Original article

# Satisfaction with life and health-promoting behaviours in the context of prevention and early detection of breast cancer in physically active women

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**ABSTRACT**

**Objective:** Assessment of the impact of life satisfaction in physically active women on their health-promoting behaviours in terms of prevention and early detection of breast cancer.

**Materials and methods:** The study, involving 100 women, was carried out in a fitness centre in Bydgoszcz in 2015. The research instruments used included the authors' self-designed questionnaire and the SWLS life satisfaction score.

**Results:** Women aged 25–34 constituted 57% of the study participants, with 82% of them domiciled in the city, and 74% of them holding secondary or higher education qualifications. 67% of them assessed their knowledge about breast cancer and breast cancer prevention programme as good, 65% of them believed it was impossible to protect oneself from cancer, 68% of them occasionally consumed alcohol. 89% of the respondents engaged in breast self-examination, and 68.4% of the subjects aged 25–34 considered excessive weight/obesity as a risk factor. 61.5% of women aged 45–60 were smokers. Respondents living in the city would dedicate one hour more for physical activity than those from the countryside. 93.2% of women with secondary/tertiary education carried out breast self-examination. Surveyed women received high scores on the scale of life satisfaction, averaging 25.69 points, they were less likely to smoke cigarettes, and more likely to engage in breast self-examination (95.5%).

**Conclusions:** Physically active women assess their knowledge on health-promoting behaviours well, lead a healthy lifestyle, and avoid breast cancer risk factors. Physically active women accomplish a high level of life satisfaction, which is especially true for married women with a higher education degree. On the other hand, life satisfaction does not correlate with age, place of residence or marital status. Women presenting a high level of life satisfaction are more involved in health-promoting behaviours, carry out regular breast self-examination, and undergo preventative medical check-ups.

**Key words:** breast cancer, life satisfaction, physical activity

## INTRODUCTION

In developed and developing countries, breast cancer incidence is continuously on the rise. It mainly affects post-menopausal women, and is related to elements of their lifestyle. Despite the advances in the diagnostics and treatment of breast cancer, approximately 13 women die because of it every day in Poland. The reasons behind such high mortality include delayed medical check-ups, and late treatment initiation [1, 2]. Breast cancer incidence in Poland in 2010 was reported as 35% lower than the EU average [3]. In 2011, 16,500 cases of breast cancer were diagnosed [1], which means that it is presently the most common malignant tumour affecting women in Poland.

Knowledge on the factors that may lead to increased breast cancer risk allows one to eliminate or modify unfavourable behaviours, and thus enhance health-related awareness. Women, who are satisfied with their lives, are probably the ones, who take better care of their health, than those whose life satisfaction is low. It has been demonstrated for all age groups that the level of life satisfaction is influenced by regular physical activity [3, 4]. Moderate and regular activity is preferred, as it has been proven that people who do intensive sports assess their quality of life at the same level as those who engage in any physical activity at all. Satisfaction with one's somatic health is important for the satisfaction with life as a whole [20]. Studies carried out in the field will help us determine the errors within the currently offered prophylaxis, and the factors which contribute to its low effectiveness. The additional knowledge thus gained may be put to use by healthcare professionals in order to implement the missing elements of education in a successful breast cancer prevention programme.

## OBJECTIVE

The aim of this paper was to assess the impact of life satisfaction in physically active women on health-promoting behaviours in the context of breast cancer prevention and early detection.

## MATERIALS AND METHODS

The survey involved 100 women aged 25–60 (median age 32.97), who frequented a fitness centre in the city of Bydgoszcz. It was carried out in between May and September 2015.

The first questionnaire used was the authors' self-designed questionnaire, containing 23 statements, and divided into 3 parts. The first one addressed the sociodemographic issues (4 questions), the second one was dedicated to the subjective assessment of health-promoting behaviours (5 questions), and the third one involved health-promoting behaviours in breast cancer prevention (11 questions). For women aged 50–60, the questionnaire included 3 questions on the participation in screening mammography tests.

