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Male and Female Trajectories of Social Isolation in Russia from 1994 To 2017

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ABSTRACT

Purpose: To determine gender differences in trends of social support levels in an open population aged 25-64 years over long-term period - 23 years in Russia / Siberia (Novosibirsk).

Methods: Within the framework of the screening in 1994-95 under the WHO MONICA-psychosocial (MOPSY) program (n = 1527, 43% males, mean age 44.85 ± 0.4 years), in 2003-2005 under the international project HAPIEE (n=1650, 34,9% males, mean age 54,25±0,2 years), in 2013-2016 (n=975, 43,8% males, mean age 34,5±0,4 years) and 2016-2017 (n=663, 41,3% years 51,95±0,32 years) within the framework of the budgetary theme No. AAAA-A17-117112850280-2, random representative samples of men and women in one of districts in Novosibirsk were examined. Social support is assessed using the Berkman-Syme scale. The index of close contacts (ICC) and social networks (SNI) was assessed.

Results: In 1994, a high prevalence of a low level of close contacts was established in an open population of 25-64 years, more pronounced among men compared with women (62% vs 56.8%). In 2003 and 2013, there was a trend towards a decrease in the frequency of the low close contact index to 46-50%, although the ICC levels did not differ by gender. In 2017, on the contrary, women were 14.4% more likely to show a lack of close contacts compared to men, especially in the 45-54 age group, where the low ICC rate exceeded the 1994 level.

The prevalence of low SNI in an open population of 25-64 years in 1994 was similar for men and women and was 77%. In 2003-2005, women in older age groups showed a slight increase in the frequency of low SNI levels up to 80.1%. By 2013, a downward trend in the frequency of low SNI among young age groups of both sexes was established, but this trend turned out to be unstable, and after a short period of time the SNI indicators returned to the 1994 levels.

Conclusion: In the period 1994-2005, a high level of social isolation among men and women was determined in the open population. By 2017, the clear trend in the increase in the level of social interactions changed to a negative side, especially among women in the 45-54 age group.

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Background

Objective reality forms the concept of social isolation and interpersonal relationships not only as a form of social interaction, but, to a large extent, as a biomedical phenomenon. And that's why. The slowdown in the decline in cardiovascular mortality worldwide makes the list of major risk factors (RF) for cardiovascular diseases expand. The accumulated data on social support required the inclusion of this RF in the list of the European recommendations for cardiovascular prevention of the latest revision with a higher level of evidence base and clinical guidelines [1,2]. According to a recent meta-analysis of the scientific literature on the subject, the lack of social networking increases the risk of death within 7 years by about 30%, while the shortage of close contacts is estimated at about 26% [3]. Valtorta et al. (2016) in a later meta-analysis showed that social isolation increases the risk of heart disease by 29%

and stroke by 32% [4].

Modern longitudinal studies show an increase in the level of social support in both sexes during the entire observation period [5]. At the same time, gender differences in social support and social networks change with age [6-8]. But social networks are more dependent on gender than on any other demographic characteristic [9]. In general, women have larger networks and receive supports from multiple sources. They have more friends and more social support than men [7, 8]. Men, as a rule, maintain close relationships with only a few people and women consider more people important to themselves including in this circle all persons who are not indifferent to them [6].

At the same time, the perception and structure of social interactions as well as the protective effect on health are unequal in men and women [10-12]. These differences are due to the study design, gender and age composition of the studied population and instruments for measuring social support.

It should be noted that in the available literature trends in social support are poorly covered and, at present, it is not possible to determine how the prevalence of social isolation by gender and age among the population has changed in recent decades. There are no such studies in Russia. Based on this, the purpose of our study was to establish gender differences in the dynamics of the levels of social support in an open population of 25-64 years over a long period of time-23 years, in Russia / Siberia.

Material and methods

The results of our study were obtained on the basis of a survey of the male and female population living in one of the districts of Novosibirsk. The examinations were carried out within the framework of screenings 1994-95, 2003-2005, 2013-2016 and 2016-2017.

Under the III screening of the WHO program «Multinational Monitoring of Trends and Determinants of Cardiovascular Disease-Optional Psychosocial Substudy» (MONICA-MOPSY) representative sample of residents aged 25–64 years examined in 1994-1995 (n=1527, 43% males, mean age 44.85±0.4 years, response rate–77.3%) [6].

