

WHAT DO PREGNANT WOMEN KNOW ABOUT HARMFUL EFFECTS OF MEDICATION AND HERBAL REMEDIES USE DURING PREGNANCY?

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SUMMARY

Background: The objective of this study was assessment of women's knowledge and awareness on medication and herbal remedies use during pregnancy.

Subjects and methods: Cross-sectional study was conducted in Department of Obstetrics and Gynaecology University Clinical Hospital Mostar. The study included 230 parturients (primipara) and 20 pharmacists who work in pharmacies of Mostar. Collected and analyzed data was based on a questionnaire of 25 questions.

Results: Out of total number of respondents ($N = 230$), 159 of them (69.1%) used some vitamin or mineral product, 44.8% of respondents had problems with morning sickness and vomiting, but they did not use any medication in pregnancy. Higher educated respondents used folic acid more often ($p=0.005$), they knew the benefits of using folic acid ($p<0.001$) and magnesium during pregnancy ($p=0.002$) and they were familiar with harmful effect of alcohol and cigarettes consumption during pregnancy ($p=0.005$) so as with harmful effect of excessive quantity of vitamin A ($p=0.037$), they were more familiar with harmful effect of herbal remedies and at least one harmful herb compared to less educated respondents ($p<0.001$).

Conclusion: There is lack of knowledge and unawareness on harmful effect of medication use and herbal remedies during pregnancy.

Key words: knowledge of medications - herbal remedies - harmful effects pregnancy - primiparas

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INTRODUCTION

The physiological changes that occur during pregnancy affect fetal development and are preparing mother for the birth. Key factors affecting the diffusion of the medication through the placenta and its effect on the fetus are: 1. Physical-chemical properties of the medications, 2. The rate of penetration of the medication through the placenta and the quantity of medication that reaches the fetus, 3. The duration of medication exposure, 4. Fetal tissue distribution of medication, 5. The development of the placenta and the fetus at the time of medication exposure, 6. Effect of the combination of medications (Katzung et al. 2011, Nordeng et al. 2016, Soma-Pillay et al. 2016).

Teratology is the study of abnormal fetal development that was given its proper place and momentum in the mid 20th century when it was established that congenital anomalies can be caused by environmental factors. Although different in origin and content, all causes of conatal anomalies are called teratogens. This is any natural or chemical substance, a microorganism, an excess or deficiency of an element which, during the fetal or embryonic life of embryo, can cause abnormality of form or function of a human (Katzung et al. 2011, Nordeng et al. 2016).

Type of malformations is dependent of the organ that is most intensively developed precisely at the time of teratogen application. In the stage where an egg cell is intensively divided before nesting in the uterus, and it is of the 7th day (when it comes to menstruation or replacement of damaged cells with new still undifferentiated cells). This is followed by the stage of organogenesis (15th to 60th day of pregnancy), which is the most sensitive period for the occurrence of most anomalies. Typical manifestations of teratogenicity are fetal death, growth retardation, abnormal development of the organ. The mechanism of teratogenic effect is not clear and is probably under many influences. Medication may have a secondary, indirect effect on the fetus, can act with the passage of oxygen and nutrients, but can also have a direct effect on the process.

In Western countries, the use of antibiotics is widespread; 80% of all prescribed medications are antibiotics. Some antibiotics should be avoided during pregnancy, for example, tetracyclines and aminoglycosides, streptomycin. The most common antibiotics prescribed to pregnant women are penicillin and cephalosporins (Kallen & Reis 2016, Kuperman & Koren 2016).

The risk of fetal malformations increases after using opioids or nonsteroidal inflammatory drugs (NSAIDs). If possible, it should be avoided during the first

trimester of pregnancy (Kallen & Reis 2016). The only medication that can be used throughout pregnancy and during lactation, as a mild analgesic and antipyretic is paracetamol, but not more than 4 grams a day (Kallen & Reis 2016, Quanounou & Haas 2016).

Antipsychotics are prescribed because of the greater number of women with mental illness. However, evidence on the safety of their use during pregnancy has not been sufficiently analyzed and it creates concern among pregnant women and clinicians. The use of antipsychotics is recommended for pregnant women who suffer from severe mental disorders. The most common antipsychotics are olanzapine, risperidone and quetiapine. Some surveys show that there is a correlation between use of antipsychotics during pregnancy and the development of gestational diabetes (Kulkarni et al. 2015).

