A Questionnaire-Based Study to Evaluate Health-Related Behaviors in 602 Women of Reproductive Age in Poland

Background: Women’s health and undertaking health behaviors during the reproductive period by women, especially during pregnancy, are an important indicator that is reflected both in their own health and in health of their children. This study aimed to use a questionnaire to evaluate the health-related behaviors in women of reproductive age in Poland.

Material/Methods: The studies were conducted among 602 women of reproductive age by diagnostic poll method with the use of questionnaire technique. The applied tool was an original on-line questionnaire. A link to the questionnaire was sent to women aged 18-49 years using the snowball sampling technique and was posted on thematic pro-health website forums.

Results: The majority of women participating in the study exhibited health behaviors on the average level (65.3%; M=7.6). Pro-health behaviors were exhibited mainly by women with higher education (M=7.7; SD=2.6), married women (M=8.0; SD=2.6), and women who were pregnant at the time (M=8.8; SD=2.6). However, single women participating in the study consumed alcohol more often (80.6%). The observed relationships were statistically significant (P<0.05).

Conclusions: This survey showed that younger women with no children were significantly less likely to be aware of positive health-associated behaviors and lifestyle when compared with older women with children. This small study supports the importance of health education in young women before they have children.

Keywords: Health Education • Reproductive Health • Women's Health

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Background

A holistic definition of health, approved by the World Health Organization (WHO), presents it as a widely-understood welfare, but concomitantly as a state of diversity, variability, and continuity [1]. In turn, health behaviors are important factors shaping and directly affecting health, apart from genetic liability, environmental conditions, and healthcare. These behaviors are defined as actions taken by the person in order to maintain, achieve, or regain good health or prevent diseases [2]. Behaviors conducive to building health potential are pro-health behaviors (eg, undertaking physical activity, rational nutrition), while behaviors harmful to health (eg, use of substances) are anti-health behaviors, otherwise negative. All these actions indirectly and directly affect health and well-being of the individual, as well as reflecting their attitude toward health [2].

It should be emphasized that good reproductive and sexual health is a condition of complete physical, mental, and social well-being in all the aspects of sexuality and functioning of the reproductive system, and each person has the right to make their own choices concerning their sexual and reproductive health [3]. Moreover, health competences can significantly determine health behaviors of women in the scope of reproductive health, and health awareness is also strictly associated with knowledge of reproductive health [4].

Women’s health in the reproductive period before conception is extremely important because it has effects on fertility, test results during pregnancy, health consequences for women themselves and for their children, and thus the health condition of the future generations. Women’s health is a component of pre-conception care and a very significant public health strategy [5, 6]. The importance and significance of the reproductive period in a woman’s life, the diversity of the population of women planning pregnancy, who are characterized by rather irregular involvement in health care before getting pregnant and limited awareness in this regard, are important for their health [5, 7].

In the literature on the subject, research on health behaviors takes into account aspects of physical activity [8, 9], eating habits [1, 10-12], follow-up visits [13, 14], vitamin supplementation [15, 16] or the use of stimulants [17-19], as well as the concept of pregnancy planning [5-7]. Researchers exploring the issues of healthy behavior and health awareness of people in the reproductive period of life do it using specially developed questionnaires and scales [20, 21], individual in-depth interviews [22], or using mixed-methods study [23].

This study aimed to use a questionnaire to evaluate the health-related behaviors in women of reproductive age in Poland.

Material and Methods

Ethics Statement

This study was submitted for assessment by the Bioethics Committee of the Medical University of Warsaw (No. AKBE/161/17). The anonymity of the survey was assured by not asking questions that could be used to identify the respondent. The data obtained characterized the person in a statistical manner (eg, education, marital status); therefore, the information necessary for the analysis, not the identification of the surveyed, was acquired.

Participants

The study was conducted in Poland from November 2017 to April 2018 among 602 women in the reproductive period aged 18-49 years who, regardless of place of residence, marital status, education, professional activity, maternity experience, or reproductive plans, wanted to consciously and voluntarily take part in the study and share information concerning their health behaviors. All the answers in the study questionnaire were anonymized.

Study Design

The study was conducted by diagnostic poll method with the use of questionnaire technique [24]. The applied tool was an original on-line questionnaire. A link to the questionnaire was sent to women aged 18-49 years using the snowball sampling technique and was posted on thematic pro-health website forums. In line with the assumption of the research, each respondent had the opportunity to learn about the aim and principles of the research and to agree or not to participate in the research.

