

EDUCATION AND PRECARIOUS LABOUR IN SLOVENE SCIENCE (SOME SOCIOLOGICAL VIEWS ON WOMEN IN SCIENCE BETWEEN CAREER AND FAMILY)

Prof. Dr. Jana GORIUP
Faculty of Arts, University of Maribor
Maribor- SLOVENIA

ABSTRACT

The image of a woman in the present Slovene society is still linked to prejudice to set limits and makes her feel bad. Especially, because the environment's opinion contains some certain activities how a woman is incapable of doing or is not able to do them good enough. One of the areas with this belief is the area of science. Different public researches and academic institutions are stimulating massive enrolling of women to higher education and science. This is showing significant gradual increase in the proportion of women in education and researching positions in Slovenia over past decades. One of the most important measures for encouraging women/mothers/housewives to pursue an academic/science career was the exclusion of maternity and her role in domestic work and later on also parental leave from the time set for elections to higher academic /scientific titles for women.

The actual position of women in science and research in Slovenia is similar to those which have been observed all around the world: horizontal and vertical segregation, subtle discrimination and thus worse situation in regard to the male scientists, in spite of the quantitative prevalence of the women students at the graduate level. This is particularly the case, after the introduction of the paid (and excluded) one year leave of absence for a child, including parental (male) leave of absence. This also increased the number of birth rate among young scientists, although this was unfortunately counteracted in the past few years by their precarious work.

The contemporary period is also characterized by the increased difficulty for women to get employed, especially younger, highly educated professionals, usually meaning the potential to have children and leaving for long maternity leave and, normally domestic work. Because of their domestic duties and household occupation top positions (at institutes, academia and industry) are not occupied by women to a greater than up to a few percent. This is also true for many other decision-making positions in Slovenia. The situation is slightly improving, but it seems how in order to get established at leading position, a woman in the field of science has to work harder than her male colleague, as confirmed by several recent studies. A "men-like behavior" is expected from a woman at leading position. However, the proportion of women at leading positions in scientific bodies has increased since the transition period, but a pay gap within scientific institutions still exists (women earning are ranging from 90% - 95% of men's gross earning). But, a closer look shows how the main source of these subtle differences comes from the differences at the leading positions scientist, where functional supplements and financial stimulation can vary up to 50 %. According to the available data of staff distribution, the vertical gender segregation does exist in world-known mode: women are concentrated in the lower professional strata as it shows the hierarchical order by the gender structure of leading staff in research projects and by the asymmetric participation of women and men in the scientific boards, creating science policy as well as in the top management of institutions of science.

Our research aim was to study and research on the pattern of casual 206 women employed in science and in academic and research institutions the position of women in science and family environment in contemporary Slovene society according to educational influences. We were particularly concentrated on their present

position which in great dimension is denoted by discrimination and inequality; especially as her formal work is understood as her precarious work and her domestic work as invisible and unpaid, from "love" done work. All these areas are extremely important for the society, not to lose the intellectual potential of women, especially in the situation of active economic crises. Within the framework of this thesis our research determined the position of women in the field of science and in her domestic environment as well. On the other hand, we have to consider the fact how in comparison with the past, women are nowadays allowed to take new roles and possibilities of public activities, but only when the traditional duties are preserved. That is why we can assert that women in science are sexually discriminated.

Key Words: women, science, education, domestic work, family, precarious work, balance, discrimination, inequality, Slovene society

INTRODUCTION

In the contemporary Slovene society, many women still figure associated with prejudices. Especially because there are certain activities which are feminine and according to the environment cannot or is unable to perform well enough. Among the latter due to the level of education and the work also considered the scope of science. The family constitutes a community of parents and children (ZZZDR - UPB, Article 2) and to have a family is not just being a parent, but it comes out also with many other roles and commitments, which one is aware of more and others less. In this paper we have examined first to investigate and explain the facts as they relate to family obligations, which represent an obstacle to scientific careers of women. We also wanted to own the position of women in science, for which we have found that among the EU countries are not significantly different: everywhere in the scientific sphere dominated by men (Vertot et al., 2007). They presented theoretical starting points and studies and our study we want to draw some attention to possible changes which could help to make better use of modern science education.

Family obligations and (gender) asymmetry of their performance in the family Slovenian legislation for many years help parents to better coordinate their paid work and family responsibilities. Even if the law and social policy in this field through the transition period is not demoted, has in some places greatly improved. Thus, in the last two decades adopt laws to build pre-existing basis for balancing family and work commitments (Kanjuro Mrčela, 2007: 17), but the law does not only bring conceived (desired) real situation, which should allow women to "non-discriminatory" access to scientific sphere.

We are aware how the family as the basic group of societies (Haralambos and Holborn, 2001) represents an individual obligation of aid and support for the family and actually meet the emotional demands of the family (Fuligni and Pedersen, 2002; Tseng, 2004). Family obligations, for each individual account for some specific, which is conditioned by its own organization and family relations as well as life partner. By Corrigan and Kondrad (2006) family obligations are defined by following terms: law, children of both parents, paid work and domestic responsibilities, and, at the sometime, they provide needed obligations on personal career.

When the women are mentioned in the literature, they are constantly placed on a position in the family, while outside. The fact is that society on the one hand, sees woman as a sexual category, and it also attaches to traditional female roles (Oakley, 2000: 95). Its primary role is the role of the housewife, the wife of her husband and mother of children. These values are part of the tradition, handed down from generation to generation and thus discriminate against gender. On the other hand, the society sees a woman as a human being who was able to improve themselves personally (Oakley, 2000: 95), showing how the liberal-democratic values apply to all regardless of gender. All this shows the duality and complexity of the situation of women.

It's no secret how today professionally active women face the dilemma how they successfully reconcile their professional role with that of private. For most of the world (mainly Western) societies with a woman through

the process of socialization, internalized sense of obligation and concerned the growth of emotional warmth and stability in her family, so he feels responsible for the upbringing and care of children (Goriup, 1996: 10). And that is why this role is left to women more than men. Looking at data from the European Commission show how on average women in Slovenia with their preschool children spend 2 hours and 23 minutes a day, while men only 56 minutes (Kanjuo Mrčela, 2007). It is also another unpaid domestic work unevenly distributed between the sexes. Women spend on household obligations 4 hours and 57 minutes, while men only 2 hours and 39 minutes a day (Kanjuo Mrčela, 2007). In most cases, women combine both, professional and private sphere and perform the tasks in both areas simultaneously. This icon represents the "perfect woman" who is this time more load (Settles, 2007: 270) as an incentive.