Treatment of hypertension in pregnancy includes antihypertensive therapy, anticonvulsant prophylaxis, controlled volume expansion (oncotic therapy), treatment of coagulation disorders, and the completion of pregnancy. Preferred antihypertensives are urapidil, nifedipine, labetalol, methyl dopa, dihydralazine and magnesium sulfate (Habek et al. 2011, Ngian et al. 2016). Pregnant women with chronic hypertension continue their current treatment, in addition to an ACE inhibitor or blocker of angiotensin receptors contraindicated in pregnancy (Habek et al. 2011, Ivanišević & Bljajić 2009).

The trend of using herbal remedies for disease prevention is increased in the world. Pregnant women are no exception (Kennedy et al. 2016). Herbal remedies are not evaluated according to the same standards as a pharmaceutical product, and are taken as a dietary supplement. There is a lack of basic knowledge about herbal remedies that are safe to use during pregnancy (Smeriglio et al. 2014). Pregnant women use herbal remedies because of the cost-effectiveness of therapy, but also because of the easy access to these products (Laelago et al. 2016). Pregnant women are not recommended to exaggerate in anything, not even drinking teas, which are generally good and healthy beverage. Green and black tea are known for containing caffeine. Pregnant women can drink one to two cups of this tea. However, it would be desirable to avoid them, because these teas contain caffeine which causes irritability and insomnia. It is necessary to avoid teas of St. John's wort, milfoil, hibiscus, sage and dandelion, parsley, rosemary, uvin H tea, black and green tea, raspberry leaf tea, if taken in large quantities. It is assumed that some of them can cause uterine contractions or bleeding if taken in large quantities. On the other hand, it is known that mint mild effect helps pregnant women with nausea and flatulence problem. Pomegranate tea is rich in vitamin C, and nettle improves blood count. Tea of linden and chamomile have soothe effect while

cranberry is good for urinary problems (Laelago et al. 2016).

In Western countries, Echinacea is one of the most commonly used herbal remedies in pregnancy. Some studies have shown an increased risk of malformations or adverse pregnancy outcomes after using Echinacea. Studies on the safety of the most commonly used herbal remedies are important for identifying herbs that should be avoided during pregnancy (Heitmann et al. 2016). Pregnant women can drink cinnamon, ginger or anise tea for nausea problems. They can use fennel, flax, chamomile and rose hip for constipation relief. It is recommended to drink tea from the leaves of raspberry and blackberry during pregnancy for easier labour (except pregnant women who suffer from constipation). The chemical compounds of these teas bind to the receptors of the uterus, relaxes it, soothes cramps and prevents possible miscarriage (Heitmann et al. 2016).

SUBJECTS AND METHODS

A cross-sectional prospective study was conducted in the Department of Obstetrics and Gynecology of University Clinical Hospital in Mostar. The study included 230 parturients (primiparas) and 20 pharmacists who work in pharmacies in the city of Mostar. Parturients with chronic diseases were excluded from the research.

Data were collected and analyzed based on a questionnaires filled by parturients whose pregnancy was completed at the Department of Obstetrics and Gynecology, University Clinical Hospital Mostar, as well as on the questionnaires filled by pharmacists working in pharmacies of the city of Mostar. The purpose, aim and method of research were explained to the respondents. The questionnaire contained 25 questions (age, delivery, abortion, professional qualifications, and the medications use during pregnancy; ie, whether respondent used medications or some herbal remedy during pregnancy and respondent's awareness on medication use). The questions were related to knowledge, awareness and the reason for particular medication use.

When interviewing pharmacists working in pharmacies of the city of Mostar, questions were related to the difficulties pregnant women most often seek help about and pregnant women's awareness on harmfulness of medication use during pregnancy.

The statistical analysis was conducted after the obtained necessary data. We used the program system SPSS for Windows (version 17.0. SPSS Inc. Chicago, Illinois, SAD) and Microsoft Excell (Office 2007 version Microsoft Corporation, Redmont, WA, SAD). Statistical analysis was performed using Fisher's exact test when there was a lack of expected frequency and Chi-square or for categorical data. The level of statistical significance was set at $p < 0.05$.

