

Raziskovalni prispevek/Research article

## STRESS BURDEN IN WOMEN IN REPRODUCTIVE AGE IN SLOVENIA – SOME CAUSES AND CONSEQUENCES

BREME STRESA PRI ŽENSKAH V RODNEM OBDOBJU V SLOVENIJI – NEKATERI VZROKI IN POSLEDICE

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### Abstract

**Background** *Stress is one of basic risk factors influencing different health states, including reproductive health of women. The study was aimed at measuring the level of stress in different groups of women in order to identify high-risk groups for stress and relate them to birth rate dynamics in Slovenia.*

**Methods** *The data originate from the national health behaviour database in adults aged 25–64. Data collected in 2001 were used. The sample size was 15,379. Among them there were 4,942 women in reproductive age (25–49 years). The response rate of the mailed questionnaire in this group was 68 %, with 3,181 questionnaires being eligible for analysis. Binary multiple logistic regression was used to determine the impact of age, education, type of work, marital status, self-assessed social class, and type of residence community on the prevalence of frequent perception of stress.*

**Results** *The overall prevalence of frequent perception of stress was 29.7 %. The highest odds ratios (OR) for stress were registered in women in age group 40–44 ( $OR_{40-44 \text{ vs } 25-29} = 1.35, p = 0.048$ ), with the lowest ( $OR_{\text{uncompleted primary vs primary}} = 1.73, p = 0.038$ ) and the highest education levels ( $OR_{\text{college vs primary}} = 1.76, p = 0.008$ ;  $OR_{\text{university vs primary}} = 1.80, p = 0.006$ ), employed in industry as heavy workers ( $OR_{\text{heavy workers in industry vs housekeepers/students}} = 1.76, p = 0.010$ ), divorced ( $OR_{\text{divorced vs consensual union}} = 1.72, p = 0.013$ ), self-classified in the lowest social classes ( $OR_{\text{lower vs upper-middle}} = 3.25, p < 0.001$ ;  $OR_{\text{labour vs upper-middle}} = 1.57, p = 0.011$ ); and residents of suburban communities ( $OR_{\text{suburban vs rural}} = 1.27, p = 0.029$ ).*

**Conclusions** *Public health activities to reduce stress burden among women in reproductive age in Slovenia (e.g. changes of legislation, changes of workplace behaviour) should be focused on women with lowest education and of lowest social class, especially working in heavy industry, and on employed women with highest education.*

**Key words** *stress; prevalence; women; reproductive age; high risk groups*

### Izvilleček

**Izhodišča** *Stres je eden od najpomembnejših dejavnikov tveganja za številna zdravstvena stanja, med katerimi so predvsem duševne motnje, vedno pogosteje pa ga povezujemo tudi z boleznimi srca in žilja. Med drugim lahko močno vpliva tudi na rodno zdravje, kar je tudi eno od meril, da ga uvrščamo med velike javnozdravstvene probleme. V Sloveniji je tega pojava več med ženskami kot med moškimi. Kot kaže, so med ženskami bolj ogrožene prav ženske v*

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rodnem obdobju. S to študijo smo želeli oceniti raven pojavnosti v različnih podskupinah žensk v rodnem obdobju, prav tako pa ga postaviti tudi v odnos z rodnostno dinamiko v Sloveniji, z namenom da bi identificirali bolj ogrožene skupine, kar bi prispevalo k učinkovitejšemu ukrepanju na tem področju.

## Metode

Podatki izhajajo iz podatkovne baze o vedenjskih dejavnikih tveganja za nenalezljive bolezni pri odrasli populaciji v starosti 25–64 let, v katero so se začeli stekati podatki v letu 2001. Uporabili smo podatke za leto 2001. V raziskavo je bilo vabljenih 15.379 odraslih prebivalcev iz vse Slovenije. Med njimi je bilo 4.942 žensk v rodnem obdobju (v starosti 25–49 let). Stopnja odzivnosti na raziskavo je bila v tej populacijski skupini visoka in je znašala 68 %. Za analizo je bilo glede na postavljena merila uporabnih 3.181 vprašalnikov. V analizi smo za ocenjevanje vpliva starosti, stopnje izobrazbe, vrste dela, ki so ga opazovanke opravljale, zakonskega stanu, družbenega sloja, v katerega so se opazovanke same uvrščale, in tipa bivalne skupnosti na zaznavanje in obvladovanje stresne obremenjenosti uporabili multivariatno metodo, natančneje binarno logistično regresijo.

