



Gender Differences in Mental Health among Adult Population in Vojvodina, Serbia

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Abstract

Background: Mental health and mental disorders are determined by multiple and interacting social, psychological and biological factors which determine the prevalence, onset and course of mental and behavioral disorders. The aim of the study was to evaluate differences in mental health status regarding gender of the adult population in the Province of Vojvodina.

Methods: Research was carried out as a retrospective cross-sectional study. Data was obtained from the “National Health Survey in Serbia, 2006” database that refers to the representative adult population of Vojvodina, aged 20 and over. A specially designed questionnaire was applied as a research instrument.

Results: This study included 3627 examinees, average age 49.9 years. In the month prior to the study, a half of the adult population in Vojvodina (48.4%) was exposed to stress and one third had emotional problems (32.9%), while both stress and emotional problems were more prevalent in females. The average score value on the psychological distress scale (presence of negative conditions and feelings) of all examinees was 64.1 (from 0 to 100) and it was statistically significantly lower in women (62.0), compared to men (66.6) ($P < 0.001$). Statistically significant differences were also observed between average score values on the role-emotional and vitality scales ($P < 0.001$).

Conclusion: When mental health is considered, this research showed that female population is more vulnerable compared to males. Women are more often exposed to stressful situations and emotional problems and more often faced with negative conditions and feelings.

Keywords: Mental health, Sex factors, Stress, Psychological factors

Introduction

Mental health represents one of the basic components within entire health of an individual which is very difficult to describe (1) and its importance is incorporated in the definition of health, as follows: “Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity”. Mental health is an integral part of this definition (2).

The World Health Organization (WHO) has defined mental health as a state of well-being in which an individual realizes his or her own abili-

ties, can cope with the common stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community (2).

Mental health and its disorders are determined by multiple and interacting social, psychological and biological factors which determine the prevalence, onset and course of mental and behavioral disorders. These include social and economic factors, demographic factors such as sex and age, and family environment (3). Some authors consider that females express more psychopathological

phenomena, others consider that those conditions are more present in males, although there are also considerations that both genders suffer equally but have different problems. A very frequently asked question is what is the source of the existing differences? A final answer still does not exist but the most often discussion is concerned with whether the difference is determined by biological or psychological factors. There are also authors who consider that all the differences are determined by social experiences. Within the discussion on social causes there are statements that male and female problems are a result of exposure to significantly different life circumstances and stresses while other consider both genders face the same experiences but with different reactions to them (4).

Some community studies have revealed that the overall prevalence of mental and behavioral disorders does not seem different between men and women, but there are differences concerning the type of mental disorders affecting females, i.e. males (3). These differences vary across age groups. In childhood, most studies report a higher prevalence of conduct disorders such as aggressive and antisocial behaviors among boys. During adolescence, girls have a much higher prevalence of depression and eating disorders and engage more in suicidal ideation and suicide attempts than boys. Boys experience more problems with anger, engage in high-risk behaviors and commit suicide more frequently than girls (5, 6). In adulthood, anxiety and depressive disorders are more common among women, while substance use disorders and antisocial personality disorders are higher in men (5, 7), and these findings have been seen both in developed and developing countries (8, 9). In contrast to depressive and anxiety disorders, severe mental disorders such as schizophrenia and bipolar affective disorders do not show any clear differences of incidence or prevalence. Schizophrenia, however, seems to have an earlier onset and more disabling course among men, while women are more likely to exhibit serious forms of bipolar depression (3, 5).

Many reasons for the higher prevalence of depressive and anxiety disorders among women have

been proposed: genetic, biological, psychological and social factors. Additionally, greater exposure of females toward domestic and sexual violence contributes a lot to these differences (3).

There is also the gender difference in perceptions of distress and in patterns of health-care seeking among those suffering from mental health problems (5). There is evidence that women report a higher number of physical and psychological symptoms, they more often seek for help, and more often get prescribed psychotropic medicines than men (3). Women are consistently more likely to use outpatient mental health services, while men usually ask for help at a later stage after the onset of symptoms, or delay until symptoms become severe (5).

Concerning these facts, on the basis of a representative sample, the aim of our study was to analyze gender differences in the level of mental health among adult population in Vojvodina, Serbia.

Materials and Methods

Mental health research of the adult population in the Province of Vojvodina, northern part of Serbia, was carried out within the national study "National Health Survey in Serbia" in 2006. It was conducted as a cross-sectional study on the representative population sample in the Republic of Serbia. The Ministry of Health of the Republic of Serbia allowed the use of national study data base, and therefore enabled realization of this study.

