

Original Article

Evaluation of Oral hygiene Awareness and health-promoting behaviors Among Adults in the Masovian Region of Poland: A Cross-Sectional Survey Study

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ABSTRACT

Assessing health-promoting behaviors is essential for understanding the determinants that influence population well-being. Although health awareness has been gradually improving in Poland, the overall oral health status of adults continues to be unsatisfactory. This study aimed to evaluate participants' knowledge concerning dental caries prevention, the significance of fluoride use, and oral hygiene practices. A quantitative cross-sectional design was adopted for this investigation. Data were collected using a custom-designed anonymous questionnaire to maintain participant privacy and encourage honest participation. The survey was conducted over five months through computer-assisted web interviewing (CAWI) using Google Forms. The survey link was distributed through public online groups and social media to reach a broad and diverse audience. All responses were anonymized and organized for subsequent statistical analysis. A total of 643 individuals participated in the study. Among them, only 95 respondents (14.77%) demonstrated adequate oral hygiene knowledge and reported behaviors consistent with recommended standards. Variables such as education level, income, and place of residence showed no significant correlation with the preferred health-oriented attitude of the "ideal patient." Notably, many participants lacked awareness of fluoride's preventive role in dental caries, with some perceiving it as harmful and avoiding fluoride-based toothpaste. Additionally, about 20% of respondents were unaware that their toothpaste contained fluoride, and these results were consistent across both urban and rural populations. The findings highlight a general deficiency in oral health knowledge among adults in Poland. Therefore, it is crucial to implement broader, well-structured educational initiatives focused on improving oral health awareness and preventive behaviors within this population.

Keywords: Oral hygiene, Surveys and questionnaires, Cross-sectional studies, Health behavior, Health education

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Introduction

Maintaining good oral hygiene is vital for achieving and preserving oral health, which in turn has a profound impact on an individual's overall well-being. Oral health also affects one's self-esteem, physical and

mental condition, and social interactions, thereby influencing the quality of life [1, 2]. The World Health Organization (WHO) describes oral health as "the state of the mouth, teeth and orofacial structures that enables individuals to perform essential functions such as eating, breathing and speaking, and encompasses psychosocial dimensions such as self-confidence, well-

being and the ability to socialize and work without pain, discomfort or embarrassment. Oral health varies over the life course from early life to old age, is integral to general health and supports individuals in participating in society and achieving their potential” [3].

The development of most oral diseases, including dental caries and periodontal conditions, is associated with common etiological determinants that overlap with several chronic diseases [4, 5]. These include lifestyle habits, unhealthy diet, tobacco use, alcohol consumption, drug abuse, and inadequate oral hygiene [6]. Promoting oral health relies primarily on interdisciplinary strategies focused on health promotion and prevention that address both individual and population needs [7, 8]. Numerous factors—such as socioeconomic status, gender, educational attainment, knowledge, and attitudes toward oral hygiene—shape personal oral health behaviors [9, 10]. Nonetheless, adherence to recommended practices like brushing teeth at least twice daily, cleaning between teeth, and incorporating fluoride use has been shown to significantly lower the prevalence and severity of caries [11]. Substantial global evidence confirms that fluoride strengthens tooth enamel by reducing susceptibility to caries and remineralizing early enamel lesions, thereby markedly decreasing caries incidence [12–19]. Despite the easy access to modern oral hygiene tools and products such as toothbrushes, toothpaste, and mouth rinses, insufficient health education continues to be a major barrier to improving oral health outcomes [20, 21].

Although public awareness of oral health has improved in Poland, epidemiological findings reveal that the oral health status of Polish adults remains inadequate. According to national data, a decline in caries prevalence and a reduced number of extractions caused by caries were observed among adults aged 34–44 years in 2019 compared to 2010; however, the decay-missing-filled (DMF) index remained relatively elevated [22]. Research indicates that many individuals’ oral health practices still fall short of optimal standards [22]. A considerable portion of respondents reported visiting the dentist primarily due to pain or urgent treatment needs rather than for preventive check-ups [22]. This behavior likely stems from a limited understanding of preventive care, leading to poorer oral health outcomes. Increasing investments in oral health education could help alleviate the economic burden related to treating dental caries and its complications. Although the effectiveness of fluoride in preventing caries is well-documented, concerns have risen following WHO

statements suggesting potential neurotoxic effects, prompting some individuals to discontinue its use [23–25]. Despite scientific consensus confirming the safety of fluoride-containing oral care products, some people avoid them. In addition, the growing influence of social media and the rising popularity of “natural” or “organic” products have fueled misinformation and skepticism about fluoride [26, 27]. Continued research is therefore needed to examine the scale and consequences of this trend.

