

# Family Planning among Women in Urban and Rural Areas in Serbia

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## SUMMARY

**Introduction** Family planning is an important aspect of population policy at the state level, because the demographic trends in Serbia are very unfavorable.

**Objective** The objective of this study was to examine the differences in family planning between the women in rural and urban areas of Serbia.

**Methods** This study represents the secondary analysis of the National Health Survey of the population in Serbia from 2006, which was conducted as a cross sectional study, on a representative sample of the population.

**Results** The respondents who used condoms as a method of contraception, were often younger, better educated, had better financial status, lived in Vojvodina, and had no children.

**Conclusion** Our study showed that there were differences in terms of family planning between the women of urban and rural areas, however, these differences could be explained by differences in age and education.

**Keywords:** family planning; condom; *coitus interruptus*; women

## INTRODUCTION

The family planning is an important part of an overall demographic and population policy of any country. The family planning enables the individuals and couples to anticipate and achieve the desired number of children [1]. The demographic trends in Serbia are very unfavorable; therefore, family planning is an important aspect of population policy at the state level. The researches indicate that the traditional contraception, *coitus interruptus* (CI) and the method of fertile days as well as the induced abortion are still the commonest forms of birth control in Serbia. For Serbia, as a country in transition, this issue has a specific connotation, because at the end of the 20<sup>th</sup> century, the number of induced abortions was between 150,000 and 200,000 per year. Observing the number of women in reproductive age, the abortions were most common in the Central Serbia (95.1 per 1,000 women of generative age) in 1989 (the last year of reliable registration of induced abortions) [2]. The Eastern Europe has much higher rate of abortions (Romania 78 per 1,000 aged 15-44), comparing with the Western Europe (the Netherlands 6.5 per 1,000). The disparity can be attributed to differences in the availability and the use of the effective contraceptives [3]. The study of Sulovic et al. [4] have shown that only 15.9% of women of reproductive age use some form of contraception and 57.4% of women have only basic knowledge of contraception. According to Multiple Indicator Cluster Survey (MICS3), the prevalence of contracep-

tive use in Serbia is 41.0% (varies from 27% in the Central Serbia to 54% in the Eastern Serbia); 23% of women commonly use the traditional methods of contraception. The most popular contraceptive methods are CI and the method of fertile days, with 14% and 8%, respectively, followed by 8% of condom use [5]. According to the preliminary results of MICS4 [6], 61% of women of generative age use some form of the contraceptive methods, but only 22% of women use a reliable method. There is also a significant trend of increasing use of the effective contraception in the Czech Republic [7].

Maintaining and improving the reproductive health of women are a significant part of the public health policy of any country, including Serbia. The total fertility rate of female population in 2002 was 1.57 children per 1,000 women of fertile age, with a net reproduction rate of 0.7; depopulation trends were present during the last 50 years [8]. This study was designed to complement previous studies and to point to women in rural areas, less educated, with lower socio-economic status, as a risk group having lower probability of adequate contraceptive protection and consequently the protection of the reproductive health.

## OBJECTIVE

The aim of this study was to examine the differences in the family planning practices of women of fertile age in rural and urban areas in Serbia.

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## METHODS

This study represents the secondary analysis of the National Health Survey of the population in Serbia from 2006, which was conducted as a cross sectional study on a representative sample of the population [9]. This study analyzed the characteristics of a total of 2.378 women aged 20 to 49. According to National Population Health Survey in Serbia in 2006, there was a total of 3,837 women aged 20 to 49. Regarding the questions related to the use of contraceptive methods, 2,876 women (75%) gave valid answers while the rest did not have a regular partner and, accordingly, did not consider these questions. Out of this number, 2,546 women used, from time to time, some form of contraception in every sexual activity. The information about the socio-demographic characteristics and family planning were obtained through the interviews.

