

How did the Pandemic Affect Health Utilization for Non-COVID-19 People? Mixed Methods Study in Primary and Tertiary Care from Ankara, Turkey?

Pandemi, COVID-19 Olmayan Kişilerde Sağlık Hizmet Kullanımını Nasıl Etkiledi? Ankara/Türkiye'den Birinci ve Üçüncü Basamak Sağlık Hizmetlerinde Bir Karma Yöntem Araştırması

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ABSTRACT

Aim: We aim to determine the effect of the pandemic on the characteristics of health utilization of non-COVID 19 people.

Method: Quantitative research was conducted on those who applied to two family health centers (n=200) and Gazi Hospital (n=210) in Ankara. Qualitative research was conducted on health workers or managers from primary care (PC) and tertiary care (TC) (Gazi and Gülhane hospital) and consultants of the Ministry of Health. We also used the health records of Gazi hospital.

Results: Making an appointment is the most common problem faced by people applying for both PC (19,0%) and TC (32,9%) during the pandemic. The follow-up percentages for PC and TC during the pandemic were 60%-56.3% in DM, 54.2%-54.9% in hypertension, 28.6%-46.2% in COPD, and 16.7%-48.5% in mental health problems, respectively. For all diseases investigated, these percentages were above 80% before the pandemic. During the pandemic period, a sharp decrease between 5% and 85% was observed in outpatients and inpatients due to DM, HT and COPD in Gazi hospital.

Participants of the qualitative study stated that delayed admission to the health institution causes more complicated case diagnoses. According to health workers, the groups most affected by the lack of access to healthcare services are demographic group elderly patients and medical group cancer patients. It was emphasized that PC plays an important role in the continuity of health services.

Conclusion: In the short term, it may be suggested to develop informative materials about conditions that require urgent treatment and follow-up processes of non-communicable diseases (NCDs) during the pandemic.

Interruptions in NCDs follow-up and treatment may create the potential for increased morbidity and mortality. Countries should make their plans considering the long-term effects of pandemic on the health system.

The pandemic has revealed the importance of PC for accessible and sustainable health care.

Keywords: COVID-19 pandemic, health care utilization, non-communicable diseases, Turkey

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ÖZET

Amaç: Pandeminin COVID 19 olmayan kişilerde sağlık hizmeti kullanımı özellikleri üzerindeki etkisinin belirlenmesi amaçlanmıştır.

Yöntem: Niceliksel çalışma, Ankara ilinde bulunan iki aile sağlığı merkezine (n=200) ve Gazi Hastanesine (n=210) başvuranlarda yapılmıştır. Niteliksel çalışma, birinci basamak sağlık kuruluşları (BBSK) ve üçüncü basamak sağlık kuruluşları (ÜBSK) (Gazi ve Gülhane hastanesi) sağlık çalışanları veya yöneticileri ve Sağlık Bakanlığı danışmanları üzerinde yapılmıştır. Çalışmada Gazi hastanesi sağlık kayıtları da kullanılmıştır.

Bulgular: Pandemi döneminde hem BBSK (%19,0) hem de ÜBSK (%32,9) için başvuran kişilerin en sık karşılaştığı sorun randevu almaktır. Pandemi sırasında BBSK ve ÜBSK için takip sıklıkları sırasıyla DM'de %60-%56,3, hipertansiyonda %54,2-%54,9, KOAH'ta %28,6-%46,2 ve ruh sağlığı sorunlarında %16,7-%48,5 olarak gerçekleşmiştir. Araştırılan tüm hastalıklar için bu sıklıklar pandemi öncesinde %80'in üzerindeydi. Pandemi döneminde Gazi hastanesinde DM, HT ve KOAH nedeniyle ayaktan ve yatan hastalarda %5 ile %85 arasında bir düşüş gözlemlenmiştir.

Nitel çalışmanın katılımcıları, sağlık kuruluşuna geç başvurunun daha karmaşık vaka teşhislerine neden olduğunu belirtmişlerdir. Sağlık çalışanlarına göre sağlık hizmetlerine erişim eksikliğinden en çok etkilenen gruplar, yaşlı hastalar ve kanser hastalarıdır. Sağlık hizmetlerinin devamlılığında BBSK'nın önemli rol oynadığı vurgulanmıştır.

Sonuç: Kısa vadede, pandemi sırasında bulaşıcı olmayan hastalıkların (BOH) acil tedavi ve takip süreçleri gerektiren durumları hakkında bilgilendirici materyallerin geliştirilmesi önerilebilir.