The present study aimed to evaluate the knowledge of dental caries etiology, health-promoting behaviors, and the understanding of fluoride’s role in caries prevention among adults living in the Masovian Voivodeship, Poland. Furthermore, it sought to identify determinants influencing appropriate oral health behaviors in this population, thereby offering insights into the effectiveness of current oral health education and preventive strategies.

Material and Methods

This research was carried out between December 30, 2022, and April 27, 2023, utilizing a quantitative cross-sectional design supported by a structured questionnaire. Participation was based on clearly defined inclusion and exclusion criteria. Eligible respondents were adults over 18 years of age who had at least five permanent teeth, were not professionally involved in dentistry, and were residents of the Masovian Voivodeship. Individuals excluded from participation included those younger than 18 years, possessing fewer than five permanent teeth, employed or studying within the dental field (such as dentists, hygienists, dental assistants, or dental students), and those living outside the Masovian Voivodeship. All participants meeting these inclusion parameters were invited to take part in the study.

The questionnaire, designed to ensure anonymity, consisted of 21 items (supplementary material available upon request from the corresponding author). The initial five questions gathered sociodemographic data through single-choice responses. The remaining sixteen questions, comprising both single- and multiple-choice formats, explored participants’ oral health awareness, preventive behaviors, and sources of health-related information.

For analytical purposes, the concept of an “ideal patient” was introduced, referring to individuals who demonstrated exemplary oral health behavior consistent with current scientific recommendations. To be classified as an “ideal patient,” a respondent had to correctly answer at least six of the sixteen health awareness questions, including four essential ones:

- Frequency of tooth brushing: Correct responses—“twice a day” or “three times a day or more.”
- Use of fluoride toothpaste: Correct response—“yes.”
- Flossing habits: Correct response—“yes, regularly.”
- Brushing duration: Correct responses—“2 minutes” or “more than 2 minutes.”

Data collection was performed through the Computer-Assisted Web Interviewing (CAWI) approach using a Google Forms (Google LLC, Mountain View, USA) survey. The survey was designed to ensure full anonymity, confidentiality of data, and honest participation. The link to the questionnaire was distributed via local Facebook groups targeting residents of the Masovian Voivodeship, with additional encouragement for participants to share it with other eligible residents. The invitation explicitly stated that only individuals living in the Masovian Voivodeship were permitted to participate. To safeguard data integrity, the Google Forms settings were configured to prevent duplicate entries, ensuring that each participant could submit only one response.

Ethical approval for the research was granted by the Bioethics Committee of the Medical University of Warsaw (approval no. AKBE/143/2022). Participants were informed about the study’s objectives and potential benefits on the survey platform, and the act of completing and submitting the questionnaire was considered as providing informed consent for participation.

Statistical analysis

Descriptive statistics were utilized to outline the general characteristics of the study sample, presenting the frequency and percentage distribution of responses to each questionnaire item. To assess differences in oral health behaviors and knowledge between urban and rural residents, the χ^2 test was applied. This comparison provided an essential overview of behavioral and knowledge-based variations within the surveyed population.

Further inferential analysis was performed through logistic regression modeling to examine the associations between selected independent variables—such as age, gender, and socioeconomic status—and dependent variables representing health-promoting behaviors and awareness levels. Model parameters were estimated using the maximum likelihood estimation (MLE) method. This approach helped determine the primary factors influencing the likelihood of adopting healthy oral care practices among adults living in Warsaw and the surrounding region. For each predictor variable, odds ratios (ORs) with corresponding 95% confidence intervals (CIs)

were computed to measure both the strength and reliability of the relationships identified.

