

ASSOCIATIONS BETWEEN HEALTH BEHAVIOR HABITS AND QUALITY OF LIFE OUTCOMES IN PREGNANT WOMEN: A PRELIMINARY INVESTIGATION IN POLISH SAMPLE

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Abstract. The aim of our study was to analyze the relationships between health behaviours and quality of life. Research was conducted on a sample of 144 women in the third trimester of pregnancy, participating in antenatal classes. The tools used for investigation of health behaviour was Health Behaviour Inventory and for the quality of life was Quality of Life Questionnaire (WHOQoL-Bref). The analysis of results between women with high, average and low General Index of Intensity of Health Behaviours (GIIHB) showed statistically relevant difference in quality of life only in the Environment domain ($p \leq 0.05$). Depending on GIIHB, there are different correlations between categories of health behaviours and quality of life. The present research confirmed the existence of correlations between health behaviours and perceived quality of life among pregnant women participating in antenatal classes. The observed correlations show a need for further investigation and taking into account also other individual and socio-economic factors.

Key words: health behaviours, quality of life pregnant women, pregnancy

Introduction

The identification and modification of women's health behaviours in pregnancy is crucial for implementation of health promotion programmes. Many researchers emphasize the necessity to analyze changes that occur in health behaviours before and during pregnancy (Crozier et al. 2009; Higgins et al. 1995). It is equally important to undertake educational, consultative and preventive measures to fight obesity among pregnant women (Kinnunen et al. 2007; Mottola et al. 2010), as well as to prevent pregnancy complications through proper preparation to childbirth and implementing appropriate health behaviours, both before and during pregnancy (Atrash et al. 2006; Frey and Files 2006). Research results indicate that obesity is a serious social health problem that concerns also women in reproductive age (Andreasen et al. 2004). The main reasons for excessive weight gain are insufficient

knowledge concerning healthy eating habits, lack of awareness of possible complications and lack of professional guidance (Stengel et al. 2012). In order to counteract unhealthy behaviours, it is of special importance to spread and promote knowledge concerning health behaviours among women in reproductive age, and to provide specific recommendations (Hood et al. 2007; Johnson et al. 2006; Moos et al. 2008). It turns out that pregnancy can be a good point in life for promotion of healthy eating and physical activity, and it can help preventing overweight and obesity in later life (Phelan 2010). Research also indicates that undertaking health behaviours during pregnancy has a positive influence on the health of the infant (weeks of gestation, birth weight, and five-minute Apgar scores).

In recent years there has been an increased interest in research aimed at identifying the factors that determine health behaviours in pregnant women (Larrañaga et al. 2013; Murakami et al. 2009). The results show that women with higher socioeconomic status declare fewer pregnancy complications, better control over weight gain and having more prenatal appointments than women with lower socioeconomic status (Larrañaga et al. 2013). In another paper, authors claim that although family income and profession are not directly correlated with beneficial dietary intake, the level of education plays an important role in modifying dietary behaviours in pregnant women (Murakami et al. 2009).

Research also indicates that among women with low income, the main source of information concerning health behaviours is family and friends, which implies a need to not only educate pregnant women, but also their closest environment (Lewallen 2004). The necessity of improving nutrition and health of pregnant women, as well as the need to promote health protection practices is confirmed by other authors (Perumal et al. 2013) even among women in high-income developing countries (Alkaabi et al. 2014).

As for health behaviours in pregnancy, adhering to doctor's prescriptions is of paramount importance, as it assumes the willingness to maintain health and reduce the risk of disease. Doctors generally advise pregnant women on behaviours concerning physical activity, diet, vitamin intake, smoking habits and giving up stimulants (Crozier et al. 2009; Higgins et al. 1995; Smedley et al. 2014). Health behaviours often find reflection in pregnant women's perceived quality of life. At times the perceived quality of life can even influence the course of pregnancy in significant ways, as can be seen in case of pregnancy complications, where a fear for one's own and for child's health is noticeable (Mirmohammadalie et al. 2007). Additional risk factor lowering the quality of life in pregnancy and strongly connected with mental health, is depression (Nicholson et al. 2006).

Despite extensive research and analysis of pregnancy risk factors and health threatening behaviours, according to the authors' knowledge, so far there has been no research assessing the general intensity of health behaviours, which divides health behaviours into categories and investigates their relationship with the quality of life in pregnant women.

