

Determining the Knowledge, Attitudes, Behaviors and Thoughts of Family Physicians Concerning the Periodic Health Examination of Adults

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Abstract

Objective and Aim

Identifying the barriers and facilitators to implementing periodic health examination (PHE) guidelines in adults is a crucial step for their application. Family physicians are responsible for implementing PHE. Studies have identified several obstacles to the implementation of adult PHE, including lack of knowledge about guidelines, time constraints, and unclear or unreliable evidence. The objective of this study is to assess the knowledge, attitudes, behaviors, and thoughts of family physicians towards adult periodic health examinations and to identify solutions to the issues encountered in practice.

Material and Methods

This is a descriptive, cross-sectional analytical study conducted at a single center.

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The study aims to evaluate the knowledge, attitudes, and behaviors of family physicians in Kayseri province regarding adult periodic health examinations using a questionnaire. The language used was clear, objective, and value-neutral, with a formal register and precise word choice. A total of 379 out of 481 family physicians in Kayseri province were reached in 2023. No changes in content were made. The questionnaire included 10 knowledge-based questions, attitude and behavior questions, and opinion-based questions, in addition to sociodemographic data. The study adhered to conventional academic structure and maintained regular author and institution formatting. The text was grammatically correct and free from spelling and punctuation errors. The knowledge questions presented five options, with only one being the correct answer. Attitude, behavior, and opinion questions were presented as 5-point Likert-type questions. The questionnaires were administered through face-to-face interviews at family health centers. Statistical analyses were performed using the SPSS version 26.0 package program (Statistical Package for the Social Sciences, version 26).

Results

The majority of family physicians were aged 40 and over (74.14%). Males made up 66% of the sample. General practitioner family physicians accounted for 75.2% of the total.

On average, family physicians provided 5.41 ± 1.54 correct answers out of 10 knowledge questions. The study found a significant correlation between knowledge level and age, title, status of guideline follow-up, and level of practice as a family physician. Most elements of PSM were practiced by most family physicians. However, some elements of PSM were not practiced by most family physicians. Most family physicians reported that they were unable to allocate time for adult PHE and expressed that they could implement PHE if their workload decreased. Most participants were against promoting the implementation of PHE due to negative performance.

Conclusion

It is important to effectively and accurately implement adult PHE to prevent unnecessary and frequent tests caused by knowledge deficiencies. It is essential to inform family physicians about PHE guidelines, train them for the equal and accurate implementation of all elements of PHE, and increase the number of family physicians who are specialists or have received specialization training. The adherence of family physicians to PHE guidelines is crucial.

Keywords: Periodic Health Examination, Family Physicians, Knowledge, Attitude, Behavior

Introduction

Periodic health examinations and screening tests (PHE) in adults are health checks carried out at regular intervals for people who have no evidence of disease. Necessary applications are made on an individual basis through counselling, screening and testing, taking into account risk factors. This avoids unnecessary tests and interventions. The leading causes of mortality and morbidity in the community should be assessed according to age and gender, and individuals should be provided with counselling, patient

education, screening examinations and tests, and vaccination services (1).

Childhood is the stage when genetic diseases may manifest, while adolescence is a period when behavioural issues may arise. Adulthood is the stage when acquired diseases may occur due to environmental factors, genetic factors, dietary habits, inactivity, and advancing age. It is crucial to identify effective methods for preventing adult morbidity and reducing mortality. When examining the risk factors for adult mortality, the most significant factors are tobacco use, diet and physical activity, alcohol consumption, exposure to toxic agents, infections, firearms, and sexual behaviour. The leading causes of death for individuals aged 19-39 include motor vehicle accidents, manslaughter, suicide, injuries, heart disease, and HIV infection (in men). The most common causes of death among individuals aged 40-64 are heart disease, lung cancer, cerebrovascular disease, breast cancer, colorectal cancer, and HIV infection (in men). Screening tests may be less necessary for the first group of adults who are at lower risk for the most common causes of mortality and morbidity (2).