BOH takip ve tedavisindeki kesintiler, morbidite ve mortalite artışı potansiyeli yaratabilir. Ülkeler, pandeminin sağlık sistemi üzerindeki uzun vadeli etkilerini dikkate alarak planlarını yapmalıdır.

Pandemi, erişilebilir ve sürdürülebilir sağlık hizmetleri için birinci basamak sağlık hizmetlerinin önemini ortaya çıkarmıştır.

Anahtar Sözcükler: COVID-19 pandemisi, sağlık hizmetleri kullanımı, bulaşıcı olmayan hastalıklar, Türkiye.

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INTRODUCTION

During the COVID-19 pandemic, the burden of the disease and its impact on the health system have reached enormous levels in Turkey as in many other countries in the world. As of the beginning of June 2021, Turkey ranks 5th in the world in terms of the total number of cases with approximately five million two hundred thousand cases. While the number of cases per million people is 61.9, the same parameter is 22.2 world-wide (1).

The decrease in the service capacity and the emergence of excessive demand for health services by the society during the pandemic make it impossible to provide full health services. According to World Health Organization (WHO) survey, more than a year after the onset of the pandemic, about 90% of countries still have one or more disruptions in essential health services. Countries had to implement the redistribution of health workers to combat the pandemic and had to close some health facilities. To adapt pandemic situations, countries have implemented different measures such as recruiting additional staff, providing more home-based services, multi-month prescriptions for treatments, and increasing the use of telemedicine (2). In this process, problems such as the disruption of the health services related to non-COVID-19 patients and healthy people become an important issue (3).

Routine medical follow-up and treatment of patients with non-communicable diseases (NCDs) may be delayed due to mobility restrictions, shortages of medicines and lack of human resources in clinics and hospitals. Many people may have perceived a high risk of exposure to COVID-19 in hospitals and clinics. This may have influenced health-care-seeking behavior for chronic medical conditions, thereby resulting in morbidity and mortality that cannot be directly attributed to the COVID-19 outbreak (4-7). Also, NCDs have been adversely affected by the disruption of health behaviors such as healthy eating, physical activity, sufficient sleeping during the pandemic (8).

NCDs are responsible for 70% of all deaths worldwide. Furthermore, approximately 70% of NCDs deaths and 80% of premature deaths of NCDs occur in low- and middle-income countries (LMIC) (9). Early detection, effective treatment and rehabilitation if need, are inevitable items for struggling with NCDs. Limited universal health coverage, hence limited health access, are seen as possible reasons for higher premature deaths from NCDs in LMIC (10). NCDs are an important public health problem in Turkey (11). These circumstances make it more important to identify health care utilization characteristics for NCDs among all non-COVID-19 persons during the pandemic.

Characteristics of changes in health utilization differ according to the health care setting. The effects of the pandemic on health utilization are an essential element in the planning of health services during and after the outbreak for the development of health policies(12). It is suggested that the effects of the pandemic on non-COVID-19 patients will continue to occur over the years (13). For Turkey, there are not enough studies revealing the changing characteristics of non-COVID-19 health applications during the pandemic.

It is important to determine the problems experienced in the provision of health services during the pandemic period and to identify the groups most affected by the problems. Making separate evaluations for those who apply to primary health care (PC) and those who apply to tertiary health care (TC) may help to identify different perspectives on the problem. The health service delivery problems during the pandemic period and the determination of risk groups for this will also guide the planning and measures to be taken in the post-pandemic period (14).

On the other hand, opinions of health workers and the administrative officers working in PC and TC regarding the changing health utilization are important. The opinions of those who consult the Ministry of Health are also important. The individuals listed here serve as enforcers and policy makers at headquarters and peripheral units of health system in Turkey.

In this study, it was aimed to determine how health utilization changed in people who applied to PC and those who applied to TC during the pandemic period. In addition, a comparison of the number of inpatients and outpatients related to NCDs including hypertension (HT), diabetes mellitus (DM), chronic obstructive pulmonary disease (COPD), and mental diseases in 2019 and 2020 will be made in TC. In this study, it was also aimed to determine the opinions of health workers and administrators working in PC and TC on changing health utilization.

METHODS

In this study, the mixed method, which includes the quantitative method and the qualitative method, was used. Additionally, we used routine health data related health utilities for TC.