## Rezultati

V celotni skupini opazovank je bila prevalenca pogostega zaznavanja stresa 29,7 %. Ocenjevanje razmerja obetov (RO) je pokazalo, da so bili najvišji obeti za prisotnost opazovanega pojava med ženskami, stari 40–44 let ( $RO_{40-44 \text{ let vs } 25-29 \text{ let}} = 1,35, p = 0,048$ ), ženskami z najnižjo ( $RO_{\text{nedokončana osnovna šola vs dokončana osnovna šola}} = 1,73, p = 0,038$ ) in najvišjima dvema stopnjama izobrazbe ( $RO_{\text{višja šola vs dokončana osnovna šola}} = 1,76, p = 0,008$ ;  $RO_{\text{visoka izobrazba ali več vs dokončana osnovna šola}} = 1,80, p = 0,006$ ), ženskami, zaposlenimi v industriji kot delavkami ( $RO_{\text{težke delavke v industriji vs gospodinjke/studentke}} = 1,76, p = 0,010$ ), ločenimi ženskami ( $RO_{\text{ločene vs živeče v izvenzakonski skupnosti}} = 1,72, p = 0,013$ ), ženskami, ki so se same uvrstile v najnižja dva družbena sloja ( $RO_{\text{cisto spodnji družbeni sloj vs zgornji srednji družbeni sloj}} = 3,25, p < 0,001$ ;  $RO_{\text{delavski družbeni sloj vs zgornji srednji družbeni sloj}} = 1,57, p = 0,011$ ); in ženskami, ki so bivale v predmestnih bivalnih skupnostih ( $RO_{\text{primestno okolje vs vaško okolje}} = 1,27, p = 0,029$ ).

## Zaključki

Višja stresna obremenjenosti med Slovenkami v rodnem obdobju bi lahko pomembno vplivala na rodnostno dinamiko v populaciji. Čeprav se morda na prvi pogled zdi, da je to predvsem demografski problem, pa se moramo zavedati, da bo postal eden največjih javnozdravstvenih problemov v bližnji prihodnosti. Ne bo zaobšel sistema zdravstvenega varstva in bo v veliki meri vplival na strukturo in delovne naloge zdravstvenih delavcev, še posebej zdravnikov. Današnja dejavnost zdravnikov, povezana s skrbjo za ženske v rodnem obdobju, je usmerjena predvsem v ohranjanje in krepitev njihovega dobrega telesnega zdravja (redni preventivni ginekološki pregledi in še posebej dobra oskrba nosečnic). Manj so aktivnosti usmerjene v duševno zdravje te občutljive populacijske skupine, zelo malo pa v socialno zdravje žensk v rodnem obdobju (npr. skrb za zdravo oziroma zdravju naklonjeno delovno in bivalno okolje). To sicer ni naloga zdravnikov specialistov s področja ginekologije in porodništva, postati pa bi morala pomembna naloga zdravnikov specialistov javnega zdravja in drugih strokovnjakov s tega področja. V Sloveniji danes močno primanjkuje znanja za odločitve, temelječe na dokazih, ki lahko močno vplivajo na zdravje ljudi. Za dobro celostno zdravje žensk v rodnem obdobju pa bi bile take odločitve ključnega pomena.

**Ključne besede** stres; prevalenca; ženske; reproduktivno obdobje; visoko ogrožene skupine

## Introduction

Stress, especially at the workplace, is recognized as one of basic risk factors influencing different disorders and diseases. Mostly it is related to mental disorders, but lately a lot of research on the relation between stress and cardiovascular diseases was also done.<sup>1,2</sup> Among others fertility also could be influenced by stress.<sup>3</sup> In Slovenia according to health behaviour survey 2001 in adults (age 25–64), the overall prevalence of frequent perception of stress is 24.3 %. It is significantly higher in women (27.0 %) than in men (21.0 %).<sup>4</sup> Even more, when women in reproductive age (25–49 years) were compared to the women out of this age (50–64 years), the prevalence was considerably higher, the

ratio being 1.35:1 (29.7 % vs. 22.0 %).<sup>5</sup> Parallel to this problem is the problem of a very low birth rate, which is one of the lowest in the European region.<sup>6</sup> A constant decrease is being registered for decades, the most intensive in the 20 years between 1983 and 2003 (1983: 13.9, 2003: 8.7 per 1,000 population).<sup>6–8</sup> In spite of the increase since 2003 (2004: 8.9, 2005: 9.0, 2006: 9.4, and 2007: 9.8 per 1,000 population),<sup>6,9</sup> Slovenia experiences one of the lowest values of total fertility rate in Europe (1991: 1.46; 1995: 1.28; 2001–2003: 1.20; 2005: 1.26).<sup>6,10</sup> There is a possibility that all these problems are to some extent related to each other. With this background, we have started a study focused on stress in women in reproductive age, aiming at

working out the guidelines for diminishing its high prevalence in this population group. The main hypotheses to be addressed were that there are differences in perceiving stress with regard to age, level of education, employment, marital status, social class, and permanent residence social environment.

