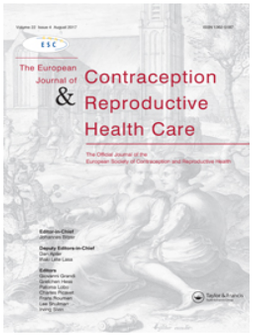

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ORIGINAL RESEARCH ARTICLE

Maternal health-related behaviours during pregnancy: a critical public health issue

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ABSTRACT

Aim: The aim of the study was to investigate the health-related behaviours of pregnant women. Maternal health-related habits, use of psychoactive medicines, diet, prevention of neural tube defects, oral cavity hygiene, chronic diseases and physical activity were analysed in a group of pregnant women attending antenatal classes.

Methods: Hundred pregnant women recruited from various antenatal classes in Poznań, Poland, were investigated using a questionnaire based on the Pregnancy Risk Assessment Monitoring System.

Results: The results showed that 29% of pregnancies were unplanned. In women with higher education, 62% reported that they were taking folic acid supplements during pregnancy, in contrast with 35% women with a lower level of education ($p = .012$). The study showed that 24% of women were exposed to second-hand smoke during pregnancy, and this was more common among younger study participants ($p = .038$). Nine percentage of women admitted drinking alcohol during pregnancy. Pre-pregnancy alcohol consumption was more frequent among women with higher education ($p = .011$). Only 46.7% of women informed their dentist about their pregnancy, and these were more often older participants ($p = .023$).

Conclusion: The study found low maternal awareness regarding health-related behaviours, which presents a serious challenge to public health care in Poland. Pregnant women and those who wish to conceive need to be educated effectively about preventive measures in order to maintain optimal maternal and reproductive health, as well as normal fetal development.

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Health competence; health-related behaviours; oral hygiene; pregnancy

Introduction

Pregnancy is a special time in a woman's life and it requires particular care and attention from the future mother because of the correlation between maternal health and fetal development. Lifestyle, which consists of a whole range of health-related behaviours, constitutes the primary modifying health factor. Lifestyle is extremely variable and as such is of vital importance in the preconception and prenatal periods [1]. Studies on health-related behaviours have been extensively analysed and evaluated, and their findings used to enable pregnant women to achieve optimal conditions for the development of their offspring [1]. Behaviours promoting reproductive health have been demonstrated to positively affect health-promoting behaviours in pregnancy and minimise the effect of chronic diseases on the risk of pregnancy-related complications [1]. Since up-to-date data regarding this issue in Poland are very limited, the aim of this pilot study was to investigate selected health-related behaviours (i.e., diet, prevention of neural tube defects, oral cavity hygiene and physical activity) which might affect the optimal course of pregnancy, as well as maternal and fetal health [2]. Better knowledge of the investigated health behaviours is necessary to plan larger studies that could help to indicate future directions in reproductive health policies (e.g., standardised sexual education, which is currently unavailable in Polish schools).

Methods

A diagnostic survey carried out using a questionnaire. The questionnaire, designed especially for the purpose of the study, was based on the Pregnancy Risk Assessment Monitoring System tool, which is coordinated by the US Center for Disease Control and Prevention (CDC). The questionnaire was anonymous and included 40 closed-ended questions, with multiple choice answers, and open-ended questions. Informed consent and permission to use the data for academic purposes were implied by completion and return of the questionnaire. Local ethics committee approval of the study was obtained (389/3, 9 May 2013). A purposive, homogenous sampling approach was used. Surveys were conducted among pregnant women aged 16–40 years while they were attending antenatal classes or undergoing obstetric assessment in four centres in Poznań, Poland [3]. Participation was voluntary and there were no inducements to join the study. In this pilot study, questionnaires were distributed to 120 women, and 100 correctly filled in documents were returned. Incomplete questionnaires were not included in the analysis. No data were collected from non-responders.

Statistical analysis was performed using Statistica software, version 10.0 (Statistica, Tulsa, OK) [4]. The results are presented using contingency tables, with percentages. The χ^2 test was used to analyse dependent variables.

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A significance level of $\alpha = 0.5$ was used. A p value of .05 was considered statistically significant.

