REPUBLIC OF TURKEY
MINISTRY OF HEALTH
GENERAL DIRECTORATE OF
PUBLIC HEALTH

World Health Organization
REGIONAL OFFICE FOR Europe

IMPROVEMENT OF BLOOD PRESSURE CONTROL IN TURKEY

PROJECT REPORT

Ankara, Turkey 2021

REPUBLIC OF TURKEY
MINISTRY OF HEALTH
GENERAL DIRECTORATE OF
PUBLIC HEALTH

World Health Organization
REGIONAL OFFICE FOR Europe

IMPROVEMENT OF BLOOD PRESSURE CONTROL IN TURKEY

PROJECT REPORT

Ankara, Turkey 2021

Hypertension, healthy diet, physical activity, non-communicable diseases

WHO European Region publications can be requested from: Publications

WHO Regional Office for Europe UN
City, Marmorvej 51
DK-2100 Copenhagen Ø, Denmark

Alternatively, documents, health-related information, or permission for citations or translations can be requested by completing the online request form on the Regional Office website (http://www.euro.who.int/pubrequest).

Project for Improvement of Blood Pressure Control in Turkey, Assessment Report, 2020, Authors: Ekinci B., Üçüncü İ., Özkan Z.A., Nayir T., Sis S., Özkan S., Yılmaz E.A., Çobanoğlu N., Sarıoğlu G., Gürbüztürk F.T., Toker S., Ergüder T. World Health Organization Turkey Office, Ankara 2021.

IMPROVEMENT OF BLOOD PRESSURE CONTROL IN TURKEY

PROJECT REPORT

Project Team

Specialist Dr. Banu EKİNCİ	Prof. Dr. Toker ERGÜDER
Prof. Dr. Seçil ÖZKAN	Assoc. Prof. Tufan NAYIR
Dr. Zübeyde ÖZKAN ALTUNAY	Sıla Saadet TOKER
Dr. Esin YILMAZ ASLAN	Dr. Melda KEÇİK
Med. Technician Nevin ÇOBANOĞLU	
Specialist Med. Technician Gülay SARIOĞLU	
Nurse Fatma TAMKOÇ GÜRBÜZTÜRK	
Consultant Ş. Seçil SİS	
Health Specialist Ahmet ARIKAN	
Health Specialist İlayda ÜÇÜNCÜ	

Table of Contents

Abbreviations

FP	Family Physician
FMIS	Family Medicine Information System
FMW	Family Medicine Worker
FHC	Family Health Centre
FMU	Family Medicine Unit
FBG	Fasting Blood Glucose
ARB	Angiotensin II Receptor Blockers
ASA	Acetyl Salicylic Acid
NCDs	Non-Communicable Diseases
BMI	Body Mass Index
DBP	Diastolic Blood Pressure
GFR	Glomerular Filtration Rate
HT	Hypertension
ICD	International Classification of Diseases
BP	Blood Pressure
CAD	Coronary Artery Disease
CVD	Cardiovascular Disease
CKD	Chronic Kidney Disease
NHHST	National Household Health Survey in Turkey: Prevalence of Noncommunicable Disease Risk Factors 2017
SCORE	Systematic Coronary Risk Estimation
SBP	Systolic Blood Pressure
CeVD	Cerebrovascular Disease
HLC	Healthy Living Centre
TPA	Turkish Pharmacists' Association
CHC	Community Health Centre
WHO	World Health Organization
RTSL	Resolve to Save Lives

List of Tables

List of Figures

Acknowledgement

As the authors, project members and WHO, we would like to express our sincere gratitude and respect to the Ministry of Health of the Republic of Turkey.

We would like to express our gratitude to those who graciously provided us with all the resources and support necessary in the development and implementation of the project in the project provinces, in particular to the esteemed Turkish Ministry of Health, General Director of Public Health Fatih Kara, Deputy Director General of Public Health Specialist Dr. Bekir Keskinkılıç, General Directorate of Public Health, Head of Department of Chronic Diseases and Elderly Health Dr. Banu Ekinci, Prof. Dr. Seçil Özkan, Prof Dr. Siren Sezer, Prof Dr. Gülay Sain Güven, Assoc. Prof. Aslı Çarkoğlu, Dr. Zübeyde Özkan Altunay, Dr. Esin Yılmaz Aslan, Nevin Çobanoğlu, Gülay Sarıoğlu, Fatma Tamkoç Gürbüztürk, Ş. Seçil Sis, Ahmet Arıkan, Asiye Kapusuz Navruz and İlayda Üçüncü in this project, which was planned with the aim of keeping blood pressure under control in people with hypertension and enabling people to lead a healthier and higher quality life without developing complications.

We would also like to express our gratitude to the Governor of Erzincan Mr. Ali Arslantaş, Deputy Governor Mr. İhsan Ayrancı, Çankırı Governor Mr. Hamdi Bilge Aktaş and Uşak Governor Ms. Funda Kocabıyık and the esteemed deputy governors responsible for the health of our project provinces.

We would like to express our thanks to those who contributed to the adoption and dissemination of the project, the esteemed Provincial Health Director of Uşak Dr. Sedat Kavas, Erzincan Provincial Health Director Assoc. Prof. Dr. Erkan Hirik, Çankırı Provincial Health Director Dr. Hüseyin Sarıkaya, and their teams within the Public Health Directorate for their intense support during project training and follow-up.

We would like to thank the Chairman of the Turkish Pharmacists' Association, Mr. Erdoğan Çolak, Secretary-General Arman Üney, and assistant Vildan Özcan, as well as our pharmacists for their contributions to increasing the significance of the project by the side of our physicians during the treatment and follow-up of our patients.

We owe a great debt of gratitude to all our provincial administrators, our project trainers, our friends working in provincial health directorates and community health centers (CHCs) who took great strides in providing training, who carried out provincial visits with devotion, and increased the value of the project by establishing a bond in the field and do not hesitate in ensuring an awareness of the value of the project.

We would also like to thank Ms. Jill Farrington, Ms. Nicola Toffelmeira, Dr. Batyr Berdyklychev, (WHO) Prof. Tiina Laatikainen, Mr Dylan Collins (Consultant) and and Ms Jennifer Cohen, Ms. Andrew Morran, Ms. Marwah Abdalla (RTSL) for a continued sharing of technical knowledge and guidance with us and always working with us as our solution partner in project-related matters. Their contribution to the project is immeasurable.

We would like to extend our thanks to the Resolve to Save Lives (RTSL) initiative and its partners for their technical and financial assistance for successful implementation of the Project.

Finally, on behalf of our patients and WHO, we would like to thank the family physicians and health workers who work in the field to ensure the health of their patients, for their contributions to the project, and for providing the opportunity of a healthier life with blood pressure control.

Preface

Chronic diseases are rapidly becoming more prevalent in both developed and developing countries around the world, straining existing health services and exhausting most of the budget allocated to health. Chronic diseases, whose incidence is rapidly increasing, are one of the most important causes of death and disability in the world.

A global public health issue, elevated blood pressure is one of the most common chronic diseases around the world. Elevated blood pressure leads to the death of 7.6 million people and the disability of 90 million people every year throughout the world.

National Household Health Survey in Turkey: Prevalence of Noncommunicable Disease Risk Factors, 2017 determined a rate of 27.7% of hypertensive individuals aged 15 years or over, and a rate of 28.8% in individuals aged 18 and over. It was found that the rate of those with blood pressure control in hypertensive individuals was 23.8% in those aged 15 and over, and 24.1% in those aged 18 and over.

With a consideration for public health, a study on the 'Improvement of Blood Pressure Control in Turkey' was conducted in cooperation with our Ministry and the World Health Organization (WHO) in order to establish improvements in blood pressure control in Turkey.

The main goal of national and international health policies is to achieve a healthy society consisting of healthy individuals. With this study, multidisciplinary teams in primary care will map the model to be applied throughout Turkey by increasing blood pressure control rates as a result of applying evidence-based clinical protocols.

While hoping that the study will have positive repercussions in the fight for improved blood pressure control, I offer my gratitude to all those who contributed.

Assoc. Dr. Fatih KARA
General Director of
Public Health

Executive Summary

Hypertension is one of the most common chronic diseases and is a global public health problem. Studies show that nine million deaths each year are caused by hypertension. National Household Health Survey in Turkey: Prevalence of Noncommunicable Disease Risk Factors (NHHST) 2017, determined found that a rate of 27.7% of hypertensive individuals aged 15 years or over, and a rate of 28.8% in individuals aged 18 and over. The rate of controlled blood pressure in hypertensive individuals has been found to be 23.8% in individuals aged 15 years and over, and a rate of 24.1% in individuals aged 18 and over.

According to NHHST (2017), Cardiovascular Diseases (CVD) risk assessment and management is implemented in less than 50% of primary health care institutions. Because CVD risk assessment is not common practice in primary health care in Turkey, the quality of care in hypertension is insufficient. Despite this, when the high overall health insurance coverage (98%), ease of access to electronic medical records and medications are considered there is potential for hypertension control and improved cardiovascular disease outcomes in Turkey.

With the aim of improving blood pressure control in Turkey, the Ministry of Health and the World Health Organization (WHO) initiated a Project for the Improvement of Blood Pressure Control in Turkey. The aim of this project is to significantly improve (an improvement of at least 50% on the baseline within a period of 12 months) blood pressure control in hypertensive patients by using a potentially sustainable and nationwide intervention model (details of the intervention model are included in the section "Project Implementation Stages and Assessment Process").

Within the scope of the study, it was decided to select three provinces (Çankırı, Erzincan, Uşak) within Turkey as project provinces and to implement the project in these provinces. Family Physicians (FP), nurses and other health personnel working in Family Health Centers (FHCs) in the project provinces were trained. The model was implemented in all FHCs in the project provinces between February 2019 and February 2020, and this range was used as a reference in the examination of health records for the assessment of the action.

This project, which benefits from improvements in health knowledge and builds on previous national and international experience on the back of primary health care reforms, is expected to contribute to the implementation of evidence-based clinical protocols by multidisciplinary teams in primary care through training, clinical experience and performance monitoring.

As a result of the analysis of the health records of individuals diagnosed with hypertension within the scope of the project:

The rate of blood pressure values having been recorded at least once within the last year has increased from 5% to 34% between February 2019 and March 2020. When the entire project is considered on a province-by-province basis, a significant increase in record rates has been observed in a one-year project implementation period (Erzincan from 5% to 42%, Uşak from 4% to 41%, Çankırı from 7% to 19%).

While the blood pressure control rate of the small number of individuals recorded in the baseline assessment was 46% (23 out of 50 individuals), the number of patients whose blood pressure was recorded during the end project/final evaluation after the implementation of the project increased 8-fold and the blood pressure control rate increased to 58% (186 out of 323 individuals).

The rate of people whose body mass index (BMI) was measured in the last year increased from 12% to 23%. When the BMI measurement is examined on an age group basis, it can be observed that the highest number of measurements are carried out for individuals aged 65 and above. In the final assessment, it was observed that 23% of individuals aged 65 and over in the sample had their BMI measured at least once in the past year.

The rate of individuals whose cholesterol was measured at least once in the past two years, has increased from 62% to 69%. Among those whose cholesterol was measured during the past year on the initial assessment, the rate of cholesterol values below 190 was 31%. This figure increased to 38% in the final assessment.

The rate of individuals whose creatinine was measured at least once in the past one year has increased from 71% to 79%. Within tests carried out, it was observed that the individuals selected as sample had creatinine tests carried out at the highest rate.

A decrease of 1% from 41% to 40% was observed in the rate of people whose proteinuria value was measured at least once in the past year. While in the first assessment proteinuria was positive in 7% of those checked, while in the final assessment, this figure increased to 15%. This may indicate that physicians are selecting individuals for testing more accurately.

The rate of individuals whose fasting blood glucose (FBG) was measured at least once in the past one year has increased from 70% to 78%. FBG measurement rates of females in the sample are higher than males.

The rate of individuals whose HbA1c was measured at least once in the past one year has increased from 34% to 38%.

There are also improvements in the records of tobacco use in the past year. The record rate of tobacco use increased from 9% in the initial assessment to 22% at the end of the one-year implementation period.

In the initial assessment of the project, only 34 individuals had a cardiovascular risk score available in their health records, while in the final evaluation, this number was found to have increased to 170.

There has been a significant increase in patient health records regarding advice on healthy eating, physical activity, tobacco and alcohol use. While records of a suggestion of a change in lifestyle was very low in the initial assessment, there was a significant change in the approach of medical personnel in the final assessment, and the rate of a suggestion of a change in lifestyle increased to 23%.

Accompanying conditions are known to be very important in the progression of diseases, and thus concomitants were also queried during the assessment stages. In the final assessment, records show that 39% of hypertensive patients have diabetes, 45% have coronary artery disease (CAD), 4% have kidney disease (CKD) and 19% have cerebrovascular disease (CeVD).

The medication use status is also required in order to maintain control of blood pressure. In the assessment, the use of antihypertensive, antidiabetic, acetyl salicylic acid (ASA) type medications and statins were queried.

It was observed that the rate of individuals not prescribed antihypertensive medications despite having been diagnosed with hypertension was 26%, while this rate dropped to 19% in the final assessment. Thus, the rate of physicians prescribing hypertensive individuals' antihypertensive medications have increased. An improvement in regular antihypertensive medication use (patients with reports regularly filling prescriptions every three months) was also noted, with this rate increasing from 49% to 61%. When considering the antihypertensive medication prescribing conditions and blood pressure values, despite the number of hypertensive individuals whose blood pressure was measured in the final assessment increasing 6-fold when compared to the initial assessment, the rate of regular medication use by those whose blood pressure values are above the reference values was found to have increased from 65% to 66%.

While the rate of individuals who were not prescribed any medication despite having a diagnosis of diabetes was 60% in the first assessment, this rate was found to have decreased to 24% in the final assessment. Regular antidiabetic medication uses also improved, increasing from 54% to 56%.

In the first assessment, a total of 175 individuals were not prescribed any of the (antihypertensive, antidiabetic, statin, ASA) subject to the study, while in the final assessment, this number decreased to 122 individuals.

The training conducted in all three provinces has been shown to make a positive contribution to the level of knowledge of physicians and family medicine workers (FMW) regarding the training subject matter. A 70% increase in the assessment of the success rate before and after training was found in both groups. This increase was also positively reflected in the practice as shown both in visits to FHCs and in assessments conducted through the Family Medicine Information System (FMIS).

In order to measure training satisfaction; A survey was conducted participants regarding trainers, training organization, training materials, content, duration, and material use, and as a result, it was observed that, among all project provincial participants; 82% stated that the training achieved its purpose, 78% that the training met their personal expectations, 93% that they found the training program to be relevant to their profession, 84% that they found the educational tools used during the training sufficient, 83% that they found the content of the training sufficient, and 89% stated they were able to establish effective communication with the trainers.

Supervision visits to the provinces contributed to the assessment of the practices of FPs regarding follow-up, and feedback and suggestions were provided to the physicians and health directorates regarding problems. With visits to FHCs by provincial administrators, ministry personnel and WHO country offices, it was observed that the monitoring and assessment activities of the project were effective in improving service delivery.

At the end of the project, focus group interviews were held with FPs, FMWs, pharmacists and patients. In general, the importance of the project in terms of raising public awareness regarding hypertension, creating a new perception by creating an approach algorithm for the patient, maintaining

and accessibility of properly recorded data when needed was emphasized by healthcare workers, while a common opinion that the training must be ongoing and implemented in other provinces was expressed.

Participants noted that the impact and purpose of the project would be more tangible if the effective use of media and public service announcements on society were utilized.

It was noted that with the implementation of the project, blood pressure measurement has become common in patients presenting to FHCs, while also providing for early diagnosis of young patients who were not yet diagnosed. It has been reported that measuring the blood pressure of all individuals aged 18 and over and monitoring hypertensive patients also brings an additional workload for health workers. It has been stated that this additional workload can be mitigated with the provision of sufficient medical personnel or reduction of daily workload so that healthcare workers do not disrupt other tasks and follow-ups, and thus more time could be allocated to hypertensive patients. It was also stated that it would be beneficial for the number and quality of institutions such as HLCs where patients can receive counselling to be increased.

In conclusion, It has been found that, with the implementation of chronic disease follow-up guidelines, on the job training and regular monitoring and assessment studies within the scope of the 'Project for Improvement of Blood Pressure Control in Turkey', an increase in the awareness of healthcare personnel and the provision of effective/standard service to hypertensive individuals, as well as the provision of personalized consultancy services can lead to an increase in the rate of blood pressure being under control. Given the incidence of other chronic diseases together with hypertension and their harmful effects in the form of summation, the importance and benefit of following and monitoring these diseases together in the health system is significant

SECTION 1

INTRODUCTION

Hypertension (HT), in other words, elevated blood pressure (BP), is an important risk factor for non-communicable diseases (NCDs) and is one of the main causes of premature death throughout the world. Studies reveal that nine million deaths in the world are caused by HT per year [1]. In addition, HT places a burden on the national budget and has a catastrophic impact by increasing household spending. Therefore, HT and associated risk factors need to be eliminated.

HT prevalence varies by countries in relation to differences in the composition of the population, an ever-increasing adoption of sedentary lifestyles, nutrition style, the level of health literacy and the effectiveness of non-personalized health system interventions [2]. In addition, while the prevalence of HT varies depending on socio-economic conditions; it can be prevented by several lifestyle changes and can be monitored and controlled by primary health care organizations [3]. Effective management of HT in primary health care institutions can identify risk factors that cause elevated BP, and diseases associated with elevated BP can thus be prevented.

The nature of preventive health care and medical care is one of the important factors in the prevention of cardiovascular, cerebrovascular (CeVD) and renal diseases that may occur in relation to HT. Studies reveal that inadequate control of BP is the most common risk factor for long-term diseases, in particular, CeVDs [4]. Therefore, as part of effective management of BP, it is necessary to ensure a diagnosis and determine the therapeutic goals and control and follow-up of BP. Thus, the level of comorbidity and mortality that may occur with elevated BP can be reduced. In addition, effective control of BP can also effectively control the direct and indirect costs of long-term diseases in the health system.

Another important factor in controlling BP and preventing hypertension is the level of access to health services. The upward trend in the number of individuals presenting to healthcare institutions on an individual basis over the years shows that access to healthcare services has been increasing since 2003, when the Health Transformation Program began in Turkey [5]. Despite the increase in access to primary health care institutions, early diagnosis of elevated BP and control of long-term patients may be delayed, especially in cases that do not lead to the seeking of health care services. Efforts converge when the first step in the process of effective management of risk factors is to ensure the follow-up and control of identified cases.

Another important factor in preventing long-term diseases and improving health is the level of health literacy and the health education provided by healthcare professionals to those who benefit from their services [6]. Undoubtedly, one of the important duties of primary health care organizations is to provide counselling and health education services. The scope and nature of these services are directly involved in the prevention of long-term diseases and risk factors.

Despite the increase in access to health services and efforts to increase health literacy, approximately 10% of those diagnosed with HT in Turkey show inability to medicate for various reasons [7]. NHHST(2017)

determined a rate of 27.7% of hypertensive individuals aged 15 years or over, and a rate of 28.8% in individuals aged 18 and over. The rate of controlled BP in hypertensive individuals has been found to be 23.8% in individuals aged 15 years and over, and a rate of 24.1% in individuals aged 18 and over [8].

Despite its preventability, the increasing prevalence and the need for control indicates that HT is a public health concern that needs to be addressed globally as one of the leading causes of mortality. On the other hand, it is expected that with the addition of a multi-sectoral approach to health development, the factors that pose a risk for long-term diseases will be reduced by the contribution of intersectoral cooperation. Accordingly, cooperation was established between the Ministry of Health and the World Health Organization (WHO) in order to ensure the effectiveness of BP control in Turkey.

It is important for the effectiveness of the health system to clarify and strengthen the role of Family Health Centers (FHC) as units closest to those who benefit from the service in the follow-up and control process of cases diagnosed with HT.

In the twentieth century, factors such as an increase in the level of education and income in the world, a change in dietary habits, and the control of infectious diseases led to an increase in life expectancy. The fact that the elderly population is increasing compared to the child population has led to the shift of health problems in society from childhood diseases to non-communicable diseases (NCD) seen in the elderly population. Although prolongation of life expectancy is desirable, in parallel, it has led to an increase in the incidence of NCDs. In both developed and developing economies, NCDs pose great financial and economic risks and threaten the sustainability of health service delivery systems.

Voluntary global goals for NCDs include the goal of controlling high BP. Within the scope of “Turkey Prevention and Control Program for Cardiovascular Diseases” and “Prevention and Control Program for Renal Diseases”; the aim is to reduce the risk of developing diseases by increasing awareness of common risk factors of non-communicable diseases in society, to control blood pressure and to calculate the risk of cardiovascular diseases and to provide interventions in accordance with the risk score, and to give priority to improving the capacity of healthcare personnel with in-service training and strengthening the provision of health services.

High BP is the main risk factor for CAD and CeVD. In addition to CAD and CeVD, high BP leads to heart failure, renal failure, peripheral vascular disease, deterioration of retinal blood vessels, and vision loss.

In order to improve BP control in Turkey, an intervention model was initiated in cooperation with the Ministry of Health and WHO, and work was carried out in the project provinces.

This final report is a compilation of all quantitative and qualitative assessments carried out during the project, with the interpretation of the data obtained as a result of the examination of electronic health records in the provinces within the scope of the study in question as of 24.02.2019- 23.02.2020 and comparison with the first field report.

Purpose

Using an approach that is potentially sustainable and suitable for nationwide roll-out, it is aimed to demonstrate that it is possible to significantly increase BP control with education and monitoring in selected primary healthcare institutions (at least 50% improvement from baseline value compared to

routine care with education and monitoring within 12 months). The conduct of initial due diligence, providing training to physicians, FMWs, managers and other relevant personnel in FHCs, providing motivation through monitoring and assessment, and by raising awareness of medical personnel and patients, measuring the effect of the intervention through field visits, assessment forms, and indicators that have been determined is aimed.

In the project provinces, clinical protocols, focused training routine monitoring, record-keeping systems, clinical audit support, peer support and patient education materials are designated as the points of the pilot intervention, and the following studies were conducted:

- National protocols for HT and CVD risk prepared by the Ministry of Health, Health personnel trainings were made within the framework of the training materials prepared, patient training materials were prepared that clinicians can use for patients,
- Representatives of the National Steering Committee of the Ministry of Health and the WHO Country Office visited the provincial supervision office to examine the hypertension monitoring processes on site, observe the differences provided in the records and make reminders of the process in question,
- FHCs were visited by provincial monitoring teams in 3-month periods, reminders and suggestions were made,
- FHC personnel and managers met at regular intervals in the project provinces and shared ideas about useful practices, obstacles and methods of dealing with them, quality improvement and mutual support,
- Software improvement studies were carried out within the framework of developing HT records and other records, monitoring patients, and assessing the quality of care,
- At the beginning and end of the project, fieldwork was carried out in the project provinces and the situation was assessed,
- Focus group interviews were held with healthcare personnel (FP, FMW, pharmacists) and patients, and their opinions about the intervention were obtained,

following the completion of those efforts, it was aimed to show the effect of this intervention.

This study, which was prepared for this purpose and is the final report of the project, shows the effect of this intervention by conducting due diligence after training was given to the physicians, FMW, manager and other related personnel in FHCs.

Project Implementation Stages and Evaluation Process

I. Preparation phase

In order to improve the surveillance system for chronic diseases, to ensure the reduction of chronic diseases and risk factors and to help in measuring and evaluating the effectiveness of interventions to be carried out, our Ministry conducted a study “Primary Care Chronic Disease Monitoring Field Practice“(Istanbul, Ankara, Erzurum)” in 2017-2018. HT and cardiovascular risk assessment monitoring

guide has been prepared.

In 2018, preparatory work on the "Project for Improvement of Blood Pressure Control in Turkey", to be carried out in cooperation with WHO, was initiated in order to show that it is possible to significantly increase BP control (at least 50% improvement on baseline within 12 months) with training and monitoring in primary healthcare institutions.

Preliminary meetings (29 June 2018, 13-14 July 2018 Ankara) were held with the representatives of our Ministry and WHO on how the project would be carried out in Turkey. In the first year of the project, the study protocol was established, and the project preparations were completed.

The project was technically and financially supported by the Resolve to Save Lives (RTSL) (https://resolvetosavelives.org/) is an initiative of the global public health organization Vital Strategies which is funded by Bloomberg Philanthropies, the Bill & Melinda Gates Foundation, and Gates Philanthropy Partners, which is funded with support from the Chan Zuckerberg Foundation and WHO at three levels (Headquarters, Regional Office for Europe and Country Office in Turkey.

This project, which benefits from improvements in health knowledge and builds on previous national and international experience on the back of primary health care reforms, has contributed to the implementation of evidence-based clinical protocols by multidisciplinary teams in primary care through training, clinical experience and performance monitoring.

At the end of the project, it was aimed to provide 50% improvement in BP control in participating clinics, to prepare materials specific to our country, an evaluation report and an action plan for publication in a peer-reviewed journal and national dissemination.

An application was made to the Gazi University Ethics Committee for the project and Ethics Committee Approval was obtained.

Within the scope of the project, a project preparation meeting was held in Istanbul in October 2018 with the participation of a manager from the project provinces in cooperation with WHO.

II. Implementation phase

The intervention was carried out in three provinces in Turkey and the provinces of Uşak, Çankırı and Erzincan from Western, Central and Eastern Anatolia were included in the study by random sampling method among the provinces that fulfilled the necessary conditions.

i. Preparation of training materials

Based on the insights regarding the health literacy of patients in Turkey, a "*hypertensive patient brochure, lifestyle change brochure and hypertension follow-up card*" was prepared, which can be used by FPs and FMWs at FHCs in their patient education, in order to support the treatment and education of HT patients. A "Hypertension Monitoring Chart" for determining individual treatment plans/goals in the management of hypertension and managing hypertension in accordance with these plans and goals was printed and transmitted to the provinces.

ii. Trainer trainings (November 2018)

Within the scope of the project, educational training materials for FP and FHWs have been prepared. A total of 24 people, including 1 administrative staff from each project province carrying out the project on a provincial level, 1 physician for the monitoring assessment team, 3 physicians to conduct educational training in the provinces and 3 FMW, were trained in November 2018. In addition to motivational meetings and effective patient counselling on risk behaviors and medications, training was organized to enable the medical personnel to gain practical skills such as organization of care, record keeping and clinical supervision.

iii. Initial evaluation of current state in project provinces (December 2018)

In December 2018, before training was given to the physicians, FMW, managers and other related personnel in FHCs in line with the purpose of the project, the provinces were visited by the National Steering Committee of the project in order to observe the routine care status of patients before intervention, to determine the initial value of BP control and to determine the current situation. Information regarding the province and districts where field work was carried out by the teams is presented in Table 3-4-5.

Anonymous information (blood pressure measurement recorded by FPs in the FMIS, medication use, etc.) was collected by the General Directorate of Health Information Systems within the framework of indicators determined from the health records of 325 patients selected for each project province in accordance with the random sampling method. Considering the WHO HEARTS technical package, an initial evaluation was carried out using the clinical control (electronic) of medical records to monitor the current status of blood pressure recording and control, concomitant, medication use and lifestyle practices in patients.

iv. Conduct of provincial training (January-February 2019)

A two days face-to-face training program with interactive training techniques, including HT and cardiovascular risk assessment, and monitoring and evaluation of hypertensive patients has been prepared for use by trainers who have completed trainer training in the project provinces. Between January-February 2019, training of all FP and FMW working in the project provinces was carried out, and a total of 247 FPs, 237 FMWs and 113 health center midwives were trained.

v. Provincial supervision visit (July 2019)

In July 2019, representatives of the National Steering Committee of the Ministry of Health and the WHO Country Office visited 5 randomly selected FHCs and FMUs to examine the monitoring processes on site, observe the differences provided in the records and make reminders of the process in question, and 10-12 hypertensive patients aged 18 years and over registered to selected physicians were randomly selected and examined. Face-to-face interviews were conducted with patients who came to the FHC. The practices of FPs regarding follow-ups were evaluated, feedback and suggestions regarding any problems were conveyed to the relevant physicians and health directorates, and a supervision visit report was prepared.

During the provincial supervision visit the following forms were used:

- Treatment Supervisor/Inspection Form

- Patient Interview Card
- Supervision Visit Summary Forms (Annex-3).

vi. Final assessment of the situation in project provinces (February-March 2020)

Between February-March 2020, in line with the aim of the project, the Ministry of Health and WHO Country Office project team visited the provinces to see routine care following the intervention in the project provinces, in order to determine the change of BP control according to the baseline and to determine the effect of the project intervention model. The final situation assessment was carried out and the final report prepared.

vii. Focus group interviews (February-March 2020)

In order to ensure the effectiveness and sustainability of the intervention program to be developed at the national level, focus group interviews were conducted between February-March 2020 by obtaining the opinions of interview groups regarding the effectiveness of the intervention practices carried out in the provinces within the scope of the project. Focus group interviews were conducted with 10 FP, 10 FMW, 10 patients (patients with hypertension aged 18 and older) and 10 pharmacists from each province and reports were prepared.

viii. Provincial monitoring teams

FHCs were visited periodically by provincial monitoring teams (administrative staff, monitoring and assessment team, training team; 3 physicians, 3 FMW) in the project provinces, with reminders and suggestions offered. A suggestion form was prepared for the use of provincial monitoring teams in monitoring visits and sent to the provinces. The visits were reported in quarterly periods. Visits were carried out for the purpose of providing encouragement, and each province determined the frequency of visits itself, and no analysis was carried out. The reminder document in Annex 3 was also used during the visits.

III. Additional interventions

i. Additional physician and FMW training

Within the scope of the project, additional training was provided for midwives working in health centers, newly appointed FPs and physicians working in the Community Health Centers (CHCs) upon request from the provinces. Additional training was provided to 30 physicians and 113 health center midwives in the project provinces.

ii. RTSL project team visit (September 2019)

A visit was made to our country by the RTSL project team in September 2019. A meeting was held with the participation of the directors of the General Directorate of Public Health, the National Steering Committee, and related associations on the handling of project progress and practices related to the selection of antihypertensive medications. Following the meeting, a visit was made to project province Erzincan; the health directorate, FHC and the Healthy Living Centre (HLC) were visited and the execution of

the project was examined on site.

iii. Smart Pharmacy Program collaboration

At a technical meeting with the Turkish Pharmacists' Association (TEB) on December 25, 2018, it was observed that the objectives of our project overlap with their Smart Pharmacy program, and it was concluded that pharmacists and FPs could work together in the provinces. In this context, training was provided by TEB to 120 pharmacists in our project provinces.

Joint meetings were held with pharmacists and physicians in the training activities organized within the scope of chronic disease monitoring in the project provinces. The ability of FPs, nurses and pharmacists to create a common working ground, sharing similar/supporting information with hypertensive individuals, and harmonious execution of processes supported the compliance of patients to treatment.

IV. Monitoring and evaluation

Within the scope of the project, the indicators determined for monitoring their applications were routinely monitored. During the project,

- Current situation assessment
- Evaluation of trainings
- Interim assessment
- Final assessment
- Assessment of focus group discussions

were carried out, and the "Project Assessment Report" encompassing the entire project was prepared.

METHODOLOGY

This descriptive and cross-sectional study (Descriptive cross-sectional study) was conducted between February 2019 and February 2020 in three pilot provinces in Turkey that met the inclusion and exclusion criteria in FHCs providing primary health care services. The inclusion criteria for the study at the provincial level are:

(i) 5% deviation from the national average in terms of cardiovascular disease-related mortality indicator,

(ii) Having FHCs at rural and urban level,

(iii) Having sufficient (enough) resources to treat patients with HT or high CVD risk,

(iv) Not being among the stakeholders of a project that requires innovative implementation that may affect its current capacity for research during the study period,

(v) Presence in different regions at the first level in the classification of statistical regional units.

Erzincan, Çankırı and Uşak provinces were selected among the provinces that met the inclusion criteria determined within the scope of the research project by using a random sampling method. The mentioned provinces are located in the TRA, TR8 and TR3 regions (according to Turkish Statistical Institute TURKSTAT Nomenclature of Units for Territorial Statistics) respectively (Figure 1). The population of the selected provinces over the age of 65 constitutes 0.4%, 0.4% and 0.6% of the population of Turkey, respectively. As of the end of 2018, there were 74 family medicine units (FMUs) in Erzincan, 59 in Çankırı and 123 in Uşak. Inhabitants per FMU in these three provinces are 3,190, 3,667 and 2,988, respectively. The number of FMUs in 81 provinces in Turkey is 26,252, and the number of FMUs in the three selected provinces accounts for 1% of the total of the country.

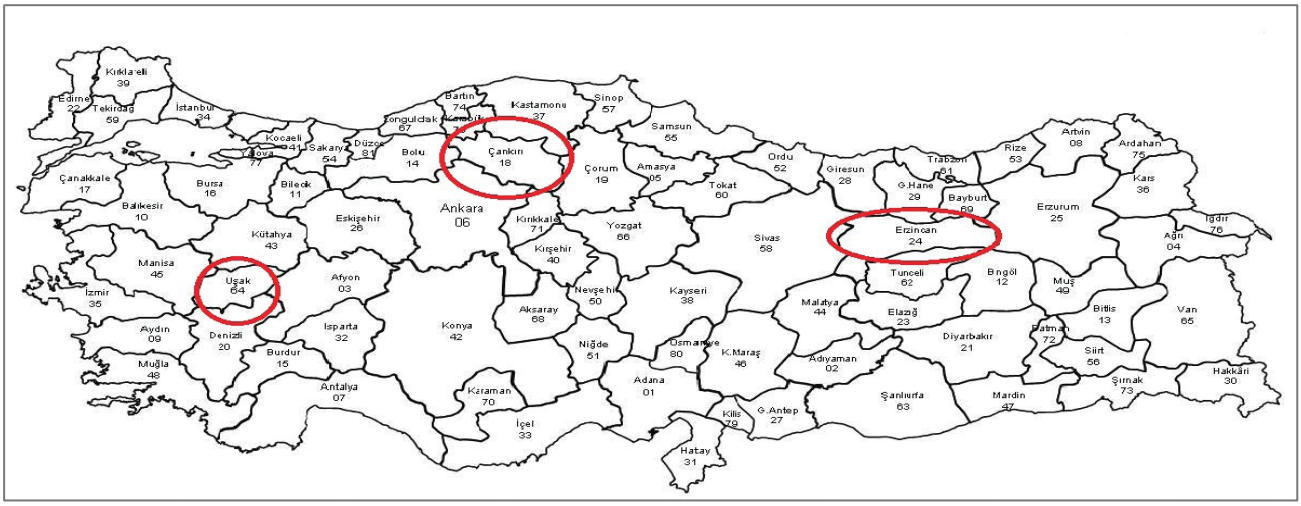


Figure 1 Selection of three provinces for field research

Initial and Final Assessment:

1. Study Universe and Sampling

Patients who were recorded to have had a diagnosis of HT in their health records in 2018 were included in the study. While determining the target population, the rate of BP under control over the age of 18 (24.1%) obtained by the NHHST (2017) study for all three provinces was used, since the "rate of blood pressure being under control" at a provincial level was not known.

The universe of the study consists of HT diagnosed cases in the range of ICD-10 code I10-I15 aged 18 years and older in 256 family medicine regions located in Erzincan, Çankırı and Uşak provinces.

1.1. *Determination of sample size:*

The sample size of the study was calculated as 271[1] using open access Epi-info software with a controlled HT prevalence of 24.1%, 95% confidence limit, 5% margin of error and 1 Pattern effect, and a total of 975,325 for each province, considering that there may be a 20% deviation in the participation rate. (Table 1).

Table 1 Population and sample size

	Çankırı	Erzincan	Uşak
Hypertensive population (N)	41,464	50,126	80,026
Frequency of expected result factor (prevalence) in the population (p)	24.1% +/-5	24.1% +/-5	24.1% +/-5
Margin of error (d)	5%	5%	5%
Pattern effect (for cluster investigation-DEFF)	1	1	1
Sample size with 95% confidence	271	271	271
Sample size formula (n)	[DEFF*Np (1-p)] / [(d2/ Z21-α/2* (N-1) + p* (1-p)]		

By using the cluster sampling, 325 (271 (95% CI) + 54 (20% deviation) individuals from patients diagnosed with hypertension were randomly selected for each province to represent the age group and gender distribution of the province's population and automatically displayed on FP screens.

For example, 3 of the 13 FHCs in Çankırı City Center were randomly selected, one of the 3 selected FPs in FHCs was randomly selected as well.

Finally, for the number of individuals determined for the province from the list of hypertensive patients registered with selected physicians, random patient selection was made in age and gender breakdown.

Screening for new patient detection is not planned, as it is agreed that a one-year follow-up interval should be observed in order to assess the state of blood pressure control at preparatory meetings. The study was conducted in accordance with Annex-1 indicators.

[1] Considering the number of hypertensive patients in the provincial health records, the selected project provinces have similar populations. The epi info program, which was used to determine the sample size, gives a fixed sample number above a certain population.

1.2. *Selection of FHC and FMU in the provinces*

The total number of FHCs (health complex with one or more family medicine units) in the provinces of Çankırı, Uşak and Erzincan is 85 and the total number of FMU is 254. In the initial assessment, 10% of this study universe was sampled and 26 out of 254 FMU were planned to be included in the sampling. In order to prevent data from similar regions, it was decided to obtain data from a single physician from each FHC. For this reason, when the FHC numbers were weighted and distributed according to the populations of the project provinces, it was decided to include 12 FHC in Uşak and 7 FHC in Çankırı and Erzincan, and the assessment was carried out in this direction. However, since it was determined that the unit's working order was disrupted when the number of patients per physician was high at the initial value, it was decided to select no more than 30 patients from each physician's list in order not to disrupt patient examinations. A greater number of FMU was included in the sampling in the final assessment to meet the number of patients per FHC (Table 2).