## Participants and methods

Data were collected in May–June 2001 in a cross-sectional survey, which is conceptually a part of a wider international project in the frame of the Countrywide Integrated Non-communicable Diseases Intervention (CINDI) programme, supported by the World Health Organization, CINDI Health Monitor (CHM).<sup>11</sup> A stratified random sample was drawn from the central population registry of Slovenia. The sampling was performed by the Statistical Office of Slovenia (SORS). A self-administered postal questionnaire was used, based on the CHM Core Questionnaire.<sup>11</sup> The response rate was increased by reminding non-respondents twice (the first reminder contained a new questionnaire form whereas the second was only a new invitation letter) and by a lottery with prizes associated with healthy behaviour (visits to health resorts, bicycles etc.). An extensive media campaign was also mounted at national and regional levels.

The total sample size was 15,379, and the age range was 25–64 years. In this initial sample 4,942 women in reproductive age (25–49 years) were included.

The research protocol for the survey was approved by the Ethical Committee of Slovenia in spring 2001.

Stress and related feelings were assessed on the basis of two questions: (a) »How often do you feel tense, stressed, or under a lot of pressure?« (1 – never; 2 – rarely; 3 – sometimes; 4 – frequently, 5 – every day), and (b) »Do you feel that you are able to cope with these feelings?« (1 – I can cope with them easily; 2 – I can cope with them with moderate effort; 3 – I can cope with them with major effort; 4 – I can barely cope with them, 5 – I cannot cope with them at all). The observed outcome was defined on the basis of cross-classification of both questions: frequent (frequently or every day) perception of tension, stress, or heavy pressure with at least minor difficulties in coping with these feelings. In short we called it »stress«.

The observed outcome was related to sex; age: 25–29, 30–34, 35–39, 40–44, or 45–49 years; education level: uncompleted primary (less than 8 years of education), primary (8 years), vocational (10–11 years), secondary (12 years), college (14–15 years), or university (16 years or more); type of work: heavy work in rural economy, heavy work in industry, administrative/intellectual work, housekeeper/student, disability pensioner, or involuntary unemployed (job seeker); social class (self-classification): lower, labour, middle, upper-middle, or upper; and type of residence community: urban, suburban, or rural.

Estimates of the prevalence of stress were assessed for each subgroup of women in reproductive age regarding the above mentioned characteristics, whereas the strength of the association between the occurrence of stress and each of selected risk factors was univariately estimated using the chi-square test.<sup>12</sup>

Binary multiple logistic regression method was used to estimate the strength of the association between stress and risk factors using multivariate method.<sup>13</sup> Dummy variables were created for all variables considered in the model. The simple method was applied with the group with the lowest prevalence of stress as a baseline category for comparison and then replaced with another group if necessary, according to the multivariate analysis results.<sup>13</sup>

In all statistical tests p-value of 0.05 or less was considered significant. SPSS statistical package for Windows Version 15.0 (SPSS Inc., Chicago, IL, USA) was used for analysis.

## Results

Out of 4,942 women in the reproductive age included in the sample, 4,875 were possible to contact (67 were not included because of changing of the domicile, severe illness or death). The response rate was 67.7 % (3,302/4,875). The respondents did not statistically differ from non-respondents in age ( $p = 0.191$ ) and residence community distribution ( $p = 0.444$ ). Overall representativeness of the sample was assessed as good. The questionnaires of 3,181 respondents were eligible for analysis after matching the data on age with basic sample data provided by SORS.

The observed outcome was possible to establish in 3,170/3,181 (99.7 %) participants. Among them, 943 (29.7 %) perceived tension, stress or heavy pressure every day or frequently, and had at least minor difficulties in coping with these feelings. Estimates of prevalence of stress in different population groups are presented in Table 1.

Univariate assessment using the chi-square test showed statistically significant impact of all observed risk factors on stress with the exception of permanent residence community (Table 1).

