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THE ROLE OF OCCUPATIONAL HEALTH SERVICES IN CANCER PREVENTION – WHICH FACTORS DETERMINE THE IMPLEMENTATION OF PREVENTIVE MEASURES?

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Abstract

Objectives: Epidemiological data on cancer diseases are alarming. The workplace has become an increasingly important site for disseminating health information and implementing health promotion activities. Occupational medicine physicians (OMPs) have the opportunity to carry out primary and secondary preventive activities focused on civilization diseases, especially cancer. The aim of this study was to evaluate the potential of OMPs in cancer prevention, including the analysis of factors determining the implementation of preventive measures, as part of standard healthcare for employees. **Material and Methods:** The study was conducted among 362 OMPs. The interviews were carried out by the computer assisted telephone interview (CATI) method. **Results:** Over 60% of the surveyed OMPs are ready to implement cancer preventive activities among employees. The doctors with the longest seniority in occupational health services are more likely to declare unwillingness to implement cancer preventive activities. Patient's consent, informing women about the program and adjusting the time of the medical visit are the most important conditions for introducing cancer prevention programs by OMPs. Neither seniority nor the number of examinations performed by a physician influenced the currently implemented cancer preventive activities as part of occupational health services (including the evaluation of cancer risk factors occurrence among employees). **Conclusions:** In Poland, OMPs are willing to implement cancer preventive activities among employees, but their current activity in this area is limited and needs development. The most specific actions should be addressed to doctors with the longest seniority in occupational health services, who are frequently unwilling to implement cancer preventive activities. Strengthening the preventive potential of Polish occupational health services requires a systemic approach to the scope and way of action of healthcare professionals. Int J Occup Med Environ Health. 2021;34(6):723–36

Key words:

mammography, occupational health services, cancer prevention, cytology, surveillance, screening program

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INTRODUCTION

Epidemiological data on cancer diseases are alarming. In 2017, the Polish National Cancer Registry received information on almost 165 000 new incidence cases and 99 600 deaths due to cancer [1]. In the Polish society, almost 1.08 million people have been diagnosed with cancer within the preceding 15 years, of which 815 000 cases were diagnosed in the previous 10 years and 515 000 cases in the past 5 years [1]. Cancer is the second leading cause of death in Poland. It caused 26.3% of deaths among men and 23.1% of deaths among women in 2017. A significant problem is especially visible in the female population because it accounts for 33% of deaths among young women and 49% of deaths among middle-aged women [1]. In Poland, the most common cancer among women is breast cancer, which accounts for 22.5% of all cases, while malignant tumors of the uterus, ovary and cervix constitute 7.3%, 4.6% and 3.0% of cases, respectively [1].

It is emphasized that the results of cancer treatment in Poland are still worse than in most of the EU member states [1]. The Governmental Population Council of Poland, which acts as the body advising the Prime Minister on matters related to demographic and population policy issues, in the diagnosis of Poland's oncology situation, summarized that a low percentage of early recognized cancers, especially cervical and breast cancers, is caused by the insufficient preparation of doctors and dissemination methods of early diagnosis. The insufficient development of oncological education in the Polish community of healthcare professionals as well as negligence in the promotion of healthy lifestyles are underlined as reasons for delayed cancer diagnosis [2]. It is proven that the introduction of a population-based screening program improved the curability rate for cervical cancer patients in the Dolnośląskie Voivodship [3].

It is stressed that the workplace has become an increasingly important site for disseminating health information and implementing health promotion activities, including cancer screening [4]. In Poland, in accordance with the provisions of the Labor Code, employees are subjected to obligatory medical examinations resulting in a statement on the fitness for work [5]. Therefore, they have regular contact with a physician providing health check-ups. One of the obligatory tasks of occupational medicine services is health promotion and, in particular, implementation of preventive health-oriented programs based on workforce health assessment. Furthermore, the role of occupational medicine services is also to initiate employers' activities aimed at protecting the health of employees, and to provide assistance in their implementation, with special attention on health promotion programs [6].

Taking into account the above data, occupational medicine physicians (OMPs) have the opportunity to carry out primary and secondary preventive activities, focused on civilization diseases, especially cancers.

The aim of this study was to evaluate the potential of OMPs in cancer prevention, including the analysis of factors determining the implementation of preventive measures as part of standard healthcare for employees.

MATERIAL AND METHODS

Study group

The study was conducted among randomly selected 362 Polish physicians from occupational health services, with women constituting 68.5% of the respondents. In addition, 264 respondents indicated that they had a specialization other than occupational medicine. The largest proportion of doctors were specialists in internal medicine (N = 143, 39.5%) and family medicine (N = 37, 10.2%). The characteristics of the study group is shown in Table 1.