Components of the study*The quantitative study*

Quantitative research is conducted on those who apply to health institutions. Health applicants include those applying to a family health center in Sincan and those applying to Gazi University Medical Faculty Hospital. Sincan is one of the central districts of Ankara. The population of the Sincan district in 2019 is approximately 535 thousand people. PC is provided by 41 family health centers in Sincan. The study includes people who applied to two family health centers in Sincan. Gazi Hospital is a health institution with a capacity of approximately one thousand beds providing health services at the tertiary level in Ankara. The study was carried out on those who applied to Gazi Hospital to receive outpatient health services. While computing the sample, we accepted that hypothesized frequency of the outcome factor is 50%, margin of error is 10% (50%±10%), and the design effect is 2. The sample size was calculated as 193 people for PC and TC separately.

The quantitative study was carried out by applying a face-to-face interview technique. IBM SPSS program (version 25) was used for statistical analysis. Data collection took place at Gazi University Hospital outpatients polyclinics (n=210) and family health centers (n=200) on February 18-26, 2021-2022. The questionnaire includes basic demographic questions of individuals and questions concerning the change in health care usage characteristics during the pandemic. NCDs that have been investigated in this study are DM, HT, COPD and mental diseases. Variables of perceived health are categorized as "better than poor" and "poor or very poor". "Better than poor" includes very good, good, neither good nor bad; and "poor or very poor" includes poor, very poor. The Chi-square test was used as a statistical method.

Review of routine health data

The monthly outpatient clinic admissions and monthly inpatient treatment numbers of the following disease groups to Gazi University Medical Faculty Hospital in 2019 and 2020 were taken into consideration: DM, HT, COPD, and mental diseases (psychiatry clinic applications).

The qualitative study

The qualitative research was conducted on healthcare workers or managers from PC and TC. Participants include the employees and managers of Sincan district health directorate, Gazi University Medical Faculty Hospital, and Gülhane Training and Research Hospital, and members of COVID-19 Community Sciences Advisory Board of Ministry of Health. The qualitative study was implemented through a focus group interview throughout March. The qualitative study was carried out with 34 people.

The question groups used to direct the qualitative study were as follows:

- Before the pandemic, did you generally have problems in the delivery of health services and the access of patients to health services?
- What are the effects of the pandemic on access to health services?
- Are there problems in the provision of health services in general due to the pandemic?
- How did the restrictive general measures taken during the pandemic period affect the health service utilization?
- Are there any problems in the provision of health services and access to health services other than those mentioned?

Ethical approval

Ethical approval was obtained from the Ethics Committee of Gazi University at the meeting of the commission dated 16.02.2021 and numbered 03 (Research Code No: 2021 – 545).

RESULTS**Questionnaire results of those applying to health services**

Table 1 shows the reason for applying to a health services and situation of having any problems with healthcare use. The most common reasons for admission to PC are to receive preventive services and (37,5%) to re-prescribe current medication (37,5%). The most common reasons for admission to TC are control of an old known disease (41,0%) and to re-prescribe current medication

(19%). Making an appointment is the most common problem for patients who applied to both PC (19,0%) and TC (32,9%) during the pandemic.

There is no statistically significant difference between age groups, genders and education groups in terms of having any problems in health use during the pandemic period. There is a statistically significant difference between the groups related to perceived health ($p<0.01$), presence of NCDs ($p<0.01$), concern about COVID-19 ($p<0.05$) (Table 2).

Table 1: Reason for applying to a health service and situation of having problems with healthcare use

	Primary care (n=200) (%)	Tertiary care (n=210) (%)
Reason for Applying to a Health service		
To receive preventive services such as vaccination, birth control	37,5	1,0
To get information about health and apply for counseling	3,0	3,3
To get examined for an incipient problem	9,5	29,5
For the control of an old known disease	10,0	41,0
To get examined as routine despite no health problems	2,5	5,2
To re-prescribe current medication or devices	37,5	19,0
For medical assistance due to accident or injury	-	1,0
Situation of Having Problems		
Having any problem	19,0	40,0
Having not any problem	81,0	60,0
Type of Having Problems		
Having problems making an appointment	19,0	32,9
Having problems controlling an old known disease	7,0	15,7
Having problem prescribing medications	3,0	5,2
Having problems getting a Health Condition Report in obligatory situations	2,5	1,4
Having problems accessing to health care	7,0	18,1
Having problems about any laboratory examination	2,5	10,5

Table 2: Distribution of situation of having problems related to health services

	Having any problem (%)	p
Perceived health		
Better than poor	26.4	
Poor or very poor	44.2	<0.01
Chronic disease		
No	17.8	
Yes	34.2	<0.01
Concern about Covid 19		
Not often or not? always anxious	22.4	
Often or always anxious	33.0	<0.05

Table 3 shows the follow-up status of the participants before and during the pandemic. For all of the NCDs examined, there are serious decreases in follow-up rates with the pandemic.

