Husejko Jakub, Porada Mateusz, Bieniek Daria, Skierkowska Natalia, Prylińska Monika, Ruszkowska Nastazja, Nawrocka Agnieszka, Sępka Justyna, Szczesna Natalia, Świerczek Pamela, Pałka Julianna, Kędziora-Kornatowska Kornelia. Breast cancer as a significant social problem. Journal of Education, Health and Sport. 2019;9(8):412-423. eISSN 2391-8306. DOI http://dx.doi.org/10.5281/zenodo.3379055
http://ojs.ukw.edu.pl/index.php/johs/article/view/7328

The journal has had 7 points in Ministry of Science and Higher Education parametric evaluation. Part B item 1223 (26/01/2017).
1223 Journal of Education, Health and Sport eISSN 2391-8306 7

The authors declare that there is no conflict of interests regarding the publication of this paper.

Received: 05.08.2019. Revised: 15.08.2019. Accepted: 27.08.2019.

Breast cancer as a significant social problem

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Summary

Background: This article is devoted to the topic of breast cancer, which is a very important and overlooked problem by many women. This cancer is the most common malignancy in women in developed countries. It also creates an increasing problem in developing countries and causes high mortality. Early diagnoses of neoplastic lesions and rapid implementation of therapy in most cases allow for successful treatment its prognosis . Self-control is very important, women should examine their breasts by palpation. Further research to diagnose breast cancer are: mammography (MMG), ultrasonography (USG), magnetic resonance (MR), positron emission tomography (PET) and microscopic examination.

Material and Methods: In this article, it was analyzed by the latest literature on risk factors, epidemiology, diagnosis and treatment of breast cancer. Articles were searched from PubMed and Google Scholar.

Results: Breast cancer risk factors have been shown to be early menstruation, high women's height, high body mass (especially fat content) and hyperinsulinaemia. In addition, genetic factors play an important role. Research also confirms that highly-used cleaners, and at their head, DDP (dichlorodiphenyltrichloroethane) affect the formation of breast cancer. This is the third most common cause of death in women aged 60-85. In treatment, an individual approach to each patient is important. Older women individually discuss the methods of treatment with the doctor, because it gives beneficial results of therapy.
Conclusions: Breast cancer has become a very important medical and social problem in older women. Mass media are needed to disseminate knowledge, topics related to treatment and to support the sick. In older women, treatment is more aggressive, and in addition to radiotherapy, a partial mastectomy is performed. Breast cancer is a tought term for woman's in all age. It is related with fear and loss of self—confidence.

Key words: breast cancer, social problem, elderly women.

Introduction

Breast cancer is still the most common cancer among women in developed countries and is becoming more common in developing countries. The data of the GLOBOCAN 2018 base prepared by the IARC Global Cancer Observatory that places breast cancer on the first place in terms of world incidence and the second in terms of mortality is his seriousness [1]. The disease is a serious epidemiological problem, which puts it at the center of medical attention.

It is also more and more eagerly taken up by the mass media. Due to its popularization and publicity, it has become a source of concern for many women. An undoubted merit of the mass media is the dissemination of knowledge not only in the field of treatment and its serious consequences, but also in the field of health-oriented education and early prevention aimed at the fastest possible diagnosis. Diagnosis of the disease at an early stage of development improves the prognosis, reduces mortality and allows for a less radical form of treatment [2]. Preventing breast cancer in addition to mammography, breast self-examination and clinical trials also includes lifestyle modification through changing eating habits, increasing physical activity, abandoning stimulants or reducing stress. In the light of the growing number of cases, the implementation of the above changes should be a priority for every woman, which will allow us to enjoy health for many years and improve the health situation of women in Poland and in the world [2]. It is worth emphasizing that in countries with high-quality healthcare, breast cancer is a chronic disease, while in countries with low quality - fatal [3].

The aim of the work is to show the disease as a problem not only of a medical nature but also of a social one. The article is also devoted to the issue of depression associated with the occurrence of the disease, the consequences of treatment limiting women in social life, family life or professional activity. He emphasizes the important role of activating women suffering from breast cancer in society through all kinds of social actions, activities in associations, presence in the media. Such solutions would undoubtedly contribute to the improvement of quality and complacency in the lives of ill women, prevent social exclusion and disseminate the topic of breast cancer.

Results

1. Breast cancer's risk factors

Risk factors for breast cancer can be divided into two periods, before puberty and during puberty. As for the first one, the sequence of events during endocrine development in the early stages of life is not fully understood. Early maturation, breast development, the first menstrual period are natural processes whose course is determined by the biological clock. Once initiated, it triggers the maturation process [4]. It seems that the age of menarche is associated with the diet, as both ovulation and menstruation require critical body mass. What's more, achieving and maintaining ovulatory cycles requires achieving the right level of body fat. The level of body fat must be at least between 17 and 22% of total body weight. The faster this condition is met, the faster we can expect regular menstrual cycles. Thus, early menstrual periods, high growth, body weight and even hyperinsulinemia are considered risk factors for breast cancer [5]. It is estimated that the girl who had the first menstrual period at the age of 12 in the risk of breast cancer is 1.6 times higher than in the girl who had the first menstrual period at the age of 13. Lowering the age associated with the first menstrual period by 12 months increases the risk of incidence of breast cancer by at least 10% [6].