Questionnaire

The interview questionnaire consisted of closed, semi-open and open questions. The interviews were carried out by the computer assisted telephone interview (CATI)

Table 1. Characteristics of the study sample of randomly selected Polish physicians from occupational health services – based on the interviews carried out by the computer assisted telephone interview (CATI) method in November and December 2015

Variable	Participants (N = 362*) [n (%)]				
	total	31–40 years (N = 21)	41–50 years (N = 95)	51–60 years (N = 112)	≥61 years (N = 130)
Sex					
women	248 (68.5)	18 (85.7)	72 (75.8)	72 (64.3)	85 (65.4)
men	114 (31.5)	3 (14.3)	23 (24.2)	40 (35.7)	45 (34.6)
Specialization					
occupational medicine	255 (70.4)	11 (52.4)	79 (83.2)	67 (59.8)	94 (72.3)
internal medicine	143 (39.5)	3 (14.3)	37 (38.9)	49 (43.8)	53 (40.8)
family medicine	37 (10.2)	2 (9.5)	12 (12.6)	12 (10.7)	10 (7.7)
Place of employment					
occupational health services unit	281 (77.6)	10 (47.5)	80 (84.2)	94 (83.9)	94 (72.3)
Regional Occupational Medicine Center	54 (14.9)	12 (57.1)	19 (20.0)	10 (8.9)	13 (10.0)
other	65 (18.0)	4 (19.0)	7 (7.4)	16 (14.3)	37 (28.5)
Seniority in occupational health services					
≤15 years	97 (26.8)	21 (100)	46 (48.4)	18 (16.1)	11 (8.5)
16–30 years	154 (42.5)	0	47 (49.5)	71 (63.4)	34 (26.2)
>30 years	108 (29.8)	0	0	22 (19.6)	85 (65.4)
I don't know	3 (0.8)	0	2 (2.1)	1 (0.9)	0
Examinations performed weekly (M)					
≤20 examinations	101 (27.9)	3 (14.3)	20 (21.1)	34 (30.4)	43 (33.1)
21–50 examinations	97 (26.8)	4 (19.0)	28 (29.5)	25 (22.3)	39 (30.0)
>50 examinations	110 (30.4)	10 (47.6)	33 (34.7)	37 (33.0)	30 (23.1)
it is hard to say/I don't know	54 (14.9)	4 (19.0)	14 (14.7)	16 (14.3)	18 (13.8)
Employee's examination time (M)					
≤10 min	67 (18.5)	5 (23.8)	17 (17.9)	24 (21.4)	21 (16.2)
11–20 min	228 (63)	12 (57.1)	68 (71.6)	65 (58.0)	80 (61.5)
≥21 min	34 (9.4)	1 (4.8)	4 (4.2)	12 (10.7)	17 (13.1)
no data	33 (9.1)	3 (14.3)	6 (6.3)	11 (9.8)	12 (9.2)

* Age group 25–30 years was not included below because of the sample size (N = 4).

method in November and December 2015. The interviewer read the questions and recorded the answers, using a special computer script.

The questionnaire provided information on whether OMPs ask questions about preventive screening for women (such as cytology, mammography, breast ultrasound) and on the cancer risk factors in a particular patient. The interviewer also asked if during a medical examination the doctors checked whether employees had a family history of cancer, smoked tobacco, abused alcohol, had a diet rich

in saturated fats, or suffered from overweight or obesity. Moreover, the surveyed physicians were asked if they inquired patients about early menarche or late menopause, and about having children or first pregnancy after the age of 30 years. They were also requested to evaluate the initiative of carrying out additional cancer preventive activities as part of medical surveillance of workers.

Statistical methods

The statistical analysis of the obtained results was carried out using SPSS v. 2.1. For the categorical variables, the χ^2 test of independence with Yates's correction was applied. The data was presented in numbers and percentages of the group in the relation to people representing a given feature. The statistical significance level was set at $p < 0.05$.

In order to show correlation between job seniority in occupational health services and age of the surveyed doctors – in the context of the declared readiness to implement described cancer preventive activities – the study sample was divided into 2 groups. The first group included physicians who stated that they were not ready to implement any additional cancer preventive activities (regardless of the indicated reason, i.e., individuals indicating the following answers: "I am not ready to implement the described activities, because I think that it would be too much burden" and "I am not ready to implement the described activities, because I believe that promotion of cancer prevention should not belong to the tasks of an occupational medicine physician"). The second group comprised people who expressed their willingness to implement cancer preventive actions (by providing answers such as: "Yes, I will gladly implement the described activities immediately" and "Yes, I am ready to implement the described activities under certain conditions"). Then, cross-tables and χ^2 tests were performed for the following variables: willingness/reluctance to implement cancer prevention, seniority in occupational health services for employees (distinguished groups: ≤15 years, 16–30 years, >30 years) and age of the respondents.