There is no statistically significant difference between gender, education level and age groups for the status of being followed for the 4 NCDs within the scope of the research ($p>0.05$). For COPD follow-up status ($n=27$), there is a statistically significant difference between the group that was frequently or always anxious about COVID-19 transmission (23.8%) and the group that did not (83.5%) ($p<0.01$). There is no significant difference between anxiety states categorized in this way in terms of follow-up for other disease groups ($p>0.05$).

For COPD follow-up status ($n=27$), there is a statistically significant difference between the group with poor or very poor perceived health (15.4%) and the group with better than poor perceived health (57.1%) ($p<0.01$). There is no significant difference between perceived health conditions categorized in this way in terms of follow-up for other disease groups ($p>0.05$).

Results of records of health utilization in tertiary health care

Table 4 shows the percent change of outpatients and inpatients in Gazi University Hospital between 2019-2020 for DM, HT, and COPD. It is observed that there is a sharp decline for outpatients and inpatients.

Table 3: Follow-up status of those who apply to primary and tertiary health care institutions before and during the pandemic

	Primary care applicants			Tertiary care applicants		
	n	Follow-up Status Before the Pandemic (%)	Status the Pandemic (%)	Follow-up Status During the Pandemic (%)	n	Follow-up Status Before the Pandemic (%)
Diabetes Mellitus	68	97.1	60	72	94.4	56.3
Hypertension	81	93.8	54.2	84	84.5	54.9
COPD	13	100	28.6	13	92.3	46.2
Mental Health Problems	6	83.3	16.7	34	79.4	48.5

Table 4: Percent change of outpatients and inpatients in Gazi University Hospital between 2019-2020 for DM, hypertension and COPD

	DM		Hypertension		COPD	
	Outpatients	Inpatients	Outpatients	Inpatients	Outpatients	Inpatients
April	-75,95	-22,62	-86,90	-75,56	-84,98	-79,23
May	-73,06	-23,19	-82,25	-59,81	-85,61	-76,69
June	-19,59	5,08	-29,32	-9,62	-44,04	-58,70
July	-36,61	-5,04	-44,02	-26,28	-52,86	-66,36
August	-27,75	-17,22	-26,27	-38,48	-53,24	-50,77
September	-47,34	-25,76	-62,51	-46,35	-54,95	-68,60
October	-48,87	-27,09	-62,13	-46,04	-59,42	-72,90
November	-46,15	-25,03	-63,35	-51,39	-73,96	-71,20
December	-49,44	-30,96	-65,19	-47,71	-77,85	-69,66

Table 5: Participants of the Qualitative Study

Institution	Number of participants	Age groups of participants	Sex of participants	tasks of participants	Code of participants
Gazi University Medical Faculty Hospital	10	41-54	6 women 4 men	1 hospital manager, 1 unit manager, 1 unit assistant manager, 3 clinical managers 5 physicians	FG.GZ
Sincan District Health Directorate	8	31-58	3 women 5 men	1 district health director, 3 branch managers, 1 nurse 3 family doctor	FG.SC
Health Sciences University Gulhane Training and Research Hospital	10	50-61	10 men	10 faculty member doctors	FG.GL.
Members of COVID-19 Community Sciences Advisory Board of Ministry of Health	6	38-72	2 women 4 men	1 intensive care unit officer, 1 psychiatry unit officer, 1 emergency medicine specialist, 1 faculty of economics lecturer, 1 sociologist of religion, 1 medical historian	FG.GZ.SSB

Results of the qualitative study

Table 5 shows the participants of the qualitative study which includes 34 people from four different institutions.

We categorized the outputs of the interviews as four different themes.

Main characteristics of health delivery before the pandemic

Participants mentioned that there was no significant problem in health service delivery before the pandemic and that general functioning could be achieved. On the other hand, they generally talked about negative situations caused by people skipping primary and secondary health services and directly applying to tertiary or emergency services. They mentioned that it is important to properly coordinate the health service demand.

FG.GZ.A9: Before COVID-19, there was no problem accessing. It was more orderly before the pandemic.

FG.GL.A6. Problems experienced in patients' access to healthcare services resulted from outpatient clinic applications without an appointment through the system. They mostly apply to the emergency service and request that their requests be resolved through this channel.

FG.GZ.SSB2: Emergency departments have always faced a situation as if there was an earthquake and a major accident happening every day, especially in education and research hospitals.

