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Factors associated with not visiting doctors and not performing diagnostic tests in a nationally representative survey of adults aged 18–64 years in Poland – a secondary data analysis

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Abstract

Introduction and Objective. In Poland, the health system, which is based on mandatory health insurance, provides universal access to health services. The aim of the study is to identify factors associated with not visiting doctors and not performing diagnostic tests in the last 12 months among a representative sample of Poles aged 18–64.

Materials and Method. The study is a secondary analysis of data from a public opinion survey on social attitudes and behaviours towards health prevention (December 2024) in a representative nationwide sample of 5,006 individuals aged 18–64 in Poland.

Results. In the analyzed population (n=5,006), 22.4% had not visited a doctor of any specialty (excluding dentists) in the past 12 months, and 19% had not undergone any diagnostic tests during that period. The most common reasons for not visiting doctors were: no perceived need (66.8%), reluctance or fear (12.1%), and excessively long waiting times (10.4%). Men (AOR = 1.57; 95% CI: 1.35–1.83; $p < 0.001$), individuals without higher education ($p < 0.05$), those without chronic diseases ($p < 0.05$), people aged 35–44 years (AOR = 1.22; 95% CI: 1.00–1.50; $p < 0.05$), those who were single or in informal relationships ($p < 0.05$), individuals without full-time employment ($p < 0.05$), and those living in very poor economic conditions (AOR = 1.44; 95% CI: 1.09–1.92; $p < 0.05$) were more likely to have avoided visiting doctors in the past 12 months. The same variables were associated with not undergoing diagnostic tests during the same period ($p < 0.05$).

Conclusions. Gender, age, chronic disease, educational attainment, marital status, economic status and employment conditions are key determinants for not visiting doctors, and not performing diagnostic tests.

Key words

healthcare, health services accessibility, prevention, preventive health services, healthcare utilization, Organization of health services, socio-demographic differences

INTRODUCTION

Providing access to basic healthcare services is a key principle of universal health coverage (UHC) [1–3]. In Poland, the healthcare model is based on mandatory health insurance model that obliges all employees to pay health insurance contributions [4]. Moreover, a variety of other groups, such as children, students, pregnant women, pensioners, and vulnerable groups, are covered by health insurance paid by the state budget. All individuals covered by mandatory health insurance (persons who are required to make contributions, as well as other groups with insurance covered by state budget) can use public healthcare services, including both outpatient and stationary care [4]. Healthcare services in Poland are provided by family care doctors, outpatient specialistic clinics as well as hospitals [4, 5]. All insured persons can visit a family doctor by appointment, with no annual limit or additional fees. Patients can also seek advice from specialist doctors and receive hospital treatment after obtaining an appropriate referral (with some exceptions for certain types of specialists, as well as all emergency medical services, available without referrals or restrictions) [4, 5]. In the Polish healthcare system, family doctors serve as gatekeepers for high-cost medical services [4].

The legal and organizational basis of the current healthcare system in Poland is defined in the 'Act of 27 August 2004 on healthcare services financed from public funds' [6]. The healthcare system in Poland is regularly modified and adapted to the current health needs of the population. Socio-demographic changes, observed in Poland after joining the European Union in 2004, also affected the healthcare system and influenced the risk of occurrence of serious health inequalities [4, 5]. There are concerns about geographical and transport barriers to access to healthcare services, due to the ongoing process of urbanization and migration of people from rural areas to cities [7]. Furthermore, educational level and household financial situation are also often described as factors influencing health inequalities [7–9]. However, there

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is a lack of representative data on the utilization of healthcare services by different sociodemographic groups in Poland [10].

In general, adults in Poland are encouraged to see a doctor (mostly a general practitioner) at least once a year, for a preventive visit and basic diagnostic tests (e.g., blood count, glucose measurement) [11, 12].

People with chronic health conditions or who are at increased risk for certain diseases may need to see a doctor more often. Each year, a family doctor receives a budget dedicated to diagnostic tests of the population under his/her care. The development of laboratory diagnostic companies in Poland provided patients with wide access to collection points, both in medical facilities and dedicated diagnostic points [13]. Regular check-ups and preventive medicine services provided within primary care are often insufficiently implemented forms of service in health care systems. In Poland, where the mandatory health insurance model guarantees access e.g., to primary care services, preventive medicine actions can be easily implemented. However, there is a limited number of nationwide studies on public attitudes toward diagnostic tests and preventive screening that are focused on sociodemographic differences and health inequalities. Use of preventive services improves early detection, reduces avoidable hospitalizations, and is generally cost-effective, thereby supporting system sustainability and equity [12–14].