All data necessary to perform the logistic regression analysis were present in 2,813 women (88.4 %). The results of the multivariate analysis showed a statistically significant impact of all observed risk factors on stress (Table 2).

## Discussion

Our study has found clear connection between stress reporting and age, level of education, employment, marital status, social class and social environment of the permanent residence in women in reproductive age in Slovenia. On the basis of the research methods we used, it is difficult to find out specific lines of connection between reported level of stress in women and fertility rates. However, there are indications that both phenomena are connected and we will discuss the results in the light of the social circumstances of women in Slovenia.

The results of our study showed that within this population group the prevalence of stress was increasing from the youngest age, in which the prevalence was about the average for total adult population (24.3 %)<sup>4</sup> to the age group 40–44. Afterwards a slight decrease in the prevalence of stress was registered (Table 1). These results support the basic findings of the research regarding stress.<sup>4</sup> This should be an alert for public health (PH) planning in

Table 1. *Estimates of prevalence (%) of frequent perception of tension, stress or heavy pressure with at least minor difficulties in coping with these feelings in different population groups according to risk factors in 3,170 women in reproductive age: CINDI Health Monitor survey Slovenia 2001.*

Tab. 1. *Ocena prevalence (v %) pogostega zaznavanja stresa ali večjega pritiska z vsaj manjšimi težavami obvladovanja v različnih populacijskih skupinah glede na različne dejavnike tveganja pri 3.170 ženskah v rodnem obdobju. (Vir: raziskava »Dejavniki tveganja za nenalezljive bolezni pri odraslih prebivalcih Slovenije« za leto 2001).*

Risk Factor		Estimate of prevalence (%)	p*
Dejavniki tveganja		Ocena prevalence (%)	
Age (years)	25-29	24.4	0.041
Starost (leta)	30-34	30.4	
	35-39	29.4	
	40-44	32.9	
	45-49	30.5	
Level of education	incomplete primary	41.4	0.032
Stopnja izobrazbe	nedokončana osnovna		
	primary		
	dokončana osnovna		
	vocational		
	poklicna		
	secondary		
	srednja		
	college		
višja	31.9		
university	31.9	0.038	
visoka ali več			
Type of work	heavy work in rural economy	32.2	0.038
Vrsta dela	težko delo v kmetijstvu		
	heavy work in industry		
	težko delo v industriji		
	administrative/intellectual work		
	administrativno/intelektualno delo		
	housekeeper/student		
	gospodinja/šudentka		
	disability pensioner		
	invalidsko upokojena		
	unemployed (job seeker)		
nezaposlena (iskalka zaposlitve)	32.2		
Marital status	married	30.1	0.028
Zakonski stan	poročena		
	consensual union		
	izvenzakonska skupnost		
	single		
	samska		
	divorced		
ločena	38.1		
widowed	37.5	<0.001	
vdova			
Social class	lower	50.0	<0.001
(self-classification)	spodnji		
	labour		
	delavski		
	middle		
	srednji		
	upper-middle		
zgornji srednji	28.9		
upper	36.4	0.298	
zgornji			
Residence	urban	29.9	0.298
community	mestna		
	suburban		
	primestna		
	rural		
Bivalna skupnost	vaška	28.5	