The study also made use of the Satisfaction with Life Scale (SWLS), comprising 5 statements. Its measurement result is a general index of the subject's satisfaction with life. The female respondents pointed to the degree to which each of the 5 statements reflected their life at the time. They provided answers in accordance with the following response scale:

1 – I strongly disagree
2 – I disagree
3 – I slightly disagree
4 – I neither agree nor disagree
5 – I slightly agree
6 – I agree
7 – I strongly agree.

Scores on each item were summed up (ranging from 5 to 35 points) to reflect the level of life satisfaction. Afterwards, the raw scores were converted into standardized units of the sten scale. It is a standardized 10-unit scale of a psychological test, constructed in such a way that the population mean is 5.5, and the standard deviation is 2 [5]. Sten ranging from 1 to 4 reflects low scores, sten 5 and 6 reflects medium scores, and sten 7–10 signifies high scoring.

Descriptive analysis made use of tables presenting the number and percentage of the individual answers to the questionnaire questions. A graphic interpretation of the data was provided in the form of a box-and-whiskers plot. Arithmetic mean and standard deviation was also applied. Interdependence between two variables was calculated with the use of Spearman's correlation coefficient. The nonparametric Mann–Whitney U test was also used to assess the differences between the medians in two groups. Additionally, the survey made use of the nonparametric Kruskal–Wallis test to compare many independent groups.

P-value ≤ 0.05 was adopted to indicate statistical significance, as was the null hypothesis ($H_0$), i.e. that there was no difference between the studied groups. Moreover, the study looked into the correlation between such variables as the subjective assessment of health-promoting behaviours, health-promoting behaviours in breast cancer prevention and life satisfaction, and variables such as the subject's age, place of residence, education and marital status.

All calculations and figures were made with the Statistica 10.0 software and the Microsoft Excel spreadsheet standard functions.

The survey was fully anonymous. The questionnaires were distributed and collected by persons from outside of the studied population, who were not familiar with the personal data of the respondents. All subjects were informed about how to fill in the study questionnaires.

## RESULTS

**Group characteristics**
57% of the respondents were aged 25–34, 82% of them lived in the city, 74% held secondary/higher education level, 49% of the subjects were married, and 18% of them were divorced or widowed (tab. 1).

**TABLE 1.**
Group characteristics.

| Variable | | N = % |
|---|---|---|
| Age | 25–34 | 57 |
| | 35–44 | 30 |
| | 45–60 | 13 |
| Place of residence | city | 82 |
| | countryside | 18 |
| Education | primary/vocational | 26 |
| | secondary/tertiary | 74 |
| Marital status | single | 33 |
| | married | 49 |
| | divorced/widowed | 18 |

**Subjective assessment of health-promoting behaviours**
Most respondents (59%) assessed their knowledge about breast cancer as good, with only 3% admitting to it being poor. 84% of the subjects declared that they were familiar with breast cancer risk factors. Over half of the respondents (65%) expressed the opinion that one could not be protected from cancer. The majority of the women (67%) assessed their knowledge about early breast cancer detection programme as good, with the minority (5%) defining it as very good. Over half of the female respondents (57%) was of the opinion that excessive weight/obesity was a risk factor conducive to post-menopausal development of breast cancer (tab. 2).

**TABLE 2.**
Questions related to the subjective assessment of health-promoting behaviours.

| Questions | Assessment | N = % |
|---|---|---|
| Self-assessment of the level knowledge about breast cancer | very good | 11 |
| | good | 59 |
| | sufficient | 27 |
| | poor | 3 |
| Knowledge of breast cancer risk factors | yes | 84 |
| | no | 16 |
| Possibility to be protected from cancer | yes | 35 |
| | no | 65 |
| Self-assessment of the knowledge about the early breast cancer detection programme | very good | 5 |
| | good | 67 |
| | sufficient | 24 |
| | poor | 4 |
| Excessive weight/obesity as a risk factor of post-menopausal breast cancer | yes | 57 |
| | no | 43 |

**Health-promoting behaviours in breast cancer prevention**
68% of the respondents admitted to occasional alcohol consumption, and 64% were non-smokers. Over half (65%) stated that they did not avoid animal fats. 73% of the women claimed to be monitoring their body mass. Out of those, the majority of 35 (47.9%) declared to be doing so once a week, while 7 respondents (9.6%) admitted to doing that every day, and the minority of 4 (5.5%) once a year only. All of the women interviewed were physically active. Most of them (35%) engaged in physical activity 3 times a week. The average time dedicated to it amounted to 3 h and 30 min a week.