Data used in this paper refer to the representative sample of the adult population in Vojvodina aged 20 yr and over (N=3627). A stratified two-stage sample was formed to provide a statistically reliable estimation of the selected indicators. Distribution of respondents by sex and age in the sample match the population distribution estimated for the year 2006 based on the census data (10). A specially created face-to-face questionnaire was used as a research instrument, i.e. the part of questionnaire that corresponds to the standard questionnaire usually used in this type of research (11). The survey was conducted by trained interviewers and their work was supervised by licensed super-

visors. The process of the data collection was standardized and performed in accordance with the methodological guidelines. Before the interview, the interviewers asked the members of the selected households for permission to ask the questions for the study (10).

Mental health was assessed on the basis of a question analysis referring to the presence of stress and emotional problems, as well as the analysis of mental health assessment scales (a scale of emotional problems impact on work ability, a psychological distress scale and a vitality scale) that were formed on the basis of the questionnaire (11). All questions referred to the month prior to the survey.

The scale of emotional problems impact on work ability (*Role-Emotional scale*), consisted of three questions, each containing two modalities of answers. The score on the scale was positive i.e. greater score means better functioning. A raw score was obtained by calculation of a simple score of marks for three questions and afterwards it was transformed in order to acquire scale from 0-100 where greater score stands for better mental health. The psychological distress scale (*Mental Health Index MHI-5*) deals with the frequency of positive (serenity, calmness and happiness) and negative (anxiety, depression, despair and sadness) conditions and feelings. It consisted of five questions, each having six modality answers. By adding marks for these questions a raw score was obtained and afterwards transformed, in order to get a scale 0-100, where greater score means better mental health.

The Vitality scale that was used in the estimation of whether examinees more often feel enthusiasm and energy or tiredness and exhaustion, encompasses four questions with six modality answers. By adding marks for four questions the raw score was obtained and afterwards transformed in a scale 0-100, where greater score stands for better mental health, i.e. better vitality.

Statistical data processing

Standard methods of descriptive and inferential statistics were used. Numerical data was presented through mean values, while attributive characteris-

tics were presented through the distribution of frequencies and percentages. For the purpose of determination of difference significance, the Pearson's χ^2 test, Student's t test and one-way variance analysis (ANOVA) were used.

Results

The research has encompassed 3627 inhabitants of Vojvodina aged 20 yr and over, with an average age 49.9 years (51.2 years for females and 48.4 years for males). Women were a bit more present in the sample (53.5%). It was noticed that women had a lower educational status compared to men and also they were more often professionally inactive (Table 1). Differences in educational and professional status were statistically significant ($P < 0.001$).

Within the estimation of mental health, the exposure to stress, presence of emotional problems and their impact on work ability were analyzed, as well as frequency of positive and negative conditions and feelings during the month prior to the survey. Results showed that one in two examinees (48.4%) was exposed to stress while one third of the adult population (32.9%) had emotional problems like sadness, hostility, worry and depression, whereas both stress and emotional problems were more evident in female population in all observed socio-demographic categories (Table 2, 3).

Among men, the oldest were the least exposed to stress, while there were no significant differences regarding education level and employment status. Among women, statistically significant differences were observed between women with a different employment status, so that students and employed women were more exposed to the stressful situations (Table 2).

When it comes to emotional problems, there were no statistically significant differences in relation to the observed socio-demographic characteristics among women, while in men the difference is confirmed among those with the different level of education, in terms that men with the lowest education level more faced with emotional problems (Table 3).

Table 1: Socio-demographic characteristics of examinees

Variables	Total n	Male (n=1685) % (95%CI)	Female (n=1942) % (95%CI)
Age (yr)			
20-44	1440	42.7 (40.3-45.1)	37.1 (35.0-39.3)
45-64	1324	36.8 (34.5-39.1)	36.3 (34.2-38.4)
65+	863	20.5 (18.6-22.4)	26.7 (24.7-28.7)
Educational level			
Primary school and lower	1407	30.4 (28.2-32.6)	46.0 (43.8-48.2)
Secondary school	1824	57.3 (54.9-59.7)	44.2 (42.0-46.4)
Post secondary school	396	12.2 (10.6-13.8)	9.8 (8.5-11.1)
Employment status			
Employed	1302	47.9 (45.5-50.3)	25.5 (23.6-27.4)
Retired	1018	27.4 (25.3-29.5)	28.7 (26.7-30.7)
Student	97	2.3 (1.6-3.0)	3.0 (2.2-3.8)
Unemployed	1209	22.4 (20.4-24.4)	42.8 (40.6-45.0)