\*: Chi-square test

\*:  $\chi^2$  kvadrat test

Slovenia as birth-giving is being postponed to higher age every year. In the period 1999–2007, age-specific birth rate per 1,000 population in age group 20–24 drastically decreased (1999: 60.9; 2003: 44.3; 2007: 39.2), while in age group 30–34 it drastically increased (1999: 55.3; 2003: 70.7; 2007: 93.0). It increased drastically also in age group 35–39 (1999: 17.5; 2003: 21.8; 2007: 31.9), while in age group 25–29 it remained almost stable (1999: 97.7; 2003: 94.8; 2007: 102.4),<sup>7,8</sup> only an isolated temporary increase was registered in the year 2000 («millennium baby-boom»: 102.7).<sup>7</sup> Another indicator showing the same trend is the average age of mothers at the delivery of the first child, which is increasing (1990–1994: 24.3 years; 1995–1999: 25.6 years; 2000–2004: 27.0 years; 2004: 27.5 years, 2007: 28.2 years).<sup>7,8</sup> If this trend will continue, Slovenia will soon join the countries with the highest proportion of mothers giving birth at age 35 years or older. According to European Perinatal Health Report for 2004 among these countries are Finland, Sweden, Ireland, Germany, Italy, and Spain.<sup>14</sup> Most women in Slovenia have their first child when they are 25–29 years old. However, they decide whether to have more children or not when they are above 30. The mean age of mothers at birth of any child is rapidly increasing (1990–1994: 26.5 years, 1995–1999: 27.7 years; 2000–2004: 28.8 years, 2005: 29.4 years, 2007: 29.9 years). When taking into consideration the fact that the stress level increased from 24.4% in the age group 25–29 to 30.4% in the age group 30–34, although this increase was statistically not significant, we can assume that it might have an impact on their decision to have one child only. Younger generations also postpone setting up own households and getting married. This trend is also reflected in increasing mean age at first marriage. For brides, for example, it increased for 2.7 years in last 15-year period (1995–1999: 25.6 years; 2000–2004: 27.3 years; 2005 28.2 years; 2007: 28.3 years).<sup>7,8</sup> The lowest prevalence of stress could be a reflection of this phenomena in the youngest age group, namely postponing «adult» responsibilities, like getting involved in a stable relationship or getting married, having children, establishing one's own household etc., to the age over 30. On the other side, cultural norms in Slovenia put enormous pressure on women aged 30–35. On the one hand they are «obliged» to create a family, while on the other they want to consolidate their professional career, and this pressure cannot be totally managed. Consequently the stress breaks out. In women aged 40–44 the possible explanation is that the stress is mostly related to highly stressful professions with a low job control,<sup>4</sup> and to the changes in marital status. Both will be discussed later. The perception of stress in this age group could have consequences in the sense of intergenerational influence – the next-generation women try to avoid negative experiences of their mothers and consequently some of them do not create a family of their own or they diminish the number of children if they are faced to choose between professional career and traditional women's role in the society.

The level of education distribution shows a marked «U distribution». This is in accordance with the results of another recent study, which showed that in Slovenia the lowest and the highest educated population groups get the lowest support at their workplace,<sup>15</sup>

Table 2. Results of logistic regression analysis of risk factors for stress in 2,813 women in reproductive age: CINDI Health Monitor survey Slovenia 2001.

Tab. 2. Rezultati multivariatne analize dejavnikov tveganja za stress pri 2.813 ženskah v rodnem obdobju. (Vir: raziskava »Dejavniki tveganja za nenalezljive bolezni pri odraslih prebivalcih Slovenije« za leto 2001.)

Risk Factor Dejavnik tveganja	Observed category Opazovana kategorija	Reference category Referenčna kategorija	Odds ratio (95 % CI*) Razmerje obetov (95 % IZ)	p
Age (years) Starost (leta)	30-34	25-29	1.17 (0.87-1.57)	0.305
	35-39	25-29	1.14 (0.85-1.52)	0.394
	40-44	25-29	1.35 (1.00-1.83)	0.048
	45-49	25-29	1.16 (0.85-1.57)	0.347
Level of education Stopnja izobrazbe	incomplete primary nedokončana osnovna	primary dokončana osnovna	1.73 (1.03-2.91)	0.038
	vocational poklicna	primary dokončana osnovna	1.22 (0.90-1.65)	0.202
	secondary srednja	primary dokončana osnovna	1.31 (0.93-1.85)	0.128
	college višja	primary dokončana osnovna	1.76 (1.16-2.67)	0.008
	university visoka ali več	primary dokončana osnovna	1.80 (1.19-2.72)	0.006
Type of work Vrsta dela	heavy work in rural economy težko delo v kmetijstvu	housekeeper/student gospodinja/šudentka	1.49 (0.87-2.56)	0.145
	heavy work in industry težko delo v industriji	housekeeper/student gospodinja/šudentka	1.76 (1.14-2.71)	0.010
	administrative/intellectual work administrativno/intelektualno delo	housekeeper/student gospodinja/šudentka	1.39 (0.92-2.09)	0.118
	disability pensioner invalidsko upokojena	housekeeper/student gospodinja/šudentka	1.45 (0.69-3.07)	0.331
	unemployed (job seeker) nezaposlena (iskalka zaposlitve)	housekeeper/student gospodinja/šudentka	1.45 (0.87-2.41)	0.151
Marital status Zakonski stan	married poročena	consensual union izvenzakonska skupnost	1.14 (0.88-1.47)	0.317
	single samska	consensual union izvenzakonska skupnost	1.06 (0.76-1.49)	0.715
	divorced ločena	consensual union izvenzakonska skupnost	1.72 (1.12-2.63)	0.013
	widowed vdova	consensual union izvenzakonska skupnost	1.53 (0.77-3.03)	0.223
Social Class (self-classification) Družbeni sloj (samooopredelitev)	lower spodnji	upper-middle zgornji srednji	3.25 (1.73-6.11)	<0.001
	labour delavski	upper-middle zgornji srednji	1.57 (1.11-2.22)	0.011
	middle srednji	upper-middle zgornji srednji	1.05 (0.79-1.39)	0.749
	upper zgornji	upper-middle zgornji srednji	1.19 (0.55-2.59)	0.657
Residence community Bivalna skupnost	urban mestna	rural vaška	1.09 (0.89-1.33)	0.399
	suburban primestna	rural vaška	1.27 (1.02-1.57)	0.029