RESULTS

This study included 230 parturients who delivered their babies in the Department of Gynecology and the Obstetrics, University Clinical Hospital Mostar. Among the respondents were 4 (1.6%) women with primary education, 114 (51.3%) with secondary education. Of the total number, 24 of them (10.4%) were higher educated, 79 of them (34.3%) were women with a university degree, 7 of them (3%) were women with master's degree and the 2 of them (0.9%) were PhDs (Table 1).

The survey showed that 57 (24.8%) of respondents used some type of antibiotic, and 172 (74.8%) did not use any.

Out of the total number of respondents, 32 of them (56.1%) used cephalosporins, 12 (21.1%) used penicillin, 8 (14%) amoxicillin - clavulanate, and 5 (8.8%) erythromycin.

77 (33.6%) of respondents used medication for fever and pain, and 152 (66.4%) did not.

Out of the total number, 2 of respondents (2.6%) used non-steroidal anti-inflammatory drugs

(NSAIDs), 6 (88.3%) paracetamol, and 7 (9.1%) used combination of NSAID + paracetamol.

When asked whether they had problems with morning sickness and the vomiting, 103 of them (44.8%) said that they had problems, and 127 of them (55.2%) said that they did not have them.

When asked whether they used herbal remedies (teas and the inhalation), 47 (20.5%) responded with yes, and 182 (79.5%) with no.

Out of the total number of respondents, 27 (58.7%) used chamomile, 1 (2.2%) cranberry, 3 (6.5%) uvin H tea, 3 (6.5%) Iceland moss, 8 (17.4%) mint, 4 (8.7%) other (Table 1).

When asked whether they were familiar with the harmfulness of herbal remedies for their babies, 82 (35.7%) responded that they were familiar, 49 (21.3%) that they were not, and 99 (43%) responded that they did not know.

59 of respondents (25.7%) knew one herb harmful for the fetus and 171 (74.3%) did not know any.

When asked what kinds of harmful teas they knew, 10 (17.9%) responded sage, 6 (10.7%) green tea, 5 (8.9%) mint, 15 (26.8%) uvin H tea, 9 (16.1%) St. John's wort, and 11 (19.6%) responded with "other".

159 of respondents (69.1%) used a vitamin or mineral product, and 71 (30.9%) did not use any.

When asked which vitamin products they used, 28 (17.6%) said vitamin C, 4 (2.5%) vitamin B, and 127 (79.9%) used complex of vitamins.

25 of respondents (10.9%) used calcium and 205 (89.1%) did not. When asked about the reason for calcium use, 7 (28%) responded because of pain in the bones, and 18 (72%) did not know the reason.

88 of respondents (38.3%) used magnesium during pregnancy, and 142 (61.7%) did not. When asked about

the reason for the use of magnesium, 74 (84.1%) responded due to muscle cramps, and 14 (15.9%) did not know the reason.

Out of total number of respondents, 136 of them (60.4%) were taking iron products, and 89 (39.6%) were not taking it. When asked about the reason for taking iron, 124 (91.2%) responded that it was for anemia, and 12 (8.8%) did not know the reason.

Picture 22 shows the type of iron most commonly used during pregnancy; 66 (49.6%) had Ferro Sanol Duodenal, 30 (22.6%) Heferol, 28 (22.1%) Tot'hema, and 9 (6.8%) had some other iron product.

When asked whether they used folic acid, 114 (49.8%) responded that they used it, and 115 (50.2%) that they did not use it.

When asked about reason for folic acid use, 62 (54.4%) responded due to anemia, and 52 (45.6%) did not know the reason.

32 of respondents (13.9%) were familiar with harmful effects of excessive quantity of vitamin A on the fetus and 198 of them (86.1%) were not.

5 of the respondents (2.2%) consumed alcohol and cigarettes during pregnancy, 199 (86.5%) did not, and 26 (11.3%) used it sometimes.

When asked about the awareness of the harmful medication, 97 (42.2%) responded that they were informed, 40 (17.4%) were not, while 93 (40.4%) were not sure (Table 1).

Pharmacists of 20 pharmacies in the city of Mostar responded to two questions. First: What difficulty pregnant women had in most of the cases? The results showed that they usually were buying vitamin and mineral products and products for vaginal-urinary infections. They often asked about products for nausea and vomiting problem. In their opinion, pregnant women were buying products for constipation, analgesics and antipyretics the least, $\chi^2=18.167$; $p=0.001$.

The second question was related to pregnant women's level of knowledge and awareness on harmful effects of medication and herbal remedies used during pregnancy. 60% believed that pregnant women were not sufficiently informed, while 40% thought that they were.