THE SITUATION OF WOMEN IN THE SLOVENE SOCIETY

In Slovenia, women now represent nearly half of employees. Further 48 per cent of the workforce which is 49.5 per cent of women, which is higher than the average achieved by the other members of the European Union (Žnidaršič Žagar, 2007: 11). But the peculiarity of our country in the employment of women is not only a high employability, but also the intensity of their work. With 92 per cent of women work out in our full-time, in comparison with other EU countries is by far the most, given that elsewhere women are employed part-time (Žnidaršič Žagar, 2007: 11). Thus the numerical participation of women in the labour market should be the result of historical events, they are transformed and strengthened, in particular by the negative stereotypes that are the starting point for evaluating women's work. The latter, based on these stereotypes have never been fair valued and we could say that these factors and stereotypes despite many social changes persist even today.

Already mentioned, we cannot ignore the numerical predominance of women and the question of their equality with men. The past situation of women, in comparison in the equality with men, stressed the importance of women's economic independence and their right to education. Today, the researchers found through analysis how the majority of people reject the ideology of one (male) breadwinner and egalitarian standards, and understand the active role of women as legitimate and as the basis for their economic independence (Mladenič, 2006). According to the Statistical Office of the Republic of Slovenia (2003) in Slovenia most women and men shared the view that both should contribute to the household and of family income. Such life is easier, since the higher the household income, which represents the quality of life in material terms, but it is such a life even more stressful, because by creating a family and the birth of children parents left less time for care, childcare and/or less time for their achievements and work careers.

WOMEN IN SCIENCE IN THE PAST

Since there is a science, there are women in science. And as there are many examples of excellent male scientists, there are also examples of innovative female scientists, which are less known, but their work also contributed to numerous scientific advances.

The history of woman's employment has not yet begun in industrial times, since it is one addition to her role in the family had already been carried out in other works, but it was still dependent on her husband. Then it was self-evident, how his wife worked, despite the fact that her work was not properly valued. Appreciate only her "duty" giving birth to children, while the other stuff was not treated equally with men. Being able to work, women get only the first industrial revolution, when the demand for workers increased tremendously. But when the work was intended only to unmarried women, as a "report" was believed that the wife / mother belongs to the family only because it could be at work too exhausted, which would therefore suffer a husband and children. Only in the transition from the 19th in 20th century a chair women gain legal options to change their social situation, since the right to vote, educational opportunities, equality in parenting and more. And these changes have led to the women began to include more equivalent in the public sphere, the sphere of

education, occupations, including science and policy. This has changed the view of the situation of women, which only further contribute to their all higher educational and career goals. Women have increasingly begun to enter the universities and occupy higher, the leading city organizations and businesses. That is why in the past century, many national and international reports devote much attention to the model increase the proportion of women in university education programs (Bell, 2010). The Slovenian area was no exception, as it clearly shows upward trend in the number of enrolled women who have not yet stopped.

Before the 50-IMI older women scientists were rare and often these were unmarried women and without children. This was only little role models for younger women who wanted to become a scientist. And although many paths to scientific title and jobs in science reached, their career ambitions in the shadow always reflect the career of their husbands (if married). It also did not expect themselves to reach the top within their profession, are rare indeed expect to have any occupation (Jogan, 2007).

The role of women in science and their place in the past, according to M. Jogan (2007) directly related to the situation of women in society and also the dominant pattern of relations between the sexes. So the man took the scientific world and transferred to various stereotypes and value premise of women in environmental science from the broader dominant patriarchal social environment (Kirn, 2000: 219). This is the essence of prejudice and stereotypes are still not completely changed the world of science was only slightly softened and transformed.