Factors associated with the period of puberty have the greatest impact on lifestyle factors. First of all, the weight of the body in obese girls begins maturing faster, which results in faster and earlier menstruation. This may have an effect on the incidence of breast cancer in the post - menopausal period, especially if the family has had breast cancer in first-degree relatives [7]. The average Amas of the girls' body at the time of puberty is 30 kg, while at the time of the first menstrual period it is 47 kg [8]. Malnutrition and deficiency of adipose tissue may delay maturation and the first menstruation [9]. However, overweight accelerates breast development, the onset of menarche and shortens the duration of the menstrual cycle [10]. The next risk factor for breast cancer is a high increase in girls, research has shown that maturation in high girls takes place earlier and the first menstruation occurs faster [11, 12]. The girl's birth length also affects the risk of breast cancer. Belgian scientists have shown that girls about longer bodies at the time of delivery show a tendency towards later menstruation, which is in contradiction with the hypothesis that higher girls have an increased risk of breast cancer [13]. Parenting factors are another factor. It is believed that the higher weight of the mother at the beginning of pregnancy predicts a higher birth weight of the newborn, and in later years, faster maturation and earlier first menstruation [14, 15]. Parents' growth is also affected. The higher parents, the later time of their first menstruation, and their daughter [15]. Parents' level of education is also affected. It has been proven that the more educated parents, the more the girl's adolescence and the timing of her first menstruation are more delayed, and thus the lower level of parents' education is associated with an increased risk of breast cancer [16]. In order to determine the factors of breast cancer, a study was conducted on over 40,000 women up to the age of 40. Results were obtained showing the advanced age of the father of the studied women, and an increased risk of breast cancer [17]. Another study conducted on over 100,000 women confirmed the positive relationship between maternal age and the risk of breast cancer, which is probably regulated by hormonal factors [18]. Also, the contamination of the environment around us is important. In homes where there was a higher consumption of cleaning chemicals, women more often contracted mammary gland cancer, the risk was greatest when using DDP (dichlorodiphenyltrichloroethane) and its derivatives [19]. Another factor influencing this morbidity is the metabolism of carbohydrates and fats. High-calorie diet delays the onset of menarche and vice versa - low-calorie, delays. The explanation for this illogical fact is that girls who use a high-calorie diet in childhood are more likely to impose dietary restrictions [20]. Particularly interested in soft drinks. A large percentage of children receive 50% of calories a day in the form of colored drinks. These substances lead to increased insulin secretion, which is a tissue growth factor. Children with a

small excess of body weight produce more insulin than lean children. These factors affect the development of breast disorder in early puberty. Breastfeeding also has a significant impact on the development of breast cancer. Breastfeeding reduces the risk of overweight and obesity in children, which is inversely correlated with the risk of breast cancer. The last factor is physical activity. In girls practicing sports, the first menstruation later appears, despite the fact that there is no delay in adolescence. Severe physical work or intense physical exercise at an early age have an effect on the delay in the onset of menarche [21, 22, 23].

2. Epidemiology

Every year, a thousands of European women have a breast cancer diagnose. According to ECIS, in 2018 breast cancer is the first leading cause of death in women in the Europe. Whereas, for 13 years, starting from 2000s, the breast cancer is the third leading cause of death in women aged between 60 and 85+ years old in Poland and ranks first in term of incidence affecting older women. [24].

Many of circumstances, that are not a problem for non-elderly women, can affect a treatment decisions in a group of seniors. Some of women rather to choose the quality of life than a requiring treatment [25]. Certain research indicates that an older women, probably due to late diagnosis, have a larger tumours that the other adults. They are reluctant undergo screening tests like mammography as well as a chemotherapy or radical therapy [26]. Furthermore, the older women receiving different treatment than a younger patients, which

require clinics to create a personalized solutions. Due to age, there is a higher risk and occurrence of co-morbidities. Both the above cause and others mentioned in this research factors provide an important and difficult issue in diagnosis and treatment of older female patients [27].

The relative survival 1-year and 5- year, according to EUROCARE-5 on-line database [28] and survivance presented in the other research, increase in a group of elderly women, because of a various reasons, starting of biological type of cancer, through to proper therapy and e.g. socioeconomic status or a differences in populations, in which the patients live [26].