All analyses were conducted at a 0.05 significance threshold, with p-values ≤ 0.05 considered statistically significant, indicating that the likelihood of the observed differences occurring by chance was below 5%. Data analysis was carried out using STATISTICA version 13.3 (TIBCO Software Inc., Palo Alto, USA) under the license of the Medical University of Warsaw.

Results

Out of the 680 completed questionnaires, 37 were excluded for not meeting the inclusion criteria, yielding a final study sample of 643 valid responses. The age profile of the participants varied, with the largest proportion (29.86%) belonging to the 18–25 age group. Females constituted the majority of respondents, accounting for 73.56% of the total sample. In terms of education, 60.19% of participants possessed higher education qualifications, 36.24% had completed secondary education, and 3.57% reported primary education as their highest level attained. Regarding place of residence, 58.48% lived in urban areas, while 41.52% were from rural communities. The respondents also represented diverse income brackets: 54.74% reported average income, 28.77% above-average, and 16.49% below-average income. A detailed summary of the demographic and socioeconomic characteristics of the study group is provided in **Table 1**.

Table 1. Sociodemographic characteristics of the study group (N = 643)

Variable	Respondents, n (%)
Sex	female 473 (73.56)
	male 170 (26.44)
Age [years]	18–25 192 (29.86)
	26–35 125 (19.44)
	36–45 132 (20.53)
	46–65 147 (22.86)
	>65 47 (7.31)
Education	primary 23 (3.57)
	secondary 233 (36.24)
	higher 387 (60.19)
Place of residence	village 268 (41.68)
	town/city 375 (58.32)
Income	below average 106 (16.49)
	average 352 (54.74)
	above average 185 (28.77)

The majority of participants reported adhering to standard oral hygiene and preventive care practices.

Notably, approximately 80% identified their dentist as the primary source of oral health information. Statistically significant differences were observed based on participants' place of residence. Urban residents were more likely than those from rural areas to obtain oral health information from family members. Additionally, a portion of the respondents indicated that they had never received any professional guidance on oral hygiene.

Findings from the study also revealed a concerning lack of understanding regarding the preventive function of fluoride in dental caries. Some respondents perceived fluoride as harmful and consequently avoided fluoride-containing toothpaste. Around 20% of participants were unaware of whether their toothpaste contained fluoride, and approximately 40%

did not know the specific brand or type of toothpaste they used, choosing instead from what was available at home. Over one-third of the sample admitted that their choice of toothpaste was influenced primarily by advertising and price. These trends were similar among both urban and rural respondents.

The statistical assessment further indicated that place of residence significantly influenced oral health attitudes and priorities. Participants living in urban environments were more likely to emphasize the importance of having white teeth and healthy gums compared to rural residents. Similar patterns were also observed regarding the frequency of tooth brushing, flossing, and rinsing after brushing. A detailed breakdown of responses to all survey questions is provided in **Table 2**.

Table 2. Survey Responses on Oral Health Habits and Knowledge by Place of Residence