Results

Participant characteristics are presented in Table 1. A total of 74% of respondents received information from their doctor about health behaviours which affect the course of pregnancy and the proper development and growth of the fetus. Unfortunately, only just over half of the women (56%) were told about the detrimental effect of alcohol consumption on the fetus. Nevertheless, 99% reported awareness of the negative influence of alcohol on the developing fetus, and only one (1%) respondent, aged <25 years, denied any knowledge of that fact. Before pregnancy, 78% of women consumed alcohol; 9% reported drinking alcohol after conception less than once a month (7%) or once a month or once a week (2%) (Table 2). Higher education was correlated with higher pre-pregnancy alcohol consumption ($p = .011$) (Table 3); 28% of respondents with higher education reported that they drank alcohol once a week before pregnancy. Smoking was believed to be harmful to the developing fetus by 99% of respondents, with 57% having received that information from their doctor. Despite the fact that 15% of women smoked before conception, 100% declared absolute tobacco abstinence once they learned about their pregnancy. Passive smoking before pregnancy was reported by 36%, but the rate decreased to 24% after the discovery of the pregnancy (Table 2). Age was inversely correlated with passive smoking before ($p = .014$) and during ($p = .039$) pregnancy (Table 3).

The frequency of diseases during pregnancy is presented in Table 4. Among respondents who reported pregnancy-related anxiety, 12% were nulliparas aged ≤30 years. Half of the women reporting thyroid diseases were ≤30 years of age. All women with asthma and 83.3% of women with anaemia were residents of cities with a population of <100,000 inhabitants. The study showed that the incidence of asthma was correlated with the place of residence ($p = .042$). Hypertension, cardiovascular diseases and diabetes affected 6% of the study population. Among women reporting depression, 75% were <25 years of age and residents of cities with a population of >100,000 inhabitants. All were primiparous.

Before pregnancy, 93% of respondents did not use any medicines. After becoming pregnant, 25% of respondents reported medicine use. The most common drugs included levothyroxine (28%), dydrogesterone (16%), furaginum (8%) and methyldopa (8%).

The frequency of folic acid intake is presented in Table 5. Even though they were aware of their pregnancy,

Table 1. Participant characteristics.

Characteristics	%
Age, years	
<25	30
26–30	38
>30	32
Place of residence, no. of inhabitants	
>20,000	11
20–100,000	45
>100,000	44
Marital status	
Married	76
Single	22
Widowed	2
Education	
Higher	71
Vocational and secondary	29
Primiparous	66
Multiparous	34
Miscarriage	12
Planned pregnancy	71
Pregnancy confirmation (week of gestation)	
5–6th	31
8th	19
12th	6

Table 2. Frequency of health-related behaviours in pregnancy.

Behaviour	%
HIV testing	51
Alcohol consumption	9
Active smoking	0
Passive smoking	24
Dental check-up	31
Physical activity	52

Table 4. Frequency of diseases during pregnancy.

Disease	%
Pregnancy-related anxiety	19
Thyroid diseases	10
Anaemia	6
Asthma	5
Hypertension	2
Cardiovascular diseases	2
GDM	2
Depression	4

Table 5. Frequency of folic acid intake.

Folic acid intake	%
Pre-pregnancy	54
During pregnancy	74
In women with primary or secondary education	35
In women with higher education	62
Pre-pregnancy, in married women	61
Pre-pregnancy, in unmarried women	33

Table 3. Characteristics of intervariable correlations.

Variables	p value	Correlation coefficient
Age vs. pregnancy planning	<.001	Cramér's V 0.407
Age vs. passive smoking before pregnancy	.014	Cramér's V 0.291
Age vs. passive smoking in pregnancy	.039	Cramér's V 0.255
Age vs. dental check-up after conception	.024	Cramér's V 0.273
Marital status vs. pregnancy planning	<.001	Tetrachoric correlation −0.637
Marital status vs. folic acid supplementation before pregnancy	.02	Tetrachoric correlation −0.390
Marital status vs. dental check-up before pregnancy	.013	Tetrachoric correlation −0.425
Marital status vs. dental check-up in pregnancy	.025	Tetrachoric correlation −0.437
Education vs. alcohol consumption before pregnancy	.011	Cramér's V 0.360
Education vs. folic acid supplementation before pregnancy	.012	Tetrachoric correlation −0.403
Education vs. fruit consumption in pregnancy	.024	Cramér's V 0.307

Table 6. Incidence and type of physical activity and diet in pregnancy.

Diet/activity	None	1/week	2/week	3/week	>4/week	%
Fruit	0	28	38	23	11	100
Vegetables	0	22	41	22	15	100
Dairy	2	28	38	23	9	100
Flour products	5	28	30	23	14	100
Meat, fish	8	53	25	9	5	100
Sweets	17	44	20	10	9	100
Physical activity in pregnancy	48	29	14	4	5	100
Type of activity						
Walking	–	–	–	–	–	40.5
Gym	–	–	–	–	–	31
Yoga	–	–	–	–	–	11.5
Swimming	–	–	–	–	–	7
Cycling	–	–	–	–	–	5
Nordic walking	–	–	–	–	–	5

65.4% of women aged ≤30 years decided not to take folic acid. The rate of pre-pregnancy folic acid supplementation among women with higher education was almost two-fold that of their peers with primary or secondary education. As far as marital status was concerned, 60.5% of women who reported using folic acid and other vitamins before pregnancy were married, whereas 66.7% of women who did not were unmarried ($p = .02$) (Table 3).

