KnE Social Sciences
EBEEC
Economies of the Balkan and Eastern European Countries
Volume 2023

Research Article

Assessment of Women's Knowledge of the Impact of Smoking During Pregnancy

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Abstract.
Smoking affects women's health and increases their risk for some diseases. Women who smoke have problems with the reproductive system, and if women are pregnant have a high risk for fetal, and neonatal problems and consequences on their health. Quitting smoking at any time during pregnancy improves the condition of mother and baby. This study aims to identify the level of knowledge women have about smoking and effects on pregnancy aged between 1545 years. This study is cross-sectional and was implemented for the period of August-November 2021 was conducted at UHOG "Queen Geraldine" Tirana, Albania. The survey included 200 pregnant women, who agreed to complete the questionnaire. Data were coded and elaborated using IBM SPSS Statistics 26 software. Descriptive results on each question, comparison between important topics, and binary logistic regression for the five final questions were performed. Nevertheless, 30% of the total women in the study were smokers, 16% of them were pregnant smokers, and 14% were smokers before pregnancy. The women who continued to smoke were from urban areas, we do not have heavy smokers, and only 2.9% of them smoked >10 cigarettes a day. Women with secondary education report that the chance of ectopic pregnancy from smoking increases OR = 0.73. As the weeks of pregnancy pass, the likelihood of discovering that smoking increases the risk of having a baby with birth defects (OR = 0.78) increases. There were women in the first pregnancy and younger age groups that represented the highest level of knowledge related to the birth of an underweight baby because of smoking p = 0.003. In 31.6% of cases, the cessation of smoking had come because of the nursing counseling that they had received in the primary service. The trend of smoking among Albanian women is growing and information on the consequences of smoking is a necessity for a healthy population in the future. Women who smoke need assistance and counseling to quit smoking before becoming pregnant. The role of health care professionals in informing women about the risks of smoking to the baby and the mother should be expanded.

Keywords: pregnancy, knowledge, smoking, smoking cessation, counseling

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Published: 1 February 2023

Publishing services provided by Knowledge E

Selection and Peer-review under the responsibility of the EBEEC Conference Committee.

1. INTRODUCTION

About 8.7 million deaths a year are currently reported [30] on the global tobacco epidemic that can cause more illness in patient, costing the global economy US$ 1.4 trillion each year and this trend is expected to increase more in 2030. Many maternal-fetal and neonatal complications have been seen including infertility, ectopic pregnancy, premature membrane rupture, placenta previa, placental abruption, miscarriage, neonatal death, preterm birth, low birth weight, intrauterine growth retardation, sudden infant death syndrome, congenital upper lip, and mouth defects if smoking during pregnancy [15]. Exposure to passive smoking during pregnancy increases the risk of low birth weight for the baby by 20% and is a known cause of lower respiratory tract disease, and bronchial asthma. The evidence has shown that smoking cessation in every time during pregnancy improves pregnancy outcomes, including birth weight, and a decrease in fetal suffering [8]. By 2025 the prevalence is expected to increase by approximately 20% from the 9% that seems currently worldwide for smoker women [9]. The historical gender differences in smoking and prevalence among girls (ages 13-15 years) are changing, the data show an increasing trend in smoking among girls according to some studies [18]. The global prevalence of smoking during pregnancy was estimated to be 8.1% in the European Region, 5.9% in the American Region, 1.2% in the Region of Southeast Asia, 1.2% in the Western Pacific Region, 0.9% in the Eastern Mediterranean Region and 0.8% in the African Region.52.9% of them continued to smoke during pregnancy[26]. In China, approximately 3.8% of women smoked [29]. More than 7 million deaths are the result of direct tobacco use, while about 1.2 million are the result of exposure of non-smokers to tobacco smoke (passive smoking)[10]. The prevalence of smoking in pregnant women was much higher estimates in high income countries, including the US (12.3%) and the United Kingdom (36 %)[7]. More studies have identified many factors associated with smoking during pregnancy, including maternal age, educational level, low socioeconomic status, exposure to secondhand smoke and various environments, age of onset of smoking, increasing the level of smoking dependence, and increasing the level of stress [15]. Smoking for women and girls often involves cultural, psychosocial, and socioeconomic factors, including body image and societal impact[23].Women who smoke during pregnancy have friends and family members who are smokers[22] and less knowledge of the side effects of pregnancy smoking and had low intentions to quit smoking compared to women who had high intentions to quit smoking. The partners, family members, and colleagues, of pregnant women, can influence women who smoke during pregnancy in behavior toward smoking. Smoking is considered the only cause