Conducting further analysis, the respondents were also divided into a group of people who "always" or "in the majority of cases" asked about cancer prevention screening and a group of those who did it "occasionally" or "never." Then, cross-tables and χ^2 tests of independence were performed for the following variables: the groups of doctors asking or not about employees' preventive screening, seniority in occupational health services and the number of examinations performed weekly.

In order to compare the numbers in the groups declaring particular current preventive actions, the sample was divided into 2 groups – those who declared that they "always" or "in the majority of cases" verified the occurrence of individual risk factors and those who checked it "occasionally" or "never." Then, cross-tables and χ^2 tests were carried out to evaluate whether the declared current preventive actions were independent of seniority in occupational health services and of the number of preventive examinations performed weekly.

RESULTS

Of the 362 respondents, the physicians from occupational health services units accounted for 77.6%. The majority of those physicians worked at the employees' healthcare system for 16–30 years (42% of the surveyed doctors). The number of preventive examinations of employees conducted by the respondents weekly varied, but the majority of doctors devoted 11–20 min to perform a check-up (Table 1).

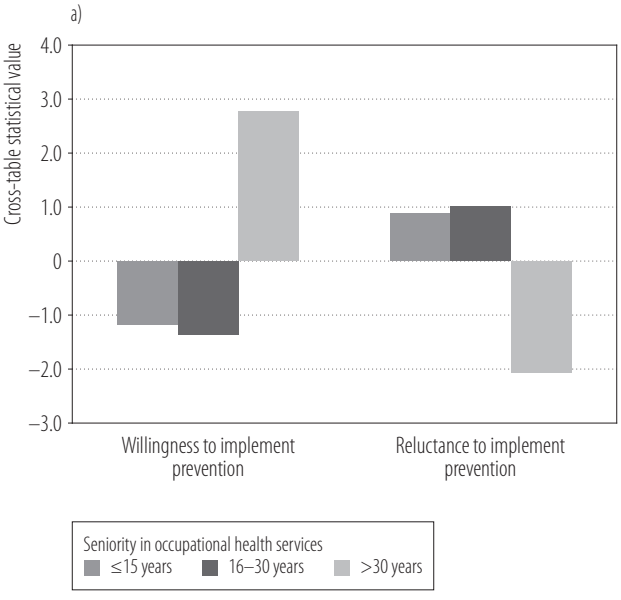
As many as 220 (61%) of the surveyed doctors declared their willingness to implement preventive activities reducing the incidence of cancer among women; 78 (22%) respondents were ready to take actions immediately, and 142 (39%) would take them under certain conditions. As many as 124 (34%) of the respondents were not ready to implement cancer prevention as a part of preventive

care for employees, because they considered that it would overburden them or that it should not be the OMP's task. The statistical analysis demonstrated that the physicians with the longest seniority (>30 years) were less often willing to implement cancer prevention than the individuals from the group with shorter (≤15 and 16–30 years) (χ^2 (2, N = 342) = 16.97, p < 0.001) (Figure 1a).

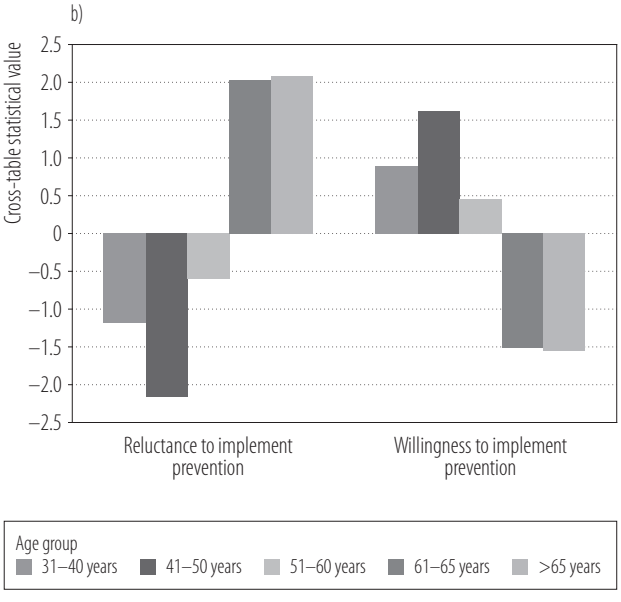
In order to indicate the correlation between readiness to implement cancer prevention in particular age groups, the above-mentioned division of the sample was applied. The first group consisted of doctors reluctant to implement preventive actions regarding cancer (regardless of the indicated reason), and the second included those who reported readiness to implement them (immediately or under certain conditions). The findings reject the null hypothesis presuming that there would be no correlation between age and the willingness to implement cancer prevention – χ^2 (4, N = 340) = 23.29, p < 0.001. The younger age groups (31–40, 41–50 and 51–60 years) were more willing than the older age groups (61–65 and >65 years) to implement cancer prevention (Figure 1b).