In the course of another international project HAPIEE (Health, Alcohol and Psychosocial factors In Eastern Europe) persons aged 45-64 were examined in 2003-2005 (n=1650, 34.9% males, mean age 54.25±0.2 years, response rate–66.5%) [7].

In the framework of the screening studies a random representative sample survey of the population aged 25-44 years conducted in 2013-2016 by the budget scientific research theme, Gov. Task № 01201282292 (n=975, 43.8% males, mean age 34.5±0.4 years, response rate–71.5%).

Within the framework of the budget theme No. AAAA-A17-117112850280-2 a survey of persons aged 35-64 was carried out in 2016-2017 (n=663, 41.3% males, mean age 51.95±0.32 years, response rate– 73.6%). The study included residents of the same district of Novosibirsk as in 1994-95, 2003-2005 and 2013-2016.

All samples were formed on the basis of electoral lists of citizens using a table of random numbers. A random mechanical selection procedure was used. The general survey was carried out according to the standard methods accepted in epidemiology and included in the MONICA program [5]. The methods were strictly standardized and complied with the requirements of the MONICA project protocol. Validation and processing of material according to the WHO MONICA-psychosocial program was carried out at the Information Collection Center of the MEDIS Institute in Munich, Germany (Institut für Medizinische Informatik und Systemforschung). Quality control was carried out in MONICA quality control centers: Dundee (Scotland), Prague (Czech Republic), Budapest (Hungary). The presented results were considered satisfactory.

The screening survey program included registration of socio-demographic data according to the standard epidemiological protocol of the WHO MONICA-psychosocial program: identification number, place of residence, full name, date of birth, date of registration, gender, marital status, educational level, professional status [13,14].

Social support was studied using the Berkman-Syme, 1979 scale. In this survey the index of close contacts (ICC) was determined

which was assessed as low, medium, high. The social networks index (SNI) was assessed as low, medium-1, medium -2, high [15]. The tests were encoded in the construction of index components and the calculation of points in accordance with the proposed algorithm of the MONICA-MOPSY program. The subjects were asked to answer the questions of the scale themselves according to the instructions placed on the scale. Individuals who did not complete the questionnaire were not included in the analysis.

Statistical analysis was performed using the SPSS software package version 11.5. The study participants were standardized by age groups in the analysis. To compare the indicators between screenings, the corresponding age groups were used. To check the statistical significance of differences between groups, we used: the chi-square test (χ^2). As a criterion of statistical significance the value of the chi-square was taken into account at a certain number of degrees of freedom. The reliability of analysis was accepted at a significance level of $p < 0.05$.

Results

When studying the generalized indicators of ICC levels, without dividing into age groups, the following observations were made. In 1994, the prevalence of low ICC scores among men was higher than among women (62% vs 56.8%; $p < 0.001$). In 2003 and 2013, there was a trend towards a decrease in the frequency of the low close contact index to 46-50% although the ICC levels did not differ by gender or did not reach statistically significant differences. In 2017, on the contrary, women were more likely to demonstrate a lack of social support in comparison with men by 14.4%, which completely neutralized the emerging favorable trend. Despite the high prevalence of high ICC in men compared with women over the entire observation period (8-12% versus 5-9%, respectively) the expected increase in the frequency of high ICC index from 1994 to 2017 did not occur.

The obtained data indicate a higher frequency of low ICC levels in men compared with women both in the youngest group of 25-34 years (63.8% vs 57.7%, respectively; $p = 0.07$), and in older age groups 45-54 and 55-64 years (64% vs 54%, respectively; $p < 0.001$) in 1994. After 9 years the prevalence of low ICC levels in the older age groups 45-54 and 55-64 years decreased, and in men - more clearly and amounted to 46-47%. But an increase in the share of a high level of close contacts did not occur in either men or women aged 45-64 years.

In 2013, a similar trend was observed only for the younger age groups 25-44 years. Together with a decrease in the proportion of people with a low ICC level there was an equalization of the prevalence between men and women at the level of 47% in both sexes for the 25-34 age group and 49% for the 35-44 age group; however, the frequency of high levels of close contact remained low for men and women, not exceeding 12%.