Analyzing knowledge and awareness of respondents on medication use during pregnancy based on professional qualifications, the study found a significant difference between higher educated women and those less educated. The difference particularly applies to herbal remedies because of the difference on knowledge of harmful effects of herbal remedies ($\chi^2=28.069$, $p<0.001$). There is a noticeable difference on the knowledge of one harmful herb ($\chi^2=23.099$, $p<0.001$). It was noted that higher educated women used folic acid more $\chi^2=14.625$; $p=0.005$, and that they had better knowledge of the benefits of taking folic acid at the beginning of pregnancy ($\chi^2=17.612$, $p<0.001$), there was also a significant difference in the intake of magnesium ($\chi^2=17.004$, $p=0.002$).

Table 1. Comparison of the obtained data according to the professional qualifications of respondents

	Professional qualifications												χ^2	p
	PE		SE		HE		BA		MSc		PhD			
	N	%	N	%	N	%	N	%	N	%	N	%		
Antibiotics during pregnancy	2	50.0	27	23.7	4	16.7	23	29.5	1	14.3	0	0.0	3.801	0.548*
Type of antibiotic													14.859	0.167*
Cephalosporins	0	0.0	13	48.1	3	75.0	16	69.6	0	0.0	32	56.1		
Erythromycin	0	0.0	2	7.4	0	0.0	2	8.7	1	100.0	5	8.8		
Penicillin	1	50.0	8	29.6	0	0.0	3	13.0	0	0.0	12	21.1		
Clavulonic acid	1	50.0	4	14.8	1	25.0	2	8.7	0	0.0	8	14.0		
Medications for increased body temperature and pain	1	25.0	38	33.3	10	41.7	26	33.3	2	28.6	0	0.0	1.623	0.943*
Medication type													13.178	0.117*
NSAIDs	0	0.0	1	2.6	0	0.0	0	0.0	1	50.0	2	2.6		
Paracetamol	1	100.0	31	81.6	10	100.0	25	96.2	1	50.0	68	88.3		
NSAID+ paracetamol	0	0.0	6	15.8	0	0.0	1	3.8	0	0.0	7	9.1		
Morning sickness	1	25.0	46	40.4	9	37.5	41	51.9	5	71.4	1	50.0	5.780	0.311*
Herbal teas use and inhalation	1	25.0	17	15.0	4	16.7	23	29.1	2	28.6	0	0.0	6.766	0.192*
Tea type													27.502	0.119*
Chammomilae flos	0	0.0	8	47.1	3	75.0	15	68.2	1	50.0	27	58.7		
Vitis idaeae folium	0	0.0	0	0.0	0	0.0	1	4.5	0	0.0	1	2.2		
Uvae ursi folium	0	0.0	3	17.6	0	0.0	0	0.0	0	0.0	3	6.5		
Lichen islandicus	1	100.0	1	5.9	0	0.0	1	4.5	0	0.0	3	6.5		
Menthae piperitae	0	0.0	5	29.4	1	25.0	2	9.1	0	0.0	8	17.4		
Other	0	0.0	0	0.0	0	0.0	3	13.6	1	50.0	4	8.7		
Awareness on herbal remedies harmfulness	1	25.0	27	23.7	7	29.2	44	55.7	2	28.6	1	50.0	28.069	<0.001*
Familiar with one harmful herb	0	0.0	15	13.2	8	33.3	33	41.8	2	28.6	1	50.0	23.099	<0.001*
Type of harmful herb													18.536	0.548*
Sage	3	20.0	1	14.3	6	19.4	0	0.0	0	0.0	10	17.9		
Green tea	4	26.7	0	0.0	2	6.5	0	0.0	0	0.0	6	10.7		
Mint	0	0.0	0	0.0	4	12.9	0	0.0	1	100.0	5	8.9		
Uvin H tea	4	26.7	2	28.6	8	25.8	1	50.0	0	0.0	15	26.8		
St. John's wort	2	13.3	3	42.9	4	12.9	0	0.0	0	0.0	9	16.1		
Other	2	13.3	1	14.3	7	22.6	1	50.0	0	0.0	11	19.6		
Vitamin and minerals use	2	50.0	76	66.7	15	62.5	58	73.4	7	100.0	1	50.0	6.136	0.258*
Type of vitamin product													10.522	0.510*
C vitamin	1	50.0	18	23.7	2	13.3	6	10.3	1	14.3	0	0.0		
B vitamin	0	0.0	2	2.6	0	0.0	2	3.4	0	0.0	0	0.0		
Complex of vitamins	1	50.0	56	73.7	13	86.7	50	86.2	6	85.7	1	100.0		
Calcium use	1	25.0	12	10.5	2	8.3	8	10.1	2	28.6	0	0.0	4.234	0.450*
Reason for calcium use													4.534	0.334*
Pain in bones	1	100.0	4	33.3	1	50.0	1	12.5	0	0.0	7	28.0		
Not sure of the reason	0	0.0	8	66.7	1	50.0	7	87.5	2	100.0	18	72.0		
Magnesium use	3	75.0	33	28.9	6	25.0	40	50.6	4	57.1	2	100.0	17.004	0.002*
Reason for magnesium use													1.478	0.947*
Muscle cramps	3	100.0	27	81.8	5	83.3	34	85.0	3	75.0	2	100.0		
Not sure of the reason	0	0.0	6	18.2	1	16.7	6	15.0	1	25.0	0	0.0		
Iron products use	3	75.0	60	53.6	16	69.6	51	66.2	5	71.4	1	50.0	4.980	0.405*
Reason for iron product use													3.639	0.570*
Mild anemia	2	66.7	55	91.7	15	93.8	46	90.2	5	100.0	1	100.0		
Not sure of the reason	1	33.3	5	8.3	1	6.2	5	9.8	0	0.0	0	0.0		