The factors conditioning the implementation of cancer preventive actions among those doctors who were ready to implement preventive actions were also analyzed. In all cases, the test of independence results were non-significant. It means that an indication (or not) of a particular condition as necessary for the willingness to implement cancer prevention does not correlate with the number of examinations performed weekly or with seniority in occupational health services (p > 0.05 for all listed conditions) (Table 2).

In Table 3, the analysis of cancer preventive activities currently implemented by the surveyed doctors as a part of preventive care for employees is presented. With regard to the question about cytology and breast ultrasound, there was no reason to reject the zero hypothesis assuming the independence of the following variable: seniority in occupational health services and verification



χ^2 (2, N = 342) = 16.97, p < 0.001.



χ^2 (4, N = 340) = 2329, p < 0.001.

Figure 1. Standardized residuals – deviations between the observed and expected numbers in the groups distinguished due to willingness/reluctance to implement prevention, and a) seniority in occupational health services, b) age groups

("always" or "in the majority of cases" vs. "occasionally" or "never") whether patients attended preventive screenings (p > 0.05). The results of the statistical analysis re-

Table 2. Analysis of factors conditioning the implementation of cancer preventive actions among physicians who are ready to implement preventive actions – based on the interviews carried out by the computer assisted telephone interview (CATI) method in November and December 2015

Factor	Participants (N = 142*) [%]						
	total	seniority in occupational health services			examinations performed weekly		
		<15 years (N = 38)	16–30 years (N = 71)	>30 years (N = 32)	<20 (N = 37)	21–50 (N = 35)	>50 (N = 54)
Patient's consent for additional activities related to verification of cancer risk factors occurrence	78.9	84.2	77.5	75.0	81.1	77.1	81.5
Informing the patients about increasing occupational health service for cancer prevention programs	71.8	71.1	69.0	81.3	81.1	77.1	64.8
The adequate visit time to perform preventive activities	70.4	68.4	71.8	68.8	73.0	74.3	68.5
Longer examination	68.3	68.4	71.8	62.5	64.9	80.0	63.0
The official order from management	30.3	36.8	25.4	34.4	24.3	34.3	35.2

* For 1 person willing to implement cancer preventive actions, age and seniority were not indicated.

lated to mammography indicate that the null hypothesis about the independence of work experience and questions about mammography considered as part of current cancer prevention should be rejected – χ^2 (2, N = 298) = 6.43; $p < 0.05$. The individuals from the groups with the shortest and the longest seniority in occupational health services (≤15 and >30 years) less often declared that they "always" or "in the majority of cases" asked about mammography screening (negative standardized residuals), comparing to the doctors with work experience of 16–30 years (Figure 2).

In the case of the question about attendance of cytology and breast ultrasound among female employees, there was no reason to reject the zero hypothesis assuming the independence of the number of medical visits performed weekly and verification *(*"always" or "in the majority of cases" vs. "occasionally" or "never") whether patients attended preventive screenings ($p > 0.05$). However, the result of the mammography test indicates that the null hypothesis about the independence of the number of examinations performed weekly and the questions about mammography being a part of current cancer prevention should be rejected – χ^2 (2, N = 255) = 6.82, $p < 0.05$. The doctors performing ≤20 examinations weekly were more likely to declare that they "always" or "in the majority of cases" asked patients about mammography (positive standardized residuals in the categories "always" or "in the majority of cases") than those conducting more check-ups weekly (21–50 and >50) (Figure 3a).

Only the result of the test taking into account seniority in occupational health services and verification of risk factors, i.e., early menarche or late menopause, rejects the zero hypothesis presuming the independence of these variables. The physicians with the longest seniority (>30 years) more often declared that they "always" or "in the majority of cases" asked patients about early menarche or late menopause (positive standardized residuals in the categories "always" or "in the majority

of cases") than the individuals from the groups with shorter seniority in occupational health services (≤15 years and 16–30 years) (Figure 3b).

In the case of the question concerning other risk factors, there was no reason to reject the zero hypothesis on the independence of seniority in occupational health services and verification of particular risk factors ("always" or "in the majority of cases" vs. "occasionally" or "never") ($p > 0.05$).

