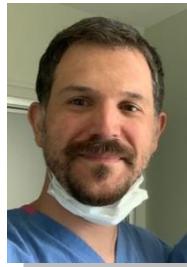


# Country report Turkey - October 2020

(update of the 2013 report by Prof. Dilek Ural and Prof Meral Kayıkçıoğlu )



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Health Care | Risk factor | Prevention methods | Cardiac Rehabilitation | activities | future

## I. Structure of Health Care in Turkey

### General description of the country

Turkey is a democratic, secular, unitary, constitutional republic with a diverse cultural heritage. It is a transcontinental Eurasian country with an area of 783,562 km<sup>2</sup>. Turkey is mainly mountainous with a continental climate, but regions surrounded by seas have a temperate Mediterranean climate.

The number of inhabitants is 83,1 million with a median age of 32,4 years. The crude birth rate is 1.43%, showing a slight decrease compared to former years due to the increase of marriage age. The number of elderly people is increasing continuously.

Turkey is classified as an upper-middle income country. Total health spending accounts for 4.2% of gross domestic product (GDP), which is among the lowest of Organization for Economic Co-operation and Development (OECD) countries. However, the economic growth experienced over the last years is expected to result in increases in health spending. Also, the lowest prices for health care among OECD countries are in Turkey at 17% of the US level and less than a quarter of the OECD average. This makes Turkey as an attractive target for health tourism, which showed a considerable increase in the past decade (1, 2).

### Structure of health care

Turkey made several reforms in health system in line with the Health Transformation Program (HTP) in the last decade. Five different governmental health insurance schemes with different coverage types were consolidated to create a unified general health insurance scheme with harmonized and expanded benefits. HTP expanded access to health-care services for all citizens, especially the poorest population groups (3). Today the majority of Turkish citizens are covered with governmental insurance. The number of private insurance companies is increasing but most of their customers have also governmental coverage.

The majority of the citizens are followed by a family practitioner (almost 25,000), but they are also free to attend to hospitals or specialists if they prefer to do so. Secondary prevention is performed by specialists. There are 1867 physicians and 28 cardiologists per million citizens.

Turkish health care is under the strict control of the government. Around two thirds of the hospitals belong to the government, whereas the rest are private. Private working of the physicians is strongly discouraged, therefore most of the physicians prefer to work in affiliation with a hospital. The number of hospital beds per

100 000 inhabitants averaged 280, which is lowest in EU (EU mean was 533.1 in 2013) but has increased over the last decade (4).

Training in cardiology is a separate specialization in Turkey. Cardiology trainees can directly start their training without having been educated in internal medicine. In 2016, cardiology residency training was increased to 5 years, and more than 1 year of this period should be spent in other specialties including internal medicine, critical care, respiratory diseases, and cardiovascular (CV) surgery. The distribution of cardiologists is not homogenous; most of the cardiologists are working in Marmara region. The European standard of minimum 3 cardiologists per 100.000 habitants has been reached in year 2014 as the current number of cardiologists exceeds 3000 (5). To reach the optimal ratio of 50 specialists per one million citizens will take another 10 years. There is a need to increase number of professionals in subspecialties like in pediatric cardiology, cardiac rehabilitation, arrhythmias, and electrophysiology. Turkish Society of Cardiology (TSC) plays a pivotal role in the postgraduate education of cardiologists.

Prevention is the main target of the government and every regulatory effort is taken to promote healthy lifestyle habits. Implementation actions may also be taken by local municipalities.

Research is an important priority for cardiology in Turkey. Use of websites and social media is extremely high in accessing the literature. Internet has increased reaching the funding resources. Governmental institutes (TUBITAK; TUSEB) and have many research funding programs. Currently, epidemiologic studies are conducted by Ministry of Health (MoH) in cooperation with WHO. TSC is also in collaboration with European Society of Cardiology both in research and educational activities.

## Interventional infrastructure

Turkey has succeeded in managing CV diseases by increasing the availability of percutaneous cardiac interventions (PCI) countrywide. All interventions are submitted and followed by a government-run electronic system (MEDULA). Tertiary centers have advanced intervention capabilities, such as percutaneous implantation of transcatheter valves (1800 aortic valve implantation cases by 2018) and cardiac transplants. Turkey has an average number of 80/year cardiac transplants comparable to the numbers in the region (6). Cardiac assist devices are also available both for bridge to transplant and as destination therapy. Moreover, Turkey is the second in implantation of cardiac assist-devices in Europe. Basic electrophysiology services have been developed and are now available in most provinces in the country. Cardiac implantable electronic devices are available and fully reimbursable for all (on average, 210 cases per year), whereas advanced ablation procedures are limited to the specialized centers in major cities.