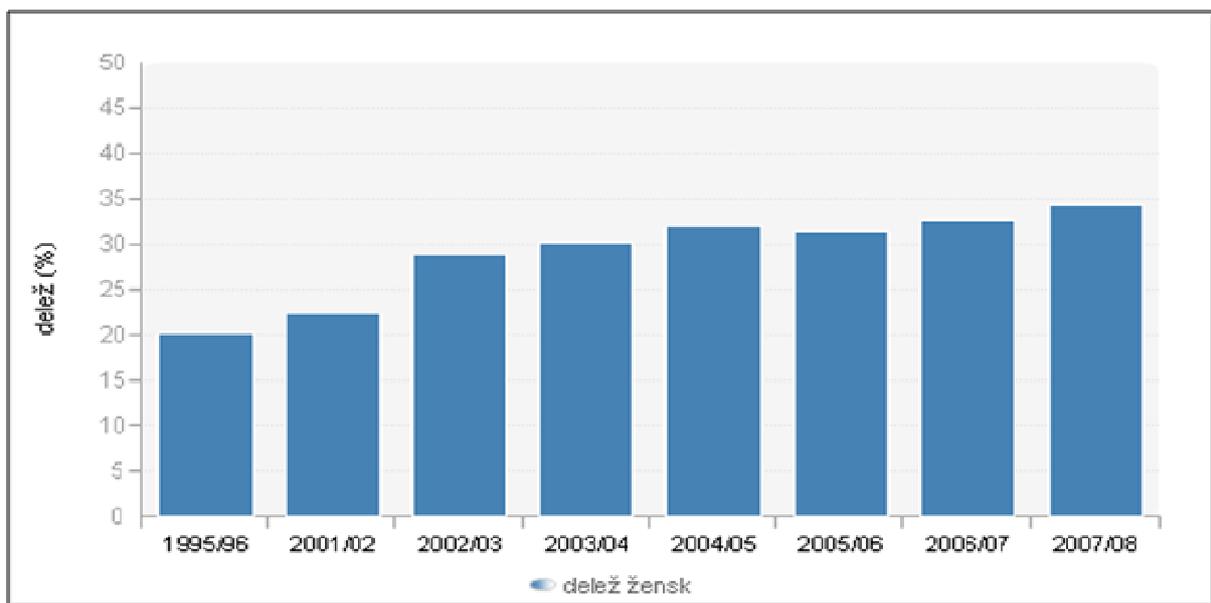
WOMEN IN SCIENCE TODAY

The situation of women in science in Slovenia is not significantly different from their position in other European countries (Vertot et al., 2007). Nowadays, many things changed radically since we have been living in a changing economic, consumer and life in general a different rhythm, in which two payments are necessary (often even necessary) for family welfare. At the same time today's society accepts that women also want the services of more than just money, they want the intellectual challenge offered by the professional scientific career. Thus we are faced with an increasing interest of women in scientific careers, which shows the greatest extent with increasing percentages of women, which is subscribed to undergraduate and graduate programs (Mellner, Krantz and Lundberg, 2006; Gilbert, 2001). This demonstrates significant growth in both numbers as well as the per cent of doctoral degrees obtained in women (Jogan, 2007: 138). At graduation, women and men are numerically equal. Sometimes even the proportion of women exceeds the proportion of men, but the number of female career advancement (eg. master's degree to a regular professorship) is usually reduced to about 10 per cent (Vertot et al., 2007). So a model is not only clear, but it also repeats the younger generations of successful women. But despite the fact how the ratio of women to all academic programs increases, the latter cannot be without bias associated with improving the situation of women in general. We could conclude that this is due to the exodus of men attractive, therefore better paid jobs elsewhere, and leading to the creation of social minority women - scientists (Jogan, 2006: 155). And although scientific reports and comparisons of Slovenian scientific space with others in Europe points out how we have the lowest sexual discrimination in academic careers, although men are twice as likely to achieve top positions in comparison with women (Mladenčić, 2006: 6). A similar research have also concluded research scientists in the position of Slovenia, which showed how women in academic careers as the biggest obstacle feel covert discrimination, lack of support in the work environment, congestion, particularly with administrative tasks, and in particular preoccupation with family and household work (Jogan, 2001: 97).

In addition to scientific excellence, the bias of gender inequality in science is reflected in the fact that "... the same competencies and skills of men and women are differently valued and rewarded" (Šadl, 2006: 183). Women need to recognize the same scientific competencies to achieve much greater productivity in their work in terms of publications than their male counterparts, and they are still paid far less (Bett, 1999; reported by Šadl, 2006: 183). While still progressing slowly, they receive fewer decorations and occupy managerial positions

less than men (National Academies, 2007, in Bell, 2010). It is therefore not surprising that few and fewer women than men, women entering the science, technology, engineering and mathematical majority (Morganson et al., 2010). According to many a woman's potential they are still underutilized and undervalued socially and economically, as well as lacking in self-awareness of their contribution to the advancement of science and society (Marn and heir, 2008).

If we want to describe today's situation of women in science, we cannot ignore the fact that scientists who are not mobile or because of family obligations cannot be, at the present time are not valued as highly as other scientists. And whereas today, the women are still usually expected to take nearly full share of their responsibility for the family. As interpreting Jogan (2001) it is necessary to explain how the entry of women into public space, usually held after the totalization principle. This means the sum of the traditional role of a new application, so it was a conditional inclusion in the public space. This, however, in other words means how women may perform public functions, but only if, at that understand their primary role (i.e., be a mother) and also perform. Such a model is at the present time and is still taken for granted in the organization of life. In addition to the above mention, we should point out a few facts, the Statistical Office of the inequalities between men and women in science and research. Figure 1 shows the proportion of female professors in the period from 1995 to 2008.



Source: Statistical Office, www.stat.si/PrikaziPDF.aspx?ID=1801.

Figure 1: Percentage of women professors in the period from 1995/96 to 2007/08.

The graphical representation of Figure 1 shows that women do not reach even 35 percent the position of higher education teachers, which clearly shows how universities and other higher education institutions are dominated by men.

Literature allows us to conclude that the problem of women in science is reduced how more and more women entered the university (including graduate programs), but realizes also that in society the problem remains unresolved, and has only re-emerged in different forms (Gilbert, 2006). Science should be organized in a way that would allow young women to participate in science as women, and not as a substitute for men (Gilbert, 2006).

COORDINATION OF PAID WORK IN SCIENCE AND FAMILY LIFE

Many research findings around the world and also in Slovenia show how the attitude towards parenting in the workplace cause the concern for employers because parenting does not represent the values, but a disturbing factor in the work process. Kanjuo Mrčela and Černigoj Sadar (2007: 29) lists the following as problems faced by parents in balancing work and family life:

- Difficulties in finding a job due to a planned parenthood or parental responsibility;
- Negative experiences after childbirth-related careers: prevents progress, assigned lower post;
- Long hours and extra workload following the birth of a child;
- Deterioration of relations in the workplace because of parental responsibilities after the birth of a child: poor relations with superiors and colleagues;
- Termination of employment after the birth of a child: by the employers or the workers themselves (intolerable conditions).

Problems listed in this day and age, time of capitalism, occur in all organizations, but are expressed more in some places, less elsewhere. The fact is how women in science want to coordinate work and family life from work more often than men are absent due to sick leave or to care for family members. Therefore performed fewer overtime hours and slowly progressing in the workplace or in his career (Vertot et al., 2007). At the same time it is hard to understand why researchers and experts still put question and explore why, there in science and engineering professions, are fewer women than men (Rosser, 2004: 24).

The Constitution itself as the Republic of Slovenia also stresses out how the State protects the family, motherhood, fatherhood, children and youth, and as well as our country's family policy geared to employers to facilitate the reconciliation of family and professional life, the legal provisions for women in science and in other professional spheres favour. However, reality shows its image. It should be recognized that good measures of coordination work and family life to help reduce gender disparities, to improve the quality of working environment and address the problem of negative demographic trend. And as Hrženjak (2007: 34) stated, each organization in its organizational structure enables women to give birth more often, well take care of home and family and were both active in the labour market.

RESEARCH OBJECTIVES

Our study addresses the research facts about family obligations, which represent an obstacle to scientific careers of women. Especially, we focused on exploring the distribution of family responsibilities and the time they spend on it. Much attention was also devoted to study the situation of women in science, which is due to its complexity, depends on several factors (from the workplace, organizations within the family division of domestic responsibilities between partners, etc...). We have also investigated what would be the possible changes that could significantly affect the 'preferred' status of women in science and in a more productive use of scientific potential of women in society. The variables we examined in their affiliated unions with three independent variables: age, job and age of children regardless of relevance.