Therefore, the aim of our study was to assess General Index of Intensity of Health Behaviours and to analyze the relationships between health behaviours such as: Proper Nutritional Habits, Preventive Behaviours, Positive Thinking, Health Practices, and Overall Quality of Life, General Health among pregnant women, as well as the quality of life in four domains: Physical Health, Psychological Health, Social Relationships, and Environment.

Methods

Participants

Research was conducted on a sample of 144 women in the third trimester of pregnancy, participating in antenatal classes. The mean age respondents were 29.1 years old ($SD = 3.4$). With higher education there was 88.2%, with secondary education – 11.1% and only 0.7% with primary education.

The majority of the participants (83.3%) were married, 15.3% single and 1.4% of the women were divorced. The research plan was approved by the local Bioethics Committee.

Procedures

The methodological basis for investigation of health behaviour was Juczyński's Health Behaviour Inventory (Juczyński 2001) and the tool used for assessing the quality of life was a Polish version (Wołowicka and Jaracz, 2001) of the abridged World Health Organization Quality of Life Questionnaire (WHOQoL-Bref).

Measurement of health behaviour: Health Behaviour Inventory. General Index of Intensity of Health Behaviours (GIIHB) was calculated by adding the results for all the 24 statements included in the Health Behaviour Inventory. The obtained GIIHB oscillated between 24–120 points. The results were then converted to standard units, and interpreted in terms of the sten score system (Juczyński 2001). According to the guidelines presented by the author of the questionnaire, the respondents were divided into 3 groups: with a high GIIHB 7–10 stens, average GIIHB 5–6 stens, and low GIIHB 1–4 stens. Four categories of health behaviours were analysed separately: Proper Nutritional Habits, Preventive Behaviours, Positive Thinking and Health Practices.

According to Juczyński (Juczyński 2001): Proper Nutritional Habits category takes into consideration mainly the type of foods consumed (e.g. wholegrain bread, vegetables or fruit). Preventive Behaviours include adhering to medical recommendations and obtaining information concerning health and sickness. Health Practices pertain to daily habits connected with sleep, recreation and physical activity. Positive Thinking means avoiding strong emotions, stress, tension and depressing situations.

They were calculated as a mean value of the results in the analysed category (ranging from 1.0–5.0), following the adopted diagnostic key. The higher the result, the healthier the habits.

Measurement of the quality of life: The Polish version of the WHOQoL-Bref questionnaire. The tool used for assessing the quality of life was a Polish version of the abridged World Health Organization Quality of Life Questionnaire (WHOQoL-Bref) (Wołowicka and Jaracz 2001). The WHOQoL-Bref questionnaire consists of 26 questions. The first two questions were analysed separately. They pertained to the general self-perception of the respondents' Overall Quality of Life and General Health. The remaining 24 questions assessed four aspects of the quality of life in four domains (Physical Health – 7 questions, Psychological Health – 6 questions, Social Relationships – 3 questions, and Environment – 8 questions). The respondents were asked to mark their answers using a five level rating scale (from 1 to 5 points). The quality of life in respective domains was expressed as a mean value, calculated according to the key and guidelines.

Statistical analysis

The results were analysed statistically with the aid of Statistica 10.0. The distributions of variables were examined using the Sapiro-Wilk test. The relevance of differences between means was assessed with the aid of

Kruskal-Wallis H-Test. Relationships between the variables were analysed using Spearman's rank correlation test and a correlation coefficient was calculated for each pair of variables. The level of statistical significance of $p \leq 0.05$ was accepted.

Results

The analysis of General Index of Intensity of Health Behaviours (GIIHB) questionnaire shows that 47.5% of women are characterized by high GIIHB, 38.9% exhibit an average level, while 13.2% turned out to have a low GIIHB.

The analysis of mean results between women with high, average and low GIIHB obtained with the use of WHOQoL-Bref did not show any statistically relevant differences for Overall Quality of Life, General Health, Physical Health domain, Psychological Health domain, and Social Relationships domain. The only statistically relevant difference was observed in the Environment domain ($K-W\ H(2, 144) = 8.20; p \leq 0.05$). The comparison of multiple averages revealed a statistically relevant difference between women with high and low GIIHB.

The correlations between Health Behaviour Inventory results and results of the WHOQoL-Bref Questionnaire conducted among the respondents are presented in Table 1.