FG.GZ.SSB1: Our people have easy access and rights to tertiary healthcare services, mostly bypassing primary and secondary healthcare services. During the pandemic, we have seen that there were difficulties in keeping up with the provision of health services abroad. However, after the pandemic started in our country, tertiary care, that is, the hospitals providing third level service, adapted to this very easily.

Pandemic effects on access to healthcare service

Although it was seen that relatively more applications were made to benefit from health services in the following periods, it was mentioned that there were fewer applications compared to the pre-pandemic period.

FG.GZ.A1: As the deputy chief physician, I can say that there are 5-6 thousand applications per day before the pandemic for reasons such as examination, medication, hospitalization, etc. With the pandemic, the hospital's B block in March was devoted to the pandemic only. Downsizing was made in all services.

Appointments have been reduced by 51% since mid-March to reduce the density. Despite this, people did not want to make an appointment. We could not even reach this rate. The number of patients coming in June increased.

FG.GZ.A3: As the hospital billing unit, we were billing around 100 thousand every month before the pandemic. With the pandemic, this number dropped to 40-50 thousand.

It has been stated that the concern of disease transmission from COVID-19 cases in hospitals during the pandemic retained people from applying for health. This situation caused no application to the health service or delayed health care application. This result was observed in both PC and TC.

FG.SC.A5: The number of patients did not change because awareness was less at the beginning of the pandemic. In the ongoing process, as they saw the deaths and the patients who had COVID in a very bad general condition, people were hesitant to come to hospitals and family health centers. Although they had symptoms, they waited and did not apply until they had symptoms in advanced stages.

FG.GZ.A7: Unfortunately, regarding this issue, the presence of patients with advanced cancer stage is related to the delay of the examination time. While there was no patient newly diagnosed in the period of March-April-May, suddenly, with the relaxation of the rules, the newly diagnosed patient started to come.

FG.GZ.SSB2: With the arrival of the pandemic, people have had a fear of hospitals being a COVID transmission point, and naturally, the number of our applications from the green area started to decrease significantly. This year, I saw the highest number of perforations, that is, intraabdominal organ perforations that I have seen in my life. That is, I saw it last year.

The general view of the participants is that chronic patients, oncology patients and patients over 65-under 20 years of age are more affected by the barriers in accessing health services.

FG.SC.A1: I think the access of older people and young people under 20 is affected mostly. They are both at home and tackled many difficulties without realizing.

FG.GL.A9-10: Since this group has the most chronic diseases, and therefore is the least admitted to the hospital, elderly chronic patients were affected the most in health care.

FG.GZ.A7: Since the treatment processes are long in oncological patients, it may sometimes be necessary to stay in guesthouses for 4-5 days. All this pandemic and infection contagion affected chronic patients. Another problem is that the time interval has been widened for the treatment protocols of those who are in remission during the normal period but will receive treatment for this. This is a situation that adversely affects oncological patients.

Pandemic effects on healthcare service delivery

Due to the fact that some of the hospital services are allocated as COVID-19 services, the decrease in patient capacity in hospitals has caused inadequacies in the treatment of patients who require chronic disease follow-up and surgical treatment. It has been declared that there are some disruptions and inadequacies in the provision of health services due to the infection of the personnel.

FG.GZ.A8: As general surgery, we had to share our services with other services due to the pandemic. We restricted the number of patient beds in order to reduce the number of patients in the same room due to isolation measures. At the same time, the number of operating tables decreased.

FG.GZ.A5: In August, there were many positive cases among assistants. This situation negatively affected the workload. Health service delivery has also been negatively affected.

It is understood that family health centers have an important function in terms of both the continuity of preventive health services and meeting the demands for curative health services.

FG.SC.A6: The number of patients increased as the closest state hospital turned into a pandemic hospital and we were in a region where socioeconomically private hospitals were not preferred. The patient care process became difficult. We tried to continue the follow-up of pregnant women and children. We tried not to disrupt the immunization services. People wanted to postpone or cancel their appointments during this process. We had trouble persuading people for follow-up and vaccination.

Participants talked about the negative effects of closed inpatient services on the mental health services and the effects of the filiation system on the health workforce.

FG.GZ.SSB3: Inpatient departments of psychiatric services in medical faculties in Ankara had to stop. Also, education remained in the background during this period. There were also disruptions in service delivery. Filiation is very important in Turkey's fight against the pandemic in the long term, but, due to the teams sent to filiation, there may be problems in both the provision of health services and education.

Social perception and reaction about pandemic effects

It was mentioned that a pandemic can cause an increase in tensions during healthcare delivery. The common opinion of the participants is that legal sanctions should be more deterrent.