89% of the women stated that they performed breast self-examination. Out of those, the majority of 45 (50.6%) would perform the examination once a month, and the minority of 14 (15.7%) less frequently than once in 3 months. 78% of the respondents claimed to be familiar with the right technique of breast self-examination. Most of them. i.e. 45 (50.6%) started carrying out the examination when aged 20, with 7 of them (7.9%) beginning at the age of 18, and 4 of them (4.5%) at the age of 40.

Nearly all of the subjects aged 50–60, i.e. 8 respondents (88.9%), had made use of invitations to screening mammography tests, with 7 of them (77.8%) participating regularly in breast cancer screening tests. Most of them (71.4%) would participate in

a screening test once in 2 years (tab. 3). 46% of the respondents would see a gynaecologist once a year, 51% would do it less frequently, and 3% of them had not yet been examined by a gynaecology specialist. Over half of the respondents (54%) stated that during the gynaecological appointments, they also had their breasts examined.

**TABLE 3.**
Questions on health-promoting behaviours in breast cancer prevention.

| Question | Response | N = % |
|---|---|---|
| Alcohol consumption | yes | 5 |
| | occasionally | 68 |
| | no | 27 |
| Tobacco smoking | yes | 36 |
| | no | 64 |
| Avoiding animal fats | yes | 35 |
| | no | 65 |
| Monitoring body mass | yes | 73 |
| | no | 27 |
| Frequency of body mass control | every day | 7/9.6 |
| | once a week | 35/47.9 |
| | once a month | 27/37.0 |
| | once a year | 4/5.5 |
| Physical activity | yes | 100 |
| | no | 0 |
| Frequency of physical activity per week | 1 | 14 |
| | 2 | 17 |
| | 3 | 35 |
| | 4 | 10 |
| | 5 | 18 |
| | 6 | 4 |
| | 7 | 2 |
| Breast self-examination | yes | 89 |
| | no | 11 |
| Frequency of breast self--examination | once a month | 45/50.6 |
| | once in 3 months | 30/33.7 |
| | less frequently | 14/15.7 |
| Knowledge of the right breast self-examination technique | yes | 78 |
| | no | 22 |
| Age at the initiation of breast self-examination | 18 | 7/7.9 |
| | 20 | 45/50.6 |
| | 30 | 33/37.1 |
| | 40 | 4/4.5 |
| Making use of free mammography invitations (n = 9) | yes | 8/88.9 |
| | no | 1/11.1 |
| Participation in screening tests (n = 9) | yes | 7/77.8 |
| | no | 2/22.2 |

## Life satisfaction

In terms of life satisfaction the respondents obtained the average result of 25.69 points and the sten average of 7.44. 66% of them were found to be highly satisfied with their life (tab. 4). The statement "I am satisfied with my life" received the highest scoring, with the average of 5.46 points, with the lowest score, averaging at 4.85, associated with the statement "In most ways my life is close to my ideal" (tab. 5).

**TABLE 4.**
Level of life satisfaction.

| Level of life satisfaction | N = % | Points | | Sten | |
|---|---|---|---|---|---|
| | | average | SD | average | SD |
| Low | 12 | | | | |
| Medium | 22 | 25.69 | 5.46 | 7.44 | 2.13 |
| High | 66 | | | | |

**TABLE 5.**
Average values expressed in points based on life satisfaction statements.

| Statement | Average | SD |
|---|---|---|
| In most ways my life is close to my ideal | 4.85 | 1.35 |
| The conditions of my life are excellent | 5.03 | 1.29 |
| I am satisfied with my life | 5.46 | 1.15 |
| So far I have gotten the important things I want in life | 5.26 | 1.34 |
| If I could live my life over, I would change almost nothing | 5.09 | 1.65 |

The highest life satisfaction averages expressed in points (26.51) were accomplished by women aged 25–34, those living in the countryside (27.46), holding secondary or higher education qualifications (25.77), and the married ones (26.33) (tab. 6). Most of them obtained sten scores of 10–24% and 7–17.0%, with the lowest number scoring sten 5–6% and sten 3–5%.