Table 1. Correlations between Health Behaviour Inventory and WHOQoL-Bref for pregnant women

Health Behaviour Inventory	WHOQoL-Bref					
	WHOQoL-Bref domain					
Overall Quality of Life	General Health	Physical Health	Psychological Health	Social Relationships	Environment	
Positive Thinking	0.136	0.132	0.227*	0.398*	0.401*	0.370*
Proper Nutritional Habits	0.072	0.141	0.063	0.144	0.240*	0.229*
Health Practices	-0.006	-0.025	-0.003	0.099	0.087	0.177*
Preventive Behaviours	0.134	0.102	0.117	0.225*	0.152	0.328*

* $p \leq 0.05/$

What is interesting in this set of data (see Table 1) is that there is a positive correlation between Positive Thinking category and all the four WHOQoL-Bref domains ($p \leq 0.05$). We can also see that the results for Proper Nutritional Habits category are positively correlated with the quality of life in Social Relationships domain and Environment domain ($p \leq 0.05$). For Health Practices a positive correlation can be observed only in the Environment domain ($p \leq 0.05$), whereas Preventive Behaviours show statistically relevant correlations with Psychological domain and Environment domain ($p \leq 0.05$).

In order to interpret in detail the relationships between answers given by women with high, average or low GIIHB and quality of life, separate analyses were conducted for each group (see Table 2).

Table 2. Correlations between Health Behaviour Inventory and WHOQoL-Bref for pregnant women with high, average and low General Index of Intensity of Health Behaviours

Health Behaviour Inventory	Overall Quality of Life	WHOQoL-Bref				
		WHOQoL-Bref domain				
	General Health	Physical Health	Psychological Health	Social Relationships	Environment	
High General Index of Intensity of Health Behaviours						
Positive Thinking	0.136	0.273*	0.313*	0.553*	0.511*	0.312*
Proper Nutritional Habits	0.247*	0.304*	0.258*	0.276*	0.387*	0.316*
Health Practices	-0.080	0.059	0.077	0.127	0.151	0.287*
Preventive Behaviours	0.027	0.278*	0.200	0.219	0.244*	0.274*
Average General Index of Intensity of Health Behaviours						
Positive Thinking	0.168	0.083	0.256	0.197	0.392*	0.303*
Proper Nutritional Habits	-0.091	-0.048	-0.144	-0.082	0.087	-0.144
Health Practices	0.083	-0.164	-0.093	-0.028	-0.136	0.289*
Preventive Behaviours	0.293*	0.139	0.157	0.116	-0.007	0.305*
Low General Index of Intensity of Health Behaviours						
Positive Thinking	0.216	0.147	0.353	0.330	0.405	0.090
Proper Nutritional Habits	0.004	0.065	-0.188	-0.051	-0.237	-0.083
Health Practices	0.007	0.026	0.047	-0.078	0.204	0.096
Preventive Behaviours	-0.001	-0.257	-0.293	-0.208	-0.357	-0.103

* p ≤ 0.05.

Statistically significant differences can only be found among women with high and average GIIHB. In a group of women with high GIIHB, the results in Positive Thinking category were significantly correlated with WHOQoL-Bref General Health ($p \leq 0.05$) and with all the four quality of life domains ($p \leq 0.05$). Among women with average GIIHB, in turn, Positive Thinking was correlated with quality of life in two domains: Social Relationships and Environment ($p \leq 0.05$). As far as Proper Nutritional Habits are concerned, statistically relevant correlations were present only in the group of women with high GIIHB, where such relationships were found in all the investigated WHOQoL-Bref categories ($p \leq 0.05$).

Both in the group of women with high and average GIIHB, the declared Health Practices were positively correlated with the results obtained in the Environment domain of the quality of life assessment ($p \leq 0.05$). As for Preventive Behaviours, statistically relevant correlation was found in a group of women with high GIIHB between General Health and quality of life in two domains: Social Relationships and Environment ($p \leq 0.05$). Apart from that, in a group of women with average GIIHB, a statistically significant correlation was found between Preventive Behaviours and both Overall Quality of Life ($p \leq 0.05$) and quality of life in the Environment domain ($p \leq 0.05$).

Discussion

Many authors deal with the problem of health behaviours and quality of life in women during pregnancy, analyzing it from different perspectives. Nevertheless, as far as we know, none of these investigations is comparable

with the present paper, since it is the first study conducted among women in perinatal period to investigate the relationship between health behaviours, defined by the Health Behaviour Inventory and quality of life, measured with the use of WHOQoL-Bref.