Table 2: Stress exposure in the population of Vojvodina

Variables	Total			Male		Female		P
	n	% (95% CI)	P	% (95% CI)	P	% (95% CI)	P	
Age (yr)								
20-44	1438	49.9 (47.3-52.5)		42.6 (39.0-46.2)		57.3 (53.7-60.9)		<0.001
45-64	1323	49.9 (47.2-52.6)	0.007	45.6 (41.7-49.5)	<0.001	53.7 (50.0-57.4)	0.171	0.003
65+	862	43.7 (40.4-47.1)		31.0 (26.1-35.9)		52.2 (47.9-56.5)		<0.001
Educational level								
Primary school and lower	1406	48.7 (46.1-51.3)		39.8 (35.6-44.0)		53.9 (50.6-57.2)		<0.001
Secondary school	1822	47.3 (45.0-49.6)	0.150	41.7 (38.6-44.8)	0.629	53.7 (50.4-57.0)	0.066	<0.001
Post secondary school	395	52.7 (47.8-57.6)		43.4 (36.6-50.2)		62.6 (55.7-69.5)		<0.001
Employment status								
Employed	1301	49.1 (46.4-51.8)		43.3 (39.9-46.7)		58.6 (54.3-62.9)		<0.001
Retired	1017	44.6 (41.6-47.6)		36.3 (31.9-40.7)		51.5 (47.4-55.7)		<0.001
Student	97	56.7 (46.8-66.6)	0.015	44.7 (28.9-60.5)	0.085	64.4 (52.2-76.6)	0.049	0.056
Unemployed	1207	59.3 (47.5-53.1)		42.9 (37.9-47.9)		53.7 (50.3-57.1)		<0.001
Total	3623	48.4 (46.8-50.0)		41.3 (39.1-43.5)		54.6 (52.2-57.0)		<0.001

Table 3: Presence of emotional problems in the population of Vojvodina

Variables	Total			Male		Female		P
	n	% (95% CI)	P	% (95% CI)	P	% (95% CI)	P	
Age								
20-44	1437	31.1 (28.7-33.5)		23.1 (20.0-26.2)		39.1 (35.5-42.7)		<0.001
45-64	1324	34.6 (32.0-37.2)	0.148	27.3 (23.8-30.8)	0.071	41.1 (37.5-44.7)	0.713	<0.001
65+	861	33.1 (30.0-36.2)		21.2 (16.9-25.5)		41.0 (36.8-45.2)		<0.001
Educational level								
Primary school and lower	1405	36.8 (34.3-39.3)		28.1 (24.2-32.0)		41.8 (38.6-45.0)		<0.001
Secondary school	1822	30.4 (28.3-32.5)	<0.001	22.6 (20.0-25.2)	0.049	39.3 (36.0-42.6)	0.480	<0.001
Post secondary school	395	30.1 (25.6-34.6)		22.4 (16.7-28.1)		38.4 (31.5-45.3)		0.001
Employment status								
Employed	1302	27.6 (25.2-30.0)		22.2 (19.3-25.1)		36.6 (32.4-40.8)		<0.001
Retired	1017	32.9 (30.0-35.8)		24.8 (20.9-28.8)		39.7 (35.6-43.8)		<0.001
Student	97	36.1 (26.5-45.7)	<0.001	23.7 (10.2-37.2)	0.201	44.1 (31.4-56.8)	0.146	0.041
Unemployed	1205	38.1 (35.4-40.8)		27.9 (23.4-32.4)		42.8 (39.4-46.2)		<0.001
Total	3622	32.9 (31.4-34.4)		24.2 (22.3-26.1)		40.3 (38.0-42.6)		<0.001

Table 4: Average score values on the Role-Emotional Scale in the population of Vojvodina

Variables	Total		Male		Female		P
	Mean (95% CI)	P	Mean (95% CI)	P	Mean (95% CI)	P	
Age (yr)							
20-44	88.0 (86.5-89.4)		91.7 (89.9-93.5)		84.3 (82.0-86.6)		<0.001
45-64	83.5 (81.8-85.3)	<0.001	88.1 (85.8-90.3)	0.014	79.6 (76.9-82.2)	0.006	<0.001
65+	81.9 (79.4-84.3)		87.2 (83.8-90.5)		78.3 (75.0-81.6)		<0.001
Educational level							
Primary school and lower	80.4 (78.5-82.3)		86.1 (83.3-88.9)		77.1 (74.6-79.7)		<0.001
Secondary school	88.1 (86.7-89.4)	<0.001	91.2 (89.6-92.8)	0.003	84.5 (82.4-86.6)	<0.001	<0.001
Post secondary school	86.3 (83.3-89.2)		89.2 (85.4-93.0)		83.2 (78.6-87.7)		0.046
Employment status							
Employed	90.0 (88.5-91.3)		92.5 (90.9-94.1)		85.6 (82.9-88.3)		<0.001
Retired	82.3 (80.1-84.5)		85.8 (82.8-88.7)		79.4 (76.3-82.6)		0.005
Student	83.9 (77.6-90.1)	<0.001	94.7 (89.3-100.0)	<0.001	76.8 (67.5-86.1)	0.008	0.005
Unemployed	81.9 (80.0-83.8)		87.0 (83.9-90.2)		79.5 (77.1-82.0)		0.001
Total	84.9 (83.8-85.9)		89.4 (88.1-90.7)		81.0 (79.4-82.5)		<0.001