**TABLE 6.**
Average values expressed in points based on life satisfaction statements and selected variables.

| Variable | | Average | SD | p |
|---|---|---|---|---|
| Age | 25–34 | 26.51 | 4.61 | |
| | 35–44 | 26.23 | 5.56 | 0.069 |
| | 45–60 | 20.85 | 6.52 | |
| Place of residence | city | 25.39 | 5.54 | 0.189 |
| | countryside | 27.06 | 4.99 | |
| Education | primary/vocational | 25.46 | 5.32 | 0.838 |
| | secondary/tertiary | 25.77 | 5.54 | |
| Marital status | single | 25.7 | 5.11 | |
| | married | 26.33 | 5.15 | 0.713 |
| | divorced/widowed | 23.94 | 6.71 | |

When it comes to the level of life satisfaction as related to other variables, the following groups were found to have the highest rates of high life satisfaction scores: women aged 25–34 – 40 (70.2%), women living in the countryside – 15 (83.9%), women holding secondary/tertiary education qualifications – 49 (66.2%), and married respondents – 33 (67.3%) (tab. 7).

**TABLE 7.**
Level of life satisfaction and selected variables.

| Level of Satisfaction | | Low | | Medium | | High | |
|---|---|---|---|---|---|---|---|
| Variable | | number | % | number | % | number | % |
| Age | 25–34 | 4 | 7.0 | 13 | 22.8 | 40 | 70.2 |
| | 35–44 | 3 | 10.0 | 6 | 20.0 | 21 | 70.0 |
| | 45–60 | 5 | 38.5 | 3 | 23.1 | 5 | 38.5 |
| Place of residence | city | 9 | 11 | 22 | 26.8 | 51 | 62.2 |
| | countryside | 3 | 16.7 | 0 | 0 | 15 | 83.3 |
| Education | primary/ vocational | 4 | 15.4 | 5 | 19.2 | 17 | 65.4 |
| | secondary/ tertiary | 8 | 10.8 | 17 | 23 | 49 | 66.2 |
| Marital status | single | 5 | 15.2 | 6 | 18.2 | 22 | 66.7 |
| | married | 3 | 6.1 | 13 | 26.5 | 33 | 67.3 |
| | divorced/ widowed | 4 | 22.2 | 3 | 16.7 | 11 | 61.1 |

## Correlation between the subjective assessment of health-promoting behaviours, health-promoting behaviours in breast cancer prevention, and life satisfaction, and independent variables, including age, place of residence, education and marital status

### *Subjective assessment of health-promoting behaviours*

Only the question about excessive weight/obesity as a risk factor of postmenopausal breast cancer was found to be correlated with the respondents' age (p = 0.013) (tab. 8). The affirmative response was provided by the majority of women aged 25–34 (68.4%), with the lowest number of affirmative responses (40%) coming from the 35–44 age bracket.

Subjective assessment of health-promoting behaviours also correlated with the respondents' place of residence with respect to the following question: "How would you define your knowledge about breast cancer?" (p = 0.046) (tab. 8). The level of knowledge was subjectively assessed as higher by the city residents, with 10 of them (12.2%) declaring their knowledge to be very good, and 51 (62.2%) of them claiming it was good.

**TABLE 8.**
Health-promoting behaviours and selected variables*.

| Question | Age (p) | Place of residence (p) | Education (p) | Marital status (p) |
|---|---|---|---|---|
| How would you define your knowledge about breast cancer? | 0.334 | **0.046** | 0.187 | 0.312 |
| Are you familiar with breast cancer risk factors? | 0.624 | 0.938 | 0.257 | 0.727 |
| Do you believe one can be protected from cancer? | 0.952 | 0.214 | 0.063 | 0.567 |
| How would you define your knowledge about the early breast cancer detection programme? | 0.661 | 0.335 | 0.205 | 0.927 |
| Do you believe that excessive weight/ obesity is a risk factor of postmenopausal breast cancer? | **0.013** | 0.089 | 0.080 | 0.674 |

* Due to the large amount of data, only the p-values are presented in the table.