The USPSTF (United States Preventive Services Task Force) has stated that annual screening of asymptomatic adults is not supported by evidence of effectiveness and may cause harm. Instead, the USPSTF recommends regular preventive visits to primary care providers to receive preventive advice, immunisations, and screening tests that are known to be effective (3).

PHE is periodically updated based on evidence by internationally accepted institutions and organizations such as USPSTF. In Turkey, the Public Health Institution of the Ministry of Health has published a guideline titled 'Recommended Periodic Health Examinations and Screening Tests in Family Medicine Practice' to meet this need.

Cardiovascular Risk Assessment: The USPSTF recommends that adults with CVD (Cardiovascular Disease) risk factors should

be counselled or referred for healthy diet counselling. It has been stated that providing counselling on healthy diet in adults without CVD risk factors provides a small net benefit on CVD risk and recommends that adults in this group should be offered healthy diet counselling to selected patients depending on individual conditions (4). These recommendations apply to adults with multiple risk factors such as high blood pressure, dyslipidaemia, metabolic syndrome or an estimated 10-year CVD risk of 7.5% or higher. Adults with other modifiable risk factors such as abnormal blood glucose levels, obesity and smoking are not included in this recommendation (4, 5).

The USPSTF recommends prescribing a statin for primary prevention of CVD in adults aged 40 to 75 years who have one or more CVD risk factors, such as hypertension, dyslipidaemia, diabetes or smoking, and who have a 10-year CVD risk of 10% or greater. The USPSTF recommends the use of statins in adults aged 40 to 75 years who have one or more risk factors for cardiovascular disease, such as hypertension, dyslipidaemia, diabetes, or smoking, and a 10-year risk of cardiovascular disease of 7.5-10%. The use of statins should be based on individual circumstances. The decision to start treatment should depend on individual patient preferences, considering the possible small benefit in the face of the possible harms and discomforts of taking medication (6).

Assessment of Tobacco Use Status: The USPSTF recommends informing all adults about tobacco use, offering advice to quit tobacco use, and providing behavioural interventions and FDA-approved pharmacotherapy to non-pregnant adults who use tobacco. It also recommends informing all pregnant women about tobacco use, offering advice to quit tobacco use, and providing behavioural interventions for cessation to pregnant tobacco users. The USPSTF has concluded that there is insufficient evidence to evaluate the benefits and harms of pharmacotherapy interventions for quitting tobacco use in pregnant women. Additionally, it has

concluded that there is insufficient evidence to evaluate the benefits and harms of using electronic cigarettes to quit tobacco use in adults, including pregnant women. The recommendation is to refer tobacco-using patients to other tobacco cessation interventions that have proven efficacy and established safety (7).

Assessment of Alcohol Use: The USPSTF recommends that primary healthcare settings screen adults aged 18 years and older (including pregnant women) for unhealthy alcohol use and provide short-term behavioural counselling interventions to at-risk or hazardous consumers to reduce unhealthy alcohol use. The USPSTF did not find sufficient evidence to recommend an optimal screening interval for unhealthy alcohol use in adults. The USPSTF has determined that 1- to 3-item screening tools, such as the Abbreviated Alcohol Use Disorders Identification Test-Consumption (AUDIT-C) and Single Alcohol Screening Questionnaire (SASQ) (8), are the most accurate in assessing unhealthy alcohol use in adults aged 18 years and older.

Hypertension Screening: The USPSTF recommends screening adults aged 18 years and older for hypertension through office blood pressure measurement. Before starting treatment, out-of-office blood pressure measurements should be taken to confirm the diagnosis. It is recommended that all adults undergo an assessment for risk factors associated with hypertension. These risk factors may include family history, obesity, sedentary lifestyle, stress, tobacco use, a diet high in fat and sodium and low in potassium, and excessive alcohol intake. The first screening for hypertension should be performed through office blood pressure measurement. According to the USPSTF, adults aged 40 years and older, as well as those at high risk of hypertension, should undergo annual screening for hypertension. According to source (9), adults aged 18-39 years who do not have a high risk of hypertension and who have previously had normal blood pressure may undergo less frequent screening (every 3-5 years) (9).