Table 2 Populations of districts of provinces and the number of FHCs and FMUs in districts (n)

Province	District	Population (n)	Number of FHCs (n)	Number of FMU sampled in initial assessment (n)	Number of FMU sampled in final assessment (n)
Çankırı	Merkez	96,025	10	3	7
	Orta	20,439	1	1	-
	Çerkeş	18,694	1	1	3
	Ilgaz	14,891	1	1	2
	Şabanözü	14,080	1	1	-
	Kurşunlu	10,307	1	-	-
	Yapraklı	8,981	2	-	1
	Kızılırmak	8,220	1	-	1
	Eldivan	7,588	1	-	-
	Atkaracalar	7,213	1	-	-
	Korgun	5,666	1	-	-
	Bayramören	4,258	1	-	-
	Çankırı Total	**216,362**	**22**	**7**	**14**
Erzincan	Merkez	157,452	18	5	10
	Tercan	17,623	3	1	2
	Üzümlü	14,390	1	1	-
	Refahiye	12,456	1	-	2
	Çayırlı	9,032	1	-	-
	İliç	8,922	1	-	-
	Kemah	8,167	1	-	-
	Kemaliye	5,555	1	-	-
	Otlukbeli	2,437	1	-	-
	Erzincan Total	**236,034**	**28**	**7**	**14**
Uşak	Merkez	252,044	22	7	7
	Banaz	36,373	4	1	2
	Eşme	34,932	5	1	2
	Sivaslı	20,753	2	1	1
	Ulubey	12,955	1	1	1
	Karahallı	10,457	1	1	1
	Uşak Total	**367,514**	**35**	**12**	**14**
	General Total	**819,910**	**85**	**26**	**42**

1.3. *Determination of number of patients based on the FHC and FMU population in provinces*

The number of patients determined by weighting according to the population in the FHC region is presented in the tables below. After the determination of FHCs and FMUs to be visited, individuals diagnosed with HT (with ICD10 code in the range of I10-I15) registered in the information systems of the Ministry of Health were determined in the central system by the General Directorate of Health Information Systems of the Ministry without visiting the provinces. The sample in the initial and final assessment was selected separately and the gender and age distributions of the patients who were sampled by province are given in the following tables (Table 3-4-5).

Table 3 Number of patients sampled in Çankırı by gender, age groups and districts (n)

Çankırı District Name	Age Group (Year)	Initial Assessment			Final Assessment		
		Male (n)	Female (n)	Both genders (n)	Male (n)	Female (n)	Both genders (n)
Merkez	18 – 44	7	9	16	7	8	15
	45 – 64	32	45	77	31	44	75
	65+	30	45	75	29	44	73
	Total	**69**	**99**	**168**	**67**	**96**	**163**
Orta	18 – 44	0	0	0	-	-	-
	45 – 64	3	4	7	-	-	-
	65+	7	8	15	-	-	-
	Total	**10**	**12**	**22**	**-**	**-**	**-**
Yapraklı	18 – 44	-	-	-	0	0	-
	45 – 64	-	-	-	2	4	6
	65+	-	-	-	5	8	13
	Total	**-**	**-**	**-**	**7**	**12**	**19**
Kızılırmak	18 – 44	-	-	-	0	1	1
	45 – 64	-	-	-	3	6	9
	65+	-	-	-	6	9	15
	Total	**-**	**-**	**-**	**9**	**17**	**26**
Şabanözü	18 – 44	1	1	2	-	-	-
	45 – 64	2	2	4	-	-	-
	65+	4	6	10	-	-	-
	Total	**7**	**9**	**16**	**-**	**-**	**-**
Çerkeş	18 – 44	3	2	5	3	2	5
	45 – 64	11	15	26	11	14	25
	65+	17	22	39	17	22	39
	Total	**31**	**39**	**70**	**31**	**39**	**70**
Ilgaz	18 – 44	1	1	2	1	1	2
	45 – 64	6	10	16	6	10	16
	65+	13	18	31	12	17	29
	Total	**20**	**29**	**49**	**19**	**28**	**47**
General Total		**137**	**188**	**325**	**133**	**192**	**325**

Table 4 Number of patients sampled in Erzincan by gender, age groups and districts (n)

Erzincan District Name	Age Group (Year)	Initial Assessment			Final Assessment		
		Male(n)	Female(n)	Both genders (n)	Male(n)	Female(n)	Both genders (n)
Merkez	18 – 44	11	14	25	11	13	24
	45 – 64	50	72	122	46	67	113
	65+	48	79	127	45	73	118
	Total	**109**	**165**	**274**	**102**	**153**	**255**
Tercan	18 – 44	1	1	2	1	1	2
	45 – 64	5	8	13	5	8	13
	65+	7	10	17	7	9	16
	Total	**13**	**19**	**32**	**13**	**18**	**31**
Üzümlü	18 – 44	0	1	1	-	-	-
	45 – 64	3	4	7	-	-	-
	65+	4	6	10	-	-	-
	Total	**7**	**11**	**18**	-	-	-
Refahiye	18 – 44	-	-	-	1	0	1
	45 – 64	-	-	-	5	7	12
	65+	-	-	-	11	15	26
	Total	-	-	-	**17**	**22**	**39**
General Total		**129**	**195**	**324**	**132**	**193**	**325**

Table 5 Number of patients sampled in Uşak by gender, age groups and districts (n)

Uşak District Name	Age Group (Year)	Initial Assessment			Final Assessment		
		Male (n)	Female (n)	Both genders (n)	Male (n)	Female (n)	Both genders (n)
Merkez	18 – 44	9	12	21	9	12	21
	45 – 64	36	55	91	36	55	91
	65+	32	52	84	32	52	84
	Total	**77**	**119**	**196**	**77**	**119**	**196**
Sivaslı	18 – 44	1	1	2	1	1	2
	45 – 64	3	5	8	3	5	8
	65+	4	6	10	4	6	10
	Total	**8**	**12**	**20**	**8**	**12**	**20**
Ulubey	18 – 44	0	0	0	0	0	0
	45 – 64	2	3	5	2	3	5
	65+	4	6	10	4	6	10
	Total	**6**	**9**	**15**	**6**	**9**	**15**
Banaz	18 – 44	1	1	2	1	1	2
	45 – 64	5	9	14	5	9	14
	65+	7	10	17	7	10	17
	Total	**13**	**20**	**33**	**13**	**20**	**33**
Eşme	18 – 44	1	1	2	1	1	2
	45 – 64	7	11	18	7	11	18
	65+	9	14	23	9	14	23
	Total	**17**	**26**	**43**	**17**	**26**	**43**
Karahallı	18 – 44	0	0	0	0	0	0
	45 – 64	3	4	7	3	4	7
	65+	4	7	11	4	7	11
	Total	**7**	**11**	**18**	**7**	**11**	**18**
General Total		**128**	**197**	**325**	**128**	**197**	**325**

The distribution of the population determined for the sample is given in Table 3-4-5, while the distribution of the actual sample is given in Table 6.

Table 6 Distribution of the actual sample by province by age and gender (n)

Age groups/Gender		Initial Assessment				Final Assessment			
		18-44	45-65	65+	Total	18-44	45-65	65+	Total
Çankırı	Male	10	49	70	**129**	11	41	73	**125**
	Female	10	67	107	**184**	12	68	102	**182**
	Both genders	**20**	**116**	**177**	**313**	**23**	**109**	**175**	**307**
Erzincan	Male	8	58	63	**129**	12	47	68	**127**
	Female	12	80	104	**196**	10	72	106	**188**
	Both genders	**20**	**138**	**167**	**325**	**22**	**119**	**174**	**315**
Uşak	Male	9	55	62	**126**	12	49	69	**130**
	Female	12	78	108	**198**	13	72	110	**195**
	Both genders	**21**	**133**	**170**	**324**	**25**	**121**	**179**	**325**
	Total	**61**	**387**	**514**	**962**	**70**	**349**	**528**	**947**

2. Dependent and Independent Variables

Data in the patient records contained in FMIS were examined and information about the types of examinations, types of diagnoses and medications used, as well as project indicators (Annex-1) involved in tracking the goals of the project were reached.

Independent variables were determined as age, gender and risk factors. Age groups were categorized in three groups: 18-44 years old, 45-64 years old and over 65 years old. As a risk factor for hypertension, tobacco use, cholesterol level, body mass index (BMI), creatinine level, glucose level, HbA1c level, urine microscopy values were determined as independent variables, HT and cardiovascular risk scores were obtained. In the electronic record system, the values of the parameters recorded within one year were marked based on periods of 3 months back from the date of the survey. Analysis was carried out by accepting the last recorded value as data.

In order to determine the availability of data in FMIS to be used in calculating the indicators agreed in the project text, selected examination types, selected diagnosis types and medications used were examined. In the survey conducted in the project provinces, the data of the following variables were examined in the FMIS database:

(i) Tobacco use
(ii) Systolic blood pressure (SBP) and diastolic blood pressure (DBP) of those whose BP was measured
(iii) Cholesterol value (last two years)
(iv) Body mass index (BMI)
(v) Creatinine value

(vi) Urinalysis
(vii) Fasting blood glucose (FBG)
(viii) HbA1c value
(ix) Cardiovascular risk score
(x) Concomitant disease status
(xi) Medication use
(xii) Lifestyle recommendations

3. Definitions

Below are descriptions of the definitions and reference values of all examinations considered within the scope of the study.

- **HT stages:**

Table 7 Blood pressure classification according to clinical BP levels (mmHg)

Stage	SBP (mmHg)	DBP (mmHg)
Elevated Normal	130-139	85-89
Stage 1	140-159	90-99
Stage 2	160-179	100-109
Stage 3	≥ 180	≥ 110

- **Tobacco Use:** Consumption of at least one tobacco product per day in the last year was evaluated as "tobacco user".

- **BP status:** In the electronic record system, the most current BP values recorded within one year from the date of the survey were considered.

- **Cholesterol value:** The recorded blood cholesterol level value in the last two years is considered. SCORE-Turkey ranges (0-139, 140-189, 190-229, 230-269, 270-309, 310+) were used for cholesterol classification.

- **Body mass index (BMI= kg/m$_2$):** It was calculated by obtaining health records for body weight and height in the last year. Parameters used in body mass index assessment are defined in the table.

Table 8 Body mass index classification (kg/m2)

Classification	BMI (kg/m2)
Underweight	<18.50
Normal	18.50 - 24.99
Overweight	25.00-29.9
Obese	≥30
• Stage 1	30-34.9
• Stage 2	35-39.9
• Stage 3 (Morbid)	≥40.00

For detailed information: https://hsgm.saglik.gov.tr/depo/birimler/saglikli-beslenme-hareketli-hayat-db/Yayinlar/kitaplar/diger-kitaplar/obezite-mucadele-el-kitabi.pdf

- **Creatinine value:** The recorded value of creatinine in the last year is considered. Below are the formulas used to calculate glomerular filtration rate (GFR) from the creatinine values of the last year using algorithms used in the calculation of CKD-EPI for adults recommended by the Turkish Biochemistry Society and included in laboratory standards.

Table 9 Glomerular filtration rate (GFR) calculation formula

Gender	Serum Creatinine	CKD-EPI Formula
Female	≤0.7 mg/dl (≤62 µmol/L)	144x (SCr/0.7) – 0.329x 0.993 Age (if black x 1.159)
Female	>0.7 mg/dl (>62 µmol/L)	144x (SCr/0.7) – 0.329x 0.993 Age (if black x 1.159)
Male	≤0.9 mg/dl (≤80 µmol/L)	141x (SCr/0.9) – 0.411x 0.993 Age (if black x 1.159)
Male	>0.9 mg/dl (>80 µmol/L)	141x (SCr/0.9) – 1.209x 0.993 Age (if black x 1.159)

Table 10 Staging of kidney disease according to estimated glomerular filtration rate (GFR) (K/DOQI)

Stage	Description	GFR (ml/min/1.73 m^2)
1	**Normal or elevated GFR**	Normal or GFR ≥ 90 + presence of evidence of concomitant kidney damage
2	**Mild disorder**	60-89 + presence of evidence of concomitant kidney damage
3	**Moderate disorder**	30 – 59)
4	**Serious disorder**	15 - 29
5	**End-stage renal disease**	< 15

- **Urine analysis:** According to the results of urinalysis in the last year, the presence of proteinuria was considered.

Table 11 Proteinuria levels (mg/dl)

Negative	Trace	1+	2+	3+	4+
-	10-20 mg/dl	30 mg/dl	100 mg/dl	300 mg/dl	1000-2000 mg/dl

- **Fasting blood glucose (FBG):** According to the Ministry of Health guidelines, FBG measurements with a value less than 100 mg/dl are classified as "Normal", measurements between 100 mg/dl and 125 mg/dl are classified as "Prediabetes", and measurements above 125 mg/dl are classified as "Overt Diabetes".

- **HbA1c value:** In the Ministry of Health HT guidelines, it is recommended that FBG is checked once during the annual follow-up on patients. At the same time, the diabetes guidelines recommend diabetes screening with FBG or HbA1c or OGTT in people over 40 years of age, and compliance with the two guidelines has been observed. In accordance with the relevant guidelines, measurements with HbA1c lower than 5.7% are "Normal", measurements between 5.7% and 6.5% of HbA1c are considered as "Prediabetes" and measurements above 6.5% classified as likely to have "Diabetes".

- **Cardiovascular risk score:** The risk was calculated with the SCORE Turkey Scale based on the gender, age, smoking status, SBP measurement value (mmHg) and total cholesterol value (mg/dl).

- **Concomitant illness status:** Is determined according to the diagnosis of the disease according to the ICD 10 diagnostic codes.
- **Medication use status:** Pharmaceutical names were selected according to ATC codes.
- **Lifestyle recommendations offered**: It was assessed by using records of whether healthy diet, physical activity, tobacco and alcohol use recommendations were provided.

4. Data Sources

Due to the high amount of time taken to access the records of all hypertensive patients in the project provinces, the lack of project resources for this type of field work, and with the aim of addressing legal and ethical problems that may arise in the future, with the approval of the Ministry of Health the health records of the FPs and patients in the sample were assessed on site in the provinces. In accordance with the Ministry of Health and FP agreements, the health records of these individuals can be provided to authorized persons by the FP itself.

As part of the study, data on dependent and independent variables belonging to the sample group were obtained from the FMIS. In order to collect the inputs of the indicators agreed in the project text in the selected sample of patients with a diagnosis of HT, the survey form in Annex-2 was created in the electronic environment.

In the study, data from FMIS health records, face-to-face interviews with sampling patients and survey forms, focus group interviews with trained FP and FMWs were collected in different time periods.

5. Data Loss

In the sample, which was selected as 975 people, 13 people were not accessible in the initial assessment and 28 people were not accessible in the final assessment. Inaccessibility was due to reasons such as patient death, FP changes or not giving permission to access information during the time the sample was selected and the site visit took place.

6. Data Analysis

Package programs were used to access descriptive and statistical information about the data obtained in the study. Frequency, percentage and mean were used in the presentation of descriptive data of the sample. After determining whether it is suitable for the normal distribution, parametric test methods were used in statistical analysis of continuous and quantitative data, and nonparametric test methods in the analysis of non-continuous and categorical data.

Midterm Review of Field Implementation:

Between 22.07.2019 - 26.07.2019, 15 randomly selected FMUs were visited together with health managers and educators in the province. The scope of the visit included the assessment of the practices of FPs for the HT monitoring process, the level of recording BP measurement values, the frequency of BP measurements, the control status of those whose BP was measured, the presence of concomitant

diagnoses in hypertensive patients, the use of medications in hypertensive patients, the analysis of the problems encountered in this process, and the records of 174 randomly selected patients included in the FMIS were considered.

5 FHC and FMU sites were visited at random to examine HT monitoring processes on-site in the project provinces selected for the study, to observe the improvement provided in the records and to make reminders of the process. 10-12 individuals from among hypertensive patients aged 18 and over registered with selected physicians were also randomly selected and examined. Data was compiled from the records of a total of 174 randomly selected patients and face-to-face interviews were conducted with a total of 75 patients who came to the FHC.

Training Assessment:

In addition to HT and cardiovascular risk assessment in the training of healthcare professionals, sessions on practical skills such as motivational meetings about patient risky behaviors and the medications they will use/currently use, and effective patient counselling, organization of health care, record keeping and clinical supervision were also held. The training was conducted face-to-face and on three days using interactive training techniques. Online pre-test, post-test and satisfaction surveys were applied before and after the training.

The study includes an analysis of the survey results completed between 10.12.2018 and 19.12.2018 in the provinces of Çankırı, Erzincan and Uşak with the current physician and FMW and with the aim of evaluating the satisfaction of the training given with the test results consisting of 20 questions.

In order to evaluate the effectiveness of the training, pre-test and post tests were applied to the participants before and after the training. In addition, data was collected through the survey prepared to evaluate the satisfaction of the participants. The participation of FPs and other physicians working in the province was planned. The number of participants in the pre-test was 238, while the number of participants in the post test was 240. The number of FMWs participating in the pre-test was 227, while 225 participated in the post test. In statistical analyses following the descriptive findings, data in both the pre-test and post-test forms were considered.

In order to reveal the general structure of the analysis population, the frequency tables of the categorical variables and the mean ± SD values of the examination results (i.e., numerical variables) were calculated at the level of both the province and the title of the personnel (physician, FMW). For numerical variables ANOVA, for categorical variables cross tables were used, while results were evaluated using Chi-square tests. Recommendations are presented in the final section.

Focus Group Interview Assessment

Focus group interviews were planned in order to assess the applications made within the scope of this study from the point of view of FP, FMW, patients and pharmacists. Interviews were held with 4 separate groups in 3 provinces where the project was carried out with a total of 12 sessions in February 2020. During the interviews, the opinions of the participants were obtained, and the positive aspects, points of failure and suggestions of the project were queried respectively. The answers were summarized, and the common ideas of the interview groups were compiled.

SECTION 3

FINDINGS OF BASE-LINE ASSESSMENT

In December 2018, an initial assessment was carried out to observe the routine care status of patients prior to the intervention, to determine the initial value of BP control and to determine the current situation.

In this section, demographic findings of hypertensive patients and findings of tobacco use, BP, cholesterol level, BMI, creatinine level, glucose level, HbA1c level, urine microscopy values (proteinuria) are included. 98% (962) of the sample group included in the study were reached. 60% (578) of the patients were female, 40% (384) were male; 6% (61) are aged between 18-44, 40% (387) aged between 45-64 and 54% (514) are aged over 65 years old.

HT Prevalence in Health Records

Before the initial assessment, the prevalence of HT in the project provinces and throughout Turkey was examined using the Ministry of Health records for June 2018, and the prevalence was determined to be 21% in Erzincan, 24% in Uşak, 23% in Çankırı and 24% in Turkey (Figure 2).

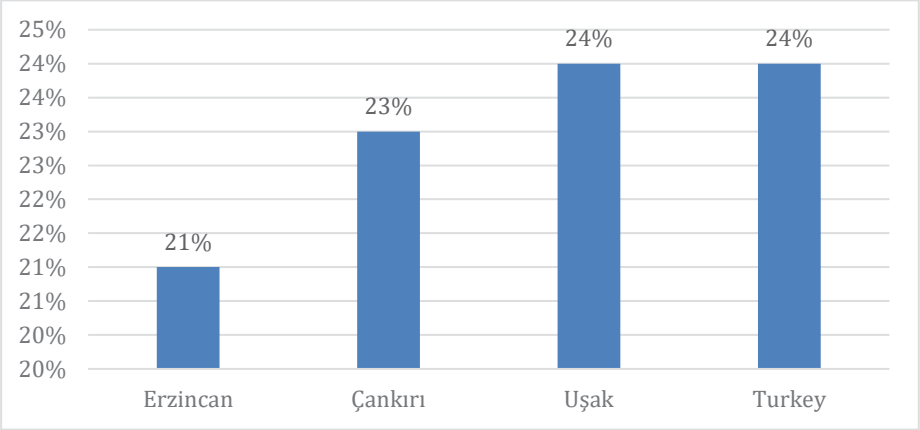


Figure 2 Prevalence of HT, June 2018

Assessment of Risk Factors

Tobacco use

In determining the prevalence of tobacco use, a sample group of individuals aged 18 and older diagnosed with HT was examined to see whether data on the state of tobacco use was present in FMIS for 2018. Tobacco use data of 9% (54) of the study group was reached.

Uşak was not taken into consideration because it was determined that FMIS data was automatically recorded, and the information was not updated. It was observed that 91% (584) of the sample selected from Çankırı and Erzincan did not have data on tobacco use registered in the FMIS. The available data in the FMIS revealed that 11 individuals consume tobacco in Çankırı and Erzincan, while 43 individuals do not. It was observed that the tobacco use rate in the provinces within the scope of the study is not regularly monitored through FMIS (Table 12).

Table 12 Percentage and number of adults aged 18 and older, by smoking status and province (n) (%)

Smoking Status	Çankırı		Erzincan		Provinces Total	
	n	%	n	%	n	%
Smoking status hasn't been recorded	280	89	304	94	584	91
Current tobacco smoker	8	3	3	1	11	2
Non–smoker	25	8	18	6	43	7
Total	**313**	**100**	**325**	**100**	**638**	**100**

Blood pressure

In FMIS, 5% (50) of the sample group were found to have blood pressure data recorded, whereas 95% (912) of the sample group did not have BP data on record. The rate of individuals with recorded BP values was found to be 7% (21) in Çankırı, 5% (16) in Erzincan and 4% (13) in Uşak, considering the sample selected on a provincial basis within the scope of the study (Table 13).

Table 13 Distribution of hypertensive individuals with recorded blood pressure values by province (n) (%)

	Çankırı		Erzincan		Uşak		Provinces Total	
	n	%	n	%	n	%	n	%
Number of individuals with recorded blood pressure values	21	7	16	5	13	4	50	5
Total number of individuals	**313**	**100**	**325**	**100**	**324**	**100**	**962**	**100**

When the hypertensive patients with recorded BP data were assessed in terms of HT stage, it was seen that 30% (15) had normal elevated BP levels, 16% (8) were in the first stage and 8% (4) were in the second stage. As the number of patients whose BP was measured compared to the total sample size was low, a ratio analysis by age and gender was not found to be significant. Most individuals with BP under control are in the provinces of Uşak (77%), Çankırı (43%) and Erzincan (25%) (Table 14).

Table 14 Hypertension stages of individuals whose blood pressure was measured (n) (%)

Stage	Çankırı		Erzincan		Uşak		Provinces Total	
	n	%	n	%	n	%	n	%
Elevated normal	8	38	4	25	3	23	15	30
Stage 1	4	19	4	25	0	0	8	16
Stage 2	0	0	4	25	0	0	4	8
Stage 3	0	0	0	0	0	0	0	0
Blood pressure under control	9	43	4	25	10	77	23	46
Number of individuals with measured blood pressure	**21**	**100**	**16**	**100**	**13**	**100**	**50**	**100**

Body mass index

When the data of the patients' BMI measurement variable was analyzed, it was observed that 12% (113) of the sample group had BMI data available in the FMIS, whereas BMI data was not available for 88% (849) (Table 15).

Table 15 Distribution of hypertensive individuals with recorded BMI values by province (n) (%)

	Çankırı		Erzincan		Uşak		Provinces Total	
	n	%	n	%	n	%	n	%
Number of individuals with measured BMI value	12	4	2	1	99	31	113	12
Total number of individuals	**313**	**100**	**325**	**100**	**324**	**100**	**962**	**100**

Due to the high interest and attention given by the health managers and physicians in the region, it was observed that the highest number of BMI measurements were carried out in Uşak with 31% (99). BMI was measured at 4% (12) in Çankırı and 1% (2) in Erzincan for the individuals included in the study.

Distribution of BMI values of patients by province is presented in Table 16. Accordingly, it was observed that the group with the highest density in terms of BMI values consists of those with a value of 30 and above, with a rate of 51% (58). This group is followed by those with BMI values between 25-29.9 at 37% (42).

Table 16 Distribution of body mass index values by provinces (n) (%)

BMI Classification	kg/m2	Çankırı		Erzincan		Uşak		Provinces Total	
		n	%	n	%	n	%	n	%
Underweight	**<18.5**	**1**	**8**	**-**	**-**	**2**	**2**	**3**	**3**
Normal	**18.5-24.9**	**1**	**8**	**-**	**-**	**9**	**9**	**10**	**9**
Overweight	**25-29.9**	**5**	**42**	**-**	**-**	**37**	**37**	**42**	**37**
Obese	**≥30**	**5**	**42**	**2**	**100**	**51**	**52**	**58**	**51**
• Stage 1	30-34.9	4	33	2	100	26	26	32	28
• Stage 2	35-39.9	1	8	-	-	20	2	21	19
• Stage 3 (Morbid)	≥40	-	-	-	-	5	5	5	4
Number of individuals with measured BMI value		**12**	**100**	**2**	**100**	**99**	**100**	**113**	**100**

Cholesterol

When the data of the patients regarding the cholesterol variable are analyzed, it was observed that the cholesterol data of 62% (598) of the sample group were recorded in FMIS, whereas the cholesterol data of 38% (364) were not included in the system (Figure 3).

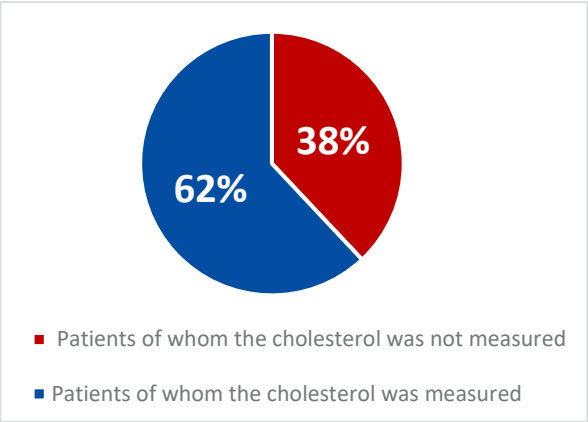


Figure 3 Cholesterol measurement rate of patients (%)

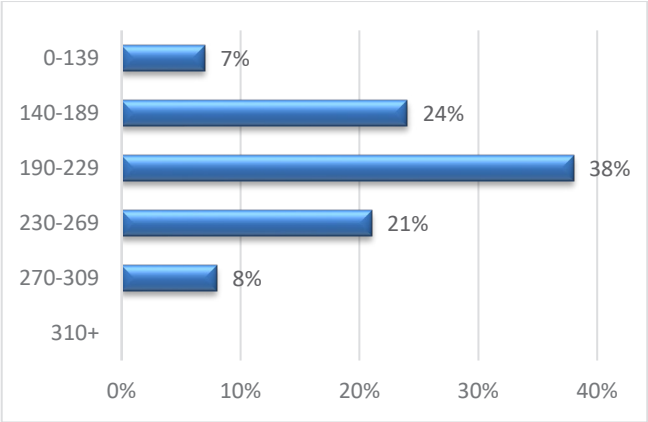


Figure 4 Cholesterol measurement rate of hypertensive individuals of whom the cholesterol was measured (%)

Table 17 Distribution of hypertensive individuals with recorded cholesterol values by province (n) (%)

	Çankırı		Erzincan		Uşak		Provinces Total	
	n	%	n	%	n	%	n	%
Number of individuals with measured cholesterol value	243	78	167	51	188	58	598	62
Total number of individuals	**313**	**100**	**325**	**100**	**324**	**100**	**962**	**100**

The distribution of cholesterol values of the patients by provinces of Çankırı, Erzincan and Uşak are shown in Table 18. Accordingly, the most common cholesterol value among hypertensive patients whose cholesterol was measured belongs to the range of 190-229 mg/dl with a rate of 38% (226). In 31% (187) of hypertensive patients whose cholesterol value was known, the cholesterol value was found to be 189 and below, and 69% (411) 190 and above.

Table 18 Distribution of cholesterol values in hypertensive individuals by provinces (n) (%)

Cholesterol Value (mg/dl)	Çankırı		Erzincan		Uşak		Provinces Total	
	n	%	n	%	n	%	n	%
0-139	19	8	6	4	17	9	42	7
140-189	45	19	35	21	65	35	145	24
190-229	82	34	71	43	73	39	226	38
230-269	59	24	45	27	23	12	127	21
270-309	33	14	8	5	5	3	46	8
310+	5	2	2	1	5	3	12	2
Hypertensive patients with cholesterol values below or above 190								
<190	64	26	41	25	82	44	187	31
≥ 190	179	74	126	75	106	56	411	69
Number of individuals with measured cholesterol value	**243**	**100**	**167**	**100**	**188**	**100**	**598**	**100**

Creatinine

Creatinine measurements of the last year of individuals in a sample of patients aged 18 and older who were diagnosed with HT, selected through the FMIS, were examined. The ratio of individuals whose creatinine value was measured at least once in the last year and recorded in the FMIS system in the total sample is 71% (683) (Table 19). It is observed that among the types of tests included in the survey, the most creatinine tests were performed on the patients.

Table 19 Distribution of hypertensive individuals with recorded creatinine values by province (n) (%)

	Çankırı		Erzincan		Uşak		Provinces Total	
	n	%	n	%	n	%	n	%
Number of individuals with measured creatinine value	229	73	230	71	224	69	683	71
Total number of individuals	**313**	**100**	**325**	**100**	**324**	**100**	**962**	**100**

Kidney disease classification of hypertensive individuals according to estimated GFR (e-GFR) results calculated by referencing creatinine measurement values are shown in Table 20. The e-GFR result of 71% (683) of 962 hypertensive individuals was found in information systems.

Table 20 Distribution of degree of kidney failure (e-GFR) in hypertensive individuals by provinces (n) (%)

Kidney disease degree	Çankırı		Erzincan		Uşak		Provinces Total	
	n	%	n	%	n	%	n	%
Normal	142	62	157	68	166	74	465	68
Mild disorder	75	33	62	27	50	22	187	27
Serious disorder	12	5	11	5	8	4	31	5
Number of individuals with measured creatinine value	**229**	**100**	**230**	**100**	**224**	**100**	**683**	**100**

Accordingly, e-GFR values of hypertensive patients in all three provinces are mostly in the normal reference value range. However, the loss of kidney function in Uşak is relatively lower than in the other two provinces, and the rate of those with normal kidney function is higher than in the other two provinces.

Proteinuria

In determining the prevalence of proteinuria, a sample group of individuals aged 18 and older diagnosed with HT was examined to see whether data on the proteinuria measurements was present in FMIS for 2018 (Table 21).

Table 21 Distribution of hypertensive individuals with recorded proteinuria values by province (n) (%)

	Çankırı		Erzincan		Uşak		Provinces Total	
	n	%	n	%	n	%	n	%
Number of individuals with measured proteinuria value	123	39	144	44	123	38	390	41
Total number of individuals	**313**	**100**	**325**	**100**	**324**	**100**	**962**	**100**

Table 22 Distribution of proteinuria values of hypertensive individuals by province (n) (%)

Proteinuria by Dipstick	Çankırı		Erzincan		Uşak		Provinces Total	
	n	%	n	%	n	%	n	%
Negative/trace	115	93	135	94	111	90	361	93
Positive (1+,2+,3+)	8	7	9	6	12	10	29	7
Number of individuals with measured proteinuria value	**123**	**100**	**144**	**100**	**123**	**100**	**390**	**100**

According to the results presented in Table 22, 93% of 390 patients had no protein in their urine, while 7% had varying levels of protein in their urine. In addition, when the distribution of urine protein measurement based on gender was examined, and it was determined that women (44%) had more proteinuria analysis recorded than men (35%). When the proteinuria results were examined, it was observed that the level of positivity (1+, 2+, 3+) was approximately twice as high in males as in females (Figure 5).

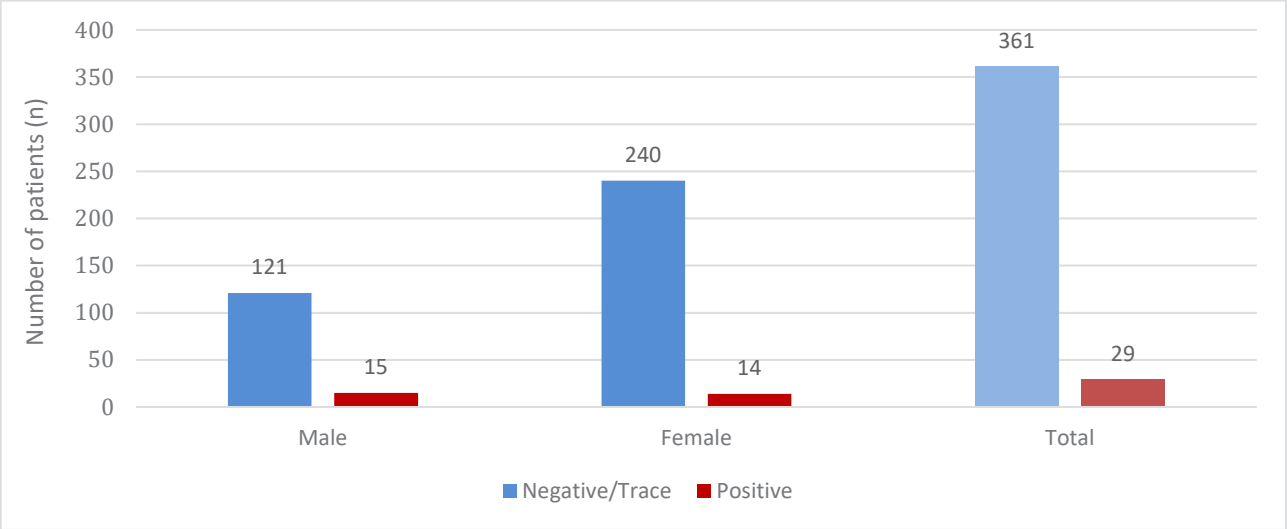


Figure 5 Distribution of Proteinuria values of hypertensive individuals by gender (n)

Fasting blood glucose

Whether the sample group consisting of individuals aged 18 and over diagnosed with HT had FBG measurement data for 2018 in FMIS was examined, and the FBG data of 70% (675) of the research group was accessed (Table 23).

Table 23 Distribution of hypertensive individuals with recorded FBG values by province (n) (%)

	Çankırı		Erzincan		Uşak		Provinces Total	
	n	%	n	%	n	%	n	%
Number of individuals with blood glucose measured	225	72	222	68	228	70	675	70
Total number of individuals	**313**	**100**	**325**	**100**	**324**	**100**	**962**	**100**

It was observed that 41% (278) of 675 patients had normal FBG levels, 29% (197) were prediabetic, and 30% (200) were diabetic. In addition, when the distribution of FBG levels by provinces was analyzed, it was observed that the rate of diabetics among individuals whose blood glucose was measured is higher in Çankırı (32%) compared to Erzincan (28%) and Uşak (29%). However, the rate of those with normal FBG level differs in all three provinces and is relatively lower in Çankırı (Table 24).

Table 24 Distribution of FBG values in hypertensive individuals by provinces (n) (%)

Presence of diabetes	Çankırı		Erzincan		Uşak		Provinces Total	
	n	%	n	%	n	%	n	%
Normal	85	38	94	42	99	43	278	41
Prediabetes	67	30	66	3	64	28	197	29
Overt diabetes	73	32	62	28	65	29	200	30
Number of individuals with blood glucose measured	**225**	**100**	**222**	**100**	**228**	**100**	**675**	**100**

Looking at the distribution of FBG levels by gender and age of the study group, it was observed that FBG values vary by gender and age, which is consistent with evidence-based findings in literature.

75% (436) of females selected in the sample and 62% (239) of males had blood sugar measurements. While 43% (104) of the males whose blood glucose was measured were normal, 28% (66) were prediabetic and 29% (69) were diabetic. In contrast, the distribution of these rates was different in females than in males. Of the females whose blood glucose was measured, 40% (174) had normal blood sugar, 30% (131) had prediabetic blood glucose levels, and 30% (131) had diabetic levels (Figure 6).

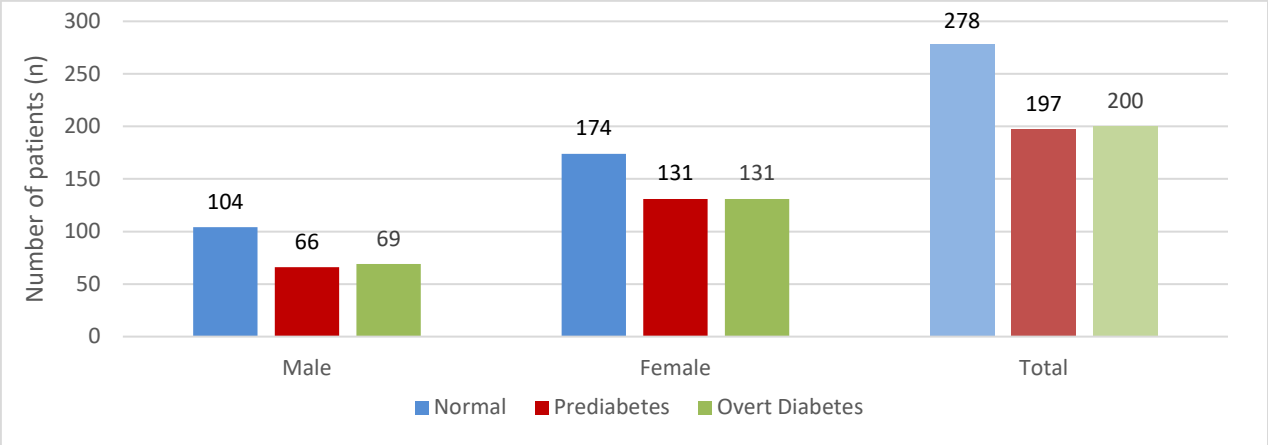


Figure 6 Distribution of FBG values of hypertensive individuals by gender (n)

On the other hand, when the distribution of blood glucose levels by age was examined, 54% (366) of those whose blood glucose level measured were over 65 years old, 40% (268) were between 45-64 years old and 6% (41) were between 18-44 years old. According to the classification made by considering the density of the research group on the basis of age groups the highest number of FBG measurements was 71% (366) for individuals aged 65 and over, followed by the 45-65 years old age group with 69% (268). The incidence of diabetes among 18-44 years of age is low compared to those over 65 years of age, and the FBG screening of the 45-64 age group is performed at a level close to those aged 65 years of age and older. (Figure 7).