\* CI - confidence interval

\* IZ - interval zaupanja

the least of it from superiors. One of the reasons for stress is a permanent threat of losing employment, which is extremely important in Slovenia, because the contribution of a woman to the family budget is substantial (in nurses for example 53 %).<sup>16</sup> In Slovenia women are in general slightly more educated than men (1996: women 10.8, and men 10.6 years of education).<sup>10</sup> Also, their level of education is increasing more rapidly than that of men.<sup>10</sup> About 57 % of higher education students and about 60 % of graduates are women.<sup>17</sup> Also the education of women is more adapted to job requirements.<sup>18</sup> But they are concentrated in sectors, which require fewer skills and are at much lower levels of the employment hierarchy. Their professional engagement is limited to specific tasks, which generally do not involve managerial positions that are associated with higher levels on the hierarchical scale and consequently to higher prestige.<sup>10,19</sup> An indicator of women's position is the gender

empowerment measure (GEM). This indicator which measures women's active participation in the public sphere is for Slovenia rather low. According to the United Nations Development Programme Human development report 2007/2008 the GEM value was 0.611 ranking Slovenia on the 41<sup>st</sup> place out of 93 countries (the highest value was in Norway: 0.910; the lowest value was in Yemen: 0.129).<sup>20</sup> Differences between sexes in the average wage also still persist, despite slightly higher educational level in women.<sup>19</sup> All this is reflected in the connection between stress and social class.

Employed women are especially vulnerable to stress. The consequences of stress in the workplace have become the major research issue today and many studies have related adverse work conditions to a variety of health problems,<sup>21-23</sup> also to those related to reproduction.<sup>2,3,24</sup> The most vulnerable group regarding the employment status and the nature of work in our study are women perform-

ing heavy work in industry, and in this group the decrease in birth rate is the highest,<sup>25</sup> but all other groups are at risk as well. The highest level of strain and the strongest effects on health are expected in jobs defined by high demands, low control and low social support.<sup>26</sup> Partially the reason lies in high load with housework. The results of a recent study about the distribution and the amount of housework in Slovenia showed that women spend on average 28.5 hours per week doing housework (men 7 hours), and 27.3 hours looking after and bringing up children (men 17.9 hours).<sup>10</sup> Given the nearly 85 % employment rate among women aged 25–49 years this workload means a double burden for them. Another problem in employed women in Slovenia, especially in those with lower education, is the problem of legislative and regulative breaches in the labour market. They are not uncommon and they include restrictions in some employment contracts that forbid women to become pregnant within a certain period and use their right to maternity leave.<sup>10</sup> Such kind of interdiction certainly represents immense pressure on women in physiologically most appropriate period for birth-giving. The situation improved after enacting the Employment Relationship Act in 2002 (Official Gazette of the Republic of Slovenia 42/2002).

