

# Evaluation of the effect of periodic health examination in Samsun, Turkey

Mustafa F. Dikici, MD, Fusun Yaris, MD, PhD.

## ABSTRACT

**Objective:** To investigate the effect of periodic health examination.

**Methods:** The follow-up results of 2005-2006 of periodic health examination clinic of the Department of Family Medicine of Ondokuzmayis University Medical School were evaluated using a questionnaire and constant follow-up.

**Results:** A total of 387 (195 women, 192 men) patients were provided a periodic health examination. In 186 patients, the total cholesterol values were high at the time of the first visit. The mean total cholesterol value was  $241.97 \pm 36.47$  mg/dl (201 min - 489 max) in the first visit and  $217.67 \pm 33.64$  mg/dl (155 min - 420 max) in last visits ( $p < 0.001$ ). Mean triglyceride values were  $287.94 \pm 82.60$  mg/dl (202 min - 547 max) in the first visit while  $231.60 \pm 66.99$  mg/dl (74.5 min - 450 max) in the last visits ( $p < 0.001$ ). Mean glucose values for the hyperglycemic patients were  $150.37 \pm 56.85$  (111 min - 400 max) in the first visit and  $125.79 \pm 32.49$  (68 min - 239 max) in the last visits ( $p < 0.001$ ). Of the total group, 140 (36.18%) patients had high blood pressure values at the first visit, 90 (64.29%) of them were normotensive at the last visit. Mean blood pressure values of the hypertensive patients were  $152.13 \pm 19.04/93.98 \pm 8.78$  mmHg in the first visit and  $136.18 \pm 15.91/86.97 \pm 18.62$  mmHg in the last visits ( $p < 0.001$ ). Of the 135 current smokers, 7 (5.2%) patients quit. Regarding all lifestyle changes, 201 (51.94%) patients had an overall note as acceptable, good or excellent.

**Conclusion:** Significant improvement was found in more than half of the patients.

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*From the Department of Family Medicine, Ondokuz Mayis University School of Medicine, Samsun, Turkey.*

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*Address correspondence and reprint request to: Dr. Mustafa F. Dikici, Ondokuzmayis Universitesi Tip Fakultesi Aile Hekimligi Anabilim Dalı Samsun, Turkey. Tel. +90 (362) 3121919 (3377). E-mail: mdikici@omu.edu.tr*

In family medicine, periodic health examinations are considered to be essential for prevention of illness.<sup>1,2</sup> History taking and physical examination are parts of a standard periodic examination. The actual impact of the physician's counseling is not truly known for all topics. However, the family physician can make the biggest impact by discussing a few very specific points during each periodic examination aiming health behavior change.<sup>1</sup> Health behavior change involves progress through 6 stages of change: precontemplation, contemplation, preparation, action, maintenance, and termination. Ten processes of change have been identified for producing progress along with decisional balance, self-efficacy, and temptations. Basic research has generated a rule of thumb for at-risk populations: 40% in precontemplation, 40% in contemplation, and 20% in preparation. Across 12 health behaviors, consistent patterns have been found between the pros and cons of changing and the stages of change. Applied research has demonstrated dramatic improvements in recruitment, retention, and progress using stage-matched interventions and proactive recruitment procedures. The most promising outcomes to date have been found with individualized and interactive interventions.<sup>3</sup> In Turkey, periodic health examinations are generally handled by family medicine physicians, who typically practice at health clinics. On February 1, 2005, periodic health examination clinic of the Department of Family Medicine was founded as part of the Medical School of Ondokuz Mayis University. Establishing the periodic health examination clinic was the result of the needs of the patients and recommendations by the United States Preventive Services Task Force and the American Academy of Family Physicians, who emphasized the importance of periodic health examinations to ensure adequate preventive care have been used.<sup>4,5</sup>

The aim of this study was to investigate and evaluate the effect of periodic health examinations for patients on improving the quality of their health care services at the end of first year.

**Methods.** All patients were provided one-on-one patient education and behavioral counseling matched to stage of readiness of the patient during their periodic health examination, which included taking their medical history, performing a physical examination, conducting laboratory procedures, immunizing, and prescribing medications, if needed.

Before each periodic examination, we used a questionnaire (\*Appendix 1) to evaluate the needs of each patient who participated in the study and to investigate the perceptions and perspectives of those patients regarding patient-centered care. Based on the results of the questionnaire, we scheduled the first visit for each patient to be 60 minutes in duration. During the first 30 minutes of the first visit, we conducted a health care needs assessment, taking the patient's history and conducting a physical examination to understand the patient's expectations and his/her perspective of periodic health examinations. For the remaining 30 minutes, we discussed the results of the patient's laboratory tests providing health education about specific medical issues and associated risks for that patient according to the readiness of the patient for changes. For the second and third visits, we spent an average of 20 to 30 minutes with each patient again according to stage of the readiness of the patient. Based on laboratory test results, a regular follow-up visit schedule was set-up for each patient at the periodic health examination clinic. Any patient in the study, who missed a follow-up appointment, was called to reschedule their follow-up appointment. If needed before a follow-up appointment, we told each patient to call and ask for a phone consultation to answer any questions that arose or address any problems encountered. At the end of one year, by an overall evaluation we put a final note (poor, acceptable, good, excellent) in the medical record of each patient participating in the study indicating that a decision should be made regarding the frequency of future follow-up appointments.