of ill health and the most preventable by the people. Tobacco smoking is considered the single most preventable cause of ill-health [30]. More studies have concluded that health system costs for smoking have a very high cost, daily, monthly, and annual costs. Reported annually that $96.7 billion all the health system care outlay by smoking and second-hand smoking $4.98 billion and productivity lost exceeds $97 billion. In the United States, smoking causes health costs and productivity losses of about $ 10.28 per package of cigarettes sold [25] in 2018 was $184.9 billion reported [27].

1.1. The situation in our country

Studies on smoking and especially on pregnant women who smoke are very few in our country. In the years 2008–09 smoking women had an average age of 26 years, respondents lived in urban areas, 80% of them were not employed, 16% were from poor families, 0.7% of them were educated and the prevalence was 3.2% [12]. As reported by Public Health in Albania there are some preventable risk factors in habits of life (smoking, alcohol abuse, overweight, unhealthy diet, and lack of physical activity) that contribute in Albania to increase the total burden of NCD (cancer, heart diseases, lung and liver diseases, and diabetes). Health professionals are the main challenges in near future preventing in new generation from starting to smoke and giving up alcohol abuse, unhealthy diets, and promoting their physical activity [5]. Smoking has increased significantly in Albania in the last two decades when the mortality increased from 18% in 1990 to 22% [10]. The mortality increase is greater in men (from 11.6% in 1990 to 14.6% in 2010) than in women (7.9% in 1990 versus 8.8%). In Albania, the prevalence of regular daily smokers among individuals aged 15 and over was 39% in 2012. The highest number of smokerswas 45-49 years, their highest number was from urban areas and with 8 years of education. The age group 30-34 years was with the highest percentage for the number of cigarettes per day about 38.4% of them consumed 15-24 cigarettes per day [1]. A study [11] reported that the consumption of cigarettes in Albania of 278.8 million packs and the average price per pack of 125 lek, Albanian households spent 34.85 billion lek (358.6 million USD) on cigarettes in 2007 representing 17,551 lek (181 USD) per capita, or 5.8% of GDP per capita in 2007. Since there are about 822,000 smokers in Albania a smoker spends on average 42,396 lek (436 USD) per year on cigarettes.

The objective of this study is to assess the knowledge of women of reproductive age about smoking or smoking cessation during pregnancy and the consequences they have during pregnancy.

2. MATERIAL AND METHOD

The study was conducted at University Hospital Obstetrics and Gynecology “Queen Geraldine”, Tirana, Albania. We used for the evaluation of smoking habits in pregnant women the “Questionnaire about Smoking Before and During Pregnancy”. Initially, we used 20 cases to evaluate the questionnaire in July 2021. Then we continued with the next step to develop the questionnaire for the target population from August to November 2021. The study used a questionnaire with structured and semi-structured questions, focused on assessing the knowledge level of women related to smoking and its cessation and the effects that both have on pregnancy. The questionnaire can easily be divided into three main blocks consisting of personal and demographic data, information about the smoking history of the interviewed and family members, and five last questions consisting of dichotomous answers about awareness of smoking damage to pregnancy and babies. Data were gathered through self-reporting paper-based questionnaires completed in the presence of the author and a collaborator. Our study is a cross-sectional evaluation of smoking habits in the population of women reaching in ”Queen Geraldine” maternity, who come here to visit or be advised for their pregnancy. The main inclusion criteria were the age of pregnant women from 15-45 years of age. The sample was taken at the women’s center in the maternity ward where women come for visits to follow up the pregnancy. From the consecutive visits, 200 pregnant women agreed to complete the questionnaire. Data were coded and elaborated using IBM SPSS Statistics 26 software. Descriptive results on each question, comparison between important topics, and binary logistic regression for the five final questions were performed. We checked the normality of independent variables when needed, multivariable logistic regression analyses were conducted to obtain adjusted odds ratios (OR) and 95% confidence intervals (CI) for factors related to the level of women’s knowledge of the smoking effects.

3. RESULTS

The results of our study are divided into 3 parts: *demographic characteristics of pregnant women, *gestational age distribution in pregnant women, * the level of women’s knowledge of the smoking effects.