In women with higher education, 71% included fruit and vegetables in their diet almost twice as often compared with their peers with primary or secondary education (Table 6). The highest consumption of sweets was found among pregnant 26- to 30-year-old women with higher education (60%), whereas married women (14%) and residents of cities with <100,000 inhabitants tended to avoid them.

Only 31% of the study population (half were residents of cities with <100,000 inhabitants) received information about proper care and oral cavity hygiene in pregnancy from their dentist or dental hygienist, and 61.3% of these women were primiparous. Only 38% of women sought oral health advice after they got pregnant and only 14% informed their dentist beforehand about their plan to conceive. In pregnant women aged >30 years, 47.4% made an appointment with their dentist once their pregnancy was confirmed, which is 2.5-fold more often than pregnant women aged <25 years (Table 3). Before pregnancy, 47% of women had undergone professional teeth cleaning or other dental care, but this rate dropped dramatically once women found out they were pregnant (Table 2). Women with higher education (76.6%) and those ≤30 years of age (61.7%) had the highest rate of dental visits before pregnancy. Other correlations are presented in Table 3.

In our study, 38% of participants reported no pre-pregnancy physical activity; 63.9% of non-exercising women were residents of cities with <100,000 inhabitants and were ≤30 years of age. Of those with higher education, 70.4% were physically active before pregnancy; only 48.3% of those with primary or secondary education reported being physically active before pregnancy. Twenty percentage of respondents had been told by their doctor about contraindications to physical exercise, e.g., extreme sports and exercises that might provoke uterine contractions. Out of the 20 women who were advised to refrain from physical activity during pregnancy, 95% were married.

Despite a small number of respondents with contraindications to physical exercises, only 52% of the study population undertook some sort of physical activity after conception (Table 2). The incidence and type of physical activity are presented in Table 6.

Discussion

Findings and interpretation

Maternal health-related behaviours before and after conception undoubtedly affect the course of pregnancy, as well as fetal and neonatal development [1,5]. However, the important thing is whether or not a woman engaging in sexual activity takes into account the possibility of pregnancy. Our study demonstrated that only 71% of pregnancies were planned, a figure that is consistent (62%) with the results of a 2011 study of pregnant women in Europe [6]. According to the UK Millennium Cohort Study, only 43% of pregnancies in the UK were planned [7]. In our study, the majority of unplanned pregnancies were reported among women aged ≤30 years, which, from a biological perspective, is the most favourable period of life for fetal conception and development. Marital status was shown to affect the decision to become pregnant. Married women are twice as likely to make that decision compared with unmarried women, due to the fact that they feel safer in their relationship and feel they may rely on their partner for support [1,5]. Żuralska et al. [8] reported similar results, as 30% of their study participants reported being in a relationship.

Alcohol consumption during pregnancy continues to be a serious issue in Poland [9]. In our study, 9% of respondents admitted to alcohol consumption after becoming pregnant, which is consistent with the findings of a CDC study (7.6%) [10]. Unfortunately, only 56% of women in our study had been told by their doctor about alcohol-related threats to the fetus and 1% had no knowledge of the effect of alcohol on fetal development. Similar findings were reported by the Polish State Agency for the Prevention of Alcohol-Related Problems [8].

Although 100% of women stated they had stopped smoking after they found out about their pregnancy, 36% continued to be exposed to tobacco smoke during pregnancy, which signifies they were unaware of the danger to the fetus connected with maternal passive smoking, or they had no support from the people with whom they lived, or they were unable to change their environment [11]. The above is especially true for pregnant women <25 years of age, possibly as a result of poor awareness and insufficient information given by their doctor. Our results, however, are more optimistic than those of Lesińska-Sawicka [6], who reported that 14.4% of pregnant women did not give up smoking during pregnancy. Our results might indicate a growing number of preventive measures, a small sample size or unwillingness to admit to smoking in pregnancy. In the case of passive smoking, the family of the pregnant patient also ought to be educated about the risks.

Our study found two cases of gestational diabetes mellitus (GDM). The fact that only 64% of women received information about GDM from their doctor is a cause for concern. According to a study carried out in 2007, GDM may contribute to 50% of pregnancy losses [12]. Previous studies have demonstrated unfavourable effects of GDM on maternal wellbeing and fetal development [13,14].