The COVID-19 pandemic significantly affected access to healthcare services in Poland [9, 14]. However, since July 2023, all legal restrictions introduced to mitigate the COVID-19 pandemic have been lifted and patients have gained full access to healthcare services as before the pandemic. Currently, there is a lack of data on the use of healthcare services and medical diagnostic tests after the end of the COVID-19 pandemic [15]. Healthcare utilization is commonly explained using conceptual frameworks, such as the Andersen Behavioural Model of Health Services Use, which classifies determinants into predisposing factors (e.g., age, gender, education), enabling factors (e.g., financial resources, employment status), and need factors (e.g., health status or chronic diseases) [16]. In Poland, information on healthcare utilization is available from several national sources, including the Statistics Poland (GUS) household survey 'Health Care in Households', Eurostat statistics on unmet healthcare needs, and the Polish Health Needs Maps *(Mapy Potrzeb Zdrowotnych)* [16–18]. These datasets have contributed to numerous studies on healthcare access and inequalities in Poland [12, 14, 19]. However, many analyses rely on aggregated or administrative data, and do not examine individual-level determinants using nationally representative datasets. Therefore, this study aimed to identify factors associated with not visiting doctors and not performing diagnostic tests in the last 12 months in a representative sample of Poles aged 18–64 in the post-pandemic period..

MATERIALS AND METHOD

Study design and data source. The study is a secondary analysis of data managed by the National Centre for Health Policy and Health Inequalities of the Cardinal Stefan Wyszyński University, Warsaw, Poland – a public academic centre funded by the Ministry of Education and Science since 2023 (Agreement No. MEiN/2023/DPI/2717 of 13/10/2023). The National Centre for Health Policy and Health Inequalities is tasked with developing scientific research on health policy to increase the efficiency of the healthcare system in Poland, and improving health by promoting prevention and health promotion solutions [20]. Within the statutory activity, the Centre conducted a nationwide representative cross-sectional study 'Health prevention and health inequalities' [20]. Datasets from this public opinion survey on social attitudes and behaviours towards health prevention in a representative nationwide sample of people aged 18–64 are available free of charge for scientific institutions upon reasonable request.

In December 2024, a total of 5,006 adults aged 18–64 years completed a series of questionnaires (computer-assisted web interviews – CAWI) on health-related behaviours and health inequalities distributed via an IT system (website) owned by a public opinion survey company (*ARC Rynek i Opinia* – www.epanel.pl) [21]. The population was ethnically and racially homogeneous (White Caucasian).

An invitation to participate in the survey was sent to randomly selected users of the research panel *(ARC Rynek i Opinia)* [21]), considering the stratification criteria of the survey sample to provide representativeness of the sample. The sample selection considered the following stratification criteria: gender, age, size of the place of residence, and level of education, based on the data published by the Statistics of Poland. Participation in the survey was voluntary. Each respondent expressed voluntary and informed consent to participate.

Measures. Based on the data available in the dataset managed by the National Centre for Health Policy and Health Inequalities, the following variables were selected for this analysis:

Visiting doctors in the last 12 months (excluding visits to the dentist) in the last 12 months; how many times have you visited a doctor of any specialty in connection with your health or a matter concerning your own health? Not at all, once, twice, 4 times or more. Individuals who declared 'not at all' were identified as those who had not visited doctors in the last 12 months.

Diagnostic tests performed in the last 12 months: Please indicate which of the following tests you have performed this year (2024) – multiple-choice question with a list of 14 different diagnostic tests and answer 'I did not perform any diagnostic tests in 2024'.

Questions on socio-demographic variables were also used to present characteristics of the study population.

Respondents were obligated to answer all questions, therfore there were no missing data in the obtained registry.

Statistical analysis. The data were analyzed with SPSS version 28 (IBM Corp., Armonk, NY, USA). In this analysis, demographic weighting was applied to reflect the structure (gender, age, place of residence) of the working-age adult population (18–64 years) in Poland. The distribution of categorical variables was shown by proportions. Independent samples chi-square test was used to compare categorical variables. Associations between personal characteristics (12 different variables) and (Model No. 1) not visiting doctors in the last 12 months or (Model No. 2) not performing diagnostic tests in the last 12 months, were analyzed using the multivariable logistic regression analyses. Models with the best fitting values (Cox & Snell R-square fit level and the

Nagelkerke R-square level) were presented in this analysis. The strength of association was measured by the adjusted odds ratio (aOR) and 95% confidence intervals (CI). Statistical significance criteria included alfa 0.05. The identified variables should be interpreted as statistically significant predictors rather than definitive 'key determinants'.