FG.GZ.A1: There may be tension with patients in the hospital from time to time. In these cases, discussions may arise between the security forces who come for the intervention and the patients in terms of social distance and contact.

FG.GL.A7: In the beginning, there was a positive change, but then it went back to the old. The positive reason for change was due to respect for healthcare professionals to fight a deadly disease.

The participants generally stated that the pandemic process negatively affected the psychology of the society, but also strengthened the social ties, and stated that the society managed this process well. The participants also mentioned that the pandemic does not have a clear end date and that it is important to provide psychological assistance to the community in this process.

FG.GZ.SSB1: We, as a society, have indeed become a strong society in this process. I think people still held out very well. It is a very difficult period because socialization is inherent in human beings. We understood this even more clearly. I think the pandemic has shown how important it is to talk to our loved ones.

FG.GZ.SSB3: Some people have already died due to COVID, but their relatives have been left behind. Most of them are experiencing seriously complicated grief. Our 3 million people are in danger of experiencing posttraumatic stress disorder. We have never taken into account that many people are caught in this disease and that many people's relatives die from this disease, and I think that this will also have a reflection after COVID.

Attention was drawn to the consequences of the pandemic in terms of health inequalities and social inequalities.

FG.GZ.SSB4: In this period, the disadvantages faced by people with low income groups in accessing life opportunities, namely those with less social capital, cultural capital and financial capital, can increase. Yet, we cannot see the consequences of this for now, but I think it will have serious consequences in the future.

FG.GZ.SSB5: We know that certain groups are much more affected. The bottom line of society, the poor, women and youth are the most affected. We see that these are the groups most affected by psychosocial effects. Family solidarity is one of the important factors in society. We have seen that the stronger the social capital of people, the stronger their social ties, and the easier it is for people to cope with psychosocial problems.

DISCUSSION

In this study, 65.7% of those who applied to PC and 81.4% of those who applied to TC stated that they had chronic diseases. According to the "The National Household Health Survey", approximately 3 in 10 people in Turkey have hypertension, one in 10 people have diabetes, and one in 4 people has an increased level of cholesterol, which clearly shows the importance of chronic diseases as public health problems (15). This situation reveals the great weight of NCDs in the workload.

Properties of healthcare use before the pandemic

Qualitative study participants stated that there was no problem in accessing services in the pre-pandemic period and patients could easily access them. It was stated that the number of applications was high before the pandemic, and attention was drawn to the high number of emergency room applications.

The number of applications to physicians per capita in Turkey is high, and the trend continues to increase. It increased from 8.3 in 2014 to 9.5 in 2018. Of the 9.5 applications, 3.2 of them belong to primary care and 6.3 of them to the secondary, indicating the use of therapeutic healthcare service predominantly. On the other hand, the fact that OECD average number of applications to the physician per capita is 6.8 points to the high number of applications in Turkey (16).

In the post-pandemic period, taking measures by identifying the determinants of the high number of health service applications should be among the health policy tools. Although the service delivery structure based on the high number of applicants may have partial advantages for extraordinary conditions such as pandemics, it may be an important risk factor for the sustainability of the system in the long term.

Pandemic effects on access to healthcare service

Extraordinary measures have also been taken in health service delivery in Turkey. The hospitals where the cases diagnosed with COVID-19 are treated are defined as pandemic hospitals. Hospitals with at least two of the disease specialists in infectious diseases, chest diseases, internal medicine and a 3rd level adult intensive care bed are accepted as pandemic hospitals. Pandemic hospitals have made numerous organizational changes regarding routine services such as the closure of some services and the reduction of outpatient appointments (17).

It is noteworthy that there has been a serious decrease in the rates of disease follow-up for PC and TC applicants during the pandemic period. The quantitative part of this study was conducted on those who applied to health services. People within the scope of the study are those who have applied to health services despite obstacles. In a population-based study, it can be predicted that these rates will be higher. Registry-based data also support this assessment. Reductions of up to 76% for DM, up to 87% for HT, up to 86% for COPD, and up to 74% for mental diseases in Gazi University Hospital reveal the extent of contraction in outpatient service provision. A sharp decline was also observed for inpatients. Furthermore, a 100% reduction in mental disease inpatients is the result of the closure of the service. These decreases are worrisome in terms of possible worsening of prognoses and emerging of complications.