In none of the analyses which took into account the number of examinations performed weekly, $p < 0.05$ was demonstrated. It means that there was no reason to reject the hypothesis presuming that the verification of particular risk factors in patients is independent of the number of medical examinations performed weekly (Table 3).

DISCUSSION

In the presented study, >60% of the OMPs claimed to be ready to implement cancer preventive activities among employees. Patient's consent, informing women about the program and adjusting the time of the medical visit were the most important conditions for introducing cancer prevention programs by OMPs. The doctors with the longest seniority in occupational health services were more likely to be unwilling to implement cancer preventive activities. Neither seniority nor the number of examinations performed by a physician influenced the currently implemented cancer preventive activities as part of occupational health services (including the evaluation of the cancer risk factors occurrence among employees).

In the Ottawa Charter, the term health promotion has been defined as "the process of enabling people to increase control over, and to improve, their health" [7]. The contemporary definition states that the workforce health promotion is a modern strategy for supporting the economic development of enterprises through coordinated investments in improving their workforce's health [8]. In turn, according to the Luxembourg Declaration of the European Agency for Safety and Health at Work, the workplace health promotion is a collective effort of employers, employees and the society striving to improve the health and well-being of employees [9].

Although occupational medicine services (OMS) tasks include health promotion activities and implementation of preventive health programs, in Poland preventive care for employees is mostly oriented towards obligatory examinations (preliminary, periodical and control). During the check-ups, employees are mainly examined to confirm a lack of contraindications for work at a given position and occupational exposure. Despite the fact that preventive programs and additional health promoting activities could be a part of prophylactic medical care for employees, they are rarely undertaken by OMS [10]. Particular attention is given to the fact that in Poland an OMP is a person to whom the patient – a working person – comes with a referral from their employer, not when a medical problem that necessitates some medical advice or specialist treatment arises. Therefore, OMPs who provide preventive care for employees, due to the fact that they have contact with all types of patients, even those who do not report any symptoms, are an ideal group to conduct broadly understood disease prevention including cancer.

A special emphasis should be put on the increased health awareness of society as in the field of cancer early detection is of crucial importance – in a stadium when the disease may be successfully cured. Breast cancer prevention and control measures should be included in workplace health promotion programs [11]. It was proven by other researchers that important opportunities for health promotion may be achieved by integrating cancer prevention and screening into worksite health promotion programs, and targeted strategies in the workplace should be developed that focus on informing and/or enabling workers to engage in routine cancer screening [12,13].

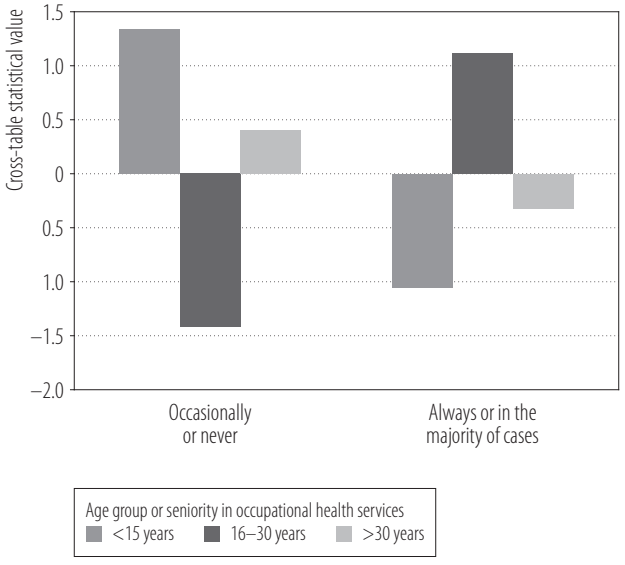
Health promotion and cancer prevention, implemented through activities aimed at the development of early ma-

Table 3. Analysis of cancer preventive activities currently undertaken and cancer risk factors verification among employees by the surveyed physicians as a part of preventive care for employees, performed among randomly selected Polish physicians from occupational health services – based on the the interviews carried out by the computer assisted telephone interview (CATI) method in November and December 2015