The crude number of PCI centers per 1 million inhabitants is 3.40 but ratio of the population living in these cities is above 85%. The numbers for elective coronary angiography, PCI and primary PCI are approximately 7, 3, and 0.6 for per 1000 person, respectively, these numbers are generally higher than the numbers reported from the rest of Europe (6). Turkey had participated in the 'Stent for Life' project which gave an impetus for the increased the frequency of primary PCI (7).

Many tertiary centers have an around-the-clock primary PCI availability. In-hospital management of acute coronary events is satisfactory with a mean door to balloon time of 36 (25-65) min (8, 9). However, TURK-MI registry revealed that only 18% of patients admitting with an acute myocardial infarction were calling emergency medical services (EMS) for ambulance, therefore a public campaign of EMS calling is underway (8, 10). Myocardial infarction in young adults seems to be more prevalent in Turkey compared to other nations of Europe (10), probably due to some genetic assets and high prevalence of familial hypercholesterolemia.

## Rare Disease

Another country specific problem is the high prevalence of rare diseases such as familial hypercholesterolemia, peri-partum cardiomyopathy, and pulmonary hypertension due to the geographical structure, founder effect, and high consanguinity rate (23.4%). The ongoing national rare CV disease awareness programs including registries (A-HIT 1,2 for familial hypercholesterolemia, ARTEMIS for peri-partum cardiomyopathy, SIMURG for pulmonary hypertension etc) will address the burden of these diseases, guide illumination of the nature of

these diseases, and stimulate improvements in quality and also consistency of practice in the region (11-13). However, as the reliability of the ICD codes is low, big data analysis for the rare CVDs cannot be conducted easily.

## Finances

The Social Security Institute is the main financer of healthcare. All costs of pharmaceutical and non-pharmaceutical management of diseases are covered by the obligatory general health insurance scheme. Visits to primary care physicians are free of charge but prescriptions are paid according to the social security status of the individuals. A small co-payment is charged for specialists' visits. There are several regulations in the prescriptions of anti-lipid, antihypertensive, antidiabetic, and antithrombotic drugs. The regulations are frequently reviewed by health authorities and updated.

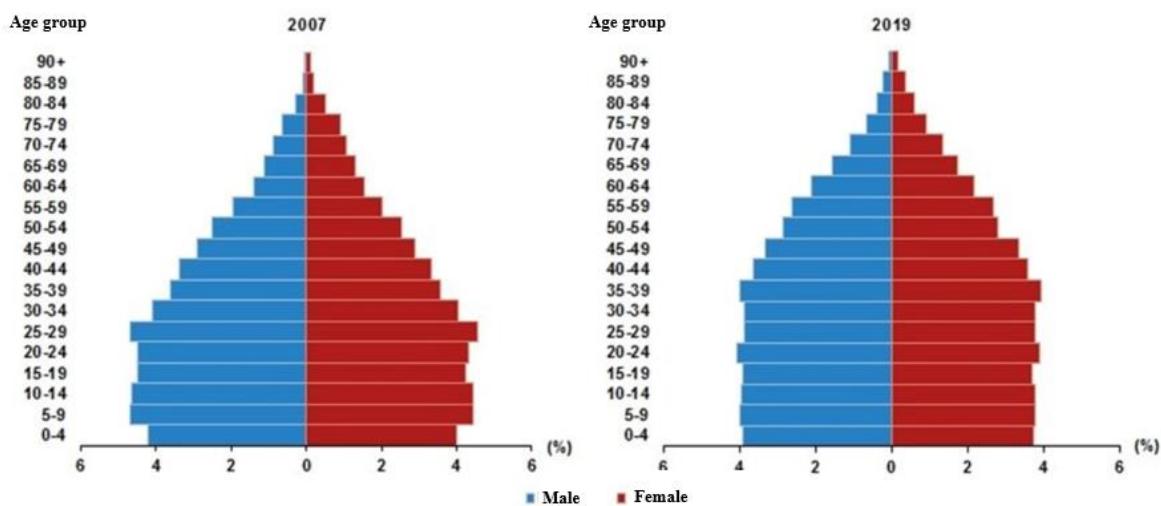
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## II. Risk factor statistics

