THE CORRELATION BETWEEN SMOKING DURING PREGNANCY AND LIFESTYLE FACTORS AMONG HUNGARIAN EXPECTANT MOTHERS

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The preliminaries of our research

The number of preterm birth cases has not declined in Hungary in the last decade. While this rate is about 6% on average in most of the European countries, it is 9% in Hungary (6% -12%).

The chance of infants' survival and the long term health consequences are determined by gestational age / birth weight.

Low social status plays a key role in a number of preterm birth cases. Negative lifestyle factors are often connected to low socio-economic status (SES).

According to representative surveys in Hungary, 36,1% of the adult population smokes regularly (40,6% of men, and 31,7% of women).

Young girls start smoking at a very early age, and by the time they enter fertile age, they become regularly smoking addicts. While the frequency of smoking among 13-year-old girls decreased in Europe in the last few years, it increased in Hungary (it was 6% in 2007).

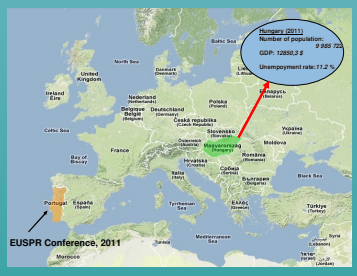
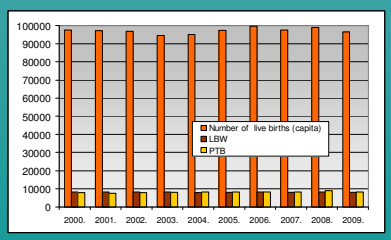
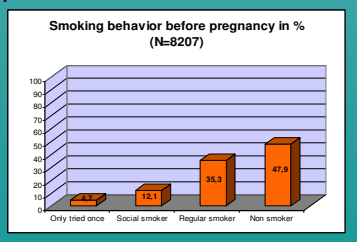


Table 1. Population, vital events in Hungary (2009)

Number of live birth in Hungary	The average age of women at the birth of first child	Preterm birth (PTB)	Low birth weight (LBW) (<2500gr)	Infant mortality per thousand liveborns	Total fertility rate (2010)
96442 per thousand in habitants 9.6	27.92 yrs	8.7 %	8.4 %	5.1 ‰	1.26

Figure 1. Number of live births, PTB, LBW in the last 10 years in Hungary



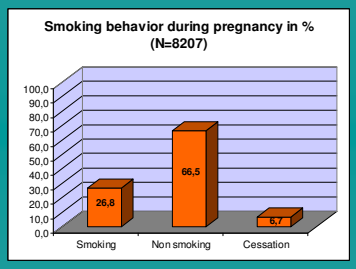


The aim of our research

The aim of our research was to study the socio-economic background, demographic status, features connected to lifestyle of mothers of live birth cases. We are intending to apply the results of our research to the training of experts who work in the field of prevention.

Objectives of our research

- to evaluate the connection between socio-economic factors and premature birth/low birth weight
- to measure the frequency of smoking among expectant mothers, the identification of factors that result in regular smoking
- to assess the effect of smoking, as the most frequent negative lifestyle factor, on the adaptation and biometric data of infants and on the mother's prior conditions.



Methods

Sample

Our research was conducted among mothers with live-born babies in two counties of Hungary (BAZ, SZSZB). We reached 9,040 mothers which represents 71,1% of all mothers with live birth cases in these two counties and 9,4% of all live births in Hungary during 2009.
The data were obtained from two sources:

1. Medical records of obstetrical wards
2. In-person interviews

Analysis

All data were analyzed using SPSS (15.0-19.0) statistical program. Descriptive statistics (means, sd, ranges and frequencies) were used to describe the sample. Bi-variate associations were calculated on all variables and their relationship to smoking status using the Pearson's Chi-square test. Logistic regression analyses were computed to assess the relationship of socioeconomic status to smoking versus non-smoking. Results are reported as reported in odds ratios (ORs) and 95 % confidence interval (CI).

Conclusion

- Smoking attitudes and health status depend on level of education, socio-economic position and social relationships.
- Changing these attitudes, the cooperation of health care, education, civil and governmental organizations is necessary, because these are the most important indispensable devices for the realization of preventive actions against smoking.
- As the access to health care services is not equal, setting up available health services at primary and secondary level in rural and underdeveloped regions would also be necessary for expectant mothers.

Table 2. Smoking habits prior pregnancy related to demographic, socioeconomic and lifestyle characteristics of smoking and non-smoking mothers (N=7877) with live born babies in Hungary in 2009