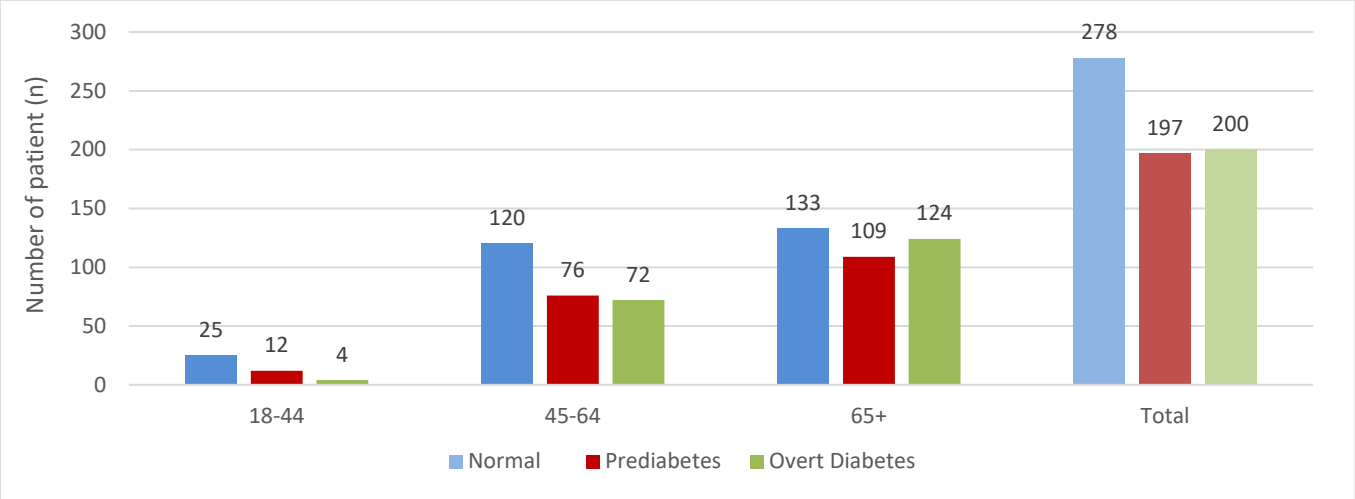


Figure 7 Distribution of FBG values in hypertensive individuals by age (n)

HbA1c

Whether the sample group consisting of individuals aged 18 and over diagnosed with HT had HbA1c measurement data for 2018 in FMIS was examined, and the HbA1c data of 34% (324) of the study group was accessed (Table 25).

Table 25 Distribution of hypertensive individuals with recorded HbA1c values by province (n) (%)

	Çankırı		Erzincan		Uşak		Provinces Total	
	n	%	n	%	n	%	n	%
Number of individuals with measured HbA1c value	112	36	101	31	111	34	324	34
Total number of individuals	**313**	**100**	**325**	**100**	**324**	**100**	**962**	**100**

It was observed that 19% (60) of 324 patients had normal HbA1c levels, 29% (95) were prediabetic, and 52% (169) were diabetic. In addition, when the distribution of HbA1c levels by provinces was analyzed, it was observed that the rate of diabetics among individuals whose HbA1c was measured is higher in Uşak (55%) compared to Çankırı (52%) and Erzincan (49%). However, the rate of those with normal HbA1c level differs in all three provinces and is relatively lower in Erzincan, and relatively higher in Uşak (Table 26).

Table 26 Distribution of HbA1c values in hypertensive individuals by provinces (n) (%)

Results by Blood Glucose Measurement Value	Çankırı		Erzincan		Uşak		Provinces Total	
	n	%	n	%	n	%	n	%
Normal	21	19	17	17	22	20	60	19
Prediabetes	33	29	34	34	28	25	95	29
Overt diabetes	58	52	50	49	61	55	169	52
Number of individuals with measured HbA1c value	**112**	**100**	**101**	**100**	**111**	**100**	**324**	**100**

Distribution of HbA1c values of hypertensive individuals by gender is presented in Figure 8. Of the male individuals whose HbA1c values were measured, 18% (19) were normal, 26% (28) had prediabetes, and 56% (60) had overt diabetes. It was observed that 19% (41) of the female individuals had HbA1c values in the normal range, 31% (67) had prediabetes and 50% (109) had overt diabetes.

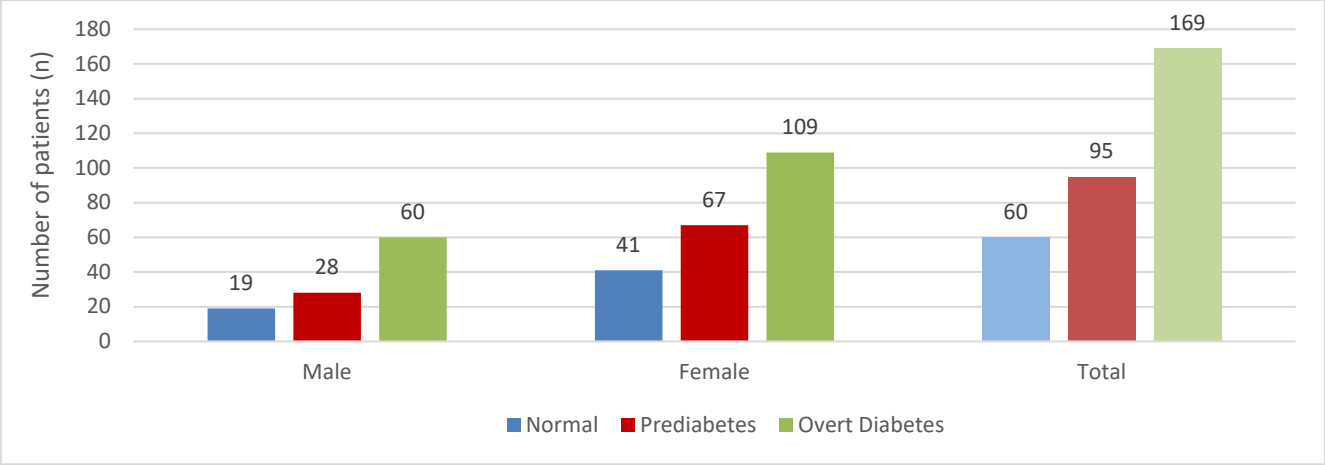


Figure 8 Distribution of HbA1c values of hypertensive individuals by gender (n)

The distribution of HbA1c values of the individuals in the study group by age is presented in Figure 9. Based on the age groups, it was observed that 71% (366) of those over the age of 65 had the highest HbA1c value and this group was followed by those in the 45-64 age group with a rate of 69% (268).

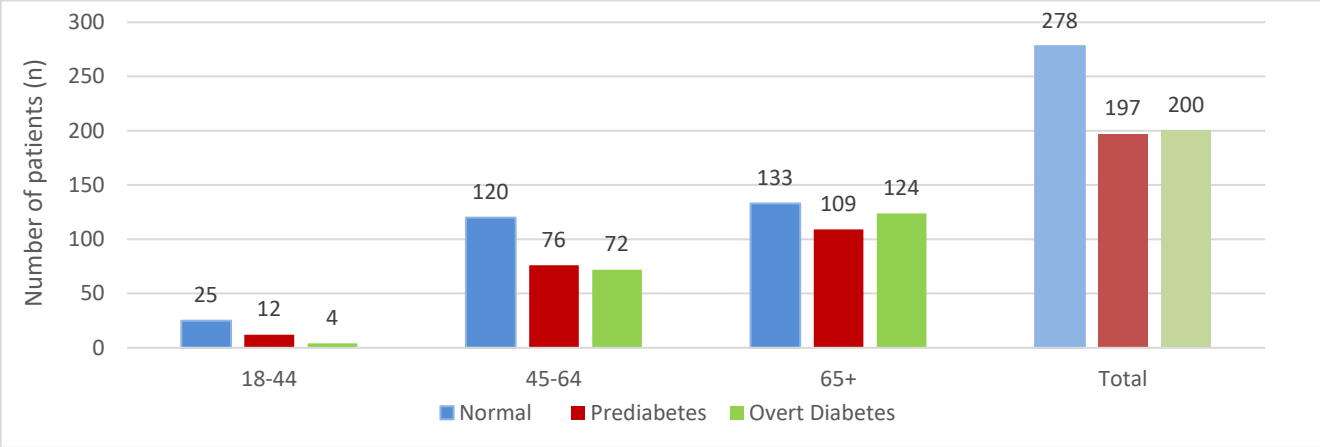


Figure 9 Distribution of HbA1c values of hypertensive individuals by age (n)

Cardiovascular risk assessment

Whether the sample group consisting of individuals aged 18 and over diagnosed with HT had cardiovascular risk assessment measurement data for 2018 in FMIS was examined, and the cardiovascular risk assessment measurement data of 4% (34) of the study group was accessed. Of the 34 risk assessments, 5 were carried out in 2014, 3 in 2015, 2 in 2016, 6 in 2017 and 18 in 2018. Of those who underwent risk assessment, 76% (26) were females and 24% (8) were males. The frequency of risk assessment was found to be 2% (8) in males and 4% (26) in females (Table 27).

Table 27 Number of cardiovascular risk assessments by year and gender (n) (%)

Year assessment carried out	Male (n)	Female (n)	Both genders (n)
2014	1	4	5
2015	0	3	3
2016	1	1	2
2017	1	5	6
2018	5	13	18
Total number (n)	**8**	**26**	**34**
Percentage distribution (%)	**24**	**76**	**100**

The distribution of risk score measurements by year according to gender is presented in Table 28. When risk scores are grouped as low risk (<1%), moderate risk (1-4%), high risk (5-9) and very high risk (≥10%) 35% (12) of 34 patients who underwent risk assessment were in the very high, 35% (12) were in the high, 21% (7) in the medium and 9% (3) in the low-risk groups.

Table 28 Number of cardiovascular risk assessments by gender and risk groups (n) (%)

Risk score			Male		Female		Both genders	
			n	%	n	%	n	%
	≥15%	Very high risk	0	0	4	15	4	12
	10-14%		2	25	6	23	8	23
	5-9%	High risk	4	50	8	31	12	35
	3-4%	Medium risk	1	12.5	3	11.5	4	12
	2%		1	12.5	0	0	1	3
	1%		0	0	2	8	2	6
	<1%	Low risk	0	0	3	11.5	3	9
Total			**8**	**100**	**26**	**100**	**34**	**100**

Lifestyle change suggestions

In the FMIS, the health records of the study group were examined to see if there was any record of counselling recommendations for healthy diet, physical activity, tobacco and alcohol use, and it was

observed that lifestyle change recommendations were made for 9% (83) of the hypertensive patients. Within the scope of lifestyle change, 37 individuals were offered recommendations for healthy eating, 28 individuals for physical activity, 12 individuals for ceasing tobacco use, and 6 individuals for ceasing alcohol use.

Cumulative Assessment of Risk Factors by Gender

Gender distribution of health data on dependent and independent variables of hypertensive patients is presented in Table 29.

Table 29 Risk factors by gender in hypertensive individuals (n) (%)

Risk factors	Male		Female		Both genders	
	n	%(1)	n	%(1)	n	%(2)
SBP ≥140 mmHg	9	2	15	3	**24**	**2**
DBP ≥90 mmHg	5	1	12	2	**17**	**2**
FBG >100	135	35	262	45	**397**	**41**
HbA1c ≥ 5.7%	88	23	176	30	**264**	**27**
Cholesterol ≥5 mmol/L (3)	120	31	243	42	**363**	**38**
25≤ BMI <40	35	9	60	10	**95**	**10**
BMI ≥40	2	1	3	1	**5**	**1**
Number of individuals in the sample	**384**	**100**	**578**	**100**	**962**	**100**

(1) Same gender group ratio
(2) Ratio among all individuals
(3) In order to convert cholesterol values, which are given in mg/dL, to mmol/l, the values were multiplied by a coefficient of 0.02586.

Of the hypertensive individuals included in the study, 2% of males (9) and 3% of females (15) had SBP of 140 mmHg or higher. It was observed that 1% of males (5) and 2% of females (12) had DBP of 90 mmHg or above. Considering the FBG values; 35% of males (135) and 45% of females (262) have FBG above 100. It was observed that 23% of males (88) and 30% of females (176) had an HbA1c level of 5.7 or above. Similarly, 31% (120) of males and 42% (243) of females have cholesterol levels above the reference value. In addition, 1% of females (3) and males (2) are morbidly obese.

Assessment of Presence of Diagnoses and Date of Initial Diagnosis

Accompanying conditions are known to be very important in the progression of diseases, and thus concomitant was also queried during the assessment stages. In the survey conducted in the project provinces, information regarding the following diagnoses was queried in the existing records of 962 randomly selected individuals on FMIS.

- Diabetes
- CVD
- CeVD
- CKD

presence was investigated.

The date of HT diagnosis was investigated in the data of patients, all of whom were known to be hypertensive. For each disease, first, the rate of records for the four disease diagnoses, followed by the distribution by provinces, gender and age group, and the dates of initial diagnosis were examined.

Hypertension

In a sample of patients aged 18 and older who were diagnosed with HT selected through the FMIS, the dates of initial HT diagnosis were examined. 69% (667) of hypertensive patients had initial date of diagnosis recorded in the FMIS system.

When we consider the place of diagnosis from the Ministry of Health records, it was observed that the diagnosis of HT is mostly made at the secondary care level in Turkey. In our project provinces, it was observed that the rate of HT diagnosis in primary care in Çankırı was relatively higher when compared to the other two provinces (Figure 10).

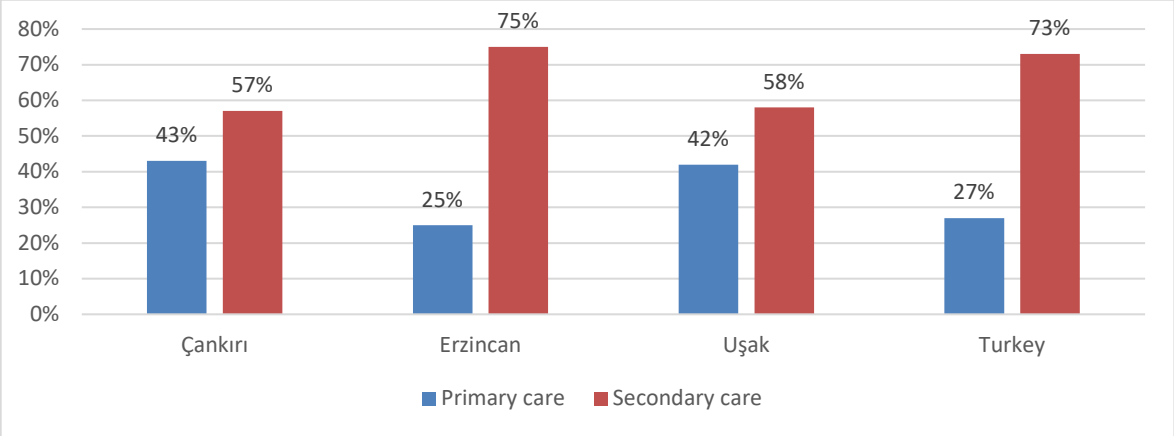


Figure 10 Distribution of the place of hypertension diagnosis of Turkey and the project provinces by stage of healthcare service (%) (2018 January)

Diabetes

In a sample consisting of patients aged 18 years and older who were selected through FMIS and diagnosed with HT, whether the individuals were diagnosed with diabetes in addition to the diagnosis of HT was examined. Of the HT patients (962), 36% (349) also had an additional diagnosis of diabetes. 74% (259) of 349 patients diagnosed with diabetes in addition to HT have an initial diagnosis date recorded in the FMIS. Distribution of diagnosis of diabetes in hypertensive individuals, classified as ICD code E10-E14 by province, is presented in Table 30.

Table 30 Distribution of diabetes diagnosis in hypertensive individuals by provinces (n) (%)

Presence of diabetes	Çankırı		Erzincan		Uşak		Provinces Total	
	n	%	n	%	n	%	n	%
Present	125	40	96	30	128	40	349	36
Not Present	188	60	229	70	196	60	613	64
Total	**313**	**100**	**325**	**100**	**324**	**100**	**962**	**100**

Accordingly, in addition to HT, the rates of those diagnosed with diabetes by province are 40% (125) in Çankırı, 30% (96) in Erzincan and 40% (128) in Uşak. In addition, the distribution of a diagnosis of diabetes in hypertensive individuals by age and gender is presented in Table 31.

Table 31 Distribution of individuals diagnosed with diabetes accompanying HT by age and gender (n) (%)

Age groups	Male		Female		Both genders	
	n	%	n	%	n	%
18-44	6	2	8	2	14	4
45-64	48	14	70	20	118	34
65+	75	21	142	41	217	62
Total	**129**	**37**	**220**	**63**	**349**	**100**

Accordingly, %37 (129) of 349 patients diagnosed with diabetes in addition to HT were male and 63% (220) were female. In addition, 4% (14) of 349 patients diagnosed with diabetes in addition to HT were between the ages of 18-44, and 62% (217) were over 65 years of age.

The prevalence of diabetes in hypertensive individuals included in the study is 34% (129) in males and 38% in females (220). The incidence of diabetes by age groups is 23% (14) for the 18-44 age group, 30% (118) for the 44-65 age group, and 42% for the over 65 age group (217).

In addition, it was examined whether the diagnosis of diabetes was made in those who should have been diagnosed with diabetes according to the laboratory test results available in the FMIS data. HbA1c and FBG values and the presence of existing diabetes diagnosis was investigated. Relevant data is presented in Table 32.

Table 32 Distribution of diabetes diagnosis in hypertensive individuals who should be diagnosed with diabetes according to HbA1c (n) (%)

HbA1c result	Diabetes diagnosis present		No diabetes diagnosis present		Total	
	n	%	n	%	n	%
Overt diabetes	200	21	73	8	273	29
Prediabetes	109	11*	384	40	493	51
Normal	40	4*	156	16	196	20
Total	**349**	**36**	**613**	**64**	**962**	**100**

** Among those diagnosed with diabetes, individuals with blood glucose levels between 100-125 mg/dl represent the under-control group. In order to compare the measurements of individuals without a diagnosis and the measurements of individuals with a diagnosis, it is presented in a single table.*

Accordingly, 64% of hypertensive individuals in the study sample do not have a diagnosis of diabetes. According to HbA1c and FBG results, 16% (156) of the sample blood glucose levels are within the normally determined range. 8% (73) of those diagnosed with HT but not diagnosed with diabetes are in the latent diabetes group according to HbA1c and FBG results. Compared to the entire study group, 4%

(40) of the patients diagnosed with diabetes and their blood glucose level was under control. In contrast, 11% (109) of the study group was diagnosed with diabetes and their blood glucose was partially under control (prediabetic). On the other hand, 40% (384) of patients have not been diagnosed with diabetes and their blood glucose level is partially controlled (Table 32).

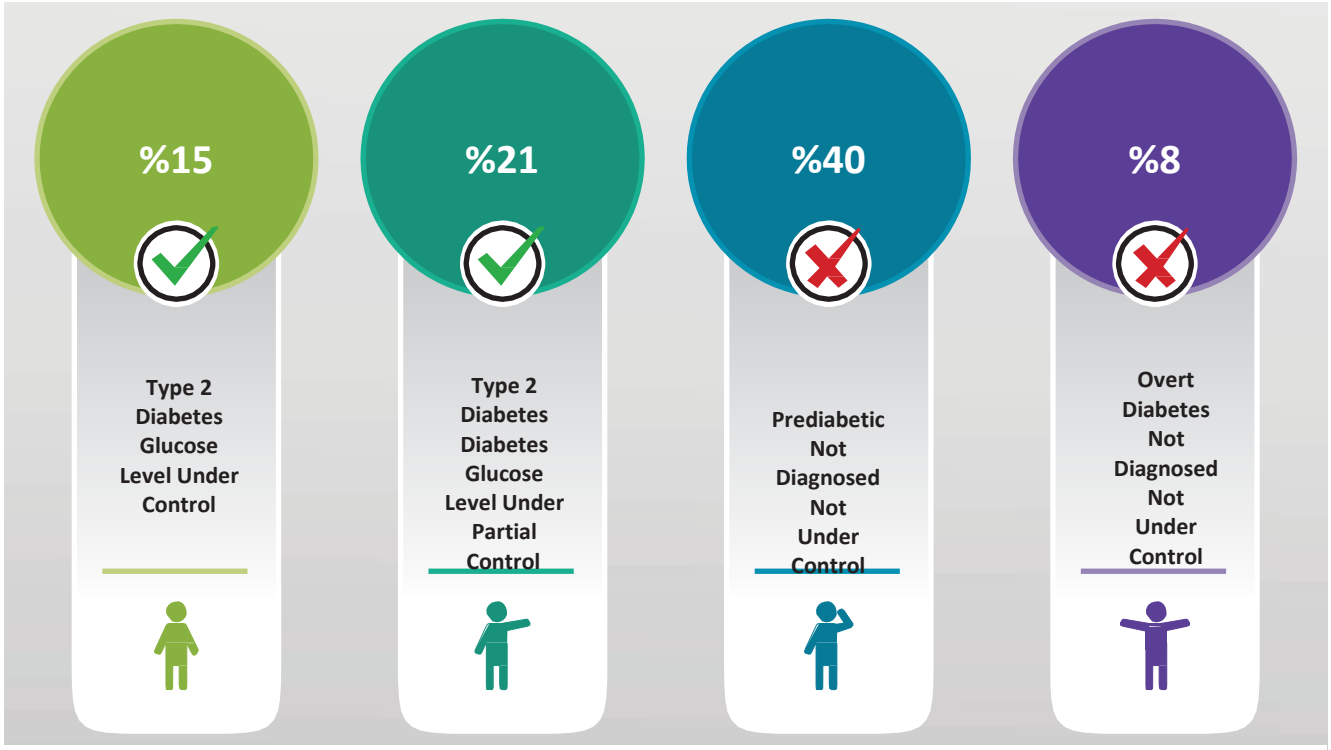


Figure 11 Monitoring and control level of diabetes (%)

Coronary Artery Disease

In a sample consisting of patients aged 18 years and older who were selected through FMIS and diagnosed with HT, whether the individuals were diagnosed with CAD in addition to the diagnosis of HT was examined. Of the HT patients, 35% (333) also had an additional diagnosis of CAD. 75% (250) of 333 patients diagnosed with CAD in addition to HT have an initial diagnosis date recorded in the FMIS. The distribution of patients diagnosed with CAD by provinces is presented in Table 33.

Table 33 Distribution of CAD diagnosis in hypertensive individuals by provinces (n) (%)

Presence of CAD	Çankırı		Erzincan		Uşak		Provinces total	
	n	%	n	%	n	%	n	%
Present	121	39	89	27	123	38	333	35
Not Present	192	61	236	73	201	62	629	65
Total	**313**	**100**	**325**	**100**	**324**	**100**	**962**	**100**

Accordingly, when we consider the distribution of patients diagnosed with CAD in addition to HT by province, it was found to be 39% (121) in Çankırı, 27% (89) in Erzincan, and 38% (123) in Uşak. The number of patients diagnosed with HT but not diagnosed with CAD constitutes 65% (629) of the total hypertensive patients.

Table 34 Distribution of individuals diagnosed with CAD accompanying HT by age and gender (n) (%)

Age groups (Year)	Male		Female		Both genders	
	n	%	n	%	n	%
18-44	4	1	4	1	8	2
45-64	52	16	51	15	103	31
65+	96	29	126	38	222	67
Total	**152**	**46**	**181**	**54**	**333**	**100**

In addition, the distribution of patients with a diagnosis of CAD in addition to HT by gender and age is presented in Table 34. Accordingly, 46% (152) of 333 patients diagnosed with CAD in addition to HT were male and 54% (181) were female. In addition, 2% (8) of 333 patients diagnosed with CAD in addition to HT were between the ages of 18-44, 31% (103) were between the ages of 45-64 and 67% (222) were over 65 years of age.

The incidence of CAD in hypertensive individuals was found to be 31% (181) in females and 40% in males (152). When considered on an age group basis; it is 13% (8) in the 18-44 age group, 27% (103) in the 45-64 age group, and 43% (222) for the age group over the age of 65.

Cerebrovascular disease

In a sample consisting of patients aged 18 years and older who were selected through FMIS and diagnosed with HT, whether the individuals were diagnosed with CeVD in addition to the diagnosis of HT was examined. Of the HT patients, 11% (110) also had an additional diagnosis of CeVD. 65% (71) of 110 patients diagnosed with CeVD in addition to HT have an initial diagnosis date recorded in the FMIS. The distribution of the presence of CeVD diagnosis in hypertensive individuals by province is presented in Table 35.

Table 35 Distribution of CeVD diagnosis in hypertensive individuals by provinces (n) (%)

Presence of CeVD	Çankırı		Erzincan		Uşak		Provinces total	
	n	%	n	%	n	%	n	%
Present	30	10	41	13	39	12	110	11
Not Present	283	90	284	87	285	88	852	89
Total	**313**	**100**	**325**	**100**	**324**	**100**	**962**	**100**

Accordingly, when we consider the distribution of patients diagnosed with CeVD in addition to HT by province, it was found to be 10% (30) in Çankırı, 13% (41) in Erzincan, and 12% (39) in Uşak. The number of patients diagnosed with HT but not diagnosed with CeVD constitutes 89% (852) of the total hypertensive patients. The distribution of 110 patients diagnosed with CeVD in addition to HT by gender and age is presented in Table 36.

Table 36 Distribution of individuals diagnosed with CeVD accompanying HT by age and gender (n) (%)

Age groups (Year)	Male		Female		Both genders	
	n	%	n	%	n	%
45-64	10	9	21	19	31	28
65+	30	27	49	45	79	72
Total	**40**	**36**	**70**	**54**	**110**	**100**

Accordingly, 36% (40) of 110 patients diagnosed with CeVD in addition to HT were male and 54% (70) were female. In addition, 28% (31) of 110 patients diagnosed with CeVD in addition to HT were between the ages of 45-64, and 72% (79) were over 65 years of age (Table 36).

The prevalence of CeVD in hypertensive individuals included in the study is 10% (40) in males and 10% (60) in females. Based on age groups, it is 8% (31) for the 45-64 age group and 15% (79) for the over 65 age group.

Chronic kidney disease

In a sample consisting of patients aged 18 years and older who were selected through FMIS and diagnosed with HT, whether the individuals were diagnosed with CKD in addition to the diagnosis of HT was examined. Of the HT patients, 3% (30) also had an additional diagnosis of CKD. 57% (17) of 30 patients diagnosed with CKD in addition to HT have an initial diagnosis date recorded in the FMIS. The distribution of patients diagnosed with chronic kidney disease by province is presented in Figure 12.

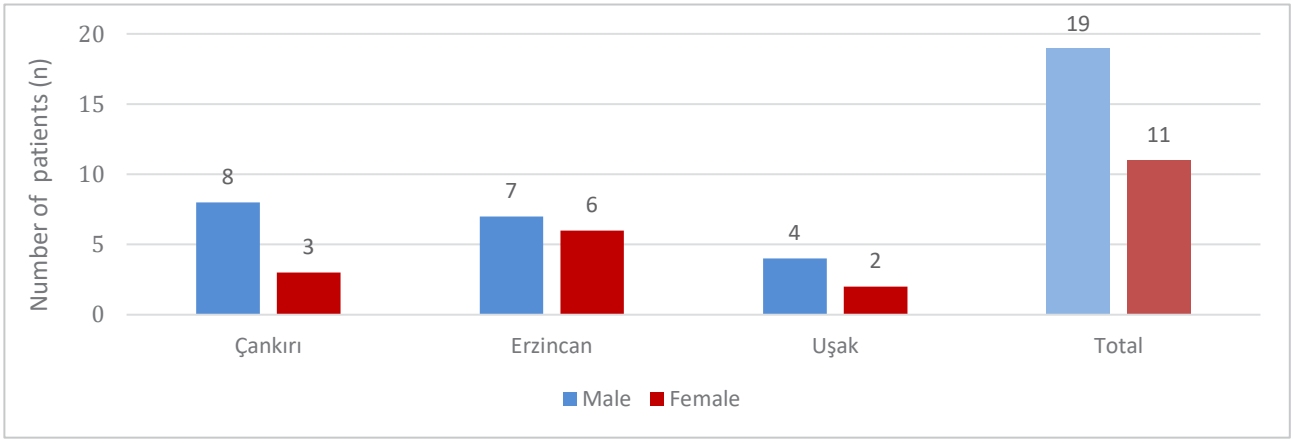


Figure 12 Distribution of patients diagnosed with CKD in hypertensive individuals by provinces and gender (n)

Accordingly, 37% (11) of 30 patients diagnosed with chronic kidney disease in addition to HT live in Çankırı, 43% (13) live in Erzincan, and 20% (6) live in Uşak. The number of patients diagnosed with HT but not diagnosed with CKD constitutes 97% (932) of the total hypertensive patients.

Accordingly, 63% (19) of patients diagnosed with CKD in addition to HT are male, while 37% (11) are female. The incidence of chronic kidney disease in the patients included in the study is 5% (19) in males and 2% (11) in females.

Presence of multiple concomitant conditions

In a sample consisting of patients aged 18 years and older who were selected through FMIS and diagnosed with HT, whether the individuals were diagnosed with multiple concomitants in addition to the diagnosis of HT was examined. It was observed that the most common diagnosis accompanying the diagnosis of HT in the patients (962) was diabetes at a rate of 36% (349) (Table 37).

Table 37 Hypertensive individuals with multiple concomitant conditions (n) (%)

Disease name	Number of individuals (n)	Percentage of individuals (%)
1. **Those with diagnosis of diabetes mellitus**	**349**	**36**
Diabetes only	190	20
Those with diabetes and CeVD	35	4
Those with diabetes and kidney disease	15	2
Those with CAD + CeVD + diabetes	26	3
2. **Those diagnosed with CAD**	**333**	**35**
Only CAD diagnosis	138	14
Those with CAD and diabetes	149	15
Those with CAD and CeVD	66	7
Those with CAD and kidney disease	23	2
3. **Those with CeVD among their diagnoses**	**110**	**11**
Those diagnosed with LVH and kidney disease	5	1
4. **Those with diagnosis of kidney disease**	**30**	**3**
5. **Those diagnosed with CAD + CeVD + diabetes + kidney disease**	**2**	**0**
Total number of individuals in the sample/ratio	**962**	**100**

In addition to diabetes, another disease that accompanies the diagnosis of hypertension is CAD (333). In addition to HT diagnosis, patients diagnosed with both diabetes and CAD account for 15% (149) of the total hypertensive patients. The ratio of CeVD accompanying HT and diabetes to total hypertensive patients is 4%.

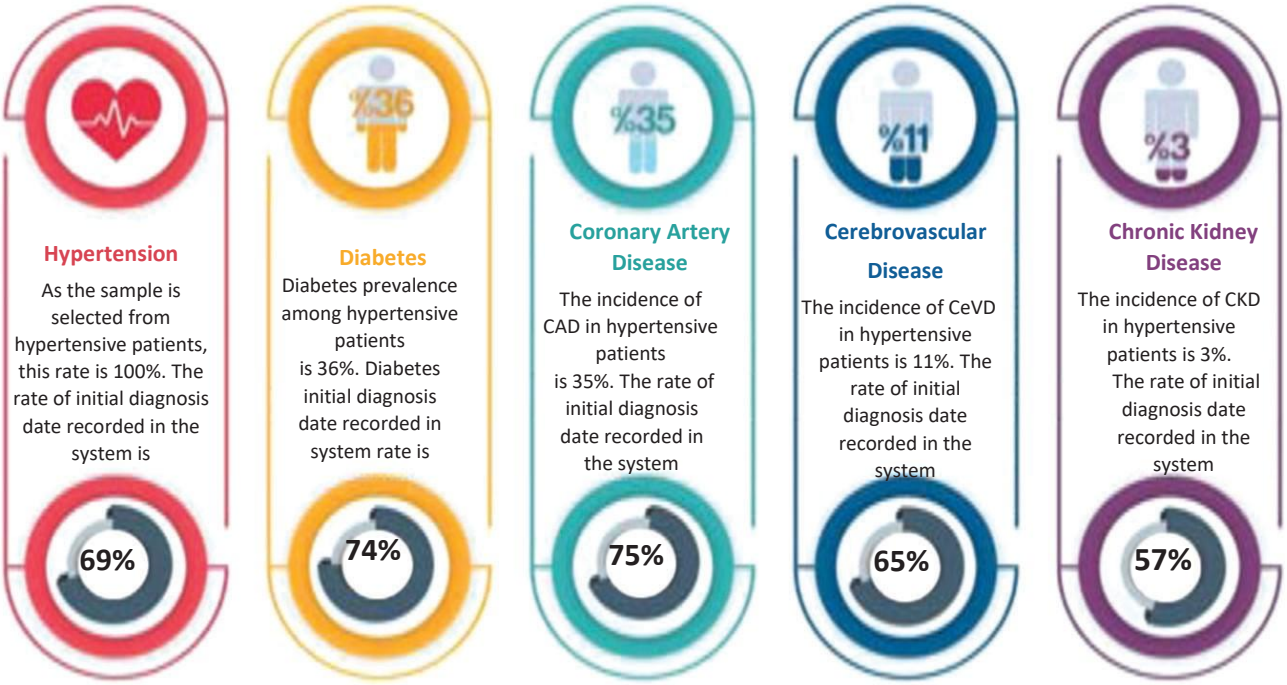


Figure 13 Frequency of diseases in hypertensive individuals and record status of initial diagnosis dates (%)

Medication Use Assessment

In the health records of the study group in FMIS; the use of

i. Antihypertensive medications
ii. Antidiabetic medications
iii. Statin-type medications
iv. ASA type medications

was examined for record of use. Prescriptions and regular filling of prescriptions were analyzed. It is observed that most of the diabetes and HT patients in Turkey obtain *a health committee report on long-term medication use* from health institutions in order to reduce the frequency of medication prescriptions and minimize the payment of contributions paid. Thus, it is possible to prescribe a 3-month dose of medication for a long-term disease with only one prescription. As such, the prescription of a medication every 3 months for a disease in FMIS is accepted as “regular medication use”.

Antihypertensive medication use

It was observed that 26% (252) of hypertensive patients aged 18 years and over were not prescribed antihypertensive medications despite being diagnosed with HT in their FMIS records. On the other hand, 49% (476) of the sample group regularly use antihypertensive medications. Antihypertensive medication use status by gender is presented in Table 38.

Table 38 Antihypertensive medication use status by gender (n) (%)

	Male		Female		Both genders	
	n	%	n	%	n	%
Regular use	193	50	283	49	476	49
No medication prescribed in last 3 months	90	23	144	25	234	24
No medication prescribed	101	26	151	26	252	26
General Total	**384**	**100**	**578**	**100**	**962**	**100**

Accordingly, 50% (193) of males diagnosed with HT use their antihypertensive medication regularly, while 23% (90) have not been prescribed antihypertensive medication for the last 3 months. Additionally, it was observed that 26% (101) of the males were not prescribed any antihypertensive medications. 49% (283) of females diagnosed with HT regularly use antihypertensive medications. It was observed that 25% (144) of the females had not been prescribed antihypertensive medication for the last 3 months, and 26% (151) were not prescribed any antihypertensive medication.

Table 39 Antihypertensive medication use status by age (n) (%)

	18-44		45-64		65+		All age groups	
	n	%	n	%	n	%	n	%
Regular use	8	13	161	42	307	60	476	49
No medication prescribed in last 3 months	14	23	94	24	126	24	234	24
No medication prescribed	39	64	132	34	81	16	252	26
General Total	**61**	**100**	**387**	**100**	**514**	**100**	**962**	**100**

The distribution of antihypertensive medication use by age is given in Table 39. According to the age group, the group with the highest rate of regular medication use was determined to be the age 65 and older age group at 60% (307), with a rate of regular medication use 42% (161) in the 45-64 age group. On the other hand, the age group with the highest density among those who were never prescribed antihypertensives was those aged 18-44 with a rate of 64% (39).

Table 40 Comparison of BP values of patients using antihypertensive medications (n) (%)

Blood Pressure	Regular user		No prescription for 3 months		No medication prescribed		Total	
	n	%	n	%	n	%	n	%
SBP ≥ 140 or DBP ≥ 90 mmHg	15	65	5	22	3	13	23	100
SBP < 140 and DBP < 90 mmHg	14	52	6	22	7	26	27	100
Number of individuals with measured blood pressure	**29**	**58**	**11**	**22**	**10**	**20**	**50**	**100**

According to Table 40, when the antihypertensive medication use status and BP level are considered together, the BP values of 27 of the 50 patients whose BP values were included in FMIS were within the reference value range. Different groups of antihypertensive medications are used in patients diagnosed with HT. The distribution of the use of these medication groups by gender is shown in Table 41.