According to prognosis for years 2010 – 2025, in Poland, an increase of incidence for whole population is expected. For the group of women included in breast cancer screening presumably there will be the highest increase of cases, differently than the older adult, aged 70+, a slower increase in incidence is expected (compared to group included in breast cancer screening - group in the 50-69 age range). The forecasted for 2025 year, a mortality trends may remain stable, not including a small fluctuations, however for the elderly women, the small increase of mortality is expected. In women aged 70 years old and more, the breast cancer will be the reason of, nearly 70%, of deaths [29].

3. Diagnosis of breast cancer

Palpation examination. Self-examination

Palpation examination is routine examination performed by patients themselves, or by general practitioners, and gynaecologists advised to execute a breast check-up once a year. Systematic breast control by touch can help in early detection of breast cancer. After the age of 20, it is recommended to examine one's breasts every month a week after menstruation. The examination should be carried out while the person is standing and lying [30]. The signs indicative of pathology are: changes in the color of breasts or warts, wrinkling of the skin, nipping of a nipple, changes in the shape of breasts or their position (excessively raised, etc.). If you find a tumour with your fingers, or notice disturbing changes in any of the breasts, contact your doctor immediately. It should be noted that it is unlikely to detect changes smaller than 0.5 cm in the palpation examination. The accuracy of breast self-examination is 12-41% [31, 32, 33].

Mammography examination (MMG)

One of the basic methods of diagnosing breast cancer is mammography performed in two projections: oblique and upper-lower. The digital technology, which is still gaining popularity, enables quick diagnosis, collection and delivery of images. The sensitivity of MMG reaches about 85%. The higher density of breasts – which is typical for young women – the lower the sensitivity of the examination. Some breast cancers cannot be detected in the MMG examination, and are only detectable by palpation [32]. A new technique, tomosynthesis, allows 3D breast imaging, which enhances the sensitivity and specificity of the check-up. The MMG examination should be performed in specialised facilities together by specialists in the field of radiology, pathology, surgery, and oncology. In Poland, there is a special programme designed for early breast cancer detection called Populacyjny Program Wczesnego Wykrywania Raka Piersi, which involves free mammography, and is targeted at women aged between 50 and 69 [32, 34].

Ultrasonography (USG)

A particularly important diagnostic method that provides the possibility of screening breasts with a higher density, at which the mammography examination has limited accuracy. Ultrasonography allows to identify cystic and solid lesions, as well as to assess mammary glands [35]. This technique is very safe, so that even young and pregnant women can undergo such an examination. The sensitivity and specificity of ultrasound examination can be increased by administering intravenous contrast agents, or by exerting the Doppler option. Ultrasonography is used for monitoring cyst puncture, and fine- or thin-needle biopsy. The disadvantage of this kind of test is its inefficiency in assessing large breasts [32, 35].

Magnetic resonance (MR)

This technique allows for precise imaging of the morphology of the examined breast. The diagnostic standard is performing magnetic resonance on both breasts simultaneously with a dynamic sequence after administration of contrast agents. The sensitivity of MR is estimated at over 98%, and the specificity, in turn, at 90-95% [32]. Magnetic resonance before surgery is prescribed in case of: presence of axillary lymph node metastases without a breast tumour diagnosed in clinical trials, invasive lobular carcinoma, and when the difference in tumour size detected by MMG and USG amounts to over 1 cm for a person under 60 years of age [35].

Positron emission tomography (PET)

There are limitations to prescribing the 18FDG PET test. This examination cannot be applied for detecting the presence of lymph node metastases. However, it is useful for detecting asymptomatic outbreaks of metastases in the nearby organs, and it helps to assess the body's response to initial chemotherapy [36, 37].

Microscopic examination

This examination is the most important part of breast cancer diagnostics, because it allows to diagnose pathologies. Microscopic cancer diagnosis is vital for the implementation of treatment. The fragment of tissue for microscopic examination must be collected using a mammotome or fine-needle biopsy. Lactation and pregnancy are not a contraindication to biopsy [32, 38].

4. Treatment

The course of treatment for women with breast cancer is individual and depends on several factors. Treatment planning is based on doctor's collaboration with the patient. Thus, research has shown that older women with breast cancer who have direct contact with a doctor and discuss the treatment process in detail, have better treatment results. Individual approach to patients and focus on one's needs, as well as fears, helps them accept the negative effects of the treatment (for example lack of breasts from the aesthetic perspective). Moreover, it was shown that many older patients are willing to take a more aggressive form of treatment, if it would only extend their lives for a short time [39].

Specialists can perform either BCS (partial mastectomy / lumpectomy), or mastectomy. Simultaneously, they use systemic therapies, such as chemotherapy, radiotherapy and hormonal therapy [40]. Women who are in the first stage of breast cancer, and approximately 67-79 years old, are mainly submitted to BCS and radiotherapy, whereas 80-84 old patients usually have mastectomy. In those cases radiotherapy is often not required. The BCS method is also preferred for patients over 85 years of age. In the second stage of the disease, mastectomy visibly predominates, but only to 79 years of age; older patients are more often treated with the BCS method [41].