Additionally, females, in all observed socio-demographic categories, had a lower average score value on the scale of emotional problems impact on work ability which indicates that emotional problems influenced their professional functioning to a greater extent (Table 4). An average score value on the psychological distress scale was 64.1 and it was significantly lower in females compared to males in all analyzed socio-demographic categories,

except among the most educated men and women (Table 5).

An average score value on the vitality scale was 50.9 and it was significantly lower in females than in males, regardless education level and employment status (Table 6). The youngest, those with higher educational level, employed ones and the students of both genders had the best scores on all three scales (Tables 4, 5, 6).

Table 5: Average score values on the psychological distress scale (Mental Health Index) in the population of Vojvodina

Variables	Total		Male		Female		<i>P</i>
	Mean (95% CI)	<i>P</i>	Mean (95% CI)	<i>P</i>	Mean (95% CI)	<i>P</i>	
Age (yr)							
20-44	67.4 (66.5-68.2)		69.2 (68.1-70.2)		65.6 (64.3-66.8)		<0.001
45-64	63.1 (62.2-64.0)	<0.001	64.8 (63.5-66.1)	<0.001	61.6 (60.3-62.9)	<0.001	0.001
65+	60.4 (59.2-61.6)		64.5 (62.7-66.3)		57.6 (56.0-59.2)		<0.001
Educational level							
Primary school and lower	59.6 (58.7-60.6)		62.2 (60.8-63.6)		58.1 (56.9-59.3)		<0.001
Secondary school	66.9 (66.1-67.6)	<0.001	68.5 (67.5-69.4)	<0.001	65.1 (64.0-66.2)	<0.001	<0.001
Post secondary school	67.5 (65.9-69.0)		68.8 (66.7-70.9)		66.0 (63.7-68.3)		0.075
Employment status							
Employed	67.5 (66.7-68.3)		68.7 (67.7-69.7)		65.6 (64.2-67.0)		<0.001
Retired	61.7 (60.6-62.7)		64.4 (62.9-66.0)		59.4 (57.9-60.9)		<0.001
Student	69.3 (66.2-72.4)	<0.001	72.6 (68.3-76.9)	<0.001	67.0 (62.6-71.4)	0.008	0.079
Unemployed	62.2 (61.2-63.2)		64.2 (62.4-65.9)		61.3 (60.0-62.5)		0.009
Total	64.1 (63.6-64.7)		66.6 (65.8-67.4)		62.0 (61.2-62.8)		<0.001

Discussion

The most serious social distinction in our culture is the one regarding the gender. It is the fact that either a male or a female person has their own approach towards resources, life choices and opportunities. This also creates their relations to other people, expectations of others and also their own expectations. Gender affiliation influences our internal conditions and directions, feelings about ourselves, impressions of the world and emotional

reactions. Considering that our social approaches are basically determined by gender, the reasonable assumption is that gender is also going to have a significant impact on mental health and appearance of emotional problems in males and females (4). In addition, the manifold role of a woman in society as wife, mother, someone who takes care of others, followed by increasing professional engagement also influences enlarged risk of mental disorder manifestation (3).