## Variables

In this study, two groups of data relevant to the family planning were analyzed: (1) the socio-demographic characteristics of women and (2) the use of contraception and the number of the abortions. Out of the socio-demographic variables: age of the respondents (presented in ten-year intervals, from 20 to 49); marital status (married, single, living alone, divorced, widowed); education (primary education, secondary education, college or university degree); the socio-economic status measured by wealth index of household, the region (Vojvodina, Central Serbia, Belgrade) and the number of children (0, 1, 2, 3 or more), were analyzed. According to the values of the calculated wealth index, the respondents were classified into five socio-economic categories or quintiles: the poorest, poor, medium, rich and the richest.

From the variables related to the family planning, the following were analyzed: the number of abortions (0, 1, 2, 3 or more) and the use of contraceptive methods; oral contraceptives (OC) (no, yes, periodically and always), use of coil (IUD) (no, yes, periodically and always), use of diaphragm (no, yes, periodically and always), use of condom (no, yes, periodically and always), method of fertile days (no, yes, periodically and always) and coitus interruptus (no, yes, periodically and always). All abovementioned information were summarized and compared in relation to

the place of residence of the respondents (rural/suburban and urban).

In order to examine whether the residence of the respondents is an independent factor that influences woman's decision to apply a specific method of contraception, the use of condom and coitus interruptus were analyzed as the dependent variables. Place of living, age, education, welfare index, region and the number of children were independent variables.

## Statistical analysis of data

The selected data were analyzed by the descriptive and inferential statistics. The frequencies of the selected variables were shown according to the place of residence of the respondents (rural/urban) and the significance was tested using chi-square test. Minimum level of the statistical significance was set at  $p < 0.05$  and  $p < 0.01$  was defined as statistically high significance. The variables, which were shown to be highly significant after univariate analysis, were further tested using multivariate analysis.

The analyses were performed using SPSS software package (version 19).

## RESULTS

An average age of women in this sample was 34.8 years ( $SD=8.7$ ); an average number of children per respondent was 1.8 ( $SD=1.7$ ), and an average number of abortions was 0.9 ( $SD=1.1$ ). The largest number of women had secondary education (62.9%), then elementary school (21.2%) and finally university degree (16.0%). The frequency of application of contraceptive methods was presented in Table 1. Occasionally and always, coitus interruptus (CI) and/or fertile days were applied by 49.3% of women, a condom by 25.5%, a coil (IUD) by 5.8%, OC by 5.4% of women, and the least, the local contraceptives by 1.4% and diaphragm by 1.0% of subjects.

Table 2 shows the frequency and univariate logistic regression for the use of contraceptive methods and abortions in relation to the respondent's residence. The differences were significant only in terms of using the condom and CI; the respondents from rural areas rarely applied this method.

**Table 1.** The application of contraceptive methods among women aged 20 to 49 years

Contraceptive methods	Number (%)			
	Total	Application		
		No	Yes, occasionally/always	No answer
OC	2876 (100.0)	2187 (76.0)	156 (5.4)	533 (18.5)
IUD	2876 (100.0)	2156 (75.0)	167 (5.8)	553 (19.2)
Local	2876 (100.0)	2243 (78.0)	41 (1.4)	592 (20.6)
Condom	2876 (100.0)	1679 (58.4)	735 (25.5)	462 (16.1)
Diaphragm	2876 (100.0)	2245 (78.1)	29 (1.0)	602 (20.9)
Fertile days	2876 (100.0)	1762 (61.3)	586 (20.4)	528 (18.4)
Coitus interruptus	2876 (100.0)	1536 (53.4)	832 (28.9)	508 (17.7)

OC – oral contraceptives; IUD – intrauterine device

**Table 2.** The frequency and univariate logistic regression (UNVR) analysis of family planning of female study population