Data based on hospital records show that the number of applications is generally in line with the mobility restriction measures in Turkey. During periods when restrictions are stretched, the number of applications tends to increase in itself. In the qualitative study, as well, healthcare professionals drew attention to the decrease in the number of applications during the restriction periods and the increase in newly diagnosed patients during the period when the restrictions were relaxed. Although the restrictions do not constitute an obstacle to applications to health institutions, it is seen that people do not apply for services more during these periods. Since the periods in which the restrictions increase are also the periods when the number of cases is higher, people may not want to apply to the hospital.

In other single country examples, it can be seen that the pandemic greatly disrupts access to healthcare services. According to a study implemented in Indonesia, there was a 46.3% decrease in the total number of visits in PC (18). In an online study of 1017 people in Singapore, it was found that 40% of the participants cancelled their appointments. 62% of these cancellations were made upon the demands of the patients and 38% upon the demands of the health institution (5). A systematic review including 81 studies across 20 countries shows that median reductions for visits are 42%, for diagnostics 31%, and for therapeutics 30% (19). The WHO conducted a study involving 155 countries regarding the interruption of preventive and therapeutic health services in NCDs with the COVID-19 pandemic. It was shown that 53% of the services provided for HT; 49% of the services provided for DM; 42% for cancer treatment; and 31% for cardiovascular emergencies were interrupted. (20). In this case, alternative follow-up recommendations have come up for those with NCDs. With telemedicine applications, people with chronic diseases are provided remote service. In order to avoid service interruptions during the pandemic period, 58% of the countries have switched to telemedicine applications(20).

According to the results of the qualitative study, the most important reason for not applying for health care is the concern of getting the disease. It is also stated by other studies that the primary reason for the decrease in health utilization is the fear of getting infection from COVID-19 (21).

It is also indicated that factors related to the health utilization of non-COVID-19 patients are complicated and interact with each other. Patient preference, risk of infection, government implementations related to restriction measures, administrative decisions related to hospital management, logistic issues related to access to health care are the factors that play an important role (22).

The percentage of having problems related to health services during the pandemic is higher for those with poor or very poor perceived health (44.2%) than those with chronic illnesses (34.2%) according to our quantitative study. This result may show that those who need health services the most are most adversely affected by the pandemic conditions.

We found significant differences between different subgroups of COPD regarding the follow-up rates. For COPD, follow-up rates were lower in the group always or often anxious about COVID-19 transmission (23.8%) and in the group with perceived poor or very poor health (15.4%). A study including 153 COPD patients found that 29,4% of patients reported worsening of their symptoms, but 15.6% of patients applied to health utilization (23). This shows that those with poorer health status within the same chronic disease group may be more disadvantaged in terms of disease follow-up.

No significant differences were found between the various subgroups for diseases other than COPD for follow-up status. This shows that the factors that determine the disease follow-up for different NCDs may have different characteristics. Identifying the groups most adversely affected by disease follow-up during the pandemic period will help prioritize intervention studies.

In this study, the highest decline in follow-up rates in PC applicants was related to the mental health problems group (from 83.3% to 16.7%). In TC applicants, it was seen that approximately half of the patients (48.5%) with mental health problems during the pandemic period were out of follow-up. Closure of psychiatry inpatient services is among the factors defined as important in the qualitative interview. Considering the fact that the pandemic itself can create an environment that will increase mental health problems, it can be said that the dimensions of the service deficit that arise in pandemic conditions may have the potential to increase even more (24). Special attention will need to be paid to mental health services while taking measures to ensure the continuity of health service provision in pandemic conditions.

According to the evaluations of the qualitative study participants, the elderly stand out among the groups most affected by the access to health services in terms of demographic criteria. While this age group has a high risk because of COVID-19, it is the group exposed to the longest-term restrictions in Turkey. This group has a double risk of having both communicable diseases and NCDs. The fact that this group is among the ones having the most difficulty in accessing the service adds a new axis to the double risk.

It has been stated by healthcare professionals that especially cancer patients suffer from the delay in accessing services. Delays in the diagnosis and treatment process due to the nature of cancer may adversely affect the prognosis. In a qualitative study conducted in China, it was found that the increased threat perception related to COVID-19 affected the patients' exposure to cancer (25). It may be beneficial to develop informational materials emphasizing that early diagnosis of cancer is effective in the pandemic period. Developing practices that include measures to encourage for cancer patients with follow-up to access services can be effective in reducing the effects of the pandemic.