Table 6: Average score values on the Vitality scale in the population of Vojvodina

	Total		Male		Female		<i>P</i>
	Mean (95% CI)	<i>P</i>	Mean (95% CI)	<i>P</i>	Mean (95% CI)	<i>P</i>	
Age (yr)							
20-44	55.1 (54.3-55.9)		56.1 (55.1-57.2)		54.0 (55.8-55.1)		0.007
45-64	50.0 (49.1-50.9)	<0.001	50.8 (49.5-52.2)	<0.001	49.2 (48.0-50.4)	<0.001	0.072
65+	45.3 (44.1-46.6)		49.3 (47.4-51.2)		42.7 (41.1-44.2)		<0.001
Educational level							
Primary school and lower	45.6 (44.7-46.5)		47.5 (46.1-48.8)		44.5 (43.4-45.7)		0.001
Secondary school	53.9 (53.2-54.6)	<0.001	54.6 (53.6-55.7)	<0.001	53.1 (52.0-54.1)	<0.001	0.037
Post secondary school	55.7 (54.2-57.3)		57.3 (55.2-59.5)		54.0 (51.9-56.2)		0.032
Employment status							
Employed	53.7 (52.8-54.5)		54.4 (53.3-55.4)		52.5 (51.1-53.9)		0.035
Retired	48.3 (47.2-49.4)		50.5 (48.9-52.1)		46.5 (45.1-47.9)		<0.001
Student	60.0 (56.9-63.0)	<0.001	63.8 (59.4-68.3)	<0.001	57.3 (53.2-61.4)	<0.001	0.037
Unemployed	49.4 (48.4-50.4)		51.1 (49.4-52.9)		48.6 (47.4-49.8)		0.023
Total	50.9 (50.3-51.5)		52.8 (52.0-53.6)		49.2 (48.5-50.0)		<0.001

The results of our research also confirmed that mental health is more endangered in female population. This research revealed that females are more often exposed to stress (especially employed and students), more often are faced with emotional problems and also have greater influence of emotional problems on work ability than males. Similar results are obtained in other parts of Serbia in 2006 as well as in 2000 (10).

In addition, the unfavorable score value on the psychological distress scale of the SF-36 questionnaire (*Mental Health Index MHI-5*) indicates that negative conditions and feelings like anxiety, depression, worry and sadness exist more often in females, which is also confirmed by the survey carried out in Great Britain (12). It is also very important to emphasize that EUROHIS (*European Health Interview Survey*), a group for screening of mental disorders in population, recommends this scale because it shows the best correlation with

the total mental health score of the SF-36 questionnaire (13-15).

On the vitality scale (*SF-36 Vitality Scale*) which is also recommended by the EUROHIS group for the mental health estimation, females again have more unfavorable average score which indicates that they more often feel tiredness and exhaustion than males which is reasonable considering the duties they have.

Significant differences in mental health between males and females can also be explained by differences existing in educational and labor status of these two population groups, considering numerous researches demonstrating that persons with a lower educational level and unemployed ones had a low level of mental health (2, 16). The mental health survey among Australian population which applied the same psychological distress scale has demonstrated that inactive unemployed examinees had lower values on this scale (17) and similar re-

sults were also obtained in Great Britain where the most educated persons and the employed had the greatest score values (12).

Our study confirmed that education and employment have a positive impact on the mental health of both genders. It should be emphasized that an average score values on the psychological distress scale were not significantly different only within the most educated group of men and women (in all other observed categories women had less favorable values), indicating that investment in women's education is of great importance for the improvement of their mental health and must be one of the priorities of the program aimed at improving the mental health of the population. On the other hand, when it comes to employment, it has been noted that working women are more exposed to stressful situations compared to unemployed ones, and that they have less favorable score on the scale of psychological distress than employed men, which can be explained by the large number of responsibilities which working women are faced with. The above mentioned findings were confirmed by the WHO, as well (3). Considering all these facts, programs aimed at improving the population's mental health would have to take this into account and find a way to relieve working women.

In order to understand gender differences more completely it has to be emphasized that different psychopathologies present in males or females, have their source in traditional approaches relating to the way of behavior that is socially acceptable for one, i.e. the other gender. Males are often criticized when expressing feelings like weakness, worry, vulnerability, which are typical of females and linked to depression and anxiety. On the other hand, behavior typical of males, like the expression of anger and antisocial behavior is hardly tolerated for women (4).

Conclusion

When mental health is considered, the overall research has confirmed that females are more vulnerable than males, that they are more often exposed to stressful situations and emotional prob-

lems, that women are more often faced with negative conditions and feelings and more often feel the lack of energy and life enthusiasm, which can be one of the significant signs of depression. On the other hand, one should be aware of the fact that males reluctantly admit to have emotional problems and face with negative mood conditions and feelings which doesn't mean these problems are not evident and that they are not going to cause certain psychopathology. Finally, further analysis should be aimed at cause determination of this gender difference, as well as the establishment of appropriate mental health care program and improvement of the mental health, as an important part of the overall health and the quality of life.

Ethical considerations

Ethical issues (Including plagiarism, Informed Consent, misconduct, data fabrication and/or falsification, double publication and/or submission, redundancy, etc) have been completely observed by the authors.

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