Variables		Number (%)			p	UNVR	
		Total	Place of living			OR (95% CI)	p
			Rural	Urban			
Abortus	Total	2712 (100.0)	1413(55.1)	1299 (47.9)	0.387		
	No	1420 (52.4)	724 (51.2)	696 (53.6)		1.00	
	Once	462 (17.0)	255 (18.0)	207 (15.9)		0.84 (0.68–1.04)	0.116
	Twice	403 (14.9)	216 (15.3)	187 (14.4)		0.90 (0.72–1.12)	0.355
	Three and more	427 (15.7)	218 (15.4)	209 (16.1)		0.99 (0.80–1.24)	0.980
OC	Total	2343 (100.0)	1292 (55.1)	1051 (44.9)	0.620		
	No	2187 (93.3)	1203 (93.1)	984 (93.6)		1.00	
	Yes, occasionally/always	156 (6.7)	89 (6.9)	67 (6.4)		0.92 (0.66–1.28)	0.620
IUD	Total	2323 (100.0)	1287 (55.4)	1036 (44.6)	0.574		
	No	2156 (92.8)	1191 (92.5)	965 (93.1)		1.00	
	Yes, occasionally/always	167 (7.2)	96 (7.5)	71 (6.9)		0.91 (0.66–1.25)	0.574
Condom	Total	2414 (100.0)	1350 (55.9)	1064 (44.1)	<0.000		
	No	1679 (69.6)	850 (63.0)	829 (77.9)		1.00	
	Yes, occasionally/always	735 (30.4)	500 (37.0)	235 (22.1)		0.48(0.40–0.58)	0.000
Fertile days calculation	Total	2348 (100.0)	1312 (55.9)	1036 (44.1)	0.411		
	No	1762 (75.0)	976 (74.4)	786 (75.9)		1.00	
	Yes, occasionally/always	586 (25.0)	336 (25.6)	250 (24.1)		0.92 (0.76–1.12)	0.411
Coitus interruptus	Total	2368 (100.0)	1314 (55.5)	1054 (44.5)	0.065		
	No	1536 (64.9)	831 (63.2)	705 (66.9)		1.00	
	Yes, occasionally/always	832 (35.1)	483 (36.8)	349 (33.1)		0.85 (0.77–1.00)	0.050

OR – odds ratio; CI – confidence interval; OC – oral contraceptives; IUD – intrauterine device

Table 3 presents the frequency and the univariate logistic regression for social-demographic characteristics in relation to the respondent's residence. The differences were significant in terms of educational level, financial status (measured by the wealth index), number of children, as well as regional differences. In rural areas, women were less educated, had lower financial status, were more often from the central Serbia, and had more children than women from the urban areas.

Table 4 shows the results of the univariate and multivariate regression analysis for the application of the methods of contraception. In order to examine whether the respondent's residence is a key factor influencing the woman's decision to use the contraception, a condom and coitus interruptus were analyzed as the dependent variables, and the place of residence, age, education, index of welfare, region and the number of children as the independent variables.

The results have shown that rural women rarely use condom as a method of contraception, as compared to women living in town (OR=0.48; 95%CI=0.40-0.58), although after controlling for other socio-demographic indicators, this difference disappeared (AOR=0.81; 95%CI=0.65-1.01). Furthermore, the results showed that educated women used condom more often than those with primary education did, and clear gradient was noted ( $p<0.000$ ). Regarding the age, and compared to younger respondents (aged 25-34), middle-aged women rarely use condom ( $p<0.000$ ) and there was also an observed gradient according to ten-year intervals. As the respondents had better financial status, they often used condom, with gradient being also present ( $p<0.000$ ). The respondents from the central Serbia, compared to those from Belgrade, rarely used condom ( $p<0.000$ ). The respondents who had one child, in relation

to those who had no children, also rarely used condom as a contraceptive method ( $p<0.000$ ).

The results of the univariable and multivariable analyses for the application of CI as a method of contraception showed that CI did not depend on the place of residence of the respondents. The subjects, who applied coitus interruptus as a method of contraception, were often younger and more educated. The results demonstrated that educated women were more likely to use CI compared to those with primary education, and clear gradient was observed ( $p<0.000$ ). Considering the age, and compared to younger respondents, middle-aged women (40-49 yrs.) rarely used CI ( $p<0.000$ ). Financial status and regional differences were not significant for the respondents who applied CI as a method of contraception. The respondents who had two children, compared to those who had one child, often used CI as a method of contraception ( $p<0.000$ ).