Table 41 Distribution of medication groups used by patients using antihypertensive medications by gender (n) (%)

Medication group	Male		Female		Both genders	
	n	%	n	%	n	%
ACEI	99	23	96	15	195	18
Angiotensin receptor blockers (ARB)	90	21	173	28	263	25
Beta blockers	104	24	137	22	241	23
Diuretics	60	14	101	16	161	15
Calcium channel blockers	64	15	115	18	179	17
Centrally acting alpha1 alpha2 agonists	17	4	2	0	19	2
Total*	**434**	**100**	**624**	**100**	**1,058**	**100**

**Since more than one medication group can be prescribed to an individual, the number of individuals is not expected to be equal to the total number of samples.*

The medications used in the treatment of HT are from six different groups, and the most used antihypertensive medication group is Angiotensin II Receptor Blockers (ARB). Beta blockers are the most common group of medications used by male patients diagnosed with HT and taking regular antihypertensive, while ARB is observed to be the most used group of medications in females. Similarly, the frequency of use of the medications used in HT diagnosis varies by age. The distribution of antihypertensive medication groups by age is shown in Table 42.

Table 42 Distribution of medication groups used by patients using antihypertensive medications by age (n) (%)

Medication group	18-44		45-65		65+		All age groups	
	n	%	n	%	n	%	n	%
ACEI	9	45	77	22	109	16	**195**	**18**
ARB	3	15	88	25	173	25	**264**	**25**
Beta blockers	4	20	88	25	149	22	**241**	**23**
Diuretics	1	5	31	9	118	17	**150**	**14**
Calcium channel blockers	3	15	54	16	122	18	**179**	**17**
Centrally acting alpha1 alpha2 agonists	0	0	4	1	15	2	**19**	**2**
Total*	**20**	**100**	**347**	**100**	**691**	**100**	**1,058**	**100**

**Since more than one medication group can be prescribed to an individual, the number of individuals is not expected to be equal to the total number of samples.*

The most prescribed antihypertensive medication groups on the basis of age groups are ACEIs for those aged 18-44, ARBs and beta-blocking agents for those aged 45-65, and ARBs for those aged over 65.

Antidiabetic medication use

36% (349) of patients aged 18 and over who were selected through FMIS with HT diagnosis were additionally diagnosed with diabetes. It was observed that 54% (188) of those diagnosed with HT and diabetes regularly received antidiabetic medication treatment and 17% (60) were not prescribed any antidiabetic medications. The ratio of diabetic patients who were not prescribed antidiabetic medication in the last 3 months despite being diagnosed with diabetes was found to be 29% (101) (Table 43).

Table 43 Antidiabetic medication use status by gender (n) (%)

	Male		Female		Both genders	
	n	%	n	%	n	%
Regular use	67	52	121	55	188	54
No medication prescribed in last 3 months	36	28	65	30	101	29
No medication prescribed	26	20	34	15	60	17
General Total	**129**	**100**	**220**	**100**	**349**	**100**

Antidiabetic medication use status by gender is presented in Table 43. Accordingly, 52% (67) of the males regularly used antidiabetic medications, 28% (36) were not prescribed medications in the last 3 months, and 20% (26) were not prescribed any medications. On the other hand, 55% (121) of the females regularly used medications and 15% (34) were not prescribed any medications.

Table 44 Antidiabetic medication use status by age (n) (%)

	18-44		45-64		65+		All age groups	
	n	%	n	%	n	%	n	%
Regular use	7	50	62	53	119	55	188	54
No medication prescribed in last 3 months	5	36	37	31	59	27	101	29
No medication prescribed	2	14	19	16	39	18	60	17
General Total	**14**	**100**	**118**	**100**	**217**	**100**	**349**	**100**

The distribution of antidiabetic medication use status of patients diagnosed with HT and diabetes by age is given in Table 44. Accordingly, the age group that uses antidiabetic medications most regularly is over 65 with 55% (119), while the 45-64 age group follows this group with 53% (62).

Statin medication use

While 62% (598) of the 962 hypertensive patients had cholesterol measurement values present in the FMIS, the rate of those without cholesterol measurements was 38% (364). Data on the cholesterol measurement status of the people in the sample and whether they had statin prescriptions are presented in Table 45.

On the other hand, 77% (318) of hypertensive patients with cholesterol levels above 190 were not prescribed statins, while 23% (93) had a statin prescription. 6% (21) of individuals whose cholesterol levels were not monitored were prescribed statins (Table 45).

Table 45 Statin prescription status according to cholesterol values of hypertensive individuals (n) (%)

Cholesterol value (mg/dl)	Has a statin prescription		Has no statin prescription		Total	
	n	%	n	%	n	%
<190	46	25	141	75	187	100
≥190	93	23	318	77	411	100
Cholesterol not measured	21	6	343	94	364	100
Total	**160**	**17**	**802**	**83**	**962**	**100**

The distribution of use of statin type medications by age and gender is presented in Table 46 and Table 47. 21 individuals whose cholesterol was not measured in the last two years, although they were prescribed statins, were not included in the medication use status analysis because their cholesterol value was not known.

Table 46 Statin medication use status by gender (n) (%)

	Male		Female		Both genders	
	n	%	n	%	n	%
Regular use	29	13	40	10	69	12
No medication prescribed in last 3 months	28	13	42	11	70	12
No medication prescribed	158	73	301	79	459	77
General Total	**215**	**100**	**383**	**100**	**598**	**100**

Among the hypertensive patients with known cholesterol levels, the group with highest rate of regular use of statin type medications was the 45-64 age group at 14% (33), and the group with the highest density among those who did not use any statin type medications was the 18-44 age group at 91% (32).

Table 47 Statin medication use status by age (n) (%)

	18-44		45-64		65+		All age groups	
	n	%	n	%	n	%	n	%
Regular use	2	6	33	14	34	11	69	12
No medication prescribed in last 3 months	1	3	23	10	46	14	70	12
No medication prescribed	32	91	184	77	243	75	459	77
General Total	**35**	**100**	**240**	**100**	**323**	**100**	**598**	**100**

ASA type medication use

It is known that the prescription of ASA type medications is recommended for individuals with a diagnosis of CAD. In a sample consisting of 333 patients aged 18 years and older who were selected through FMIS and diagnosed with CAD in addition HT, whether the individuals were prescribed ASAs was examined.

Table 48 ASA medication use status in hypertensive individuals with CAD diagnosis by gender (n) (%)

	Male		Female		Both genders	
	n	%	n	%	n	%
Regular use	57	38	55	30	112	34
No medication prescribed in last 3 months	46	30	46	25	92	28
No medication prescribed	49	32	80	44	129	39
General Total	**152**	**100**	**181**	**100**	**333**	**100**

It was observed that 38% (57) of males with a diagnosis of CAD in addition to HT used ASA type medications regularly, 30% (46) of were not prescribed ASA type medications in the last 3 months, and 32% (49) were never prescribed ASA type medications. While 30% (55) of the females used ASA type medications regularly, 25% (46) had not used ASA type medications in the last 3 months, and 44% (80) had never used ASA type medications.

Table 49 ASA medication use status in hypertensive individuals with CAD diagnosis by age (n) (%)

	18-44		45-64		65+		All age groups	
	n	%	n	%	n	%	n	%
Regular use	2	25	38	37	72	32	112	34
No medication prescribed in last 3 months	3	38	23	22	66	30	92	28
No medication prescribed	3	38	42	41	84	38	129	39
General Total	**8**	**100**	**103**	**100**	**222**	**100**	**333**	**100**

Among all age groups, the group with the highest rate of regular ASA type medication use was found to be the 45-64 age group with 37% (38), and 41% (42) of the patients in this group were found to have not been prescribed any ASA type medications.

As a result, patients who were not prescribed any of the antihypertensive, antidiabetic, statin, ASA medications subject to the study constitute 18% (175) of the sample.

Initial Assessment Results

When the rates of examinations and analyzes of hypertensive patients in the last one year (for cholesterol in the last two years) are examined on the FMIS, 9% (54) of the study group were found have tobacco use data, 5% (50) blood pressure data, 12% (113) body mass index data, 62% (598) cholesterol data, 71% (683) creatinine data , 41% (390) proteinuria data, 70% (675) fasting blood glucose data, 34% (324) HbA1c data, 4% (34) cardiovascular disease risk assessment data available in the FMIS (Figure 14). While the rates were calculated in the table, each hypertensive patient included in the sample was reviewed for the presence of each data point, and separate calculations carried out for each available data. The record rate of all fields among hypertensive patients was found to be 38%.

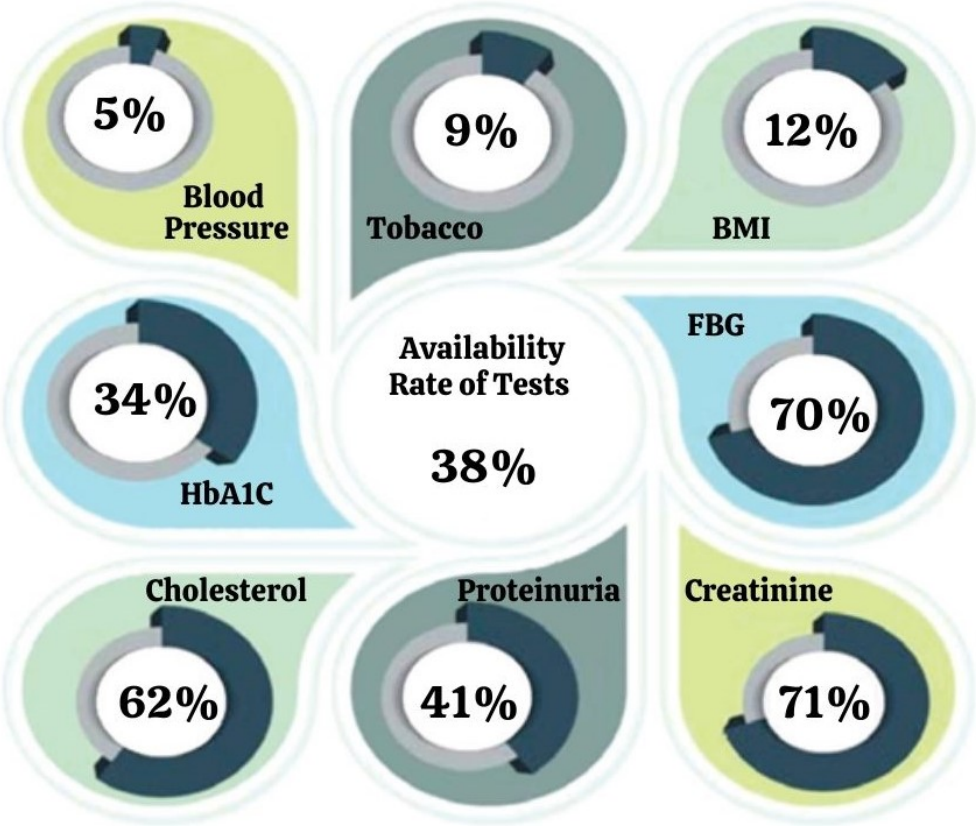


Figure 14 Risk factors and test record status (%)

Of the HT patients, 36% (349) had an additional diagnosis of diabetes, while 35% (333) also had an additional diagnosis of CAD. The rate of those diagnosed with CeVD in addition to HT was 11% (110), and the rate of those diagnosed with CKD 3% (30).

SECTION 4

ASSESSMENT OF TRAINING

The study includes an analysis of the survey results completed between 10.12.2018 and 19.12.2018 in the provinces of Çankırı, Erzincan and Uşak with the current physician and FMW and with the aim of evaluating the satisfaction of the training given with the test results consisting of 20 questions.

Participation of Physicians and FMWs in Training and Success by Province

238 participating physicians were given a preliminary test before the planned training. A total of 20 questions regarding chronic diseases, HT diagnosis and treatment algorithm, CVD risk factors and motivational communication were included in the preliminary test form. The score of each training subject was determined; first, the success level of the participant was assessed on a scale of 100 points and the average training score of the individual was established. The average success score of the training subject was calculated by taking into consideration the score of all participants.

Of the pre-test participants, 21% (51) work in Çankırı, 29% (68) in Erzincan and 50% (119) in Uşak. The mean score of the participants in the chronic disease subsection was 85, the mean score of the HT diagnosis and treatment algorithm subsection was 53, the mean score of the CVD risk factors subsection was 46, and the mean score in the motivational communication section was 31. The province with the highest average score of the chronic diseases section was Uşak, while the province with the lowest was Erzincan. The province with the highest average score of the HT diagnosis and treatment algorithm section was Uşak, while the province with the lowest was Erzincan.

The province with the highest average score of the CVD risk factors section was Erzincan, while the province with the lowest was Çankırı. The province with the highest average score of the motivational communication section was Erzincan, while the province with the lowest was Çankırı (Table 50).

Table 50 Mean pre-test results of physicians participating in training (n) (score)

Province	Number (n)	Chronic diseases (Score)	Hypertension diagnosis and treatment algorithm (Score)	Cardiovascular diseases risk factors (Score)	Motivational communication (Score)	Overall mean (Score)
Çankırı	51	81	52	43	23	46
Erzincan	68	75	50	51	40	51
Uşak	119	92	56	45	29	51
Mean	-	85	53	46	31	50

Following the planned training, a post test was applied to 240 participating physicians. A total of 20 questions regarding chronic diseases, HT diagnosis and treatment algorithm, CVD risk factors and motivational communication were included in the post test form. Of the post-test participants, 22% (53) work in Çankırı, 28% (67) in Erzincan and 50% (120) in Uşak.

The mean score of the participants in the chronic disease subsection was 96, the mean score in the HT diagnosis and treatment algorithm subsection was 82, the mean score in the CVD risk factors subsection was 80, and the mean score in the motivational communication section was 76. The province with the highest average score of the chronic diseases section was Uşak, while the province with the lowest was Çankırı.

The province with the highest average score of the HT diagnosis and treatment algorithm section was Uşak, while the province with the lowest was Çankırı. The province with the highest average score of the CVD risk factors section was Uşak, while the province with the lowest was Çankırı. The province with the highest average score of the motivational communication section was Erzincan, while the province with the lowest was Çankırı (Table 51).

Table 51 Mean post-test results of physicians participating in training (n) (score)

Province	Number (n)	Chronic diseases (score)	Hypertension diagnosis and treatment algorithm (score)	Cardiovascular diseases risk factors (score)	Motivational communication (score)	Overall mean (score)
Çankırı	53	88	67	62	46	63
Erzincan	67	96	78	83	86	83
Uşak	120	98	91	86	83	89
Mean	-	96	82	80	76	82

227 participating FMWs were given a preliminary test before the planned training. A total of 20 questions regarding chronic diseases, HT diagnosis, CVD, healthy living skills and motivational communication were included in the preliminary test form. Of the pre-test participants, 19% (43) work in Çankırı, 29% (66) in Erzincan and 52% (118) in Uşak. The mean score of the participants in the chronic disease subsection was 82, the mean score in the HT diagnosis subsection was 47, the mean score in the CVDs subsection was 52, the mean score in the healthy living skills was 75 and the mean score in the motivational communication section was 30. The province with the highest average score of the chronic diseases section was Uşak, while the province with the lowest was Erzincan. The province with the highest average score of the HT diagnosis section was Uşak, while the province with the lowest was Çankırı. The province with the highest average score of the CVD section was Erzincan. The province with the highest average score of the healthy living skills section was Uşak, while the province with the lowest was Erzincan. The province with the highest average score of the motivational communication section was Çankırı, while the province with the lowest was Uşak (Table 52).

Table 52 Average pre-test results of the FMWs attending the training (n) (score)

Province	Number (n)	Chronic diseases (score)	Hypertension diagnosis (score)	Cardiovascular diseases (score)	Healthy living skills (score)	Motivational communication (score)	General Mean (score)
Çankırı	43	67	41	51	71	41	49
Erzincan	66	62	47	55	69	29	49
Uşak	118	79	49	51	80	28	53
Mean	-	72	47	52	75	30	51

Following the planned training, a post test was applied to 225 participating FMWs. A total of 20 questions regarding chronic diseases, HT diagnosis, CVD, healthy living skills and motivational communication were included in the post test form. Of the post-test participants, 20% (44) work in Çankırı, 28% (64) in Erzincan and 52% (117) in Uşak.

The mean score in the post test of the participants in the chronic disease subsection was 95, the mean score in the HT diagnosis subsection was 85, the mean score in the CVDs subsection was 90, the mean score in the healthy living skills was 90 and the mean score in the motivational communication section was 90. The province with the highest average score of the chronic diseases section was Uşak, while the province with the lowest was Çankırı. The province with the highest average score of the HT diagnosis section was Uşak, while the province with the lowest was Çankırı. The province with the highest average score of the CVD section was Uşak, while the province with the lowest was Çankırı. The province with the highest average score of the healthy living skills section was Uşak, while the province with the lowest was Çankırı. The province with the highest average score of the motivational communication section was Erzincan, while the province with the lowest was Çankırı (Table 53).

Table 53 Mean post-test results of FMWs participating in training (n) (score)

Province	Number (n)	Chronic diseases (score)	Hypertension diagnosis (score)	Cardiovascular diseases (score)	Healthy living skills (score)	Motivational communication (score)	General Mean (score)
Çankırı	44	94	75	70	71	63	73
Erzincan	64	93	81	93	93	83	85
Uşak	117	97	92	97	96	82	91
Mean	-	95	85	90	90	78	86

Distribution of Test Results of Physicians by Province, Kurtosis and Skewness Values

When the distribution of test results conducted with the participation of physicians in Çankırı was examined, an increase in the right skewing of the distribution was observed at the end of the training. This shows that the pre-test mean increased with the training and the participants achieved higher test scores than the mean. The graph indicates a trend towards high score values. In addition, the kurtosis of the distribution decreased and became centralized following training (Figure 15).

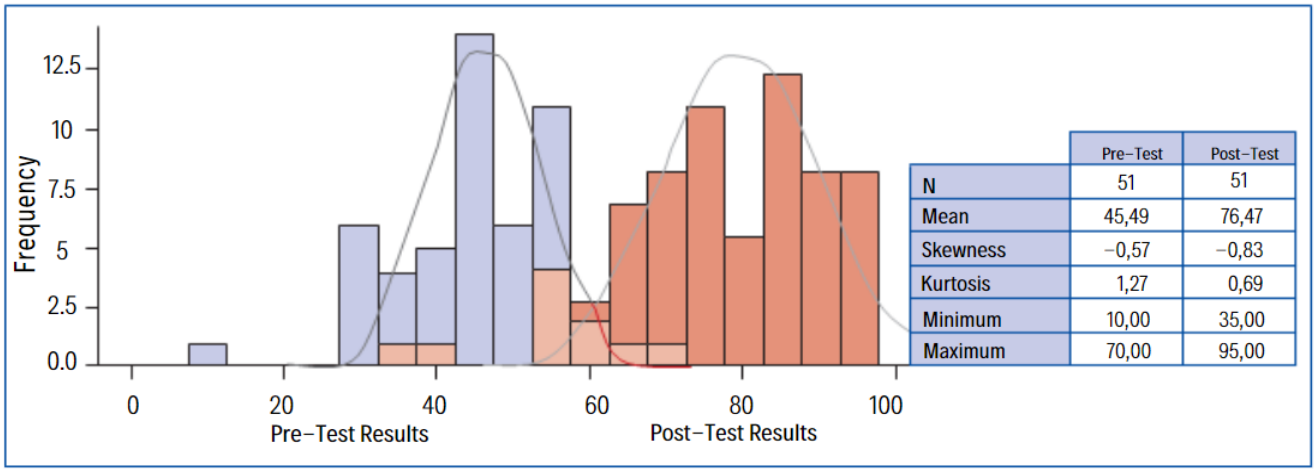
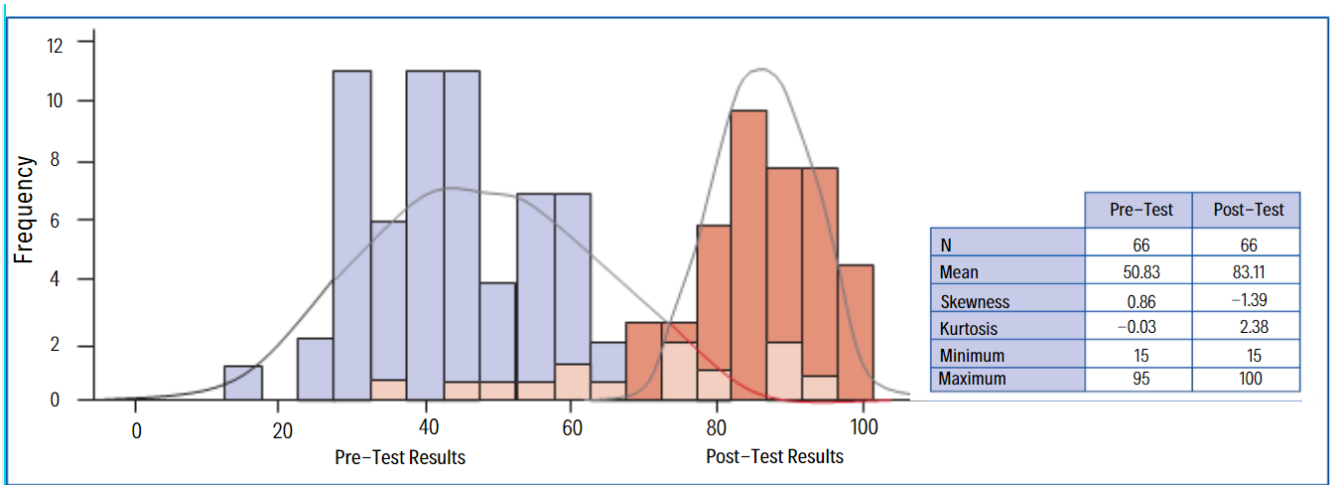


Figure 15 Pre-test and post-test findings of physicians in Çankırı

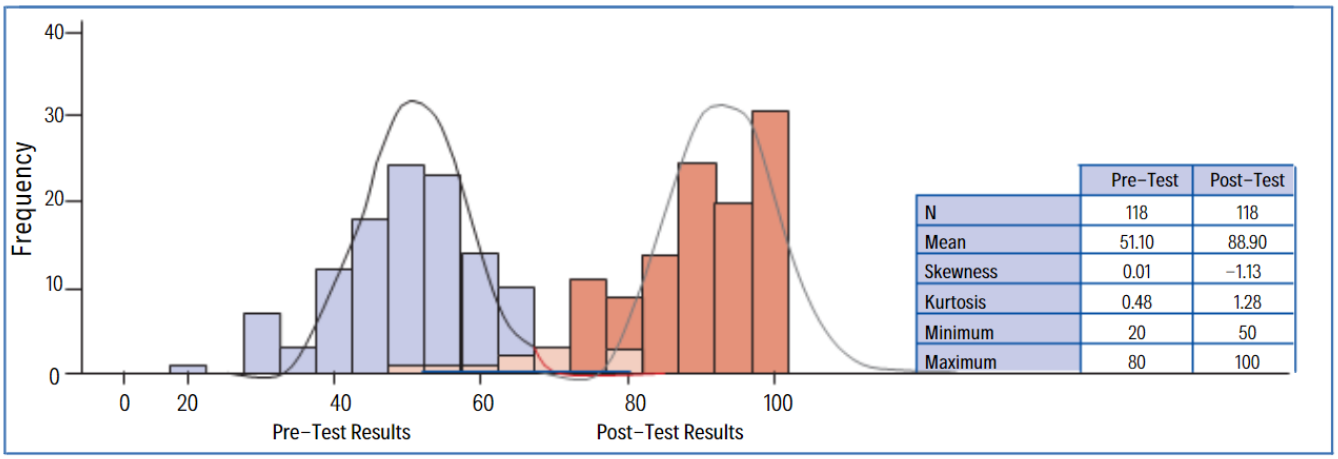
When the distribution of test results conducted with the participation of physicians in Erzincan was examined, a high degree of right skewness was observed following the training (Figure 16).



	Pre-Test	Post-Test
N	66	66
Mean	50.83	83.11
Skewness	0.86	−1.39
Kurtosis	−0.03	2.38
Minimum	15	15
Maximum	95	100

Figure 16 Pre-test and post-test findings of physicians in Erzincan

When the distribution of exam results conducted with the participation of physicians in Uşak is examined, the success rates that were skewed to the left (in the direction of 0) before the training showed a high degree of skewing to the right (in the direction of 100) at the end of the training (Figure 17).



	Pre-Test	Post-Test
N	118	118
Mean	51.10	88.90
Skewness	0.01	−1.13
Kurtosis	0.48	1.28
Minimum	20	50
Maximum	80	100

Figure 17 Pre-test and post-test findings of physicians in Uşak

Significance Test of Difference Between Pre-test and Post-Test Means of FPs and FMWs

As the findings have been revealed above, it is seen that the mean post-test scores of the physicians and FMWs are higher than the mean scores of the pre-test. In order to determine whether this difference is random or an indicator of real success, a significance test of the difference between the two was applied. Findings related to the analysis are presented in Table 54.

Table 54 Comparison of pre-test and pos- test findings of physicians participating in training

	Mean	Std. Deviation	t	df	Sig. (2-tailed)
Post test - pre-test total	34.766	17.622	30.244	234	.000
Post-test-pre-test chronic disease management	11.915	29.355	6.222	234	.000
Post test - pre-test hypertension	31.596	21.129	22.924	234	.000
Post-test - pre-test CVD assessment	36.525	26.563	21.079	234	.000
Post test - pre-test motivational communication	49.894	31.309	24.430	234	.000

In Table 54, the total score from all subsections in the post test differs significantly from the average score obtained in the pre-test (p=0.000). There is a statistically significant difference between the pre-test and post-test scores of the chronic diseases sub section. Similarly, the difference between the pre-test and post-test scores of the physicians in the hypertension diagnosis and treatment algorithm subsection is also statistically significant (p=0.000). The difference between the pre-test and post-test scores of the physicians from the cardiovascular diseases subsection is statistically significant. There is a statistically significant difference between the mean scores of the physicians in the communication sub-section in the pre-test and post-test (p=0.000). In other words, the training process has a positive effect on the increase in post-test scores, and this finding indicates that training provided is effective. In addition, an assessment was made regarding differences in scores obtained by family health workers other than physicians in pre-test and post-tests. Table 55 on this matter is presented below.

Table 55 Comparison of pre-test and post-test findings of FMWs participating in training

	Mean	Std. Deviation	t	Degrees of freedom (df)	Sig. (2-tailed)
Post-test total - pre-test total	35.513	13.437	39.555	223	.000
Post test - pre-test chronic diseases	23.661	31.736	11.158	223	.000
Post test - pre-test hypertension	38.591	17.762	32.519	223	.000
Post test - pre-test CVD	38.170	30.034	19.021	223	.000
Post-test k - pre-test healthy living skills	15.476	25.812	8.974	223	.000
Post-test - pre-test motivational communication	48.214	35.310	20.436	223	.000

Following the completion of the training, the total score obtained from all sub-sections shows a statistically significant difference from the mean score obtained in the pre-test (p=0.000). Again, there is a statistically significant difference between the pre-test and post-test scores of the chronic diseases sub section. Similarly, the difference between the pre-test and post-test scores of the FMWs in the hypertension diagnosis subsection is also statistically significant (p=0.000). The difference between the pre-test and post-test scores of the FMWs from the cardiovascular diseases subsection is statistically significant. The difference between the pre-test and post-test scores of the FMWs from the healthy living skills subsection is statistically significant. There is a statistically significant difference between the mean scores of the FMWs in the communication sub-section in the pre-test and post-test (t=69.894; p=0.000). In other words, the training process has a positive effect on the increase in post-test scores, and this finding indicates that training provided to FMWs is effective.

Pre-Test and Post-Test Mean Success Increase Rates

The above findings reveal that there is a change in the knowledge levels of both physicians and FMWs before and after training on chronic diseases, diagnosis of hypertension, cardiovascular disease and motivational communication. The changes in the provinces that emerged during the physician training process were examined and the findings obtained from the analysis of the data are presented in Table 56.

Table 56 The success rate of the physicians who participated in the training (score) (%)

Province	Chronic diseases			Hypertension diagnosis and treatment algorithm			Cardiovascular diseases risk factors			Motivational communication			Total		
	Pre-test (Mean score)	Post-test (Mean score)	Increase (%)	Pre-test (Mean score)	Post-test (Mean score)	Increase (%)	Pre-test (Mean score)	Post-test (Mean score)	Increase (%)	Pre-test (Mean score)	Post-test (Mean score)	Increase (%)	Pre-test (Mean score)	Post-test (Mean score)	Increase (%)
Çankırı	78	91	**16**	51	78	**53**	42	75	**76**	23	68	**202**	45	76	**68**
Erzincan	74	96	**30**	50	79	**57**	52	83	**60**	39	86	**117**	51	83	**63**
Uşak	92	98	**6**	56	91	**63**	45	86	**91**	29	83	**184**	51	89	**74**
General	84	96	**14**	53	85	**59**	46	83	**79**	31	81	**163**	50	85	**70**

When Table 56 is examined, it can be observed that the training received by the physicians increased the scores obtained from all sections in all provinces. While the highest level of change was the motivational communication section, the least knowledge change occurred in chronic diseases. This finding indicates that physicians already have a high level of knowledge regarding chronic diseases.

Similarly, with the assessment of the descriptive findings, it can be observed that there is a change in the knowledge levels of FMWs on chronic diseases, diagnosis of HT, cardiovascular diseases, healthy living skills and motivational communication before and after training. The changes in the provinces that emerged during the FMW training process were examined and the findings obtained from the analysis of the data are presented in Table 57.

Table 57 The success rate of the FMWs who participated in the training (score) (%)

Province	Chronic diseases			Hypertension diagnosis and treatment algorithm			Cardiovascular diseases risk factors			Motivational communication			Healthy living skills			Total		
	Pre-test (Mean score)	Post-test (Mean score)	Increase (%)	Pre-test (Mean score)	Post-test (Mean score)	Increase (%)	Pre-test (Mean score)	Post-test (Mean score)	Increase (%)	Pre-test (Mean score)	Post-test (Mean score)	Increase (%)	Pre-test (Mean score)	Post-test (Mean score)	Increase (%)	Pre-test (Mean score)	Post-test (Mean score)	Increase (%)
Çankırı	67	94	**40**	41	76	**84**	51	72	**41**	71	72	**2**	41	65	**56**	49	74	**51**
Erzincan	62	93	**51**	47	81	**72**	55	92	**66**	69	93	**35**	29	82	**189**	49	85	**74**
Uşak	79	97	**23**	49	92	**87**	51	97	**88**	80	96	**20**	27	82	**198**	53	91	**74**
General	72	96	**33**	47	86	**82**	52	91	**73**	75	90	**21**	30	79	**159**	51	86	**70**

The findings presented in Table 57 reveal that the training received by FMWs in all three provinces increased the scores obtained from all sections. While the highest level of change was the motivational communication section, the least knowledge change occurred in healthy living skills. This finding indicates that the level of competency of FMWs in healthy living is already high.

Training Satisfaction Analysis

In order to measure the level of satisfaction with the training for physicians and FMWs, trainers developed a measurement tool consisting of 14 questions regarding the trainers, training organization, training materials, content, duration and use of materials. There were three different options provided to answer the given questions: positive, moderate and negative. In addition, a likert scale from 1 to 10 was used in order to measure the contribution of the training to the personal skills of the participants.

The question of whether the training has achieved its goals was considerably more positive in the provinces of Erzincan and Uşak than in Çankırı. A response was given at the level of 82% across all provinces that the training achieved its purpose. FMWs gave a more positive assessment than physicians regarding the achievement of training goals. Although the question of whether the training met personal expectations was found to be 78% in total, the highest satisfaction at the provincial level was observed in Uşak, followed by Erzincan. FMWs gave a more positive assessment when compared to physicians regarding the training having met their personal expectations. The question regarding the participants finding the training program relevant to their profession was found to be correlative at 93% in total, the highest satisfaction at the provincial level was observed in Uşak, followed by Erzincan. Both groups found the training to be highly relevant to their professions. The participants were satisfied with the training organization at a level of 85% in total, and the highest satisfaction at the provincial level was observed in Uşak, followed by Erzincan. FMWs were more satisfied with the training organization than physicians.

The training was found to be sufficient at an average of 84% based on the answers given to the question whether the equipment used during the training was sufficient or not. The highest satisfaction at the provincial level was observed in Uşak, followed by Erzincan. FMWs considered the issue of whether the educational materials used in the training were sufficient or not more positively than physicians.

On a provincial basis, on average, 78% of the participants found the place of training appropriate. The province that is most satisfied with the place of training is Erzincan. FMWs assessed the place of training more positively than the physicians in terms of suitability. On a provincial basis, on average, 83% of the participants found the content of training sufficient. The highest satisfaction at the provincial level was observed in Uşak, followed by Erzincan. FMWs were more satisfied with the content of the training than physicians. On a provincial basis, on average, 89% of participants believe that their trainers communicate effectively. FMWs considered the issue of effective communication by their trainers more positively than physicians.

A 91% response was received to the question of whether trainers were excited and enthusiastic about their subject across the provinces. FMW considered their trainers being excited and enthusiastic about their subject more positively than physicians. Uşak's response to the matter of whether the training was provided theoretically or applied was "applied" at the highest rate. Likewise, FMWs are of the opinion that

the subject matter was handled in an applied manner.

The duration of the training was found suitable at a rate of 84%. The contribution of the training to personal skills was assessed as higher in Erzincan and Uşak. FMWs assessed the contribution of the training to personal skills higher than physicians. When considered in general, it was observed that the province that completed the training with the most satisfaction was Uşak, followed by Erzincan, with Çankırı last. The fact that the success level of the provinces is also in this order suggests that there is a high correlation between success and satisfaction.

Training Assessment Results and Recommendations

Significant differences were observed between the pre-test and post-test results of the physicians and FMWs attending the training on a provincial basis. Participants who showed similar success in pre-tests showed different increases in success at the provincial level in post-tests. The highest increase in success is observed in Uşak, while Erzincan ranks second and Çankırı third. When we compared the physician group and the FMW group between themselves, it was observed that the participants in both groups achieved the same average levels of success throughout the provinces. Both groups increased pre-test results by an average of 70%.

When the trainings held at different times are compared; while it can be said that for physicians, regardless of the provinces, the success scores obtained in the trainings given at different times have homogeneous variances and non-differential means, FMW training results showed varying levels of success according to which order the training provided was. In FMWs, the 1st group education scores have lower success levels than the 2nd, 3rd, and 4th group training. The success scores of the 2nd group education are lower than the 3rd and 4th. However, the scores of the 4th level training are lower than 3rd levels.

According to post test scores, a small number of participants have been found to score below expectations, which may be due to communications problems, the level of desire for training, and similar reasons. These participants were retrained. However, in general, when the results of the pre-test and post-test are examined, it is observed that the training provided greatly contributes to the level of knowledge of the participants. Follow-up visits were conducted by the National Steering Committee and provincial administrators to observe the contribution of the training on the behaviors of physicians and family health workers.

The results of the training reveal the need for training throughout the country in order to ensure that medical personnel can develop their professional skills on these issues and also reveal the effectiveness of the training. Widespread and continuous implementation of training throughout the country is recommended.

SECTION 5

MIDTERM REVIEW OF FIELD IMPLEMENTATION

The distribution of the patients whose records were examined are presented in Table 58 by province, age and gender. Recommendations for supervision visits have been made electronically in accordance with unit characteristics, family physician's records and surveys aimed at service recipients (Annex-3).

Patient Records

Table 58 Distribution of patients whose BP measurement records were examined by province, age and gender (n)

	Çankırı		Erzincan		Uşak		Provinces Total	
	Male(n)	Female(n)	Male(n)	Female(n)	Male(n)	Female(n)	Male(n)	Female(n)
18-44	0	1	7	4	1	3	8	8
45-65	17	15	1	2	3	0	21	17
65+	12	9	0	0	2	1	14	10
Total	**29**	**25**	**8**	**6**	**6**	**4**	**43**	**35**

BP measurement values of patients and the frequency of their presence in health records were examined and the results are presented in Table 59.

Table 59 Frequency of blood pressure measurement by province (n) (%)

Number and rate of blood pressure values recorded in the system	Çankırı		Erzincan		Uşak		Provinces Total	
	n	%	n	%	n	%	n	%
Recorded at least once	29	54	29	48	10	17	68	39
Recorded at least twice	8	15	5	8	3	5	16	9
Recorded at least three times	1	2	3	5	3	5	7	4

According to the table, 68 out of 174 patients have blood pressure measurement values recorded in the FMIS. Blood pressure was measured and recorded at least once in 68 patients, at least twice in 16 patients, and at least three times in 7 patients. Distribution of HT values of 68 patients by stage of HT stage presented in Table 60.

Table 60 Hypertension stages of individuals whose blood pressure was measured (n)

Blood pressure stage	Çankırı		Erzincan		Uşak		Provinces Total	
	Female (n)	Male (n)	Female (n)	Male (n)	Female (n)	Male (n)	Female (n)	Male (n)
Elevated normal and Stage 1	7	4	5	4	1	3	13	11
Stage 2	1	0	1	1	1	0	3	1
Stage 3	0	1	0	0	1	1	1	2
Blood pressure under control	8	8	8	10	1	2	17	20
Total	**16**	**13**	**14**	**15**	**4**	**6**	**34**	**34**

Among 68 patients, 24 were found to have stage 1 blood pressure, 4 to have stage 2, 3 to have stage 3, and 37 to have blood pressure under control. Concomitant diagnoses in hypertensive patients and their frequency are presented in Table 61.