Assessments

The original questionnaire on health behaviors of women during the reproductive period was developed particularly for the needs of this study. The questionnaire was created based on the subject literature and the available research tools. However, the specificity of the study required extension of the research tool and its adaptation to the subject of the study. As a result, an original questionnaire initially defined as the Scale of Health Behaviors of Women During the Reproductive Period was developed and was piloted in a group of 30 women. As a result of the pilot study, the content of 3 questions was modified. It consisted of 37 single-choice and multiple-choice questions, including nutrition, substance use, performing pro-health behaviors (eg, gynecological visits, breast self-examination), physical activity, fertility, and data on the characteristics of the studied women. To analyze the health behaviors of women during the reproductive period, 16 representative single-choice questions
were selected among those contained in the survey. A female respondent scored 1 point for indicating a health behavior. The minimum possible score was 0, while the maximum score was 16. The health behaviors were interpreted in the following ranges: 0-5 points indicated low level of health behaviors, 6-10 points indicated medium level of health behaviors, and 11-16 points indicated high level of health behaviors.

Statistical analysis

Statistical analysis was conducted with the use of STATISTICA version 12. Results for variables in qualitative scales are presented using percentage distributions. In the case of results expressed in quantitative scales, basic descriptive statistics were calculated: mean (M), standard deviation (SD), and median (Me). The compliance of distributions of quantitative variables with normal distribution was examined with the Kolmogorov-Smirnov test with Lilliefors correction. Because the distributions were different from the normal distribution and the sizes of the compared groups were various, we used non-parametric methods for the verification of statistical hypotheses: Spearman’s rank correlation coefficient, Mann-Whitney U test, and Kruskal-Wallis rank ANOVA test. To analyze the relationships between the variables on qualitative scales, the chi-square independent test was applied. The accepted significance level was $P<0.05$.

Results

Respondents’ Characteristics

Characteristics of female study participants in the reproductive period are presented in Table 1. The majority of the studied women were aged 26-30 years (25.2%), single (56.5%), declared to have higher education (68.8%), were city residents (89.9%), were professionally active (55.6%), and did not have children (58.6%). Moreover, the non-pregnant responders had BMI mainly within normal limits (70.6%). Most of respondents did not attempt to have a child during the study period (44.5%). The majority of women participating in the study exhibited health behaviors on the average level (65.3%; M=7.6).
Statistical analysis showed a significant positive correlation between age and Scale of Health Behaviors of Women (R=0.14; P=0.0006), as well as a statistically significant negative correlation between BMI and Scale of Health Behaviors of Women (R=-0.11; p=0.0007) (Table 2).

Pro-health behaviors were mainly expressed by married women (M=8.0; SD=2.6) with higher education (M=7.7; SD=2.2), and who were pregnant at that moment (M=8.8; SD=2.6). Moreover, the oldest respondents (M=28.8; SD=7) visited a gynecologist every 2-3 years, while the youngest women (M=23.0; SD=3.6) did not attend gynecological visits at all. Women with lower BMI (M=22.6; SD=3.9) were physically active. The observed

Table 2. Analysis of correlation between health behaviors, age, and BMI of the respondents.

| Scale of Health Behaviors of Women | R   | t(N-2) | p     |
|-----------------------------------|-----|--------|-------|
| Age                               | 0.14| 3.5    | 0.0006|
| BMI                               | -0.11| -2.7   | 0.0007|

Table 3. Analysis of relationships between the Scale of Health Behaviors of Women and the selected variables.

| Variable                      | Scale of Health Behaviors of Women | p-value |
|-------------------------------|------------------------------------|---------|
|                               | M   | Me  | SD  |       |
| Education                     |     |     |     |       |
| Secondary                     | 7.2 | 7.0 | 2.6 | 0.0198|
| Higher                        | 7.7 | 8.0 | 2.6 |       |
| Marital status                |     |     |     |       |
| Single                        | 7.2 | 7.0 | 2.6 | 0.0000|
| Married                       | 8.0 | 8.0 | 2.6 |       |
| Reproductive plans            |     |     |     |       |
| I attempt to have a child     | 8.1 | 8.0 | 2.3 |       |
| I am pregnant                 | 8.8 | 8.5 | 2.6 |       |
| I do not attempt to have a child or I delay conception | 7.2 | 7.0 | 2.7 | 0.0014|
| I have given birth to a child within the last 12 months | 8.0 | 8.0 | 2.5 |       |
| I do not have sexual intercourses | 7.6 | 7.0 | 2.4 |       |
| Gynaecological visits         |     |     |     |       |
| Once a year or more frequently | 28.6| 28.0| 5.6 |       |
| Once every 2-3 years          | 28.8| 28.0| 7.0 | 0.0000|
| Less frequently than once every 3 years | 25.9| 24.0| 6.3 |       |
| I do not go to the gynaecologist | 23.0| 23.0| 3.6 |       |
| Physical exercises            |     |     |     |       |
| Does physical exercises       | 22.6| 21.9| 3.9 | 0.0313|
| Does not do physical exercises| 24.1| 22.6| 5.2 |       |