In 2017, a trend towards an increase in the unfavorable ICC level was again noted but only among female population, especially in the 45-54 age group, where the low ICC indicator exceeded the 1994 level in the same group reaching 67% and was statistically significant ($p < 0.01$). Rates of low ICC in males of 35-44 and 45-54 age groups did not change in comparison with the previous periods of 2013 (for the 35-44 age group) and 2003 (for 45-54 years old); however, there was a favorable trend towards an improvement in the level of close contacts in the 55-64 age group: a decrease in the frequency of low ICC to 41.9% in favor of a high ICC to 12.8% over the entire observation period.

Table 1: Gender differences in the dynamic of close contact index in age groups of a population aged 25-64 years in 1994–2017

Levels		25-34 years				35-44 years				45-54 years				55-64 years				25-64 years			
		M		F		M		F		M		F		M		F		M		F	
		N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Low	1994	102	63.8	82	57.7	85	55.9	86	60.6	79	64.2	72	54.1	102	64.6	71	54.2	368	62	311	56.8
Moderate		39	24.4	50	35.2	44	28.9	45	31.7	33	26.8	52	39.1	37	23.4	55	42	153	25.9	202	36.9
High		19	11.9	10	7	23	15.1	11	7.7	11	8.9	9	6.8	19	12	5	3.8	72	12.1	35	6.4
Total		160	100	142	100	152	100	142	100	123	100	133	100	158	100	131	100	593	100	548	100
		$\chi^2=5.27$ df=2 p=0.072				n.s.				n.s.				$\chi^2=14.85$ df=2 p<0.001				$\chi^2=22.603$ df=2 p<0.001			
Low	2005									140	46.1	298	53.8	129	47.4	251	48.3	269	46.7	549	51.1
Moderate										141	46.4	231	41.7	118	43.4	240	46.2	259	45	471	43.9
High										23	7.6	25	4.5	25	9.2	29	5.6	48	8.3	54	5
Total										304	100	554	100	272	100	520	100	576	100	1074	100
										$\chi^2=6.567$ df=2 p=0.038				n.s.				n.s.			
Low	2013	79	47.9	95	44.6	130	49.6	167	49.9									209	48.9	262	47.8
Moderate		66	40	96	45.1	105	40.1	141	42.1									171	40	237	43.2
High		20	12.1	22	10.3	27	10.3	27	8.1									47	11	49	8.9
Total		165	100	213	100	262	100	335	100									427	100	548	100
		n.s.				n.s.												n.s.			
Low	2017					34	49.3	49	55.1	38	47.5	98	67.1	49	41.9	83	55.7	121	45.5	230	59.9
Moderate						30	43.5	32	36	35	43.75	46	31.5	53	45.3	55	36.9	118	44.4	133	34.6
High						5	7.2	8	8.9	7	8.75	2	1.4	15	12.8	11	7.4	27	10.1	21	5.5
Total						69	100	89	100	80	100	146	100	117	100	149	100	266	100	384	100
						n.s.				$\chi^2=12.537$ df=2 p<0.01				n.s.				$\chi^2=14.554$ df=2 p<0.001			

The prevalence of a low level of social networks (combined indices of low and medium-1 SNI) in an open population of 25-64 years in 1994 was similar for men and women and amounted to 76.4% and 77.2%, respectively ($p < 0.05$). By 2003-2005, this trend did not change significantly, although women showed a slight increase in the frequency of low SNI levels up to 80.1%.

A clear decline in the prevalence of low SNI occurred in 2013-2016. For men and women this indicator dropped to 60-61%. On the contrary, in 2017, an increase in the frequency of low SNI was noted in both sexes but more significantly among the female part of the population: 64.8% and 75.2%, for men and women, respectively ($p < 0.05$).

The prevalence of a high level of social networks was 1.5-2-fold higher in men than women but this value did not exceed 5.5% in 1994 and 2003-2005. Together with the decline of low SNI index in 2013, there was an increase in the frequency of high SNI to 7% in men and 7.9% in women. This gender equalization in the high SNI level persisted in 2017 against the background of a general drop to 5% (on average) and this gender difference in the frequency of high SNI did not exceed 1%.