Ethics. The study protocol was reviewed and approved by the Ethical Committee at the Medical University of Warsaw (Approval No. AKBE/56/2025) and performed according to the Declaration of Helsinki. This study is a secondary statistical analysis of data collected by a specialized survey company – *ARC Rynek i Opinia* (www.epanel.pl) within the statutory activity of the National Centre for Health Policy and Health Inequalities Research in Warsaw, Poland [20, 21]. Datasets acquired by the authors from the data owner were anonymous and prevented the identification of any individual study subject by the research team at any stage of the study.

RESULTS

Data on 5,006 individuals aged 18 – 64 were analyzed, 49.9% were females. The average age was 41.8 (SD=12.59); median age 42. Gender did not differentiate the average age (p=0.163). Most of the individuals had secondary (37.9%) or higher education (30.3%). Among the study group, 40.6% lived in rural areas and 46.6% were married. More than half of the study group (57.2%) worked full-time, and another 18.0% worked part-time or casually. Two out of five individuals (39.5%) declared a good or very good financial situation. Less than half of individuals (47.1%) reported a lack of chronic diseases diagnosed by a doctor. Of all individuals, 26.8% assessed their health as definitely or slightly better than their peers. A detailed summary of the characteristics of the study sample is presented in Table 1.

In the analysed population (n=5,006), 22.4% of individuals had not visited a doctor of any specialty (excluding a dentist) in the last 12 months (Tab. 2). Males more often declared not visiting doctors than females (28.1% vs. 16.6%, p<0.001). In the group of people with primary education, 30.3% of respondents had not visited doctors in the last 12 months, while among those with higher education, this percentage was 16.3% (p<0.001). In the youngest age group (i.e. 18–24 years), 27.9% had not visited a doctor, while in the group of 45–64 years, this percentage was 19.1% (p<0.001). Rural residents were more likely to declare that they had not visited a doctor than city residents, especially those living in cities with more than 500,000 inhabitants (25.9% vs 18.5%; p<0.001). In the group of married people, the percentage of people who had not consulted a doctor in the last year was 18.3%, while among singles it was 29.6% (p<0.001). The presence of children under 4 years of age in the household did not significantly differentiate the results (p=0.127), similar to the presence of children aged 5–12 (p=0.123). Almost one-quarter of unemployed people (24.7%) had not consulted a doctor in the last year. Among those working full time, it was (20.9%). The differences were statistically significant (p<0.05). No relationship was found between the assessment of the financial situation and not visiting a doctor (p=0.440). Over one-third (34.8%) of people who had not been diagnosed with any of the analysed chronic diseases had not consulted a doctor in the last year. In the group diagnosed with at least 3 chronic diseases, this percentage was (7.3%). The differences were statistically significant (p<0.001). One- quarter (24.7%) of people who assessed their health as definitely or slightly better than people of the same age had not visited a doctor in the last year. In the group assessing their health as definitely worse, this percentage was 12.4% (p<0.001). Among people who declared that they never get colds or infections, 43.4% had not visited a doctor in the last 12 months. In contrast, among those who declared infections 5–6 times a year, 17.9% responded in the same way (p<0.001) (Tab. 2).

In the analysed population (n=5,006), 19% of adults had not undergone any diagnostic tests in the last year. Men were more likely to declare no tests than women (25.3% vs. 12.7%, p<0.001). In the group of people with primary education, this percentage was 33.3%, and with higher education – 12.0% (p<0.001). In the youngest age group (i.e. 18–24 years), 25.1% had not undergone any tests, while in the group 45–64 years, this percentage was 15.9% (p<0.001). Among rural residents, this percentage was 23.4%, and in the largest cities 14.3% (p<0.001). Single people were significantly more likely to declare that they had not undergone any tests in the last year than married people (25.6% vs. 14.6%). The presence of children under 4 years of age in the household did not significantly differentiate the results (p=0.162), nor did the presence of children aged 5–12 (p=0.343). In the group of full-time employees, 17.6% had not undergone tests in the last year. Among the unemployed, this was 21.5% (p<0.05). People with a good or very good financial situation were less likely to declare that they had not undergone diagnostic tests in the last year, compared to the worst-off (16.0% vs. 23.6%; p<0.001). Among people without a diagnosed chronic disease, 29.5% had not undergone tests in the last year. In the group with 3 or more chronic diseases, this percentage was 4.5% (p<0.001). People declaring their health condition as definitely or slightly better than people their age had not undergone tests in the last year in 17.9% of cases. However, among those who assessed their health as significantly worse than people their age, this percentage was 12.2% (p<0.001). One-third (33.0%) of people who declared that they usually do not get colds did not have any tests done in the last year, while in the group that has 5 or more infections per year, this percentage was 16.8% (p<0.001) (Tab. 2).