In September 2006, we conducted a retrospective study to compare the objective data gathered from each patient in order to measure the effect of the periodic health examination. The study was conducted with the 387 patients applied between February 1, 2005 through January 31, 2006 and completed one year follow-up until the end of September 2006. All of the medical records of our patients, especially those of the diabetic, hypertensive, and dyslipidemic patients, were reviewed. The results of those patients, who completed their one year follow-up are presented in this study. Nine patients were excluded because they did not complete one year follow up, or they did not agree to come again to the clinic. Descriptive characteristics

and lipid, glucose, triglyceride, blood pressure profile of the studied patients were calculated as mean  $\pm$  SD for continuous variables and as percentages for categorical variables. Changes in the patient's lipid, glucose, and blood pressure were calculated and the differences in those results were evaluated by using t-test. Results were considered significant  $p < 0.05$ .

**Results.** A total of 387 (195 women, 192 men) patients were provided one year follow-up after a periodic health examination. The mean age of the group was  $47.93 \pm 12.70$  (15 min - 79 max) years. For the women patients, the mean age was  $46.42 \pm 12.50$  (15 min -77 max) years, and for the men, the mean age was  $49.46 \pm 12.75$  (15 min - 79 max) years. Age groups are summarized in Table 1. Of the 387 patients, 106 (27.39%) had at least one diagnosis of hypertension (HT), dyslipidemia, diabetes mellitus (DM) or ischemic heart disease (IHD). In that group, 125 had previously been prescribed drugs to be taken continuously. Of these prescriptions, 102 were for diabetes, HT, dyslipidemia, or IHD while 23 were for other medical conditions. We found that 78 of our patients had taken their drugs regularly; however, the others had used their medications either irregularly or never. Of the 125 patients, 20 patients were prescribed the same medications after our study as had previously been prescribed. Of the new diagnoses, the most common were dyslipidemia (118 patients), HT (58 patients) and DM (20 patients). New prescriptions were given to 66 patients. Of these 66, 31 were for DM, HT, and dyslipidemia and 35 for all other medical conditions. Lipid lowering agents were prescribed for 23 patients. Five patients were prescribed antihypertensive medications, and 3 were prescribed oral antidiabetic drugs. When we evaluated the lipid profile of the patients, 190 (49.09%) patients had at

**Table 1 -** Age group-gender distribution of the patients.

Age group (years)	Women			Men			Total	
	N	(%)*	(%)**	N	(%)*	(%)**	N	(%)**
≤20	8	(57.14)	(4.10)	6	(42.86)	(3.13)	14	(3.62)
21-40	47	(56.62)	(24.10)	36	(43.38)	(18.75)	83	(21.45)
41-60	119	(49.79)	(61.02)	120	(50.21)	(62.50)	239	(61.75)
61-79	21	(41.18)	(10.78)	30	(58.82)	(15.62)	51	(13.18)
All ages	195	(50.39)	(100)	192	(49.61)	(100)	387	(100)

\*Row percentage, \*\*Column percentage

\*The full text including Appendix is available in PDF format on Saudi Medical Journal website ([www.smj.org.sa](http://www.smj.org.sa))

least one impaired lipid result. During the year, we repeated the evaluation once or twice or more for 187 of the patients; we used the last value reported for the patient for our evaluation.

In 186 patients (48.06%), the total cholesterol values were high (>200 mg/dl) at the time of the first visit. By the last visit, 59 (31.72%) of them had normal values (Table 2). For those 186 patients, the mean total cholesterol values were  $241.97 \pm 36.47$  (201 min - 489 max) and  $217.67 \pm 33.64$  (155 min - 420 max) mg/dl in the first and last visits respectively ( $p < 0.001$ ). In the last visit, 51 (27.42%) patients had 10% higher than normal values. A total of 64 patients (16.5%) had high (>200 mg/dl) triglyceride values in their first visit and 21 of them (32.81%) had normal values in the last visit (Table 2). Within those 64 patients, mean triglyceride values were  $287.94 \pm 82.60$  (202 min - 547 max) and  $231.60 \pm 66.99$  (74.5 min - 450 max) mg/dl in the first and last visits, respectively ( $p < 0.001$ ). Of the total group, 57 (14.73%) had a high (>110 mg/dl) blood glucose level at the time of the first visit. By the last visit, 31 (54.39%) of them had normal blood glucose values (Table 2). Mean glucose values for the hyperglycemic patients were  $150.37 \pm 56.85$  (111 min - 400 max) and  $125.79 \pm 32.49$  (68 min - 239 max) in the first and last visits, respectively ( $p < 0.001$ ). Of the total group, 140 (36.18%) patients had high blood pressure values ( $\geq 140/90$  mmHg) at the time of the first visit. At the last visit, 90 (64.29%) of the 140 patients were found to be normotensive (Table 2). Mean blood pressure values of the hypertensive patients were  $152.13 \pm 19.04$  /  $93.98 \pm 8.78$  mmHg and  $136.18 \pm 15.91$  /  $86.97 \pm 18.62$  mmHg in the first and last visits, respectively ( $p < 0.001$ ). A total of 45 (11.6 %) patients achieved a weight loss between 5 and 10%. Dietary changes were also evaluated according to the answers given by the patients during their second or third visits; 98 (25.32%) patients answered that they tried to have healthy diet. Of the total 387 patients, 57 (14.7%) began exercising approximately 30 minutes per day, 5 times a week.

