

## 22-years trends in Anxiety and Depression in the Russian population: Gender differences based on WHO MONICA-psychosocial, HAPIEE epidemiological studies

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**Background:** In the modern dynamically changing picture of the world, the problem of social adaptation of a person comes first while well-being is one of the important objective conditions of life. There is a huge number of factors that determine working capacity and other health characteristics, mental resistance to stressful situations plays an important role. A high level of mental resistance to stress is the key to maintaining, developing and strengthening the health and professional longevity of a person. The fact that men and women have a completely different reaction to stress and deal with its consequences in different ways is well known to psychologists however in the current economic crisis, men and women are in an equally difficult, traumatic environment. Therefore, there is a need to find at the population level the origins and gender differences in reactions to stress of men and women.

The aim of the study was to establish gender differences and dynamics of personal anxiety and depression over 22 years in the open population of Russia / Siberia aged 25-64 years.

**Materials and Methods :** The results of our study were obtained from the survey of a general population living in one of the districts in Novosibirsk. The screening examinations were performed at the Research Institute of Internal and Preventive Medicine - a branch of the ICG SB RAS in 1994-95 and 2003-2005. Samples were generated independently for each of the epidemiological programs, according to the requirements of protocol. Survey of male and female population in 1994-95 was conducted under the WHO MONICA-MOPSY program (Multinational Monitoring of Trends and Determinants of Cardiovascular Disease- Optional Psychosocial Substudy "MONICA-MOPSY"). As part of the screening persons aged 25-64 were examined (n=657 of males, average age- 44.3±0.4 years, responderate - 82.1%; n=870 of females, average age- 45.4±0.4 years, responderate- 72.5%). Under the IV screening of the project HAPIEE (Determinants of Cardiovascular Disease in Eastern Europe: A Multicenter Cohort Study) persons aged 45-64 years were examined in 2003-2005 yy (n=576 of males, average age- 54.23±0.2 years, responderate- 61%; n= 1074 of females, average age-54.27 + 0.2 years, response rate- 72%). Inframe of Vscrening in 2013-2016 the people aged 25-44 years (n=427 of males, average age- 34±0,4 years, response rate - 71%; n=548 of females, average age- 35±0,4 years, response rate - 72%). General examination in 1994-95 and 2003-2005 and 2013-2016 was conducted according to standard methods adopted in epidemiology and included in the MONICA program. The screening program included the following sections:

1) Registration of socio-demographic data was carried out according to the standard epidemiological protocol of the WHO program

"MONICA-psychosocial": identification number, place of residence, name, date of birth, date of registration. Gender: 1 - male, 2 - female.

2) **Psychosocial testing:** Anxiety traits were measured using the Spielberger C.D. scale. When interpreting the indicators, the following indicative estimates of personal anxiety were used: a low level of personal anxiety, an average level of personal anxiety and a high level of personal anxiety. To evaluate depression, we used the form of the depression scale - the MOPSY test (Depression Scale), consisting of 15 questions. For each question there are 2 answers given: 'agree', 'disagree'. The severity of depression was assessed as no depression, moderate, major depression. The coding of the tests consisted in constructing the components of the indices and calculating the scores in accordance with the proposed algorithm of the MOPSY program. The scale "Knowledge and attitude to own health" included the following sections: stress in the family and at the workplace; sleep disturbances. The subjects were asked to self-answer the questions of the scale according to the instructions placed in the scale. The methods were strictly standardized and complied with the requirements of the protocol of the WHO program "MONICA - psychosocial". Processing of the material according to the WHO program "MONICA - psychosocial" was carried out at the "MONICA" Information Collection Center in Helsinki (Finland). Quality assurance was carried out at the MONICA quality control centers: Dundee (Scotland), Prague (Czech Republic), Budapest (Hungary). The presented results were found satisfactory. Statistical analysis was carried out with the SPSS (Statistical Package for the Social Science) software package, version 11.5. To test the statistical significance of differences between groups, the chi-square test ( $\chi^2$ ) was used. A p-values  $\leq 0.05$ .

**Results:** In the open population of 25-64 years in 1994-1995 more than half of women (59.9%) and men (50.9%) had a high level of anxiety. In addition, there was an increase in the high level of anxiety among men from younger age groups to older groups (from 35.5% to 60.4%, respectively). The opposite picture is shown in women: the highest levels of personal anxiety are found in younger groups, especially in age group of 35-44 years (69.2%) compared with group of 55-64 years - 53.8% ( $\chi^2=15.937$  v=2 p=0.0001). However, over a 10-year period from 1994-1995 to 2003-2005, the level of high anxiety increased in older age groups, especially at the age of 55-64 for women from 53.8% to 86.5% ( $\chi^2=83.274$  v=2 p=0.0001). Over the 22-year period from 1994-1995 to 2013-2016 the number of people with a high level of anxiety, both men (38.3% to 22.4%) and women (64.6% to 39.9%), decreased in the age group of 25-34 years ( $\chi^2=28.982$  v=2 p=0.001;  $\chi^2=19.89$  v=2 p=0.0001). The same trend was observed in persons aged 35-44 years.

In all age groups without exception, in 1994-1995 the levels of major depression and moderate depression in women (11.8% and 42.8%) were higher than in men (3.1% и 25.9%) ( $\chi^2= 66.724$  v=2 p=0.0001). In the age group 55-64 years, for the period from 1994 to 2003-2005, the level of major depression in women decreased from 18.6% to 4.2%, while

in men it remained at the same level – 4% ( $\chi^2=18.210$   $v=2$   $p=0.0001$ ;  $\chi^2=6.088$   $v=2$   $p=0.048$ ). For the period from 1994 to 2013-2016, among people of the middle age group of 35-44 years, the level of major depression increased both in men from 1.8% to 11.1% and women from 13.6% to 16.1% ( $\chi^2=29.695$   $v=2$   $P=0.0001$ ,  $\chi^2=11,08$   $v=2$   $P = 0.004$ ).

**Conclusions:** Women were found to have significantly higher rates of psychosocial stress than men. High levels of anxiety, major depression and moderate depression among the population of 25-64 years old in

1994-1995 were higher in women than in men (59.9% and 50.9%; 11.8%, 42.8% and 3.1%, 25, 9%, respectively). During the observation period, in the group of 55-64 years an increase in personal anxiety (86.5%) and a decrease in the level of depression (4.2%) were found in women over 10 years. Over a 22-year period, in the group of men 25-34 years the high level of anxiety decreased (22.4%), major depression increased (11.1%); high levels of anxiety decreased (39.9%) in women and major depression increased (16.1%).