Individuals who had not visited a doctor in the past 12 months (n=1119) were asked about the reasons for this situation (respondents could indicate more than one reason). Over two-thirds of the respondents (66.8%) indicated that they had no reason to see a doctor. In second place, reluctance or fear of the doctor was indicated (12.1%), and in third place, too long waiting time (10.4%). A similar percentage of respondents indicated financial constraints or lack of insurance (9.6%) (Fig. 1).

The first of the presented multivariable logistic regression models predicting that a given person had not visited a doctor of any specialty in the last year, was obtained by the Cox and Snell R-square fit level of 0.132 and the Nagelkerke R-square of 0.201. Males had a 57% higher chance of not visiting doctors in the last year compared to females (aOR=1.57; 95%CI: 1.35 – 1.83). Compared to people with higher education, people with primary education had a 62% higher chance of being in the group who had not visited doctors (aOR=1.62; 95%CI: 1.20 – 2.19). People who had not been diagnosed with any chronic disease had almost a 6-fold greater chance

Table 1. Characteristics of the study population (n=5,006)

Variable		n	%
Gender	female	2500	49.9%
	male	2506	50.1%
Educational level*	primary	412	8.2%
	vocational	1181	23.6%
	secondary	1896	37.9%
	higher	1518	30.3%
Age group [years]	18–24	541	10.8%
	25–34	990	19.8%
	35–44	1326	26.5%
	45–64	2149	42.9%
Place of residence	rural area	2035	40.6%
	city below100,000 residents	1581	31.6%
	city from 100,000 – 499,999 residents	789	15.8%
	city above 500,000 residents	601	12.0%
Marital status*	single	1368	27.3%
	divorced or widowed	527	10.5%
	informal relationship	781	15.6%
	married	2331	46.6%
Having children aged up to 4 years	no	4416	88.2%
	yes	590	11.8%
Having children aged 5–12 years	no	3878	77.5%
	yes	1128	22.5%
Professional work	full-time job	2862	57.2%
	part-time job	902	18.0%
	no (unemployed, student, or pensioner)	1242	24.8%
Financial situation of the household*	we have enough for everything and we are still saving for the future	999	19.9%
	we have enough for everything without any special sacrifices, but we do not save for the future	977	19.5%
	we live frugally and thanks to that we have enough for everything	1805	36.0%
	we live very frugally to save for more serious purchases	679	13.6%
	we only have enough money for basic needs, or there is not enough money even for the cheapest food	547	10.9%
Number of chronic diseases diagnosed by a doctor	none	2359	47.1%
	1	1281	25.6%
	2	699	14.0%
	3 or more	667	13.3%
Self-assessment of health status relative to peers	definitely better or a little better	1343	26.8%
	the same or hard to say	2323	46.4%
	a little worse	1003	20.0%
	definitely worse	337	6.7%
On average, how often do you get sick or catch a cold during the year?	not at all	460	9.2%
	1–2 times a year	3125	62.4%
	3–4 times a year	1057	21.1%
	5 or more times a year	364	7.3%

* demographic weighting was applied and total 'n' was 5,007 rather than 5,006.

(aOR=5.85; 95%CI: 4.19–8.16) of not having had a medical consultation in the last 12 months, compared to those who had been diagnosed with 3 or more chronic diseases. People who usually do not get sick had a 3-fold greater chance (aOR =3.02; 95%CI: 2.09–4.34) of being in the group who had not had any medical visits in the past year, compared to people who had an average of 5 or more infections per year. In the model, variables such as size of place of residence, presence of children in the household aged up to 4 and from 5 – 12 years, and self-assessment of health status did not differentiate the odds of having a medical visit in a statistically significant way (p>0.05) (Tab. 3).

The second of the presented multivariable logistic regression models predicting that a given person had not performed any diagnostic tests, was obtained by a Cox and Snell R-square fit level of 0.136 and a Nagelkerke R-square of 0.219. Males

Table 2. Percentage of adults in Poland who have not visited doctors or have not had diagnostic tests performed in the last 12 months (n=5,006).

