

Research Article

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Gender Differences in Dynamic of Job Stress as Cardiovascular Risk Factor in Population Aged 25-64 Years from 1988 to 2017

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ABSTRACT

The Aim: To determine gender differences in the dynamic of job stress indicators in an open population of 25-64 years over a long-term period - 29 years in Russia / Siberia (Novosibirsk).

Methods: Within the framework of the screening in 1988-89 under the WHO MONICA-psychosocial (MOPSY) program (n=1676, 49.5% males, mean age 44.1±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% males, mean age 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. Job stress indicators were assessed using the Karasek's scale adopted by MONICA-MOPSY.

Results: About 40% of male and female population in 1988 reported a change in occupation in the previous 12 years. The highest proportion of such persons was observed in the younger age groups and significant gender differences were also found there. By 2016-17, the proportion of those who changed their specialty decreased but gender differences were not determined. In 2016-17, the proportion of men and women who enjoy their job increased slightly compared to 1988, but the gender difference was insignificant.

Responsibility at work increased up to 58.2% and 54.5%, respectively in dynamics among young men and women. In 2016-17, the perception of responsibility at the workplace returned to the semblance of 1988 without gender differences.

Regarding changes in the workplace, in 1988, the most frequent were "change of salary" and "change of workplace" for both sexes. Men more often than women indicated conflicts with their superiors and subordinates. In 2013, the change of workplace was reported more often than changes in salary (especially in the youngest group of 25-34 years old) but in 2017 these answers correlated with each other, amounting to 11-12%. No gender differences were observed.

In 2013-16, share of men and women who reduced their workload increased to 20%. This proportion decreased in 2016-17. And the trend towards an increase in workload at the workplace moved at a faster pace, especially among middle-aged and older men.

The proportion of women who cannot relax and rest after usual working day in the period from 1988 to 2013-16 was stable at 38-39%; but by 2016-2017 it decreased by a third. The proportion of such men has been growing over 29 years and began to exceed women by 10% in 2016-17.

Conclusions: Both genders began to perform additional work tasks more often and to assess their responsibility at work as high over 29 years of observations. There is a trend towards eliminating of sex differences.

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Introduction

Recent studies have shown unequal perceptions of stress in men and women. A Chilean study of 3,010 workers found that 23.8% of women and 14.8% of men report stress in the workplace. Women are more likely to experience stress compared to men among

people vulnerable to psychosocial risk. Informal employment or work with occupational risks is also associated with distress. In identical professional situations, women are more likely than men to suffer from stress [1]. The prevalence of stress in vulnerable groups increases to 30.8% in women and 16.5% in men. When adjusted for an authoritarian management style, taking into account low job satisfaction, combined with high demands and

low decision-making, women have a higher risk of vulnerability to stress in the workplace and conflicts with colleagues, including humiliation and bullying [2]. In certain industries, such as the mining industry, with a high level of demands and stress in the workplace, the proportion of people experiencing stress reaches 80% [3]. Often the magnitude of distress is associated with the form of employment - formal, informal, cooperative. And it can vary in different countries, indicating local characteristics and mentality [3]. Consideration should also be given to the effect of age on the level of discrimination in both sexes. High labor intensity and requirements for physical indicators in men, as well as comparatively lower pay among women, are risk factors for stress at work in persons of pre-retirement age [4]. It is characteristic that older workers are in better health than non-workers. And such an observation is characteristic of the female sex to a greater extent [4].

Traditional gender roles seem to make men more sensitive to the impact of socio-economic crises [5]. For example, during the financial crisis in Greece, the prevalence of depression among men increased to the point that it overwhelmed such in women [6]. Here, as with other factors associated with depression, these findings can be at least partially explained by an inverse causal relationship, where people with depression have a harder time finding a job or a well-paid, satisfying job. However, there is evidence to support the causal effect of unemployment on mental health [7, 8].

Our research complements these prior scientific reports. Evaluating a large number of people from the general population participating in screening over the years but with a common design, increases the generalizability and relevance required for epidemiological protocols based on research principles. Thus, the aim of our study was to explore gender differences in the dynamics of job stress indicators in population aged of 25-64 years over a long-term period - 29 years.

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 1988-89, 2003-2005, 2013-2016 and 2016-2017.

Under the II 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 was examined in 1988-1989 (n=1676, 49.5% males, mean age 44.1±0.4 years, response rate - 69.8%) [9].

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%) [10].

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 [6]. 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.

The levels of stress at the workplace were studied using the questionnaire "Knowledge and attitude to one's health", proposed by the "MOPSY" protocol, based on main components of the Karasek questionnaire: psychological requirements at work, breadth of powers/controls and social support at work, adapted to the studied population. The assessment of each question, calculated in points was summed up in a general scale and divided into tertiles. Thus, the severity of stress was assessed as: low, moderate, high [11]. 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

In the course of determining the levels of stress in the workplace, the corresponding questions of the self-completed questionnaire were analyzed. Thus, about 40% of the male and female population in 1988 reported a change in their specialty in the previous 12 years. The highest proportion of such persons was observed in the younger age groups and significant gender differences were also found there: 25-34 years - 56.2% and 43.4%, 35-44 years - 35.5% and 46.6% of men and women, respectively (p for all < 0.05). In 2003-05, there was a considerable increase in the proportion of men and women aged 45-54 who changed their profession within 12 years: 46.4% and 42.6%, respectively. In the oldest age group the proportions remained at the 1988 level. In 2013-16, there was an increase in the proportion of 35-44-year-old men who changed

their profession in the last 12 years by 13% compared to 1988. This strengthened the tendencies of gender differences: “change in specialty” was reported by 50.5% of men and 44% of women aged of 25-44 years (p = 0.051). By 2016-17, there was a decrease in the proportion of those who changed their specialty, especially among women 35-44 years - 31.6%. But no sex differences were found.