### Cardiovascular Mortality

Population in Turkey is regularly followed by the "Address Based Population Registration System". According to 2019 statistics, total population in Turkey is 83,154,997 (male 50.1% and female 49.9%), with an annual growth rate of 14% (1). As shown in the population pyramid below number of people in middle age and old age is increasing rapidly. Demographical projections suggest that half of the population will be over age 34 and 10.2% will be over age 65 in 2023. Life expectancy at birth increased rapidly in the last decades and current estimations are 81.0 years for women and 75.6 years for men.



Source: [www.tuik.gov.tr](http://www.tuik.gov.tr)

The crude mortality rate is 5.2%. Non-communicable diseases are estimated to account for 86% of total deaths, and nearly 1 in 5 adults dies prematurely (2). Most of the deaths (50.6%) occur in the old age group (>75 years). The first six causes of death cases were diseases of the circulatory system (38.4%), neoplasms (19.7%), diseases of the respiratory system (12.5%), diseases of the nervous system and the sense organs (4.9%), endocrine, nutritional and metabolic diseases (4.8%), and external causes of injury and poisoning (4.4%), respectively. Most of the deaths from circulatory diseases were seen in women and deaths from neoplasms were occurred in men. Turkey –especially Turkish women– is among the countries with highest CV mortality in Europe.

### Major cardiovascular risk factors

Major CV risk factors in Turkish adult population are investigated in several national surveys (3-5). Among them Turkish Adults Risk Factors Study (TARF) – the earliest and longest epidemiological study sponsored by TSC – is the most comprehensive study that evaluated CV disease and its risk factors in Turkey (6). Accumulating evidence generated in the TARF study demonstrated that standard risk factors fail to identify a large proportion of individuals at high coronary heart disease risk and that inflammatory markers and type-2 diabetes are far more pertinent in this regard, particularly in Turkish women, than in Western populations (7). In an effort to establish a unique risk estimation system from TARF database, the authors reported that age, presence of diabetes mellitus, CRP, systolic blood pressure, LDL-cholesterol, smoking status, and HDL-cholesterol were relevant in the estimation of CV risk in men, while the latter two factors were not predictive among women (8).

Smoking status in Turkey showed a favorable change in the two last decades. After national smoking ban, several campaigns and programs, prevalence of smoking decreased significantly and rapidly in a relatively short period of time – especially between 2008 and 2012. Turkey has achieved such rapid results because it is the

first country in the world to implement the full range of policies to address each of World Health Organization's (WHO's) M-P-O-W-E-R (MPOWER) strategies to reduce tobacco use. According to the Global Adult Tobacco Survey (GATS) (9, 10):

- Turkey's adult smoking rate is 31.6%, the majority of whom being daily cigarette smokers (29.6%) according to 2016 survey. Smoking rate in men is still much higher than in the rate in women (43.4% versus 19.7%, respectively).
- The age group with the highest smoking rate is 30-44 (41.8%), followed by 45-59 years (32.4%).
- Exposure to secondhand smoke in restaurants fell from 55.9 percent in 2008 to just 12.7 percent in 2016 – a reduction of 77 percent
- Declines in exposure to secondhand smoke were also seen in workplaces, public transportation, government buildings and even in homes
- Health warnings on cigarette packages had been noticed by 83.3 percent of current smokers. This had encouraged more current smokers to think about quitting – 31 percent in 2016 compared to 46.3 percent in 2008
- Nearly a quarter of all smokers (24.6%) tried to quit in the past 12 months.
- 73.7% of adults noticed anti-cigarette information on the television or radio
- 89.8% of all adults believe smoking and secondhand smoke cause serious illness and 90.4% of all adults are in favor of smoking bans in workplaces and public places
- Tax increases mean the real cost of a cigarette pack has increased substantially, which studies show is a highly effective way to reduce smoking.
- A free national 24-hour quit-line service is available.

The situation of life-style-related factors are also a major concern in Turkey, especially the tendency to obesity, high salt consumption, and low level of physical activity. Especially after the success in smoking ban, obesity and diabetes, which are strongly linked to unhealthy nutrition and lack of physical exercise, became the most prominent risk factors (6). For example, compared to TURDEP-I (2003); the rate of increase in TURDEP II (2009) was 90 % for diabetes and 40 % for obesity (11, 12).