Variable		Not visiting a doctor in the last 12 months	p	Not undergone diagnostic tests in the last 12 months	p
	Overall (n=5006)	22.4%		19.0%	
Gender	female (n=2500)	16.6%	<0.001	12.7%	<0.001
	male (n=2506)	28.1%		25.3%	
Educational level*	primary (n=412)	30.4%	<0.001	33.3%	<0.001
	vocational (n=1181)	27.6%		23.6%	
	secondary (n=1896)	22.2%		18.7%	
	higher (n=1518)	16.4%		12.0%	
Age group [years]	18–24 (n=541)	27.9%	<0.001	25.1%	<0.001
	25–34 (n=990)	24.8%		20.3%	
	35–44 (n=1326)	23.6%		20.6%	
	45–64 (n=2149)	19.1%		15.9%	
Place of residence	rural area (n=2035)	26.0%	<0.001	23.4%	<0.001
	city below100,000 residents (n=1581)	20.5%		17.1%	
	city from 100,000 – 499,999 residents (n=789)	19.9%		15.0%	
	city above 500,000 residents (n=601)	18.5%		14.3%	
Marital status*	single (n=1368)	29.6%	<0.001	25.6%	<0.001
	divorced or widowed (n=527)	17.7%		14.6%	
	informal relationship (n=781)	24.9%		23.4%	
	married (n=2331)	18.3%		14.6%	
Having children aged up to 4 years	no (n=4416)	22.7%	0.127	19.3%	0.162
	yes (n=590)	19.9%		16.8%	
Having children aged 5–12 years	no (n=3878)	22.9%	0.123	19.3%	0.343
	yes (n=1128)	20.6%		18.0%	
Professional work	full-time job (n=2862)	20.9%	<0.05	17.6%	<0.05
	part-time job (n=902)	23.7%		19.8%	
	no (unemployed, student, or pensioner) (n=1242)	24.7%		21.5%	
Financial situation of the household*	we have enough for everything, and we are still saving for the future (n=999)	22.3%	0.440	16.0%	<0.001
	we have enough for everything without any special sacrifices, but we do not save for the future (n=977)	21.2%		18.0%	
	we live frugally and thanks to that we have enough for everything (n=1805)	22.2%		20.6%	
	we live very frugally to save for more serious purchase (n=679)	22.2%		16.8%	
	we only have enough money for basic needs, or there is not enough money even for the cheapest food (n=547)	25.5%		23.5%	
Number of chronic diseases diagnosed by a doctor	none (n=2359)	34.8%	<0.001	29.5%	<0.001
	1 (n=1281)	14.7%		13.2%	
	2 (n=699)	8.9%		7.8%	
	3 or more (n=667)	7.3%		4.5%	
Self-assessment of health status relative to peers	definitely better or a little better (n=1343)	24.8%	<0.001	17.9%	<0.001
	the same or hard to say (n=2323)	25.2%		22.3%	
	a little worse (n=1003)	16.0%		15.2%	
	definitely worse (n=337)	12.4%		12.2%	
Average number of common infections (getting sick or catching a cold) per year	not at all (n=460)	43.4%	<0.001	33.1%	<0.001
	1–2 times a year (n=3125)	22.0%		19.7%	
	3–4 times a year (n=1057)	15.7%		11.4%	
	5 or more times a year (n=364)	17.8%		16.7%	

* demographic weighting was applied and total 'n' was 5,007 rather than 5,006.

had an 83% higher chance of not performing diagnostic tests compared to females (aOR= 1.83; 95%CI: 1.55 – 2.16). Compared to individuals with higher education, individuals with primary education had over 2.5 times higher chance of being in the group who had not undergone diagnostic tests in the last 12 months (aOR = 2.66; 95%CI: 1.95 – 3.63). Individuals who had not been diagnosed with any chronic disease had an over 8-fold greater chance (aOR= 8.64; 95%CI:

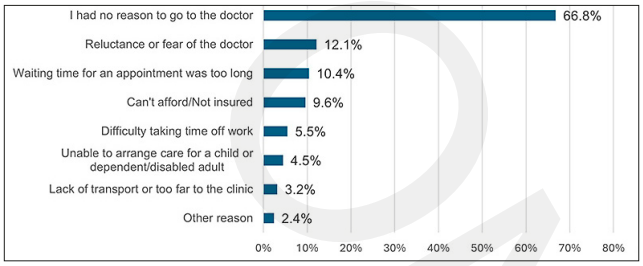

Figure 1. Reasons for not visiting doctors in the last 12 months (n=1,119)