HYPOTHESES

The data collection and analysis, we evaluated the following hypotheses that were formulated on the basis of the presented studies and theoretical principles:

H1: The higher academic degree increases the time that women spend on paid work, and reduces the time spent by women for other family responsibilities.

H2: In the family women, scientists, or home household chores and caring for children usually perform both partners equally.

- H3: The procedures for assessing the quality of the academic staff there is a gender bias.
 H4: Women estimated that in a scientific career, have the same opportunities for promotion than men.
 H5: The situation of Women in Science as not good, not bad.
 H6: In the women's flexible working hours would reduce the barriers, which in a scientific women career make up family responsibilities.

METHODOLOGY

Pattern

In a sample of 206 women were included who are employed in science (specifically, the faculties of the University of Maribor and Ljubljana and the Slovenian institutes). On such non-casual pattern with which we researched how women are employed in science, how they organize their family responsibilities, how they share family responsibilities with their partners and some proposals highlighted in order to improve their position. Among those participating in the survey, almost half of them were between 31 and 40 years old; at least they were older than 60 and those younger than 30 years. Most respondents occupied positions of Associate Professor and Assistant Professor, but some were also occupied in surround possible position (mostly these were professional colleague). Most of them are mothers of primary school children; younger surveyed women are still childless.

Methods of data collection and analysis

Based on the literature in the field of family responsibilities and women in science we have compiled a questionnaire, which was split between women working in institutions dealing with science and research. Interviews were conducted anonymously and individually. For the needed validity of the survey questionnaire, we ensure the review of relevant literature, and its reliability with precise and unambiguous instructions specific issues. For the objectivity, we provide mostly closed types of questions in which we could not change the information with subjective judgments. During the survey the interviewers did not influence the answers of respondents for individual fulfillment. Processing and data analysis were performed with SPSS 16.0 computer program.

EMPIRICAL RESULTS

Hypothesis H1 stated how higher academic degree increases the time that women spend on paid work, and reduces the time spent by women for other family responsibilities. The chart below shows the percentage of time that women spend on average on each day of work.

Table 1: Organization of working time of women scientists

	Household	Family care	Paid work	Free time
Lecturer	1,67	2,67	9	1,67
High lecturer	1,67	3	10	1
Lector	1,64	2,23	8,31	1
Assistant	2,32	1,57	9,86	1,5
Assistant professor	1,71	2,57	9,78	1,3
Associate professor	2,09	2,17	10,43	1,04
Full Professor	1,25	3	10,5	1
others	1,53	2,06	9	1,35
Total	1,92	2,26	9,64	1,22

We found significant differences in the time that respondents spend on paid work for the working place, since the higher the academic title of respondents over time they devoted to paid work. Family welfare assistants spend the least time, which is largely still do not have children. If we compare the distribution of time Associate Professor, we find that the latter paid work devoted a lot of time (which average 10.43 hours a day), while caring for a family less (an average of only 2.17 hours per day). On the other hand, the lecturer devoted less time to paid work (an average of 9 hours per day) and more time caring for family (average 2.67 hours per day). The data thus confirm our hypothesis; they clearly show the trends of time-use differences between scientists with different titles. On this basis, we consider the hypothesis H1 as authorized.

The following hypothesis (H2) we assume that women in families, scientists, or home household chores and caring for children usually perform both partners equally. In this context, we determine how respondents with their partners (if living with them) share the commitment to provide the individual activities within the family.

We found that women scientists, mainly in the home cook, shop, clean and care for children. Compared with women and men, according to the respondents mainly perform only minor repairs inside or outside the house or the dwelling. Both partners are responsible only for the same monetary affairs and education of children and their school affairs.

Table 2: Number of (f) and in percentage (f %) of the performance of individual activities in the family.

	Mostly done by women-mothers		Mostly done by men-fathers		Mostly done equally by both	
	f	f %	f	f %	f	f %
cooking	140	68,0	8	3,9	58	28,1
shopping	112	54,3	10	4,9	84	40,8
cleaning	146	70,9	0	0	60	29,1
money management	66	32,0	20	9,7	120	58,3
repairs	10	4,9	130	63,1	66	32,0
care	94	45,6	0	0	112	54,4
education and upbringing	50	24,3	0	0	156	75,7
helping child in school duties	80	38,8	0	0	126	61,2

These trends suggest that women scientists, although employment in the service and care for the household, is still indispensable in activities relating to children and it directs us to reject hypothesis H2. The data show that women in families, scientists, and domestic work and work with children (still) is not evenly distributed among the partners.

Hypothesis H3 states that the procedures for assessing the quality of the academic staff there is a gender bias. As an indicator to verify this hypothesis, we women, scientists, asking whether they consider the procedures for assessing the quality of bias exist.

Table 3: Number of (f) and in percentage (f %) of bias in the quality assessment procedures

		f	f %
Valid	yes	30	14,6
	no	94	45,6
	undecided	82	39,8
	Total	206	100,0

In most cases (456%) surveyed women believed that the gender bias in quality assessment procedures exist. Many (41%) were also undecided.

Table 4: Number of (f) and in percentage (f %) after evaluation of the excluded potential bias due to gender in relation to the job.