In many cases, doctors would prefer to choose less aggressive treatment for older patients, especially those above 80 years of age. However, they do not apply it, due to special treatment guidelines. The whole process is not precisely defined for the older age group. Surveys carried out among Dutch specialists show that patient's chronological age and performance status are factors that influence clinicians' recommendations of cancer treatment, and patient's survival. Each doctor may have different opinions about treatment, especially since the guidelines for breast cancer treatment, and contemporary research, are often different. Additionally, the course of treatment differs depending on the doctor's specialization. Experts mainly choose treatment methods within their specialization; however, probably the main reason for the differences in treatment, is the small amount of research and statistics on the quality breast cancer treatment among older patients [42]. More attention during the study on this group of patients can, definitely, eliminate the difference between the reported doctor's recommendations and the actual treatment of older women with breast cancer.

5. Social life of woman suffering from breast cancer

Breast cancer is a very common cancer that occurs in society and the morbidity is systematically increasing.On television, the press, the Internet is a lot of information about it. Information on prevention, treatment and coping during the disease is disseminated. In addition to a number of physical symptoms, a woman has to face the problems of the mental sphere. Since the diagnosis, her current life has changed. She must accept the fact of the disease and choose a treatment method. An important role is played by her closest surroundings, family and friends who should give her support and help in difficult times. Undoubtedly, the diagnosis of cancer is a traumatic experience. This is a favorable situation for the appearance of depressive disorders. Women are accompanied by a sense of threat to life, loss of control over their own lives and powerlessness in the face of illness [43].

Patients who are treated surgically with chemo, radio and hormone therapy are more exposed to negative emotions. The sense of life threatening increases significantly in this case. The dominant emotional reactions are fear, anger and gloom. A long-lasting and strong sense of anxiety is a factor in the appearance of depression. Increased depression leads to increased sensation of somatic symptoms, reduces motivation and the will to fight the disease, leads to a decrease in appetite and worsening of the sleep quality. There is increased tension in the family, increased emotional excitability. Women are afraid for the future of

their family. They do not know if relatives will cope when severe treatment or death comes. Patients cut off from friends because of weakness and also because of the loss of beauty (hair loss, wasting, skin changes) [44].

An important element is the support from the family, which should give a sense of security, give comfort in difficult moments of the disease and show that the patient is still an important person in their lives. Friends and coworkers should also accompany the patient during this time. Whenever possible, depending on the physical condition of the patient, she should be encouraged to participate in cultural and social life. Family and friends should propose a common going to the cinema, theater or to a restaurant. It is important not to talk constantly about the disease and distract woman from negative thoughts [45].

A lot of benefits in the psychological and social sphere can be achieved by breast reconstruction. Thanks to this treatment, woman regains her self-confidence again, her self-esteem and self-acceptance improve. This results in improved functioning in society. Women are more likely to meet family and friends and often help other women with breast cancer [46, 47]. Immediate post-mastectomy breast reconstruction is considered a standard of treatment. It was found that the quality of life of women after breast reconstruction is very similar to the quality of life of health women, who are the same age [48].

6. Possibilities of social activites for patients

Detected breast cancer affects negatively on the functioning of women in society. Treatment and symptoms of the disease force them to adapt to the biopsychosocial changes of the body [49]. Diagnosis of breast cancer is a stressful situation requiring social support and help that isn't always achievable. Support should be provided already at the stage of a doctor's visit, by medical personnel as well as people from the everyday environment of women. From the research that determined the scope and type of social support provided to patients with cancer by nurses, it was shown that cancer patients suffer from a deficit in support [50, 51]. This is due to the fact that the diagnosis itself is also difficult for the staff taking care of the patient. For women, the diagnosis of developing breast cancer is very difficult and stressful. It is extremely important to spread knowledge about the available support groups among cancer patients so that nurses can direct their patients there. Another important issue seems to be drawing attention to the fact that cancer can be lived, it isn't allowed to stigmatize sick people. Defining the concept of social support, it is said that it is help in meeting the needs of a person who finds himself in a difficult situation [52]. In this case, women diagnosed with breast cancer. This type of help can be implemented by belonging to specific support groups. In Poland, patients can count on existing, targeted associations and foundations helping to cope in the current situation - breast cancer disease. The most known foundations and associations are:

• Federation "Amazonki" - works on behalf of women with breast cancer by coordinating the activities of clubs and associations of women after breast cancer treatment in Poland. They provide care to oncologists, surgeons, physiotherapists and psychologists;

• Rak'n'roll Foundation - supports the sick patients and their relatives in the fight against cancer. They're making projects to support cancer patients: "Divine Mothers" - a program for pregnant women suffering from cancer. "Give a hair" - hair collection in hairdressers for making wigs for chemotherapy patients;