* Fisher's exact test; χ^2 = Chi-square test; PE = Primary education; HE = higher education; SE = Secondary education; BA = Bachelor; MSc = Master of Science; PhD = Doctor of Philosophy; NSAID = Non-steroidal anti-inflammatory drugs

Table 1. Continues

	Professional qualifications												χ^2	p
	PE		SE		HE		BA		MSc		PhD			
	N	%	N	%	N	%	N	%	N	%	N	%		
Type of iron product													15.597	0.339*
Ferro Sanol Duodenal	0	0.0	26	44.1	9	60.0	29	58.0	1	20.0	1	100.0		
Heferol	2	66.7	12	20.3	3	20.0	12	24.0	1	20.0	0	0.0		
Tot'hema	1	33.3	16	27.1	2	13.3	7	14.0	2	40.0	0	0.0		
Other	0	0.0	5	8.5	1	6.7	2	4.0	1	20.0	0	0.0		
Folic acid use	1	25.0	50	43.9	7	29.2	51	65.4	4	57.1	1	50.0	14.625	0.005*
Reason for use of folic acid													17.612	<0.001*
Anemia	0	0.0	17	34.0	6	85.7	35	68.6	3	75.0	1	100.0		
Not sure of the reason	1	100.0	33	66.0	1	14.3	16	31.4	1	25.0	0	0.0		
Excessive quantity of vitam A	0	0.0	9	7.9	4	16.7	19	24.1	0	0.0	0	0.0	10.759	0.037*
Alcohol and cigarettes consumption													23.605	0.005*
Yes	1	25.0	4	3.5	0	0.0	0	0.0	0	0.0	0	0.0		
No	2	50.0	93	81.6	19	79.2	77	97.5	6	85.7	2	100.0		
Sometimes	1	25.0	17	14.9	5	20.8	2	2.5	1	14.3	0	0.0		
Opinion on awareness on medication harmfulness													11.041	0.280
Yes	0	0.0	51	44.7	13	54.2	30	38.0	2	28.6	1	50.0		
No	1	25.0	16	14.0	4	16.7	19	24.1	0	0.0	0	0.0		
Not sure	3	75.0	47	41.2	7	29.2	30	38.0	5	71.4	1	50.0		

* Fisher's exact test; χ^2 = Chi-square test; PE = Primary education; HE = higher education; SE = Secondary education; BA = Bachelor; MSc = Master of Science; PhD = Doctor of Philosophy; NSAID = Non-steroidal anti-inflammatory drugs

Higher educated women showed a better knowledge of the harmful effects of excessive quantity of vitamin A during pregnancy ($\chi^2=10.759$, $p=0.037$), as well as a better understanding of the harmful effects of alcohol and cigarettes during pregnancy ($\chi^2=23.605$, $p=0.005$) compared to those who were less educated (Table 1).

