychasthenia, Schizophrenia and hypomania subscales and married people had higher scores in the Lie subscale. Hence, this study shows higher rates of prevalence of mental disorders in single individuals of sample. These findings are aligned with Wilson and Olson [12], Laasko and Pounonen-Illmonon [11] and Danesh's studies that explained married people have better mental health. Various researchers mentioned distinct reasons for explaining the differences of mental health status of married and single individuals. Johnson and Wu [28] believe that married people might have had better mental health before their marriage or people who have better mental health tend to get married. Other researchers believe that marriage has decisive influence on mental health and the reason is that married people receive different types of supports. For instance, Laasko and Pounonen-Illmonon [11] emphasized the importance of social supports' role. They divided social supports into appraisal and informational supports. Appraisal support is included of giving feedbacks and social admiring; informational supports are about advices, suggestions and counsel. They are of the opinion that receiving these supports reduces the incidence of depression symptoms in couples and promote their mental health. Other researchers assume that better mental health in married couples is because of their sexual and emotional satisfactions [10] and their economic well-being [29]. Therefore, according to the complex relationship between marital status and mental health and various mediating factors' role, it can be concluded that the combination of factors listed above

and even other factors are effective in this subject. Furthermore, married people of current sample scored higher than singles on the lie scale which indicated that they have tried to represent a good image of themselves. As a result, their questionnaires are less reliable and absolute acceptance of the findings of this study should be avoided.

Conclusion
Generally, the findings of this study demonstrate that men than women and married people than single people have different patterns of mental disorders and various levels of mental health status. Considering the higher scores of men in correction and infrequency–psychopathology subscales and higher scores of married people in lie subscale it is suggested to accept these findings cautiously.

In conclusion, the psychological assessment is consisted of three procedures: interview, test, observation. Measurement tools should be reliable and valid. These methods alone may not identify the psychological problems, but every method could help us to recognize the multiple aspects of abnormalities. We can say scientific process is conducted when all of these methods are combined to confirm hypothesis. Therefore, it is recommended to use structured interview based diagnostic and statistical manual of mental disorders (DSM) in order to validate the result of the study. One of the limitations of current research was the unequaled sample size of women and men. MMPI-2 test contains numerous questions and there is the possibility of subjects' fatigue, withdrawing some of participants from study and samples' attrition could be the other limitation of this study.

Conflict of interest
The authors declare that they have no conflicts of profits.

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