• The OmeaLife Breast Cancer Foundation is not limited - an organization founded in 2016 by four women who were "face to face" with breast cancer. Three of them are burdened with the mutant BRCA1 gene. Girls from OmeaLife break stereotypes related to cancer, share their experience and knowledge with others;

• The Polish Coalition of Patient Organizations - the founders are four associations: the Federation of Amazonia Societies, the National Association for Chronic Leukemia, Spinal

Leukemia, Association for Supporting Lymphoma Sow Eyes and the Polish Stomach Society POL-ILKO. The goals of this organization is comprehensive support and cooperation with oncology patients' organizations, exchange of experiences and examples of correct practices in order to strengthen the organization of oncology patients at the national and European level.
Women with breast cancer before or after mastectomy are not indifferent to society. Established foundations and associations are very happy to help these women find their place in the world.
An important role in overcoming stereotypes associated with cancer, apart from existing foundations, is played by the media. They shape the way of talking about cancer. More and more bold social campaigns are appearing - both regarding cancer prevention (eg Don't pack in a coffin, make a cytology), as well as requesting transfer of 1% tax for statutory purposes of the foundation (We collect on tits, new hairstyles and drugs "Rak'n'Roll. Win life"). They help to tame the topic of cancer, talk about cancer more directly in language, closer to life and not death.
An additional space where women can find help is the internet. The fact that there is a great need to talk about cancer is evidenced by the growing popularity of blogs written by people affected by oncological disease - called "Blogoraki". Online diaries from the time of illness have gained many regular readers. Support groups have been formed around them, which indicates a certain contradiction in social behavior in the face of sick persons [53].

Conclusions

A breast cancer is an equally important problem both from the medical and social side It is account nearly 20% of all cancer affecting elderly women. The risk factors depend on a connection with breast cancer family relatives, the level of patient and his parents' knowledge, a lifestyle. Likewise, the risk factors largely have formed as far back in puberty. A good source of knowledge about prevalence, treatment and support are mass-media. A lot of foundations and blogs are devoted to breast cancer. The one of the leading activity is fully accepting and supporting by the closest society and family. The diagnosis and the time after is a very though and traumatic experience for women, because of factors like anxiety, inconvenience associated with treatment, loss of self-confidence connected with changing appearance and life. Mentioned above agents have a huge influence in choosing a requiring treatment and thus have an effect to survivability and mortality. Individual treatment, depending on many factors and existence of co-mobilities have an impact to therapy results. In fact, in the group of elderly women, the more aggressive treatment is used. Beside radiotherapy a partial mastectomy is performed. Although, a quality of life of women with reconstructed breast is similar to life of women without cancer, older adults are rarely determined to choosing screening test or systemic therapies. Whereas, the validity of palpation, mammography examination and imaging techniques in diagnosis should to be remembered even due to prognosis for the coming years about increasing of incidence in population of polish women.

Discussion

According to current epidemiological data, breast cancer is extremely common and affects 12% of women in the world. A characteristic period of its occurrence is the older age. However, the incidence of an earlier life is associated with a higher risk of death [54]. The results of our publication present information on breast cancer associated primarily with older age. However, it should be remembered that appropriate prevention at a younger age can protect many patients from disease, the effects of which would be visible at the stage of old age. It is particularly important to develop models that can predict the risk of breast cancer, as

they can help young women determine the appropriate time to start screening. Being aware of this fact and using reports on the anti-Müllerian hormone (AMH) and testosterone, probably positively associated with the risk of developing breast cancer, Clendenen et al. conducted a case-control study on women aged 35-50, adding testosterone and / or AMH to the Gail model. According to the results, the modified Gail model increases the possibility of determining the risk of developing this cancer [55], which may prove to be an important report defining new directions of development of knowledge about breast cancer.

In the procedure aimed at reducing the risk of breast cancer and reducing its complications, body weight is also important. A summary of the results of studies described in 159 source materials determined that overweight women and those who increase weight after diagnosing breast cancer are at a higher risk of developing this disorder, compared to leaner patients [56]. This proves the importance of dietary intervention, which should not be overlooked in the treatment process.

Research in Denmark raises another problem, which is linking thyroid dysfunction with the incidence of breast cancer. Using national registers, details of every woman in Denmark with diagnosed conditions resulting in disorders in the functioning of the thyroid in 1978-2013 were subjected to statistical analysis. According to the results, 61,873 women with hypothyroidism and 80,343 women with hyperthyroidism have a higher incidence than those found in studies of women who are not experiencing thyroid dysfunction [57]. This indicates the need to pay special attention to patients with thyroid disease and indicates the need for further research on the links between endocrine disease and the occurrence of breast cancer.

When treating breast cancer, it should be borne in mind that therapeutic intervention can also lead to complications. A well-known example is where the use of tamoxifen increased the risk of endometrial cancer [58]. It shows emphatically that research should be conducted to increase knowledge about breast cancer treatment in order to minimize the risk of serious complications, disproportionate to the obtained benefits.