According to the results of our study, marital status also seems to be a strong factor for stress, especially being divorced in comparison to living in consensual union. For several years now, Slovenia has been facing major changes in the form of family and partnership.<sup>10</sup> Crude marriage rate per 1,000 population is decreasing (1990–1994: 4.3; 1995–1999: 3.9; 2000–2004: 3.5, 2005: 2.9; 2007: 3.2), while the crude divorce rate (1990–1994: 1.0; 1995–1999: 1.0; 2000–2004: 1.2, 2005: 1.3; 2007: 1.3) and the number of divorces per 1,000 marriages (1990–1994: 221.0; 1995–1999: 252.6; 2000–2004: 339.8, 2005: 458.8; 2007: 410.6) are increasing.<sup>7,8</sup> According to censuses, the percent of families composed of one parent with children only in Slovenia is increasing as well (1981: 12.5 %, 1991 15.4 %, 2002: 16.1 %, 2005: 19.0 %).<sup>27–29</sup> The burden of stress in divorced women has several reasons. One is financial, as divorced women in Slovenia usually keep children after divorce, and a lot of divorced women take care of their children on their own, while the fathers' alimonies are still not completely guaranteed. According to census 2002, 86.0 % of single-parent families were composed of mother and children.<sup>28</sup> Also in some social environments, especially in rural ones, the divorce is a stigmatizing phenomenon. A lot of divorced women suffer after the breakdown of the relationship to which they are »addicted«. It could be expected that stress, generated by divorcing, will even increase if this trend will continue. But we should keep in mind that sometimes divorces are beneficial. A lot of marriages are problematic because of alcohol addiction of the male partner. The number of children born out of wedlock is rising as well (1990–1994: 27.0 %; 1995–1999: 32.6; 2000–2004: 40.8, 2005: 46.7; 2007: 50.8),<sup>7,8</sup> indirectly indicating that extramarital partnership rate (consensual union) is increasing. The number of couples in extramarital partnership, with or without children, in 1981 census represented only 2.0 % of all families, in 1991 census 3.1 %, while in 2002 census 7.6 %.<sup>27,28</sup> Our study results did not show this kind of partnership to be a risk factor for stress in women. According to Hanžek, women living in such

partnership are the happiest population group by marital status.<sup>30</sup> The reason for the lowest prevalence of stress in this group could be that women living in consensual union are more independent and autonomous and consequently have more self-esteem than married women (low levels of autonomy and low self-esteem seem to be related to worse health).<sup>31</sup> Slovenia also has very liberal legislation which has treated married and non-married heterosexual couples equally *de facto* and *de iure* ever since 1976 (Marriage and Family Relations Act; Official Gazette of the Socialistic Republic of Slovenia 15/1976).

Suburban residence communities appear to be connected with the occurrence of stress. Stress in these communities can be related to extensive daily migration from suburbs to the workplace (daily migration could be very stressful as the transport infrastructure and the public transport system in Slovenia are inadequate), and to a higher cost of living and lower social support in an urban environment. These factors should be investigated in detail, along with other economic and social features of the different types of community, which can influence the health of their residents (like low residential stability or low social exchange).<sup>32,33</sup>

The relationship between socio-economic status, stress and reproductive function of women is complex. In Slovenia, we must take into consideration also the impact of transition from the state planned to the market economy in the early nineties, which enhanced economic development, but also brought some undesirable effects on the quality of life of several segments of population. The commitment of the Slovenian politics to develop both a flourishing economy and good social welfare has not yet fulfilled the expectations. There are many problems – from non-availability of suitable housing, high expenses for child-care services, non-flexible working hours, present state of the labour market which makes it possible that a woman, due to competitiveness, is forced even to enter an employment contract that forbids her to become pregnant while employed at certain employer.<sup>10</sup>

Projections for future course of demographic indicators for Slovenia are not optimistic in spite of the birth rate increase after 2003.<sup>10</sup> Women who are giving birth now were born in the late seventies when birth rates were considerably higher than in the 80ies and 90ies. When these later generations will come into reproductive period (around 30, as understood by the Slovenians) there will be much less of them. Taking into consideration current age distribution and fertility, annual fertility indicators did increase due to postponing the childbearing age in generations born in the sixties and later,<sup>10</sup> but this will not be enough for the replacement of generations. Recent research results show strong wish of the young people in Slovenia to have children in appropriate circumstances which will allow them to keep good quality of life.<sup>34</sup> In order to increase birth rate, and consequently enable the renewal of generations, a number of measures helping young people to have as many children as they want should be taken at all levels of PH activities. Prevention of stress could be one of the crucial steps.

Health promotion activities at workplace are usually focused on the changes of individual behaviour, and the role of the work organization and the conditions of labour market are often neglected. Both, specific measures of