5.74 – 13.02) of not having undergone diagnostic tests in the last 12 months, compared to individuals who had been diagnosed with 3 or more chronic diseases. Individuals who usually do not get sick had an over 2-fold greater chance (aOR= 2.31; 95%CI: 1.57 – 3.39) of being in the group who had not undergone any diagnostic tests, compared to individuals who had an average of 5 or more infections per year. In this model, variables such as size of place of residence, presence of children in the household up to 4 years of age and from 5 – 12 years of age, and self-assessment of health status, did not differentiate ($p>0.05$) the odds of having undergone diagnostic tests in the last year in a statistically significant way (Tab. 3).

DISCUSSION

This secondary analysis of data from a representative sample of over 5,000 adults in Poland revealed that one-fifth of Poland's had neither visited a doctor nor undergone diagnostic tests in the past 12 months. Nearly one-tenth of those who had not used these services cited fear of doctors, long waiting times, or limited availability of health services as primary reasons. In addition to personal characteristics, such as gender, age, and the presence of health conditions, socio-demographic factors—including educational attainment, marital status, employment status, and household financial situation—were significantly associated with not visiting doctors and not undergoing diagnostic testing within the past year. Findings from this study indicate potential health inequalities caused by educational level, professional, and financial status.

It should be noted that the outcomes analyzed in this study represent any doctor visit and any diagnostic test performed in the last 12 months, regardless of whether the service was preventive or related to existing health problems. Therefore, the findings should not be interpreted strictly as measures of preventive healthcare utilization. Nevertheless, regular contact with healthcare providers and basic diagnostic testing may also contribute to early detection of health problems and improved population health outcomes.

Research on health service use may inform clinicians, public health specialists, and policymakers on current trends and needs related to the organization of public health systems [22]. Visiting doctors and undergoing diagnostic tests are the basic health services provided within publicly funded health systems [4, 5]. Moreover, in developed countries, wide access to private health services is provided. In Poland, universal health coverage guarantees access to primary care physicians when needed, without any referral [4]. Moreover, access to a wide range of specialists is available after receiving referrals from primary care physicians (with some exceptions for specialists where referral is not needed). This analysis is focused on 2 outcome variables: not visiting doctors in the last 12 months and not undergoing diagnostic tests in the last 12 months. This way of data analysis was applied to identify factors that may cause health inequalities.

Health inequalities may result from limited access to health services, mostly due to transportation or financial barriers, as well as individual health literacy levels driven by education and personal beliefs [23]. Gender differences in behaviours related to health service use are well-described in the scientific literature [9, 24, 25]. In general, males are less likely to visit doctors and participate in screening programmes [24, 25]. In line with previously published results, findings from the current study also confirmed that males were less likely than females to visit doctors or undergo diagnostic tests. Age is a significant risk factor for chronic diseases [26]. Among adults, utilization of health services increases with age and is the highest among those aged 65 years and over [26]. In this study, individuals aged 35–44 were less likely to visit doctors or undergo diagnostic tests, when compared to those aged 45–65 years. This observation may result from the fact that adults aged 35–44, due to professional and social obligations the lack of visible symptoms of the disease, and the perception of the risk of disease, do not visit a doctor (even for preventive visits) or undergo diagnostic tests. Respondents without chronic diseases, as well as those who had not had common infections during the last year, were less likely to visit doctors or undergo diagnostic tests. Patients with chronic diseases should visit doctors for regular check-ups and issue of prescription. Common infections often cause urgent visits to primary care practices. The utilization of health services is likely to be lower in a relatively young and healthy population. Public health specialists should identify and analyze motivation for low utilizations of preventive services in these groups.

Educational level may influence individual behaviours and health literacy levels [27]. In this study, adults without higher education were more likely to not visit doctors or undergo diagnostic tests. This finding is in line with previously published data on disparities in health-related to education. Educational level may be particularly important when related to preventive visits to a doctor and diagnostic tests related to health screening.

In the current study, being single or in an informal relationship was associated with not visiting a doctor and not undergoing diagnostic tests. Being in a relationship may be associated with health-related behaviours as spouses or partners can motivate each other to take care of their own health and use health services, especially for regular check-ups. Economic barriers to accessing health services are one of the most common causes of health inequalities [7, 8, 23]. In this study, low economic status was associated with not visiting doctors and not undergoing diagnostic tests. This finding suggests that despite significant economic growth and social developments observed in Poland in the past two decades, economic inequities still affect the use of health services. Moreover, those who did not have full-time jobs were less likely to visit doctors or undergo diagnostic tests. Different employment statuses may be related to access to private healthcare services offered as employment benefits. However, it should be noted that insurance status and use of private healthcare services were not directly measured in this study.