In the USA, antenatal depression constitutes a serious public health problem. According to Gavin et al. [15], 6.8–12.9% of pregnant women in the USA are affected by antenatal depression. The results of our study are slightly more optimistic, as we observed only a 4% rate of antenatal depression among the study population. All women who reported antenatal depression were nulliparous, which might have been the result of the new experiences that pregnancy brings, and the challenge and responsibility for the upbringing of a newborn child [5]. According to Scharfe [16], maternal depression during pregnancy has a direct impact on the condition and development of the fetus and may contribute to its emotional, social and cognitive status in the future.

Our findings concerning folic acid intake and supplementation with other vitamin preparations are a source of concern. Despite the fact that 71% of women reported that their pregnancy was planned, only 54% used folate supplementation before conception. This result is consistent with the study of Sengpiel et al. [17], who found folic acid and vitamin supplementation in only 42% of women before conception. In our study, the number of women reporting folic acid and vitamin use increased to 74% after pregnancy was confirmed, but 26% chose not to supplement their diet. The latter were predominantly pregnant women aged $\leq$30 years, which might indicate insufficient knowledge about the beneficial effect of folic acid and other vitamins on fetal development [18]. A CDC study found an 81% rate of awareness about the need for folic acid and vitamin supplementation [19]. Our study showed that both higher education and marriage had a positive effect on folic acid and vitamin intake, which is consistent with a study by Wiśniewska and Wysocki [20] which also found higher education to be a promoting factor for folate supplementation before and during pregnancy. In Poland, maternal awareness of prophylactic folic acid intake before and during pregnancy continues to be low.

Our study found that education was positively correlated with fruit and vegetable consumption (66%), which is consistent with the studies of Czech-Szczapa et al. [21] and Crozier et al. [22], who also found that women with higher education were more likely to have a healthy diet.

Our study found that women $>$25 years of age with higher education were more likely to seek dental care. Although this finding is similar to CDC data, it is worrying that the percentage of pregnant women who present for dental care decreases (31%) [23], as it may result in deterioration of oral cavity hygiene and complications of fetal development [24]. Guidelines concerning access to dental hygiene for pregnant women should be introduced, especially for women with low income and low education.

Strengths and weaknesses of the study

Our study is not without limitations, chief among them being a relatively small sample size, non-probability sampling, lack of a representative sample and a research method which only generated soft data. Nevertheless, a questionnaire study contributes a valuable source of information about the lifestyle of pregnant women.

Differences in results and conclusions in relation to other studies

In our study, only 38% of pregnant women made an appointment to see a dentist. In the USA, the rate is significantly higher (70.1%), which may indicate greater awareness and prevention in that population [23].

The consumption of sweets also generated conflicting results. In our study, married pregnant women with higher education consumed sweets more frequently in comparison with other groups, which is contrary to the findings of Czech-Szczapa et al. [21]. Being in a stable relationship gives a sense of safety and acceptance by a partner, which might increase sweet consumption and lower self-discipline.

Relevance of the findings: implications for clinicians and policy-makers

Adequate family-friendly policy and legislation, together with easy access to health care, may become the foundations of a healthy generation. The introduction of sexual education is an important element. Age-adjusted sexual education may encourage health-promoting behaviours and provide a basis for knowledge about reproductive health, enabling pre-pregnancy planning.

Unanswered questions and future research

As the results of our study seem promising, we intend to continue the research using a larger sample size.

Conclusion

The results of our study reflect the findings of other authors, indicating that pregnant women have insufficient knowledge about reproductive health. Despite the high number of women who state they are aware of the negative effect of alcohol consumption and smoking on maternal and fetal health, everyday practise contradicts this. Additionally, dental hygiene continues to be an important public health issue. Pregnant women do not receive sufficient information about health-promoting behaviours from their doctor and often get no pregnancy advice at all. There is a lack of preventive programmes and social awareness campaigns targeting the needs of pregnant women. It is necessary to implement social awareness campaigns and educational classes about reproductive health.

Disclosure statement

No potential conflict of interest was reported by the authors.

References

[1] Robbins CL, Zapata LB, Farr SL, et al. Core state preconception health indicators – Pregnancy Risk Assessment Monitoring System and Behavioral Risk Factor Surveillance System, 2009. MMWR Surveill Summ. 2014;63:1–62.

[2] Główny Inspektorat Sanitarny. Lublin 2013. Available from: http://zdrowiewciazy.pl/pdf/publikacje/raport_zachowania_zdrowotne_kobiet_w_ciazy.pdf [cited 2017 Feb 23].