Dyslipidaemia Screening: The USPSTF recommends lipid screening for men aged 20 to 35 years and women aged 20 to 45 years with CHD risk factors (USPSTF recommendation level: B). For men and women in these age groups without CHD risk factors, the USPSTF does not make a recommendation for or against lipid screening. Additionally, the USPSTF recommends screening for men over 35 years of age and women over 45 years of age (10).

Diabetes Mellitus Screening: The USPSTF recommends screening for prediabetes and type 2 diabetes in adults aged 35 to 70 years who are overweight or obese. Patients with prediabetes should be offered or referred for effective preventive interventions. Although an optimal screening interval for adults with normal baseline glucose test has not been recommended by the USPSTF, studies have indicated that screening every 3 years is appropriate for adults with normal blood glucose levels. The article mentions the effectiveness of lifestyle interventions, such as diet, physical activity, and metformin use, in preventing or delaying the progression of diabetes in prediabetes (11).

Obesity Screening: The USPSTF recommends offering or directing multicomponent behavioural interventions to adults with a BMI (Body Mass Index) of 30 and above. These interventions aim to help patients lose weight through methods such as nutrition, physical activity, and self-monitoring (12).

Thyroid Dysfunction Screening: The USPSTF did not provide a screening recommendation for thyroid dysfunctions, as there is no direct evidence on the effects of thyroid screening and non-screening on clinical outcomes based on current evidence (13).

Psychiatric screening: The USPSTF recommends screening for depression in the adult population, including pregnant women, postpartum women, and older adults (USPSTF recommendation level: B). Additionally, the USPSTF has stated that the available evidence is insufficient to evaluate screening for suicide risk in the adult

population (90). The USPSTF recommends screening for anxiety disorders in adults, including pregnant women (14).

Osteoporosis Screening: Furthermore, the USPSTF recommends osteoporosis screening with bone mineral density measurement to prevent osteoporotic fractures in postmenopausal women under 65 years of age who are determined to be at risk of osteoporosis by a risk assessment tool. The study concluded that there is currently insufficient evidence to evaluate the benefits and harms of osteoporotic fracture screening in men (15).

Breast Cancer Screening: The USPSTF recommends biennial screening mammography for women aged 50 to 74 years. The decision to start screening mammography before the age of 50 years should be individualised. Women who value potential benefit more than potential harm may choose to start biennial screening between the ages of 40 and 49 years. The net benefit of mammography screening in women aged 40 to 49 years, although positive, is small (16).

Prostate Cancer Screening: The USPSTF recommends periodic PSA (Prostate Specific Antigen) screening for prostate cancer in men aged 55 to 69 years for a select group of individuals. The decision to undergo screening should be made by the patient and clinician, taking into account family history, comorbid conditions, and patient opinions about the benefits and harms of screening, diagnosis, and treatment (17).

Cervical Cancer Screening: The USPSTF recommends cervical cytology screening every 3 years for women aged 21-29 years, and every 3 years for women aged 30-65 years with either cervical cytology or hrHPV testing. Alternatively, cotesting can be done every 5 years (18).

Colorectal Cancer Screening: The USPSTF recommends colorectal cancer screening for all adults aged 50-75 years and for adults aged 45-49 years. The USPSTF recommends colorectal cancer screening for all adults

aged 50-75 years and for adults aged 45-49 years. The recommended screening intervals are: - every year for fecal occult blood and fecal immunohistochemical test - every 1-3 years for fecal DNA test - every 5 years for CT (Computed tomography) colonography - every 5 years for flexible sigmoidoscopy - every 10 years for colonoscopy (19).