According to 2016 WHO survey (STEPS II), average fruit and vegetable consumption was 4.6 and 5.1 days per week, respectively. Daily amount of fruit and vegetable consumption was 1.4 and 1.6 servings per day, respectively. Unfortunately, these numbers indicate that 87.8% of the population had a consumption level much lower than the recommended amount of five servings per day (6).

Salt consumption seems to decrease with the elimination of salt-shakers from the tables in accordance with the MoH regulations. The mean salt intake declined from 18 to 9.9 g/day between 2011 and 2017. However, more than a quarter of the population (28.1%) still adding salt to the foods before starting eating.

Physical activity level is far from being ideal. 49.4% of the population were reported to be mildly active, only 24% of the population engaged an intense level of physical activity. The median activity duration is 30 minutes with a 4.3 to 90 interquartile range. 64.4% of the adult population were overweight (62.8% of men and 66% of women) and 28.8% were obese (21.6% of men and 35.9% of women). Average waist and hip circumference were 91.3 and 98.7 cm for males and 87.9 and 102.5 cm for females, respectively (6). The determined ideal waist circumference is for Turkish men and women is < 96 cm and < 91 cm, respectively.

According to 2016 WHO survey (5, 6), 27.7% of the Turkish population had a history of high blood pressure. The presence of hypertension was more common in women than in men (26.1% versus 29.3%, respectively). 13.6% of the study population had never had their blood pressure measured. Surveys have repeatedly shown that the adherence to the blood pressure lowering drugs is low; %57.1 of the patients diagnosed with hypertension were not taking their antihypertensive medications. A history of diabetes was found in 13.2% of the population and every third person had metabolic syndrome. Hyperlipidemia was diagnosed in 10.1% of the population. Awareness of high blood glucose or cholesterol level was even lower compared to hypertension; 35% and 45.6% of the study population had never had their blood glucose and cholesterol level measured, respectively.

**Table 1.** Prevalence of CV Risk factors in Turkey

Risk Factor	Studies between 1998-2003	Studies between 2008-2010	Studies between 2010-2020
<b>Hypertension (%)</b>	28.9 (awareness 46%)(9)	31.4 (awareness 58.1%)(9)	27.7% (6)
<b>Current smoking (%)</b>	28.7(9) (Women 10.9%, men 50.9%)(9)	21.7(9) (Women 9.8%, men 31.4%)(9)	31.6% (10)(Women 19.7%, men 43.4%)(10)
<b>Obesity (%)</b>	22.3 (central obesity 34.9%)(9)	36% (central obesity 53.6%)(9)	28.8% (6)
<b>Type 2-diabetes (%)</b>	7.2 (9)	13.7(9)	13.2 (6)

Source: Dilek Ural and Meral Kayıkçıoğlu (6, 9, 10)

In 2017, to uncover the contemporary burden of CV risk factors, TSC conducted meta-analyses enrolling epidemiologic studies with low bias and high representativeness of the country population distribution (13-17). These meta-analyses represent the last 15 years' data, and revealed an overall prevalence of hypertension 31.2%, smoking 29.1%, diabetes 14.6%, obesity 28.5%, and metabolic syndrome 43.3% (Table 2). Except smoking, all of these risk factors were significantly more prevalent in women than in men. Similarly, dyslipidemia constitutes a major public health problem in Turkey. In the adult population, almost 3 of 10 have hypercholesterolemia, one of 2 has a low HDL-cholesterol, and 1 of 3 has high triglycerides levels (18).

**Table 2.** Crude prevalence of major CV Risk factors in Turkey with regard to gender according to TSC meta-analysis representing the epidemiologic studies conducted between years 2000-2017