Variable	Participants (N = 362*) [%]						
	total	seniority in occupational health services			examinations performed weekly		
		≤15 years (N = 97)	16–30 years (N = 154)	≥30 years (N = 108)	≤20 (N = 101)	21–50 (N = 97)	>50 (N = 110)
Cancer preventive activity							
cytology							
always or in the majority of cases	58.6	54.6	58.4	63.9	60.4	55.7	59.1
selected group of patients	9.9	12.4	9.7	8.3	10.9	11.3	7.3
occasionally	18.8	19.6	19.5	15.7	17.8	23.7	16.4
no, never	12.7	13.4	12.3	12.0	10.9	9.3	17.3
mammography							
always or in the majority of cases	50.8	43.3	56.5	50.9	64.4	44.3	44.5
selected group of patients	16.9	17.5	18.8	13.9	10.9	22.7	18.2
occasionally	19.3	25.8	13.0	21.3	13.9	22.7	19.1
no, never	13.0	13.4	11.7	13.9	10.9	10.3	18.2
breast ultrasound							
always or in the majority of cases	37.5	35.1	37.7	40.7	47.5	35.1	35.5
selected group of patients	16.3	12.4	19.5	15.7	13.9	22.7	14.5
occasionally	24.6	28.9	24.0	20.4	17.8	25.8	24.5
no, never	21.5	23.7	18.8	23.1	20.8	16.5	25.5
Cancer risk factors verification							
any cancer cases in the closest family							
always or in the majority of cases	83.4	86.6	83.8	81.5	86.1	83.5	79.1
selected group of patients	4.1	3.1	4.5	4.6	2.0	4.1	7.3
occasionally	6.9	8.2	5.8	5.6	7.9	10.3	4.5
no, never	5.5	2.1	5.8	8.3	4.0	2.1	9.1

smoke tobacco							
always or in the majority of cases	95.3	96.9	94.8	94.4	95.0	92.8	97.3
selected group of patients	1.1	1.0	1.3	0.9	1.0	2.1	0.9
occasionally	2.5	2.1	2.6	2.8	2.0	4.1	1.8
no, never	1.1	0	1.3	1.9	2.0	1.0	0
alcohol abuse							
always or in the majority of cases	65.2	64.9	66.2	63.9	64.4	64.9	69.1
selected group of patients	8.3	12.4	7.8	5.6	6.9	9.3	9.1
occasionally	16.6	15.5	18.8	13.9	19.8	14.4	15.5
no, never	9.9	7.2	7.1	16.7	8.9	11.3	6.4
diet high in saturated fats							
always or in the majority of cases	31.5	36.1	26.0	36.1	35.6	22.7	31.8
selected group of patients	19.1	17.5	24.7	13.0	17.8	23.7	18.2
occasionally	21.0	20.6	22.1	20.4	19.8	25.8	19.1
no, never	28.5	25.8	27.3	30.6	26.7	27.8	30.9
overweight or obesity							
always or in the majority of cases	85.4	87.6	85.1	84.3	82.2	85.6	84.5
selected group of patients	5.8	8.2	5.8	2.8	8.9	4.1	6.4
occasionally	4.7	4.1	5.2	4.6	4.0	3.1	8.2
no, never	4.1	0	3.9	8.3	5.0	7.2	0.9
early menarche or late menopause							
always or in the majority of cases	31.5	26.8	25.3	45.4	30.7	35.1	26.4
selected group of patients	7.7	9.3	9.7	3.7	8.9	8.2	9.1
occasionally	22.9	25.8	26.0	16.7	16.8	17.5	30.0
no, never	37.8	38.1	39.0	34.3	43.6	39.2	34.5

* For some of the participants, the data on seniority in occupational health services is lacking.



χ^2 (2, N = 298) = 6.43, p < 0.05.

Figure 2. Standardized residuals – deviations between the observed and expected numbers in the groups distinguished due to currently implemented cancer prevention (the question about mammography screening – "always" or "in the majority of cases" vs. "occasionally" or "never") and seniority in occupational health services

lignancy prevention (consolidation of healthy lifestyle patterns) and primary prevention (disease prevention by controlling risk factors, with particular emphasis on cervical cancer, breast cancer, colorectal cancer and lung cancer) are among the priority actions of the National Oncology Strategy for 2020–2030 implemented in Poland [14]. The National Population-Based Prevention and Early Cervical Cancer Screening Program as well as the National Population-Based Early Breast Cancer Screening Program are available for women from appropriate age groups. However, the most important issue in the implementation of these programs is the participation rate of the target population. For example, in 2010 the participation rate in cytology was only 27%, which confirms an urgent need for further education in order to increase women's health awareness in Poland [15]. The number of women aged 20–69 who declared that they had never had a Pap test carried out was 14% in 2011, and it was lower compared to 2004 when this percentage equaled 30% [16,17]. To improve the effectiveness of the National Population-Based Cervical Cancer Screening Program in Poland, the intensive training of doctors and midwives, as well as developing a social educational campaign, are recommended [18].