References

1. Dane statystyczne Global Cancer Observatory na podstawie *Globocan 2018*: https://gco.iarc.fr/today/online-analysis-multi-bars?v=2018&mode=cancer&mode_population=countries&population=900&populations=900&key=asr&sex=0&cancer=39&type=0&statistic=5&prevalence=0&population_group=0&ages_group%5B%5D=0&ages_group%5B%5D=17&nb_items=10&group_cancer=1&include_nmsc=1&include_nmsc_other=1&type_multiple=%257B%2522inc%2522%253Atrue%252C%2522mort%2522%253Atrue%252C%2522prev%2522%253Afalse%257D&orientation=horizontal&type_sort=0&type_nb_items=%257B%2522top%2522%253Atrue%252C%2522bottom%2522%253Afalse%257D&population_group_globocan_id=. Accessed on 13/02/2019.

2. Lorenc A, Pop T, Boychuk T. (2012) *Wiedza Kobiet po 40 roku życia. O czynnikach ryzyka i profilaktyce raka piersi.* Young Sport Science of Ukraine 4, 59-65.

3. Smaga, A., Mikułowska, M., Komorowska, A., Falkiewicz, B., Gryglewicz, J. (2014) *Rak piersi w Polsce – leczenie to inwestycja.* Warszawa Sequence

4. Apter, D., & Sipilä, I. (1993). Development of children and adolescents: physiological, pathophysiological, and therapeutic aspects. *Current opinion in obstetrics & gynecology*, *5*(6), 764-773.

5. Baanders, A. N. (1992). Breast cancer in Europe: the importance of factors operating at an early age. *European journal of cancer prevention: the official journal of the European Cancer Prevention Organisation (ECP)*, *1*(4), 285-291.

6. Koprowski, C., Ross, R. K., Mack, W. J., Henderson, B. E., & Bernstein, L. (1999). Diet, body size and menarche in a multiethnic cohort. *British Journal of Cancer*, *79*(11), 1907.
7. Bardia, A., Vachon, C. M., Olson, J. E., Vierkant, R. A., Wang, A. H., Hartmann, L. C., ... & Cerhan, J. R. (2008). Relative weight at age 12 and risk of postmenopausal breast cancer. *Cancer Epidemiology and Prevention Biomarkers*, *17*(2), 374-378.
8. Frisch, R. E., & Revelle, R. (1970). Height and weight at menarche and a hypothesis of critical body weights and adolescent events. *Science*, *169*(3943), 397-399.
9. Baker, E. R. (1985). Body weight and the initiation of puberty. *Clinical obstetrics and gynecology*, *28*(3), 573-579.
10. Micozzi, M. S. (1987). Cross-cultural correlations of childhood growth and adult breast cancer. *American journal of physical anthropology*, *73*(4), 525-537.
11. George, I. M. S., Williams, S., & Silva, P. A. (1994). Body size and the menarche: the Dunedin Study. *Journal of adolescent health*, *15*(7), 573-576.
12. Hesketh, T., Ding, Q. J., & Tomkins, A. (2002). Growth status and menarche in urban and rural China. *Annals of Human Biology*, *29*(3), 348-352.
13. Silva, I. D. S., De Stavola, B. L., Mann, V., Kuh, D., Hardy, R., & Wadsworth, M. E. (2002). Prenatal factors, childhood growth trajectories and age at menarche. *International journal of epidemiology*, *31*(2), 405-412.
14. Johnson, A. A., Knight, E. M., Edwards, C. H., Oyemade, U. J., Cole, O. J., Westney, O. E., ... & Jones, S. (1994). Dietary intakes, anthropometric measurements and pregnancy outcomes. *The Journal of nutrition*, *124*(suppl_6), 936S-942S.
15. Shahi, V., & Tandon, J. (1999). A study of maternal determinants and foetal weight. *Indian Journal of Maternal and Child Health*, *10*(1), 13-5.
16. Louwman, W. J., van Lenthe, F. J., Coebergh, J. W. W., & Mackenbach, J. P. (2004). Behaviour partly explains educational differences in cancer incidence in the south-eastern Netherlands: the longitudinal GLOBE study. *European journal of cancer prevention*, *13*(2), 119-125.
17. Weiss-Salz, I., Harlap, S., Friedlander, Y., Kaduri, L., Levy-Lahad, E., Yanetz, R., ... & Paltiel, O. (2007). Ethnic ancestry and increased paternal age are risk factors for breast cancer before the age of 40 years. *European Journal of Cancer Prevention*, *16*(6), 549-554.
18. Xue, F., Colditz, G. A., Willett, W. C., Rosner, B. A., & Michels, K. B. (2007). Parental age at delivery and incidence of breast cancer: a prospective cohort study. *Breast cancer research and treatment*, *104*(3), 331-340.
19. Cohn, B. A., Wolff, M. S., Cirillo, P. M., & Sholtz, R. I. (2007). DDT and breast cancer in young women: new data on the significance of age at exposure. *Environmental health perspectives*, *115*(10), 1406-1414.
20. Ludwig, D. S., Peterson, K. E., & Gortmaker, S. L. (2001). Relation between consumption of sugar-sweetened drinks and childhood obesity: a prospective, observational analysis. *The Lancet*, *357*(9255), 505-508.
21. Frisch, R. E. (1987). Body fat, menarche, fitness and fertility. *Human Reproduction*, *2*(6), 521-533.
22. Moisan, J., Meyer, F., & Gingras, S. (1991). Leisure physical activity and age at menarche. *Medicine and science in sports and exercise*, *23*(10), 1170-1175.
23. Sharma, S. S., & Shukla, N. B. (1992). Menarcheal age among Indian sportswomen. *British journal of sports medicine*, *26*(2), 129-131.
24. ECIS - European Cancer Information System From https://ecis.jrc.ec.europa.eu/explorer.php?$0-1$1-PL$2-138$4-2$3-All$6-60,85$5-2000,2013$7-2,3$CRatesByCancer$X0_10-ASR_EU_NEW, © European Union, 2019. Accessed on 23/02/2019.