We found correlations between health behaviours and perceived quality of life among women participating in antenatal classes. Women who declared engaging in behaviours beneficial for health, assessed their quality of life higher. This is confirmed by another research, which indicates that individuals who undertake positive health behaviors tend to report higher quality of life (Woodruff and Conway 1992). Many authors (Lau and Yin 2011; Li et al. 2012; Olsson and Nilsson-Wikmar 2004) provide important information concerning various factors and mechanisms that influence the quality of life in pregnant women. Nevertheless, there are differing opinions as to how and to what extent does the quality of life change in pregnancy and perinatal period (Emmanuel and Sun 2014; Forger et al. 2005).

A change of health behaviours in perinatal period seems to be a crucial point that motivates women to maintain the changes in the postnatal period and throughout life (Phelan 2010). Therefore, it is encouraging to note that in present investigation, almost half of the respondents exhibited a high GIIHB. The observed high percentage of women with a high General Index of Intensity of Health Behaviours can be explained by a relatively high level of knowledge and awareness in the context of behaviours related to mother's and child's health. However, it is hard to determine whether the high percentage of women with high GIIHB is a result of prenatal education or high level of education presented by the respondents. Moreover, the present research does not clearly indicate whether the health behaviours of participants resulted from a change of habits after getting pregnant (as evidenced by other authors, e.g. Crozier et al. (2009), Higgins et al. (1995)) or were they a continuation of habits from before pregnancy. Literature indicates that physical health and quality of life related to health may be improved by practitioners who undertake preventive measures targeting these behaviors (Borzecki et al. 2005). Present research showed that depending on the obtained General Index of Intensity of Health Behaviours (high, average or low), there are different correlations between the respective categories of health behaviours among pregnant women and their Overall Quality of Life, General Health and the quality of life in four domains: Physical Health, Psychological Health, Social Relationships, and Environment.

We found that women with a high General Index of Intensity of Health Behaviours, who scored well in the following categories: Positive Thinking, Proper Nutritional Habits and Preventive Behaviors, also highly assessed their General Health. On the other hand, there was no such correlation for women with an average and low GIIHB. It was interesting that only in the category of Proper Nutritional Habits, and only among women with a high GIIHB, was there a strong correlation with all the aspects of quality of life assessed with the aid of WHOQoL-Bref questionnaire. Especially important from the perspective of health is earlier research conducted by Liu et al. (2009), in which the authors concluded that nutrition and health education can help women cease some of the unhealthy traditional postpartum practices and reduce the extent of postpartum health problems. It is worth to mention at this point another paper (Bahrami et al. 2013), which shows a long-term effect of prenatal education on the quality of life of women after childbirth. Bahrami et al. (2013) observed that even one year after childbirth, the quality of life in the Environment and Social Relations domains was assessed higher by women participating in antenatal education classes than by women who did not participate in such classes. Therefore, it should be noted that in our research, the quality of life in Environment domain is significantly correlated with health behaviours in women with a high and average GIIHB. Consequently, taking into consideration the premises of the present investigation, it can

be concluded that a higher level of intensity of health behaviours contributes to better functioning of women in the perinatal period, as far as the Environment domain is concerned.

Nevertheless, our research has several shortcomings. Due to a small number of respondents, it can be assumed that the participants did not form a representative group for the whole population of pregnant women participating in antenatal classes. Moreover, the analysis of correlations concentrated solely on the variables included in the applied questionnaires and did not take into consideration other socioeconomic or psychological factors, which might influence the quality of life. The gathered data show only the correlations between the analysed variables in the investigated group, and do not allow to draw conclusions as to cause-effect relations between the given categories. Therefore, the results should be interpreted cautiously.

Conclusion

The assessment of quality of life in pregnancy is a topic that calls for further investigation. Discrepancies in research results indicating the influence of socioeconomic factors and personality traits (Guszkowska et al. 2014; Hueston and Kasik-Miller 1998), as well as lack of standardised and widely accepted tools for the assessment of quality of life among pregnant women (Mogos et al. 2013; Morrell et al. 2013), make it hard to draw unambiguous conclusions.

Nevertheless, it is worth emphasising that the present research confirmed the existence of correlations between health behaviours and perceived quality of life among pregnant women participating in antenatal classes. The observed correlations show a need for further investigation and taking into account also other individual and socio-economic factors. A more detailed analysis of these correlations may prove instrumental for designing promotional and preventive measures for both women planning pregnancy and women in the perinatal period.

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