		Lecturer		High lecturer		Lector		Assistant		Assistant Professor		Associated Professor		Full Professor		Others	
		f	f%	f	f%	f	f%	f	f%	F	f%	f	f%	f	f%	f	f%
Cooking $\chi^2=38,196$ g=14, P=0	Women	0	0	10	83,3	24	92,3	24	92,3	38	82,6	28	58,3	2	25	14	41,2
	Men	0	0	0	0	0	0	0	0	0	00	8	16,7	0	0	0	0
	Both	6	100	2	16,7	2	7,7	2	7,7	8	17,4	12	25	6	75	20	58,8
Shopping $\chi^2=34,539$, g=14, P=0,002	Women	2	33,3	6	100	16	61,5	16	61,5	36	78,3	16	33,3	2	25	10	29,4
	Men	0	0	0	0	0	0	4	15,4	0	0	8	16,7	0	0	0	0
	Both	4	66,7	0	0	10	38,5	6	23,1	10	21,7	24	50	6	75	24	70,6
Cleaning $\chi^2=12,788$, g=7, P= 0,077	Women	3	100	12	100	10	76,9	16	61,5	40	87	16	66,7	6	75	18	52,9
	Men	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Both	0	0	0	0	6	23,7	10	38,5	6	13	16	33,3	2	25	16	47,1
Money managing $\chi^2=49,398$, g=14, P=0	Women	0	0	4	33,3	4	15,4	10	38,5	36	78,3	2	2	0	0	8	23,5
	Men	0	0	0	0	6	23,1	6	23,1	0	0	6	12,5	2	25	2	5,9
	Both	6	100	8	66,7	16	61,5	10	38,5	10	21,7	40	83,3	6	75	24	70,6
Repairs $\chi^2=9,461$, g=14, P=0,800	Women	0	0	0	0	2	7,7	0	0	2	4,3	6	12,5	0	0	0	0
	Men	4	66,7	8	66,7	18	69,2	22	84,6	28	60,9	30	62,5	4	50	24	70,6
	Both	2	33,3	4	33,3	6	23,1	4	15,4	16	34,8	12	25	4	50	10	29,4
Care $\chi^2=31,645$, g=7, P=0	Women	2	33,3	12	100	16	61,5	14	53,8	30	65,2	14	29,2	2	25	2	5,9
	Men	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Both	4	66,7	0	0	10	38,5	12	46,2	16	34,8	34	70,8	6	75	32	94,1
Education and upbringing $\chi^2=22,176$, g=7, P=0,002	Women	0	0	6	50	4	15,4	7	53,8	18	39,1	6	12,5	2	25	0	0
	Men	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Both	6	100	6	50	22	84,6	12	46,2	28	60,9	42	87,5	6	75	34	100
Helping in child's school obligations $\chi^2=38,196$, g=14, P=0,0	Women	0	0	6	100	14	53,8	14	53,8	16	34,8	10	20,8	6	75	6	17,6
	Men	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Both	3	100	0	0	12	46,2	12	46,2	15	65,2	38	79,2	2	25	32	82,4

If we look even mentioned in the indicator variable, depending on the job, we find that the existence of bias, most women believe how their jobs bear the other (in 70.6%) and lecturers (69.2%) and Lecturer (66.7%). At least in the existence of bias in the quality assessment procedures convinced an associate professor (20.8%) and an assistant (30.8%), which is predicted by the latter's brief period of cooperation expected in academic circles. But on the other hand, the fact that sex bias does not exist, the most confident assistant professor. And if we look further χ^2 -test associations between the dependent variables.

Table 5: Results of the test-dependent relationships between variables.
 Assessment of excluded options of gender bias

Results of Assessment by gender excluded according to age	χ^2 -Test Result: $\chi^2 = 20,232$; g = 8; P = 0,009
Results of Assessment of excluded options by gender according to work	χ^2 -Test Result: $\chi^2 = 18,077$; g = 14; P = 0,203
Results of Assessment of excluded options by gender according to children	χ^2 -Test Result : $\chi^2 = 35,219$; g = 10; P = 0,000

By age, the χ^2 -Test results indicate that the null hypothesis (H0) was discarded. So, there is a statistically significant difference between age of women and excluded the possibility of bias due to gender. The highest possibilities of the existence of gender bias believed female respondents aged over 60 years. We concluded that older respondents have undergone many experiences, as they are aware about the status of women in science. The most hesitant Sat respondents aged between 51 and 60 years, as explained by the fact that some of the working lives of the survivors whom bitter experience because of the differences between the sexes, which are now tied, in addition, we must consider the existence of a latent fear of danger.

According to χ^2 -test shows that the null hypothesis (H0) and keep the claim that a statistically significant difference between the workplace and excluded the possibility of gender bias does not exist. Older respondents are of the opinion that the possibility of bias exists in the same way as younger ones. The results are expected, since there is a bias based on gender in all workplaces and bias does not depend on the job, but the employer, parent, or the evaluation of quality.

Table 6: Number of (f) and in percentage (f %) of the excluded potential bias due to gender in relation to the title on work place.

		Work place								
		lecturer	High lecturer	lector	Assistant	Assistant Professor	Associated Professor	Full Professor	others	Total
yes	f	0	0	2	4	8	10	2	4	30
	f%	,0	,0	7,7	15,4	17,4	20,8	25,0	11,8	14,6
no	f	4	6	18	8	20	10	2	24	92
	f%	66,7	50,0	69,2	30,8	43,5	20,8	25,0	70,6	44,7
undecided	f	2	6	6	14	18	28	4	6	84
	f%	33,3	50,0	23,1	53,8	39,1	53,4	50,0	17,6	40,8
Total	f	6	12	26	26	46	48	8	34	206
	f%	100,0	100,0	100,0	100,0	100,0%	100,0	100,0	100,0	100,0

Depending on the age children can be the result of a χ^2 -test null hypothesis (H0) is discarded. There is a statistically significant difference between age children and excluded the possibility of bias due to gender. The biases are most firmly convinced of respondents with primary school and secondary school children.

Table 7: Number of (f) and in percentage (f %) of the excluded potential bias due to gender in relation to the children age.

		Children age						Total
		Under school age	Primary school	Secondary	High School, university	Independent	No children / Childless	
yes	f	12	12	4	2	0	0	30
	f%	31,6	21,4	33,3	12,5	,0	,0	14,6
no	f	14	34	8	6	8	22	92
	f%	36,8	60,7	66,7	37,5	30,8	37,9	45,6
Do not know	f	12	10	0	8	18	36	84
	f%	31,6	17,9	,0	50,0	69,2	62,1	39,8
Total	f	38	56	12	16	26	58	206
	f%	100,0	100,0	100,0	100,0	100,0	100,0	100,0

χ^2 – Test result: $\chi^2 = 35,219$, $g = 10$, $P = 0,000$

According to the graphic and tabular displays, the results of χ^2 -test show that the women surveyed in science and research field are confident that the average bias in the evaluation processes of the quality of academic staff. Hypothesis H3 can therefore confirm the dimensions of gender bias.

In verification of the hypotheses, we were also focused on practical verification of egalitarian opportunities for women and men in promotion. As we in Hypothesis H4 assumed that men and women in scientific careers have equal opportunities for advancement, we, as part of the verification of this hypothesis, used data on the opinions of respondents whether there are equal opportunities for women and men for promotion. Most of them are estimated to exist in the processes of advancement opportunities for women and men. But on the other hand, as shown in the previous analysis of the indicator, feel bias. So the emphasis is on indecision.