[3] Teddlie C, Yu F. Mixed methods sampling: a typology with examples. J Mix Methods Res. 2007;1:77.

[4] StatSoft. Electronic statistics textbook. Available from: www.statsoft.pl/textbook/stathome.html [cited 2014 Sep 7].
[5] Banaszak-Żak B. Lifestyle of women during pregnancy [in Polish]. Zdr Publ. 2005;115:179–183.
[6] Lesińska-Sawicka M. Pregnancy planning and use of prescription drugs during pregnancy by women from selected European countries [in Polish]. Probl Hig Epidemiol. 2011;92:127–131.
[7] Flower A, Shawe J, Stephenson J, et al. Pregnancy planning, smoking behaviour during pregnancy, and neonatal outcome: UK Millennium Cohort Study. BMC Pregnancy Childbirth. 2013;13:238.
[8] Żuralska R, Kuzepska M, Mziray M, et al. Alcohol and pregnancy. Preliminary study of women's opinion about alcohol consumption during pregnancy [in Polish]. Probl Pielęg. 2011;19:533–537.
[9] Moskalewicz J. Health problems related to alcohol consumption [in Polish]. Alkoholizm i Narkomania. 2007;20:55–63.
[10] Centers for Disease Control and Prevention (CDC). Alcohol use and binge drinking among women of childbearing age – United States, 2006-2010. MMWR Morb Mortal Wkly Rep. 2012;61:534–538.
[11] Szymanowski K, Chmaj-Wierzchowska K, Florek E, et al. Effect of tobacco smoke on fetal, neonatal and infant development – a review of the literature [in Polish]. Prz Lek. 2006;63:1135–1137.
[12] Dudley DJ. Diabetic-associated stillbirth: incidence, pathophysiology, and prevention. Clin Perinatol. 2007;34:611–626.
[13] Martin KE, Grivell RM, Yelland LN, et al. The influence of maternal BMI and gestational diabetes on pregnancy outcome. Diabetes Res Clin Pract. 2015;108:508–513.
[14] Molęda P, Fronczyk A, Jabłońska K, et al. Practical implementation of recommendations for the diagnosis of gestational diabetes [in Polish]. Ginekol Pol. 2015;86:132–136.
[15] Gavin NI, Gaynes BN, Lohr KN, et al. Perinatal depression: a systematic review of prevalence and incidence. Obstet Gynecol. 2005;106:1071–1083.
[16] Scharfe E. Cause or consequence? Exploring causal links between attachment and depression. J Soc Clin Psychol. 2007;26:1048–1064.
[17] Sengpiel V, Bacelis J, Myhre R, et al. Folic acid supplementation, dietary folate intake during pregnancy and risk for spontaneous preterm delivery: a prospective observational cohort study. BMC Pregnancy Childbirth. 2014;14:375.
[18] Bianchi CM, Mariotti F, Verger EO, et al. Pregnancy requires major changes in the quality of diet for nutritional adequacy: simulations in the French and the United States populations. PLoS One. 2016;11:e0149858.
[19] Centers for Disease Control and Prevention (CDC). Use of supplements containing folic acid among women of childbearing age – United States, 2007. MMWR Morb Mortal Wkly Rep. 2008;57:5–8.
[20] Wiśniewska K, Wysocki J. Folic acid and its importance in primary prevention of congenital malformations. In: Latos-Bielenska A, Materna-Kiryluk A, editors. Congenital malformations in Poland in 2003-2004. Data from the Polish Register of Congenital Malformations [in Polish]. Poznań: University of Medical Sciences, 2010. p. 83–92.
[21] Czech-Szczapa B, Szczapa T, Merritt TA, et al. Disordered eating attitudes during pregnancy in mothers of newborns requiring neonatal intensive care unit admission: a case control study. J Matern Fetal Neonatal Med. 2015;28:1711–1715.
[22] Crozier SR, Robinson SM, Borland SE, et al. Do women change their health behaviours in pregnancy? Findings from the Southampton Women's Survey. Paediatr Perinat Epidemiol. 2009;23:446–453.
[23] Azofeifa A, Yeung LF, Alverson CJ, et al. Oral health conditions and dental visits among pregnant and nonpregnant women of childbearing age in the United States, National Health and Nutrition Examination Survey, 1999-2004. Prev Chronic Dis. 2014;11:E163.
[24] Ressler-Maerlender J, Krishna R, Robison V. Oral health during pregnancy: current research. J Womens Health (Larchmt). 2005;14:880–882.