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Abstract

The main objective of this study is to evaluate the performance of Turkey's Health System during the COVID-19 pandemic. A cross-sectional study was conducted in Turkey among 656 people using a questionnaire. STATA 14.0 statistical software package was used for analysing the data. Frequency, percentage, mean, standard deviation, t-test and one-way analysis of variance test were used. The participants' Healthcare System Performance Evaluation Scale total score mean $\bar{X} = 3.60 \pm 0.6$ in the sub-dimension of 'Safe and Security' $\bar{X} = 3.63 \pm 0.8$, in the sub-dimension of 'Transparency' $\bar{X} = 3.15 \pm 1.1$, in the sub-dimension 'Accessibility' $\bar{X} = 3.79 \pm 0.9$, in the sub-dimension 'Affordability' $\bar{X} = 3.83 \pm 0.8$ was determined. The Healthcare System Performance Evaluation Scale and a sub-dimension of this scale, accessibility, scores of them are high and differed statistically by age. The affordability sub-scale score was statistically different from income groups ($F = 6.47$; $p < .05$). Although the performance of the general healthcare system is high, it was seen that the scores regarding the transparency of the information shared during COVID-19 were partially lower than other dimensions.

Keywords

Healthcare system, performance evaluation, COVID-19, health management, Turkey

Introduction

A new virus appeared in China for the first time in December 2019. This virus first spread to many cities in China and then to many countries in the world. This virus was named the new type of coronavirus (COVID-19) by the World Health Organization (WHO) (Li et al., 2020; Mahase, 2020). The number of confirmed cases in the world until now (3 May 2020) has reached 3,545,872 and the number of deaths has reached 247,347 (Worldometers, 2020). Thousands of people have been dying every day since the COVID-19 outbreak began (Mahase, 2020). In the shadow of these deaths, scientists, experts and authorities are discussing different healthcare systems around the world every day.

Healthcare systems are shaped according to the political situation, economic system, ideology, insurance type and culture of the countries. Although healthcare systems differ from country to country, it is stated that the principles of most healthcare systems are more or less similar (Reid, 2009). Although there are many healthcare systems in the world, there are four basic healthcare systems. These models are the Beveridge Model, the Bismarck Model, the National Health Insurance Model and the Out-of-pocket Model (Chung, 2017). Some of these are financed by social insurances, some by taxes and some by individual premiums (Reid, 2009). Most countries do not use these healthcare systems, which differ in theory, by themselves. In general, countries use a mixture of these healthcare systems (Chung, 2017; Reid, 2009). Turkey

is one of those countries that prefer a mixed healthcare system model where both the private sector and the public sector operate. This mixed healthcare system is a structure that is financed by both taxes, social premiums, and very few but out-of-pocket expenditures (Okursoy, 2010).

The performance of healthcare systems is determined by the degree of protection and development of individuals' health, fair financing and meeting the expectations of individuals (Murray & Frenk, 1999, 2000; WHO, 2000). It is stated that the power of the healthcare system will make it successful in order to eliminate all elements that threaten the health of individuals (WHO, 2000). Regardless of the type, the main purpose of healthcare systems is to protect everyone's health and provide healthcare when necessary (Bleich et al., 2009).

The thoughts of individuals who use the system to evaluate the performance of healthcare systems are considered very important. Because individuals are accepted as both users and

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stakeholders of healthcare systems. Therefore, it is stated that the evaluation of the healthcare systems' performance evaluation dimensions such as safe and security, transparency, accessibility and affordability will contribute to the accountability of the healthcare system (Blendon et al., 2001). It is extremely important to evaluate the performance of healthcare systems. Because individuals' trust in healthcare systems is said to affect their health results positively (Mossialos, 1997).

In order to evaluate the performance of healthcare systems in detail, it is necessary to evaluate some features that are important for individuals. These features are that the health services provided by the healthcare system are safe, accessible, the services are affordable and the information provided is transparent (Hall & Dornan; 1990; Munro & Duckett, 2015; Strasser et al., 1993).