Table 3. Influence of selected factors on not visiting a doctor or undergoing diagnostic tests in the last 12 months – multivariable logistic regression model (n=5,006)

Variable		Not visiting a doctor in the last 12 months		Not undergoing diagnostic tests in the last 12 months	
		p	AOR (95%CI)	p	aOR (95%CI)
Gender	female	Ref.	Ref.	Ref.	Ref.
	male	**<0.001**	1.57 (1.35 – 1.83)	**<0.001**	1.83 (1.55 – 2.16)
Educational level	primary	**<0.01**	1.62 (1.2 – 2.19)	**<0.001**	2.66 (1.95 – 3.63)
	vocational	**<0.001**	1.74 (1.4 – 2.17)	**<0.001**	1.92 (1.52 – 2.44)
	secondary	**<0.01**	1.35 (1.12 – 1.64)	**<0.001**	1.52 (1.23 – 1.88)
	higher	Ref.	Ref.	Ref.	Ref.
Age group [years]	18–24	0.89	1.02 (0.77 – 1.35)	0.748	1.05 (0.78 – 1.41)
	25–34	0.189	1.16 (0.93 – 1.46)	0.364	1.12 (0.88 – 1.43)
	35–44	**<0.05**	1.22 (1.00 – 1.5)	**<0.05**	1.27 (1.03 – 1.57)
	45–64	Ref.	Ref.	Ref.	Ref.
Place of residence	rural area	0.083	1.25 (0.97 – 1.61)	**0.016**	1.4 (1.06 – 1.84)
	city below100,000 residents	0.906	0.98 (0.76 – 1.28)	0.793	1.04 (0.78 – 1.38)
	city from 100,000 – 499,999 residents	0.702	1.06 (0.79 – 1.42)	0.809	0.96 (0.70 – 1.33)
	city above 500,000 residents	Ref.	Ref.	Ref.	Ref.
Marital status	single	**<0.001**	1.45 (1.19 – 1.77)	**<0.01**	1.46 (1.18 – 1.81)
	divorced or widowed	0.623	1.07 (0.82 – 1.4)	0.379	1.14 (0.85 – 1.53)
	informal relationship	**<0.01**	1.39 (1.11 – 1.73)	**<0.001**	1.71 (1.35 – 2.15)
	married	Ref.	Ref.	Ref.	Ref.
Having children aged up to 4 years	yes	0.786	0.97 (0.76 – 1.23)	0.994	1.00 (0.77 – 1.3)
	no	Ref.	Ref.	Ref.	Ref.
Having children aged 5–12 years	yes	0.993	1.00 (0.83 – 1.21)	0.647	1.05 (0.86 – 1.28)
	no	Ref.	Ref.	Ref.	Ref.
Professional work	full-time job	Ref.	Ref.	Ref.	Ref.
	part-time job	**<0.05**	1.24 (1.01 – 1.52)	0.191	1.16 (0.93 – 1.44)
	no (unemployed, student, or pensioner)	**<0.01**	1.39 (1.15 – 1.68)	**<0.05**	1.27 (1.04 – 1.56)
Financial situation of the household	we have enough for everything, and we are still saving for the future	Ref.	Ref.	Ref.	Ref.
	we have enough for everything without any special sacrifices, but we do not save for the future	0.75	1.04 (0.82 – 1.31)	0.136	1.21 (0.94 – 1.57)
	we live frugally and thanks to that we have enough for everything	0.38	1.10 (0.89 – 1.35)	**<0.01**	1.48 (1.18 – 1.86)
	we live very frugally to save for more serious purchases	0.073	1.27 (0.98 – 1.65)	0.085	1.29 (0.97 – 1.73)
	we only have enough money for basic needs or there is not enough money even for the cheapest food	**<0.05**	1.44 (1.09 – 1.92)	**<0.001**	1.86 (1.37 – 2.51)
Number of chronic diseases diagnosed by a doctor	none	**<0.001**	5.85 (4.19 – 8.16)	**<0.001**	8.64 (5.74 – 13.02)
	1	**<0.001**	2.05 (1.45 – 2.91)	**<0.001**	3.26 (2.14 – 4.98)
	2	0.333	1.22 (0.82 – 1.82)	**<0.05**	1.85 (1.15 – 2.97)
	3 or more	Ref.	Ref.	Ref.	Ref.
Self-assessment of health status relative to peers	definitely better or a little better	0.399	1.18 (0.80 – 1.75)	0.141	0.73 (0.49 – 1.11)
	the same or hard to say	0.103	1.37 (0.94 – 2.00)	0.567	1.12 (0.76 – 1.66)
	a little worse	0.77	1.06 (0.71 – 1.57)	0.918	0.98 (0.65 – 1.47)
	definitely worse	Ref.	Ref.	Ref.	Ref.
Average number of common infections (getting sick or catching a cold) per year	not at all	**<0.001**	3.02 (2.09 – 4.34)	**<0.001**	2.31 (1.57 – 3.39)
	1–2 times a year	0.186	1.23 (0.90 – 1.68)	0.152	1.27 (0.92 – 1.76)
	3–4 times a year	0.397	0.86 (0.61 – 1.21)	**<0.05**	0.65 (0.45 – 0.94)
	5 or more times a year	Ref.	Ref.	Ref.	Ref.