***Demographic Characteristics of Pregnant Women**

Table 1 presents the demographic data of women in the study 77% of them were from the capital and 78.5% belonged to urban areas, with the age group 30-34 years

Table 1: Residence of pregnant women.

Capital	**Frequency**	**Percent**	
other	46	23.0	
capital	154	77.0	
Total	200	100.0	
Residence	**Frequency**	**Percent**	
rural	43	21.5	
urban	157	78.5	
Total	200	100.0	
Age	**Frequency**	**Percent**	Cumulative Percent
15-19 years	7	3.5	3.5
20-24 years	17	8.5	12.0
25-29 years	53	26.5	38.5
30-34 years	81	40.5	79.0
35-39 years	32	16.0	95.0
40-45 years	10	5.0	100.0
Total	200	100.0	
Level of education	**Frequency**	**Percent**	Cumulative Percent
Uneducated	7	3.5	3.5
Primary and 8/9-year education	37	18.5	22.0
Secondary education	106	53.0	75.0
Higher education	50	25.0	100.0
Total	200	100.0	

with 40.5%. The mean age of women in our study was Mean ± SD (30.6 ± 5.55 years). Approximately 53% of study participants had secondary education,45% unemployed, and 55% were employed.

***Gestational Age Distribution in Pregnant Women**

Table 2: Gestational age.

How many weeks pregnant are you?	**Frequency**	**Percent**	**Cumulative Percent**
<13 weeks	47	23.5	23.5
14-26 weeks	93	46.5	70.0
27-42 weeks	60	30.0	100.0
Total	200	100.0	
Parity	Frequency	Percent	Cumulative Percent
first pregnancy	90	45.0	45.0
second pregnancy	77	38.5	83.5
third pregnancy	33	16.5	100.0
Total	200	100.0	

Regarding the level of smoking, we have 16% pregnant smokers,14% pregnant, non-smokers but were a smoker before pregnancy, and 70% pregnant, non-smokers. When asked about the number of cigarettes smokers per day, we have: 74.3% of them smoked 1-5 cigarettes a day, 22.9% of women smoked 5-10 cigarettes a day and 2.9% smoked more than 10 cigarettes a day. Result that there is a relationship between the age of women and the number of cigarettes, aged 20-34 years with 62.8% who smoke 1-5 cigarettes and 14.3% aged 35-39 years smoking 5- 10 cigarettes a day and only 2.9% smoke > 10 cigarettes a day 40-45 aged. We don't have heavy smokers and the p-Value is <0.001.

Table 3: Data on the associations between smoking and gestational age of pregnant women.

Choose the following option that most closely relates to you		**How many weeks pregnant are you?**			**Total**
		<13 weeks	14-26 weeks	27-42 weeks	
I quit smoking before I got pregnant	Count	1	4	7	12
	% Of Total	2.1%	8.3%	14.6%	25.0%
I quit smoking as soon as I found out I was pregnant	Count	6	4	5	15
	% Of Total	12.5%	8.3%	10.4%	31.3%
I have continued to smoke despite being pregnant	Count	0	15	6	21
	% Of Total	0.0%	31.3%	12.5%	43.8%
Total	Count	7	23	18	48
	% Of Total	14.6%	47.9%	37.5%	100.0%

When women are <13 weeks, 12.5% of them quit smoking as soon as they find out they are pregnant the difference is significant p-Value = 0.002. The question "If you have chosen to quit smoking during pregnancy do you think that after it there is a probability that you will resume?

4.5% have responded no and 5.5% yes.

***The level of women's knowledge of the smoking effects**

Table 4 presents a clear picture of knowledge about smoking that has an impact on the harmful effects. When we use binary logistic regression to see an association with: age, educational level, employment status, pregnancy, Are you a smoker? non-smoker for all five of table 4 questions that we received in the study for the level of knowledge result that with the question about getting pregnant we have OR (95% CI) 0.783, (0.530 - 1.157), p = 0.219 with increasing weeks of pregnancy (OR = 0.78) to understand that the baby has defects the chances decrease. About 55.5% of them know "Smoking does not increase a woman's risk of having an ectopic pregnancy". Have an

Table 4: Data on the level of women's knowledge of the smoking effects.