Table 8: Results of the test-dependent relationships between variables and opportunities for advancement on the job.

Equal opportunities for women and men for the advancement of age	χ^2 -Test-results: $\chi^2 = 16,198$ $g = 8$; $P = 0,040$
Equal opportunities for women and men for the advancement according to work place	χ^2 -Test-results: $\chi^2 = 56,829$ $g = 14$; $P = 0,000$

In the trial-dependent relationships between variables are based on age-based χ^2 -test found that the null hypothesis (H0) is discarded. So there is a statistically significant difference between age of female respondents and equal opportunities for women and men for promotion. That there are equal opportunities for advancement are most satisfied respondents older than 60 years, but at least the age of 30 years.

As the result shows χ^2 -test can also post on the null hypothesis (H0) and discarding said that there is a statistically significant difference between respondent's jobs and equal opportunities for women and men for promotion. Respondents with higher titles, most consider that the same opportunities for advancement of women and men provided, while those with lower titles on this not so sure.

The basic hypothesis H4, that men and women in scientific careers have equal opportunities for promotion, may be adopted in modified form: namely, that equal opportunities for advancement of both sexes exist, but (are) felt by the older and more experienced scientists, while the less confident that equality promotion cannot be guaranteed.

Hypothesis H5 states that respondents rated their situation as not good, not bad, ie. that matters which are generally good, but could be further improved. According to the study hypothesis, we evaluated the responses to the question of how respondents rated the overall situation of women in science in our country.

Table 9: Number of (f) and in percentage (f %) of the respondents' estimation of the general situation of women in science in Slovenia.

	F	f %
Very bad	4	1,9
Bad	24	11,7
Neither bad nor good	98	47,6
good	72	35,0
Very good	8	3,9
Total	206	100,0

Most respondents chose to assess the status of women in science in our country is neither good nor bad, but many also of those who rated their situation as good.

Table 10: Results of the test-dependent relationships between variables.

Assess the overall situation of women in science in our country according to age	χ^2 -Test-result: $\chi^2=40,599$; g = 16; P = 0,001
Assess the overall situation of women in science in our country according to work place	χ^2 -Test-result: $\chi^2=61,398$; g = 28 ,P = 0,000
Assess the overall situation of women in science in our country according to child's age	χ^2 -Test-result: $\chi^2=30,936$; g = 20; P = 0,056

In testing associations between the dependent variables of age on the basis of χ^2 -test we found that the null hypothesis (H0) is discarded. There is a statistically significant difference between age and assess of the overall situation of women in science in our country. Most of its position as neither bad nor good estimated respondents aged between 41 and 50 years and between 51 and 60 years. Particularly notable is that how assessing of the younger about their situation is worse than of the elderly. However, in the social context of contemporary global post-modern society, it is not entirely surprising, that younger women just entering the (academic) market work are coping with many (including contingency) problems. It is therefore understandable that the older surveyed women estimate their position better.

The result of χ^2 -test indicate that the null hypothesis (H0) is discarded. We noticed a statistically significant difference between the workplace and assess in the overall situation of women in science in our country between the respondents with lower academic self-rated title inferior position and those with higher. Results are expected, because the younger women in modern and extremely harsh social conditions in the Slovenian society today, experience most serious existential problems relating in particular to the economic and social independence, compared with earlier. Younger women experience a greater fear for the job, what of course

makes their situation and feelings of uncertainty more tensioned. On the other hand, respondents, especially full professors, already experienced such situation and feel now a lesser fear of loss of gainful employment or termination of the academic title.

With regard to the children age the χ^2 -test shows that the null hypothesis (H0) is retained. Thus, a statistically significant difference between the age of children and assess of the overall situation of women in science in our country does not exist. Respondents with children, regardless of their age, are on average equal to (not) satisfied with their situation than those who do not have children. As neither good nor bad, respondents assess their position as mothers of high school children, less extent are those with preschool children. These results were expected, since the state as employer is not optimal in favour of the institution of motherhood, as respondents in the labour market do not find specific advantages; even the opposite.

The final hypothesis (H6), we assumed that the flexible working hours of women in science reduce barriers, which in their scientific careers represent a family commitment. In this connection, we asked the respondents the open question: "The results of various surveys show that family responsibilities are a very important barrier to the advancement of women (mothers) scientists. What do you think; it can be done to reduce these barriers (at your university / other institution and / or in the wider social environment)?" Their answers we significant and ranked by the 5 suggestions that would help eliminate the belief that family liabilities constitute a barrier to the advancement of women scientists. We obtained results that show the following graph.

Table 11: Proposals to eliminate the belief that family obligations represent barrier to the advancement of women scientists.

Demand for changes in women's status in science and research according to work place	χ^2 -Test-result: $\chi^2=4,757$; g = 4; P = 0,313
Demand for changes in women's status in science and research according to child's age	χ^2 -Test-result: $\chi^2=6,204$; g = 5; P = 0,287

Table 12: Number of (f) and in percentage (f %) of the respondents' proposals in general.

	f	f %
Proportionate distribution of family duties	52	25,2
Reorganization of (institutional)child's care	36	17,5
Domestic assistance (parents, domestic helper)	24	11,7
Higher income for employed with children	16	7,8
Working time reorganization	78	37,9
Total	206	100,0

Many, 25.2%, respondents estimated that in the progress of the family would not be an obstacle if the partners could agree among themselves and evenly distribute certain obligations. In particular, the respondents emphasized the importance of an agreement between the partners, as a woman alone with the children difficult coordinates her scientific research work with family responsibilities, even it is not impossible. An equalization of parental responsibility is the proposal expressed by most respondents younger than 60 years;

while younger it did not propose this. By age children, this proposal reflects the highest respondents without children and those whose children were already independent.