Table 61 Presence of concomitant diagnoses in hypertensive patients (n) (%)

Concomitant disease	Diagnosis	Çankırı	Erzincan	Uşak	Provinces Total	
		n	n	n	n	%
Diabetes	Yes	29	17	31	77	44
	No	25	43	29	97	56
Coronary Artery Disease	Yes	23	23	30	76	44
	No	31	37	30	98	56
Cerebrovascular disease	Yes	5	7	5	17	10
	No	49	53	55	157	90
Chronic kidney disease	Yes	2	1	1	4	2
	No	52	59	59	170	98

Of 170 patients, 44% (76) were also diagnosed with diabetes, 44% (76) with CAD, 10% (17) with CeVD, and 2% (4) with chronic kidney disease. While diabetes and CAD are more prevalent in Uşak than in the other two provinces, the number of patients diagnosed with CeVD is higher in Erzincan than in the other two provinces. The findings regarding the medications used in hypertensive patients, their regular use, and their distribution by province are presented in Table 62.

Table 62 Medication use in hypertensive patients (n) (%)

		Çankırı		Erzincan		Uşak		Provinces Total	
		n	%	n	%	n	%	n	%
ASA medication use	No prescription for 3 months	5	9	4	7	3	5	12	7
	Regular user	12	22	11	18	18	30	41	24
	No medication prescribed	37	69	45	75	39	65	121	70
Antihypertensive medication use	No prescription for 3 months	3	6	8	13	6	10	17	10
	Regular user	51	94	46	77	51	85	148	85
	No medication prescribed	0	0	6	10	3	5	9	5
Statin medication use	No prescription for 3 months	6	11	1	2	4	7	11	6
	Regular user	10	19	5	8	16	27	31	18
	No medication prescribed	38	70	54	90	40	67	132	76

While 70% of hypertensive patients have never been prescribed ASAs, regular ASA use is observed in 24%. Patients who were previously prescribed ASAs but had not filled a prescription in the last three months constitute 7% of 174 patients. Considering the use of antihypertensives, it was observed that 5% of the patients do not use antihypertensives despite being diagnosed with hypertension, 85% use them regularly, and 10% do not have antihypertensive medication prescriptions filled regularly. It was observed that statin use has a lower regular use rate than ASAs and antihypertensives, and 76% of those diagnosed

with hypertension have never used statins before. On the other hand, differences were observed on a province-by-province basis in the use of ASAs, antihypertensives and statins.

Family Health Centre (FHC) Implementations

Blood pressure measurements of five patients were observed during the midterm review visits made between 22.07.2019 and 26.07.2019. During the observation, the criteria was based on whether adults were screened opportunistically, whether at least one working BP measuring instrument was available, whether patients with a BP value of 140/90 mmHg and above were guided to their family physician, whether the blood pressure treatment algorithm was in a publicly visible location, whether patients diagnosed with elevated BP received health training or not, and whether there was a patient follow-up management system. Data was collected based on the Annex-3 questions when obtaining information from patients. 5 FHCs were visited in each province and FHC evaluation form data were filled in line with recommendations of WHO HEARTS Technical package. The findings are presented in Table 63.

Table 63 Blood pressure management in FMU (n) (%)

		Çankırı		Erzincan		Uşak		Total	
		n	%	n	%	n	%	n	%
Is opportunistic screening carried out on all adults?	Yes	0	0	2	40	3	60	5	33.3
	No	5	100	3	60	2	40	10	66.6
Does the institution have at least one working BP measurement instrument?	Yes	5	100	5	100	5	100	15	100
	No	0	0	0	0	0	0	0	0
Are all patients with BP ≥140/90 referred to a family physician for treatment?	Yes	5	100	5	100	5	100	15	100
	No	0	0	0	0	0	0	0	0
Is the HT treatment algorithm displayed on the wall/placed on the table?	Yes	4	80	3	60	3	60	10	66.6
	No	1	20	2	40	2	40	5	33.3
Have members of staff been designated to provide counsel to patients?	Yes	2	40	0	0	5	100	7	46.6
	No	3	60	5	100	0	0	8	53.3
Are there patient counseling tools/materials available?	Yes	5	100	5	100	5	100	15	100
	No	0	0	0	0	0	0	0	0
Is there a system in place to provide individual or group counseling to patients?	Yes	1	20	3	60	4	80	8	53.3
	No	4	80	2	40	1	20	7	46.6
Is there a system in place to follow up on patients who abandon initial therapy?	Yes	0	0	0	0	1	20	1	20
	No	5	100	5	100	4	80	14	93.3

Accordingly, there is at least one working blood pressure monitor present in FMU in all provinces. Patients determined to have elevated blood pressure are deferred to their family physician. The availability of the HT treatment algorithm in a visible place and the frequency of opportunistic screening for adults differs by province.

Patient records and reporting system

Family medicine system has been established based on an electronic record system and there is no physical patient card application in the FMU. Findings related to HT patient frequency and blood pressure control rate reporting are presented in Table 64.

Table 64 Recording and reporting of HT cases (n) (%)

		Çankırı		Erzincan		Uşak		Total	
		n	%	n	%	n	%	n	%
Does the responsible clinic know the percentage of patients with BP<140/90 registered with the institution?	Yes	2	40	1	20	0	0	3	20
	No	3	60	4	80	5	100	12	80
Has the 6-month BP control rate for the last quarter been reported correctly?	Yes	0	0	0	0	0	0	0	0
	No	5	100	5	100	5	100	15	100

Patient interviews on service provision

Feedback on service provision was obtained by interviewing 75 randomly selected patients diagnosed with HT. The questions asked and responses received from patients in the face-to-face interviews are presented in Table 65.

In interviews with patients, observations regarding the intervention were carried out, and it was determined that 93% of the patients had their blood pressure measured correctly by the FMW. Of the patients, it was determined that 45% of the patients had their blood pressure measured at each visit, 93% took their prescribed medication, 19% paid for their prescriptions out of pocket, 93% (70) understood their prescriptions correctly, 75% had knowledge of their blood pressure measurements, and 68% had knowledge of the reference range values of blood pressure measurements.

Table 65 Findings regarding patient interviews (n) (%)

		Çankırı		Erzincan		Uşak		Total	
		n	%	n	%	n	%	n	%
How many patients had their blood pressure measured accurately?	Yes	23	92	22	88	25	100	**70**	**93**
	No	2	4	3	12	0	0	**5**	**7**
Was BP measured at each visit?	Yes	12	48	5	20	17	68	**34**	**45**
	No	13	52	20	80	8	32	**41**	**55**
Has the patient taken all prescribed medication when visiting today?	Yes	24	96	21	84	25	100	**70**	**93**
	No	1	4	4	16	0	0	**5**	**7**
Has the patient ever paid out-of-pocket for medication in the past?	Yes	4	16	9	36	1	4	**14**	**19**
	No	21	84	16	64	24	96	**61**	**81**
Did the patient understand their prescribed medications correctly?	Yes	24	96	24	96	22	88	**70**	**93**
	No	1	4	1	4	3	12	**5**	**7**
Is the patient aware of their measured BP value at their visit?	Yes	17	68	18	72	21	84	**56**	**75**
	No	8	32	7	28	4	16	**19**	**25**
Is the patient aware of their targeted blood pressure value?	Yes	19	76	16	64	16	64	**51**	**68**
	No	6	24	9	36	9	36	**24**	**32**

Images from field visits


Göç Kalma Sağlıklı Kal
TANSİYON TAKİP KARTI
YÜKSEK TANSİYON NEDİR?
VİRAL HEPATİTLER
HEPATİT B
YÜKSEK TANSİYON NEDİR?
HEPATİT A HEPATİT E
Bilgilenin, Korunun!
HEPATİT A HEPATİT E
HEPATİT C

SECTION 6

FINAL ASSESSMENT FINDINGS

Between February and March 2020, a final assessment was carried out in order to determine the routine care offered following the intervention in the project provinces, to determine the change in blood pressure control compared to the baseline value, and to determine the effect of the project intervention model.

97% (947) of the sample group included in the study were reached. 60% (565) of hypertensive patients were female, 40% (382) were male; 7% (70) were in the 18-44 age group, 37% (349) were in the 45-64 age group, and 56% (528) were over 65 years old.

HT Prevalence in Health Records and Application to Healthcare Institutions

The prevalence of HT in project provinces and throughout Turkey was examined for the month of June 2019 using Ministry of Health records. In June 2019, the prevalence of HT was 23% in Erzincan, 25.5% in Çankırı, and 26% in Uşak and throughout Turkey (Figure 18).

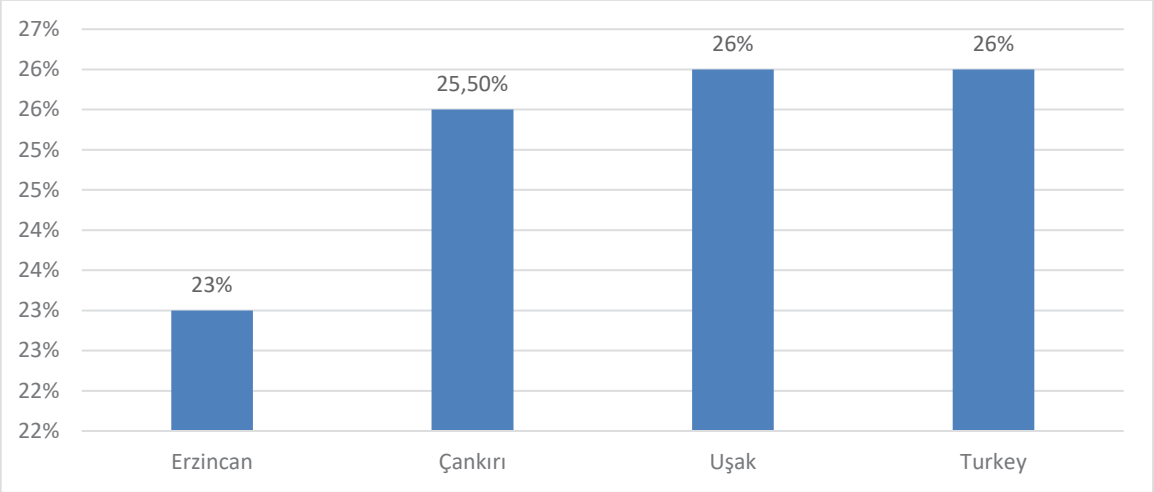


Figure 18 HT Prevalence, June 2019

From the records of the Ministry of Health, the number of people with a diagnosis of HT (I10-I15) throughout Turkey who have presented to any healthcare institution between January 2018 and June 2019 was analyzed. It has been observed that while hypertensive individuals between the ages of 18-44 in Turkey visited healthcare institutions due to HT 0.1 times in this period, hypertensive individuals over the age of 65 visited a healthcare institution due to HT an average of 3.5 times per year (Figure 19).

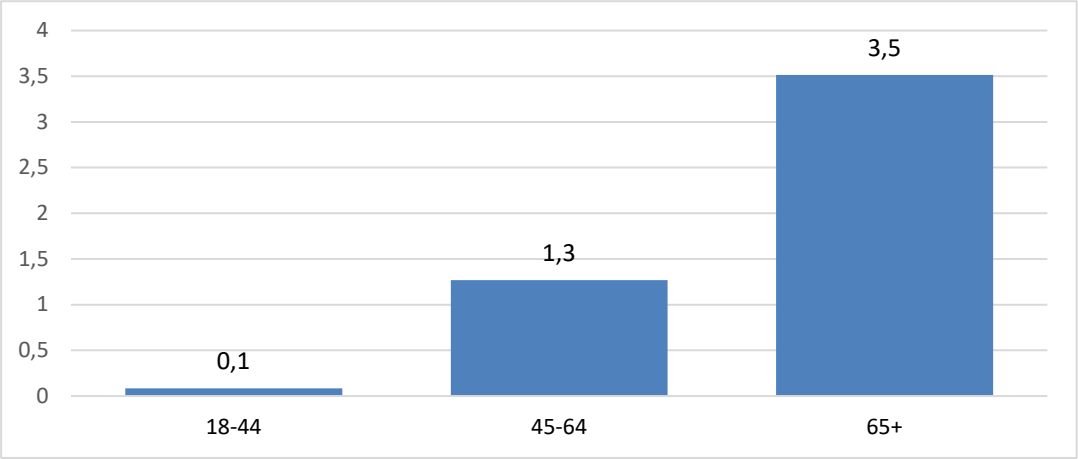


Figure 19 Average number of visits made to healthcare institutions with the diagnosis of hypertension by hypertensive individuals in Turkey (n)

Assessment of Risk Factors

Tobacco use

In determining the prevalence of tobacco use, a sample group of individuals aged 18 and older diagnosed with HT was examined to see whether data on the state of tobacco use was present in the FMIS for 2018.

In all provinces, the ratio of those who are recorded as *tobacco users* and *non-users* is 22% (212). Data availability in the FMIS on tobacco use is 19% (59) in Çankırı, 38% (120) in Erzincan, and 10% (33) in Uşak. (Table 66).

Table 66 Tobacco use (n) (%)

Tobacco use	Çankırı		Erzincan		Uşak		Provinces total	
	n	%	n	%	n	%	n	%
No information on tobacco use was recorded.	248	81	195	62	292	90	735	78
Consumes tobacco	9	3	17	5	13	4	39	4
Does not consume tobacco	50	16	103	33	20	6	173	18
Total	**307**	**100**	**315**	**100**	**325**	**100**	**947**	**100**

Blood pressure

According to the data obtained in the final assessment survey, BP record rates and HT stage findings by province are presented in Table 67. When the availability of BP data was considered on a province-by-province basis, it was found to be 42% (132) in Erzincan, 41% (132) in Uşak, and 19% (59) in Çankırı.

Table 67 Distribution of hypertensive individuals with recorded blood pressure values by province (n) (%)

	Çankırı		Erzincan		Uşak		Provinces total	
	n	%	n	%	n	%	n	%
Number of individuals with measured blood pressure	59	19	132	42	132	41	323	34
Total number of individuals	**307**	**100**	**315**	**100**	**325**	**100**	**947**	**100**

In a sample of patients aged 18 and older who were diagnosed with HT selected through the FMIS, whether BP measurement values were recorded in the system or not in 4 periods between the dates of 24.02.2019 and 23.02.2020 was controlled. The period between November 2019 to 23 February 2020 has been identified as the *first period,* August, September, October 2019 as the *second period*, May, June, July 2019 as *third period*, and the period of February, March, April 2019 as the *fourth period.* The frequency of measurement of BP values of 947 patients between 24.02.2019 and 23.02.2020 was examined and the distribution of the findings by province and frequency is presented in Table 68.

Table 68 Number of measurements in four periods during the project field application (n) (%)

Number of blood pressure measurements	Çankırı		Erzincan		Uşak		Provinces total	
	n	%	n	%	n	%	n	%
Never measured	248	81	183	58	193	59	624	66
Measured once	50	16	94	30	83	26	227	24
Measured twice	8	3	33	10	35	11	76	8
Measured 3 times	1	0	5	2	9	3	15	2
Measured 4 times	-	-	-	-	5	2	5	1
Total	**307**	**100**	**315**	**100**	**325**	**100**	**947**	**100**

Between the dates of 24.02.2019-23.02.2020, the blood pressure of 66% of the study group has been measured or has not been recorded.

Table 69 Hypertension stages of individuals whose blood pressure was measured (n) (%)

Stage	Çankırı		Erzincan		Uşak		Provinces total	
	n	%	n	%	n	%	n	%
Elevated normal and Stage 1	25	42	34	26	35	27	94	29
Stage 2	3	5	15	1	10	8	28	9
Stage 3	5	8	4	3	6	5	15	5
Blood pressure under control	26	44	79	60	81	61	186	58
Number of individuals with measured blood pressure	**59**	**19**	**132**	**42**	**132**	**41**	**323**	**34**

When the hypertensive patients with recorded BP data were considered in terms of HT stage, the blood pressure level of 58% (186) was determined to be under control, while 29% (94) were within elevated normal levels, 9% (28) were second stage, and 5% (15) were third stage.

When the rates of BP being under control are considered on a province-by-province basis; it was determined to be 44% (26) in Çankırı, 60% (79) in Erzincan, and 61% (81) in Uşak. Hypertensive patients with BP measurements categorized as elevated normal constitute 42% (25) of the sample in Çankırı, 26% (34) in Erzincan, and 27% (35) in Uşak (Table 69).

Body mass index

When the data regarding patient BMI measurement variable was analyzed, 23% (218) of the sample were found to have recorded BMI data in the FMIS. The rate of individuals whose BMI was measured was determined to be 43% (141) in Uşak, higher than Erzincan (21%) and Çankırı (4%).

Table 70 Distribution of hypertensive individuals with recorded BMI values by province (n) (%)

	Çankırı		Erzincan		Uşak		Provinces total	
	n	%	n	%	n	%	n	%
Number of individuals with measured BMI value	11	4	66	21	141	43	218	23
Total number of individuals	**307**	**100**	**315**	**100**	**325**	**100**	**947**	**100**

Distribution of body mass index values by provinces is presented in Table 71. Accordingly, it was observed that the group with the highest density in terms of BMI values consists of those with a value between 25-29.9 at 44% (97). This group was followed by those with a BMI of 30 and above at a rate of 41% (90).

Table 71 Distribution of body mass index values by provinces (n) (%)

BMI Classification	kg/m2	Çankırı		Erzincan		Uşak		Provinces total	
		n	%	n	%	n	%	n	%
Underweight	**<18.5**	**0**	**0**	**0**	**0**	**2**	**1**	**2**	**1**
Normal	**18.5-24.9**	**0**	**0**	**11**	**17**	**18**	**1**	**29**	**13**
Overweight	**25-29.9**	**7**	**64**	**24**	**36**	**66**	**47**	**97**	**44**
Obese	**≥30**	**4**	**36**	**31**	**47**	**55**	**39**	**90**	**41**
• Stage 1	30-34.9	4	36	19	29	36	26	59	27
• Stage 2	35-39.9	0	0	10	15	14	10	24	11
• Stage 3 (Morbid)	≥40	0	0	2	3	5	4	7	3
Number of individuals with measured BMI value		**11**	**100**	**66**	**100**	**141**	**100**	**218**	**100**

When the BMI measurements were examined based on age groups, it is seen that the highest number of measurements were carried out for hypertensive patients aged 65 and over (Figure 20). In the sample, it was determined that 23% of individuals aged 65 and over have had their BMI measured at least once in the last year.

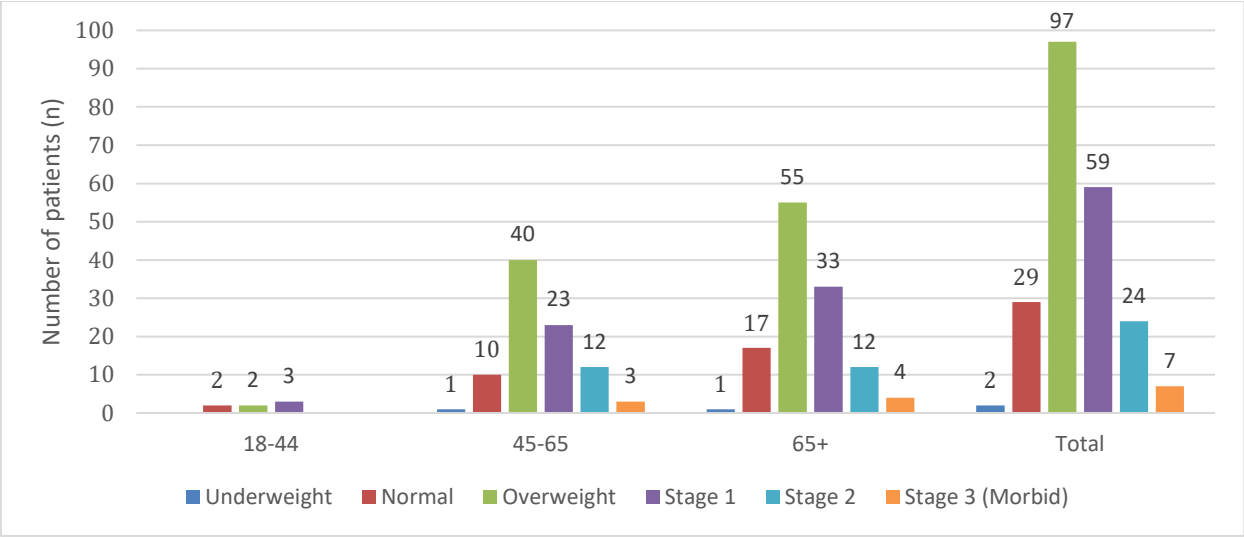


Figure 20 Distribution of BMI values of hypertensive individuals by age (n)

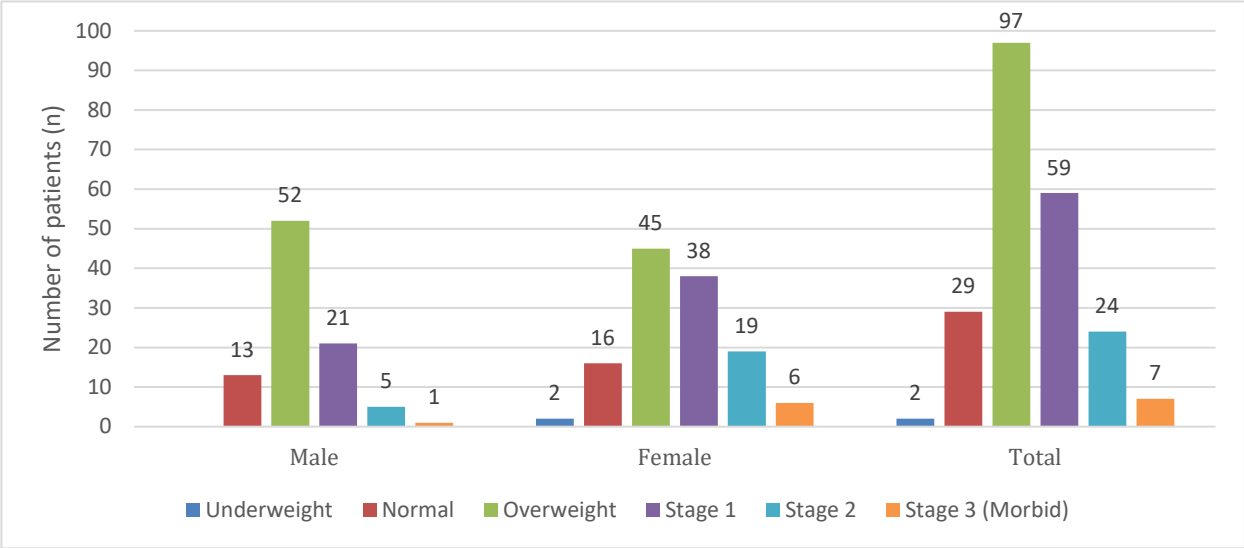


Figure 21 Distribution of BMI values of hypertensive individuals by gender (n)

Cholesterol

In a sample of patients aged 18 and older who were diagnosed with HT selected through the FMIS, the rate of individuals with cholesterol values measured at least once in the last two years was found to be 69% (655) (Table 72).

Table 72 Distribution of hypertensive individuals with recorded cholesterol values by province (n) (%)

	Çankırı		Erzincan		Uşak		Provinces total	
	n	%	n	%	n	%	n	%
Number of individuals with measured cholesterol value	229	75	190	60	236	73	655	69
Total number of individuals	**307**	**100**	**315**	**100**	**325**	**100**	**947**	**100**

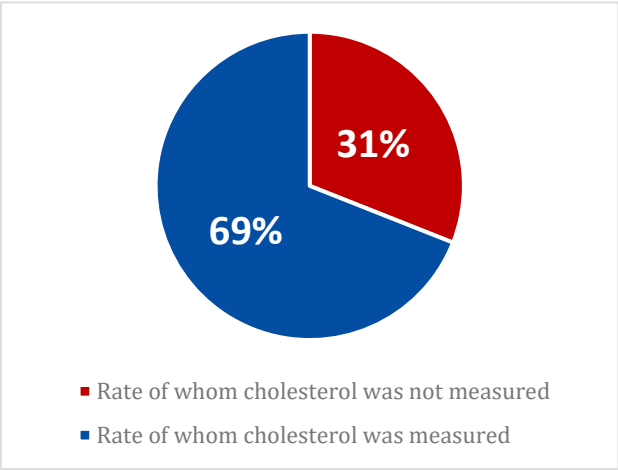


Figure 22 Cholesterol measurement rate of patients (%)

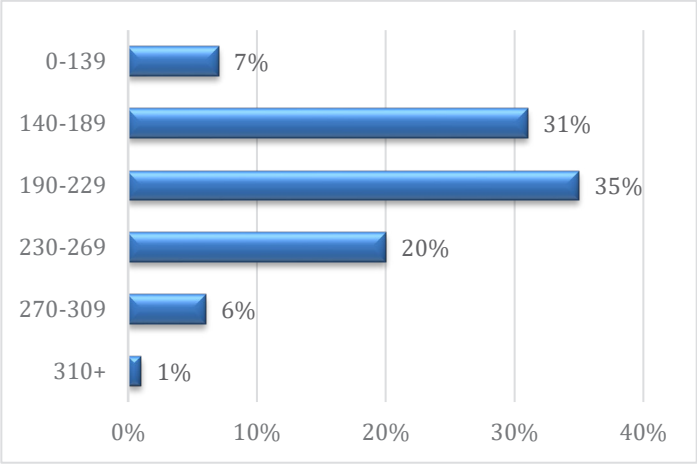


Figure 23 Cholesterol measurement rate of hypertensive individuals with measured cholesterol (%)

The distribution of those selected for sampling who have had their cholesterol measured at least once in the last year, by provinces and SCORE-Turkey intervals has been shown in Table 73. In hypertensive patients (962), the maximum clustering was found to be 35% (229) in those with a cholesterol value in the range of 190-229. Among hypertensive patients, the rate of individuals with a cholesterol value of 139 and below was determined to be 7% (44).

Table 73 Distribution of cholesterol values in hypertensive individuals by provinces (n) (%)

Cholesterol Value (mg/dl)	Çankırı		Erzincan		Uşak		Provinces total	
	n	%	n	%	n	%	n	%
0-139	13	6	16	8	15	6	**44**	**7**
140-189	73	32	51	27	82	35	**206**	**31**
190-229	78	34	67	35	84	36	**229**	**35**
230-269	44	19	45	24	39	17	**128**	**20**
270-309	17	7	9	5	16	7	**42**	**6**
310+	4	2	2	1	0	0	**6**	**1**
<190	86	38	67	35	97	41	**250**	**38**
≥ 190	143	62	123	65	139	59	**405**	**62**
Number of individuals with measured cholesterol value	**229**	**100**	**190**	**100**	**236**	**100**	**655**	**100**

Creatinine

The ratio of individuals included in the sample whose creatinine value was measured at least once in the last year and recorded in the FMIS system in the total sample was determined to be 79% (748) Among tests carried out within the scope of the assessment, it was observed that the individuals selected as sample had creatinine tests carried out at the highest rate (Table 74).

Table 74 Distribution of hypertensive individuals with recorded creatinine values by province (n) (%)

	Çankırı		Erzincan		Uşak		Provinces total	
	n	%	n	%	n	%	n	%
Number of individuals with measured creatinine value	256	83	257	82	235	72	748	79
Total number of individuals	**307**	**100**	**315**	**100**	**325**	**100**	**947**	**100**

Kidney disease classification of hypertensive individuals according to estimated GFR (e-GFR) results calculated by referencing creatinine measurement values are shown in Table 75. The e-GFR result of 748 of 947 hypertensive individuals was found in information systems. While creatinine measurement rates were determined to be similar in Çankırı and Erzincan, the rate was determined to be lower in Uşak.

Table 75 Distribution of degree of kidney failure (e-GFR) in hypertensive individuals by provinces (n) (%)

Kidney disease degree	Çankırı		Erzincan		Uşak		Provinces in total	
	n	%	n	%	n	%	n	%
Normal	168	66	187	73	157	67	512	68
Mild disorder	78	30	62	24	71	30	211	28
Serious disorder	10	4	8	3	7	3	25	3
Number of individuals with measured creatinine value	**256**	**100**	**257**	**100**	**235**	**100**	**748**	**100**

Proteinuria

In a sample of patients aged 18 and older who were diagnosed with HT selected through the FMIS, the rate of individuals with proteinuria values measured and recorded at least once in the last one year constitutes 40% (377) of the study group (Table 76).

Table 76 Distribution of hypertensive individuals with recorded proteinuria values by province (n) (%)

	Çankırı		Erzincan		Uşak		Provinces in total	
	n	%	n	%	n	%	n	%
Number of individuals with measured proteinuria value	126	41	143	45	108	33	377	40
Total number of individuals	**307**	**100**	**315**	**100**	**325**	**100**	**947**	**100**

Table 77 Distribution of proteinuria values of hypertensive individuals by province (n) (%)

Proteinuria	Çankırı		Erzincan		Uşak		Provinces in total	
	n	%	n	%	n	%	n	%
Negative/trace	110	87	126	88	86	80	322	85
Positive (1+,2+,3+)	16	1	17	12	22	20	55	15
Number of individuals with measured proteinuria value	**126**	**100**	**143**	**100**	**108**	**100**	**377**	**100**

According to the results presented in Table 77, 85% (322) of 377 patients had no protein in their urine, while 15% (55) had varying levels of protein in their urine. In addition, when considering urine protein measurement numbers by gender; it was determined to be 41% (230) in females and 38% (147) in males. The level of positivity was determined to be lower in females than males, at 13% (30) in females and 17% (25) in males (Figure 24).

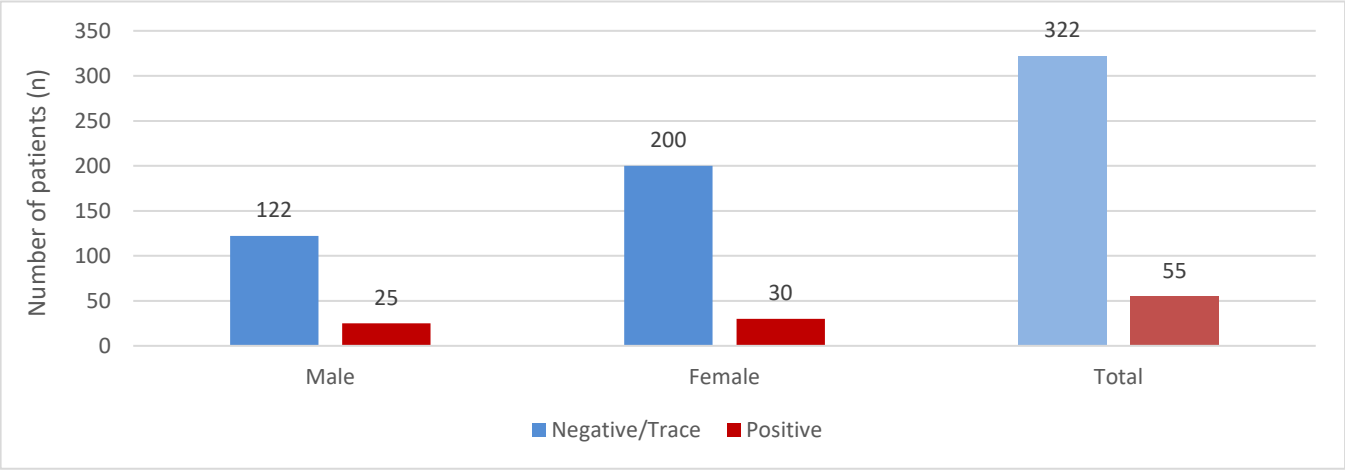


Figure 24 Distribution of proteinuria values of hypertensive individuals by gender (n)

Fasting blood glucose

The ratio of individuals whose FBG was measured at least once in the last year and recorded in the FMIS system was determined to be 78% (742).

Table 78 Distribution of hypertensive individuals with recorded FBG values by province (n) (%)

	Çankırı		Erzincan		Uşak		Provinces total	
	n	%	n	%	n	%	n	%
Number of Individuals of whom Blood Glucose measured	252	82	249	79	241	74	742	78
Total number of individuals	**307**	**100**	**315**	**100**	**325**	**100**	**947**	**100**

Table 79 Distribution of FBG values in hypertensive individuals by provinces (n) (%)

Diabetes diagnosis	Çankırı		Erzincan		Uşak		Provinces total	
	n	%	n	%	n	%	n	%
Normal	89	35	99	40	101	42	289	39
Prediabetic	83	33	75	30	77	32	235	32
Overt diabetes	80	32	75	30	63	26	218	29
Number of Individuals of whom Blood Glucose measured	**252**	**100**	**249**	**100**	**241**	**100**	**742**	**100**

In the sample, 29% (218) of people with a FBG value recorded in the system for the last year can be classified as having overt diabetes, 32% (235) as having prediabetes, and 39% (218) as normal (Table 79). FBG measurement numbers and measured values differ by gender and age.

82% (463) of females selected in the sample and 73% (279) of males had blood sugar measurements carried out. While 41% (114) of the males whose blood glucose was measured were found to be normal levels, 28% (77) were found to be at prediabetic levels and 32% (88) diabetic levels. In contrast, the distribution of these rates was different in females than in males. 38% (175) of females whose blood glucose was measured were found to be normal, while 34% (158) had prediabetic and 28% (130) had diabetic levels (Figure 25).

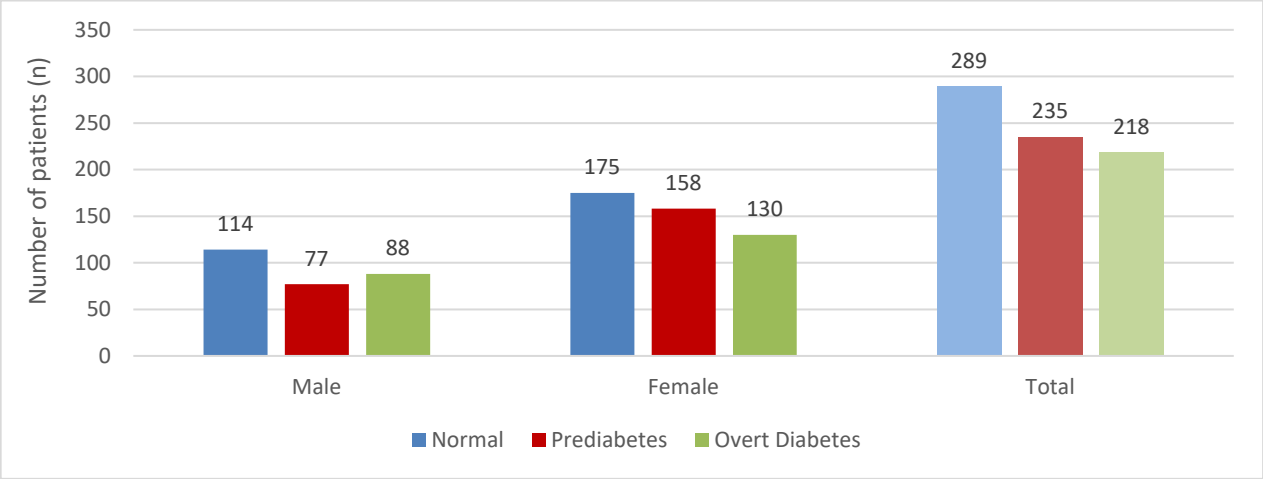


Figure 25 Distribution of FBG values of hypertensive individuals by gender (n)

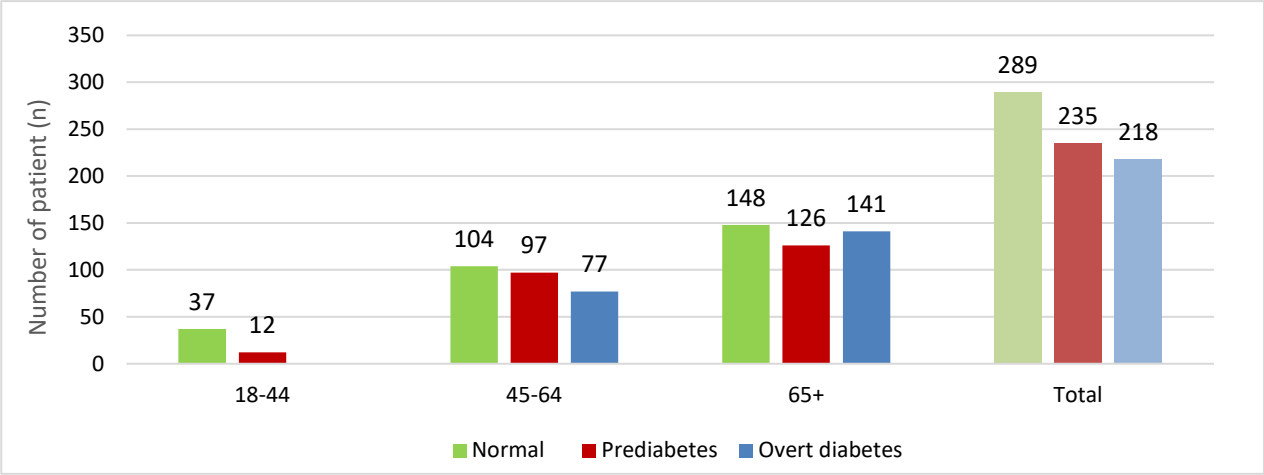


Figure 26 Distribution of FBG values in hypertensive individuals by age (n)

In Figure 26, the distribution of FBG values of hypertensive individuals by age is presented. When the sample was analyzed according to the classification based on age groups, it was determined that 28% (77) of the 45-64 age group and 34% (141) of those over 65 years of age were diabetic.

HbA1c

In a sample of patients aged 18 and older who were diagnosed with HT selected through the FMIS, the rate of individuals with HbA1c values measured and recorded at least once in the last one year was found to be 38% (357).