About 30% of the males and females of younger age in 1988 have taken additional work tasks in the last 12 months. In older age groups, these proportions were less. More than half of the population aged 25-64 (about 60%) answered that their workload at the workplace did not change during the year. The share of those who reduced or stopped performing additional work was 4 times higher among people in the oldest age group 55-64 years old - 25-26%. Despite the absence of significant gender differences in the answer to the question about “changes in work load”, in the course of long-term observations, there was a dynamics in the structure of responses characteristic of both sexes. In 2003-05, among older people, the proportion of those who took on additional work increased; especially in the 45-54 age group: 32.2% of men and 40.6% of women (p = 0.053). In 2013-16, this increase affected males aged 25-34; however, the proportion of women who began to do additional work did not change significantly

in comparison with 1988. During this period, the proportion of men and women who reduced their workload increased to 20%. In 2016-17, the proportion of those who stopped doing extra work declined and slightly exceeded 1988 levels. The trend for an increase in the proportion of those who took on additional work continued in 2016-2017, exceeding the 1988 levels in the 35-64-year-old population.

The same proportion of men and women - 60% reported that they like their work (the total answer is "like" and "like it very much") in 1988. In 2003-2005, there were less than half of these among people of older age groups. At the same time, women were less likely than men to indicate that they enjoy their work, especially in the 55-64 age group: 47.4% and 39.4%, respectively (p < 0.001). The proportion of those who love their job did not change among women in the younger age groups in 2013-16; men aged 25-44 years lagged behind them by 5% (p < 0.05). In 2016-17, the share of men and women who enjoys their job increased slightly compared to 1988, but there remained an insignificant gender difference of 5% (p = 0.064). The share of those who did not like their work did not exceed 7-9% for 29 years, with the exception of 2003, when this share rose up to 11% but still did not differ by gender.

Table 1: Gender differences in trends of job stress indicators in population of 25-64 years depending on age

		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	%
Has your specialty changed over the past 12 years?																					
Yes	1988	114	56.2	79	43.4	71	35.5	97	46.6	52	29.9	56	30.9	56	37.6	40	30.5	297	40.6	275	38.7
		89	43.8	103	56.6	129	64.5	111	53.4	122	70.1	125	69.1	93	64.2	91	69.5	435	59.4	436	61.3
		203	100	182	100	200	100	208	100	174	100	181	100	149	100	131	100	732	100	711	100
				$\chi^2=5.741$ df=1 p<0.05				$\chi^2=4.769$ df=1 p<0.05				n.s.				n.s.					
Yes	2003	141	46.4	236	42.6	90	33.1	155	29.8	231	40.1	391	36.4	211	49.5	307	56.0	426	100	548	100
		163	53.6	318	57.4	182	66.9	365	70.2	345	59.9	683	63.6	211	49.5	307	56.0	426	100	548	100
		304	100	554	100	272	100	520	100	576	100	1074	100	426	100	548	100	426	100	548	100
				n.s.				n.s.				n.s.				$\chi^2=3.800$ df=1 p=0.051					
Yes	2013	87	53.0	94	44.1	128	48.9	147	43.9	37	45.7	47	34.3	32	26.4	41	27.3	100	36.6	119	30.9
		77	47.0	119	55.9	134	51.1	188	56.1	44	54.3	90	65.7	89	73.6	109	72.7	173	63.4	266	69.1
		164	100	213	100	262	100	335	100	81	100	137	100	121	100	150	100	273	100	385	100
				n.s.				n.s.				n.s.				n.s.					
Yes	2017	31	43.7	31	31.6	37	45.7	47	34.3	32	26.4	41	27.3	100	36.6	119	30.9	100	36.6	119	30.9
		40	56.3	67	68.4	44	54.3	90	65.7	89	73.6	109	72.7	173	63.4	266	69.1	173	63.4	266	69.1
		71	100	98	100	81	100	137	100	121	100	150	100	273	100	385	100	273	100	385	100
				n.s.				n.s.				n.s.				n.s.					