	Overall	Women	Men
<b>Hypertension</b>	31.2%	36.0%	30.0%
<b>Smoking</b>	30.3%	15.7%	46.1%
<b>Diabetes mellitus</b>	14.6%	16.5%	14.3%
<b>Obesity (BMI<math>\geq</math>30 kg/m<sup>2</sup>)</b>	28.5%	33.2%	18.2%
<b>Abdominal obesity</b>	39.6%	50.8%	20.8%
<b>Metabolic syndrome (According to ATPIII Criteria)</b>	32.9%	38.3%	26.8%
<b>Metabolic syndrome (According to IDF Criteria)</b>	43.3%	50.4%	35.4%
<b>Hyperlipidemia (LDL-C &gt;130 mg/dL)</b>	29.1%	30.2%	27.8%
<b>Low HDL (&lt;40 for men/&lt;50 mg/dL for women)</b>	46.1%	50.7%	41.1%
<b>Hypertriglyceridemia (&gt;150 mg/dL)</b>	36.5%	32.0%	41.3%

Source: Timmis A, Townsend N, Gale CP, et al. European Society of Cardiology: Cardiovascular Disease Statistics 2019. Eur Heart J. 2020;41(1):12-85. doi:10.1093/eurheartj/ehz859 (19).

A 2013 survey on childhood obesity revealed that prevalence of obesity among children aged 7-8 years is 23.3% in boys and 21.6% in girls. Lack of physical activity, consuming unhealthy food, watching television and internet dependency are the main reasons for childhood obesity in Turkey (20). The MoH promotes public education and awareness campaigns on physical activity and childhood obesity. As another component, action plan regulations such as restricting marketing and media advertisements of unhealthy food in childhood programs have been introduced. A regulation banning the sale of potato chips and cola beverages in school canteens has been in place since 2011, which helped to blunt the increase in childhood obesity prevalence (6.5% in 2009, 8.8% in 2013, and 9.9% in 2016).

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### III. Prevention methods, staff

#### Who delivers?

The main actors in CV prevention are general practitioners. The majority of Turkish citizens has a family physician and can reach them easily. Primary care physicians are regularly educated in the management of main risk factors and logical drug use - to choose the most cost-effective evidence-based drug - is encouraged. Patients can also directly attend to internists and cardiologists (1).

Number of nurses specialized in CV prevention is limited. Nurse-based clinics/programs are lacking in Turkey, therefore sustained contact for lifestyle intervention cannot be established in the majority of the patients. For now, general practitioners are the key persons to initiate and provide long-term follow-up.

The practicing cardiologists mostly play a consultant role in the evaluation of patients with CV problems referred from the primary care physician. Awareness and knowledge of guidelines among practicing cardiologists is fair and especially in secondary prevention patients mostly receive all the evidence-based medicines suitable to their indications and contraindications.

#### Where?

Currently 24,671 Family Physicians are working in the area of primary care. There are 26,552 Family Medicine Units and 8,005 Family Health Centers where the general populations' primary health care is conducted. An additional 207 Healthy Life Centers (HLC) which are multi-purpose structures established to protect individuals and society from risk factors, to encourage a healthy lifestyle, and to strengthen primary health care services are actively working. HLCs operate as an additional service unit affiliated to the community health center. The MoH's concept is "INVESTING IN HEALTH, NOT IN DISEASE", with its HLCs; supporting and strengthening family medicine services throughout the country (such as health counseling, x-ray, laboratory), facilitating access to non-medical services (such as dietitian services, psychosocial support services, physiotherapy, child development services) in primary care, preventing the hospital crowding, smoking and to combat CV risks. They aim to introduce healthy habits that will increase the quality of life of the society. HLCs includes CV risk factor and nutritional counseling, psycho-social counseling, oral and dental health, women's and reproductive health, school children's health, and screening and education, smoking cessation counseling, counseling for drug abuse, and control and management of NCDs. There are physiotherapists in each HCLs serving for cardiac rehabilitation.

#### Guidance

Turkey does not have separate national guidelines. Both European and North American guidelines can be selected by individual health professionals. There are several societies of health professionals and each society may prefer a different guideline.

Turkish Society of Cardiology (TSC) uses and endorses European guidelines, usually without any adaptation to the national characteristics. Almost every guideline is translated to Turkish, published and delivered to members of TSC. Promotion and implementation of these guidelines is usually arranged by TSC.

Recalibrated SCORE-TURKEY risk charts are provided online as a family physician–patient follow-up program called e-nabız ("e-pulse") (2). However, target lipid levels have not been achieved in most patients, probably as a result of reluctance of physicians, promotion of misconceptions by the media, and high use of alternative medicine products.

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## IV. Cardiac Rehabilitation in Turkey

The concept of cardiac rehabilitation is not acknowledged enough in both public and private health sector in Turkey. Cardiologists and cardiovascular surgeons are not sufficiently demanding, and awareness of health professionals on this issue is quite low. Therefore, cardiac rehabilitation practices could not become common enough, and do not allow for routine service.