Table 80 Distribution of hypertensive individuals with recorded HbA1c values by province (n) (%)

	Çankırı		Erzincan		Uşak		Provinces total	
	n	%	n	%	n	%	n	%
Number of individuals with measured HbA1c value	133	43	115	37	109	34	357	38
Total number of individuals	**307**	**100**	**315**	**100**	**325**	**100**	**947**	**100**

Of 357 patients with HbA1c measurements, 22% (78) were determined to have normal HbA1c levels, 36% (129) were prediabetic, and 42% (150) were diabetic. In addition, when the distribution of HbA1c levels by provinces was analyzed, it was observed that the rate of diabetics among individuals whose HbA1c was measured is higher in Uşak (45%) compared to Çankırı (41%) and Erzincan (40%). However, the rate of those with normal HbA1c level differs in all three provinces and is relatively lower in Erzincan, and relatively higher in Çankırı (Table 81).

Table 81 Distribution of HbA1c values in hypertensive individuals by provinces (n) (%)

Diabetes diagnosis	Çankırı		Erzincan		Uşak		Provinces total	
	n	%	n	%	n	%	n	%
Normal	36	27	21	18	21	19	78	22
Prediabetic	42	32	48	42	39	36	129	36
Overt diabetes	55	41	46	40	49	45	150	42
Number of individuals with measured HbA1c value	**133**	**100**	**115**	**100**	**109**	**100**	**357**	**100**

Distribution of HbA1c values of hypertensive individuals by gender is presented in Figure 27. It was observed that 24% (29) of male individuals whose HbA1c values were measured were normal, 35% (43) had prediabetes, and 41% (51) had overt diabetes. It was observed that 21% (49) of female individuals had HbA1c values in the normal range, 37% (86) had prediabetes, and 42% (99) had overt diabetes.

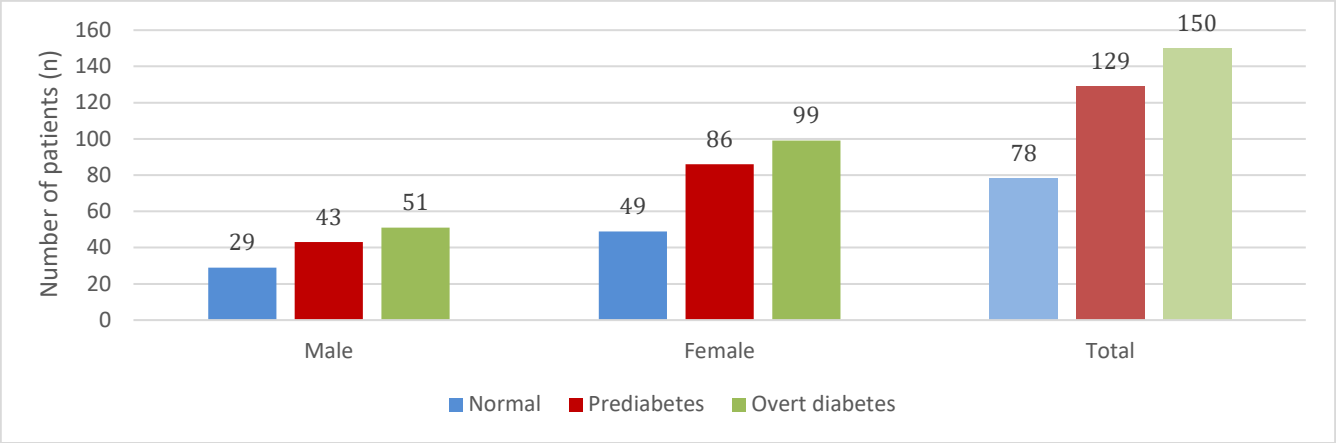


Figure 27 Distribution of HbA1c values of hypertensive individuals by gender (n)

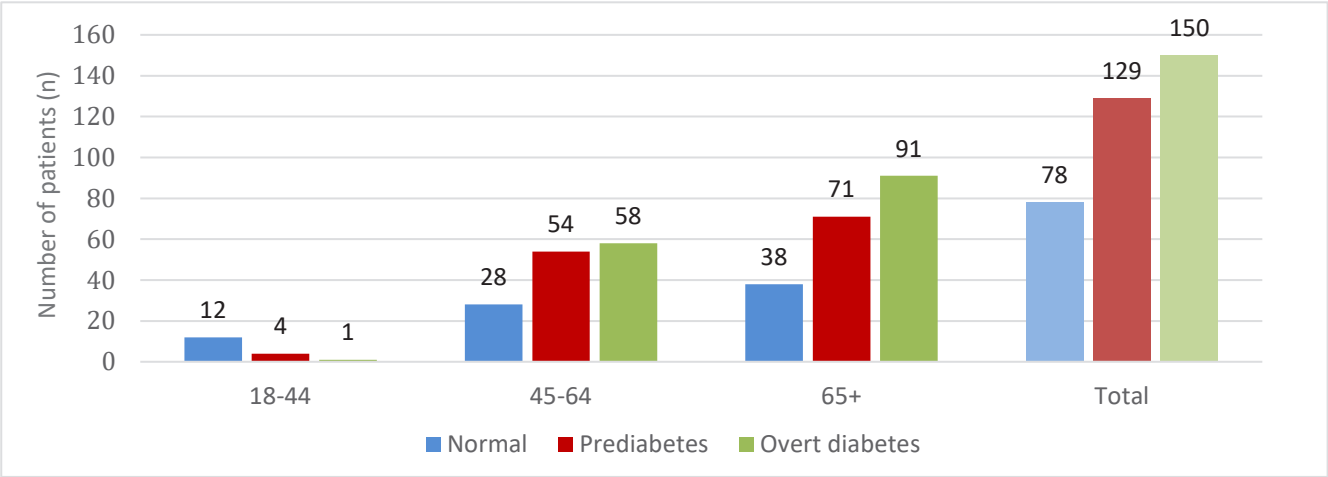


Figure 28 Distribution of HbA1c values of hypertensive individuals by age (n)

The distribution of HbA1c values of the individuals in the study group by age is presented in Figure 28. Based on age groups, it was observed that the group with the highest number of diabetics was the group over the age of 65 at 46% (91), followed by the 45-64 age group with 41% (58).

Cardiovascular risk assessment

Whether the sample group consisting of individuals aged 18 and over diagnosed with HT had cardiovascular risk assessment measurement data for the study period in FMIS was examined, and the cardiovascular risk assessment measurement data of 18% (170) of the study group was accessed.

Table 82 Number of cardiovascular risk assessments by gender (n) (%)

Risk score		Male		Female		Both genders	
		n	%	n	%	n	%
≥ 15%	Very high risk	10	16	4	4	14	8
10-14%		11	18	22	20	33	19
5-9%	High risk	10	16	24	22	34	20
3-4%	Medium risk	7	11	8	7	15	9
2%		2	3	17	16	19	11
1%		2	3	9	8	11	6
<1%	Low risk	19	31	25	23	44	26
Total		**61**	**100**	**109**	**100**	**170**	**100**

Of the 170 risk assessments carried out, 28% (47) were determined to be in the very high risk, 20% (34) in the high risk, 26% (45) in the medium risk, and 44 (26%) in the low-risk group (Table 82). When the number of cardiovascular risk assessments by provinces was examined, it was observed that 59% (101) of the risk assessments were performed in Uşak and 41% (69) in Erzincan, but no cardiovascular risk assessments were carried out in Çankırı (Table 83).

Table 83 Number of cardiovascular risk assessments by province (n) (%)

Risk score		Çankırı (n)	Erzincan (n)	Uşak (n)	Provinces total (n)
≥15%	Very high risk	-	4	10	14
10-14%		-	15	18	33
5-9%	High risk	-	17	17	34
3-4%	Medium risk	-	7	8	15
2%		-	6	13	19
1%		-	4	7	11
<1%	Low risk	-	16	28	44
Total (n)		**-**	**69**	**101**	**170**
Percentage distribution (%)		**-**	**41**	**59**	**100**

Lifestyle change suggestions

In the FMIS, the health records of the study group were examined to determine if there was any record of counselling recommendations for healthy diet, physical activity, tobacco and alcohol use, and it was observed that lifestyle change recommendations were made for 23% (218) of the hypertensive patients. (Table 84).

Table 84 Distribution of lifestyle change recommendations by provinces (n)

Recommendation Type	Çankırı (n)	Erzincan (n)	Uşak (n)	Provinces total (n)
Healthy eating	8	63	134	205
Physical activity	1	63	49	113
Quitting tobacco	14	64	135	213
Quitting alcohol	1	52	3	56
Total number of recommendations*	**24**	**242**	**321**	**587**
Number of individuals	14	67	137	218

*More than one recommendation was given to each individual.

Cumulative Assessment of Risk Factors by Gender

Gender distribution of health data on dependent and independent variables of hypertensive patients is presented in Table 85.

Table 85 Risk factors by gender in hypertensive individuals (n) (%)

Risk factors	Male		Female		Both genders	
	n	%(1)	n	%(1)	n	%(2)
SBP ≥140 mmHg	40	10	80	14	**120**	**13**
DBP ≥90 mmHg	30	8	52	9	**82**	**9**
Fasting blood glucose >100	160	42	267	47	**427**	**45**
HbA1c ≥ 5.7	94	25	185	33	**279**	**29**
Cholesterol ≥ 5 mmol/L (3)	117	31	159	28	**276**	**29**
25≤ BMI <40	78	20	102	18	**180**	**19**
BMI ≥40	2	1	7	1	**9**	**1**
Number of individuals in the sample	**382**	**100**	**565**	**100**	**947**	**100**

(1) Same gender group ratio
(2) Ratio among all individuals
(3) In order to convert cholesterol values, which are given in mg/dL, to mmol/l, the values were multiplied by a coefficient of 0.02586.

Of the hypertensive individuals included in the study, 10% of males (40) and 14% of females (80) had SBP of 140 mmHg or higher. It was observed that 8% of males (30) and 9% (52) of females had DBP of 90 mmHg or above. Considering the FBG values; 42% of males (160) and 47% of females (267) have FBG above 100. It was observed that 25% (94) of males and 33% (185) of females had an HbA1c level of 5.7 or above. Similarly, 31% (117) of males and 28% (159) of females have cholesterol levels above the reference value. In addition, 1% of males (7) and males (2) are morbidly obese.

Assessment of Presence of Diagnoses and Date of Initial Diagnosis

In the survey conducted in the project provinces, information regarding the following diagnoses was queried in the existing records of 947 randomly selected individuals on FMIS:

- Diabetes
- CVD
- CeVD
- CKD

The history of HT diagnosis was investigated in the data of patients, all of whom were known to be hypertensive. For each disease, first, the rate of records for the four disease diagnoses, followed by the distribution by provinces, gender and age group, and the dates of initial diagnosis were examined.

Hypertension

In a sample of patients aged 18 and older who were diagnosed with HT selected through the FMIS, the dates of initial HT diagnosis were examined. In the final assessment, it was seen that all 947 people included in the sample had an initial diagnosis date available. The availability of the initial diagnosis date is 100%.

In June 2019, the health care institutions diagnosing HT throughout Turkey and in the project provinces were selected from the records of the Ministry of Health, and the distribution by healthcare

service level is presented in Figure 29. The rate of diagnosis of HT in primary care facilities in Uşak was determined to be higher than in the other two provinces, and the lowest in Erzincan. It was observed that the rate of diagnosis of HT in primary care facilities in all the project provinces is higher than that of Turkey in general.

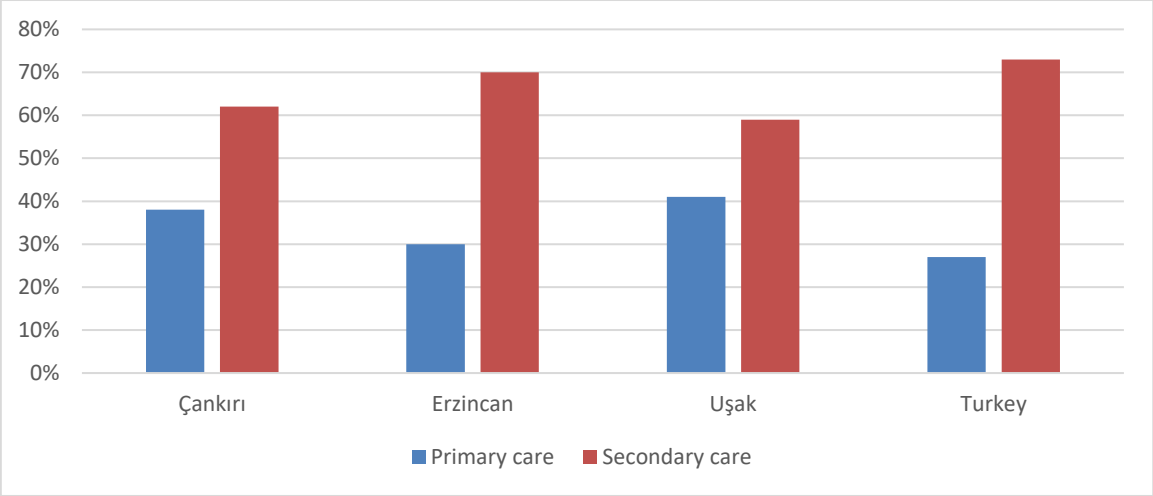


Figure 29 Distribution of the place of hypertension diagnosis in Turkey and the project provinces by stage of healthcare service, (%) (2019 June)

Diabetes

In a sample consisting of patients aged 18 years and older who were selected through FMIS and diagnosed with HT, whether the individuals were diagnosed with diabetes in addition to the diagnosis of HT was examined. Of the HT patients 39% (370) also had an additional diagnosis of diabetes. The distribution of patients with diabetes diagnosis by province is presented in Table 86.

Table 86 Distribution of diabetes diagnosis in hypertensive individuals by provinces (n) (%)

Presence of diabetes	Çankırı		Erzincan		Uşak		Provinces total	
	n	%	n	%	n	%	n	%
Present	130	42	106	34	134	41	370	39
Not Present	177	58	209	66	191	59	577	61
Total	**307**	**100**	**315**	**100**	**325**	**100**	**947**	**100**

Accordingly, the rates of those diagnosed with diabetes in addition to HT, by province are 42% (130) in Çankırı, 34% (106) in Erzincan and 41% (134) in Uşak. The number of patients diagnosed with HT but not diagnosed with diabetes constitutes 61% (577) of the total hypertensive patients. The distribution of 370 patients diagnosed with diabetes in addition to HT by gender and age is presented in Table 87.

Table 87 Distribution of individuals diagnosed with diabetes accompanying HT by age and gender (n) (%)

Age groups	Male		Female		Both genders	
	n	%	n	%	n	%
18-44	5	1	3	1	8	2
45-64	44	12	94	25	138	37
65+	80	22	144	39	224	61
Total	**129**	**35**	**241**	**65**	**370**	**100**

Accordingly, 35% (129) of 370 patients diagnosed with diabetes in addition to HT were male and 65% (241) were female. 2% (8) of these patients were between the ages of 18-44, and 61% (224) over 65 years old. The prevalence of diabetes in hypertensive individuals included in the study is 34% (129) in males and 43% in females (241). The incidence of diabetes by age groups is 11% (8) for the 18-44 age group, 40% (138) for the 44-65 age group, and 42% for the over 65 age group (224).

In addition, it was examined whether the diagnosis of diabetes was made in hypertensive individuals who should have been diagnosed with diabetes according to the laboratory test results available in the FMIS data. HbA1c and fasting blood glucose values and the presence of existing diabetes diagnosis in hypertensive patients was investigated. Relevant data is presented in Table 88.

Table 88 Distribution of diabetes diagnosis in hypertensive individuals who should be diagnosed with diabetes according to HbA1c (n) (%)

HbA1c result	Diabetes diagnosis present		No diabetes diagnosis present		Total	
	n	%	n	%	n	%
Overt diabetes	159	17	11	1	**170**	**39**
Prediabetic	85	9*	74	8	**159**	**37**
Normal	32	3*	70	7	**102**	**24**
Total	**276**	**29**	**155**	**16**	**431**	**100**

** Among those diagnosed with diabetes, individuals with blood glucose levels between 100-125 mg/dl represent the under-control group. In order to compare the overlap of measurements and diagnoses, it is presented in a single table.*

It was determined that 46% of the selected hypertensive individuals in the sample also had diabetes. 29% of these patients had HbA1c measured in the last year and it was observed that 17% of them had diabetes that was not under control. Across the sample, 1% of people who tested HbA1c without a diagnosis of diabetes had overt diabetes, while 8% of the test results indicated that these people were prediabetic (Figure 30).

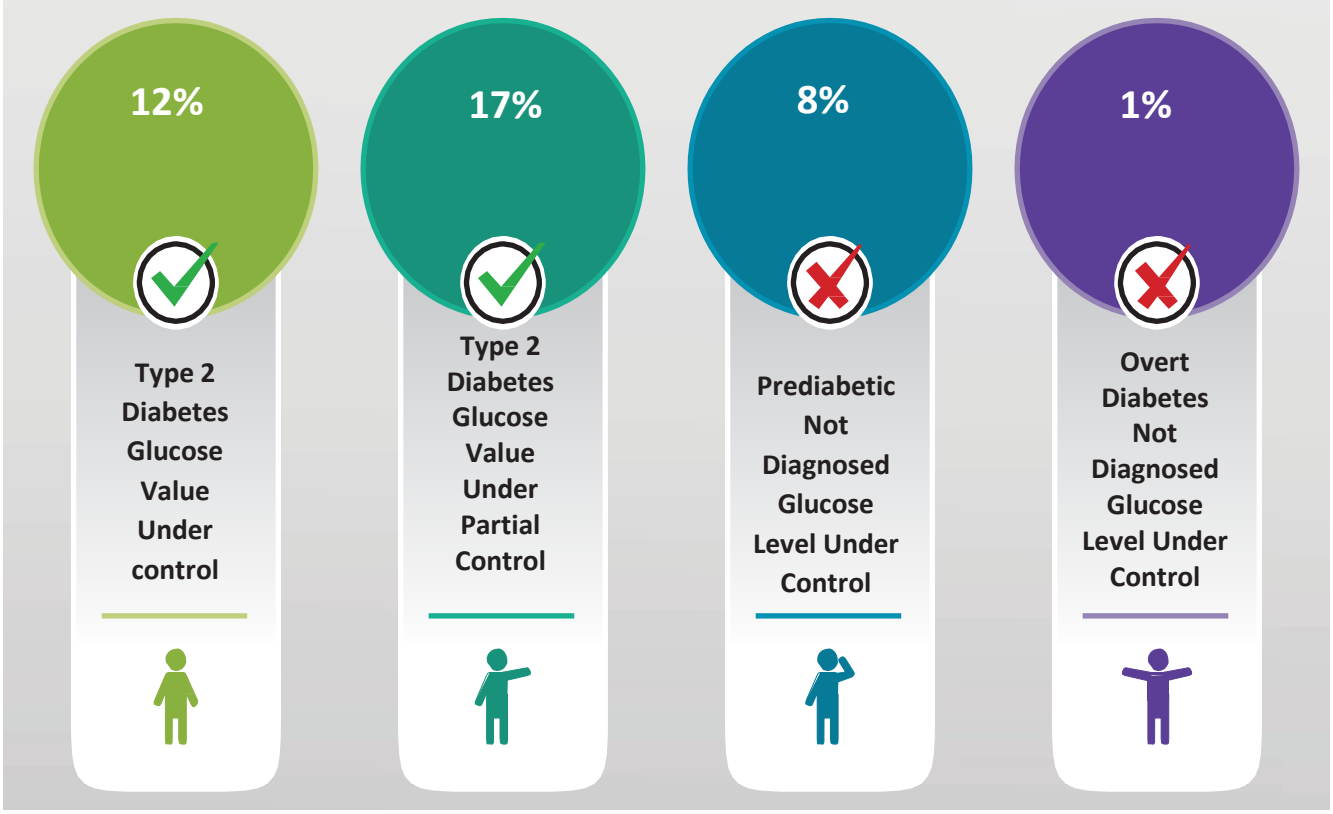


Figure 30 Diabetes status of the patients (%)

Coronary Artery Disease

In a sample consisting of patients aged 18 years and older who were selected through FMIS and diagnosed with HT, whether the individuals were diagnosed with CAD in addition to the diagnosis of HT was examined. Of the HT patients, 45% (429) also had an additional diagnosis of CAD. The distribution of cases of hypertensive patients diagnosed or not diagnosed with CAD by province is presented in Table 89.

Table 89 Distribution of CAD diagnosis in hypertensive individuals by provinces (n) (%)

Presence of CAD	Çankırı		Erzincan		Uşak		Provinces total	
	n	%	n	%	n	%	n	%
Present	140	46	131	42	158	49	429	45
Not Present	167	54	184	58	167	51	518	55
Total	**307**	**100**	**315**	**100**	**325**	**100**	**947**	**100**

Accordingly, the rates of those diagnosed with CAD in addition to HT by province are 46% (140) in Çankırı, 42% (131) in Erzincan and 49% (158) in Uşak. The number of patients diagnosed with HT but not diagnosed with CAD constitutes 55% (518) of the total hypertensive patients. The distribution of 429 patients diagnosed with CAD in addition to HT by gender and age is presented in Table 90.

Table 90 Distribution of individuals diagnosed with CAD accompanying HT by age and gender (n) (%)

Age groups (Year)	Male		Female		Both genders	
	n	%	n	%	n	%
18-44	6	1	3	1	9	2
45-64	67	16	75	17	142	33
65+	130	30	148	34	278	65
Total	**203**	**47**	**226**	**53**	**429**	**100**

Accordingly, 47% (203) of 429 patients diagnosed with CAD in addition to HT were male and 53% (226) were female. 2% (9) of 429 patients diagnosed with CAD in addition to HT were between the ages of 18-44, and 65% (278) were over 65 years of age.

The prevalence of CAD in hypertensive individuals included in the study is 53% (203) in males and 40% (226) in females. The incidence of diabetes by age groups is 13% (9) for the 18-44 age group, 41% (142) for the 44-65 age group, and 53% (278) for the over 65 age group.

Cerebrovascular disease

In a sample consisting of patients aged 18 years and older who were selected through FMIS and diagnosed with HT, whether the individuals were diagnosed with Cerebrovascular Disease in addition to the diagnosis of HT was examined. Of the HT patients, 19% (177) also had an additional diagnosis of CeVD. The distribution of cases of hypertensive patients diagnosed or not diagnosed with CeVD by province is presented in Table 91.

Table 91 Distribution of CeVD diagnosis in hypertensive individuals by provinces (n) (%)

Presence of CeVD	Çankırı		Erzincan		Uşak		Provinces total	
	n	%	n	%	n	%	n	%
Present	46	15	68	22	63	19	177	19
Not Present	261	85	247	78	262	81	770	81
Total	**307**	**100**	**315**	**100**	**325**	**100**	**947**	**100**

Accordingly, when we consider the distribution of patients diagnosed with CeVD in addition to HT by province, it was found to be 15% (46) in Çankırı, 22% (68) in Erzincan, and 19% (63) in Uşak. The number of patients diagnosed with HT but not diagnosed with CeVD constitutes 81% (770) of the total hypertensive patients.

Table 92 Distribution of individuals diagnosed with CeVD accompanying HT by age and gender (n) (%)

Presence of CeVD	Male		Female		Both genders	
	n	%	n	%	n	%
18-44	3	2	1	1	4	2
45-65	16	9	25	14	41	23
65+	54	31	78	44	132	75
General Total	**73**	**41**	**104**	**59**	**177**	**100**

Accordingly, 41% (73) of 177 patients diagnosed with CeVD in addition to HT were male and 59% (104) were female. 2% (4) of 177 patients diagnosed with CeVD in addition to HT were between the ages of 18-44, and 75% (132) were over 65 years of age. The prevalence of CeVD in hypertensive individuals included in the study is 19% (73) in males and 19% (107) in females. The incidence of CeVD by age groups is 6% (4) for the 18-44 age group, 12% (41) for the 44-65 age group, and 25% (132) for the over 65 age group (Table 92).

Chronic kidney disease

In a sample consisting of patients aged 18 years and older who were selected through FMIS and diagnosed with HT, whether the individuals were diagnosed with CKD in addition to the diagnosis of HT was examined. Of the HT patients, 4% (38) also had an additional diagnosis of chronic kidney disease. The distribution of patients diagnosed with chronic kidney disease by province is presented in Figure 31.

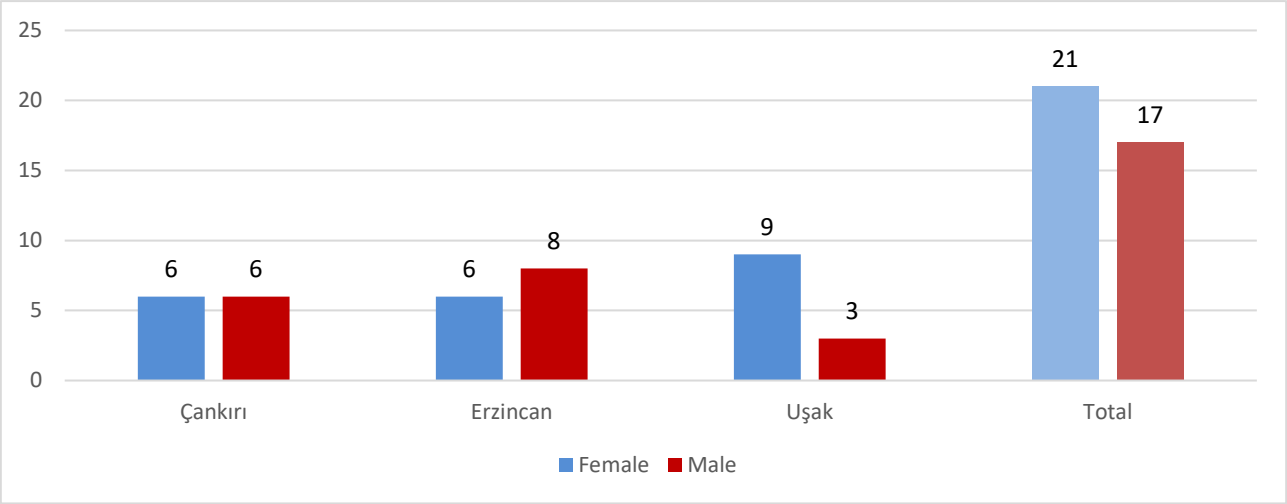


Figure 31 Distribution of chronic kidney disease diagnosis in hypertensive individuals by provinces (n)

Accordingly, 32% (12) of 38 patients diagnosed with chronic kidney disease in addition to HT live in Çankırı, 37% (14) live in Erzincan, and 32% (12) live in Uşak. The number of patients diagnosed with HT but not diagnosed with chronic kidney disease constitutes 96% (909) of the total hypertensive patients.

Presence of multiple concomitant conditions

In a sample consisting of patients aged 18 years and older who were selected through FMIS and diagnosed with HT, concomitant conditions in addition to the diagnosis of HT were examined (Table 93). In addition to the diagnosis of HT (947), it is observed that the most common concomitant diagnosis is CAD (429). One in five hypertensive patients has diabetes and coronary heart disease together. Approximately one in ten hypertensive patients has coronary heart disease and cerebrovascular disease together.

Another concomitant disease accompanying hypertension following CAD has been observed to be diabetes (370). The ratio of CeVD accompanying HT and CAD to total hypertensive patients is 5%. 45% of hypertensive patients have been observed to have CAD, 39% to have diabetes, 19% to have CeVD and 4% to have chronic kidney diseases.

Table 93 Hypertensive individuals with multiple concomitant conditions (n) (%)

Disease name	Number of individuals (n)	Percentage of individuals (%)
1. **Those diagnosed with CAD**	**429**	**45**
Only CAD diagnosis	174	18
Those with CAD and diabetes	190	20
Those with CAD and CeVD	113	12
Those with CAD and kidney disease	21	2
2. **Those with diagnosis of diabetes mellitus**	**370**	**39**
Diabetes only	213	22
Those with diabetes and CeVD	76	8
Those with diabetes and kidney disease	22	2
Those with CAD + CeVD + diabetes	50	5
3. **Those with CeVD among their diagnoses**	**177**	**19**
Those diagnosed with LVH and kidney disease	18	2
4. **Those with diagnosis of kidney disease**	**38**	**4**
5. **Those diagnosed with CAD + CeVD + diabetes + kidney disease**	**9**	**1**
Total number of individuals in the sample	**947**	**100**

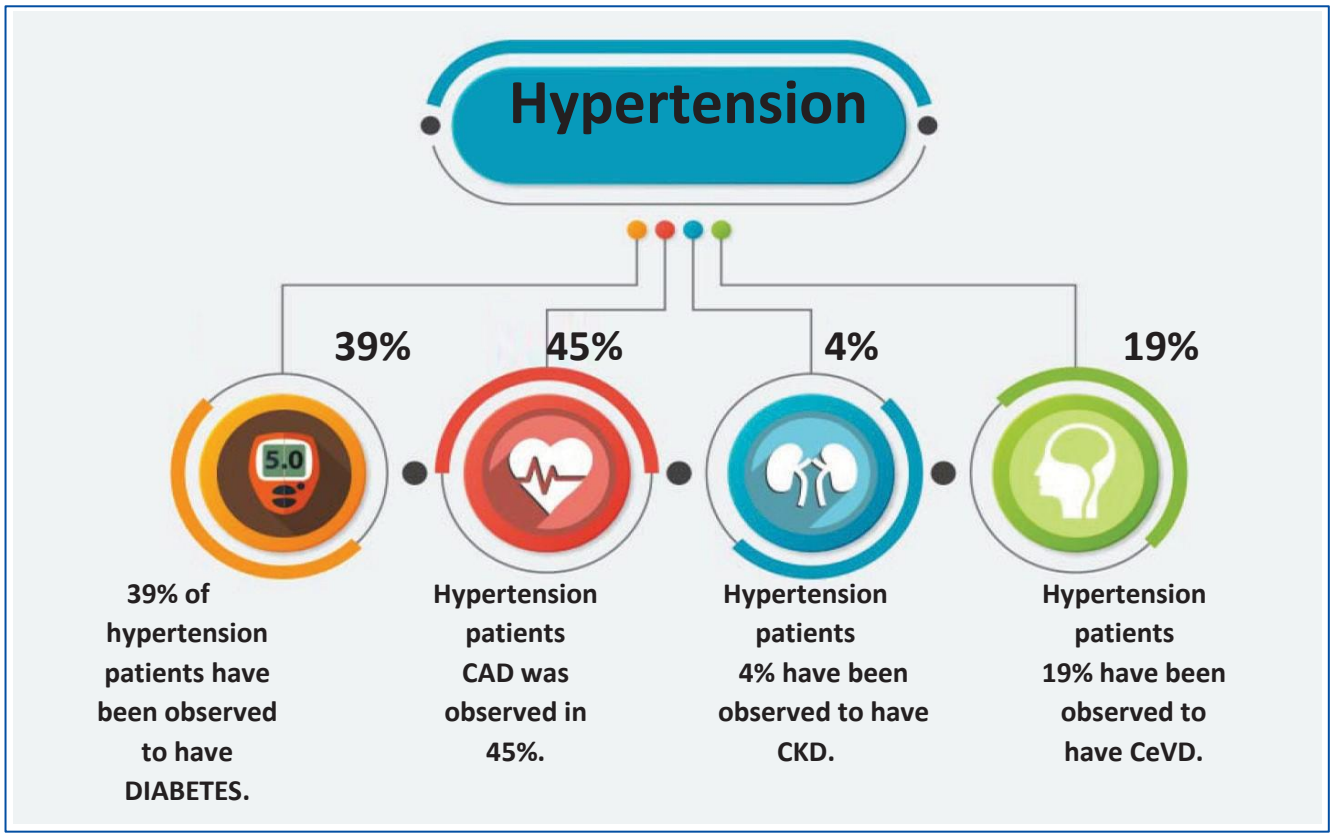


Figure 32 The incidence of diseases in hypertensive individuals(%)

Medication Use Assessment

In the health records of the study group in FMIS

i. Antihypertensive medications
ii. Antidiabetic medications
iii. Statin-type medications
iv. ASA type medications

was examined for record of use. Prescriptions and regular filling of prescriptions were analyzed. It is observed that most of patients with diabetes and HT in Turkey obtain *a health committee report on long-term medication use* from health institutions in order to reduce the frequency of medication prescriptions and minimize the payment of contributions paid. Thus, it is possible to prescribe a 3-month dose of medication for a long-term disease with only one prescription. As such, the prescription of a medication every 3 months for a disease in FMIS is accepted as "regular medication use".

Medication reports

The survey conducted in the project provinces examined whether a medication use report was issued for long-term use of antihyperlipidemic and antidiabetics in addition to the health board's report on *long-term medication use for antihypertensives*. Relevant findings are presented in Table 94.

Table 94 Medication report status of patients according to medication groups (n) (%)

Medication group	Number (n)	Percent (%)	Medication group	Number (n)	Percent (%)
Only antihypertensives	333	35	**Only antidiabetics**	26	3
Only antihyperlipidemics	12	1	**Antihyperlipidemic, antidiabetic**	20	2
Antihypertensive, antidiabetic	100	11	**Antihypertensive, antihyperlipidemic**	81	9
Antihypertensive, antihyperlipidemic, antidiabetic	126	13	**No reports**	249	26

Accordingly, 26% of hypertensive patients do not have long-term medication use reports. It was observed that 35% of the patients have only antihypertensive medication use, 1% have only antihyperlipidemic and 3% have only antidiabetic medication use reports. In contrast, 13% of patients received a medication use report for long-term use of all three groups of medications.

Antihypertensive medication use

All the participants included in the study consisted of hypertensive patients aged 18 years and over. From the records in FMIS, it was observed that 19% (183) of the patients were not prescribed antihypertensive medications despite being diagnosed with HT. On the other hand, 61% (575) of the sample group regularly use antihypertensive medications.

Table 95 Antihypertensive medication use status by gender (n) (%)

	Male		Female		Both genders	
	n	%	n	%	n	%
Regular use	224	59	351	62	575	61
No medication prescribed in last 3 months	78	20	111	20	189	20
No medication prescribed	80	21	103	18	183	19
General Total	**382**	**100**	**565**	**100**	**947**	**100**

Antihypertensive medication use status by gender is presented in Table 95. Accordingly, 59% (224) of males diagnosed with HT and 62% (351) of females regularly use antihypertensive medication, and 21% (80) of males and 18% (103) of females have never been prescribed antihypertensive medication. The distribution of antihypertensive medication use by age is given in Table 96.

Table 96 Antihypertensive medication use status by age (n) (%)

	18-44		45-64		65+		All age groups	
	n	%	n	%	n	%	n	%
Regular use	22	31	202	58	351	66	575	61
No medication prescribed in last 3 months	11	16	77	22	101	19	189	20
No medication prescribed	37	53	70	20	76	14	183	19
General Total	**70**	**100**	**349**	**100**	**528**	**100**	**947**	**100**

Accordingly, the age group that uses antihypertensive medications most regularly is over 65 with 66% (351). It was observed that 53% (37) of hypertensive individuals in the 18-44 age group were not prescribed any antihypertensive medications (Table 96).

Table 97 Comparison of BP values of patients using antihypertensive medications (n) (%)

Blood pressure	Regular user		No prescription for 3 months		No medication prescribed		Total	
	n	%	n	%	n	%	n	%
SBP ≥ 140 or DBP ≥ 90 mmHg	122	66	33	18	31	17	186	100
SBP < 140 and DBP < 90 mmHg	91	66	35	26	11	8	137	100
Number of individuals with measured blood pressure	**213**	**66**	**68**	**21**	**42**	**13**	**323**	**100**

When the antihypertensive medication prescription status of the patients whose BP values were recorded in the last year was examined, 66% (122) of the patients with SBP ≥140 mmHg used antihypertensive medications regularly, 18% (33) had no antihypertensive medication prescription filled in the last 3 months and 17% (31) had never used any antihypertensive medications.

It was observed that 66% (91) of those with SBP <140 mmHg had been prescribed antihypertensive medication in the last 3 months, 26% (35) did not fill an antihypertensive prescription in the last 3 months, and 8% (11) had never used any antihypertensive medication.

Antidiabetic medication use

It is known that 39% (370) of 947 hypertensive individuals included in the sample also have diabetes. The distribution of use by those with HT and diabetes diagnosis of antidiabetic type medications by age and gender is presented in Table 98 and Table 99.

Table 98 Antidiabetic medication use status by gender (n) (%)

	Male		Female		Both genders	
	n	%	n	%	n	%
Regular use	65	50	141	59	206	56
No medication prescribed in last 3 months	36	28	39	16	75	20
No medication prescribed	28	22	61	25	89	24
General Total	**129**	**100**	**241**	**100**	**370**	**100**

Accordingly, 50% (65) of the males with diabetes diagnosis in the study group regularly used antidiabetic medications, 28% (36) were not prescribed antidiabetic medications in the last 3 months, and 22% (28) were never prescribed any antidiabetic medications. 59% (141) of the females were found to use antidiabetic medications regularly, and 16% (39) were not prescribed antidiabetic medications in the last 3 months, and 25% (61) were never prescribed antidiabetic medications.

Table 99 Antidiabetic medication use status by age (n) (%)

	18-44		45-64		65+		All age groups	
	n	%	n	%	n	%	n	%
Regular use	1	13	79	57	126	56	206	56
No medication prescribed in last 3 months	2	25	30	22	43	19	75	20
No medication prescribed	5	63	29	21	55	25	89	24
General Total	**8**	**100**	**138**	**100**	**224**	**100**	**370**	**100**

Among the patients diagnosed with HT and diabetes, the group that uses antidiabetic medications most regularly is the 45-64 age group at 57% (79), followed by those over the age of 65 at 56% (126).