Table 2: Gender differences in trends of job stress indicators in population of 25-64 years depending on age

		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	%
Has your work load changed over the past 12 months?																					
Began to do additional tasks	1988	59	29.4	61	34.1	62	31.3	70	34.8	41	23.8	44	25.0	11	7.5	15	11.8	173	23.9	194	28.0
Not changed		126	62.7	109	60.9	124	62.6	113	56.2	113	65.7	104	59.1	97	66.0	80	63.0	466	64.4	411	59.4
Diminished additional tasks		18	8.0	9	5.0	12	6.1	18	9.0	18	10.5	28	15.9	39	26.5	32	25.2	85	11.7	87	12.6
Total		203	100	179	100	198	100	201	100	172	100	176	100	147	100	127	100	724	100	692	100
		n.s.				n.s.				n.s.				n.s.				n.s.			
Began to do additional tasks	2003									98	32.2	225	40.6	58	21.3	110	21.2	156	27.1	335	31.2
Not changed										161	53.0	256	46.2	163	59.9	330	63.5	324	56.2	586	54.6
Diminished additional tasks										45	14.8	73	13.2	51	18.8	80	15.4	96	16.7	153	14.2
Total										304	100	554	100	272	100	520	100	576	100	1074	100
										$\chi^2=5.877$ df=2 p=0.053				n.s.				n.s.			
Began to do additional tasks	2013	72	43.6	81	38.0	88	33.7	116	34.6									160	37.6	197	35.9
Not changed		59	35.8	91	42.7	122	46.7	147	43.9									181	42.5	238	43.4
Diminished additional tasks		34	20.6	41	19.2	51	19.5	72	21.5									85	20.0	113	20.6
Total		165	100	213	100	261	100	335	100									426	100	548	100
		n.s.				n.s.															
Began to do additional tasks	2017					34	48.6	35	36.8	25	32.5	48	37.2	23	23.0	32	26.0	82	33.2	115	33.1
Not changed						30	42.9	44	46.3	33	42.9	62	48.1	53	53.0	61	49.6	116	47.0	167	48.1
Diminished additional tasks						6	8.6	16	16.8	19	24.7	19	14.7	24	24.0	30	24.4	49	19.8	65	18.7
Total						70	100	95	100	77	100	129	100	100	100	123	100	247	100	347	100
		n.s.				n.s.				n.s.				n.s.				n.s.			

Table 3: Gender differences in trends of job stress indicators in population of 25-64 years depending on age

		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	%	
Do you enjoy your job?																						
Dislike it at all	1988	7	3.4	4	2.2	7	3.5	3	1.4	1	0.6	3	1.7	4	2.7	2	1.6	19	2.6	12	1.7	
		Dislike	14	6.9	15	8.2	13	6.5	7	3.4	12	6.9	7	3.9	7	4.7	8	6.5	46	6.3	37	5.3
		Indifferent	64	31.5	72	39.6	63	31.7	76	36.7	52	30.1	59	32.8	46	30.7	33	26.6	228	31.2	244	34.8
		Like	98	48.3	81	44.5	98	49.2	115	55.6	91	52.6	98	54.4	86	57.3	68	54.8	375	51.3	367	52.3
		Like it very much	20	9.9	10	5.5	18	9.0	6	2.9	17	9.8	13	7.2	7	4.7	13	10.5	63	8.6	42	5.9
		Total	203	100	182	100	199	100	207	100	173	100	180	100	150	100	124	100	731	100	702	100
			n.s.	$\chi^2=11.820$ df=4 p<0.05				n.s.				n.s.				n.s.						
Dislike it at all	2003									12	3.9	19	3.4	10	3.7	17	3.3	22	3.8	36	3.4	
		Dislike	22	7.2	46	8.3	20	7.4	43	8.3	42	7.3	89	8.3								
		Indifferent	126	51.4	246	44.4	113	41.5	255	49.0	239	41.5	501	46.6								
		Like	128	42.1	213	38.4	11	40.8	168	32.3	239	41.5	381	35.5								
		Like it very much	1	5.3	30	5.4	18	6.6	37	7.1	34	5.9	67	6.2								
		Total	304	100	554	100	272	100	520	100	576	100	1074	100								
			$\chi^2=15.284$ df=4 p<0.01	$\chi^2=45.866$ df=4 p<0.001				n.s.														
Dislike it at all	2013	5	3.0	4	1.9	3	1.1	11	3.3									8	1.9	15	2.7	
		Dislike	14	8.5	10	4.7	10	3.8	22	6.6									24	5.6	32	5.9
		Indifferent	55	33.3	56	26.4	103	39.3	110	32.9									158	37.0	166	30.4
		Like	79	47.9	107	50.5	128	48.9	158	47.3									207	48.5	265	48.5
		Like it very much	12	7.3	35	16.5	18	6.9	33	9.9									30	7.0	68	12.5
		Total	165	100	212	100	262	100	334	100									427	100	546	100
			$\chi^2=10.562$ df=4 p<0.05	$\chi^2=8.283$ df=4 p=0.082												$\chi^2=10.942$ df=4 p<0.05						
Dislike it at all	2017					1	1.4	1	1.1	0	0	2	1.6	0	0	3	2.7	1	0.4	6	1.9	
		Dislike	1	1.4	2	2.2	3	4.0	1	0.8	4	4.5	5	4.5	8	3.4	8	2.5				
		Indifferent	23	33.3	27	30.0	25	33.3	34	27.6	35	39.3	40	36.4	83	35.6	101	31.3				
		Like	40	58.0	48	53.3	39	52.0	67	54.5	46	51.7	50	45.5	125	53.6	165	51.1				
		Like it very much	4	5.8	12	13.3	8	10.7	19	15.4	4	4.5	12	10.9	16	6.9	43	13.3				
		Total	69	100	90	100	75	100	123	100	89	100	110	100	233	100	323	100				
			n.s.	n.s.				n.s.				$\chi^2=8.870$ df=4 p=0.064										

More than half of the population aged 25-64 in 1988 believed that their “responsibility at work in the last 12 months” has not changed. About a third pointed to an increase in liability over the year. And only 7% of respondents reported a decrease in the level of responsibility at the workplace. These proportions in the answers did not differ by sex, with the exception of the 55-64 age group, where the share of women with reduced responsibility at the workplace was 2-fold higher compared with men (p <0.05).