The first applications of cardiac rehabilitation in Turkey began in the 1970s with phase III programs in post-infarction patients. Phase I to phase III programs continued in the following years, but primarily due to the increase of coronary artery bypass surgery and percutaneous intracoronary interventions, rehabilitation initiatives have remained more in the background.

Physical therapy and rehabilitation physicians began to focus on the subject stronger in the last decade. Cardiopulmonary rehabilitation units are available in physical therapy and rehabilitation clinics of many universities, research and education hospitals. Independent or private owned cardiac rehabilitation centers are relatively few. However, it is not possible to give an official statistic about the number of actively working centers, number of patients referred to these centers and phases of the rehabilitation. Certainly, the number of patients referred to a rehabilitation program is very small in daily practice. One of the main reasons for this is the difficulty of employing a large team required for cardiac rehabilitation. The number of cardiopulmonary physiotherapists is quite insufficient. Another important reason is lack of an adequate cooperation between cardiology specialists and physiotherapists.

The most positive change in recent years is the acceptance of a payment for cardiac rehabilitation in line with the relevant legislation by the MoH. Cardiac rehabilitation is a part of the curriculum of physical therapy and rehabilitation specialist training in our country, but its importance is rather neglected in cardiology training. Cardiac rehabilitation is currently reimbursed by MoH, if performed under supervision of a physical rehabilitation specialist. A new organization centered on "Healthy Life Centers" and new state hospitals are being planned to change the structure of cardiac rehabilitation in the near future. The link between primary care physicians and cardiologists still needs to be improved.

The cardiac rehabilitation subcommittee, which operates under the umbrella of the TSC, launched a survey to determine the current status of cardiac rehabilitation in Turkey and to find out the view of cardiologists to cardiac rehabilitation in order to generate new policies in this regard. However, results of this study are not yet clear.

Two courses of on Cardiac Rehabilitation were included in the scientific program of the 30th National Congress of TSC and participation was high.

We hope that cardiac rehabilitation services will see more and more request by the physicians and patients in parallel with the increase in the level of general health and awareness of the importance of quality of life.

## V. Main prevention activities

National heart health policy established by Turkish MoH and TSC aims to decrease the burden of CV disease and its risk factors in Turkey. The MoH leads the main public awareness campaigns, projects, and educational activities. Local authorities also conduct various projects for CV health. Turkey has succeeded in setting a national policy, action plan targets, collecting reliable mortality data and achieving risk-factor surveys. A Multisectoral Action-Plan was launched by the MoH in 2017 and its 4 strategic pillars were strengthening national capacities, leadership, governance and partnerships; reducing modifiable and preventable risk factors; strengthening the response of the health system; and monitoring trends and determinants of non-communicable diseases and evaluating progress in their prevention and control (1, 2).

The MoH has established a follow-up web-based program and management algorithm combined with e-pulse for the patients with CV disease and/or high CV risk to standardize the approach to these patients in the whole country. In 2019, as the initial step of the implementation of the program 300 family physicians have been trained as trainers, and 23,000 family physicians are currently receiving training from those trained physicians. This program included management of CV patient, management of stroke patient, and also elderly. Physicians also received education on teaching techniques and methods as they educate the patients and their families. With this project, all family physicians will now apply SCORE-TR to every patient over the age of 40, and if there is CAD of high CV risk will refer to the specialists. The MoH also organized an education program on peripartum cardiovascular diseases, targeting obstetricians and provided by cardiologists, in order to decrease infant and mother mortality.

Among the non-governmental organizations, TSC is heading the preventive activities. It provides brochures, radio programs, TV spots, special web pages, and informative TV programs produced by the members of the society. These activities pioneered similar activities of the other medical societies and well appreciated by the press and public. Thus, TSC won all the “Best Social Responsibility” and “Best Communication Project Awards” in health every year since 2006.

Upon call of the World Health Organization on reducing noncommunicable diseases, a Multisectoral Action Plan of Turkey for Noncommunicable Diseases 2017– 2025 has been drawn up. Coordinated by the Public Health Institute of the Ministry of Health, and with the participation of other related ministries, authorities, universities and civil society, this Action Plan adopts a holistic and high-level multidisciplinary approach, with the priority objectives of ensuring effective implementation and the sustainability of prevention and protection activities (3).