### *Subjective assessment of health-promoting behaviours in breast cancer*

Responses to the following questions were found to be correlated with age: "Do you smoke cigarettes?" (p = 0.029), and "How old

were you when you began breast self-examination?" (p < 0.001). Assessment of health-promoting behaviours in terms of breast cancer prevention was dependent on the respondents' place of residence with respect to the question about the time dedicated to physical activity (p = 0.018). City residents were found to dedicate 3.49 h a week on average to physical activity, while respondents living in the countryside would allocate an average of 2.5 h a week to sports.

As for the level of education, it correlated with the response to a single question only: "Do you engage in breast self-examination?" (p = 0.022). Similarly, only the response to the question about the age at breast self-examination initiation was found to be correlated with the respondents' marital status (p = 0.03) (tab. 9).

**TABLE 9.**
Health-promoting behaviours in breast cancer and selected variables*.

| Question | Age (p) | Place of residence (p) | Education (p) | Marital status (p) |
|---|---|---|---|---|
| Do you consume alcohol? | 0.997 | 0.312 | 0.569 | 0.396 |
| Do you smoke cigarettes? | **0.029** | 0.783 | 0.441 | 0.366 |
| Do you avoid animal fats in your diet? | 0.059 | 0.074 | 0.141 | 0.447 |
| Do you monitor your body mass? | 0.143 | 0.068 | 0.619 | 0.874 |
| Frequency of physical activity | 0.724 | 0.719 | 0.22 | 0.364 |
| Time dedicated to physical activity | 0.527 | **0.018** | 0.161 | 0.34 |
| Do you engage in breast self-examination? | 0.271 | 0.096 | **0.022** | 0.073 |
| Frequency of breast self-examination | 0.451 | 0.171 | 0.144 | 0.761 |
| Are you familiar with the right technique of breast self-examination? | 0.113 | 0.204 | 0.879 | 0.92 |
| How old were you when you began breast self--examination? | **0.001** | 0.154 | 0.428 | **0.03** |
| How many times a year do you see a gynaecologist? | 0.892 | 0.223 | 0.949 | 0.076 |
| Does your gynaecologist examine your breasts during appointments? | 0.938 | 0.712 | 0.179 | 0.495 |

* Due to the large amount of data, only the p-values are presented in the table.

Most of the women (65.4%) aged 25–34 began breast self--examination at the age of 20, followed by the respondents from the 35–44 and 45–60 age brackets, out of whom 55.6% and 60%, respectively, began the self-examination at the age of 30. Most of the respondents (69; 93.2%) who performed breast self-examination held secondary/tertiary education qualifications, with 20 (76.9%) from the primary/vocational education group. The majority of single women (18; 64.3%) initiated breast self-examination at the age of 20. Among the married respondents, the greatest number, i.e. 23 (48.9%) started BSE when aged 30, as did 6 of the divorced/widowed respondents (42.9%).

### Life satisfaction
The highest life satisfaction score expressed in points (26.51) was attributed to women aged 25–34, while the lowest (20.85) to those aged 45–60. A higher average of all life satisfaction statements was reported for the respondents living in the countryside (27.06), holding secondary/tertiary education qualifications (25.77), and the married ones (26.33) (tab. 10).

**TABLE 10.**
Life satisfaction averages and selected variables.

| Variable | | Average | SD | p |
|---|---|---|---|---|
| Age | 25–34 | 26.51 | 4.61 | 0.069 |
| | 35–44 | 26.23 | 5.56 | |
| | 45–60 | 20.85 | 6.52 | |
| Place of residence | city | 25.39 | 5.54 | 0.189 |
| | countryside | 27.06 | 4.99 | |
| Education | primary/vocational | 25,46 | 5,32 | 0.838 |
| | secondary/tertiary | 25.77 | 5.54 | |
| Marital status | single | 25.7 | 5.11 | 0.713 |
| | married | 26.33 | 5.15 | |
| | divorced/widowed | 23.94 | 6.71 | |

The greatest number of respondents, i.e. 40 (70.2%) in the 25–34 age group had a high level of life satisfaction, with 21 (70%) women from the 35–44 age bracket representing the same level. In the group of city dwellers, as many as 51 (62.2%) respondents were found to have a high life satisfaction level, with only 9 of them (11%) presenting with a low life satisfaction. Amongst the respondents living in the countryside, 15 women (83.3%) declared a high level of life satisfaction, with only 3 (16.7%) reported as having a low satisfaction with life.