DISCUSSION

Total avoidance of pharmacological treatment in pregnancy is not possible and may be dangerous because some women enter pregnancy with medical conditions that require ongoing and episodic treatment (e.g. asthma, epilepsy, hypertension). Also during pregnancy new medical problems can develop and old ones can be exacerbated (e.g. migraine, headache) requiring pharmacological therapy. The fact that certain drugs given during pregnancy may prove harmful to the unborn child is one of the classical problems in medical treatment. In 1960's pregnant ladies who ingested thalidomide gave birth to children with phocomelia. Various other examples of teratogenic effects of drugs are known. It has been documented that congenital abnormalities caused by human teratogenic drugs account for less than 1% of total congenital abnormalities. Hence in 1979, Food and Drug Administration (FDA) developed a system that determines the teratogenic risk of drugs by considering the quality of data from animal and human studies. FDA classifies various drugs used in pregnancy

into five categories, categories A, B, C, D and X. Category A is considered the safest category and category X is absolutely contraindicated in pregnancy. This provides therapeutic guidance for the clinician (Punam et al. 2009).

Under the Law on Higher Education ("Official Gazette", No. 59/07, 59/09), which determines the organization of higher education institutions involved in education and research offering academic degrees in all three cycles, this survey included 48.6% higher educated respondents, and the largest number of respondents had a high school education (51.3%).

Today, both worldwide and in our country, trend of taking herbal remedies for the purpose of treating is growing. This study showed that 20.5% of women used some kind of herbal remedy during pregnancy. The largest number of respondents (58.7% of them) used chamomile, which is absolutely recommended, while minority (17.8%) used a tea of lime, pomegranate and mint. Out of the total number of respondents, 35.7% of them said that they were familiar with the harmful effects of herbal remedies. This data is statistically significant, as well as the fact that higher educated women showed knowledge of one harmful herb. The harmful herb that was cited most frequently is uvin H tea 26.8%, followed by other (parsley, raspberry, black tea, homemade tea) with 19.6%.

According to a survey conducted in the United States, 90% of women used some kind of medication du-

ring pregnancy. Since the time period for testing was short, it was not exactly defined what type of medication was harmful for the fetus (Kennedy et al. 2016)

Research on herbal remedies used during pregnancy was conducted in Australia, North America and Europe, in the period from October 2011 to February 2012. The objective of this study was to determine the safety of their use. Out of the total number of respondents, 29.3% said that they used herbal remedy. Out of this number, 31.6% used herbal remedy which required caution and turned out to be contraindicated (Heitmann et al. 2016).

Folic acid supplements prevent neural tube defects of the fetus. Survey showed that folic acid recommended before and during early pregnancy was used in 49.8% of cases. As the reason for use, 54.4% of respondents stated anemia, and 45.6% did not know the reason. When comparing respondents' knowledge for folic acid use based on their professional qualifications, there was significant difference. That indicates that women of higher educated women have better knowledge and are more informed of the reason for the folic acid use.

During 2013 and 2014, China conducted a study on the folic acid use in the first, second and third trimesters of pregnancy. There were born live-born babies who had ≥ 90 percentile of birth weight according to normogram based on gender, parity of mothers and their age during pregnancy (Wang et al. 2016). This study showed that 38.3% of women used the magnesium during pregnancy. It was found that there was a significant difference which indicated that higher educated women used magnesium products more during pregnancy.

Several previous studies have demonstrated that magnesium deficiency may represent health problems for both mother and child, since it can lead to gestational diabetes, preeclampsia and limited growth according to gestational age (Dalton et al. 2016).

Survey showed that 13.9% of women were familiar with harmfulness of excessive quantity of vitamin A during pregnancy. Higher educated women showed better knowledge of the damaging effects of this vitamin than less educated women.

It is common knowledge that smoking has an effect on birth weight of the newborn and placenta, and has an important role in reducing the time of pregnancy (Urbaniak et al. 2015). This study showed that 2.2% of women consumed tobacco or alcohol during pregnancy, and 11.3% of women stated that they used it sometimes. Higher educated women consumed alcohol and cigarettes less than less educated women.

Research on smoking was conducted in 2011 in Poznan. The participants were divided into 3 groups: active smokers, passive smokers and women who never consumed cigarettes. This study showed that children of mothers who were active smokers were born with lower

birth weight, compared to those of nonsmoker mothers (Urbaniak et al. 2015).