The high number of services provided by healthcare systems is not an adequate criterion alone. Because it is a fact that individuals who do not have the power to pay are also stakeholders of the healthcare system. It is stated that economically disadvantaged people have access to health services whenever they want and the wide coverage of these health services is an important factor that shows the performance of the healthcare system (Subramanian et al., 2009). Because the power of the healthcare system to include citizens is considered to be important in evaluating the performance. It is important for individuals to comply with social distancing and isolation rules, pay attention to hand hygiene and use protective equipment (Hick & Biddinger, 2020). However, it is the opportunities provided by the healthcare system, which are much more important in combating the pandemic. Because it is stated that there is a health system that will protect the health of individuals and provide diagnosis and treatment that will bring it back when the health deteriorates (WHO, 2000).

The healthcare system is obliged to provide everything that individuals need during the pandemic period. These needs are often diagnostic tests, patient beds, medicines for treatment and protective equipment such as masks, gloves and disinfectants that will ensure the safety of patients and healthcare professionals against pandemics (Hick & Biddinger, 2020; Hick et al., 2020; Institute of Medicine, 2012). There are important performance dimensions to evaluate the performance of healthcare systems offered to the public. Some of these include features such as health services being accessible, safe, affordable and transparent (Murray & Evans, 2003; WHO, 2000).

The services that healthcare systems offer to individuals in normal times are important, but it can be stated that these services can gain more importance when many people apply to the healthcare system at the same time, especially in difficult times such as combating epidemic diseases. It is considered to be extremely important that the health services required by individuals are accessible, safe and affordable. Because individuals use healthcare systems during epidemic diseases more than ever, they will be able to make more objective evaluations by closely monitoring the healthcare system performance.

This study has two main objectives. The first main objective is to evaluate the performance of Turkey's Health System during the COVID-19 pandemic. The second is to determine whether Turkey's Health System performance varies according to certain demographics.

Method

Population and Sample Size

This study's population was people over the age of 18 living in Turkey during COVID-19.

Sampling was used to carry out this study. In this study, the sample size was 656 people. This sample size was sufficient to reveal the purpose of the study.

In this study, purposive sampling technique (also known as selective or subjective sampling approach), one of the sampling methods, was used. In this sampling method, researchers select the population that sets their own criteria for specific purposes as a sample (George & Mallery, 2001).

In this study, there were three criteria for inclusion in the sample. The first of them, live in Turkey. The second is to be over 18 years old. The third is to know enough Turkish to answer questions prepared in Turkish.

In this study, there were two criteria for exclusion in the sample. The first of them, not a Turkish citizen. The second is under the age of 18.

Data Collection Tool

In this study, a questionnaire was used as a data collection tool. This questionnaire used is basically divided into two main sections. The first was the Demographic Questionnaire, consisting of seven questions such as age, gender, marital status, education level, monthly salary, having chronic illness and current health status. The second was the Health System Performance Evaluation Scale, consisting of four sub-sections, with a total of 27 items, prepared by researchers based on the literature. The Health System Performance Evaluation Scale was prepared with a five-point Likert type. 1 = strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5 = strongly agree. The maximum score that can be obtained from the scale is 135 and the minimum score is 27. Maximum scores indicate that Turkey's Health System performance is high while minimum scores indicate that Turkey's Health System performance is low.

The four sub-sections that make up the Health System Performance Evaluation Scale were Safe and Security, Transparency, Accessibility and Affordability. These sub-sections are detailed below.

Safe and Security

In this sub-section of the scale, questions covering health and safety activities that were offered to the public and health professionals by Turkey's Health System were asked. This

sub-section included 12 questions in total. The maximum score that can be obtained from the safe and security sub-scale is 60 and the minimum score is 12. Maximum scores indicate that safe and security is high while minimum scores indicate safe and security is low.