Statin medication use

While 69% (655) of the 947 hypertensive patients had cholesterol measurement values present in the FMIS, the rate of those without cholesterol measurements was 31% (292). Data on the cholesterol measurement status of the people in the sample and whether they had statin prescriptions are presented in Table 100.

On the other hand, 78% (314) of hypertensive patients with cholesterol levels above 190 were not

prescribed statins, while 22% (91) had a statin prescription. 4% (13) of individuals whose cholesterol levels were not monitored were prescribed statins.

Table 100 Statin prescription status according to cholesterol values of hypertensive individuals (n) (%)

Cholesterol value (mg/dl)	Has a statin prescription		Has no statin prescription		Total	
	n	%	n	%	n	%
<190	69	28	181	72	250	100
≥190	91	22	314	78	405	100
Cholesterol not measured	13	4	279	96	292	100
Total	**173**	**18**	**774**	**82**	**947**	**100**

The distribution of use of statin type medications by age and gender is presented in Table 101 and Table 102. 13 individuals whose cholesterol was not measured in the last two years, although they were prescribed statins, were not included in the medication use status analysis because their cholesterol value was not known.

Table 101 Statin medication use status by gender (n) (%)

	Male		Female		Both genders	
	n	%	n	%	n	%
Regular use	41	17	54	13	95	15
No medication prescribed in last 3 months	28	11	37	9	65	10
No medication prescribed	179	72	316	78	495	76
General Total	**248**	**100**	**407**	**100**	**655**	**100**

When the use of statins in patients with known cholesterol levels is considered by gender, the rate of regular use of statin type medications in males is 17% (41) while this rate is 13% (54) in females. For both genders, the rate of individuals who have not been prescribed any statin-type medications is 76% (495) despite know cholesterol levels.

Table 102 Statin medication use status by age (n) (%)

	18-44		45-64		65+		All age groups	
	n	%	n	%	n	%	n	%
Regular use	2	4	36	14	57	16	95	15
No medication prescribed in last 3 months	2	4	23	9	40	11	65	10
No medication prescribed	43	91	197	77	255	72	495	76
General Total	**47**	**100**	**256**	**100**	**352**	**100**	**655**	**100**

Among the hypertensive patients with known cholesterol levels, the group with highest rate of regular use of statin type medications was the over 65 age group at 16% (57), and the group with the highest density among those who did not use any statin type medications was the 18-44 age group at 91% (43).

ASA type medication use

The prescription of ASA-type medications to people diagnosed with CAD is recommended, and the ASA use of 429 patients with CAD diagnosis in addition to HT within the sample was investigated by gender and age through health records.

Table 103 ASA medication use status in hypertensive individuals with CAD diagnosis by gender (n) (%)

	Male		Female		Both genders	
	n	%	n	%	n	%
Regular use	91	45	67	30	158	37
No medication prescribed in last 3 months	35	17	50	22	85	20
No medication prescribed	77	38	109	48	186	43
General Total	**203**	**100**	**226**	**100**	**429**	**100**

The distribution of ASA use status by gender is presented in Table 103. Accordingly, 45% (91) of men diagnosed with CAD in addition to HT use ASA type medications regularly; 17% (35) of them were not prescribed any ASA type medication in the last 3 months, 38% (77) of them were not ever prescribed any ASA type medication. While 30% (67) of the females used ASA type medications regularly, 22% (50) had not used ASA type medications in the last 3 months, and 48% (109) had never used ASA type medications.

When the distribution of ASA type medication use according to age was examined in the light of the data in health records, it was observed that the group who used ASA type medications most regularly among all age groups was over 65 years old at 39% (108) (Table 104).

Table 104 ASA medication use status in hypertensive individuals with CAD diagnosis by age (n) (%)

	18-44		45-64		65+		All age groups	
	n	%	n	%	n	%	n	%
Regular use	3	33	47	33	108	39	158	37
No medication prescribed in last 3 months	0	0	32	23	53	19	85	20
No medication prescribed	6	67	63	44	117	42	186	43
General Total	**9**	**100**	**142**	**100**	**278**	**100**	**429**	**100**

Patients who were not prescribed any of the antihypertensive, antidiabetic, statin, ASA medications subject to the study constitute 13% (122) of the sample.

Final Assessment Results

When the final assessment of the rates of examinations and analysis in the last one year (for cholesterol in the last two years) are examined on the FMIS, 22% (212) of the study group were found have tobacco use data, 34% (323) blood pressure data, 23% (218) body mass index data, 69% (655) cholesterol data, 79% (748) creatinine data , 40% (377) proteinuria data, 78% (742) fasting blood glucose data, 38% (357) HbA1c data, 18% (170) cardiovascular disease risk assessment data available in the FMIS (Figure 33) . While the rates were calculated in the table, each hypertensive patient included in the sample was reviewed for the presence of each data point, and separate calculations carried out for each available data. The record rate of all fields among hypertensive patients was found to be 60%.

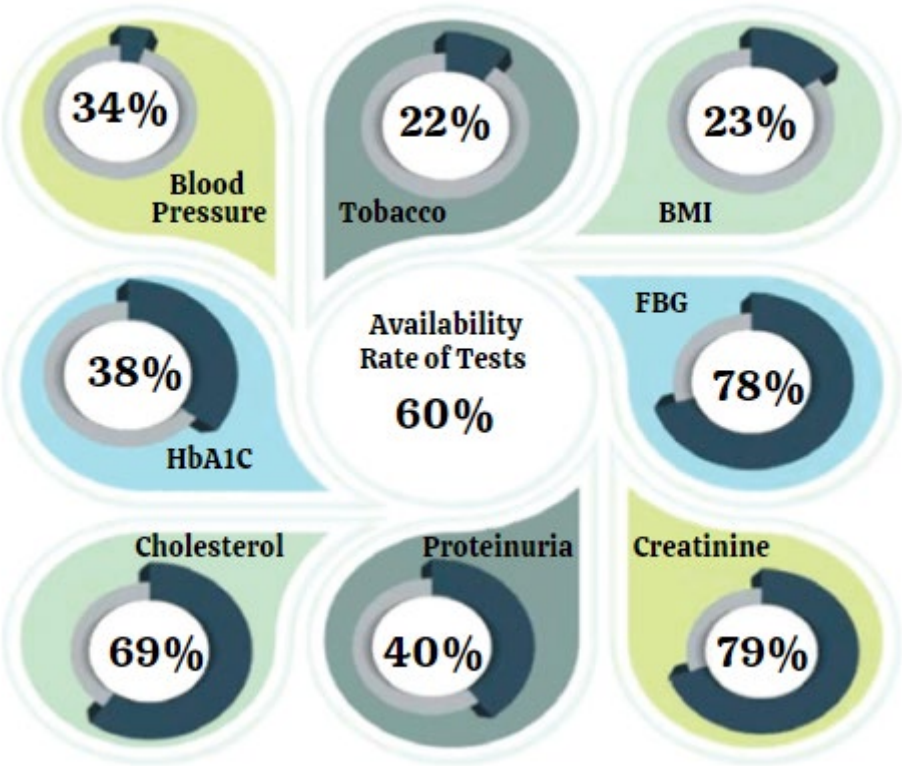


Figure 33 Risk factors and test record status (%)

The question querying concomitant diseases accompanying HT; 39% (370) of the patients were observed to have been diagnosed with diabetes, 45% (429) with CAD and 19% (177) with CeVD. Of the HT patients, 4% (38) also had an additional diagnosis of chronic kidney disease.

SECTION 7

FOCUS GROUP INTERVIEWS REPORT

Focus group interviews were conducted in order to assess the practices carried out within the scope of the Project for Improvement of Blood Pressure Control in Turkey from the point of view of Family Physicians, FMWs, patients and pharmacists.

Family Physicians Focus Group Interview

Focus group interviews were done in a total of 3 provinces being Çankırı, Erzincan and Uşak. A total of 31 FPs attended the interview, 10 from Erzincan, 10 from Çankırı, and 11 from Uşak. Participants were between the ages of 27-58. Twenty of the participants were male, 11 were female, and 28 married and 3 single individuals.

Participants were informed by the moderators about the subject and purpose of the focus group interview. Introduction cards were distributed to the participants, and they were informed on their completion and introduced themselves individually. Informed consent was obtained from the participants with the signing of informed consent forms. Group rules were determined. Once the participants were informed of the importance of them sharing their opinions sincerely with an impartial attitude in response to the questions asked in the interview, the interviews commenced.

1. ***"What do you generally do when a patient you think may have hypertension comes in?"***

It was observed that when a potential HT patient presents to the family physician, they first query the patient's personal information such as their history, weight, lifestyle habits, presence of concomitant diseases, and family history, blood pressure monitoring, and recommended healthy lifestyle changes, in particular a salt-free diet. Most of the participants stated that they first performed blood pressure monitoring, kidney function tests and ECG. While there are physicians who prefer to plan treatment by prescribing medications themselves, there are physicians who prefer to refer patients to specialist physicians such as internal medicine and cardiology. While physicians agree on blood pressure monitoring, there was no consensus on the commencement of HT treatment in the primary care setting. In general, they have stated that they are in the opinion of referring to those with concomitant diseases.

2. ***"In which situations do you measure blood pressure in your patients? Do you measure every patient's blood pressure?"***

Some physicians stated that the training provided within the scope of the HT control project changed the algorithm used by FPs to differentiate blood pressure patients during patient examinations, and this is very useful in terms of diagnosis. Some stated that after the project, they planned to measure the blood pressure of all patients over the age of 18 at the FHC.

Some doctors also noted that the blood pressure of patients presenting to them is generally not measured, but blood pressure is measured in the presence of a risk factor, and blood pressure measurement is usually performed by a FMW. It has been observed that they make recommendations to patients with high blood pressure rather than patients with normal blood pressure and follow them. In

general, there seems to be a consensus among which the biggest problem encountered in HT diagnosis, treatment and follow-up is the patient's unhealthy life habits and treatment compliance. In addition, it was observed that those who recommend the measurement of blood pressure at home are not sure of accurate measurements being taken and are trying to take precautions about this matter.

3. ***"In general, do you advise your patients on healthy eating, physical activity, quitting smoking or not drinking alcohol?"***

Participants stated that their patients were inadequate in terms of physical activity and attributed this condition to the cultural structure of the society to which their patients belong. Physicians stated that they gave advice to their patients, in particular with obesity, questioned their smoking and nutritional habits, and made recommendations. However, the consensus among physicians was that the healthy living recommendations they provided themselves were not sufficient and the individual health awareness of their patients should be improved and Individual health awareness should be strengthened. At the same time, doctors who are smokers have also stated that they do not make recommendations for ceasing smoking. As a result, it was determined that healthy lifestyle recommendations were not adequately given by physicians, and the rate and continuity of understanding and implementation by patients was low. Most physicians have stated that they agree on the effective use of media rather than written materials to inform the public.

4. ***What is your approach towards following the development of HT complications? How do you carry out monitoring?***

Most of the participants said that they call patients more often now. Physicians state that HT patients usually apply to the FHC every 3 months to obtain medication prescriptions. However, they noted that they did not follow up on the development of complications, and they preferred to refer patients to secondary health institutions when necessary. However, they also stated that they did not have any information regarding their treatment there.

5. ***"As you know, various applications/intervention programs were carried out in your province within the scope of Improvement of Blood Pressure Control. What did these applications include? Which ones did you participate in?"***

There are also physicians who are not as satisfied with the training carried out within the scope of improving BP control. Some of the participants stated that the subjects they knew were repeated in these training sessions. Some others have stated that the training has increased awareness of BP control among physicians, and they have at least started keeping records. There have also been participants who said they used follow-up cards, and this facilitated the diagnosis process. They noted that the rate of patient determination was very low with blood pressure measurements made within the scope of the project. On the other hand, most physicians think that the intervention was not applied sufficiently. It was determined that the reason for lack of implementation was workload, and the presence of patients who do not present to the FHC or like to be called. However, there are also physicians who use the risk scoring system and state that they are satisfied and benefit from the algorithm. They noted that the content of the training was sufficient, but it is difficult to implement it in conditions such as the heavy workload of the FHC. In addition, some physicians stated that blood pressure control, recording and follow-up is an important issue, but since it is not on the performance list of the physician, it is in the second plan in practice.

6. ***"What are your thoughts on the data collected for patients and the process of monitoring the data?"***

The participants noted that the project increased the diagnosis and follow up in terms of HT and that with the contribution of the project, their motivation has increased in this matter. They stated that they would be able to work harder towards HT control if their workload was reduced. With regards to data collection and follow up process, the physicians reached a consensus that patients may feel uncomfortable when their information is obtained. One physician stated that the score calculation was complicated. It was stated that it is important to record the correct data into the system and that it should be an integrated record system with other systems.

7. ***"Has this intervention program changed your approach/practices regarding the patients? What changed? When implemented at the national level, what would your recommendations be to improve its effectiveness and sustainability?"***

Participants argued that the training and project increase their motivation and should be implemented in other provinces as well. Participants stated that training should not only be given to medical personnel, but also that training should be organized for the public. Most physicians have stated that they have difficulty in practice, that they have a heavy workload, that patients are not compliant and that they have problems with the system. They stressed that patients should be given responsibility for their own health, but they think that monitoring and intervention in this way will be more successful. Blood pressure monitoring-chronic disease follow up should be monitored by the doctor's positive performance monitoring system.

General results of family physicians focus group interviews

Participants liked the project for reasons such as raising public awareness of HT, creating an approach algorithm to a particular patient, and creating a new perception, properly recording data and accessing it when necessary, and shared a consensus that that training should be continued in other provinces.

Some participants noted that the project was good, but the fact that the FPs routine system is an obstacle to the sustainability of the project, it is difficult to devote enough time to the patient due to the large number of daily patients, and the lack of sufficient awareness and responsibility for their own health leaves the project insufficient.

Most participants stated that the impact and purpose of the project would be more effective if conditions such as reducing the daily workload of family physicians thus allowing more time for patients, having a system in which they can enter data quickly and easily, and effectively using media channels and public service announcements on society were met.

Family Medicine Worker Focus Group Interview

Focus group interviews were done in a total of 3 provinces being Çankırı, Erzincan and Uşak. Focus group interviews were conducted with a total of 31 FMWs in these three provinces. All of the participants are female. The ages of the participants ranged from 26 to 50. Looking at the schools from which the participants graduated, it was determined that 41% were graduates of health vocational high school, 28% high school, and 31% university. Looking at the occupation of the participants, 52% were found to be nurses, 42% were midwives, and 6.5% were emergency medical technicians.

Participants were informed by the moderators about the subject and purpose of the focus group interview. Introduction cards were distributed to the participants, and they were informed on their completion and introduced themselves individually. Informed consent was obtained from the participants

with the signing of informed consent forms. Group rules were determined. Once the participants were informed of the importance of them sharing their opinions sincerely with an impartial attitude in response to the questions asked in the interview, the interviews commenced.

1. ***"What do you generally do when a patient you think may have HT comes in?"***

The patients were asked how they carry out the determination of patient characteristics such as age, gender, smoking, systolic blood pressure, diastolic blood pressure, cholesterol level, blood glucose level, medication use, height, weight, and waist circumference, and how applications are made, and whether they have any other applications.

Most participants stated that they measured the patient's blood pressure, pulse, waist, hip circumference and recorded the measurement values in the system and recommended diet and lifestyle changes if necessary. Some participants stated that the physician was the first to evaluate the patient when the patient arrived, and they performed blood pressure measurements of patients or pregnant women who were scheduled for follow-up of their blood pressure. Some participants noted that they conducted opportunistic scans in other government agencies and referred those with high blood pressure to family physicians.

2. ***In which situations do you measure blood pressure in your patients?***

Most of the participants stated that they tried to measure the blood pressure of all patients over the age of 18 at least once a year. Some of the participants stated that they could only measure if the doctor or patient requested it because of the workload, while others noted that they measured, if necessary, based on the patient's symptoms. Some of the participants described the identification of new patients with examples. They stated that they always measure the blood pressure of pregnant or postpartum patients.

3. ***Do you advise your patients on general health issues?***

Most of the participants stated that they provide general counselling services, mostly in the form of individual counselling and through brochures. Some participants however, stated that because of their workload, they could not provide counselling or quickly provide verbal information. They noted that brochures and visual materials are effective in consulting.

4. ***What is your approach to treatment in hypertension patients?***

Almost all participants stated that the physicians made decisions about treatment. Participants noted their observations about patient compliance with treatment. Some of the participants thought that patients were compliant with treatment, while others noted that patients did not use their medications regularly.

5. ***How do you follow up and monitor the development of hypertension complications?***

Participants noted that in general, they followed patients who developed complications more often and regularly, followed blood pressure values at home with blood pressure cards. Participants noted that some patients who developed complications were referred to the hospital and a specialist, some patients also arranged their appointments, and some patients were referred to the hospital by ambulance.

6. ***What are your views regarding the applications and content of the Project for Improvement of Blood Pressure Control in Turkey?***

Some of the participants stated that they were happy with the practices and training provided, and after these practices, they carried out more blood pressure measurements and gave healthy lifestyle advice. Some noted that they noticed and corrected their mistakes, kept more records, measured blood pressure in some patients without the physician's request, and increased their knowledge of diet, etc. A small number of participants stated that they had not learned anything new, but simply revisited what they already knew.

7. What are your ideas on patient record keeping and the process of monitoring data?

Most participants noted that they do not have a good system to record data, and often they cannot record their measurements in the system and report them to the ministry. Some participants stated that they could not fully enter the data into the system due to their workload. Some of the participants stated that they entered the data, seeing the patient's previous blood pressure, the recommendations given at the previous visit in the system, making their work easier.

8. If the Project for Improvement of Blood Pressure Control in Turkey were to be implemented on a national scale, what would your recommendations regarding the efficiency and sustainability of the project be?

Some of the participants stated that automatic blood pressure monitors could be used to reduce the workload. Many participants noted the importance of television and the public service announcements for informing the public and noted that it would be useful to increase information in the media.

Some of the participants stated that it would be useful to repeat the training given to the medical staff at certain intervals, otherwise they focused on whatever training or project is available on the subject. They stated that a pilot center regarding hypertension could exist in the provinces, and more importance can be placed on the education of society regarding these conditions.

FMW focus group interview general results

According to the information provided by the participants, it was determined that the training conducted within the scope of the Project for Improvement of Blood Pressure Control in Turkey was useful, allowing employees to revisit their knowledge, learn new information and correct their mistakes. After the project, the expansion of blood pressure measurement to patients presenting to family health centers and the early detection of many young and new hypertension patients will be an important gain for combating hypertension in our country.

As the participants noted, there is also a large workload associated with measuring blood pressure for all patients over the age of 18. Enough employees must be provided so that this burden does not disrupt other tasks and follow-ups. The use of automatic blood pressure monitors could become more widespread, but due to the risk of incorrect measurement, their calibration must be performed accurately.

For the project to be sustainable, the training must be repeated at certain intervals. Media tools should be used effectively to inform the public as well. Public service announcements should be increased, visual materials such as brochures, posters should be used effectively. The number and nature of institutions such as HLC, where patients diagnosed with hypertension can receive counselling, should be increased.

Pharmacist Focus Group Interview

During the focus group discussions, 26 pharmacists working in the provinces of Uşak, Çankırı and

Erzincan and aged between 30 and 68 were reached. Only 1 of the participants is single, the others are married.

Participants were informed by the moderators about the subject and purpose of the focus group interview. Introduction cards were distributed to the participants, and they were informed on their completion and introduced themselves individually. After the participants were informed, their informed consent was obtained. Group rules were determined. Once the participants were informed of the importance of them sharing their opinions sincerely with an impartial attitude in response to the questions asked in the interview, the interviews commenced.

1. ***"What do you generally ask when a patient you think may have HT comes in, do you carry out blood pressure measurements, do you recommend follow up?"***

The participants stated that they attempted to understand the cause of the patient's high blood pressure, and they generally queried information such as age, weight, smoking and medication use, dietary habits, concomitant diseases, family history, and lifestyle. Although participants stated that blood pressure measurement is prohibited in pharmacies and that they do not have the authority to carry out blood pressure measurements, it was understood that almost all of them measure blood pressure in their pharmacies. Noting that there are patients who present with complaints such as headaches, and that there are individuals who accompany other patients or walk-ins who request to measure their blood pressure while passing, they stated that they measure the blood pressure of the patients, particularly those advised by physicians to track their blood pressure, for information purposes, and refer the patients to nearby healthcare institutions. It was also observed that the participants sometimes gave blood pressure monitoring cards to patients who requested their blood pressure be measured, recommended that they measure their blood pressure regularly at the same times, to come to the pharmacy if they were not able to, and then go to an internist or health institution.

2. **"In which situations do you measure blood pressure for your patients, do patients routinely come for blood pressure measurement, what do you do if the patients have high blood pressure, what is patient compliance with medication like?"**

Participants did not measure blood pressure for every patient, that they mostly measured blood pressure in the pharmacy for patients who did not have a blood pressure monitor at home and were recommended to track their blood pressure, as well as those who complained of headaches, dizziness, and newly diagnosed patients were more nervous and wanted to measure more often. They stated that they didn't take any action for patients with normal blood pressure levels, while patients who were found to have elevated blood pressure were told to rest and measured again, and in case the level increased again, they referred them to emergency services or family health centers. It was seen that some participants, in cases of high blood pressure, make recommendations for healthy living, emphasize regular follow-up and regular use of medications. A few participants stated that patients had difficulty in accepting chronic diseases. Most of the participants stated that in general, women and the elderly had better medication compliance, men had adjustment problems due to side effects and not accepting the disease, and compliance was higher in the elderly due to the fear of death. They stated that patients with high blood pressure usually have their own medications with them, that they do not provide sublingual medications requested, and referred these patients to emergency services. Some participants stated that the state hospital and training and research hospitals are busy, some patients have blood pressure medications prescribed by family physicians and are therefore not covered by state insurance, thus creating unnecessary workload in hospitals for the prescription of medications and issuing of medication use

reports and argued that FPs should also be given the authority to issue reports.

3. **"In general, do you advise your patients on healthy eating, physical activity, quitting smoking or not drinking alcohol, what is compliance like?"**

Although participants did not advise each patient, they mostly made recommendations for healthy living, such as a salt-free diet, lifestyle changes, physical activity, and not gaining weight. They stated that they generally inform those who ask for information, and that some people do not like such information provided without being requested. They noted that patient compliance with these recommendations is minimal, some patients discontinue compliance as soon as they feel better, while some patients cannot even comply with prescriptions due to psychological problems. They expressed that those patients lack awareness about these issues, consume a lot of some herbal products, the issues they query are mostly regarding food supplements, that they are very influenced by social media and their environment, and thus this greatly reduces their motivation. Some participants stated that brochures do not work very well. According to some participants, one of the reasons for the low diet compliance of the patients is the belief that all homemade food is healthy and do not pay attention to recommendations to reduce salt intake. They noted that some patients paid more attention to the advice of people on television than pharmacists.

4. **"How do you approach patients who have been diagnosed with hypertension and whose treatment is planned by the physician, do you utilize medication compliance scales, are you able to call and give information to your patients?"**

Participants stated that they advise patients regarding regular use of prescriptions, not to discontinue medications, to contact their physicians in the event of side effects, and that physicians do not provide adequate information to patients and regularly change the prescriptions of the patients. In particular, it is observed that newly diagnosed patients with recently prescribed medications are not able to accept the condition of chronic disease, tend to cease taking their prescribed medications and pay attention to what they hear from those around them and the media, do not trust medical treatment, and attempt to find healing through herbal treatments. Some participants also mentioned physicians who create negative perceptions regarding medication use on television and in the media. Participants stated that they could not call patients to give them information, which could be misconstrued as being for commercial gains. It is understood that some patients query whether medications such as painkillers and antibiotics will interact with their blood pressure medications. The participants did not agree on patient compliance or non-compliance with prescriptions. It was observed that the participants are not able to apply medication compliance scales.

5. **"How do you approach the development of hypertension complications, what kind of cooperation do you have with the physician who plans treatment at this stage?"**

Participants stated that they could not meet with physicians working in state hospitals and thus patients must return to hospital in the event of any problems/deficiencies with medication reports and receipts, and that this is difficult and tiring for elderly patients in particular. Participants stated that they could not communicate well with physicians in general, and although they could partially communicate with private hospital physicians and FPs, the relationship between physicians and pharmacists was not very successful. Although they stated that in some cases they referred patients to physicians, they did not receive any feedback that physicians were pursuing complications. It was understood that participants describe how patients are to use their prescriptions during times that are not crowded and busy, and when necessary, write it down and give it to the patients.

6. ***"Various intervention programs were carried out in your province within the scope of Improvement of Blood Pressure Control. Have you heard of them? From whom did you hear about them, what did they include, which did you participate in? "***

Almost all participants stated that they had heard about these intervention programs and participated in the "My Guide Pharmacy" smart pharmacy program prepared by the Turkish Pharmacists' Association. It was determined that they believe the training to be beneficial. They stated that they had to record patient information to the system within the scope of the programs, however as the information is very detailed recording it takes time, and they did not have time to carry it out and therefore mostly could not complete the records.

In addition, they stated that patients were hesitant when they would record their information on the computer, and therefore they wrote the information on paper and then transferred it to the computer, and this could not be completed regularly due to excessive workload. They stated that there is a need for programs to be implemented regarding the follow-up of chronic diseases and that they want to be a part of this subject as a part of clinical pharmacy.

7. ***"What do you know about the data collected for patients and the process of monitoring the data, what are your thoughts?"***

It was determined that the participants collected data within the scope of My Guide Pharmacy Project. Participants stated that a separate employee was required for documentation and that it took time. It is understood that participants do not have sufficient information about the data collected and the monitoring process. They repeated that data entry into the system is difficult and takes time, and that patients are uncomfortable with recording their private information. Some participants noted that the process of entering data becomes easier and easier over time. Most participants stated that instead of entering data from the beginning, it would be more appropriate to create a joint system with physicians and follow them from there, and it could also be useful for communicating with physicians. Pharmacies do not have a record system for tracking chronic diseases, except for the My Guide Pharmacy Program.

8. ***"Has this intervention program changed your approach/practices regarding the patients? When implemented at the national level, what would your recommendations be to improve its effectiveness and sustainability?"***

The participants stated that data entry into the "My Guide Pharmacy" program system should be facilitated, the physician-pharmacist relationship should be improved, that it would be beneficial to improve coordination, and that they could notice some situations that the physicians overlooked because they spent more time with the patient. Almost all participants stated that such training programs are useful and should be repeated constantly. Suggestions were also received from the participants that visual materials and public service announcements could be increased. Such programs appear to contribute to the approach of participants towards patients and enable them to gain awareness.

General results of pharmacists focus group interviews

The pharmacist participants stated that they generally queried information such as age, weight, smoking and medication use, dietary habits, concomitant diseases, family history, and lifestyle of visiting patients they suspect to have hypertension. It was seen that blood pressure measurement is prohibited in pharmacies and that they do not have the authority to carry out blood pressure measurements, it was understood that almost all of them measure blood pressure in their pharmacies. It was determined that they did not measure blood pressure for every patient, that they mostly measured blood pressure in the

pharmacy for patients who did not have a blood pressure monitor at home and were recommended to track their blood pressure, as well as those who complained of headaches, dizziness, that they sometimes give blood pressure monitoring cards to patients, offer healthy lifestyle suggestions, emphasize regular follow-up and regular medication use, and then recommend presenting to a healthcare institution.

It was determined that patients do not comply with the recommendations, the brochures distributed are not very effective, and they turn to herbal treatments instead of medical treatment due to the wrong information they have obtained from the media and those around them. Participants believe that in general, women and the elderly had better medication compliance, men had adjustment problems due to side effects and not accepting the disease, and compliance was higher in the elderly due to the fear of death. Participants stated that they advise patients regarding regular use of prescriptions, not to discontinue medications, to contact their physicians in the event of side effects, and that physicians do not provide adequate information to patients and regularly change the prescriptions of the patients. It was observed that the participants are not able to apply medication compliance scales. It is understood that they could not communicate well with physicians in general, and although they could partially communicate with private hospital physicians and FPs, the relationship between physicians and pharmacists was not very successful. It was determined that the participants collected data within the scope of My Guide Pharmacy Project. They stated that within the scope of the program, they must enter certain patient information into the system, that data entry into the system is difficult and takes time, and that patients are uncomfortable with recording their private information. Most participants stated that instead of entering data from the beginning, it would be more appropriate to create a joint system with physicians and follow them from there, and it could also be useful for communicating with physicians. Almost all participants stated that such training programs are useful and should be repeated constantly. Suggestions were also received from the participants that visual materials and public service announcements could be increased. Such programs appear to contribute to the approach of participants towards patients and enable them to gain awareness.

Patient Focus Group Interview

Focus group interviews were conducted with 35 hypertensive patients in Uşak, Erzincan and Çankırı provinces. 29% of the patients were female, 31% were male; 89% were married, 6% single, 6% divorced/widowed/separated. 38% of the patients were primary school graduates, 9% middle school graduates, 23% high school graduates, 31% higher education graduates, 50% of the patients were retired, 14% were civil servants, and 17% were housewives.

Patients were informed by the moderators about the subject and purpose of the focus group interview. Introduction cards were distributed to the patients, and they were informed on their completion and introduced themselves individually. Patients have signed an informed voluntary consent form within their consent. Group rules were determined. Once the importance of sharing opinions sincerely with an impartial attitude in response to the questions asked in the interview was stated, the interviews commenced.

1. "Which services do you visit the Family Health Units for?"

Most hypertensive patients stated that they were satisfied with the family medicine system and family physicians, because there were no crowds, and were able to complete their work quickly. Almost all of them reported that they went to their family physicians for prescriptions and for acute health problems

such as colds, as well as follow-up and analysis of their chronic diseases. Hypertension follow up patients constitute most patients. It was stated that many services were obtained from family physicians, including prescription of medication and blood analysis. Patients also stated that they regularly went for control when called. Patients have mentioned that they trust family physicians and that it is much easier to reach family health centers than to reach the hospital, and that they do not wait in line at Family Health Centers. Some of the patients said that they had to go to either private healthcare institutions or family physicians because private health institutions were expensive, and they could not secure appointments at university and public hospitals. About dissatisfaction, two patients stated that family health centers are not sufficient in terms of hygiene, family physicians do not carry out examinations adequately that they cannot have tests carried out when they wish and are required to go to private hospitals, that family physicians are only places to visit for prescriptions and that they generally prescribe the same medications. One patient stated that the family physicians sometimes gave better diagnosis and information than specialists. A patient stated that technological facilities in family medicine centers are insufficient and should be developed, but the knowledge of our physicians is superior to that of abroad.

2. "Where and how was your high blood pressure initially diagnosed?"

Most of the patients stated that the diagnosis of hypertension was made by specialist physicians in the hospitals they presented to due to symptoms such as long-term and severe headache, palpitation, and panic attacks. They stated that the causes of this disease are smoking, stress, genetics, salty and sugary foods, sleep and work disorders. Although some of the patients stated that they did not have problems when they had regular follow-ups and used their medications regularly, the number of patients who had regular follow-ups was low. Most of them stated that they use their prescribed medications regularly. Some patients stated that this disease caused them fatigue or that they had to avoid certain activities due to the stress they cause.

3. "Where do you receive treatment and follow-up for your high blood pressure? Do you have any problems reaching your prescriptions?"

Patients stated that generally did not go for regular check-ups, did not consult a doctor when they did not experience any problems, and often went to specialist doctors to update their medication use reports when they expired, and did not generally prefer family medicine units. Only a few patients stated that they had regular follow-ups.

It was determined that the patients mostly use their medications regularly. They stated that when they did go to a physician, mostly only the report was renewed and nothing else was done. When patients were asked if they paid co-payments when obtaining prescribed medications at the pharmacy, they stated that they sometimes had to make a co-payment, although it depends on the medication.

4. *"What do you think is needed for diseases such as high blood pressure? What are your suggestions?"*

Hypertensive patients stated that generally a healthy diet and a stress-free life are important in such diseases, such diseases can be prevented by social measures, socio economic development, efficient urbanization and infrastructure services. They stated that healthy nutrition and exercise should be given importance especially in childhood, and that mothers or individuals providing childcare should be educated on these matters.

However, they stated that this did not prevent them from taking their medications. It has been noted

that family physicians refer hypertension patients to the hospital in order to obtain the opinion of a specialist doctor, when necessary, while the number of patients who indicate that blood pressure measurement is performed during their visit, a number of risk questions are asked, and healthy lifestyle recommendations are made is very low. In addition, most patients have stated that several tests are usually carried out on demand. Patients stated that they usually measure their own blood pressure themselves, often measuring when they feel that their blood pressure may rise, and some patients also expressed that they carry blood pressure monitors with them.

5. ***"In general, how often are you given advice regarding healthy eating, physical activity, quitting smoking or not drinking alcohol at family health centers?"***

Hypertensive patients generally stated that they were given suggestions such as walking, losing weight, drinking plenty of water, staying away from salt, sugar and flour, but that these recommendations were not offered frequently. They also stated that the physicians who smoke do not make recommendations regarding not smoking. It was observed that most patients could not comply with these recommendations, neglected, or did not take time for them, did not carry out regular physical activity, and due to their culture, ate a high carbohydrate diet. In general, patients tried to walk as much as they could, but some stated they could not participate in enough sports and walking for reasons such as herniated disc, knee problem, palpitations. Most patients stated that they were not called for follow-up from family health units, while only a few patients stated that they did not need to be called because they went to regular follow-ups. Almost all patients stated that they were not given a follow-up card for hypertension and that cardiovascular disease risk assessment was not performed. They also noted that the brochures were not distributed, although there were several brochures that they could not fully understand, and there were no brochures containing healthy lifestyle recommendations.

6. ***"Can you tell us about your communication with medical personnel and other personnel when receiving services at the Family Health Center?"***

Patients generally stated that they did not have any problems with family health units, that they were satisfied with communication, and in case words they did not understand were used, they were immediately explained. Although some patients stated that they receive information from the internet and social media about things they do not know, it was determined that they do not have complete confidence in this information, and some patients stated they trust specialist physicians for information. Patients stated that the doors were always closed during the examination, with an emphasis on privacy. Although patients stated that they used garlic or lemon as a supplement, they stated that they would not give up their medications for supplements. Patients have stated that they have not seen the brochures in family health centers or that their physician has not given them, some patients stated that there is no new information they can learn from brochures, that they already know the information in the brochures, and as they are able to search for anything they do not already know, there is no need for brochures.

Although some patients noted that monitoring hypertension may be easier in family health units and that they can thus avoid stressful environments in hospitals, some patients noted that specialist physicians, cardiologists in particular, are necessary for follow-ups. Patients generally believe that when they consult a doctor, some examinations should be performed routinely, not only on demand. Some patients, on the other hand, stated that risk assessment should be performed, especially in people with a family history.

Patient Focus Group Interview General Results

As a result of the interviews, most hypertensive patients expressed their satisfaction with the family medicine system and family physicians. Almost all the patients said that they went to family physicians for prescriptions, half went to the family physician for blood pressure monitoring, analysis and follow-up, and only visited specialist physicians when medication use reports expired. From this result, we can state that all the patients interviewed in the focus group consist of hypertension patients using the primary care family medicine system, and the focus group is composed of patients with characteristics suitable for the purpose of the project. Patients generally stated that they did not have any problems in family health units, that they were satisfied with communication, even if words they did not understand were used, they were immediately explained if they asked.

A small number of patients (two patients) stated that family health centers are not sufficient in terms of hygiene, family physicians do not carry out examinations adequately that they cannot have tests carried out when they wish and are required to go to private hospitals, that family physicians are only places to visit for prescriptions and that they generally prescribe the same medications. Hypertensive patients generally stated that they were advised to walk, lose weight, drink plenty of water, and stay away from salt, sugar and flour. However, it is understood that these recommendations are not made very frequently. In addition, they also stated that the physicians who smoke do not make recommendations regarding not smoking. Almost all patients stated that they were not given a follow-up card for hypertension and that cardiovascular disease risk assessment was not performed. They also noted that the brochures were not distributed, although there were several brochures that they could not fully understand, and there were no brochures containing healthy lifestyle recommendations.

SECTION 8

ASSESSMENT OF PROCESSES AND RESULTS

In this section, the records of patients randomly selected by the General Directorate of Health Information Systems in accordance with the sample definition framework, both in the initial assessment and in the final assessment, the changes in the rate of physical examination and laboratory tests at the beginning and at the end was compared, and the results of other interventions and studies were also included.

Before the initial and final assessments, HT prevalence for project provinces and Turkey in general was examined from the records of the Ministry of Health. In the same period, an increase in HT prevalence was observed in all three project provinces and in parallel throughout Turkey.

When the records of the Ministry of Health were examined from the point of view of healthcare institutions where individuals were diagnosed with HT, it was observed that HT was diagnosed mostly in the second stage throughout Turkey. In our project provinces, especially in Çankırı, it has been observed that the rate of HT diagnosis in primary care is high. In addition, an increase was observed in the rate of HT diagnosis in primary care in 3 project provinces in the period.

In addition, when the place of diagnosis of the patients were examined, it was observed that HT was diagnosed mostly in the secondary care level in Turkey. Among the project provinces, it was observed that the highest rate of HT diagnosis in primary care was in Çankırı. In addition, in the prevalence study conducted before the final assessment, there was an increase in the rate of HT diagnosis in primary care in 3 project provinces during this period.

In the study, data from FMIS health records, face-to-face interviews with sampling patients and survey forms, focus group interviews with trained FPs and FMWs were collected in different time periods, package programs were used to obtain descriptive and statistical information about the data reached.