Health Behaviors Analysis

Statistical analysis showed a significant positive correlation between age and Scale of Health Behaviors of Women (R=0.14; P=0.0006), as well as a statistically significant negative correlation between BMI and Scale of Health Behaviors of Women (R=-0.11; p=0.0007) (Table 2).
relationships were statistically significant \( (P < 0.05) \). Detailed data are presented in Table 3.

Reproductive Behavior Analysis

The married women more often used both natural family planning methods (56.5%) and contraceptive agents (48.5%) compared to the single respondents. However, single women (80.6%) participating in the study consumed alcohol more often. The observed relationships were statistically significant \( (P < 0.05) \) (Table 4).

Table 4 shows the analysis of relationships between single marital status and the use of natural family planning methods, contraceptive agents, and alcohol consumption.

| Variable                      | Marital status | p-value |
|-------------------------------|----------------|---------|
|                               | Single n (%)   | Married n (%) |     |
| Using natural family planning methods |                       |              |     |
| Yes                           | 80 (23.5)      | 114 (43.5) | 0.0000 |
| No                            | 260 (76.5)     | 148 (56.5) |         |
| Taking contraceptive agents   |                |           |         |
| Yes                           | 159 (46.8)     | 127 (48.5) | 0.0000 |
| No                            | 53 (15.5)      | 134 (51.2) |         |
| I do not have sexual intercourse | 128 (37.7)    | 1 (0.3)    |         |
| Alcohol consumption           |                |           |         |
| Yes                           | 274 (80.6)     | 139 (53.1) | 0.0000 |
| No                            | 66 (19.4)      | 123 (47.0) |         |

Table 5. The analysis of relationships between the reproductive plans and the use of folic acid and contraception.

| Reproductive plans | Using folic acid | Using contraception |
|--------------------|------------------|----------------------|
|                    | Yes n (%) | No n (%) | Yes n (%) | No n (%) |
| I attempt to have a child | 19 (70.4) | 8 (29.6) | 1 (3.7) | 26 (96.3) |
| I am pregnant      | 32 (84.2) | 6 (15.8) | 8 (21) | 30 (74.6) |
| I do not attempt to have a child or I delay conception | 29 (10.8) | 239 (89.2) | 200 (74.6) | 64 (23.9) |
| I have given birth to a child within the last 12 months | 28 (24.8) | 85 (75.2) | 61 (54.00) | 49 (43.4) |
| I do not have sexual intercourse | 11 (7) | 145 (93) | 16 (10.3) | 122 (78.2) |
| p-value            | 0.0000     | 0.0000    |         |         |

Discussion

The women participating in this study were characterized by different health behaviors, which were influenced by various sociodemographic determinants, such as age, education, marital status, BMI index, and procreation plans. It should be stressed that health behaviors of pregnant women are developed on a higher level compared to non-pregnant women, which is confirmed by the results of studies conducted by Boguszewski et al (2018) [10]. This is also indicated by the results of our own studies. Besides, the majority of women participating in the study exhibited the average level of health behaviors. Moreover, our own study results have shown that with age, the studied women have shown more pro-health behaviors, as well as the women with higher education and the married women. Therefore, the content concerning health education should be directed to the remaining respondents who showed a low and medium level of health behaviors [1].
Physical activity is one of the fundamental needs of each human being and is an important condition of health improvement and maintenance in all stages of life. Therefore, it was chosen as another aspect analyzed by the present study. Lack of physical activity bears serious consequences in the form of general deterioration of health worldwide and the rise of non-infectious diseases [8,9]. Cassidy et al (2017) observed that overweight and obese adults more often report having a low level of physical activity compared to adults with normal body weight [9]. Results of our own studies indicated that the higher the BMI, the less positive health behaviors were exhibited by women, including the fact that they were not physically active; they did not perform any exercise. Moreover, Wojtyła et al (2011) stated that physical activity of young women of reproductive age is insufficient, which in turn does not guarantee good health in the future and increases the risk of many chronic diseases in adulthood. Physical activity is also significantly reduced during pregnancy and the post-partum period [8]. During pregnancy, women make worse nutritional choices, participate in physical activity less often, and get less sleep, so in this period the risk of adverse health effects is increased [11]. Thus, the above-mentioned subgroups should be encouraged to be more mobile by emphasizing its positive health aspects. Moreover, emphasis should be placed on community recreation programs and supporting them in promoting a physically active lifestyle [25].