The same structure of responses was observed in 2003-2005. In the dynamics among young people, especially aged 25-34 years responsibility at work throughout the year increased in 2013-16: 58.2% and 54.5%, respectively. In 2016-17, the structure of responses returned to the similarity of 1988 and it was 40%, not differing by gender. The share of those whose level of responsibility in the workplace decreased has not changed by more than 2-3% over 29 years. An equal number of men and women aged of 25-64 years - 46%

considered their responsibility at work “high” and “huge” in 1988. Approximately the same number rated it as “average”. And only 10-12% considered their responsibility in the workplace “insignificant”; but prevalence of such opinions were 2.5-fold higher in men aged of 25-34 (p <0.05).

In 2003-2005, the number of respondents with a high level of responsibility at work decreased to 36.8% for men and 39.1% for women. This was mainly in women aged 45-54 years: the decrease in this group was 11% in comparison with 1988.

In 2013-16, on the contrary, the proportion of younger men and women with high responsibility increased by 10-15% compared to 1988. However, no significant gender differences were observed as in previous periods.

By 2016-2017, the trend towards an increase in the level of responsibility at work continued, affecting older age groups. I

was about 60% of men and women in population aged of 35-64 years. The share of people with low responsibility at work did not change over 29 years exception women aged 55-64 years in 2017 - 17.8%, as in 1988 ($p < 0.05$).

With regard to changes at the workplace, in 1988 the most frequent were "changes in salary" - in 14.1% of men and 24.5% of women and "change of workplace" - in 16.8% of men and 17.8% of women. Women more often than men reported such changes; as well as the change of the head - 7.8% and 10.6%, respectively ($p < 0.001$). Men more often than women indicated conflicts with their superiors and subordinates. Most of the respondents - 38% indicated no changes during the year or other changes not indicated in the questionnaire. In 2003, their share increased up to 50%. Otherwise, the structure of responses was similar to 1988, with the exception of conflicts with subordinates, since their share was similar for men and women of older age groups, although it was small - 5%. Among other changes, men were 3% more likely than women to report "job change" in the 45-54 and 55-64 age groups ($p < 0.05$). In subsequent periods of observation, "change in salary" and "change of workplace" were the most frequent responses to the question "about changes at the workplace." However, in 2013 change of workplace was reported more often than salary changes (especially in the youngest group of 25-34 years old, where job changes were reported 2 times more often - 26-29%). In 2017, these answers correlated with each other, amounting to 11-12%. No gender differences were observed.

Table 4. Gender differences in trends of job stress indicators in population of 25-64 years depending on age

		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	%
Has your responsibility at work changed in the past 12 months?																					
No	1988	107	52.7	105	58.0	111	55.8	104	50.7	89	51.4	105	58.0	99	66.9	83	67.5	409	56.1	402	57.5
		84	41.4	70	38.7	80	40.2	90	43.9	72	41.6	63	34.8	37	25.0	20	16.3	276	37.9	247	35.3
		12	5.9	6	3.3	8	4.0	11	5.4	12	6.9	13	7.2	12	8.1	20	16.3	44	6.0	50	7.2
		203	100	181	100	199	100	205	100	173	100	181	100	148	100	123	100	729	100	699	100
n.s.				n.s.				n.s.				$\chi^2=6.223$ df=2 $p<0.05$				n.s.					
No	2003																				
		173	56.9	288	52.0	183	67.3	346	66.5	356	61.8	634	59.0	175	30.4	349	32.5	191	44.8	242	44.6
		107	35.2	223	40.3	68	25.0	126	24.2	175	30.4	349	32.5	217	50.9	258	47.5	217	50.9	258	47.5
		24	7.9	43	7.8	21	7.7	48	9.2	45	7.8	91	8.5	18	4.2	43	7.9	18	4.2	43	7.9
Total		304	100	554	100	272	100	520	100	576	100	1074	100	n.s.		$\chi^2=5.749$ df=2 $p=0.056$		n.s.		n.s.	
n.s.				$\chi^2=5.339$ df=2 $p=0.069$				n.s.				n.s.				n.s.					
No	2013	62	37.6	83	39.3	129	49.4	159	47.9									191	44.8	242	44.6
		96	58.2	115	54.5	121	46.4	143	43.1									217	50.9	258	47.5
		7	4.2	13	6.2	11	4.2	30	9.0									18	4.2	43	7.9
		165	100	211	100	261	100	332	100									426	100	543	100
n.s.				$\chi^2=5.339$ df=2 $p=0.069$				n.s.				n.s.				$\chi^2=5.749$ df=2 $p=0.056$					
No	2017	35	50.7	46	51.7	35	46.7	57	46.3	57	64.0	75	69.4	127	54.5	178	55.6	127	54.5	178	55.6
		33	47.8	41	46.1	35	46.7	59	48.0	26	29.2	27	25.0	94	40.3	127	39.7	94	40.3	127	39.7
		1	1.4	2	2.2	5	6.7	7	5.7	6	6.7	6	5.6	12	5.2	15	4.7	12	5.2	15	4.7
		69	100	89	100	75	100	123	100	89	100	108	100	233	100	320	100	233	100	320	100
n.s.				n.s.				n.s.				n.s.				n.s.					