Question	Response	Total Respondents (%)	Rural (%)	Urban (%)	p-value
What factors regarding oral hygiene are important to you?	Healthy teeth	596 (92.69)	249 (92.91)	347 (92.53)	0.856
	White teeth	249 (38.72)	91 (33.96)	158 (42.13)	0.036*
	No caries	411 (63.92)	162 (60.45)	249 (66.40)	0.121
	Healthy gums	414 (64.39)	153 (57.09)	261 (69.60)	0.001*
Where do you get your knowledge about oral hygiene?	Never received instructions	48 (7.47)	16 (5.97)	32 (8.53)	0.223
	Parents/family members	237 (36.86)	84 (31.34)	153 (40.80)	0.014*
	Dentist	494 (76.83)	197 (73.51)	297 (79.20)	0.092
	Advertisements	83 (12.91)	36 (13.43)	47 (12.53)	0.737
	School	91 (14.15)	41 (15.30)	50 (13.33)	0.481
What is the most important factor limiting tooth decay?	Brushing teeth	196 (30.48)	75 (27.99)	121 (32.27)	0.210
	Fluoride toothpaste	21 (3.27)	12 (4.48)	9 (2.40)	
	Brushing and fluoride toothpaste equally important	426 (66.25)	181 (67.54)	245 (65.33)	
How often do you brush your teeth?	Less than once a day	17 (2.64)	8 (2.99)	9 (2.40)	<0.001*
	Once a day	91 (14.15)	51 (19.03)	40 (10.67)	
	Twice a day	448 (69.67)	188 (70.15)	260 (69.33)	
	Three times a day or more	87 (13.53)	21 (7.84)	66 (17.60)	
What kind of toothbrush do you use?	Manual	289 (44.95)	134 (50.00)	155 (41.33)	0.055
	Electric	123 (19.13)	54 (20.15)	69 (18.40)	
	Sonic	138 (21.46)	48 (17.91)	90 (24.00)	
	Both manual and electric	93 (14.46)	32 (11.94)	61 (16.27)	
Do you use toothpaste with fluoride?	Yes	415 (64.54)	186 (69.40)	229 (61.07)	0.090
	No	100 (15.55)	37 (13.81)	63 (16.80)	
	Don't know	128 (19.91)	45 (16.79)	83 (22.13)	
Do you floss your teeth?	Yes, occasionally	280 (43.55)	109 (40.67)	171 (45.60)	0.048*
	Yes, regularly	155 (24.11)	58 (21.64)	97 (25.87)	
	No	208 (32.35)	101 (37.69)	107 (28.53)	
Do you use oral rinses?	Yes	173 (26.91)	76 (28.36)	97 (25.87)	0.769
	No	230 (35.77)	93 (34.70)	137 (36.53)	
	Yes, occasionally	240 (37.33)	99 (36.94)	141 (37.60)	
What oral rinses do you use?	Fluoride mouthwash	190 (29.55)	88 (32.84)	102 (27.20)	0.372
	Chlorhexidine rinse	76 (11.82)	25 (9.33)	51 (13.60)	
	Alcohol rinse	84 (13.06)	35 (13.06)	49 (13.07)	
	Essential oils mouthwash	25 (3.89)	11 (4.10)	14 (3.73)	
What influences your choice of toothpaste?	Price	211 (32.81)	86 (32.09)	125 (33.33)	0.741

	Taste	182 (28.30)	75 (28.00)	107 (28.53)	0.879
	Advertisements	76 (11.82)	35 (13.06)	41 (10.93)	0.410
	Use what's available at home	258 (40.12)	102 (38.06)	156 (41.60)	0.367
	Don't know	85 (13.22)	35 (13.06)	50 (13.33)	0.920
What is the effect of fluoride in toothpaste?	Cleans teeth	111 (17.26)	56 (20.90)	55 (14.67)	0.039*
	Protects against caries	485 (75.43)	200 (74.63)	285 (76.00)	0.690
	Refreshes oral cavity	70 (10.89)	27 (10.07)	43 (11.47)	0.576
	Whitens teeth	39 (6.07)	20 (7.46)	19 (5.07)	0.209
	Negative health impact	35 (5.44)	10 (3.73)	25 (6.67)	0.106
	Don't know	96 (14.93)	37 (13.81)	59 (15.73)	0.499
When do you brush your teeth?	Before breakfast	246 (38.26)	102 (38.06)	144 (38.40)	0.930
	After breakfast	372 (57.85)	136 (50.75)	236 (62.93)	0.002*
	Before dinner	14 (2.18)	6 (2.24)	8 (2.13)	0.928
	After dinner	240 (37.33)	97 (36.19)	143 (38.13)	0.616
	Right before bed	434 (67.50)	167 (62.31)	267 (71.20)	0.018*
How long do you brush your teeth?	≤30 seconds	23 (3.58)	9 (3.36)	14 (3.73)	0.939
	1 minute	89 (13.84)	39 (14.55)	50 (13.33)	
	<2 minutes	124 (19.28)	54 (20.15)	70 (18.67)	
	2 minutes	239 (37.17)	95 (35.45)	144 (38.40)	
	>2 minutes	168 (26.13)	71 (26.49)	97 (25.87)	
How much toothpaste do you use?	Pea-sized amount	131 (20.37)	58 (21.64)	73 (19.47)	0.108
	~0.5 cm	111 (17.26)	36 (13.43)	75 (20.00)	
	~1 cm	176 (27.37)	81 (30.22)	95 (25.33)	
	~2 cm	67 (10.42)	33 (12.31)	34 (9.07)	
	Apply once (electric toothbrush)	144 (22.40)	53 (19.78)	91 (24.27)	
	Apply twice (electric toothbrush)	14 (2.18)	7 (2.61)	7 (1.87)	
Do you rinse your mouth with water after brushing?	Don't rinse	59 (9.18)	22 (8.21)	37 (9.87)	0.037*
	Yes, occasionally	42 (6.53)	11 (4.10)	31 (8.27)	
	Yes, often	56 (8.71)	18 (6.72)	38 (10.13)	
How much water do you use to rinse after brushing?	Yes, always	486 (75.58)	217 (80.97)	269 (71.73)	0.091
	Handful	217 (33.75)	81 (30.22)	136 (36.27)	
	Two handfuls	190 (29.55)	77 (28.73)	113 (30.13)	
	Half a glass	137 (21.31)	70 (26.12)	67 (17.87)	
	Full glass	43 (6.69)	20 (7.46)	23 (6.13)	