Transparency

In this sub-section of the scale, questions were asked covering statements regarding the transparency of the COVID-19 information that was shared by Turkey's Health System authorities with the public and health professionals. This sub-section included five questions in total. The maximum score that can be obtained from the transparency sub-scale is 25 and the minimum score is 5. Maximum scores indicate that transparency is high while minimum scores indicate that transparency is low.

Accessibility

In this sub-section of the scale, questions were asked covering statements regarding the access of individuals seeking healthcare service for the appropriate hospital, hospital bed and protective material (mask, disinfectant, protective clothing, etc.) and COVID-19 diagnostic test that was offered by Turkey's Health System during COVID-19. This sub-section included six questions in total. The maximum score that can be obtained from the accessibility sub-scale is 30 and the minimum score is 6. Maximum scores indicate that accessibility is high while minimum scores indicate that accessibility is low.

Affordability

In this sub-section of the scale, questions were asked covering statements regarding the affordability of individuals seeking healthcare service for the appropriate hospital, hospital bed and protective material (mask, disinfectant, protective clothing, etc.) and COVID-19 diagnostic test that was offered by Turkey's Health System during COVID-19. This sub-section included four questions in total. The maximum score that can be obtained from the affordability sub-scale is 20 and the minimum score is 4. Maximum scores indicate that affordability is high while minimum scores indicate that affordability is low.

Study Type and Data Collection Method

In the current study, the descriptive, cross-sectional and correlational research types were determined as the study type. The model of the research was determined as the relational screening model of the quantitative research pattern of causal comparison type (Saunders et al., 2012). The questionnaire used as the primary data source was used as the data collection method. The steps for collecting data are detailed below.

Step 1: An online questionnaire was prepared to collect the data based on literature.

Step 2: An online questionnaire link was sent to the people living in different cities of Turkey.

Step 3: A message was sent to people who received the link to the online questionnaire to share with different people.

Step 4: The data obtained from the participants were separated according to the purpose of the study and data that did not meet the inclusion criteria were removed.

Validity, Reliability and Normality Assumptions

The Health System Performance Evaluation Scale was created by three academicians, especially from the studies of the WHO for the performance of health systems and similar studies in the literature. Two criteria related to validity were examined. The first was language validity and the second was structural validity.

Two academicians who are experts in the field of Turkish language and literature for language validity of the scale reviewed the scale and made some necessary corrections. After these corrections, a pilot study was made for readability and comprehensibility with a group of participants. After this pilot study, some corrections made by the participants were made. The scale was finalised after the approval of the language specialist.

Exploratory factor analysis (EFA) was conducted for the construct validity of the scale (Anderson & Gerbing, 1988). EFA was carried out with the STATA 14.0 Package Program using the principal components analysis (PCA) technique and the Varimax rotation method (StataCorp., 2015). The suitability of EFA is explained by the Kaiser–Meyer–Olkin (KMO) sample proficiency test and Bartlett's sphericity test results. $p < .05$ was accepted for Bartlett's sphericity test. The KMO value of 0.60 and above is considered sufficient for the execution of EFA (Sharma, 1996). Eigenvalues greater than 1 are accepted for each factor. In general, it is stated that factor loads should be over 0.50, which is considered as the threshold value (Hair et al., 1998).

Within the framework of the EFA results assumptions made within the scope of this study, the KMO value was found to be 0.909 and is above the recommended value (0.60). In addition, the Bartlett's sphericity test result is statistically significant ($p < .000$). The scale consists of four sub-factors. Each factor load was above the threshold value of 0.50 (Hair et al., 1998). The total variance explained by the scale was 67%.

Cronbach's alpha coefficient was used for the reliability analysis of the scale. Within the scope of the analysis, each sub-dimension of the scale was collected under four factors and the overall reliability coefficients of the scale were found to be higher than the value accepted as 0.70 (Cronbach, 2004).

It is accepted that the two important values regarding the distribution of the scale are skewness and kurtosis, and if these two values are between -1.5 and $+1.5$, the data are suitable for normal distribution (Tabachnick & Fidell, 2014). The skewness and kurtosis values for the normal distribution

were found between -1.5 and $+1.5$. It can be stated that this study is suitable for normal distribution. Since it is not covered by this study, extensive information about scale development has not been provided.