Lung Cancer Screening: The United States Preventive Services Task Force (USPSTF) recommends annual screening for lung cancer using low-dose computed tomography (CT) in adults aged 50 to 80 years who have a smoking history of 20 pack-years or more and who currently smoke or have quit smoking within the past 15 years. Screening should be discontinued once a person has not smoked for 15 years or if a health condition arises that significantly limits life expectancy. (20)

Periodic health examinations have become one of the most common reasons for seeking primary healthcare services in recent years (21). In the United States, approximately 44 million adults undergo PHEs annually (22). Regular health check-ups can contribute significantly to preventive healthcare. The frequency of periodic health examinations should be determined and implemented for all segments of society. Thus, early diagnosis and treatment can improve public and individual health by preventing potential diseases or chronic complications. Therefore, Primary Health Care (PHC) is of vital importance. The family physician is the main executor of preventive health services within the scope of periodic health check-ups (23).

Various issues are involved in providing effective preventive health services. To prevent harm caused by inappropriate tests or interventions, family physicians must decide which preventive services to recommend and prioritize.

As the primary practitioners of preventive healthcare, family physicians must be aware of these updates and developments. This study aims to raise awareness among family physicians about adult preventive services.

The aim is to determine the knowledge, attitudes, behaviours, and thoughts of family physicians on this subject. In this way, by examining PHE from the perspective of family physicians, it is aimed to contribute to the improvement of physician, patient, work, and environmental health.

Materials and Methods

This study is a single-centre, descriptive cross-sectional analytical study that evaluates the knowledge levels of family physicians working in Kayseri province regarding adult periodic health examinations using a set of 10 questions prepared by the researcher. There are a total of 103 primary health care centres and 481 family physicians in 16 districts of Kayseri province. Although the goal was to reach all 481 family physicians, a total of 378 were included in the study due to reasons such as annual leave, training, flexible working hours or mobile services that prevented them from being present at the Primary Health Care Center, their inability to allocate time due to work intensity, or their unwillingness to participate. The data was collected between November 2023 and February 2024.

The purpose and requirements of the research were explained to the participating family physicians. They were informed that they were free to choose whether or not to participate in the study, and written and verbal consent was obtained from those who agreed to participate. The study employed an informed consent form for volunteers, as well as a questionnaire prepared by the researcher that included sociodemographic data. To measure the knowledge of participants about adult periodic health examinations, the researcher prepared 10 multiple-choice questions with 5 options each, based on the 'Recommended Periodic Health Examinations and Screening Tests in Family Medicine Practice' guide published by the Ministry of Health in 2015. This study protocol was approved by the Clinical Research Ethics Committee of Erciyes University Faculty of Medicine. Permission to conduct a survey among family physicians in Kayseri was obtained by applying to the

Kayseri Provincial Health Directorate. Statistical analyses were performed using the SPSS version 26.0 package program.

Table 1. Distribution of sociodemographic data of participants

Variables		N	%	Variables		N	%
Age	≤30	14	3,7	Time worked as a family physician	≤ 5 yıl	64	16,89
	30-39	84	22,16		5-10 yıl	81	21,37
	40-49	128	33,77		≥10	234	61,74
	50-59	142	37,47	Title	Practitioner	285	75,20
	≥60	11	2,90		Expert	53	13,98
Gender	Woman	129	34,04		SAHU	41	10,82
	Man	250	65,96	Chronic Disease	Yes	122	32,19
Marital Tatus	Married	335	88,39		No	257	67,81
	Single	44	11,61	Cancer	Yes	3	0,79
					No	376	99,21

Results

The participants had an average age of 46.85 (SD±8.87), with women averaging 44.7 (SD±8.17) and men averaging 47.9 (SD±9.05) years. 88% (335) of the participants were married. 13.98% (53) of the participants worked as specialist family physicians, while 10.81% (44) were undergoing contract-based family physician specialization training. 27.44% (104) of the participants smoked. 61.74% (234) had worked as family physicians for 10 years or more. The average duration of participants' work as a family physician is 10.97 (SD±4.58) years. 81.5% (309) of family physicians work in Kocasinan, Melikgazi, and Talas districts (Table 1). The participants' sociodemographic characteristics are summarized in Table 1.