Table 13: Number of (f) and in percentage (f %) of the respondents' proposals by age

		Age					Total
		under 30	31 to 40	41 to 50	51 to 60	over 60	
Proportionate distribution of family duties	f	2	20	18	6	6	52
	f%	12,5	21,7	31	20,0	60,0	25,2
Reorganization of (institutional)child's care	f	8	16	4	6	2	36
	f%	50,0	17,4	6,9	20,0	20,0	17,5
Domestic assistance (parents, domestic helper)	f	4	6	12	6	0	24
	f%	25,0	6,5	20,7	6,7	,0	11,7
Higher income for employed with children	f	0	10	2	2	2	16
	f%	,0	10,	3,4	6,7	20,0	7,8
Working time reorganization	f	2	30	22	14	0	78
	f%	12,5	43,5	37,9	46,7	,0	37,9
Total	f	16	92	29	30	10	206
	f%	100,0	100,0	100,0	100,0	100,0	100,0

17.5% of female respondents expressed the need to reorganize as child care, which they consider would help greatly to relieve the parents of the special nature of the work. There were various proposals on a revised working time of the kindergartens, especially the opening of kindergartens in the afternoon and evening, as scientific research takes place only in the morning. These ideas have also been enabled in the context of child protection within the work environment, which in some EU countries already are happening and represent an important innovation that allows parents to spend more time with their children. Especially, as the parents working in the field of science often do not complete the 8-hour working hours at their work places, as their work continues until the late evening hours, or even is continued at home at night.

Many respondents, 11.7%, also highlighted that the family was a major obstacle for progress in their career, especially if they had no help at home. The respondents in particular emphasized the help of their parents or partners. Some respondents also estimated their conviction that their scientific career would not be impeded, if the State would ensure some domestic help at home. Without helpers, who iron, wash, protect children, many more respondents would not be able to cater for all. This proposal were suggested by the majority of respondents older than 30 years, women who are already

At the least, 7.8%, but still a lot of respondents believe that for employees with children an increased income would enable the scientists to reconcile work and family life. Thus, such employees are devoted to family and to work, and aware that some domestic responsibilities can be carried out by someone else.

On the basis of the offered proposals and possible improvements, we to leading institutes to improve the quality of employer's lives and some possibilities for changing the organization of work time, what is according to respondents, the best solution that would help to facilitate scientific research of the female scientists? Therefore, our final hypothesis (H6) can be confirmed. Ideas of female respondents are realistic and achievable and possible, and the life would be for all involved, not just women scientists, much easier.

SOME OPTIONS FOR APPLICATION FOR SCIENTIFIC KNOWLEDGE

Through research, we found certain evidence which in practice should result in change for the better. In the first instance would need to improve our society and the State, which both are coping with an acute economic crisis. We need also a new active fathering and to promote an active involvement of father in family life, which would enable woman an easier ascent through the academic career ladder. In addition, one of the major movements in improving the situation of women in science should be the elimination of gender bias in academic circles (and, of course, generally in employment and promotions). Mentioned above, it would be required to establish more social control, a model should be directed in the elimination of gender bias. Bias associated with the same opportunities for advancement, for equality from theory into practice. As necessary, we estimate a mere exercise of measures to create a gender balance. The fact is that in Slovenia we have adequately trained professionals, but the employers are very selective in employment. The latter is the case, searching for a job, as a woman than men; they prefer to opt for the men. An important measure, which is also one of the essential conditions for the optimal development of scientific research in Europe and around the world, is promoting equality between women and men researchers. Currently, women are underrepresented in scientific institutions, especially in leadership positions, so it is important to realize that greater gender balance at all levels in the exploration of a key element in building public confidence in science is a global goal. Listed ideas are plausible, but there are many movements in the society and in the minds of women scientists that will become reality.

Being a woman and a scientist at this point today, where productivity and earnings are fundamental objectives, all mentioned does not mean any good starting point. This is evidenced in the survey data, as women in science about their position in principle, are not satisfied and want some changes.

To sum up, the family and family obligations represent a major obstacle in professional progress of women in the field of science and research. But individuals show that coordination is possible. We estimate how woman as scientists and researcher is on important decision whether to accept such decisions and compromises that allow her such work in science and in domestic life, or she allows to be stopped and accepts the unequal position in comparison with male colleagues.

In conclusion we may add that we have studied our based hypothesis that women in the scientific sphere are gender discriminated because of it and how the development of their professional career in science and research is harder than those of men. In addition, we must mention that the principle of equal opportunities is becoming an increasingly important element of awareness for responsible persons on key positions on Universities and research Institutions (Jogan, 2006: 165). Especially, as these are the ones who mostly determine everyday situations in science and research, to impact strongly on the family organization and family lives of employees. Despite it, some quick changes are needed, as well.

BIODATA AND CONTACT ADDRESS OF AUTHOR



Jana GORIUP is an regular Full Professor, researcher and lecturer at Faculty of Arts, Faculty of Medicine, Faculty of Nursing and Health and Faculty of Education at University in Maribor, Slovenia. She holds lessons in Sociology of Education, Sociology of Family, Sociology of Medicine, Sociology of Nursing and Health, Communication in Medicine and Sociology of Partnership and Every day's life. Her lessons, research and published works include sections on crucial topics such as: social class, globalization, education, gender, family, curriculum, social inequality and social justice, health and illness, nursing and communication in medicine. Her research work deals with issues relevant to the immediate world and societies, and is in the major issues confronting family, gender, medicine and nursing and

education today and is strongly comparative and accentuates the essential importance of globalizing influences upon social life. She is the author of many works including Chapters in Sociology of Medicine(2007), Chapters in Sociology of Education (2006), Citizenship Culture (book, notebook, teachers' book; 2000), and other more than 740 bibliography unites. She is a graduate student at the University of Ljubljana and University of Maribor. As researcher in various types of research teams he researched Social values and modern society (1997-1999); Extrinsic and intrarinsic religiosity in intercultural perspectives(2004 – 2007); Equality in Education(2000 – 2002); Sustainable indicators of social exclusion and inequality in education (2001 – 2004); Socio-economic influences of families' budget on equal life standards(2003 – 2006); she is the Member to National Committee for Women in Science (from 2001 onwards) and to National Committee for TV and Broadcasting (from 2006 onwards). She organized several international Conferences on Education and on social problems related to family and women's problems and specially focused on sustainable processes in education, organized several seminar series for students (f.e.: March 2008 onwards on Contemporary problems with sustainable drugs' situation). Between 2005 and 2011 she served as Vice Dean for Research and Scientific Affairs.

Jana GORIUP

Koroška cesta 160

2000 Maribor- SLOVENIJA

E. Mail: jana.goriup@um.si

REFERENCES

Bell, S. (2010). Women in science: The Persistence of gender and Australia. *Higher Education Management and Policy*, 22 / 1, 47-65.