Statistical Analysis

STATA 14.0 statistical software package was used for analysing the data (StataCorp., 2015). The distribution of the questions in the Demographic Questionnaire was evaluated as frequency, percentage, and Health System Performance Evaluation Scale scores as mean and standard deviation. In the case of two groups in the comparison of quantitative data, the t -test was used for independent samples in the comparison of parameters between groups. In the case of more than two groups in the comparison of quantitative data, the one-way analysis of variance (ANOVA) test was used to compare the parameters between the groups, and the Bonferroni test was used to identify the group that caused the difference. The results were evaluated at 95% confidence interval and $p < .05$ significance level.

Ethical Considerations

In this study, data were obtained from volunteer participants. Throughout the research, no unethical behaviour has taken place and no harm has been done to humans and animals.

Results

Descriptive Analysis

48.32% (317) of the participants were female and 51.68% (339) were male. 34.30% (225) of the participants had low income, 41.77% (274) had medium income and 23.93% (157) had high income. 26.83% (176) of the participants had at least one chronic disease, whereas 73.17% (480) of the participants did not have any chronic disease. Percentages of the participants according to the level of education were as follows: primary-secondary school 12.50% (82), high school 10.37% (68), associate degree 11.89% (78), graduate 34.60% (227) and postgraduate 30.64% (201). 49.70% (326) of the participants were single and 50.30% (330) were married. In addition, the average age of the participants was $\bar{X} = 33.13872 \pm 12.14772$ (Table 1).

Healthcare System Performance Evaluation Analysis

The scores of the Health System Performance Evaluation Scale and sub-dimensions are given in Table 2. As a result of the evaluation of the research data, the participants' Health System Performance Evaluation Scale total score mean $\bar{X} = 3.60 \pm 0.6$ in the sub-dimension of 'Safe and Security'

Table 1. Descriptive Analysis of Nominal Variables (N = 656).

Variable	Sub-variable	Freq.	Percent
Gender	Female	317	48.32
	Male	339	51.68
Income status	Low income	225	34.30
	Medium income	274	41.77
	High income	157	23.93
Having chronic disease	Yes	176	26.83
	No	480	73.17
Education	Primary-secondary school	82	12.50
	High school	68	10.37
	Associate degree	78	11.89
	Graduate	227	34.60
Health situation	Postgraduate	201	30.64
	Very bad	59	8.99
	Bad	64	9.76
	Normal	183	27.90
Health situation	Well	181	27.59
	Very well	169	25.76
	Marital status	Single	326
Married		330	50.30

$\bar{X} = 3.63 \pm 0.8$, in the sub-dimension of 'Transparency' $\bar{X} = 3.15 \pm 1.1$, in the sub-dimension 'Accessibility' $\bar{X} = 3.79 \pm 0.9$, in the sub-dimension 'Affordability' $\bar{X} = 3.83 \pm 0.8$ was determined (Table 2).

The Health System Performance Evaluation Scale and a sub-dimension of this scale, accessibility, scores of them are high and differed statistically by age. Other scale sub-dimensions by age did not differ statistically. Accordingly, the score obtained from the Health System Performance Evaluation Scale increased with age (Table 3).

The Health System Performance Evaluation Scale and sub-scales scores did not show a statistically significant difference except that affordability by gender. Affordability sub-scale score was statistically different from income groups ($F = 6.47$; $p < .05$). Although scores of affordability by income groups of participants differed, all of the participants have found health services payable provided by Turkey's Healthcare System for COVID-19. Such an outcome is highly expected to go because every citizen is covered by health insurance in Turkey (Table 4).

Participants with chronic disease, compared to those without, stated that they have easier access to health services provided by Turkey's Healthcare System. Other scale sub-dimension scores except the Accessibility dimension did not differ statistically by having a chronic disease (Table 5).

Table 2. Health System Performance Evaluation Scale Scores ($N = 656$).