## DISCUSSION

This study, using the representative sample, examined the factors which influenced the family planning of women of childbearing age, according to their place of living (urban or rural/suburban).

The population policy of a country and the fertility rate substantially determine the use of contraception. In the developing countries, the dominant factors for the use of contraception are socio-demographic, while in developed countries, psychological variables are important factors for lack/use of contraceptives [10]. In the study of Radulovic et al. [11], most respondents used the traditional methods of contraception.

**Table 3.** The frequency and univariate logistic regression analysis (UNVR) of demographic and socioeconomic characteristics of female study population

Variables		Number (%)			p	UNVR	
		Total	Place of living			OR (95%CI)	p
			Rural	Urban			
Age (years)	Total	3837 (100.0)	2121(55.3)	1716 (44.7)	0.669		
	20–29	1262 (32.9)	701 (22.8)	561 (23.0)		1.00	
	30–39	1242 (32.4)	674 (31.8)	568 (33.1)		1.05 (0.90–1.23)	0.520
	40–49	1333 (34.7)	746 (35.2)	587 (34.2)		0.98 (0.84–1.15)	0.831
Education	Total	3575 (100.0)	1973 (55.2)	1602 (44.8)	<0.000		
	Elementary school	757 (21.2)	261 (13.2)	496 (31.0)		1.00	
	Secondary	2247 (62.9)	1276 (64.7)	971 (60.6)		0.40 (0.34–0.47)	<0.000
	University degree	571 (16.0)	436 (22.1)	135 (8.4)		0.16 (0.13–0.21)	<0.000
Marital status	Total	3575 (100.0)	1973 (55.2)	1602 (44.8)	<0.000		
	Marital	2557 (71.5)	1307 (66.2)	1250 (78.0)		1.00	
	Living with partner	67 (1.9)	37 (1.9)	30 (1.9)		0.81 (0.26–2.57)	0.721
	Living alone	741 (20.7)	492 (24.9)	249 (15.5)		0.53 (0.18–1.46)	0.207
	Divorced	135 (3.8)	98 (5.0)	37 (2.3)		0.38 (0.12–1.15)	0.087
Widow	61 (1.7)	32 (1.6)	29 (1.8)		0.91 (0.28–2.90)	0.868	
Wealth index	Total	3837 (100.0)	2121 (55.3)	1716 (44.7)	<0.000		
	Poorest	589 (15.4)	130 (6.1)	459 (26.7)		1.00	
	Poorer	801 (20.9)	273 (12.9)	528 (30.8)		0.55 (0.43–0.70)	<0.000
	Middle	800 (20.8)	372 (17.5)	428 (24.9)		0.33 (0.26–0.41)	<0.000
	Richer	846 (22.0)	618 (29.1)	228 (13.3)		0.10 (0.08–0.13)	<0.000
Richest	801 (20.9)	728 (34.3)	73 (4.3)		0.03 (0.02–0.04)	<0.000	
Region	Total	3837 (100.0)	2121 (55.3)	1716 (44.7)	<0.000		
	Vojvodina	941 (24.5)	553 (26.1)	388 (22.6)		1.00	
	Belgrade	732 (19.1)	552 (26.0)	180 (10.5)		0.46 (0.38–0.57)	<0.000
	Central Serbia	2164 (56.4)	1016 (47.9)	1148 (66.9)		1.61 (1.38–1.88)	<0.000
Children	Total	3575 (100.0)	1973 (55.2)	1602 (44.8)	<0.000		
	0	784 (21.9)	507 (25.7)	277 (17.3)		1.00	
	1	657 (18.4)	372 (18.9)	285 (17.8)		1.73 (1.45–2.06)	<0.000
	2	1639 (45.8)	842 (42.7)	797 (49.8)		2.24 (1.73–2.89)	<0.000
	≥3	351 (9.8)	158 (8.0)	193 (12.0)		0.97 (0.67–1.41)	0.888