*statistically significant ($p < 0.05$, χ^2 test). Data presented as frequency (percentage) (n (%)).

Figure 1 presents a detailed summary of oral hygiene habits, emphasizing daily practices essential for maintaining oral health. The results demonstrate varying levels of adherence to recommended routines. Most participants (83.2%) reported brushing their teeth at least twice daily, in line with dental guidelines, while 14.15% brushed once a day, and only 2.6% brushed less than once daily, reflecting overall strong compliance with the twice-daily recommendation. Fluoride toothpaste usage was relatively high, with

64.5% of respondents including it in their oral care regimen. Regarding flossing habits, fewer than half of the participants (43.5%) floss occasionally, 24.1% floss regularly, and 32.3% do not floss at all. In terms of brushing duration, which is crucial for effective plaque removal, 37.2% of respondents brushed for the recommended 2 minutes, 26.1% brushed for more than 2 minutes, 19.3% brushed for less than 2 minutes, 13.8% for only 1 minute, and a small proportion (3.6%) brushed for 30 seconds or less.

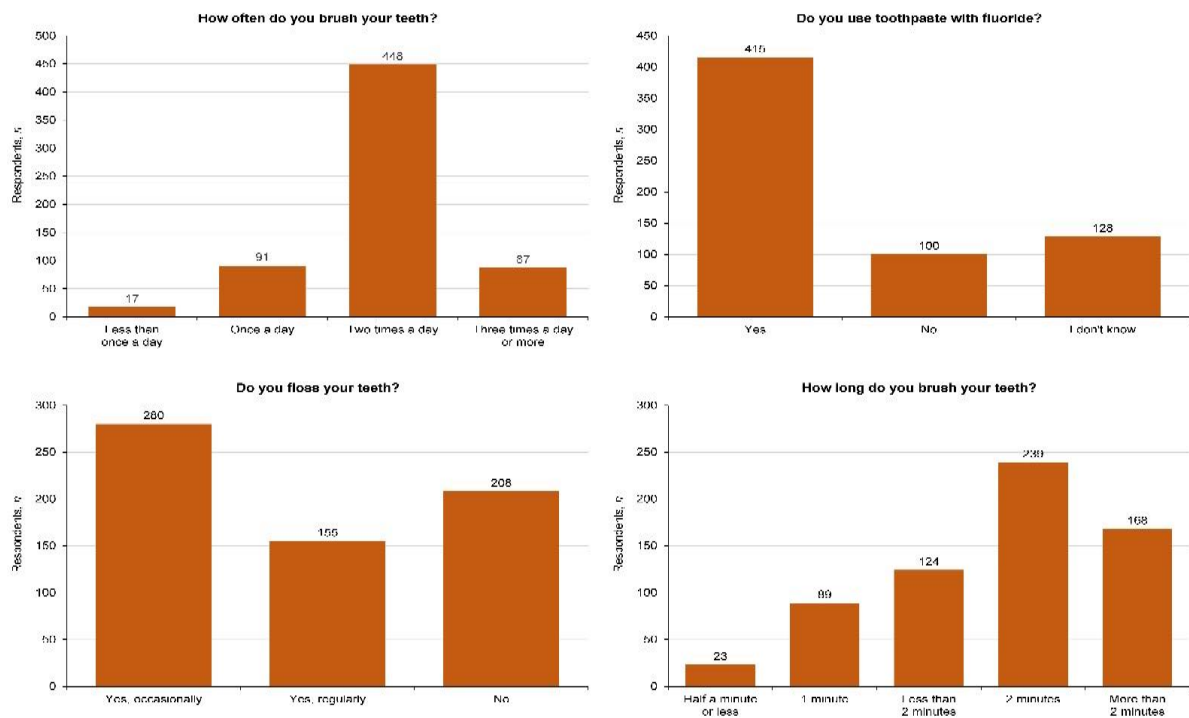


Figure 1. Overview of oral hygiene practices in the study group (N = 643)

In the current study, only 95 participants (14.8 percent) demonstrated sufficient knowledge of oral hygiene and reported practices consistent with recommended guidelines. Analysis showed that both sex and age were significant determinants of being an “ideal patient.” Men were considerably less likely than women to exhibit optimal oral care behaviors, with an odds ratio (OR) of 0.47 (95 percent CI: 0.25–0.85, $p = 0.013$), indicating a 53% lower probability of meeting the ideal

criteria. Participants aged 46–65 were nearly three times more likely to follow recommended oral hygiene routines compared to the 18–25 age group (OR = 2.90; 95 percent CI: 1.49–5.64, $p = 0.002$). No significant differences were observed for other age groups relative to the youngest cohort. Other sociodemographic factors, such as educational level, place of residence, and income, did not significantly affect the likelihood of being classified as an “ideal patient” (Table 3).