55.4% (210) of the participants only follow the guidelines published by the Ministry of Health. 30.08% (114) had no information about the guidelines. When the age distribution of family physicians was evaluated according to gender, the mean age distribution of male family physicians was found to be higher ($U=3.4888$, $p<0.001$) (Table 2).

In order to determine the opinions of the participants, the participants were directed to answer the statements on a 5-point Likert scale. For these statements, a scale was not used since it was aimed to evaluate each opinion independently. Of the family physicians surveyed, 78.1% (296) found it difficult to allocate time for PHE due to their current job descriptions and working conditions. However, 23.22% (88) reported that they could allocate time for PHE. Additionally, 84.69% (321) of family physicians stated that they would definitely apply PHE to their patients if the registered population and the number of patients applying to the outpatient clinic were reduced. According to Table 25, 35.09% (133) of family physicians believed that their patients were indifferent to information about PHE or were hesitant to undergo necessary examinations. It is important to note that the language used in this passage is clear, concise, and objective, adhering to the desired characteristics outlined in the assignment. Additionally, 54.35% (206) of family physicians reported liking family medicine, while 21.9% (83) did not.

The mean of the participants' total correct answers in 10 knowledge questions was 5.41 (SD±1.54) (Table 3).

The Kruskal-Wallis test revealed a significant relationship ($p < 0.001$) between the title of family physicians and the number of correct answers. Statistically significant differences were found between general practitioner family physicians and SAHU (contracted family medicine residency), as well as general practitioner family physicians and specialist family physicians in the negative

Table 2. Evaluation of participants' knowledge of guidelines

		N	%
Follow the PHE guides published and recommended in Turkey and around the world	Those who follow more than one guide	24	6,34
	Only those who follow the guidelines published by the Ministry of Health	210	55,40
	Only those who follow international guides	31	8,18
	Those who do not follow any guides	114	30,08
Do you think you have enough information about PHE and screening tests?	Yes	111	29,28
	No	54	14,25
	Partially	214	56,46

direction for general practitioner family physicians ($p < 0.001$) (Table 4). The Post-Hoc Conover test was used to determine the direction of the relationship.

The guideline follow-up status of GPs was divided into 2 groups as guideline followers and non-guideline followers, and these variables and the total number of correct answers to the information questions were compared using the Mann-Whitney U test. A significant correlation was found between consultant follow-up status and total number of correct answers ($U = 2.61$, $p = 0.009$) (Table 5).

Discussion

The study involved 379 family physicians from family health centres in Kayseri province. Of these, 66% were male, 88.39% were married, and 75.2% were general practitioner family physicians. According to OECD 2019 data, 62.5% of physicians in Turkey were male (24). Tugay (2014) conducted a study on the knowledge, attitudes, and behaviours of family physicians towards the periodic examination guide via the Family Medicine Distance Education Platform in Turkey. The study included 5183 family physicians, of which 72.2% were male, 86.5% were married, and 99% were general practitioner family physicians.

It was found that 30% of the participants did not follow any guidelines. Furthermore, 30% of respondents reported having adequate information about PHE and screening tests, while 56% reported having partial information. Wolfe et al. (2004) conducted a study on family physicians' opinions and attitudes towards the AAFP's PHE guideline. The study found that 35% of family physicians reported being fully informed about the guideline, while 61% reported being fully or somewhat informed. The study found that 39% of participants had no information about the periodic examination guide (26). Similarly, Tugay's study revealed that over half of family physicians lacked knowledge about the periodic health examination guide in primary care (25).

Table 3: Evaluation of participants' total number of correct answers.