25. Alberg, A. J., & Singh, S. (2001). Epidemiology of breast cancer in older women. *Drugs & Aging*, *18*(10), 761-772.
26. Diab, S. G., Elledge, R. M., & Clark, G. M. (2000). Tumor characteristics and clinical outcome of elderly women with breast cancer. *JNCI: Journal of the National Cancer Institute*, *92*(7), 550-556.
27. Louwman, W. J., Vulto, J. C. M., Verhoeven, R. H. A., Nieuwenhuijzen, G. A. P., Coebergh, J. W. W., & Voogd, A. C. (2007). Clinical epidemiology of breast cancer in the elderly. *European journal of cancer*, *43*(15), 2242-2252.
28. De Angelis, R., Sant, M., Coleman, M. P., Francisci, S., Baili, P., Pierannunzio, D., ... & Bielska-Lasota, M. (2014). Cancer survival in Europe 1999–2007 by country and age: results of EUROCARE-5—a population-based study. *The lancet oncology*, *15*(1), 23-34.
29. Didkowska, J., Wojciechowska, U., & Zatoński, W. (2009). Prediction of cancer incidence and mortality in Poland up to the year 2025. Prognozy zachorowalności i umieralności na nowotwory złośliwe w Polsce do 2025.
30. Nowicki, A., Olszwska, A., & Mumańska, M. (2007). Wykrywanie raka piersi poprzez samobadanie. Badanie retrospektywne u kobiet po operacji. *Ginekol Pol*, *78*, 293-298.
31.Tkaczuk-Wlach, J., Sobstyl, M., & Jakiel, G. (2012). Rak piersi-znaczenie profilaktyki pierwotnej i wtórnej. *Przeglad Menopauzalny*, *16*(4), 343.
32. Jassem, J., Krzakowski, M., Bobek-Billewicz, B., Duchnowska, R., Jeziorski, A., & Olszewski, W. (2013). Rak piersi. *Zalecenia postępowania diagnostyczno-terapeutycznego w nowotworach złośliwych*, 211-263.
33. Chmielarczyk, W., Wronkowski, Z., & Zwierko, M. (2000). Samobadanie piersi. *Służba Zdrowia*, (24-26), 2926-2929.
34. Didkowska, J. (2010). Wskaźniki zdrowotne chorób nowotworowych w Polsce na tle Europy. *Oncology in Clinical Practice*, *6*, 24-27.
35. Kornafel, J. (2011). Rak piersi. *Centrum Medyczne Kształcenia Podyplomowego, Warszawa*, 131-141.
36. Jodłowska, E., Czepczyński, R., Fularz, M., Adamiak, P., Jarząbek-Bielecka, G., Kędzia, W., ... & Ruchała, M. (2017). Pozytonowa tomografia emisyjna–znaczenie w ginekologii. *Current Gynecologic Oncology*, *15*(4), 268-276.
37. Krzakowski, M., Rutkowski, P., Jassem, J., Zaucha, R., Fijuth, J., Słuszniak, J., ... & Rzyman, W. (2011). Zalecenia w zakresie zastosowania badań pozytonowej emisyjnej tomografii w onkologii. *Nowotwory. Journal of Oncology*, *61*(1), 57-57.
38. Lyman, G. H., Giuliano, A. E., Somerfield, M. R., Benson III, A. B., Bodurka, D. C., Burstein, H. J., ... & Hayman, J. A. (2005). American Society of Clinical Oncology guideline recommendations for sentinel lymph node biopsy in early-stage breast cancer. *Journal of clinical oncology*, *23*(30), 7703-7720.
39. Mandelblatt, J., Figueiredo, M., & Cullen, J. (2003). Outcomes and quality of life following breast cancer treatment in older women: when, why, how much, and what do women want?. *Health and quality of Life Outcomes*, *1*(1), 45.
40. Miller, K. D., Siegel, R. L., Lin, C. C., Mariotto, A. B., Kramer, J. L., Rowland, J. H., ... & Jemal, A. (2016). Cancer treatment and survivorship statistics, 2016. *CA: a cancer journal for clinicians*, *66*(4), 271-289.
41. Schonberg, M. A., Marcantonio, E. R., Li, D., Silliman, R. A., Ngo, L., & McCarthy, E. P. (2010). Breast cancer among the oldest old: tumor characteristics, treatment choices, and survival. *Journal of Clinical Oncology*, *28*(12), 2038.
42. Hamelinck, V. C., Stiggelbout, A. M., van de Velde, C. J., Liefers, G. J., & Bastiaannet, E. (2017). Treatment recommendations for older women with breast cancer: A survey among surgical, radiation and medical oncologists. *European Journal of Surgical Oncology (EJSO)*, *43*(7), 1288-1296.