**Table 4.** The use of contraception (condom and coitus interruptus): univariate and multivariate (adjusted) logistic regression (UNVR and MLVR)

Variables		Condom Yes (n=735) vs. No (n=1679)		Coitus interruptus Yes (n=832) vs. No (n=1679)	
		UNVR OR (95% CI)	MLVR AOR (95% CI)	UNVR OR (95% CI)	MLVR AOR (95% CI)
		Place of living	Urban	1.00	1.00
	Rural	0.48 (0.40–0.58)*	0.81 (0.65–1.01)	0.85 (0.72–1.01)	0.95 (0.77–1.16)
Age (years)	20–29	1.00	1.00	1.00	1.00
	30–39	0.58 (0.48–0.70)*	0.69 (0.55–0.86)*	0.98 (0.81–1.18)	0.84 (0.68–1.02)
	40–49	0.28 (0.21–0.37)*	0.33 (0.24–0.45)*	0.57 (0.44–0.73)*	0.51 (0.39–0.66)*
Education	Elementary school	1.00	1.00	1.00	1.00
	Secondary	3.03 (2.27–4.06)*	1.78 (1.30–2.44)*	1.81 (1.42–2.31)*	1.89 (1.45–2.46)*
	University degree	4.86 (3.48–6.79)*	2.24 (1.53–3.29)*	2.52 (1.88–3.39)*	2.86 (2.04–4.00)*
Wealth index	Poorest	1.00	1.00	1.00	1.00
	Poorer	1.66 (1.15–2.41)*	1.32 (0.89–1.95)	1.11 (0.82–1.49)	0.97 (0.71–1.32)
	Middle	2.10 (1.46–3.02)*	1.50 (1.01–2.21)*	1.20 (0.89–1.62)	1.01 (0.73–1.40)
	Richer	3.20 (2.26–4.54)*	1.96 (1.32–2.91)*	1.19 (0.89–1.59)	0.92 (0.66–1.29)
Richest	4.93 (3.48–6.98)*	2.50 (1.63–3.81)*	1.41 (1.05–1.89)	1.08 (0.75–1.55)	
Region	Vojvodina	1.00	1.00	1.00	1.00
	Belgrade	1.52 (1.18–1.95)*	1.00 (0.76–1.36)	0.85 (0.65–1.09)	0.77 (0.59–1.01)
	Central Serbia	0.65 (0.53–0.81)*	0.72 (0.58–0.90)*	0.90 (0.74–1.10)	0.90 (0.73–1.11)
Children	0	1.00	1.00	1.00	1.00
	1	0.28 (0.22–0.35)*	0.50 (0.38–0.65)*	1.21 (0.83–1.49)	1.70 (1.29–2.26)*
	2	0.21 (0.15–0.31)*	0.46 (0.31–0.71)*	1.08 (0.76–1.54)	1.72 (1.17–2.53)*
	≥3	1.23 (0.75–2.03)	1.13 (0.68–1.90)	1.17 (0.69–1.98)	1.12 (0.66–1.92)

\* p&lt;0.01

AOR – adjusted for all other variables (place of living, age, education, wealth index, region and children)

The comparative analysis of contraceptive methods used by women of reproductive age in urban and rural areas of the United States, has shown that 29% of women in urban areas use OC compared to 27.3% of women from rural areas [12].

The study of Scouby on a sample of women from five different European countries has shown that OC is commonly used by the respondents from Germany, France and Great Britain, while the respondents from Italy and Spain apply condom and the unsafe methods of contraception; identified disparities are attributed to social and cultural differences [13]. The women residents of Northern European countries (Denmark, Germany, Poland) tend to use more effective methods of contraception than the inhabitants of Southern Europe (Italy and Spain) [14]. Sexually active women of reproductive age in Norway apply at least one form of contraception; OC is a method of choice for most of them [15].