Corrigall, E. A., and Konrad, A. M. (2006). The Relationship of Job Attribute Preferences Tues Employment, Hours of Paid Work, and Family Responsibilities: An Analysis Comparing Women and Men. *Sex Roles*, 54, 1 / 2, p. 95-111.

Fulgini, A. J., & Pedersen, S. (2002). Family Obligation and the Transition Tues young adulthood. *Developmental Psychology*, 38, p. 856-868.

Gilbert, J. (2001). ITS Science and 'Other': looking underneath 'woman' and 'science' for new directions and research on gender and science education. In *Gender and Education*, (13), 3, p. 291-305.

Goriup, J. (1996). Woman as a teacher and as a mother. In Kalhous (ed.), *Sbornik the sixth Conference on současných celosvětových otázkách alternativního školství, universitatis palackianae Olomucensis Facultas pedagógica*, Olomouc, p.7-8.

Goriup, J., Barle, A. (2006). *Chapters in Sociology of Education: Overlook of contemporary sociological studies, perspectives and concepts*, (Scientific monographie, Faculty of Management Koper). Koper: UP Faculty of management.

Goriup, J., Barle, A. (2007). *Chapters of Sociology of medicine* (Scientific monographie). Maribor: Faculty of Medicine.

Goriup,J.(2010). Some sociological aspects of changed man's role as a man and as a father in post-modern Slovene society; p.121-125; *Mezyczna w rodzinie I społeczeństwie – ewolucja rol w kulturze polskiej I europejskiej*; Wydawnictwo Poznanskie;Poznan.

Goriup, J., Oblak, U. (2011). Nekateri sociološki vidiki problematike žensk v znanosti med delom in družino v slovenski družbi = Some sociological aspects of women in science being divided between work and family in Slovene society. *Revija za elementarno izobraževanje*, letn. 4, p. 23-48.

Goriup, J. (2010). Nekateri sociološki vidiki spremenjene vloge moškega kot moškega in očeta v post-moderni slovenski družbi. V: GŁOWACKA-SOBIECH, Edyta (ur.), GULCZYŃSKA, Justyna (ur.). *Mężczyzna w rodzinie i społeczeństwie - ewolucja ról w kulturze polskiej i europejskiej*. Tom II, Wiek XX. Poznań: Wydawnictwo Poznańskie, p. 121-125.

Haralambos, M. and Holborn, M. (2001). *Sociology: themes and perspectives*. Ljubljana: Central Bureau of Statistics.

Hrženjak, M. (2007). *Invisible work*. Ljubljana: Peace Institute, Institute for Contemporary Social and Political Studies.

Jogan, M. (2001). *Sexism in everyday life*. Ljubljana: Faculty of Social Sciences.

Jogan, M.: *Women in science: from exclusion to (full) inclusion*, in: Beznec (ed.), *Yuniverzum: Women in Science*, University Press, Ljubljana, 2006, p.140-152.

Jogan, M.: *Work + Family: Development password for both sexes in science*. In Sedmak and Medarič (ed.), *The public and private*, Publisher Annales, Koper, 2007, p.131-153.

Kanjus Mrčela, A. (2007). *Introduction: paid work and "other"*. In *Work and family: a partnership of family-friendly working environment* Ljubljana: Faculty of Social Sciences; p.11-26.

Kanjus Mrčela, A. and Černigoj Sadar, N. (2007). *Problems in reconciling paid work and private lives of young people in Slovenia*. In *Work and family: a partnership of family-friendly working environment*, Ljubljana: Faculty of Social Sciences.

Kirn, A. (2000). *Women in Science and Science in Society*. *Social rules (XVI)* 34, 35, p. 219-228..

Marriage and Family Relations(2004) - official consolidated text. *Official Gazette*, 69/2004.

Marn, N. and Heir, V. (B I). (2008) *The position of women in labor. The position of women in senior jobs and problems in progress (on the basis of study of literature in the field of study of women in employment)*. Accessed 5th 12th 2008, from <http://www.equal.oris.si/equal/data/strani/ELABORAT.pdf>.

Mellner, C., Krantz, G. and Lundberg, U. (2006). *Symptom Reporting and Self-Rated Health Among Women in Mid-Life: The Role of Work Characteristics and Family Responsibilities*. *The International Journal of Behavioural Medicine*, (13),1, p.1-7.

Mandić D. (2006). (In) to the European Commission. In D. Mladenić (ed.), *Equality between women and men in science and research in Slovenia*. Grosuplje: Partner Chart, p. 5-10.

Morganson, V. J., et. al. (2010). *Understanding Women's Underrepresentation in Science, Technology, Engineering, and Mathematics: The Role of Social coping*. *The Career Development Quarterly*, 59, p.169-179.

Oakley, A. (2000). *Housewife*. Ljubljana: Publisher / * cf.

Rosser, S. V. (2004). *The Science Glass Ceiling: Academic Women Scientists And The Struggle They Succeed*. New York: Routledge.

Settles, I. H. et. al. *Voice Matters*. (2007). *The Impact of Buffering a Negative Climate for Women in Science*. *Psychology of Women Quarterly*, p. 270-281.

Sy, S. R. and Birttain, A. (2008). *The Impact of Family Obligations on Young Women's Decisions During the College Transition Years: A Comparison of Latina, European American, and Asian American Students*. *Sex Roles*, 58, p.729-737.

Šadl, Z. (2006). *The illusion of inclusion. Scientists in homosocialnem miljeju*. In Beznec, B. (Ed.), *Yuniverzum: Women in Science* Ljubljana: Student publisher, p.82-195.

Šoba, V.A. (2010). *Some legislative aspect of fatherhood after divorce and separation of partner's cohabitation in Republic of Slovenia ;Mezczyna w Rodzinie I społeczeństwie – ewolucja rol w kulturze polskiej I europejskiej*; Wydawnictwo Poznanskie; Poznan; p.127-134.

Tseng, V. (2004). *Family interdependence and academic cene and college: Youth from Immigrant and US-born Families*. *Child Development*, 75, p.966-983.

Vertot, P., et al. (2007). *Facts about men and women*. Ljubljana: Statistical Office.

Žnidaršič Zagar, S. (2007). *Historical perspective - the current situation of women in the labor market in the Republic of Slovenia*. In M. Sedmak and Z. Medarič (ed.), *The public and private Koper: Publisher Annales*, p.11-41.