Table 5: Gender differences in trends of job stress indicators in population of 25-64 years depending on age

		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	%				
How do you assess the responsibility of your work over the past 12 months?																									
Insignificant	1988	29	14.3	10	5.6	22	11.1	17	8.4	15	8.8	14	7.8	21	14.7	31	25.6	87	12.1	74	10.7				
Average		83	40.9	93	52.2	80	40.2	86	42.4	77	45.3	66	36.7	64	44.8	47	38.8	306	42.4	296	42.8				
High		80	39.4	66	37.1	81	40.7	88	43.3	70	41.2	91	50.6	51	35.7	38	31.4	285	39.5	286	41.4				
Huge		11	5.4	9	5.1	16	8.0	12	5.9	8	4.7	9	5.0	7	4.9	5	4.1	43	6.0	35	5.1				
Total		203	100	178	100	199	100	203	100	170	100	180	100	143	100	121	100	721	100	691	100				
		$\chi^2=9.769$ df=3 p<0.05				n.s.				n.s.				n.s.				n.s.							
Insignificant	2003									25	8.2	60	10.8	38	14.0	59	11.3	63	10.9	119	11.1				
Average										154	50.7	250	45.1	147	54.0	285	54.8	301	52.3	535	49.8				
High										100	32.9	216	39	74	27.2	158	30.4	174	30.2	374	34.8				
Huge										25	8.2	28	5.1	13	4.8	18	3.5	38	6.6	46	4.3				
Total										304	100	554	100	272	100	520	100	576	100	1074	100				
										$\chi^2=7.794$ df=3 p=0.066				n.s.				n.s.							
Insignificant	2013	10	6.1	14	6.7	11	4.2	24	7.3									21	4.9	38	7.0				
Average		67	40.6	61	29.2	85	32.6	113	34.1									152	35.7	174	32.2				
High		69	41.8	113	54.1	134	51.3	158	47.7									203	47.7	271	50.2				
Huge		19	11.5	21	10.0	31	11.9	36	10.9									50	11.7	57	10.6				
Total		165	100	209	100	261	100	331	100									426	100	540	100				
		n.s.				n.s.												n.s.							
Insignificant	2017									3	4.3	6	6.7	4	5.3	4	3.3	4	4.5	19	17.8	11	4.7	29	9.1
Average										17	24.6	26	29.2	28	36.8	41	33.6	41	46.1	33	30.8	86	36.8	100	31.4
High										39	56.5	38	42.7	27	35.5	64	52.5	37	41.6	47	43.9	103	44.0	149	46.9
Huge										10	14.5	19	21.3	17	22.4	13	10.7	7	7.9	8	7.5	34	14.5	40	12.6
Total										69	100	89	100	76	100	122	100	89	100	107	100	234	100	318	100
										n.s.				$\chi^2=7.758$ df=3 p=0.067				$\chi^2=10.339$ df=3 p<0.05				n.s.			

Table 6: Gender differences in trends of job stress indicators in population of 25-64 years depending on age