	true		wrong	
	Frequency	Percent	Frequency	Percent
Women who smoke during pregnancy are more likely to have babies with birth defects.	114	57.0	86	43.0
Smoking does not increase a woman's risk of having an ectopic pregnancy.	111	55.5	89	44.5
Pregnant women should stay away from smoking.	122	61.0	78	39.0
Smoking increases the risk of giving birth to a premature or stillborn baby	115	57.5	85	42.5
A baby of a woman who smokes is likely to have less birth weight than a baby who is not exposed to tobacco.	115	57.5	85	42.5

association knowledge with educational level, OR (95% CI) 0.730, (0.4921.081), p = 0.116 women with secondary education refer to increasing the chance of ectopic burden from smoking. About 61% of them answered it's true to the question "Pregnant women should stay away from smoking". We have an association with the age factor with educational level, when the study participants are younger the chance increases, so they are more informed about staying away from smoking OR (95% CI)0.924, (0.706-1.208), p = 0.561. About 57.5% of them answered that it is true to the question: "Smoking increases the risk of giving birth to a premature or stillborn baby". Have an association between unemployment and knowledge the chances of increase as well as unemployment that has more information on women in high school but for various reasons has been unemployment (in most cases the reason has been pregnancy) OR (95% CI) 0.776, (0.4301.398), p = 0.398. About 57.5% of them answered that it is true to the question: "The child of a woman who smokes is likely to have less weight at birth than a baby who is not exposed to tobacco." Have an association between knowledge and the number of pregnancy p <005 the possibility increases when women have the first pregnancy have more information OR 95% CI 1.900, (1.235 - 2.923), p-Value = 0.03.

The level of women's knowledge of the smoking effects has associated with the employed status p = 0.052

4. DISCUSSION

Knowledge about the negative effects of smoking during pregnancy was higher at younger ages and those in secondary and high school. This may come because of education and information done in schools about the effects of smoking. The age group with the highest number is 30-34 but also smokers belonging to this age is

Table 5: Data on the level of women's knowledge of the smoking effects with the employed status.

		wrong	wrong %	true	true %	Total	Total %	p- Value
Women who smoke during pregnancy are more likely to have babies with birth defects	Unemployed	37	41.1%	53	58.9%	90	100.0%	0.626
	Employed	49	44.5%	61	55.5%	110	100.0%	
	Total	86	43.0%	114	57.0%	200	100.0%	
Smoking does not increase a woman's risk of having an ectopic pregnancy	Unemployed	41	45.6%	49	54.4%	90	100.0%	0.786
	Employed	48	43.6%	62	56.4%	110	100.0%	
	Total	89	44.5%	111	55.5%	200	100.0%	
Pregnant women should	Unemployed	32	35.6%	58	64.4%	90	100.0%	0.366
	Employed	46	41.8%	64	58.2%	110	100.0%	
Stay away from smoking	Total	78	39.0%	122	61.0%	200	100.0%	
Smoking increases the risk of giving birth to a premature or stillborn	Unemployed	41	45.6%	49	54.4%	90	100.0%	0.429
	Employed	44	40.0%	66	60.0%	110	100.0%	
	Total	85	42.5%	115	57.5%	200	100.0%	
A baby of a woman who smokes is likely to have less birth weight than not exposed to tobacco	Unemployed	45	50.0%	45	50.0%	90	100.0%	0.052
	Employed	40	36.4%	70	63.6%	110	100.0%	
	Total	85	42.5%	115	57.5%	200	100.0%	

consistent with the study done in the country [1] where smoking was more common in this age group. Almost 9% of pregnant women were 35 years and older, the mean age was 29 years [6]. Our study resulted in a mean age of 30.6 ± 5.55 years. The mean age of pregnant women ranged from 23.6 to 28.2 years [7]. The factors that had influenced smoking cessation in the study resulted to be the counseling of nurses and health professionals in primary care which is consistent with other studies that extract this factor but also other factors [14] . Promotional intervention is generally expected to have an effect from the beginning of the conception of pregnancy and if not continue to smoke regardless of gestational age. Among women smokers, 34.13% quit smoking due to pregnancy and 46.03% were advised by a healthcare provider to quit smoking due to pregnancy [9]**.** Other studies have reported that the role of health professionals in smoking doesn't have any impact because they were well informed[15]. In other

articles [24] find that (53.6%) indicated that their doctor or other health care provider had discussed with them the harmful effects of smoking. 53% have secondary education, 25 % higher education, and 18.5% primary education but other studies [6] report nearly 12% of women had lower education.