In the primary/vocational education group, 17 (65.7%) women were highly satisfied with their lives, and only 4 (15.4%) had

a low life satisfaction. On the other hand, in the secondary/tertiary education group, the level of life satisfaction was high for 49 (66.2%) women, and low for 8 of them (10.8%).

The highest average expressed in points was accomplished by married women (26.33), and the lowest by divorced/widowed respondents (23.94). In the group of single women, the majority of 22 (66.7%) were found to have a high level of life satisfaction, and the minority of 5 (15.2%) represented the low level. Amongst married women, 33 (67.3%) respondents were highly satisfied with their lives, and only 3 (6.1%) declared a low satisfaction with life. Out of the divorced/widowed subjects, 11 (61.1%) had a high life satisfaction, and 4 (22.2%) were reported to have a low life satisfaction level (tab. 11).

**TABLE 11.**
Level of life satisfaction and selected variables.

| Level of satisfaction | | Low | | Medium | | High | |
|---|---|---|---|---|---|---|---|
| Variable | | number | % | number | % | number | % |
| Age | 25–34 | 4 | 7.0 | 13 | 22.8 | 40 | 70.2 |
| | 35–44 | 3 | 10.0 | 6 | 20.0 | 21 | 70.0 |
| | 45–60 | 5 | 38.5 | 3 | 23.1 | 5 | 38.5 |
| Place of residence | city | 9 | 11 | 22 | 26.8 | 51 | 62.2 |
| | country-side | 3 | 16.7 | 0 | 0 | 15 | 83.3 |
| Education | primary/vocational | 4 | 15.4 | 5 | 19.2 | 17 | 65.4 |
| | secondary/tertiary | 8 | 10.8 | 17 | 23 | 49 | 66.2 |
| Marital status | single | 5 | 15.2 | 6 | 18.2 | 22 | 66.7 |
| | married | 3 | 6.1 | 13 | 26.5 | 33 | 67.3 |
| | divorced/widowed | 4 | 22.2 | 3 | 16.7 | 11 | 61.1 |

***Correlation between health-promoting behaviours and life satisfaction***

Due to the large amount data, only the statistically significant health-promoting behaviours are presented below.

Health-promoting behaviours were dependent on the level of life satisfaction with respect to two questions: "Do you smoke cigarettes?" (p = 0.05), and "Do you engage in breast self-examination?" (p = 0.002). Women who were found to have a low level of life satisfaction were more likely to smoke – 8 (66.7%). A high-

er average expressed in points (26.53) was accomplished by the non-smoking respondents.

A great majority of the respondents (63; 95.5%) whose life satisfaction was high would perform breast self-examination. Out of 12 women with low life satisfaction level, 8 (66.7%) were reported to carry out breast self-examination (tab. 12). A higher life satisfaction average (26.3) was accomplished by the respondents who engaged in breast self-examination.

**TABLE 12.**
Cigarette smoking and breast self-examination as correlated with life satisfaction.

| Health-promoting behaviour | Cigarette smoking | | | | Breast self-examination | | | |
|---|---|---|---|---|---|---|---|---|
| | yes | | no | | yes | | no | |
| Level of satisfaction | number | % | number | % | number | % | number | % |
| low | 8 | 66.7 | 4 | 33.3 | 8 | 66.7 | 4 | 33.3 |
| medium | 8 | 36.4 | 14 | 63.6 | 18 | 81.8 | 4 | 18.2 |
| high | 20 | 30.3 | 46 | 69.7 | 63 | 95.5 | 3 | 4.5 |
| average | 24.19 | | 26.53 | | 26.3 | | 20.73 | |
| SD | 6.36 | | 4.73 | | 5.21 | | 5.06 | |
| p | 0.05 | | | | 0.002 | | | |

**DISCUSSION**

Every woman may have some influence on the level of breast cancer risk, provided she has the required knowledge about breast self-examination, screening tests, and a healthy lifestyle [6].