		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	%		
Have you experienced significant changes at your workplace over the past 12 months?																							
Conflicts with superiors	1988	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	48	10.7	32	7.9		
Conflicts with subordinates		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	48	10.7	3	0.7		
Change of workplace		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	75	16.8	72	17.8		
Change of the head		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	35	7.8	43	10.6		
Change of subordinates		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6	1.3	7	1.7		
Change in salary		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	63	14.1	95	23.5		
No or others		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	172	38.5	152	37.6		
Total		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	447	100	404	100		
																		$\chi^2=49.534$ df=6 p<0.001					
Conflicts with superiors	2003									23	7.6	36	6.5	26	9.6	27	5.2	49	8.5	63	5.9		
Conflicts with subordinates										19	6.2	24	4.3	11	4.0	27	5.2	30	5.2	51	4.7		
Change of workplace										72	23.7	112	20.2	36	13.2	53	10.2	108	18.8	165	15.4		
Change of the head										18	5.9	42	7.6	12	4.4	23	4.4	30	5.2	65	6.1		
Change of subordinates										6	2.0	10	1.8	3	1.1	9	1.7	9	1.6	19	1.8		
Change in salary										29	9.5	92	16.6	31	11.4	58	11.2	60	10.4	150	14.0		
No or others										137	45.1	238	43.0	153	56.2	323	62.1	290	50.3	561	52.2		
Total										304	100	554	100	272	100	520	100	576	100	1074	100		
										$\chi^2=10.821$ df=6 p<0.05				$\chi^2=8.547$ df=6 p=0.073				$\chi^2=11.142$ df=6 p<0.05					
Conflicts with superiors	2013	13	8.6	12	6.3	17	7.0	16	5.1									30	7.6	28	5.6		
Conflicts with subordinates		10	6.6	10	5.2	7	2.9	12	3.9									17	4.3	22	4.4		
Change of workplace		39	25.8	57	29.8	42	17.4	62	19.9									81	20.6	119	23.7		
Change of the head		5	3.3	12	6.3	12	5.0	18	5.8									17	4.3	30	6.0		
Change of subordinates		4	2.6	4	2.1	8	3.3	8	2.6									12	3.1	12	2.4		
Change in salary		18	11.9	22	11.5	31	12.8	44	14.1									49	12.5	66	13.1		
No or others		62	41.1	74	38.7	125	51.7	151	48.6									187	47.6	225	44.8		
Total		151	100	191	100	242	100	311	100									393	100	502	100		
				n.s.				n.s.												n.s.			
Conflicts with superiors	2017					4	6.5	4	4.3	1	1.3	2	1.6	1	0.9	7	4.7	6	2.3	13	3.5		
Conflicts with subordinates						2	3.2	1	1.1	3	3.8	3	2.4	0	0	0	0	5	1.9	4	1.1		
Change of workplace						10	16.1	10	10.9	8	10.1	17	13.5	15	12.8	13	8.7	33	12.8	40	10.9		
Change of the head						2	3.2	10	10.9	4	5.1	7	5.6	9	7.7	6	4.0	15	5.8	23	6.3		
Change of subordinates						2	3.2	1	1.1	2	2.5	4	3.2	0	0	2	1.3	4	1.6	7	1.9		
Change in salary						9	14.5	12	13.0	12	15.2	15	11.9	12	10.3	15	10.1	33	12.8	42	11.4		
No or others						33	53.2	54	58.7	49	62.0	78	61.9	80	68.4	106	71.1	162	62.8	238	64.9		

Total			62	100	92	100	79	100	126	100	117	100	149	100	258	100	367	100
			n.s.				n.s.				$\chi^2=7.469$ df=6 p=0.076				n.s.			

A quarter of the male population and more than a third of the female population aged 25-64 in 1988 do not have the opportunity to “relax and have a rest after a normal working day during the last 12 months” (the combined answers are “never” and “rarely”). The proportion of these individuals is higher in the younger age groups, reaching 27.4% among men and 44.7% among women aged 25-34 years (p <0.01). The proportion of those who have a rest after work is 2 times lower in women compared to men the same age. Half of the male and female population aged 25-64 were able to relax “occasionally”, meaning the opportunity to rest after a working day (p <0.001).

In 2003-05, in the older age groups, the proportion of those who are unable to rest at the end of the day increased: it almost doubled among men 55-64 years. At the same time, the number of men and women who usually rest after work decreased: 22% and 10.8% (sum of answers “often” and “always” for the 55-64y age group; p <0.001).

Multidirectional trends were found in 2013-16. In the youngest age group, the proportion of men and women who often or always have a rest after work increased: 34.5% and 31.9%, respectively (n.s.). At the same time, the proportion of 35-44 years old men who cannot rest has increased by 10%. In 2016-17, for the first time, men were more likely than women to report that they were unable to relax after a working day in all age groups. The greatest difference with the female sex was found in the 45-54y age group: 34.2% of men and 21.7% of women (p <0.01). Surprisingly, the proportion of those who is able to relax was also higher in this age group: 39% and 29.1%, respectively.

Table 7: Gender differences in trends of job stress indicators in population of 25-64 years depending on age