Regarding vitamin and mineral products use, 69.1% of women said that they were taking vitamin or mineral product. Most respondents used a complex of vitamins and minerals -79.9%, 17.6% used vitamin C while 2.5% of them used vitamin B. Vitamin and mineral products use is now the subject of debate in scientific circles. Lack of real scientific evidence which should encourage routine of vitamin supplements use during pregnancy increased opposing opinions over prenatal vitamin supplement.

It is different thing when talking about folic acid and iron use. In fact, in some countries, such as Austria or Germany, that are iodine poor areas, the additional application of iodine is not only supplement, but also question of the correct functioning of the thyroid gland of the fetus and the mother.

This study showed that iron products were used by 60.4% of pregnant women. Anemia is reason for use in 91.4% of the cases. The most commonly used product is Ferro Sanol Duodenal, taken by 49.6% of respondents. It is followed by Heferol with 22.6%, and Tot'hema, taken by 22.1% of respondents.

Most of the doctors' scientific conclusions recommend a careful assessment of the diet of each pregnant women. It is recommended to prescribe vitamin supplements only when it is determined that the diet is deficient.

Regarding the calcium level, it must be maintained throughout the life and not only during pregnancy. In our study it was used by 10.9% of respondents. However, 72% did not know the reason for calcium products use.

The use of painkillers increases the risk of birth defects. Our study showed that 33.6% of respondents have used some kind of painkiller. Most of them used paracetamol - 88.3% of the patients. NSAIDs should be avoided during pregnancy, as acetyl salicylic acid can lead to premature closure of the ductus arteriosus after 32. week. In our study, 2.6% of respondents used NSAIDs, while 9.1% used a combination of acetaminophen and NSAIDs.

The study showed that 44.8% of respondents had a problem with morning sickness and vomiting during pregnancy. However, they did not named any product used to mitigate this problem.

This study showed that 24.8% of women used some type of antibiotics during pregnancy. Cephalosporins and penicillin were used in most of the cases, 56.1% of respondents used cephalosporins, while 21.1% used penicillin. Cephalosporins and penicillin are most commonly prescribed antibiotics during pregnancy in our country, which is also the case in most of the Western countries.

Survey conducted in pharmacies in the city of Mostar showed that pregnant women buy vitamin and mineral supplements in most of the cases, followed by products for vaginal and urinary infections. Women were often coming to inform about products for nausea and vomiting problem. It is interesting that 103 (44.8%) of respondents said they had problems with morning sickness and vomiting, but did not use any medicines.

According to pharmacists' opinion, women are not sufficiently informed about the medication use during pregnancy. That claim of insufficient awareness on the medication use was proven both by the pharmacists and by the mothers - 40.4% of the respondents said that they were not sure whether they were informed enough about the harmfulness of a particular medication.

Herbal remedies are not evaluated according to the same standards as pharmaceuticals, and in the USA some of it are not licensed but sold as food supplements. There is a lack of basic knowledge on the part of both clinicians and patients as to the indications for use and safety of herbal medicines used in pregnancy and lactation. If "traditional use" is the only available information, the pregnant woman should be made aware of this to enable her to make an informed decision concerning potential use (Ivanišević & Bljajić 2009). The potential consequences of tobacco, cocaine or cannabis use during pregnancy are a major public health concern. The combined use of different substances during pregnancy may have serious consequences on the pregnancy and on child development. Many consequences on child development may be observed such as growth disorders, learning or motor disorders, language disorders, cognitive disorders (attention, memory, executive functions), attention deficit disorders with impulsivity or with hyperactivity (ADHD), and memory disorders. The prevalence of depressive or anxiety disorders may also be increased in these children (Lamy et al. 2015).

This is understandable, especially if one considers how long it takes to prove whether some medication is harmful or not, and it is completely unethical to conduct that type of research on pregnant women.

CONCLUSIONS

There is lack of knowledge and unawareness on harmful effect of medication use and herbal remedies during pregnancy. Higher educated pregnant women are more familiar with harmful effects of medication and herbal products use during pregnancy.

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Contribution of individual authors:

Tatjana Barišić and Ana Pecirep were involved in the concept and design of the survey;

Ana Pecirep, Ruža Miličević, Anja Vasilj and Dejan Tirić collected, analysed and interpreted the data.

Tatjana Barišić and Ana Pecirep wrote the text, assisting final editing and critical revision of the scientific content.

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