Scale	Mean	Std. Dev.	Min	Max
Safe and Security	3.635356	0.8691509	1	5
Transparency	3.158537	1.137234	1	5
Accessibility	3.795224	0.9932277	1	5
Affordability	3.838034	0.8814055	1	5
Total Scale	3.606786	0.646402	1	5

Table 3. Health System Performance Evaluation Scale and Sub-dimensions Score by Age.

Scale	Age				t	p
	<33		≥33			
	\bar{X}	SD	\bar{X}	SD		
Safe and Security	3.60	0.86	3.66	0.87	0.887	.375
Transparency	3.13	1.12	3.19	1.15	0.698	.485
Accessibility	3.70	0.96	3.90	1.00	2.514	.012*
Affordability	3.78	0.88	3.90	0.86	1.630	1.630
Health System Performance Evaluation Scale	3.55	0.64	3.66	0.64	2.128	.033*

Note: * $p < .05$, Bold characters indicate variables that are statistically significant at the 0.05 level.

Table 4. Health System Performance Evaluation Scale and Sub-dimensions Score by Income Status.

Scale	Income Status						F	p
	Low		Medium		High			
	\bar{X}	SD	\bar{X}	SD	\bar{X}	SD		
Safe and Security	3.60	0.82	3.66	0.92	3.62	0.83	0.34	.711
Transparency	3.10	1.08	3.12	1.19	3.29	1.09	1.53	.217
Accessibility	3.78	1.02	3.81	0.95	3.77	1.20	0.10	.901
Affordability	3.68	0.97	3.87	0.84	3.99	0.76	6.47	.001*
Health System Performance Evaluation Scale	3.54	0.63	3.62	0.65	3.67	0.64	1.92	.147

Note: * $p < .05$, Bold characters indicate variables that are statistically significant at the 0.05 level.

Discussion

As a result of the literature review we have done, we can say that this study is the first scientific study trying to evaluate the success of Turkey's Healthcare System during COVID-19 pandemic.

Although very difficult and complex, the success of healthcare systems can be technically measured. However, an evaluation that is more important than a technical measurement is the opinions of individuals using the healthcare system

about the system (Murray & Frenk, 1999, 2000; WHO, 2000). Because individuals are direct users of the healthcare system, it is stated that they have a lot of experience to evaluate it. Individuals especially want health services provided by healthcare systems to be affordable, accessible, fair and comprehensive. The performance of healthcare systems that can fulfil these desires of individuals is considered high (Bleich et al., 2009; Tavares & Ferreira, 2020).

It is stated that the performance of healthcare systems in normal times depends on many criteria. These criteria are: an

Table 5. Health System Performance Evaluation Scale and Sub-dimensions Score by Chronic Disease.

Scale	Having Chronic Disease				t	p
	Yes		No			
	\bar{X}	SD	\bar{X}	SD		
Safe and Security	3.60	0.86	3.66	0.87	0.887	.375
Transparency	3.13	1.12	3.19	1.15	0.698	.485
Accessibility	3.70	0.96	3.90	1.00	2.514	.012*
Affordability	3.78	0.88	3.90	0.86	1.630	1.630
Health System Performance Evaluation Scale	3.55	0.64	3.66	0.64	2.128	.033*

Note: * $p < .05$, Bold characters indicate variables that are statistically significant at the 0.05 level.

equal and fair health system, reliable health service and an accessible and affordable healthcare system that covers everyone (Bleich et al., 2009; Murray & Frenk, 1999, 2000; WHO, 2000). Although these criteria are important in normal times, it is thought that they will become more important in abnormal times like COVID-19. It is stated that the main purpose of healthcare systems consists of efforts to eliminate the health threats of individuals and to protect the health of the individual (Bleich et al., 2009; WHO, 2000).