		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	%
Have you been able to relax and rest after usual working day over the past 12 months?																					
Never	1988	6	2.9	12	6.6	7	3.5	9	4.3	12	7.0	11	6.1	3	2.0	9	7.6	28	3.8	41	5.9
Rarely		50	24.5	69	38.1	43	21.5	76	36.5	35	20.3	46	25.4	22	15.0	29	24.4	153	21.0	224	32.1
Occasionally		105	51.5	78	43.1	111	55.5	92	44.2	76	44.2	90	49.7	74	50.3	49	41.2	368	50.5	313	44.8
Often		27	13.2	16	8.8	24	12.0	26	12.5	29	16.9	17	9.4	15	10.2	10	8.4	95	13.0	70	10.0
Always		16	7.6	6	3.3	15	7.5	5	2.4	20	11.6	17	9.4	33	22.4	22	18.5	85	11.7	50	7.2
Total		204	100	181	100	200	100	208	100	172	100	181	100	147	100	119	100	729	100	698	100
		$\chi^2=15.056$ df=4 p<0.01				$\chi^2=16.109$ df=4 p<0.01				n.s.				$\chi^2=9.399$ df=4 p=0.052				$\chi^2=32.466$ df=4 p<0.001			
Never	2003	11	3.6	29	5.2	12	4.4	35	6.7	23	4.0	64	6.0	8	2.7	18	4.7	85	28.2	134	34.6
Rarely		85	28.0	191	34.5	78	28.7	153	29.4	163	28.3	344	32.0	85	28.2	134	34.6	85	28.2	134	34.6
Occasionally		141	46.4	246	44.4	122	44.9	276	53.1	263	45.7	522	48.6	127	42.2	141	36.4	127	42.2	141	36.4
Often		38	12.5	56	10.1	33	12.1	24	4.6	71	12.3	80	7.4	62	20.6	65	16.8	62	20.6	65	16.8
Always		29	9.5	32	5.8	27	9.9	32	6.2	56	9.7	64	6.0	19	6.3	29	7.5	19	6.3	29	7.5
Total		304	100	554	100	272	100	520	100	576	100	1074	100	301	100	387	100	301	100	387	100
		$\chi^2=8.796$ df=4 p=0.066				$\chi^2=21.489$ df=4 p<0.001				$\chi^2=22.177$ df=4 p<0.001				n.s.							
Never	2013	3	2.5	7	4.4	5	2.7	11	4.8	8	2.7	18	4.7	8	2.7	18	4.7	8	2.7	18	4.7
Rarely		25	21.0	47	29.4	60	33.0	87	38.3	85	28.2	134	34.6	85	28.2	134	34.6	85	28.2	134	34.6
Occasionally		50	42.0	55	34.4	77	42.3	86	37.9	127	42.2	141	36.4	127	42.2	141	36.4	127	42.2	141	36.4
Often		32	26.9	36	22.5	30	16.5	29	12.8	62	20.6	65	16.8	62	20.6	65	16.8	62	20.6	65	16.8
Always		9	7.6	15	9.4	10	5.5	14	6.2	19	6.3	29	7.5	19	6.3	29	7.5	19	6.3	29	7.5
Total		119	100	160	100	182	100	227	100	301	100	387	100	301	100	387	100	301	100	387	100
		n.s.				n.s.				n.s.				n.s.							
Never	2017	0	0	4	4.1	4	4.9	6	4.5	2	1.7	7	4.6	6	2.2	17	4.4	6	2.2	17	4.4
Rarely		27	38.6	25	25.5	24	29.3	23	17.2	39	32.2	31	20.5	90	33.0	79	20.6	90	33.0	79	20.6
Occasionally		36	51.4	49	50.0	22	26.8	66	49.3	57	47.1	80	53.0	115	42.1	195	50.9	115	42.1	195	50.9
Often		4	5.7	17	17.3	23	28.0	35	26.1	20	16.5	17	11.3	47	17.2	69	18.0	47	17.2	69	18.0
Always		3	4.3	3	3.1	9	11.0	4	3.0	3	2.5	16	10.6	15	5.5	23	6.0	15	5.5	23	6.0
Total		70	100	98	100	82	100	134	100	121	100	151	100	273	100	383	100	273	100	383	100
		$\chi^2=9.716$ df=4 p<0.05				$\chi^2=15.189$ df=4 p<0.01				$\chi^2=13.547$ df=4 p<0.01				$\chi^2=14.140$ df=4 p<0.01							

Discussion

In terms of workplace stress, about 40% of the male and female population in 1988 reported a change of specialty in the previous 12 years. The highest proportion of such persons was observed in the younger age groups and significant gender differences were also found there. In 2003-05, there was a considerable increase in the proportion of men and women who changed their profession, especially in the 45-54 age group, while in the oldest age group the proportions remained at the 1988 level. In 2013-16, the trends in gender differences increased due to the more frequent change of specialty among young men. By 2016-17, the proportion of those who changed their specialty decreased but gender differences were not determined.

About 30% of younger males and females in 1988 have taken additional work tasks in the last 12 months. The proportion of those who reduced or stopped performing additional work was 4 times higher among the people in the oldest age group. In 2003-05, the proportion of those who took on additional work increased among older people. In 2013-16, this increase affected males aged 25-34 years. However, the proportion of young women who began to do additional work did not change significantly in comparison with 1988. The trend for an increase in the share of those who took on additional work remained in 2016-2017, exceeding the 1988 levels.

High workload at the workplace is one of predictors of psychosocial stress in both sexes [12]. But this leads women to life exhaustion and an increase in the level of cynicism to a greater extent than men [13]. The trend towards an increase in work load in 2017 is probably associated with an increase in affective states among persons of younger age groups during this period.

According to the WHO report (2020), the main causes and sources of stress in the workplace are the following aspects: high demands and low control, insufficient freedom of decision-making, imbalance of effort - reward, monotony, poor communication and employee awareness. Also ambiguous instructions and roles, unclear organizational procedures and personal goals, lack of involvement in processes, time frames. From 15 to 30% of the working population in Europe experience sleep disturbances, life exhaustion and anxiety, which affects the ability to adequately perform their professional duties [14].

The same proportion of men and women - 60% said they liked their job in 1988. In 2003-2005, there were less than half of these among people of older age groups. At the same time, women were less likely than men to indicate that they enjoy their work. The proportion of those who love their job did not change among women in the younger age groups in 2013-16. In 2016-17, the proportion of men and women who enjoy their job increased slightly compared to 1988, but there remained a slight gender difference of 5%. The share of those who did not like their work did not exceed 10% for 29 years.

Job satisfaction is one of the indicators of professional success and the effectiveness of the duties performed. But in contrast to our study, a number of reports indicating a higher job satisfaction among women [15].