The respondents, who apply condom as a method of contraception, are more often younger, better educated, with better financial status, living in Vojvodina, and have no children. The respondents, who apply CI as a method of contraception, are also younger, better educated and have one or two children. The study of Sulovic, which has also analyzed the application of contraception of women of reproductive age on a representative sample (1981), has shown that the most applied method of contraception is CI, OC is second, and the least frequent is the use of condom [4]. After a period of twenty-five years, there is a significant increase in the condom use, while the use of OC has been significantly reduced in our study.

Numerous studies have confirmed disparities in terms of the application and choice of contraceptive methods, depending on the place of residence of the respondents. In our study, there is no significant difference in the number of abortions among women in rural and urban areas. Greece has one of the highest abortion rates in Europe and a very low prevalence of the contraceptive use (CI and condom during 2001) [16]. In the study of the Turkish authors, the women from rural areas who do not use any form of the contraception, the women who have more than four children, and the unemployed women, are more likely to have the abortion [17].

In our study, the age of the respondents has significant impact on the use of contraception; the younger respondents (aged 20-29) are more likely to apply condom and CI. In the study of Dilbaza and colleagues, the young women in Turkey the least apply the contraception, and as for the implementation of CI, there are no differences between the adolescent women, either in generative or perimenopausal age [18]. In our study, higher level of the education represents higher probability of using condoms and CI equally. The women of fertility age on the territory of Nis, with low education, use the protection against unwanted pregnancy much less than women with higher education. The traditional methods of contraception are mostly used by the women with primary education [19]. The Span-

ish women using the contraception are usually younger, with higher education, not married and have children [20]. The application of condoms positively correlates with lower education levels among the women in fertility age in the United States [21]. The lower level of the education among the Danish women is associated with the (non) use of condoms. Low educational level is associated with an early sexual activity, (not)using the condoms, and less educated women from urban areas have greater number of sexual partners [22, 23]. The options to use reliable contraceptives are higher by women with at least secondary education [24].

In our study, the respondents with better financial status use condoms more frequently, while the financial status is not significant in respondents applying CI as a method of contraception. According to the results of the national health survey (2006), the use of contraceptives was significantly lower in poor than in the rich category of women; this is explained by the fact that there is a problem of affordability of women of lower socio-economic status [9]. The authors who have examined the influence of the socio-demographic factors on the contraceptive use, confirmed the positive correlation between the educational level, age and socio-economic status with the use of the contraceptives in general and the application of more efficient methods of contraception [25, 26, 27, 14].

The significance of our study is that it used nationally representative sample and identified the factors associated with the family planning as well as the differences in the use of the methods of contraception among women in rural and urban areas of the country. This study is based on the processing of results of the questionnaire, but the bias and validity of the answers could not be verified.

## CONCLUSION

The application of contraception among rural women is not determined by their place of living, but rather by their lower level of education and socio-economic status. Particular attention should be paid to reduce the identified differences. Gynecologists who are working at primary healthcare services have a great responsibility in leveraging the identified disparities. They should work in cooperation with educational institutions, media and other relevant institutions involved in the domain of the family planning, promoting and encouraging the birth.

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## Планирање породице код жена у градским и сеоским подручјима Србије

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### КРАТАК САДРЖАЈ

**Увод** Демографска кретања у Србији врло су неповољна, те је планирање породице значајан аспект популационе политике на државном нивоу.

**Циљ рада** Циљ рада је био да се испитају разлике у планирању породице између жена у репродуктивном периоду које живе у градским и сеоским подручјима Србије.

**Методе рада** Истраживање представља секундарну анализу Истраживања здравља становништва Србије из 2006. године, које је изведено по типу студије пресека, на репрезентативном узорку популације. У овом раду анализирани

су одлике укупно 2.378 жена старости од 20 до 49 година.

**Резултати** Испитанице које су као методу контрацепције примењивале кондом чешће су биле млађе животне доби, образованије, бољег материјалног статуса, живеле су на територији Војводине и нису имале деце.

**Закључак** Студија је показала да постоје разлике у погледу планирања породице између жена из градских и сеоских подручја, али оне се објашњавају разликама у старости и степену образовања.

**Кључне речи:** планирање породице; кондом; *coitus interruptus*; жене