Nearly 78.5% of respondents lived in urban areas which correspond to other studies [6] reported that 75% of all pregnant women lived in urban areas. 16% of women in the study were pregnant smokers,14% pregnant, non-smokers but were a smoker before pregnancy, and 70% were pregnant non-smokers. A study by [22] reports that 56% have remained active smokers during pregnancy. According to study [6], approximately 15% of women continued to smoke during pregnancy, and 26% of all women said they smoked before pregnancy but stopped smoking after learning they were pregnant. In our study, 12% of the respondents quit smoking when they found pregnancy and belonged to the first trimester and only 5.5% of the respondents have said yes for relapse smoking in the future. 20% of women reported [24] quit attempts in the second or third trimester, and 30% of smoking women stopped smoking temporarily in pregnancy with quit attempts and relapsing occurring at varying times across pregnancy. 19.6% of all participants reported [20]a cessation of smoking because of becoming pregnant. Many of the women who stopped smoking were currently in their third trimester, 17.5% of the total women were smokersof which 13% smoking 1-5 cigarettes in a day,4% smoking 5-10 cigarettes in a day, and only 0.5% smoking > 10 cigarettes per day,so, in our study, we don't have heavy smokers. According to [26] globally, 51.8% of women smokers were low-level smokers,34.8% were moderate smokers, and 13.5% were heavy smokers. Our study does not have many cases but represents a part of the population that lives in Tirana where the information on the effects of smoking is greater than in other cities but can be used to guide the development of future messages aimed at reducing the prevalence of smoking during pregnancy. More data on smoking in Albania are needed to monitor its progress, increase, or decrease of smokers, especially attention should be focused on pregnant women. Pregnancy is a very good opportunity to quit smoking and 7.5% of smokers surveyed had quit because of pregnancy but the advice needs to do before pregnancyconception so that the benefit outweighs the consequences. Smoking affects fetal health as the increased risk to mother and baby, for this reason, the constant emphasis by health professionals on the benefits of quitting smoking before conception is important. However, previous research [16],[4],[17]have shown that quitting smoking during the first or second trimester of pregnancy can reduce a range of negative pregnancy outcomes. In the third part of the questionnaire, the level of women's knowledge of smoking affects approximately 57% know about giving birth to

babies with defects, and more information had women <13 weeks pregnant p = 0.219. According [15] report that the high knowledge about the negative effects of smoking during pregnancy was low among respondents in general but was somewhat higher among women of reproductive age and those with higher education. About 55.5% of women in our study know the risk of ectopic pregnancy and especially those with secondary education p = 0.116. According [15] report, women knew about the increased risk of the baby and less than 20% of all respondents were aware that quitting smoking after the first trimester of pregnancy has benefits. This study presents some important limitations. First, there was an attraction of women to these questions also was found as the tendency for underreporting smoking, this has been observed in other studies by [16] which look at underreporting of smoking by women. Another limitation is that women may have given favorable social responses, especially with smoking cessation instead of being completely true, which has also been ascertained in the study [15]. We can't claim that the sample we have selected 200 women represent the knowledge and attitudes of the entire population, but the information has a very valuable value on the topic.

5. CONCLUSIONS

The trend of smoking among Albanian women is increasing and information on the consequences of smoking is a necessity for a healthy population in the future. Women smokers need support and counseling to quit smoking before pregnancy. The role of health care providers in primary care and maternity should be greater in informing women about the consequences of smoking during pregnancy on the baby and mother. The greatest focus should be on midwives who have direct contact with pregnant women. Obstetricians, midwives, family doctors, and nurses should be trained to identify, counsel, and support pregnant women in smoking cessation in all health care settings. Policymakers need to focus on awareness-raising programs and campaigns that motivate and focus on smoking cessation patients, including family and friends. Policymakers also may have an impact on reducing the health care and economic costs from tobacco smoking that need a comprehensive approach to tobacco control.Cooperation between the Ministry of Education, Health and Social Affairs, and Finance (increasing cigarette taxes) can have a positive impact on reducing smoking by bringing about a reduction in morbidity and mortality which will be cost-effective.

``I declare that I have no competing interest as a reviewer"

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