Pandemic effects on healthcare service delivery

The percentage of having any problem is higher in the TC (40%) than PC (19%). Getting an appointment takes the first place among the problems in both PC (19%) and TC (32.9%). This situation may have occurred as a result of the restrictions experienced in polyclinic services in TC during the pandemic. The fact that even one-third of TC applicants state that they have problems in getting an appointment gives a rough idea of how high this rate may be in the general population. Furthermore, these percentages are higher in TC than PC. This result suggests that PC is less likely source of problem. As a supportive aspect of this determination, in the qualitative study, it was stated by PC workers that the number of applications to PC increased during the pandemic period. Its contribution to the continuity of health services during the pandemic reveals the importance of PC.

PC workers stated that they made an effort to persuade people for follow-up and routine vaccination program. Preventive health services provided in PC can be among the health services vulnerable to the effects of the pandemic.

In a qualitative study conducted in Nepal, it was found that maternal health and immunization services were among the most affected services (26). More than one-third of countries reported disruptions to immunization services in the WHO survey (2). In Turkey, how preventive services such as routine childhood vaccination are affected during the pandemic should be clarified with specific studies or based on health records.

The pandemic period has led to the emergence of the importance of PC. It is observed that PC fulfills a very important function in this period, especially for the elderly and lower-income groups who are more disadvantaged in accessing health services. Increasing the capacity and quality of PC in the post-pandemic period will contribute to healthcare services both in ordinary and crisis periods.

It was stated by the participants that the filiation works were successful, and it was emphasized that even specialist physicians from different clinical branches took part in filiation teams. Contact tracing is seen by WHO as one of the basic instruments in combating pandemics. It is stated in WHO sources that community participation, public support, careful planning, taking into account local needs, trained health manpower, logistic support, data collection and evaluation system are critical components of contact tracing (27). On the other hand, long-term appointments of physicians in therapeutic health institutions, especially specialist physicians, to the? filiation teams may be among the reasons for the service deficit in the health institutions where these physicians work. This point shows how important it can be for some physicians in filiation teams to be able to return to their main positions in terms of reducing the long-term negative effects of the pandemic.

Social perception and reaction about pandemic effects

It was stated by health care workers that the pandemic period had a positive effect on the relationship between healthcare professionals and citizens. Despite the increasing demand for services in general, it is pleasing to see that there are no cases of violence in health. It can be said that the pandemic has created an awareness among citizens about the difficulties of working conditions of healthcare professionals. It may be important to continue efforts to ensure the continuity of this awareness in the post-pandemic period.

It has been emphasized that social groups with lower cultural capital or social capital are more negatively affected by the pandemic, and those with stronger social capital can more easily create coping mechanisms. This determination may serve as a source for an interpretation that pre-existing health inequalities may affect the course of the pandemic. Incentives for disadvantaged social groups will be important in mitigating the effects of the pandemic.

A limitation of this study is that the quantitative part of the study was carried out with those who applied to health services. In order to fully demonstrate the health service usage habits during the pandemic period, community-based studies are required. Since it was not possible to conduct a community-based study due to the limited health manpower during the pandemic period, a study design that could indirectly detect the problem was created. As it is known that the quantitative part of the study has important limitations, the qualitative part and the part based on hospital records were added to this study.

It is also a limitation that only two family health centers for PC and only one hospital for TC are within the scope of the research. These features of the study design prevent the generalization of the results to the population.

CONCLUSIONS

The part of the study related to the data obtained from hospital records and the qualitative interview results indicate a decrease in the admissions of those with NCDs. The quantitative part shows that there is a significant decrease in the level of primary and tertiary health care services in NCDs follow-up.

The fact that the rate of those who have any problems related to the use of health services is higher in those with chronic diseases and those with poor perceived health, suggest that the groups in need of service more are most adversely affected by the pandemic.

It has been stated that delayed admission to the health institution causes more complicated case diagnoses. During the pandemic period, groups most affected by the lack of access to healthcare services stand out as demographic group elderly patients and medical group cancer patients.

It may be beneficial to develop packages of special measures that encourage access to these risk groups. It may be suggested to develop informative materials on the conditions that require urgent treatment of common NCDs and the follow-up processes of NCDs.

It is understood that PC plays a very important role in ensuring the continuity of health service provision in pandemic conditions. PC has contributed greatly to combating the pandemic, not only in terms of public health practices such as contact screening, but also in terms of health service delivery. This result once again proves the importance of PC in terms of public health.

Interruptions in NCDs follow-up and treatment may create the potential for increased morbidity and mortality in the long term. Countries should make their plans considering not only the long-term consequences of COVID-19 as a disease but also the long-term effects on the health system as a pandemic that will continue afterward.

Conflict of interest

No conflict of interest was declared by the authors.

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