Studying the gender gradient and the dynamics of the prevalence of social networks in different age groups, it should be noted that the frequency of a low SNI index was slightly higher in women aged 25-54 years and was 77.4-78.2% in 1994. In the oldest

age group 55-64y, on the contrary, men more often reported a low level of SNI compared to women - 81.6% and 74.8%, respectively ($p < 0.05$). In 2003, women aged 45-54y and 55-64y showed a tendency towards an increase in the frequency of a low SNI index up to 80% in comparison with 1994; whereas in men, an increase in low SNI in the 45-54 age group was accompanied by a 5% decrease by 2003 in the oldest age group (76.7% and 74.3%, for the 45-54y and 55-64y, respectively).

In the younger age groups surveyed in 2013-16, there was a clear downward trend in the frequency of low SNI in both sexes compared to 1994, where the levels of social connections did not differ significantly between men and women, averaging 60%.

In 2017, this favorable trend persisted only in men aged 45-54y and 55-64y where the low SNI was 56.8% and 65.1%, respectively. Middle-aged women showed a significant increase in the low SNI index. So in the group of women aged 45-54 years the level of low SNI reached a peak up to 85% and significantly exceeded the indicators of 1994 and 2003.

The high index of social networks was low and varied within 1.5-4.5% in men and women in the period from 1994 to 2003-2005 and this indicator did not differ significantly between age groups. In 2013, there was a trend towards an increase in the frequency of high SNI in the younger age groups. Reached levels of SNI were stable only in women aged 35-45y in 2017; for everyone else, SNI strove for the values of 1994.

Table 2: Gender differences in the dynamic of social networks index in age groups of a population aged 25-64 years in 1994–2017

Levels		25-34 years				35-44 years				45-54 years				55-64 years				25-64 years			
		M		F		M		F		M		F		M		F		M		F	
		N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Low	1994	122	76.3	111	78.2	113	74.4	110	77.4	94	72.9	104	78.2	128	81.6	98	74.8	457	76.4	423	77.2
Moderate		28	17.5	28	19.7	33	21.7	29	20.4	26	20.2	23	17.3	21	13.4	31	23.7	108	18.1	111	20.3
High		10	6.3	3	2.1	6	3.9	3	2.1	9	7	6	4.5	8	5.1	2	1.5	33	5.5	14	2.5
Total		160	100	142	100	152	100	142	100	129	100	133	100	157	100	131	100	598	100	548	100
		$\chi^2=15.894$ df=3 p=0.001				n.s.				n.s.				$\chi^2=7.217$ df=2 p=0.028				$\chi^2=6.867$ df=2 p=0.033			
Low	2005									233	76.7	444	80.2	202	74.3	416	80	435	75.5	860	80.1
Moderate										59	19.4	97	17.5	61	22.4	90	17.3	120	20.8	187	17.4
High										12	3.9	13	2.3	9	3.3	14	2.7	21	3.7	27	2.5
Total										304	100	554	100	272	100	520	100	576	100	1074	100
										$\chi^2=6.567$ df=2 p=0.038				n.s.				n.s.			
Low	2013	98	59.4	123	57.8	158	60.3	212	63.3									256	60	335	61.1
Moderate		53	32.1	71	33.3	88	33.6	99	29.6									141	33	170	31
High		14	8.5	19	8.9	16	6.1	24	7.2									30	7	43	7.9
Total		165	100	213	100	262	100	335	100									427	100	548	100
		n.s.				n.s.												n.s.			
Low	2017					53	73.6	66	68	46	56.8	119	85	67	65.1	97	70.3	166	64.8	282	75.2
Moderate						16	22.2	23	23.7	29	35.8	19	13.6	31	30.1	34	24.6	76	29.7	76	20.3
High						3	4.2	8	8.2	6	7.4	2	1.4	5	4.9	7	5.1	14	5.5	17	4.5
Total						72	100	97	100	81	100	140	100	103	100	138	100	256	100	375	100
						n.s.				$\chi^2=22.212$ df=2 p<0.001				n.s.				$\chi^2=8.175$ df=2 p=0.017			

Discussion

We found that a higher prevalence of a low ICC level in men compared with women was noted both in the youngest group of 25-34 years (63.8% vs 57.7%) and in the older age groups 45-54 and 55-64 years (64% vs 54%, respectively) in 1994. Foreign studies of those years also note that women, in contrast to men, more often report the presence of social support as a factor aimed to reduce the burden of negative psychological characteristics, such as depression [16]. In another study, the highest levels of social support were found among young women, while middle-aged and older women indicated relatively low levels of support. Men in all age groups showed the same level of social support [5]. Analysis shows that women are more connected and receive support from multiple sources, while men tend to rely solely on their spouses. Moreover, men are more satisfied with marriage as a form of social interaction than women [6].