* demographic weighting was applied and total 'n' was 5,007 rather than 5,006

In the current study, in multivariable logistic regression model, place of residence was not associated with visiting doctors. This observation suggests that health services are available throughout the country and there are no obvious transport barriers when it comes to seeing a doctor. Moreover, there was no association between the presence of children at

home and visiting doctors, or having diagnostic tests due to own health. This observation suggests that the transmission of childhood diseases (e.g. from schools or kindergartens) from children to adults does not significantly affect visits by adults to a doctor. Furthermore, self-reported health status did not influence the analyzed outcomes, which is probably because the occurrence of chronic diseases and the frequency of infections were controlled in multivariable regression models.

The study was carried out in Poland, where there is a mandatory health insurance system, and all insured individuals are obligated to declare the primary care physician from whom they will receive primary care services. Due to this fact, all insured individuals have access to primary care services, including visiting doctors and basic laboratory tests. Moreover, general practitioners are encouraged to perform annual check-ups for individuals without chronic diseases and other health conditions. In countries where the health system is based on private services and paid healthcare (e.g., the United States), numerous people can avoid preventive visits to doctors and regular testing as it's associated with additional expenditures [28, 29]. A universal healthcare system may have a significant impact on healthcare utilization, including preventive visits to doctors and screening tests [29, 30]. This observation requires further investigation and comparison between different health systems.

Practical implications. Findings from this study showed that beyond such personal characteristics as gender or age,, socio-demographic factors such as educational level, marital status, and professional and financial status, are significantly associated with public attitudes towards visiting doctors and undergoing diagnostic tests. Males, individuals without higher education, individuals who are not in formal relationships, as well as those without full-time employment, and with a bad economic status, are at higher risk for not visiting doctors or not undergoing diagnostic tests.

The findings from this study may be used to develop public health policies targeted to socio-economic groups that are at higher risk of health inequalities and lower utilization of health services.

Further studies employing qualitative methodologies are needed to understand and explain decisions by individuals not to seek care in a country that has made efforts to reduce access barriers.

Limitations of the study. This study has several limitations typical for secondary data analysis. The scope of analysis was limited to the data acquired from the National Centre for Health Policy and Health Inequalities [20]. Data on health service use (visiting doctors and undergoing tests) were self-declared and not verified by health records. The causes for visits to a doctor and types of diagnostic tests were not analyzed. The dataset did not allow distinguishing between preventive healthcare use and visits related to existing health problems. In addition, the survey was conducted using an online panel (CAWI), which may introduce potential selection bias related to internet access. This study was limited to a representative sample of adults aged 18–64 (working age group). The original survey was conducted using a computer system, which likely biased the respondent pool toward younger individuals with internet and computer access, there is therefore the risk of potential sampling bias, and high representation of younger individuals. Nevertheless, demographic weighting was applied which reducedd the risk of bias. Data were self-reported, with the risk of recall bias, especially related to data on the health status and income of the household.

CONCLUSIONS

One-in-five adults aged 18–64 had not visited a doctor or undergo diagnostic testing in the past year. Gender, age, chronic disease, educational attainment, marital status, economic status and employment conditions, are key determinants of not visiting doctors and not undergoing diagnostic tests. Public health interventions are needed to address these disparities and promote equitable access to health care. Regular visits to a doctor and blood tests should be considered one of the foundations for the prevention of chronic diseases, which represent a very serious challenge for the Polish healthcare system.

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