More than half of the population aged 25-64 in 1988 believed that their "responsibility at work in the last 12 months" has not changed. About a third pointed to an increase in liability over the year. And only 7% of respondents reported a decrease in the level of responsibility at the workplace. In the dynamics among

young people, especially aged 25-34 years responsibility at work throughout the year increased in 2013-16: 58.2% and 54.5%, respectively. In 2016-17, the structure of responses returned to the similarity of 1988. At the same time, the share of persons with increased responsibility at work was 40%, not differing by gender. The share of those whose level of responsibility in the workplace has decreased has not changed by more than 2-3% over 29 years.

An equal number of men and women aged 25-64 - 46% considered their responsibility at work "high" and "very high" in 1988. Approximately the same number rated it as "average". And only 10-12% considered their responsibility in the workplace insignificant. In 2003-2005, the number of respondents with a high level of responsibility at work decreased, especially among women 45-54 years old. In 2013-16 and 2016-17, on the contrary, the proportion of men and women with high responsibility increased by 10-15% compared to 1988, reaching about 60% for men and women in population 35-64 years. The share of people with low responsibility at work has not changed over 29 years.

However, our study showed an upward trend in the level of responsibility at the workplace compared to the baseline in 1988. This increase in responsibility is due to a high level of requirements. In the demand-control model, a successful balance of these characteristics with a high level of control is positively associated with self-rated health [16]. This is possible in case of sufficient freedom of decision-making in conditions of well-informed employees and clearly defined tasks. But high responsibility is associated with physical and mental health consequences as well as a shift in emphasis in the role status of "family-career" [16, 17].

Regarding changes at the workplace, in 1988, the most frequent were "change of salary" and "change of workplace" for both sexes. Men more often than women indicated conflicts with their superiors and subordinates. However, in 2013 a workplace change was reported more often than salary changes, especially in the youngest group of 25-34 years, where workplace changes were reported 2 times higher - 26-29%. In 2017 these answers correlated with each other, amounting to 11-12%. No gender differences were observed. Although conflicts with superiors and subordinates were more often observed in men financial reasons were predictors of workplace changing for both sexes. In addition, financial constraints partly explain the link between the threat of dismissal and mental health [18]. Normal labor relations, adherence to work regulations and job and rest regimes can provide a structured environment, financial stability and social support. But demands at work or the perceived imbalance between effort and reward can have detrimental effects on the health and psychological climate at the workplace [19-22].

A quarter of the male population and more than a third of the female population aged 25-64 did not have the opportunity to relax and have a rest after usual working day. The proportion of these persons is higher in the younger age groups, reaching 27.4% among men and 44.7% among women aged 25-34y. In 2003-05, in the older age groups, the proportion of those who are unable to rest at the end of the day increased: it almost doubled among men 55-64 years. In dynamics, the proportion of men who cannot rest has increased by 10%. In 2016-17, for the first time, men were more likely than women to report that they were unable to relax after a working day in all age groups. The greatest difference with the female sex was found in the 45-54 age group: 34.2% of men and 21.7% of women. Surprisingly, the proportion of those

who is able to relax was also higher in this age group: 39% and 29.1%, respectively.

The growth of emotional tension and high responsibility in the workplace, along with the role conflict "family-work" are the main reasons for unsuccessful rest after a normal working day [17]. Recent research shows that flexible working hours are a good tool in adapting to family needs, especially for women [23]. At the same time, part-time employment along with unemployment are predictors of depression. However, social support, a sense of personal control over the situation can weaken this connection [24].

The study of the relationship between occupational and mental health is especially relevant in the context of an economic downturn. The impact on mental health varies according to occupational status and the amount of time spent in the absence of a sense of security / safety. A number of researchers point to the deterioration of mental health at the workplace in the last decade [18].

Although the ultimate impact on mental health is mediated by socio-demographic characteristics such as the educational level of the respondents, the buffering effect of protective levels of psychosocial factors has been well established in epidemiological studies. Thus, social support has a direct impact on a favorable mental background, even in conditions of unemployment. And in conditions of professional employment, a higher level of social support is beneficial for the psychological perception of health [25].

Conclusions

About 40% of male and female population in 1988 reported a change in occupation in the previous 12 years. The highest proportion of such persons was observed in the younger age groups and significant gender differences were also found there. By 2016-17, the proportion of those who changed their specialty decreased but gender differences were not determined.

In 2016-17, the proportion of men and women who enjoy their job increased slightly compared to 1988, but the gender difference was insignificant.

Responsibility at work increased up to 58.2% and 54.5%, respectively in dynamics among young men and women. In 2016-17, the perception of responsibility at the workplace returned to the semblance of 1988 without gender differences.

Regarding changes at the workplace, in 1988, the most frequent were "change of salary" and "change of workplace" for both sexes. Men more often than women indicated conflicts with their superiors and subordinates. In 2013, the change of workplace was reported more often than changes in salary (especially in the youngest group of 25-34 years) but in 2017 these answers correlated with each other, amounting to 11-12%. No gender differences were observed.

In 2013-16, share of men and women who reduced their workload increased to 20%. This proportion decreased in 2016-17. There was found a trend towards an increase of load at the workplace, especially among middle-aged men and older.

The proportion of women who cannot relax and rest after usual working day in the period from 1988 to 2013-16 was stable at 38-39%; but by 2016-2017 it decreased by a third. The proportion

of such men has been growing over 29 years and began to exceed women by 10% in 2016-17.

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