Table 3. Logistic regression analysis of factors influencing ideal oral hygiene behaviors in the study group

Predictor	Level	b	OR	95% CI	Z	p-value
Intercept	–	–1.85	0.16	0.03–0.78	–2.272	0.023*
Sex	female (ref.)	–	–	–	–	–
	male	–0.77	0.47	0.25–0.85	–2.494	0.013
Age [years]	18–25 (ref.)	–	–	–	–	–
	26–35	0.25	1.28	0.59–2.77	0.636	0.525
	36–45	0.47	1.60	0.76–3.38	1.228	0.219
	46–65	1.07	2.90	1.49–5.64	3.142	0.002*
	>65	–1.64	0.19	0.02–1.51	–1.564	0.118
Education	primary (ref.)	–	–	–	–	–
	secondary	–0.12	0.89	0.18–4.34	–0.151	0.880
	higher	0.29	1.34	0.28–6.41	0.369	0.712
Place of residence	village (ref.)	–	–	–	–	–
	town/city	0.17	1.18	0.73–1.91	0.675	0.500
Income	below average (ref.)	–	–	–	–	–
	average	–0.64	0.53	0.27–1.03	–1.883	0.060
	above average	–0.22	0.81	0.39–1.66	–0.588	0.557

*statistically significant ($p < 0.05$); b – unstandardized regression coefficient; OR – odds ratio; CI – confidence interval.

Discussion

The survey offered valuable insights into the causes behind the high prevalence of caries and periodontal

diseases in the Polish population. The findings revealed that health awareness and related attitudes remain relatively low, with most participants adhering only to basic oral hygiene practices, such as brushing twice daily, without regular flossing or using supplementary measures like fluoride rinses. Socioeconomic status plays a significant role in determining health outcomes, influencing dietary habits, hygiene practices, and overall health awareness. The systemic transformations in Poland have markedly affected public health, creating a complex scenario where widespread availability of oral hygiene products, growth of the private healthcare sector, increased health awareness, the collapse of institutional dental care, and relatively low medical spending coexist. Recent research indicates that individuals from higher socioeconomic backgrounds demonstrate significantly better dental health, including lower incidence of caries and periodontal diseases [28-30], with similar trends observed in Poland [22]. Despite improvements in clinical measures, a proportion of adults continue to experience the negative impacts of caries and periodontal disease in daily life [31].