43. Sobieralska-Michalak, K., Kowalska, J., & Tudorowska, M. (2016). Rodzaj zabiegu a lęk, depresja i przystosowanie do choroby u kobiet z rozpoznanym rakiem piersi. *Polskie Forum Psychologiczne,* 21(3):432-446
44. Stępień, R., & Wrońska, I. (2008). Lęk i depresja jako emocjonalne uwarunkowania możliwości funkcjonalnych kobiet po radykalnym leczeniu raka piersi. *Studia Medyczne, 10*, 31-35.
45. Williams, F., & Jeanetta, S. C. (2016). Lived experiences of breast cancer survivors after diagnosis, treatment and beyond: qualitative study. *Health expectations*, *19*(3), 631-642.
46. Rubin, L. R., & Tanenbaum, M. (2011). "Does that make me a woman?" Breast cancer, mastectomy, and breast reconstruction decisions among sexual minority women. *Psychology of Women Quarterly*, *35*(3), 401-414.
47. Mazurek E. Obraz siebie kobiet po rekonstrukcji piersi. *Nowiny Lekarskie*. 2012; 81(3):281-287.
48. Ceradini, D. J., & Levine, J. P. (2008). Breast cancer reconstruction: More than skin deep. *Primary Psychiatry*, *15*(10), 72-80.
49. Szadowska-Szlachetka, Z., Luczyk, M., Slusarska, B., Nowicki, G., Luczyk, R., & Bartoszek, A. (2016). Social and welfare problems of the cancer patient vs. scope of social support of the patient and his/her family. *Medycyna Paliatywna*, *8*(4), 164.
50. Cepuch, G., Tomaszek, L., & Wojtas, K. (2015). Przygotowanie pielęgniarek do udzielania wsparcia pacjentom z chorobą nowotworową—doniesienia wstępne. *Problemy Pielęgniarstwa*, *23*(4), 433-438.
51. Glińska, J., Krzemińska, B., Lewandowska, M., Dziki, A., & Dziki, Ł. (2014). Wsparcie społeczne kobiet z nowotworem gruczołu piersiowego. *Problemy Pielęgniarstwa*, *22*(1), 27-34.
52. Sek, H., & Cieslak, R. (2004). Wsparcie społeczne—sposoby definiowania, rodzaje i źródła wsparcia, wybrane koncepcje teoretyczne. *Wsparcie społeczne, stres i zdrowie. Wydawnictwo Naukowe PWN: Warszawa*.
53. Piętowska, M. (2015). „Blogoraki"–w poszukiwaniu nowego języka choroby. *Przegląd Humanistyczny*, *448*(01), 137-142.
54. McGuire, A., Brown, J., Malone, C., McLaughlin, R., & Kerin, M. (2015). Effects of age on the detection and management of breast cancer. *Cancers*, *7*(2), 908-929.
55. Clendenen, T. V., Ge, W., Koenig, K. L., Afanasyeva, Y., Agnoli, C., Brinton, L. A., ... & Hallmans, G. (2019). Breast cancer risk prediction in women aged 35–50 years: impact of including sex hormone concentrations in the Gail model. *Breast Cancer Research*, *21*(1), 42.
56. Chlebowski, R. T., Aiello, E., & McTiernan, A. (2002). Weight loss in breast cancer patient management. *Journal of clinical oncology*, *20*(4), 1128-1143.
57. Søgaard, M., Farkas, D. K., Ehrenstein, V., Jørgensen, J. O. L., Dekkers, O. M., & Sørensen, H. T. (2016). Hypothyroidism and hyperthyroidism and breast cancer risk: a nationwide cohort study. *European journal of endocrinology*, *174*(4), 409-414.
58. Hu, R., Hilakivi-Clarke, L., & Clarke, R. (2015). Molecular mechanisms of tamoxifen-associated endometrial cancer. *Oncology letters*, *9*(4), 1495-1501.