**Table 2** - Summary of success rate after periodic health examination for each variable.

Impaired variable	First visit abnormal	Last visit		Success rate (%)
		Normal	Abnormal	
Total cholesterol	186	59	127	(31.72)
Triglyceride	64	21	43	(32.81)
Glucose	57	31	26	(54.39)
Blood pressure	140	90	50	(64.29)
Current smoker	135	7	128	(5.2)

During the first visit, 135 (34.9%) patients indicated that they were currently smokers, and 51 (13.2%) stated that they had smoked in the past. Of the current smokers, 7 (5.2%) patients quit smoking after their periodic health examination and did not start to smoke again until the end of one year (Table 2). At the end of the first year, the laboratory and clinical findings for 134 (34.6%) patients were in the normal range, which we attributed to successful lifestyle changes. Regarding all lifestyle changes including exercise, smoke cessation, improvement in blood values, 201 (51.94%) of 387 patients had an overall note as acceptable, good or excellent.

**Discussion.** Diabetes mellitus is one of the most common causes of secondary dyslipidemias.<sup>6</sup> Of our patients, 50% had at least one impaired lipid result and 15% were diabetic.

Despite the well-established benefits of available lipid-modifying drugs, current management of dyslipidemia continues to be suboptimal, with a substantial proportion of patients failing to achieve guideline-recommended lipid targets.<sup>7</sup> The National Cholesterol Education Program (NCEP) Adult Treatment Panel III (ATP III)<sup>8</sup> recommends lifestyle therapies, which include a combination of diet and exercise modifications, in place of drug treatment for patients who fall into an intermediate range of coronary heart disease (CHD) risk. Combination lifestyle therapies are efficacious, preliminary means of improving cholesterol levels in those diagnosed with dyslipidemia, and should be implemented in place of drug therapy when cholesterol levels fall just above the normal range.<sup>8</sup> In our study, one-third of our patients did achieve guideline-recommended total cholesterol target levels, one third achieved 10% excess value, thus, improving management of dyslipidemia in each case. For primary health care, improving blood sugar control is an important step towards improving the quality of diabetic care.<sup>9</sup> In a referenced study, glycemic control was found to be poor, in general, among diabetic patients.<sup>10,11</sup> However, our control results were generally acceptable and 55% were within normal limits. In addition to drug therapy, there are important measures for the promotion of nationwide blood pressure control for hypertensive patients. Among these measures are: education programs for both patients and doctors, periodic blood pressure monitoring by the patients.<sup>12</sup> Using these kinds of measures to control the blood pressure of patients, we had a high success rate. Studies show that the low rate of dietary and physical activity advice reported by overweight patients implies that more lifestyle counseling should be provided in primary

health care.<sup>13</sup> In another primary care study, 4% of patients entering the program achieved a 10% weight loss, and 13% achieved a weight loss between 5 and 10%.<sup>14</sup> In our study, we tried to provide more effective nutrition counseling and 11% achieved 5-10% weight loss and 25% of the patients tried to have healthy diet. An active lifestyle and regular physical activity decreases cardiovascular mortality.<sup>15</sup> The studies emphasize that to get patients to enhance their physical activity is a difficult issue, with a low success rate.<sup>16</sup> Our success rate associated with establishing and maintaining regular physical exercise was approximately 15%. In a study over a 6-month period, smoking cessation rates were 23.9% in the intervention group and 9.7% in the control group.<sup>17</sup> Cessation rate of 5% at the end of one year seems low, which may be due to the lack of a smoke cessation clinic. In a study assessed stages of change in fat intake, physical activity, and cigarette smoking, brief behavioral counseling based on advice matched to stage of readiness for change was found to be valuable in encouraging healthy lifestyles among patients in primary care at raised risk of cardiovascular disease. The likelihood of achieving action/maintenance was related to baseline stage for all 3 behaviors.<sup>16</sup> A total of 162 (41.86%) of our patients started to make exercise, quit smoking and tried to have healthy diet.

Significant improvement was found in more than half of the patients at the end of one year. Seeing the first improvements after the periodic health examination, we can recommend that family medicine physicians provide adequate periodic health examinations and allow enough time with each patient to discuss the results of their laboratory tests and recommended course of action as well as answer any questions that the patient may have and a good timing for the patient's readiness. If results with stage-matched interventions continue to be replicated, health promotion programs will be able to produce unprecedented impacts on entire at-risk populations.

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