personal and organizational development are necessary, including teamwork, interpersonal and leadership skills. Activities at the mezzo level should be directed to better relations at workplace. Special attention should be paid to the support from fellow workers and superiors and the possibilities to increase the ability to control one's job. Also the imbalance between personal efforts and rewards should be decreased and stimulating relationship supported.<sup>26</sup> Rewards appropriate for efforts at work and the control over job circumstances are crucial, and in Slovenia we unfortunately disregard these facts. Of great importance are also strategies to enhance trust among people, mutual interactions and civic activities, which are called »the social capital«. This calls for changes in several segments of the society, which is a long term process. Not many politicians are interested in results in the far away future, but without political will there will be no effect. All interventions will be effective only if they are multi sector and multidisciplinary. However, the negative trends in economy, including increasing unemployment and decreased social security, will have an impact on the processes discussed here. It is difficult to predict changes in Slovenia. In Germany, results suggest that there is no clear indication that economic uncertainty generally leads to a postponement of parenthood. More highly educated women tend to postpone family formation when unemployed or when they feel insecure about their personal economic situation, but women with low educational levels accommodate themselves quite readily with motherhood when subject to labour market insecurities.<sup>35</sup>

Our study has some limitations. Self-reported data on behaviour may be unreliable as the questions can be misinterpreted by participants and influenced by changing perceptions of the behaviour over time. The questions about the perception of stress and related feelings are not very detailed in CHM Questionnaire. It does not distinguish between mild and severe forms of these states, and transient as well as persistent ones. The definition of stress could be argued, too, but we defined it as we did for a reason. The frequency of the reporting of the observed feelings was the first important criterion, while the second was the ability to cope with them. Stress can also be a positive experience, and as such perceived as a challenge. Some people actively seek stressful situations and enjoy dealing with problems that would frustrate others. The resilience level, meaning a kind of elasticity in spite of stress and ability to recover quickly, also varies individually.<sup>36</sup> Therefore, the subjective perception of not being able to cope (even only sometimes) is essential. Another limitation is the age range, in our study being 25–49, which represents only a part of female reproductive age (15–49). This age group of women in reproductive age differs from the group aged 15–24, and it is formed of fully grown-up and mostly economically independent adults, which is not the case with many under-24. Consequently this limitation is not so important. The next limitation could be the lack of data about children in a family. Chronic or acute stress, which could be seen also as a reaction to problematic economic, social and cultural relations, can have several negative consequences on people. In this paper we are focused only on women in reproduc-

tive age and from this point of view, the consequences of stress can influence reproductive function of a woman from completely physical (impairment of oogenesis with transitory infertility, chronic infections of the reproductive system)<sup>3, 37, 38</sup> to completely social consequences (partnerlessness or childlessness for the sake of preserving employment). The last limitation could be that we used 2001 survey data in this study and not from 2004 study. The reason is that data for the 2004 survey were not available for additional analyses in the time of conducting this study. Additionally, this limitation is less important since between 2001 and 2004 no major PH activity was performed in Slovenia for reducing stress in observed population group and no significant difference was expected. However, our study has also several strengths. The major strength of this study is that the results provide valuable information about the dimensions of the problem. It gives suggestions for the policy makers, who can most effectively locate resources to improve health, as well as demographic situation. The study also provides valuable ideas for countries in similar political and socio-economic situation, especially those in the Southern Europe. For the time being, Slovenia shares the approach to these problems with some other South-European countries, where stress is not recognised as an important policy issue and has not yet been put on the political neither the research agendas.<sup>26</sup> The results are also valuable from the point of view of PH issues and policies, which should be addressed in the light of European Union enlargement. Despite its limitations, this study is important as it provides valuable information about the burden of the problem in the community and suggests solutions.

## Conclusions

In conclusion we need to underline, that the problem studied in this study is certainly one of the major public health problems to be confronted in the near future in Slovenia, and it is not merely the demographic problem as it seems to be at very first sight. It will certainly influence the structure and tasks of health care workers, especially medical doctors, since the demographic structure of the Slovene population will rapidly change.

But what can be done? Today, several activities to preserve and/or enhance the good health condition in women in reproductive age are going on in Slovenia. All these activities are mainly oriented to physical health (regular preventive gynaecological examinations and especially good care for women during pregnancy). Unfortunately, very few activities are oriented to mental health, and even fewer are focused on sociological aspects of women's health. There is a lack of knowledge base for planning those and for policy decision making. It is encouraging that some projects in the near past,<sup>39, 40</sup> and some ongoing projects were/are dealing also with this problem. But this is far from being enough and more research, especially qualitative, is needed to shed light on the background of the stress level in women and fertility rates as outcomes of the role and position of women and men in society,

especially in the context of recent negative trends in economy. A number of measures for reducing prevalence of stress should be taken at different levels of PH activities, among them more equal professional and at-home engagement of both sexes, and better interpersonal relationships at workplace, including a higher job control. However, social aspects of health should be included in health care system at all levels.

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