Variables	Overall (N)	Smokers (n)	Non-Smokers (n)	P-value
Age in years	**7833**	**3402**	**4431**	<0.001*
x. (sd)	27.7 (6.0)	26.8 (6.1)	28.4 (5.9)	
min-max	14-46	14-46	14-46	
Age categories (n,%)				<0.001
<18	286	133 (3.9)	153 (3.5)	
18-34	6446	2846 (83.7)	3600 (81.2)	
35-40	987	371 (10.9)	616 (13.9)	
41<	114	52 (1.5)	62 8 (1.4)	
BMI (kg/m²)	7485	3230	4255	N.A.
mean (sd)	22.87(4.75)	22.34(4.69)	23.28 (4.73)	
min-max	12.89-50.78	13.06-50.78	12.89-47.83	
BMI categories (n,%)				<0.001
Underweight	1103	617 (19.1)	486 (11.4)	
Normal	4482	1904 (58.9)	2578 (60.6)	
Overweight	1226	463 (14.3)	763 (17.9)	
Obesity	674	246 (7.6)	428 (10.1)	
Education	**7846**	**3494**	**4815**	<0.001*
<8 grades	750	478 (14.0)	272 (6.1)	
Completed 8 grades**	2286	1285 (37.7)	1001 (22.6)	
Secondary	3429	1403 (41.1)	226 (45.7)	
University/collage	1381	244 (7.2)	1137 (25.6)	
Employment before birth	**7838**	**3490**	**4432**	<0.001
Employed	3196	1033 (30.3)	2163 (48.8)	
Unemployed	1899	1044 (30.7)	855 (19.3)	
Varia***	2743	1329 (39.0)	1414 (31.9)	
Marital status (n,%)	**7849**	**3407**	**4442**	<0.001
Married	4078	1301 (38.2)	2777 (62.5)	
None-contractual cohabit.	3371	1866 (54.8)	1505 (33.9)	
Separated/divorced	118	68 (2.0)	50 (1.1)	
Single/widowed	282	172 (5.0)	110 (2.5)	
Ethnicity (n,%)	**6932**	**2993**	**3939**	<0.001
Roma	2150	1235 (41.3)	915 (23.2)	
non-Roma	4782	1758 (58.7)	3024 (76.8)	
Level of income/capita	**7563**	**3325**	**4238**	<0.001
Deep poverty (n,%)	3576	2025 (60.9)	1551 (36.6)	
Poverty	2177	817 (24.6)	1360 (32.1)	
At poverty level	1126	298 (9.0)	828 (19.5)	
Sufficient/wealthy	684	185 (5.6)	499 (11.8)	
Dietary habits				<0.001
Fresh fruits (n,%)	**7812**	**3397**	**4415**	
At least once a day	5420	2100 (61.8)	3320 (75.2)	
Every other day	812	386 (11.4)	426 (9.6)	
Once or twice per week	1044	570 (16.8)	474 (10.7)	
Less than once per week	536	341 (10.0)	195 (4.4)	
Vegetables (n,%)	**7807**	**3391**	**4416**	<0.001
At least once a day	4696	1788 (52.7)	2908 (65.9)	
Every other day	1176	510 (15.0)	666 (15.1)	
Once or twice per week	1296	701 (20.7)	595 (13.5)	
Less than once per week	639	392 (11.6)	247 (5.6)	
Dairy products (n,%)	**7809**	**3446**	**4414**	<0.001
At least once a day	5222	2211 (65.1)	3311 (75.0)	
Every other day	924	421 (12.4)	503 (11.4)	
Once or twice per week	797	430 (12.7)	367 (8.3)	
< once per week	566	333 (9.8)	233 (5.3)	
Coffee (n,%)	**7715**	**3362**	**4353**	<0.001
At least once a day	3708	2235 (66.5)	1473 (33.8)	
Every other day	124	65 (1.9)	59 (1.4)	
1-2 times a week	148	48 (1.4)	100 (2.3)	
Seldom/never	3735	1014 (30.2)	2721 (62.5)	

*t-probe, all other p-values were processed by the Pearson's chi-square test
** Primary school ***Disabled, student, ect.

Table 3. Multivariable logistic regression model of smoking versus non-smoking (N= 5818) mothers by demographic, social and lifestyle characteristics in Hungary (2009)

Variables	OR	95 % CI	<p-value
Roma vs. non-Roma	0.98	0.82-1.17	N.A.
Hospital treatment vs. non-treatment	0.78	0.68-0.90	0.001
Age <18 years vs.			
18-34	0.59	0.44-0.80	0.001
35-40	0.73	0.51-1.04	N.A.
41<	0.80	0.44-1.45	N.A.
BMI underweight vs.			
Normal weigth	1.20	1.02-1.42	0.05
Overweight	1.57	1.27-1.94	0.001
Obese	1.44	1.13-1.84	0.01
Education < 8 grades vs.			
8 grades (primary school)	1.20	0.96-1.49	N.A.
Secondary school	1.47	1.12-1.92	0.01
University/college	3.25	2.33-4.52	0.001
Workplace before birth vs.			
Employed	0.96	0.80-1.14	N.A.
Unemployed	1.14	0.96-1.35	N.A.
Varia (disabled, student, etc.)			
Single or widowed vs.			
Married	2.48	1.81-3.40	0.001
Non-contractual cohabitation	1.39	1.02-1.90	0.05
Separated or devorced	1.30	0.75-2.24	N.A.
Nr. Of children vs. 1-2			
3-6	1.26	0.86-1.87	N.A.
7 or more	1.30	0.89-1.91	N.A.
Deep poverty of the family vs.			
Poverty	1.17	0.99-1.38	N.A.
At poverty level	1.43	1.14-1.78	0.001
Sufficient/wealthy	1.15	0.88-1.50	N.A.
Housing without amenities			
Full amenities	1.05	0.86-1.28	N.A.
Partial amenities	1.12	0.93-1.35	N.A.
Consumption < daily vs. daily of…			
Fruit	1.07	0.91-1.24	N.A.
Vegetable	1.18	1.02-1.36	0.005
Dairy	1.10	0.96-1.27	N.A.
Meat	1.06	0.94-1.21	N.A.
Caffeine daily vs. < daily	3.59	3.19-4.04	0.001

Sources:
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