It should be highlighted that gynecological examination is significant for every woman’s health [13]. Women often consider this examination as an embarrassing, painful, and even dangerous procedure [13,26]. Results of our own studies demonstrated that the oldest respondents visited a gynecologist once every 2-3 years, while the youngest women did not attend gynecological visits at all. Studies by Warzeca et al (2019) showed that level of education is a determinant of attending a gynecological examination; women with higher education more often visited a gynecologist on a regular basis [14].

Therefore, campaigns encouraging young women to use preventive health examinations in gynecology should be prepared. Regular and correct implementation of screening programs is the best way to prevent clinical forms of diseases [27].

Women’s ability to control their fertility by the appropriate use of contraceptive agents is an inseparable element of their lives. Using contraception or natural family planning methods enables them to avoid unplanned and unwanted pregnancies and prolong the time interval between the subsequent pregnancies depending on the life situation, which entails an individual’s right to decide on their reproductive and sexual health [3,28].

Studies by Wang et al (2017) on the marital status of women in the context of using contraception conducted among the African and American women showed that married women used contraception most often. In the analyzed African countries, contraception was generally more popular among married women than among currently married women, and unmarried women used contraceptive methods more often than the married women [29]. In the United States, vasectomy is almost exclusively used by married men. Female sterilization is not restricted to married women only; however, it is less popular among unmarried women. Studies by Eeckhaut (2015) demonstrated that, in contrast to vasectomy, the use of sterilization in women depending on their marital status resulted from differences in the number of childbirths [30]. Studies by Yadav (2015) showed that women in Nepal mainly used natural family planning methods, whereas only a small percentage of them used contraceptive tablets and condoms. Moreover, the married women had low level of knowledge on contraception and low levels of contraceptive use [31]. On the other hand, the studies by Upadhyay et al (2016) revealed that women in casual relationships used contraceptive methods less often than women remaining in long-term relationships. Women in new relationships (0-3 months) used effective contraceptive methods less often than women remaining in relationships that lasted for more than 1 year [32]. Research by Zgliczynska et al (2019) on use of contraception by Polish women of reproductive age showed that among the factors determining the use of hormonal or non-hormonal contraception were, inter alia, type of relationship, level of education, parenthood, number of sexual partners, and frequency of sexual contacts [21].

Our own study results have shown that married women used natural family planning methods more often than single respondents, while contraceptive agents were used at a similar level in both groups. Educational and counseling messages should be constantly adapted, and knowledge on natural family planning methods and contraception should be widespread among women [33].

The importance of contraception after pregnancy should be emphasized here [34,35]. The Lactational Amenorrhea Method (LAM) is a recognized contraceptive method that ensures a 98% protection against pregnancy on condition that, among others, menstruation has not appeared since delivery and that the child is entirely or almost entirely breastfed and is younger than 6 months [35]. If a woman is not breastfeeding, contraceptive use should be considered to avoid pregnancy, because in such a situation fertility returns within 1 month after the end of pregnancy. Moreover, due to an increased risk of venous thromboembolism related to the use of estrogen-containing contraceptive agents, the start of using these methods should be delayed until 6 weeks after delivery. On a global scale, contraception after delivery prevents approximately 30% of deaths of mothers and 10% of deaths of infants if the pregnancies are spaced at least 2 years apart. Therefore, the WHO recommends waiting...
at least 2 years after delivery before the next pregnancy [34]. In our own study we observed that the majority of pregnant women did not use any contraceptive agents, while more than half of the women who had given birth to a child within the last 12 months used contraceptive agents.

Alcohol consumption is a negative health behavior that is common all over the world, leading to the development of addiction. Alcohol overuse is associated with high rates of mortality and morbidity, as well as with decreased well-being of society [17]. The frequency of alcohol consumption among married people is lower than among single people, which is confirmed by studies by Kendler et al (2016) and Recek et al (2016) [18,19], as well as the results of our own studies. In this context it is important to realize that psychological and social aspects of marriage, particularly health-relevant interactions between spouses, strongly protect against development of disorders associated with alcohol consumption [18].