The physically active women who filled in our questionnaire assessed their knowledge about breast cancer as good, which was especially true for the city dwellers. The higher result of self-assessment in that group might be due to the fact that prevention programmes are more frequently implemented in urban areas than in the countryside. Other studies, however, which did not focus on the self-assessment of risk factor knowledge, demonstrated that the level of knowledge about breast cancer did not depend on the dwelling place [7]. In a study carried out in the region of Podkarpacie, a similar group of women, but physically inactive, mostly defined their level of knowledge as average [7]. The obtained results indicate that physically active women take better care of their health, and have a better knowledge about breast cancer. A great majority of them claimed to be familiar with breast cancer risk factors. The younger respondents were more likely to believe that excessive weight/obesity was a risk factor too.

Thanks to their knowledge and awareness, women may modify unfavourable behaviours, thus contributing to a reduction in breast cancer incidence. The reasons behind negative behaviours include the fallacious conviction that women without a positive family history are less likely to suffer from breast cancer, and the commonly held myth that "it is better not to know" [7]. An important element of breast cancer prevention is therefore overcoming psychological and cultural barriers, and influencing social values, convictions and attitudes [6].

Most of the respondents assessed their knowledge about the early breast cancer detection programme as good, and most of them had made use of mammography invitations. It corresponds with the results of studies carried out in 2009 at the Oncology Centre in Bydgoszcz. Most of the study participants underwent tests within the framework of the early breast cancer and cervical cancer detection programme [8]. However, women participating in the national breast cancer screening programme constitute only 1/4 of the population that the programme targets [8]. Similar results were obtained in a study carried out in the Sierpc municipality, emphasising the low participation levels in screening tests [9]. Results of the authors' own study indicate that physically active women assess their knowledge of breast cancer prophylaxis very well, as their general health-related awareness is high.

Over half of the respondents believed that one could not be protected from cancer. That opinion might stem from their lack of knowledge, and from repeating fallacious arguments. On the other hand, studies carried out by other authors demonstrated that women's knowledge about breast cancer is rather poor, which is especially true of their knowledge of cancer risk factors [7, 10].

Moreover, more than a half of respondents in our study was of the opinion that excessive weight/obesity was a risk factor of postmenopausal breast cancer. The result might testify to the fact that women who exercise regularly are aware of how obesity not only impacts their appearance, but their health too. Fighting obesity frequently motivates one to a change of lifestyle, a consequence of which is taking better care of one's health. Thanks to the different social programmes and campaigns, women become increasingly more aware of the fact that in order to change their looks they need to change their whole lifestyle, which often has a positive impact on their health.

In our study, women aged 25–34 were more likely to point to excessive weight/obesity as a risk factor of breast cancer. That age group is more aware of the threats involved, and appears to have a better knowledge of cancer prophylaxis. Younger women are more keen to gain access to information materials, prevention programmes offered as part of social campaigns, and to new findings published online. Their higher level of awareness might also stem from the differences in school curricula. Current teaching curricula include issues pertaining to cancer prevention unlike the ones in use a few decades earlier.

Over a half of our respondents admitted to not avoiding animal fats, whereas a vast majority declared to be monitoring their body weight. As we know, one of the key factors contributing to the risk of disease is one's diet. Many authors have demonstrated that only a small number of women are aware of the fact that an unhealthy diet is one of the risk factors of breast cancer [11–13].

As regards health-promoting behaviours, it is worth noticing that most of our respondents declared occasional alcohol consumption. In other studies, every second woman would declare alcohol consumption, most of whom did it less often than once a month [10]. Alcohol consumption, and high-grade one in particular, is known to increase the risk of breast cancer. It is comforting to learn that our respondents consume it only occasionally. The reason for it might be their lack of awareness of the negative alcohol impact on health. Few people realize that alcohol might be the cause of cancer.