### Campaigns

Several non-governmental organizations conduct campaigns for CV prevention. TSC is the leading organization with most long-lasting and effective campaigns, some of which are listed below:

- “10.000 steps a Day for Your Heart”: Its’ aim is to motivate people to walk at least 10.000 steps every day in order to preserve and develop their cardiovascular health.
- “Love Your Heart, Know Your Numbers”: It was based on reminding people the critical numbers for heart health such as blood pressure, lipid levels, etc. Health and life insurance companies also support the campaign and inform their customers about its activities and components.
- “Love Your Heart, Go Red”: Designed as an extension of “Go Red for Women” by targeting both men and women, the campaign aimed to promote healthy diet and regular exercise by TV films, web site, public conferences and screenings.
- “Care your heart; your loved ones are in it”: Initiated together with the MoH and 4 medical societies, the campaign was based on the concept of “Total Risk Management against CV Disease”. In order to

accomplish the task, 7.000 physicians were trained in 3 teleconferences; training kits were distributed to 30.000 doctors and 6.000 hospitals. Popular mass communication included 20 national TV channels and 10 major news portals. A full-day risk screening was conducted at the parliament. A special web site ([www.kalbinizikoruyun.org](http://www.kalbinizikoruyun.org)) was prepared for both the training of doctors and the people. A toll-free phone line was established.

- “12/8” Hypertension Awareness Campaign: Launched in November 2005 as an integrated communication project including all mass and outdoor media. This project is conducted since 2006 at major hospitals and more than 350.000 patients were screened at specially designed corners.
- “Invent Something for Health”: World Hypertension Day in 2012 marked a new and long-term Project: “Hypertension Hunters Contest” aimed especially at youth in web, face-book and twitter to inform them on importance and risks of hypertension and invite them to develop creative means and methods for reminding their hypertensive family members to abide by their diets and to take their medicines.
- A campaign with the catch-phrase “educate women to protect family” was carried out in 7 cities with the cooperation of TSC and local municipalities. In this project, women were given a detailed education on the CV prevention and healthy living, and CV parameters were evaluated before and after the training within 6 months.
- “Heart Age”: Designed to improve the consciousness of the people on heart health by promoting lifestyle changes that might lower the „age of their heart”.
- European Heart Failure Day: The campaign includes a webinar for cardiologists and family physicians and an integrated communication program to warn the general audience against heart failure.
- World Heart Day and World Hypertension Day: Both days are among the regular annual program of the TSC to improve public awareness in cardiovascular health issues, celebrated with a week-long program carried out in several major cities with wide coverage in the mass media.
- “Appreciate your value” ([degerinibil.net](http://degerinibil.net)) for hypertension awareness.
- “Cycle for your heart” ([kalbinicinpedalla.com](http://kalbinicinpedalla.com)) encourages public to assume healthy transportation habits.
- “Listen to your heart” ([kalbinidinlesen.com](http://kalbinidinlesen.com)), a web-based patient platform established by TSC including VTRs for the education of patients and their families with CV disease or high risk. <https://www.kalbinidinlesen.com/>. This website also includes a heart-friendly cook-book which can be accessed at: <https://www.kalbinidinlesen.com/yemek-kitabi>.
- MOVEIT-DON’T LET HEART ATTACK STOP YOU, an awareness project of TSC in 2020 conducted after the results of TURKMI that revealed a very low EMS use in admissions of heart attack in Turkey. The projects logo was put on display on the main search page (custom category) of Yandex Navigation App.



Figure. A heart-friendly cook-book provided by an educational website ([kalbindinlesen.com](http://kalbindinlesen.com)) of the Turkish Society of Cardiology.

## Projects

The major national campaigns promoting heart health are conducted by the Turkish MoH.