In Poland, no research concerning preventive pro-health programs in the field of cancer prevention through health promotion adopted by OMS has been carried out so far. The aim of this study was to evaluate cancer preventing actions undertaken by OMPs and to analyze the factors determining the implementation of preventive measures limiting the risk of malignant tumors' developing.

According to registers kept by the Regional Occupational Medicine Centers, in 2015 the number of doctors entitled in Poland to provide preventive healthcare for working people amounted to 7053 [19]. In this study, opinions were collected from a randomly selected representative group of 362 OMPs (providing preventive care for employees) from Poland (including people employed in various types of basic occupational medicine units, e.g., public and non-public healthcare institutions, and physicians practicing individually).

The questionnaire study was used to collect data and verify whether during employees' examinations OMPs ask questions about the prevention of cancer diseases and attendance of screenings such as cytology and mammography. An attempt was also made to identify factors that prevent doctors from carrying out preventive actions related to cancer diseases.

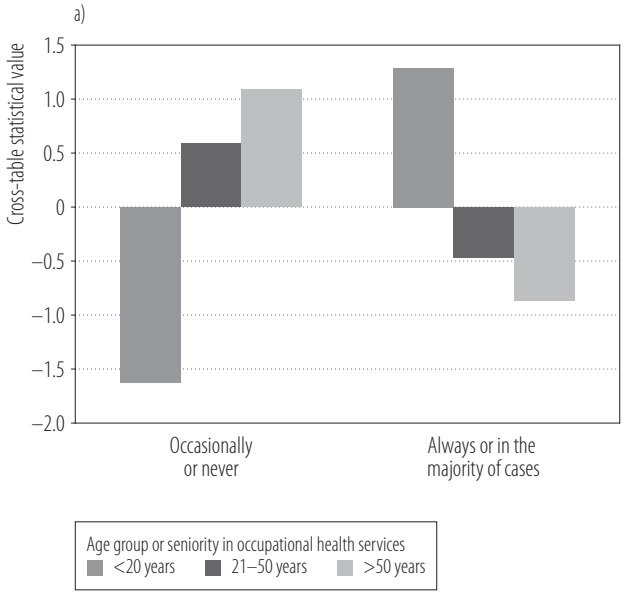
It was established by Edwards and Boulet [20] that physicians should not overlook opportunities to recommend mammography screening where appropriate, and include breast examinations as part of regular physical check-ups. Also, the benefits of good occupational health and safety practices have been identified, and the studies concerning workplace cancer prevention initiatives were published in medical literature. For example, Sorensen et al. [21] dem-

onstrated that the integration of occupational health and safety and health promotion may be an essential means of enhancing the effectiveness of worksite tobacco control initiatives with blue-collar workers.

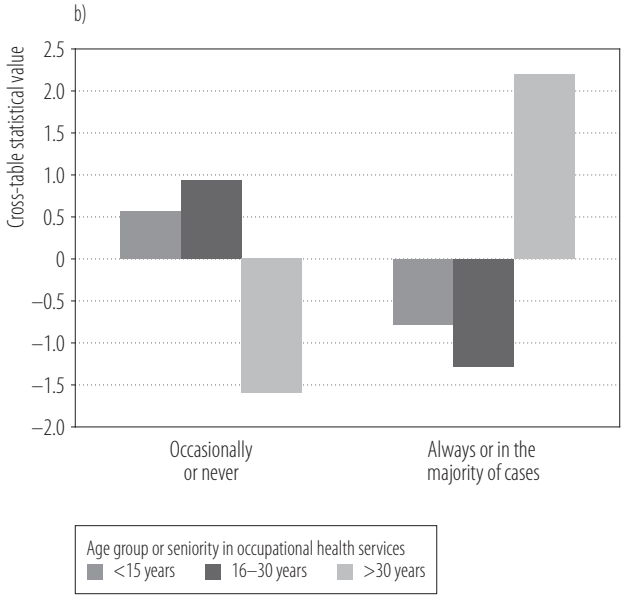
In the absence of primary cancer prevention programs with the participation of OMPs or other specific regulations in this field, there was a need to create a model of preventive measures for cancer among women, which is integrated with preventive care for employees [22]. One out of 5 doctors (22%) declared that they were ready to implement preventive measures immediately. It is worth noting that, within the younger age groups, there were more doctors willing to implement additional activities for the prevention of cancer among employees.

Screening programs at work represent an efficient, cost-effective approach for the early detection of cancer [23]. Crombie et al. [24] concluded that education programs at work can have a positive impact on attitudes and practices, including an increased likelihood and confidence in practicing breast self-examination, promoting women to have a physical breast examination, and promoting discussions of breast screening at the workplace. It was also proven by Gadgil et al. [25] that improving breast awareness and access to care in a cohort of women in an occupational healthcare scheme indicates early detection and more conservative treatment of breast cancers.