It is stated that the main purpose of healthcare systems is to protect the health of individuals and to diagnose and treat deteriorated health (WHO, 2000). In this context, ensuring the safety and security of individuals and healthcare professionals during COVID-19 can be considered as the primary duties of health systems. Therefore, according to the findings, Turkey's Healthcare System in terms of safety and security is seen as having high performance ($\bar{X} = 3.63 \pm 0.8$).

Combating COVID-19 is also said to be extremely important in transparency (Demirtas, 2020). Every evening the number of tests, the number of deceased persons, the number of recovered patients, the number of intubated patients and the number of patients in intensive care are explained by the Ministry of Health of Turkey. In fact, although the Turkish Ministry of Health announces COVID-19 data every evening, the participants in this study did not see the Turkish health care system as transparent enough on this issue, ($\bar{X} = 3.15 \pm 1.1$). This is an interesting result for us. However, it is believed that there is speculative news emerging on social media as in every country in the emergence of such a result (Ozgir, 2020).

Turkey's Healthcare System, started in 2003, 'Transformation in Health Program' facilitates access to health services and works to ensure all citizens fair healthcare; it is also indicated to expand the scope of health insurance (Ministry of Health Turkey, 2003; WHO, 2011; Yildirim & Yildirim, 2011). According to the participants in this study, access to health services related to COVID-19 offered by Turkey's Healthcare System is fairly easy ($\bar{X} = 3.79 \pm 0.9$). This result is expected to occur. Because in order to facilitate

access to healthcare, 'family practice' was established in the framework of the 'Health Transformation Program' in Turkey (Yildirim & Yildirim, 2011). Family practice, a pandemic application centre, was established to facilitate individuals' access to healthcare services and to speed up diagnosis and treatment.

In this study, Affordability, which is a sub-dimension of Turkey Healthcare System Performance Scale, shows the state of individuals' affordability of health services. According to the results, it was determined affordable health services provided by Turkey's Healthcare System to the participants during COVID-19 ($\bar{X} = 3.83 \pm 0.8$). An important evaluation criterion of the healthcare system is the power of individuals to pay for the services provided. In other words, the affordability criterion is stated to be an important criterion affecting the healthcare system performance score of individuals (Blendon et al., 2001).

It is seen that the performance score of the healthcare system increases with age. This result is not an expected result. Because, in a study, it is stated that access to health services decreased with age (Zhang et al., 2018). It may have such a result because in Turkey 65 years and older individuals have a priority to access health services. Scores obtained from other scale sub-dimensions by age do not differ statistically.

It has been determined that with the increase in income, the affordability score of health services has increased. However, this result is partially valid. Because everyone is covered by general health insurance in Turkey. Therefore, health services can be paid for all income groups (WHO, 2011; Yildirim & Yildirim, 2011). However, this result may apply to more featured health services.

People with chronic diseases found health services for COVID-19 more accessible than those without chronic diseases. It is expected that such a result will emerge. Because with chronic diseases in Turkey, they cannot go out in the framework of measures COVID-19. However, in this process, Turkish soldiers, police and health workers were constantly

serving to meet the needs of those who stayed at home under the ban. This situation led to such a result.

The study results show the performance of Turkey's Healthcare System in the fight against COVID-19. Accordingly, participants stated that Turkey's Healthcare System performance has found success. Although the performance of the general healthcare system is high, it was seen that the scores regarding the transparency of the information shared during COVID-19 were partially lower than other dimensions. There are many studies on the performance of healthcare systems. However, in these difficult days when the COVID-19 pandemic brought life to a halt, the performance of healthcare systems has become more important than ever. In this context, the results obtained from this study are thought to fill the scientific gap in the literature. It is also thought that this study will provide a roadmap for future studies.

In light of the data obtained from this study, it can be suggested that all stakeholders of Turkey's Health System should avoid giving false and incomplete information in order to improve the performance of the health system. Thus, it is thought that the performance of the health system in Turkey will be much higher. It is obvious that Turkey's Health System has a very high score, especially in affordability, responsiveness and accessibility, and can even be a role model for many countries, but it should be more sensitive to the information shared, especially in the COVID-19 process.

Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship and/or publication of this article.

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