	Mean	Standard Deviation (SD)
Total number of correct answers of the participants	5,41	1,54

The participants gave an average of 5.41 ± 1.54 correct answers out of 10 information questions. Aydođdu's study found that the participants obtained an average score of 9.46 ± 4.36 out of 20

questions (27). In Yıldız Opçin's study on family medicine residents regarding PHE and screening tests, the participants scored an average of 58.1 ± 14.21 out of 100 on the information questions (28). Our study found

that family physicians have insufficient knowledge about adult PHE and screening tests. Therefore, it is necessary to conduct further studies to increase their awareness of periodic health examinations and

Table 4. The relationship between title and number of correct answers

		N	%	Number of Correct Answers			
				Mean	SD (\pm)	T*	p**
Title	Practitioner	285	75,20	5,19	1,48	29,56	<0.001
	Expert	53	13,98	6,08	1,59		
	SAHU	41	10,82	6,12	1,47		
Time worked as a family physician	≤ 5 yıl	64	16,89	5,61	1,6	7,14	0,028
	5-10 yıl	81	21,37	5,64	1,61		
	≥ 10	234	61,74	5,28	1,49		
Age	≤ 30	14	3,7	5	1,71	15,82	0,003
	30-39	84	22,16	5,95	1,69		
	40-49	128	33,77	5,24	1,44		
	50-59	142	37,47	5,33	1,46		
	≥ 60	11	2,90	4,90	1,44		

*The Kruskal-Wallis test, ** p: significance level, p <0.05 is significant.

guidelines. Including PHE guidelines in medical and specialty education, as well as providing necessary training for family physicians, may increase their awareness. Given the absence of an existing guideline, it may be necessary to create and publish an evidence-based guideline for Turkey.

Upon reviewing the statements attended by most family physicians, it becomes clear that there is insufficient time for PHE. It is suggested that PHE practices may improve with a reduction in patient population and outpatient clinic density. Correa et al. conducted a study on the barriers to implementing clinical practice guidelines. The study identified barriers in five categories: political and social factors, health system organization, guidelines, health professionals, and patient-related factors. The most common barriers highlighted in the study were the absence of a clinical implementation process manager, healthcare professionals' time constraints, unclear and unreliable guideline evidence, and insufficient information about guidelines (29). The study conducted by

Lugtenberg et al. identified separate barriers for each of the guideline recommendations. The literature identifies several barriers to guideline adherence, including applicability, lack of evidence, organisational constraints, lack of information, and unclear recommendations (30). Our study's participants' responses to opinion statements also support these barriers.

Conclusion

Identifying barriers and facilitators to implementing adult PHE guidelines is crucial for successful implementation. This study aims to understand the barriers to adult PHE implementation and evaluate factors related to family physicians' knowledge levels, as they are the main practitioners of PHE, in order to eliminate these barriers.

The implementation of adult PHE was associated with the number of correct answers given to the guideline follow-up knowledge questions by family physicians. It was concluded that guideline follow-up is

crucial for the proper implementation of adult PHE.

One of the variables that showed a positive association with the number of correct answers was whether the family physician

was a specialist or had received SAHU training. Furthermore, our findings indicate that receiving specialized training or possessing expertise, professional experience, and age are significant factors in enhancing the implementation of PHE.

Table 5. The relationship between guide follow-up and the number of correct answers

	N (%)	Number of Correct Answers			
		Mean	SS (\pm)	U*	p**
Guide followers	265(69,9)	5,56	1,62	2,61	0,009
Those who do not follow the guide	114 (30,1)	5,08	1,28		

*The Mann-Whitney U test, ** p: significance level, p <0.05 is significant.

Additionally, the age of the family physician and the duration of their work as a family physician were found to affect the number of correct answers. Specifically, being between the ages of 30-40 and having worked for less than 10 years had a positive impact on the number of correct answers. The higher average age of family physicians may pose a barrier to implementing adult PHE. Most family physicians believe that allocating time to PHE is difficult and negatively impacts performance. Time constraints have also been identified as a barrier in other studies examining the implementation of guidelines.

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