There is also a large group of OMPs (39%) ready to implement preventive actions under certain conditions. The most important of these, apart from patient's consent for additional activities related to verification of cancer risk factors occurrence, is the time needed to collect a detailed interview. The vast majority of the surveyed doctors indicated that the time that the planned activities would absorb during the visit should be adequate to doctor's capabilities, and it might even mean that the preventive visit would take more time than currently. On the other hand, a considerable group of physicians providing preventive care for employees verified at least some of the questions



χ^2 (2, N = 255) = 6.82, p < 0.05.



χ^2 (2. N = 331) = 10.84, p < 0.01.

Figure 3. Standardized residuals – deviations between the observed and expected numbers in the groups distinguished due to currently implemented cancer prevention: a) the question about mammography ("always" or "in the majority of cases" vs. "occasionally" or "never") and the number of preventive examinations performed weekly, and b) the question about early menarche or late menopause ("always" or "in majority of cases" vs. "occasionally" or "never") and seniority in occupational health services

regarding recently undergone prophylactic examinations (breast ultrasound, mammography, cytology) and the occurrence of risk factors for cancer.

The results of the research indicate that the majority of physicians providing prophylactic care for employees ask their patients about cytology and mammography at least occasionally. However, the doctors who ask such questions to all patients are definitely less common (about one-third of them). As for mammography, the limitation in the group of patients who are asked about the examination may result from age limits for free breast screening under population prevention programs [26].

The risk factors such as cancer occurrence among the patient's closest family members, smoking as well as overweight and obesity are verified always or at least in the majority of cases by 83.4%, 95.3%, and 85.4% of OMPs, respectively. In turn, doctors are significantly less likely to ask about the content of fatty acids in the diet, age at menarche or menopause, having children, and age at first pregnancy. Approximately one-third of them do so always or in the majority of cases.

As many as 27% of OMPs do not want to conduct cancer prevention because they believe that it would overburden them. Therefore, the length of the questionnaire (the questionnaire focused on recently carried out prophylactic tests of breasts, ovarian and cervical cancer risk factors) [22] seems to be the key issue. By analyzing the results of this research on the time that cancer prevention should take during a medical visit, it can be assumed that ≤5 min would be acceptable for most doctors. Unfortunately, the prolongation of the time predicted for a preventive visit on a large scale is unlikely. It is worth paying attention to the fact that most questions included in the questionnaire are already usually asked by doctors and the usage of the standardized tool would improve the doctor's work.

A certain group of doctors – less than every tenth respondent – is not at all interested in implementing the measures provided for in the project because, in their opinion, cancer prevention should not belong to the tasks of OMPs. This kind of statements were mostly observed in the group of older doctors and doctors with longer seniority. Almost half of the physicians with the longest work experience considered that an additional program would overburden them (37%) or admitted that promoting cancer prevention should not belong to the occupational doctor's tasks (11%). This statement is unacceptable, as the Act on Occupational Health Services, among other documents, requires occupational doctors to undertake preventive activities [6]. Furthermore, the need to change the approach to workers' health, from the so-called occupational perspective in which the priorities include aspects directly related to work (such as occupational diseases or accidents at work) to the approach typical of public health, in which attention is paid to all elements of working person's health (including prevention of civilization diseases), has been postulated for a long time.

It is emphasized that a specialist in occupational medicine should act not only as a physician, but also as an expert in the work-health relationship, in all its aspects: prevention, diagnosis and treatment. Both as part of an interdisciplinary team and working independently, OMPs should participate in supporting the health of people working in healthy and safe conditions. The EU guidelines on the competences of physicians who take care of employees emphasize the role of physicians primarily as advisers (at the individual and entire facility level; among others, detecting and indicating organizational irregularities, having a real impact on the health and comfort of employees, as well as suggesting changes, methods and measures of their introduction) and as coordinators of information systems (through collecting and disseminating information related to health and safety in the work process, as well as designing and implementing training and health promoting programs). This approach was also presented in the report prepared by WHO in 2012, entitled: "Situation analy-

sis and recommendations for stewardship on workplace health promotion in Poland" [27].

CONCLUSIONS

In Poland, OMPs are willing to implement cancer preventive activities among employees, but their current activity in this area is limited and needs development.

The most specific actions should be addressed to doctors with the longest seniority in occupational health services, who are frequently unwilling to implement cancer preventive activities.

Strengthening the preventive potential of Polish occupational health services requires a systemic approach to the scope and way of action of healthcare professionals.

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