In this study, factors such as place of residence, reported income, or education did not significantly influence pro-health attitudes in the ideal patient model. However, analysis of specific survey questions revealed additional nuances. Differences between urban and rural residents were notable, particularly regarding sources of dental information; urban participants more frequently cited parents and family. This emphasizes the critical role of dentists as trusted providers of knowledge and guidance. Previous epidemiological studies have noted insufficient prevention and hygiene education in dental practices [32], yet routine dental visits offer an opportunity for professionals to assess caries risk, update patient knowledge, and motivate behavioral change. Verploegen and Schuller reported that patients often receive inadequate information from dental teams during visits [33]. Moreover, an increasing number of adults seek health-related knowledge online [33]; while the Internet and social media can enhance awareness, they do not necessarily foster motivation or self-efficacy in health-promoting behaviors, highlighting the importance of evidence-based information delivered in dental offices to influence patient habits. The current study confirmed that dental professionals remain the most reliable source of preventive and oral health information [34].

Urban residents in this study were more likely than rural residents to emphasize the importance of white teeth and healthy gums, as well as to follow practices

such as regular brushing, flossing, and mouth rinsing after brushing. The study included 473 women and 170 men, showing that women are more proactive and health-oriented, consistently displaying higher knowledge and engagement in pro-health behaviors—a pattern observed over many years and across societies, including Poland [35-37]. Age also influenced attitudes: individuals over 40 exhibited more positive behaviors toward oral health maintenance, in contrast to Jensen *et al.*, who found that individuals over 35 tended to have less favorable health promotion attitudes, particularly among older adults [21].

As people age, health becomes increasingly important due to a natural decline in quality of life and a rise in limitations affecting independent functioning. While this link is well-established for general health, its connection to oral health remains less clear. An increasing number of individuals focus on the aesthetic appearance of their teeth, often overlooking their functional role [38]. Most respondents recognized the value of healthy teeth, yet their answers revealed limited understanding of caries progression and periodontal health, indicating a knowledge gap in these areas. Interestingly, those who prioritized gum health and used chlorhexidine mouthwash—likely in response to existing periodontal issues—demonstrated more positive pro-health behaviors. The hygienization phase in treating periodontal disease requires strict adherence to professional recommendations, and the extended nature of such treatment, which includes instruction, motivation, and repeated professional cleanings, enhances patients' awareness and commitment to oral hygiene. Although health-promoting behaviors are instilled early in life, for many individuals this process largely concludes during childhood and adolescence. This creates challenges for adults, particularly seniors, for whom preventive dental care is often insufficient.

Experts assert that concerns regarding the harmful effects of fluoride are overstated, as the levels found in oral care products are considered safe [39], and no studies have linked fluoride in toothpaste to adverse health outcomes. Concurrently, more patients are becoming aware of modern societal demands and recent global changes. The concept of green dentistry, aligned with sustainable development, has emerged to address the need for improvements in social, environmental, and economic standards [26]. However, research on organic toothpastes remains scarce, with no studies specifically addressing this topic, suggesting limited promotion of these products;

price and advertising are currently the primary factors influencing toothpaste choice.

Effective oral hygiene involves brushing twice daily, cleaning interdental spaces, rinsing, using sugar-free gum, and maintaining a diet that minimizes carbohydrate intake, including hidden sources. A study from the late 1990s assessing oral health in Poland revealed low patient awareness of oral hygiene practices [34]. At that time, awareness was measured by the use of dental floss and proper interdental cleaning. Although most respondents knew about flossing, only about one in seven men and one in four young women actually used it [34], with no significant differences based on residential environment. In contrast, our research shows improvements over the past 25 years, with approximately one-quarter of respondents now including regular flossing in their daily oral hygiene routine.

Limitations

The study has several limitations, including the selection of participants, which was limited to residents of Warsaw and its surrounding areas (Masovian Voivodeship). Consequently, the findings may be more favorable than those applicable to the rest of the country, particularly among lower-income individuals living in less developed regions. Additionally, the decision to conduct the survey online restricted participation to individuals with Internet access. The survey's design may also have encouraged respondents to provide answers that present themselves in a positive light, potentially resulting in some inaccurate or biased responses.

Conclusions

The findings of this study reveal that the surveyed population possesses insufficient knowledge regarding oral health, highlighting the urgent need for effective home-based oral hygiene practices. The results underscore the importance of implementing comprehensive oral health education programs specifically designed for the adult Polish population, in light of the current absence of targeted initiatives for this group.

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