The majority of our respondents were non-smokers, with older women being more likely to smoke. For some time now, thanks to numerous social campaigns in the media, the general awareness of the harmfulness of tobacco smoking has been on the increase. Similar results have been obtained by other authors, who observe that a great majority of today's women do not smoke [14].

All of our female respondents declared that they were physically active. The study group was a selected one in a sense, as the survey was carried out at a fitness centre. Most of the women claimed they did sports 3 times a week. Study participants living in the city would dedicate one hour more to physical activity than those living in the countryside. Other studies also demonstrated that city dwellers were likely to exercise more [15]. The different level of physical activity between the two groups might result from a lower accessibility of fitness clubs in the countryside, requiring village residents to travel over greater distances to get there.

Lifestyle might be the determining factor leading to differences in physical exercise intensity. Other studies carried out with the

use of the International Physical Activity Questionnaire (IPAQ), involving women who exercised irregularly, and focusing on many different areas of life, indicated that women exhibit the lowest physical activity in the areas of recreation, sports and leisure time. Over half of them arrive at a moderate level of physical activity, which may be interpreted as the lowest possible level to result in health benefits [16].

The cheapest and at the same time most efficacious method of early detection is breast self-examination. Literature sources confirm that ca. 90% of breast cancers are detected during the self-examination [17]. A vast majority of our respondents declared to be performing the examination and to be familiar with its technique. Most of the younger and single women began breast self-assessment at the age of 20, with respondents holding secondary/tertiary education qualifications doing it more often than others. Similar results have been obtained by other authors [15, 16]. Studies have also indicated that 64% of women know when to initiate the self-examination [12]. Additionally, a once-monthly examination motivates one to reflect on one's health [2].

Over half of our respondents see their gynaecologist once a year or more often. Other authors suggest that 75% of women declare to be regularly examined by a gynaecology specialist [19]. Some of them, however, consider the gynaecological examination in terms of an obligation or constraint, accompanied by a feeling of shame.

In our survey, respondents had a high level of life satisfaction, irrespective of their age, dwelling place, education or marital status. Their satisfaction was primarily reflected in the following statements: "I am satisfied with my life" and "So far I have gotten the important things I want in life". Women aged 25–34 were reported to have a higher life satisfaction than those aged 45–60. A higher level of life satisfaction was also correlated with secondary/tertiary education and the status of being married. Importantly, respondents with a lower life satisfaction engaged in breast self-examination significantly less frequently, and were more likely to smoke. Younger, well-educated and married women appear to be more satisfied with their lives, as they enjoy their family lives, professional careers, and are more likely to be in good health.

The study demonstrated that the respondents who self-examined their breasts more often, were non-smokers, would regularly see their gynaecologist, and exercised on a regular basis, thus reducing breast cancer risk factors. They also had a high level of life satisfaction. In a group of students from 21 countries, a positive correlation was observed between factors such as smoking, physical activity, sun protection and avoiding animal fats, and satisfaction with life. For different countries the results pertaining to smoking and physical activity were similar, with students manifesting a high level of life satisfaction being less likely to smoke and more likely to exercise [20]. Authors of studies carried out in residential homes also indicate the link between life satisfaction and physical activity [21]. The higher level of life satisfaction in physically active women may additionally stem from their personal and professional achievements. They tend to be more focused on themselves, their health, and on the accomplishment of their goals, which motivates them to be proactive and positive in all they do. Promoting a physically active lifestyle may directly lead to a reduction in breast cancer-related mortality in women.

## CONCLUSIONS

1. Physically active women assess their knowledge about health-related behaviours well, lead a healthy lifestyle, and avoid breast cancer risk factors.
2. Physically active women have a high level of life satisfaction, which is especially true of well-educated married women who exercise on a regular basis. On the other hand, life satisfaction is not correlated with variables such as age, place of residence, education or marital status.
3. Women with a high level of life satisfaction pay more attention to health-related behaviours, perform regular breast self-examination, and participate in screening tests.

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