- Obesity Prevention and Control Program of Turkey: Turkish Society of Cardiology and 14 other medical specialization societies besides several universities, municipalities and institutions of manufacturers such as Union of Food Industry Employers and Federation of Food and Beverage Industry Associations provided input for the program prepared under energetic initiative of the Ministry of Health. In line with the program, the MoH published several books and brochures for healthy eating and physical activity, handbook on management of obesity for general practitioners (4).
- National Tobacco Control Programme and Action Plan of Turkey: The campaign has been prepared in collaboration with about 130 experts and authorities from all relevant ministries, universities and non-governmental organisations. The 4-years campaign is accepted among the most successful smoking ban campaigns throughout the world. World Health Organization gave three “World No Tobacco Day Awards” to Turkey in six years.
- European Heart Health Charter and EuroHeart Health Project: Signing Ceremony of the European Heart Health Charter held in Ankara on December 26, 2007. TSC participated in all the possible modules for the greater project group EuroHeart Health including the translation, signing and dissemination of the charter, the European Guidelines on CVD Prevention in Clinical Practice, HeartScore® and Red Alert on Women’s Hearts.
- Healthy Cities Project conducted by municipalities, which are members of Turkish Healthy Cities Association, tries to establish a platform for cooperation that will contribute to the development, embracement and implementation of Healthy Cities movement across Turkey and create sustainable cities.
- Schools Become Life Project, a recently started program that will be conducted by municipalities and Ministry of Education, aims to provide lifelong learning to both students and adults including informing them about healthy lifestyle habits and increasing their sporting activities.

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## Education

Lifestyle risk factors are on the rise in children and youth in Turkey. The government tries to prevent this rise by education programs targeting students in primary school. Especially promotion of healthy lifestyle habits is the main target of these programs. Ministry of Education has attempts such as ban of the sale of soda and cola beverages in school canteens. Turkish pediatricians coach mothers not to add salt and sugar to baby food and formulas within the first year.

Prevention of CV disease is included in core curriculum programs of medical students (Turkish Core Curriculum). Usually the main topics (hypertension, dyslipidemia, diabetes, and obesity) are discussed separately. Education of the concept of global risk evaluation and management is not a homogeneous topic, but individual mentors describe its application in most of the medical schools.

Global risk assessment and management is a stable topic in cardiology training core curriculum. The majority of the trainees are aware of different global risk calculation methods. Selection of the method to be used is left to the clinicians.

Education of primary care physicians depends mainly on the regular education courses of MoH. TSC includes sessions for family physicians and European guidelines on various prevention topics are promoted in these sessions.

Turkish Society of Cardiology (TSC) plays a pivotal role in the postgraduate education of cardiologists that involves several continuing medical educational activities including standardized semi-annual courses for cardiology fellows (Cardiology School), and also many meetings organized by working groups. E-learning is continuously available for improving cardiologists' knowledge, skills and training experiences. Since 2002 a voluntary National Board Exam is carried out by an independent National Accreditation Council of Cardiology, within TSC (1).

Interest of mass media in CV prevention is growing year by year. Most of the authors and consultants are senior specialists in either cardiology or internal medicine. These programs play a very powerful role in the education of the public. Erroneous information may appear time to time, but their effect is limited.

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## VI. The future

### Needs

Despite the enormous effort spent for CVD prevention, all the epidemiologic data show an incremental rise in CV risk factors in terms of diabetes, hypertension, and abdominal obesity. For achieving more effective preventive measures we need:

- Continuation of public awareness campaigns, programs and education of population from school years.
- Increase health professionals' awareness and willingness to participate in CV prevention and especially in rehabilitation.
- Establishment and promotion of patient organizations in order to increase public awareness, ease cooperation with health authorities, and provide education and self-support for the patients.
- Close control of the media in order to avoid the risk of false information
- To increase the health literacy throughout all social strata. Inclusion of relevant general health and prevention topics in the core curriculum of high schools.
- To increase the collaborative work of primary care physicians and cardiologists.

### Possibilities

- A partnership with politicians and municipalities
- Increase number of centers and staff working in cardiac rehabilitation.
- Involving other health professionals in CV prevention and rehabilitation efforts (i.e. increasing number of nurse-lead programs)
- Participating in ongoing projects on CV risk factor education and interventions especially in women and school children.

### Obstacles

- Traditions including misbeliefs such as preference of alternative medicine, herbal drugs
- Misleading campaigns of media
- Economic, social, and political challenges
- Different priorities of government and authorities controlling the healthcare system

### Plans for the coming year(s)

- Projects for the implementation of the guidelines for both primary and secondary prevention and co-ordination of preventive actions.
- Increase the attractiveness of cardiac rehabilitation for cardiologists and other health professionals.
- Reach the 2025 Global NCD Mortality Target with an effective prevention and rehabilitation strategy.