In the analysis of data recorded in the FMIS system regarding tobacco use, cholesterol level, body mass index, creatinine level, fasting blood sugar level, HbA1c level, urine microscopy values and cardiovascular risk score and lifestyle change recommendations as risk factors for HT; the rates of change observed between the initial and final assessment are presented in Figure 34.

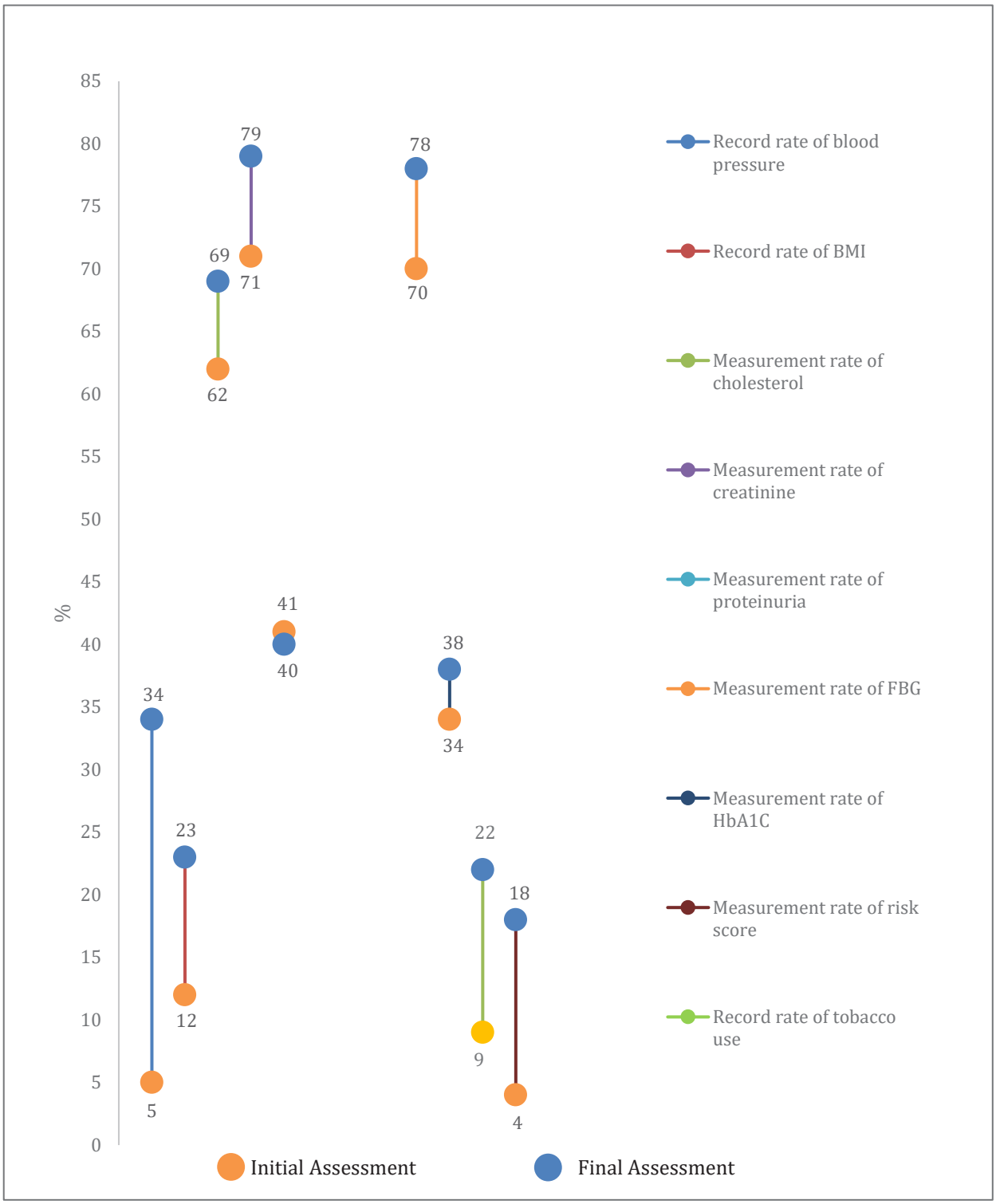


Figure 34 Change in the rates of physical examination and laboratory examination of hypertensive patients (%)

The changes of the initial and final values of the risk factors followed within the scope of the study according to the provinces is presented in Figure 35.

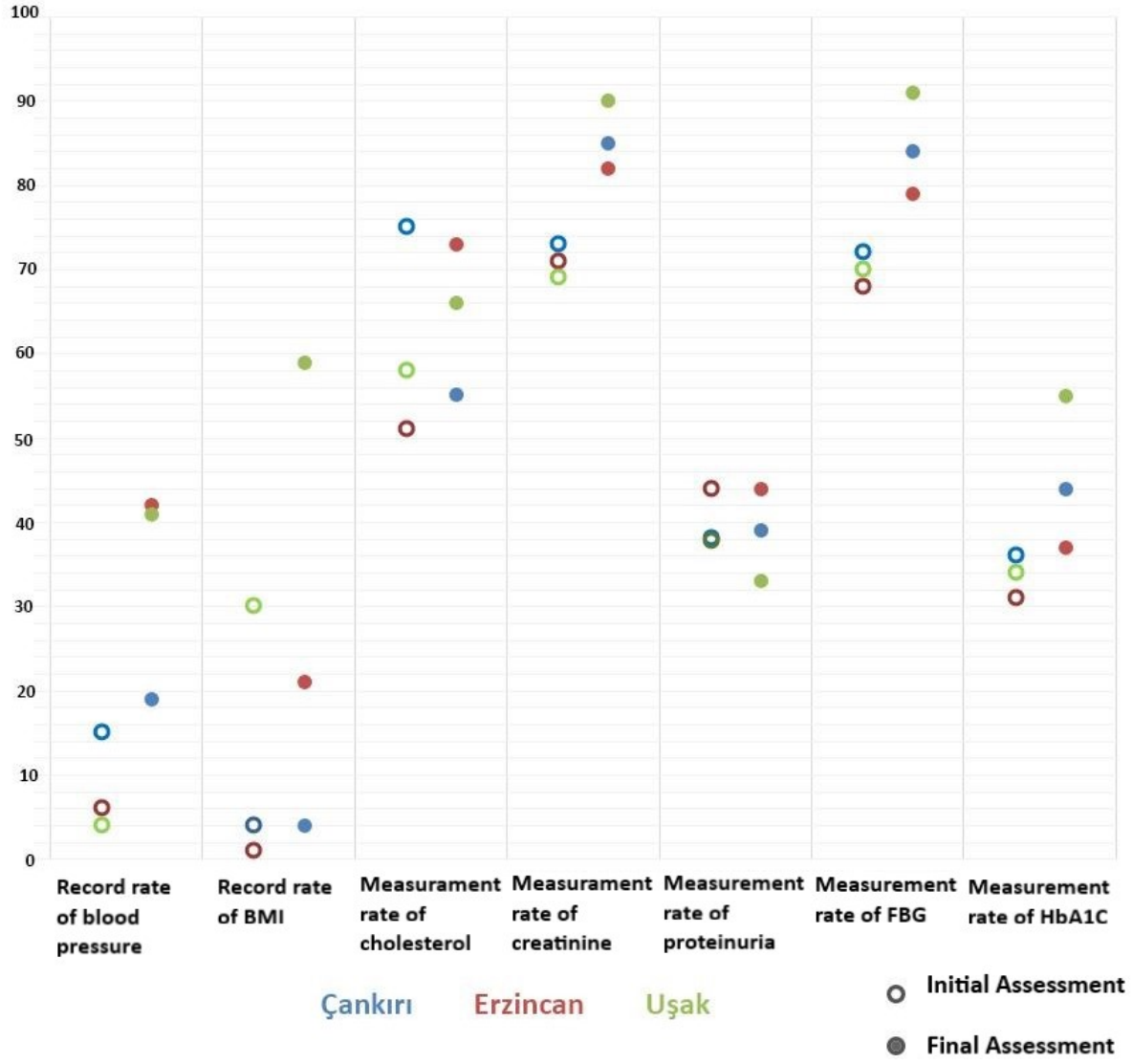


Figure 35 Change in the rates of physical examination and laboratory examination of hypertensive patients by provinces (%)

In the initial assessment, the BP record rate was 7% (21) in Çankırı, 5% (16) in Erzincan, 4% (13) in Uşak and 5% (50) in the total of the provinces covered by the study. In the current situation assessment, BP control rate was determined to be 43% (9) in Çankırı, 25% (4) in Erzincan, 77% (10) in Uşak and 46% (23) in total.

In the final assessment, it was observed that the BP record rate increased to 19% (59) in Çankırı, 42% (132) in Erzincan, 41% (132) in Uşak and 34% (323) in total. The BP control rate is 44% (26) in Çankırı, 60% (79) in Erzincan, 61% (81) in Uşak and 58% (186) in provinces. When BP recording and BP control rates in the initial and final assessment are compared, it was observed that there is a 29% increase in the record rate, a 12% increase in the control rate, and a significant increase in the number of individuals measured.

The rate of recording of tobacco use information in the FMIS system is 9% (54) in the initial assessment. Since it was determined that “no tobacco use” data was automatically recorded in the system in Uşak, the Uşak data was not taken into consideration at the initial assessment, and the necessary

warnings were given to the relevant individuals regarding proper record keeping. Thus, the final assessment showed an increase in the record rate for tobacco use in all project provinces, and the recordkeeping rate increased from 9% (54) at the initial assessment to 22% (212).

The BMI record rate increased from 12% (113) at the initial assessment to 23% (218) at the final assessment. Although the BMI measurement rate in Çankırı remained the same at 4% level, the BMI measurement rate in the initial assessment compared on a project province basis increased from 31% to 43% in Uşak and from 1% to 21% in Edirne.

Cholesterol measurement rate was 62% (598) at the initial assessment. In 31% (187) of hypertensive patients whose cholesterol value was known, the cholesterol value was found to be 189 and below, and 69% (411) 190 and above. Although the rate of individuals whose cholesterol was measured in the final assessment increased to 69% (655), in 38% (250) of hypertensive patients whose cholesterol value was known, the cholesterol value was found to be 189 and below, and 62% (405) 190 and above.

Among the types of tests assessed within the scope of the project, it was observed that creatinine tests were performed the most, and the rate of people whose creatinine value was measured in the initial assessment was 71% (683). Although the e-GFR values calculated by referencing creatinine measurement in the current condition assessment are mostly in the normal reference value range, the loss of kidney function in Uşak is relatively lower than in the other two provinces. In the final assessment, the rate of hypertensive patients whose creatinine value was measured increased to 79% (748), and when e-GFR values were examined, it was observed that the loss of kidney function in Çankırı was at a higher level compared to the other two.

In the initial assessment, the rate of individuals whose proteinuria value was measured was 41% (390), and the rate of individuals with a positive proteinuria level was 7% (29). The ratio of individuals with a measured proteinuria value was 40% (377) with a decrease of 1% in the final assessment, and the value of 15% (55) of those tested for proteinuria value was positive.

FBG measurement in hypertensive individuals is at the level of 70% (675) at the initial assessment. The rate of diabetics in individuals whose blood sugar is measured in Çankırı was 32% (73) and higher when compared to the other two provinces. The number of individuals whose blood glucose was measured at the final assessment was 78% of the sample (742). In the final assessment, Çankırı ranks first among the project provinces in terms of density of diabetic individuals.

HbA1c value was measured for 34% (324) of the sample in the initial assessment, and 52% (169) of the tested individuals were found to be diabetic. In the final assessment, it was determined that 38% (357) of the sample had HbA1c measurements and 42% (150) of these individuals were found to be diabetic.

While the cardiovascular risk assessment rate carried out with SCORE Turkey scale was 4% (34) of the study group in the initial assessment, this rate reached a level of 18% (170) in the final assessment.

In the FMIS, the health records of the study group were examined to determine if there was any record of counselling recommendations for healthy diet, physical activity, tobacco and alcohol use, and it was observed that lifestyle change recommendations, were made in 9% (83) of hypertensive patients in the initial assessment, and 23% (218) of hypertensive patients in the final assessment.

The presence of diabetes, CAD, CeVD and chronic kidney disease was investigated in terms of concomitant diseases in the hypertensive individuals included in the sample.

The rate of those diagnosed with diabetes in addition to HT in the initial assessment was 36% (349), and the 65 and over age group has the highest prevalence of diabetes in terms of age groups at 42% (217). At the initial assessment, 8% (73) of those diagnosed with HT and not diagnosed with diabetes were in the overt diabetes group. In the final assessment, the rate of those diagnosed with diabetes in addition to HT in the total sample was 39% (370), and 1% (11) of people who tested HbA1c, although there was no diabetes diagnosis in the sample, were in the overt diabetes group.

Those diagnosed with coronary artery disease along with HT comprised 35% (333) of the sample in the initial assessment and 45% (429) in the final assessment. When considered based on age groups, the incidence of CAD with HT is highest in individuals aged 65 and over, like with diabetes.

At the initial assessment, 11% (110) of the sample of hypertensive patients aged over 18 years selected over FMIS had a diagnosis of CeVD. The incidence of CeVD in addition to HT is 10% in males and females. In the final assessment, the rate of those diagnosed with CeVD in addition to HT increased to 19% (177), and the incidence of CeVD was 19% in both males and females.

Of the four diseases queried to be concomitant with HT, the least common was found to be chronic kidney disease and was present at a rate of 3% (30) in the initial assessment, and 4% (38) in the final assessment.

In the health records of the study group at FMIS, records of the use of antihypertensive, antidiabetic, statin type and ASA type medications were examined.

In a sample of hypertensive patients aged 18 and over, the rate of regular antihypertensive medication use increased from 49% (476) in the initial assessment to 61% (565) in the final assessment. The rate of patients in the study group who had never been prescribed antihypertensive medications decreased from 26% (252) to 19% (183). When antihypertensive medication use and BP values were examined together, 20% (10) of hypertensive individuals whose blood pressure was measured in the initial assessment were never prescribed medications, while this rate decreased to 13% (42) in the final assessment. The medications used to treat HT consist of six different groups. An initial analysis showed that the most used group of antihypertensive medications was ARBs with 25% (264), followed by beta-blocking agents with 23% (241). As part of the study, since no intervention was performed on the types of medications used to treat HT, it was not predicted that there would be a change in the final assessment, and the most used antihypertensive groups were not re-examined.

The antidiabetic use cases of patients diagnosed with diabetes in addition to HT was examined. In the initial assessment of patients in this group, 54% (188) were regularly prescribed antidiabetic medications, while 17% (60) were not prescribed antidiabetic medications at all. In the final assessment, 56% (206) of patients diagnosed with HT and diabetes regularly used antidiabetic medications, while 24% (89) were not prescribed antidiabetic medications at all.

The statin use of individuals whose cholesterol levels were measured was examined. While 12% (69)

of the patients with known cholesterol levels were regularly using statin type medications in the initial assessment, this rate increased to 15% (95) in the final assessment. In addition, 77% (459) of the patients with HT with known cholesterol were not prescribed any statin type medications in the initial assessment, while this rate decreased to 76% (495) in the final assessment.

The use of ASA in patients with coronary artery disease in addition to HT in the study group was examined. Accordingly, 34% (112) of the individuals in this group regularly used ASA-type medications in the initial assessment, while in the final assessment this figure increased to 37% (158). Because ASA type medication prices are lower than examination fees, it is known that the medications included in this group are obtained by patients directly from the pharmacy without a prescription. For this reason, it has been observed that the rate of prescription of ASA type medications is lower than other medication types.

As a result of the trainings organized for FPs and FMWs within the scope of the project; significant differences were observed between the pre-test and post-test results of the physicians and FMWs attending the training on a province basis the results of the training reveal the need for training throughout the country in order to ensure that medical personnel can develop their professional skills on these issues and also reveal the effectivity of the training.

It was observed that FPs and FMWs tried to intervene in their patients in line with the follow-up parameters following the training provided. It has been observed that time is needed to carry out regular monitoring in accordance with the HT monitoring guide. It was predicted that behavior change in physicians and FMWs on this issue would be possible with reminders, and reminders were carried out regarding this.

Between 22.07.2019 and 26.07.2019, 15 randomly selected family medicine units were visited together with health managers and trainers in the province, and a midterm review was carried out. 75 randomly selected patients diagnosed with HT were interviewed, and it was observed that the blood pressure of 93% (70) of the patients was measured accurately by the FMW. Of the patients, it was determined that 45% (34) of the patients had their blood pressure measured at each visit, 93% (70) took their prescribed medication, 19% (14) paid for their prescriptions out of pocket, 93% (70) understood their prescriptions correctly, 75% (56) had knowledge of their blood pressure measurements, and 68% (51) had knowledge of the reference range values of blood pressure measurements.

Focus group interviews were planned in order to assess the applications made within the scope of this study from the point of view of FPs, FMWs, patients and pharmacists. In these interviews, FPs and FMWs; expressed their opinion that in general the work carried out within the scope of the project increased the awareness of HT, that the prevalence of blood pressure measurement influenced the early diagnosis of HT, but that it was difficult to perform the screenings as often as desired with their current capacities. The common view of FPs, ASCs and pharmacists is that increasing public awareness of the issue will contribute to HT control.

In this study, which was carried out to demonstrate that it is possible to significantly increase blood pressure control with training and monitoring in selected primary healthcare institutions; in a sample of patients aged 18 and older who were diagnosed with HT selected through the FMIS, whether blood pressure measurement values were recorded in the system or not in four periods between the dates of

24.02.2019-23.02.2020 was controlled. Although there was an increase in the rate of hypertensive individuals whose blood pressure was measured only once, the number of individuals fully monitored at a frequency in accordance with the Ministry of Health guidelines was found to be very low (5 individuals). While it has been concluded that two measurement results will be sufficient to calculate the blood pressure control rate within the scope of the project, it is believed that the number of follow-ups conducted in accordance with the guidelines of the Ministry of Health will also increase over time.

It has been observed that the majority of FMWs perform blood pressure measurements correctly and work in cooperation with family physicians. It has been determined that most HT patients are provided with counselling services regarding their diseases, treatment plans and healthy lifestyle recommendations in FHCs.

It was determined that patients who presented for examination were also given HT brochures. An increased awareness of HT disease has also been observed in FPs and FMWs. It is believed that time is needed to carry out regular monitoring in accordance with the HT monitoring guidelines.

It was observed that physicians apply medication therapy in accordance with long-term medication use reports that appear to be recorded in FMIS in order to regulate the blood pressure of their patients, as well as monitoring different levels of other accompanying risk factors. On the other hand, it was observed that patients who have HT follow-up are present in second and third-line health institutions, however as follow-up data for these patients is not available in the FMIS, patients who are registered with a family physician and do not present in person are not monitored in terms of blood pressure and risk factors.

It has been observed that physicians regulate the treatment plans of their patients or implement the treatment plan initiated by another physician/specialist physician. Patients do not have any problems accessing the treatment. When the data contained in the health records are examined, hypertensive individuals over the age of 65 apply to health care 3.5 times a year with HT diagnosis, but lack of follow-up indicates that the quality of service should be improved. Reaching patients who have not applied for services from FHCs with an additional effort will enable the physician to see the treatment status in the population clearly. In this respect, it has been stated that efforts to reach patients who are registered with them but do not receive services from this unit may be of benefit.

It was observed that physicians mostly measured the BP values of their patients, but these measurement values were not recorded in the FMIS at the same rate. For this reason, although there is a significant increase in measurement, it has been observed that the desired level of record keeping has not been met. It has been determined that one of the reasons for this is the FMIS. Blood pressure values can be recorded in FMIS in three different ways. However, when the records taken with one of these methods were examined again, it was seen that the record was not present. In our country, health records are registered in the electronic record system and there is no physical patient card application.

Although there is no problem in the access of hypertensive patients to health services and medications in our country, it has been observed that there has been an increase in diagnosis and record keeping of patients with the training and guidelines provided within the scope of the project. Increasing the quality of the service provided, understanding the importance of early diagnosis, ensuring regularity and continuity in patient follow-up, more intensive and prioritized follow-up of at-risk patients, developing simple up-to-date algorithms, increasing compliance with treatment, management of risk factors, ensuring

lifestyle changes, preventing complications, and developing multi sectoral collaborations, are among the points to be developed to control blood pressure.

APPENDICES

Annex-1 Project Indicators

Indicator 1: Six-month control of blood pressure for those treated for hypertension:

Rate of patients registered at the health facility for the treatment of hypertension and whose blood pressure is controlled 6 months after the start of treatment

Indicator 2: Blood pressure control in hypertensive individuals:

The rate of hypertensive individuals with controlled blood pressure in medical facilities in a specific geographical area, such as a region, province, or state

Indicator 3: Blood pressure control in hypertensive individuals:

Rate of all hypertensive individuals with controlled blood pressure in the population

Indicator 4: Blood pressure control in hypertensive individuals:

Rate of eligible individuals* (defined as individuals aged 40 years and older with ≥30% cardiovascular risk within 10 years, including those with current cardiovascular disease) who receive medication and counseling (including glycemic control) to prevent heart disease and stroke

* The use of the term “eligible individual" does not mean that others should not receive treatment. Countries may wish to consider analyses involving people at high risk identified according to national guidelines

Note: For more information regarding indicators, see. http://www.who.int/nmh/ncd-tools/indicators/GMF_Indicator_Definitions_Version_NOV2014.pdf

Annex-2 Initial and final assessment survey form

	SURVEY QUESTIONS
1	Registration code
2	Data collection date
3	City
4	District
5	FMU code
6	Date of Birth
7	Gender
8	Tobacco use status
9	Hypertension diagnosis code {ICD10=I10-I15}
10	Date of hypertension diagnosis
Blood Pressure Measurement and Tests Section	
11	Do you have one or more blood pressure measurements for the period from November 2019 to 23 February 2020 in your records? (Y / N)
11.1	Date of last blood pressure measurement
11.2	Latest systolic blood pressure value (mmHg)
11.3	Latest diastolic blood pressure value (mmHg)
12	Do you have one or more blood pressure measurements for the period of August, September, October 2019 in your records? (Y / N)
12.1	Date of last blood pressure measurement
12.2	Latest systolic blood pressure value (mmHg)
12.3	Latest diastolic blood pressure value (mmHg)
13	Do you have one or more blood pressure measurements for the period of May, June, July 2019 in your records? (Y / N)
13.1	Date of last blood pressure measurement
13.2	Latest systolic blood pressure value (mmHg)
13.3	Latest diastolic blood pressure value (mmHg)
14	Do you have one or more blood pressure measurements for the period of February, March, April 2019 in your records? (Y / N)
14.1	Date of last blood pressure measurement
14.2	Latest systolic blood pressure value (mmHg)
14.3	Latest diastolic blood pressure value (mmHg)
15	Is there a Body Mass Index (BMI) measurement? (Y / N)
15.1	Date of last BMI measurement
15.2	Latest BMI measurement value

16	Do you have one or more Fasting Blood Glucose (FBG)=(Glucose) measurements in your records? (mg/dL) (Y / N)
16.1	The date of the last FBG value
16.2	Latest FBG value
17	Do you have one or more HbA1c measurements in your records? (Y / N)
17.1	Date of last measurement
17.2	Latest HbA1c value
18	Do you have one or more total Cholesterol measurement values in your records? (mg/dL) (Y / N)
18.1	Date of last total cholesterol measurement
18.2	Latest total cholesterol value
19	Do you have one or more creatinine measurement values in your records? (mg /dL) (Y / N)
19.1	Date of last creatinine measurement
19.2	Latest creatinine measurement value
20	Do you have one or more urinalysis Proteinuria measurement values in your records? (Y / N)
20.1	Date of last proteinuria measurement
20.2	Latest proteinuria measurement value (0,1)
Concomitant Diseases Section	
21	Diabetes present/not present (Type 1=E10, Type 2=E=11, None)
21.1	Diabetes initial diagnosis date
22	Coronary heart disease present/not present (I20, I21, I22, I23,I24,I25)
22.1	Date of initial diagnosis of coronary artery disease
23	Cerebrovascular disease present/not present (I60-I69)
23.1	Date of initial Cerebrovascular disease diagnosis
24	Chronic kidney disease present/not present (N 18-19)
24.1	Date of initial diagnosis of chronic kidney disease
Medication Prescription Information Section	
25	In the last two years, which class of medications has the patient been given a medication use report?
	Antihypertensive Antihyperlipidemic Antidiabetic
25	Has the patient been prescribed antihypertensives? (Y / N)
25.1	Date the patient was last prescribed anti-hypertensive
25.2	Antihypertensive medication 1
25.3	Antihypertensive medication 2
25.4	Antihypertensive medication 3
25.3	Antihypertensive medication 4
25.4	Antihypertensive medication 5
26	Has the patient been prescribed acetylsalicylic acid (ASA or aspirin)? (Y / N)
26.1	Date the patient was last prescribed ASA
26.2	Prescribed ASA medication
27	Has the patient been prescribed a statin (C10 - Lipid Metabolism Medications)? (Y / N
27.1	Date the patient was last prescribed a statin
27.2	Prescribed statin medication
28	If the patient has a diagnosis of diabetes, has an antidiabetic been prescribed? (Y / N)
28.1	Date the patient was last prescribed an antidiabetic
28.2	Diabetes medications 1

28.3	Diabetes medications 2
28.4	Diabetes medications 3
28.5	Diabetes medications 4
SCORE TR and Lifestyle Suggestions Section	
29	Is there a SCORE TR risk score record for the patient? (Y / N)
29.1	What is the latest date the risk score was calculated?
29.2	What is the latest SCORE TR risk value for the patient? (%)
30	Lifestyle change
30.1	Healthy eating advice
30.2	Physical activity advice
30.3	Smoking cessation advice
30.4	Alcohol cessation advice
31	Notes

Note: Date fields included in the survey should be allowed to be entered as a selection, as well as manually. If the answer to the 21st question is "Yes", the 28th question should be active, if the answer is "No", the 28th question should be passive.

Annex 3- Supervision visit documents

Treatment control form

TREATMENT SUPERVISOR / INSPECTION FORM		
Province:		Date:
FHC Name:		
FMU Unit Code:		
Name-Surname of Family Physician and Family Health Personnel:		
Supervisor Name:		
Has a hypertension treatment program been initiated in the FMU? Circle the appropriate answer.		Y N
No	**Indicator**	**Circle the appropriate answer**
1	**Screening and BP measurement**	
1.1	Is opportunistic screening carried out on all adults?	Y N
1.2	Is the HT treatment algorithm displayed on the wall/placed on the table?	Y N
1.3	Does the institution have at least one working BP measurement instrument?	Y N
1.4	Are all patients with BP ≥140/90 referred to a family physician for treatment?	0 1 2 3 4 5
1.5	How many patients had their blood pressure measured accurately? (Observe 5 patients, >2 for each staff measuring blood pressure)	Rate:
2	**Treatment**	
2.1	Is the treatment algorithm displayed on the wall/placed on the table?	Y N
	Check 10 random patient treatment cards (see patient treatment card inspection form). Write the ratios for the following items.	Rate:
2.2	Blood pressure measured in each of the last three visits	
2.3	Initial antihypertensive medication therapy prescribed in accordance with the protocol	
2.4	For patients with BP ≥ 140/90, those with dosage increase or additional medication (if not applicable, write "……")	
2.5	Those with a history of CAD prescribed aspirin (if not applicable, write "….")	
2.6	Patients over 40 years of age with diabetes or CAD prescribed statins (if not applicable, write "…..")	
2.7	Patients with BP ≥ 140/90 referred to a specialist after treatment with three medications (insert "….." if not applicable)	
2.8	BP <140/90 in last application	
3	**Counselling and Follow-up**	
3.1	Have members of staff been designated to provide counsel to patients?	Y N
3.2	Are there patient counselling tools/materials available?	Y N
3.3	Is there a system in place to provide individual or group counselling to patients?	Y N
3.4	Is there a system in place to follow up on patients who abandon initial therapy?	Y N
3.5	Is there a functioning system for a reminder and follow-up for patients?	Y N
4	**Service Provision Interview and verify with 5 patients (see patient interview report card).** *Circle the number of positive responses*	
4.1	Was BP measured at each visit?	0 1 2 3 4 5

4.2	Has the patient taken all prescribed medication when visiting today?	0 1 2 3 4 5
4.3	Has the patient ever paid out-of-pocket for medication in the past?	0 1 2 3 4 5
4.4	Did the patient take their medication correctly?	0 1 2 3 4 5
4.5.	Is the patient aware of their measured BP value at this visit?	0 1 2 3 4 5
4.6	Is the patient aware of their targeted blood pressure value?	0 1 2 3 4 5
5	**Medication inventory system**	
5.1	Is there a functioning medication inventory system?	Y N
5.2	Are there any essential medications out of stock in the last quarter?	Y N
5.3	Were there any stock depletions this quarter, for which medications?	Y N
5.4	Is there sufficient buffer stock (safety stock) for essential medications for the next quarter?	Y N
6	**Patient records reporting system**	
6.1	Is there a functioning record and reporting system?	Y N
6.2	Are enough patient cards available for the next three months?	Y N
6.3	Is there an organization record available for monitoring?	Y N
6.4	Is there a place to organize/store patient cards?	Y N
6.5	Are the cards arranged by serial number or by another system that will make them easy to access?	Y N
6.6	Was the last quarter's report submitted on time?	Y N
6.7	Does the responsible clinic know the percentage of BP <140/90 patients in the institution?	Y N
6.8	Has the 6-month BP control rate for the last quarter been reported correctly? (Check institution records for the last quarter)	Y N

Patient interview report card

PATIENT INTERVIEW REPORT CARD							
Consult with 5 patients and mark each question as Yes or no. Count the Yes numbers in each row to calculate the total. Record the total figure in the clinical inspection tool.							
		Patient No.					
No	**Questions**	**1**	**2**	**3**	**4**	**5**	**Total**
1	Has the patient taken all prescribed medication when visiting today?						
2	Has the patient ever paid out-of-pocket for medication in the last 6 months?						
3	Did the patient take their medication correctly?						
4	Is the patient aware of their measured BP value at this visit?						
5	Is the patient aware of their targeted blood pressure value?						
6	Was BP measured at each visit?						

Supervision visit summary

Supervision Visit Summary		
Identified Problem		**Suggestions**
1	Screening and BP measurement	
2	Treatment	
3	Counselling and Follow-up	
4	Service provision, including costs to the patient	
5	Medication inventory	
6	Records and reporting	
7	Other	

Reminder Note Regarding the Visitations for Patients at the Family Medicine Units

Distinguished Provincial Administrators and Trainers

A Few Reminders Regarding the Visitations for the Patients with Hypertension at Family Medicine Units !

(**P.S:** It is advised that the questions are asked, and implementations and recommendations are reminded during the visitations for family physicians and family health workers.)

1	Did you know that the incidence of hypertension in individuals over the age of 18 in Turkey is 28.8%?
2	Do you know the number of individuals over the age of 18 registered in the family medicine unit? If yes, how many? (**P.S:** If unknown, show them how to find it on FMIS)
3	Do you know the number of registered patients diagnosed with hypertension? If yes, how many? (**P.S**: If unknown, show them how to find it on FMIS)
4	Are there any registered patients who do not take their medication regularly, who are not compliant to the treatment or whose hypertension is not under control?
5	What kind of applications do you perform, or suggestions do you make to your registered patients diagnosed with hypertension? (**P.S:** If necessary, kindly give information to the physician about the 7th entry)
6	Do you opportunistically scan the individuals over the age of 18 in your family medicine unit?
7	**Applications and suggestions necessary for the registered patients diagnosed with hypertension in the family medicine units:** ✓ Each individual aged 18 and over who applies to the FMU should have their blood pressure measured **at least once a year** and their blood pressure values should be recorded in the FMIS. ✓ The **CVD** risk of each individual aged 40 and over who applies to FMU should be calculated in accordance with SCORE Turkey and the score value should be written to the FMIS. ✓ During the examination of the patient diagnosed with hypertension, their blood pressure should be measured, and the measured blood pressure values (**both systolic and diastolic**) should be recorded in the FMIS. ✓ The **CVD** risk of the patient diagnosed with hypertension should be calculated in accordance with the SCORE Turkey and recorded in the FMIS. ✓ A patient diagnosed with hypertension should have their **FBG, HbA1C, Total Cholesterol, Creatinine, and Urine Protein levels** checked at least once a year. ✓ **Medication use status** of the patient diagnosed with hypertension should be checked and necessary reminders and recommendations should be made. ✓ **Smoking and alcohol consumption status** of the patient diagnosed with hypertension should be checked and recorded in the FMIS. ✓ A **healthy lifestyle advice** (healthy diet, salt restriction, physical activity, a lifestyle without smoking and alcohol) should be given to the patient diagnosed with hypertension and should be recorded in the FMIS. ✓ **BMI** of the patient diagnosed with hypertension should be calculated and recorded in the FMIS.

Project Participant List

Ministry of Health Project Team

Banu EKİNCİ
Seçil ÖZKAN
Siren SEZER
Gülay SAIN GÜVEN
Aslı ÇARKOĞLU
Zübeyde ÖZKAN ALTUNAY
Esin YILMAZ ASLAN
Gülay SARIOĞLU
Nevin ÇOBANOĞLU
Fatma TAMKOÇ GÜRBÜZTÜRK
Ş. Seçil SİS
Ahmet ARIKAN
Asiye KAPUSUZ

Provincial Project Implementation Teams

Erzincan Provincial Health Directorate

Erkan HİRİK
Özlem GÖKTEKİN UZUN
Adem Yusuf KASIMOĞLU
Türker BEKAR
Faruk Cemal TAŞTAN
Ensar KARFPAN
Miraç Emirhan AYDIN
Nur Banu TATAR
Serpil YILMAZ
Fatma ÇELEBİ
Hilal ÖLMEZ

Çankırı Provincial Health Directorate

Hüseyin KESKİN
Eyüp YALÇINKAYA
Cihan ABDİBAŞ
Kezban Kübra YILDIRIM
Turgay ADANIR
Seyit Ahmet KOSKA
Merve AKIN
Nigar KAYA
Mukaddes OKCU
Hüsniye KARACUROĞLU
Ayşegül AÇIKGÖZ

Uşak Provincial Health Directorate

Sedat KAVAS
İsmail ÇIBIK
Betül İLBEY
Mehmet Fatih ARSLAN
Yasemin KÖPRÜ
Betül BOĞAR
Damla İlkem KUMRUL
Ayşe SÖYLER
Emine UYSAL
Rüveyde ÜLKÜ
Zeynep EMREM
Begüm BELOĞLU

Participants List of Focus Group Discussions in Province Visits

Provincial Focus Group Discussion Team			
Dr. Associate Asiye U. DİKMEN	Çankırı	Gazi University, Faculty of Medicine, Department of Public Health	23-26 February 2020 23-26 February 2020
Dr. Hatice Mediha KINA			
Research Associate Dr. Sümeyye Nur BUDAK			
Research Associate Dr. Burkay BUDAK			
Dr. Associate Hülya ŞİRİN	Erzincan	University of Health Sciences, Gülhane Faculty of Medicine, Department of Public Health	24-27 February 2020 24-27 February 2020
Prof. Dr. Seçil ÖZKAN		Gazi University, Faculty of Medicine, Department of Public Health	
Research Associate Dr. Mert BABACANOĞLU			
Research Associate Dr.Mücahit YILDIZ			
Dr. Associate Hakan TÜZÜN	Uşak	Gazi University, Faculty of Medicine, Department of Public Health	26-29 February 2020 26-29 February 2020
Research Associate Dr. İsmail Emre GÖKCE			
Research Associate Dr.Serkan AKSOY			
Research Associate Dr. Alperen ÖZÇELİK			

REFERENCES

1	World Health Organization, “A global brief on hypertension: silent killer, global public health crisis,” World Health Organization, Geneva, 2013.
2	K. T. Mills, A. Stefanescu ve J. He, “The global epidemiology of hypertension,” *Nature Reviews Nephrology,* no. 16, pp. 223-237, 2020.
3	J. D. Stanaway ve a. et, “Global, regional, and national comparative risk assessment of 84 behavioural, environmental and occupational, and metabolic risks or clusters of risks for 195 countries and territories: a systematic analysis for the global burden of disease study 2017,” *Lancet,* cilt 392, pp. 1923-1994, 2018.
4	M. Wajngarten ve G. S. Silva, “Hypertension and Stroke: Update on Treatment,” *European Cardiology Review,* cilt 14, no. 2, pp. 111-115, 2019.
5	Sağlık Bakanlığı, “Sağlık İstatistikleri Yıllığı 2018,” Sağlık Bakanlığı, 2019, 2018.
6	Y. Akbulut, “Sağlık okuryazarlığının sağlık harcamaları ve sağlık hizmetleri kullanımı açısından değerlendirilmesi,” %1 içinde *Sağlık Okuryazarlığı*, Ankara, Ankara Üniversitesi, 2015, pp. 113-135.
7	Sağlık Bakanlığı, “Türkiye kronik hastalıklar ve risk faktörleri sıklığı çalışması,” Sağlık Bakanlığı, Ankara, 2013.
8	S. Üner, M. Balcılar ve T. Ergüder, “Türkiye Bulaşıcı Olmayan Hastalıkların Prevalansı Hanehalkı Sağlık Araştırması,” Dünya Sağlık Örgütü Türkiye Ofisi, Ankara, 2018.
9	B. Altun, M. Arıcı, G. Nergizoğlu, U. Derici, O. Karatan, C. Turgan ve a. et, “Prevalence, awareness, treatment and control of hypertension in Turkey in 2003,” *Journal of Hypertension,* pp. 1817-1823, 2005.
10	World Health Organization, “HEARTS technical package for cardiovascular disease management in primary health care: risk-based CVD management,” World Health Organization, Geneva, 2020.