Such dissatisfaction with close contacts reflects the low ICC index in women in our study. We found that high ICC is more common among men than women over the entire observation period (8-12% versus 5-9%, respectively), while the expected increase in the frequency of a high ICC index from 1994 to 2017 did not occur. Several studies have reported that men receive greater protection from social support than women, possibly because social support is correlated with socioeconomic status only in men [18]. In women, outcomes (endpoints) are generally more related to satisfaction with close contacts as indicators of family well-being than in men [17,19]. This is consistent with our findings on the existence of a “family-career” role conflict among the female population where marital status has large associations with health outcomes [20-21].

According to our data women were more likely to demonstrate a lack of social support by 14.4% in comparison with men in 2017, which completely neutralized the emerging favorable trend of

2013. How can this result be explained? Recent studies show that not only the level of social support but also education, marital status and the level of expression of feminist traits are predictors of life satisfaction and self-rated health in women [22]. This is in full agreement with our early publications, in which the impact of social support on women’s health is mediated by the action of a social gradient including professional status, educational level, marital status [23].

The prevalence of low SNI in male and female population aged 25-64 years was equally high in 1994 and 2003-2005. In 2013-2016, there was an unstable trend towards an increase in the level of social networks in young age groups of both sexes. Over a short period this trend reversed indicating an unfavorable growth mainly in females aged 35-64 years reaching rates at 75% of the low index of social networks.

What is the reason for such a sharp reversal of the apparently emerging favorable trend, which we noted in 2013? Perhaps the socio-economic situation in 2016-2017, which is the most unfavorable period in recent years in the country explains this unfavorable trend to social isolation. There was a decrease in the activity of citizens in the public, sports, religious, entertainment spheres, and participation in interest clubs (for example, health groups) and political associations. In fact, this is a return to those negative levels of social support that we saw in 1994.

A number of researchers conclude that perceived support from women can be explained by a wider social network and a tendency to maintain relationships characterized by greater intimacy, emotional disclosure and empathy. However, it has been reported that women are more likely than men to be dissatisfied with social interactions [16].

But why is this most clearly seen among women of working

age? In our works we point out a high level of stress at work in female part of the population, especially during periods of social upheaval, which is associated with a high level of responsibility and duties as well as competition in the workplace [20-21]. A favorable level of social support in the form of increased satisfaction from contacts with relatives and an expansion of the network of social connections can serve as a “safety cushion” in times of stress but external economic reasons destroy this barrier.

It must be said that the current situation in the global pandemic and restrictions does not add points in favor of expanding the network of social relations and close contacts. It can be assumed that without the efforts and special measures to improve the social relationships among general population this unfavorable trend towards social isolation will persist.

Conclusions

1. There was a higher prevalence of low ICC levels in men compared with women in 1994 (62% vs 56.8%). In 2003 and 2013, there was a trend towards a decrease in the frequency of the low close contact index to 46-50%, although the ICC levels did not differ by gender.
2. In 2017, on the contrary, women were more likely to report a lack of close contacts by 14.4% compared to men, especially in age group of 45-54 years, where the low ICC indicator was higher than in 1994.
3. The prevalence of low SNI in an open population aged 25-64 years in 1994 was similar for men and women and amounted to 77%. In 2003-2005, women in older age groups showed a slight increase in rates of low SNI levels up to 80.1%. By 2013, a downward trend in the frequency of low SNI in young age groups of both sexes was established but this trend turned out to be unstable and after a short period the SNI indicators returned to the 1994 levels.
4. Women of pre-retirement age are the most vulnerable group in which the dominant of social isolation is clearly expressed.

Conflict of Interest

The Authors declare no conflict of interest

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