Another essential health behavior of women is vitamin supplementation, particularly folic acid supplementation in the prevention of neural tube defects and other congenital defects sensitive to folic acid deficiency. In addition to enriching basic dietary products with folic acid, reproductive-age women should consume 0.4-1.0 mg of folic acid supplement per day before conception [15]. Studies by Shere et al (2015) showed that due to a decrease in folic acid blood concentration when taking oral contraceptive agents, folate supplementation should be continued in reproductive-age women who use this method of contraception [36]. On the other hand, Dessie et al (2017) demonstrated that nearly half of studied women took folic acid supplement in various periods of pregnancy, but they emphasized that only 1.92% of women took the supplement in the period protecting against neural tube defects [37]. In Turkey there is a relatively high incidence of neural tube defects, and Köken et al (2013) found that nearly half of the studied women were aware that folic acid use prevents these defects. Moreover, the level of knowledge and folic acid use increased with socio-economic status and level of education, and the respondents who were knowledgeable about this indicated health care professionals as a source of information. The investigators also demonstrated that more than four-fifths of the studied women declared that pregnancy was planned, whereas only 14.2% of them used folic acid before conception. In turn, the use of folic acid during the first trimester of pregnancy was declared by almost half of the pregnant women [16]. Results of our own studies have shown that folic acid was most frequently used by pregnant women and women planning pregnancy. Stern et al (2013) demonstrated that the studied women mentioned folic acid supplementation among the things on the “to-do list” when planning to get pregnant. In this study, midwives recommended women to take folic acid tablets when they discontinued hormonal contraceptive tablets. Advice to take a new type of tablet instead of the contraceptive tablet makes it easier for women to remember it. Moreover, the study broadened the knowledge of women concerning both the reproductive period and folic acid supplementation before getting pregnant. Using information acquired during conversation or medical interview with a woman seems to be a potential tool to promote reproductive health [38]. The above study results indicate that midwives, who take care of women at every stage of life, especially during the reproductive period, play an important role in disease prevention and health education [39]. Midwives are specialists in reproductive health; therefore, they are able to provide obstetrical care as well pre-conception care, encouraging women to engage in pro-health behaviors, to learn how to detect fertility, and to learn both natural family planning methods and contraceptive methods, as well as providing guidance on a healthy lifestyle [40].

In summary, women of reproductive age participating in the present study are characterized by varied health behaviors. It should be emphasized that pro-health behaviors favor maintaining and improving the health and reproductive potential, while women’s health during the reproductive period, especially during pregnancy, is a very important indicator that is reflected both in their own health and in the health of their children [12,41,42]. We found that younger women, single women, and women who do not plan to conceive exhibit more negative behaviors and do not attach adequate importance to a healthy lifestyle. This indicates the need to raise the level of health awareness and education in this group of women, which will enable them to make informed and responsible decisions regarding their health. To improve knowledge and health awareness of women in the field of reproductive health protection and promoting a pro-healthy lifestyle, a multifaceted approach is necessary, requiring cooperation and involvement of many components, including in particular the Ministry of Health and local governments, educational institutions, non-governmental organizations and associations, healthcare representatives, and media to develop accessible, evidence-based information on reproductive health, which is a challenge for the public health sector and is emphasized in the literature [4,5,7]. In addition, the results of our own studies indicate the need for further research in the area of health behaviors of reproductive-age women, knowledge and its sources in this field, as well as health literacy and women’s behaviors. This will help to clarify the expectations and needs of women concerning health education in this period.

However, the conducted study has certain limitations as well. It was carried out based on the original research tool; however, when designing it, indicators used in the standardized tool for investigating these fields were applied. The research was carried out using the diagnostic survey method, which reveals...
the opinions and declared health behavior of the respondents, which may be a limitation in the interpretation and generalization of the results. The analysis was superficial. 

Undoubtedly, the study group could have been larger and more diverse. However, it seems that these limitations do not decrease the diagnostic value of the conducted study.

Conclusions

Women of reproductive age participating in the present study were characterized by varied health behaviors. This survey from Poland showed that younger women with no children were significantly less likely to be aware of pro-health behaviors and lifestyle when compared with older women with children. This small study supports the importance of health education in young women before they have children.

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