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Access to healthcare: A field survey in Istanbul

Muhammed Ziya PAKÖZ, Mehmet Ali YÜZER
Istanbul Technical University, Faculty of Architecture, Department of Urban & Regional Planning, Istanbul, TURKEY

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Abstract:
Access to healthcare is a multi-dimensional concept that depends on the characteristics of supply (healthcare system) and demand (population). When healthcare facilities are located, the spatial and non-spatial dimensions of access to healthcare should be evaluated in conjunction. Spatial dimension emphasizes the importance of distance, while non-spatial dimension addresses factors such as level of income, educational attainment level, culture, ethnicity, age and sex.

In this study, various aspects of access to healthcare in Istanbul, which is the most populated, complex, multi-centered and multi-cultural city in Turkey, were examined by a field survey conducted with the participation of 756 households. The results of the survey reveal that hospital choices differ based on level of income. For the middle and low income groups, 'accessibility' and 'affordability' have higher importance, while the upper and upper-middle income groups prioritize 'acceptability'.

The article also elaborates on the acceptable and realized travel time and travel distances to the hospitals in Istanbul. According to international standards and the literature on the topic, the maximum travel time to the nearest hospital is generally accepted as '30 minutes', which proves to be parallel to the findings of the survey. However, the realized travel distance varies based on the type of the hospital in terms of ownership (public, private) and level of services (regional, local).

Along with addressing the spatial and non-spatial dimensions of access to healthcare, the article contributes to the available literature by discussing the supply of health services from various aspects and by revealing the relation between user (patient) behavior -which changes in relation to the type and nature of the health supply and the characteristics of the city- and the related distance thresholds and border-crossings.

Keywords: *Access to healthcare, affordability, spatial accessibility, distance, Istanbul.*

1. Introduction

According to the World Health Organization (WHO), health is "a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity"[1], and a health system comprises of the activities and

people which primarily aim to protect and improve health or promote a healthy life (WHO, 2007:2).

[1]This definition of health was included in the regulation of the World Health Organization in 1946. Although controversial, it remains still valid.

Development of a health system requires the simultaneous consideration of the supply and demand for healthcare services and, therefore, the improvement of access to healthcare and health coverage based on the needs and expectations of the demand. 'Access to healthcare' is a broad concept which implies different dimensions of the relation between the supply and demand, and it deserves to be examined in further detail.

In comparison to the studies which focus on the spatial aspect of access to healthcare (Luo, Qi, 2009; Loh et al., 2009; Guagliardo et al., 2004; Luo and Wang, 2004; Fortney et al., 2000; Delamater et al., 2012; Kara and Egresi, 2013; Hare and Barcus, 2007), studies which evaluate the spatial and non-spatial factors in conjunction (Wang and Luo, 2005; Goodman et al., 1997; Liu et al., 1999; Buchmueller et al., 2005) are less in number. Also, the differentiation of access to healthcare by type of disease (Chan et al., 2006; Govind et al., 2008) and in urban and rural areas (Hiscock et al., 2008; Chan et al. 2006) has been researched. These studies explain the differentiation of access with only demand-side barriers or availability of supply, but do not take the types of supply into consideration. The survey that was conducted within the scope of this article, not only evaluates the spatial and non-spatial factors in conjunction, but also considers health supply in various aspects (availability and variety), reveals user behaviors which change according to the type of the supply and the characteristics and pattern of the city, and defines distance thresholds and border-crossing according to these features.

Istanbul is the most populated and dynamic city in Turkey. Due to the availability of a wide range of public and private hospitals which serve users from local to international levels and the multicultural and complex characteristics of the city, which represents the whole country, it bears even more importance to understand the patterns of hospital choice and access to health services in Istanbul. Moreover, the multi-centered form of the metropolitan area and the Bosphorus, which physically divides the city into two parts, necessitate putting forward the border-crossing and travel patterns of patients between districts. In addition, studies which address accessibility to healthcare (Kara and Egresi, 2013) and spatial distribution of healthcare facilities (Senturk et al., 2011) in Istanbul are limited in number and extent. Therefore, Istanbul metropolitan area is selected as the focus of this study.

The article is divided into five sections. Following the introduction, the second section of the article identifies the goals and components of a healthcare system with a specific emphasis on the significance of access to healthcare within the entire system. Subsequently, the notion of access to healthcare is examined in detail with its spatial or non-spatial dimensions, and the spatial aspect and the distance problem are particularly addressed. In the following section, results of the field survey conducted with the participation of 756 households in Istanbul are evaluated in terms of the different dimensions of access to healthcare, and spatial patterns of access to inpatient services in Istanbul were examined in accordance with the survey results.

2. Healthcare system: Goals, functions and components

'Raison d'être' of a healthcare system is realizing the objective of 'being more

healthy'. In comparison to a health system, the scope of a healthcare system is narrower, and it particularly focuses on demand, supply and location. Therefore, the article addresses the healthcare system rather than the health system as a whole.

Social and economic goals should always be taken into account to measure the performance of a system. In the spatial distribution and financing of healthcare services, expanding the responsibility to achieve 'equity in access to healthcare' and 'efficiency in the utilization of the resources', to show sensitivity to human dignity and to increase satisfaction levels should always be listed among the objectives of a healthcare system (WHO, 2000; WHO, 2007; Frenk, 2010). Murray and Frenk (2000) examine the functions of a health system under four headings, namely stewardship, financing, service provision and resource generation; while Mossialos and Dixon (2002) consider two of these functions, namely financing and service provision, as two basic functions of a healthcare system.

Four main sources of revenue are mentioned for the financing of healthcare services (Mossialos and Dixon, 2002): out-of-pocket payments, taxes, social (or compulsory) health insurance contributions and private (or voluntary) health insurance premia. These sources of revenue contribute to healthcare systems at different levels in different countries. Apart from these, grants offered by international organizations may also be a source of revenue, particularly in low-income countries.

Provision of healthcare services implies the activities that result in intervention (to the patient). These services may be both personal services (such as preventive, diagnostic, therapeutic or rehabilitating) and non-personal services (such as healthcare training or sanitation) (Murray and Frenk, 2000).

According to Frenk (2010), a healthcare system should not be addressed only by the supply aspect, but also by the entire population (including the demand). Frenk underlines that the population is not only an external beneficiary but also the main component of the system and lists five different roles for the individuals involved in healthcare systems: the **patient** in need of treatment, the **consumer** in search of service of good quality, the **taxpayer** who finances the healthcare sector, the **citizen** who is entitled to access to healthcare service, and most importantly, the c**o-producer of health** whose behaviors promote or harm the healthy life.

As suggested by Berkman (1994), sub-systems of healthcare services system are population, sources, organization of supply, and location.

Individuals are the main components of the 'population', and they should be taken into consideration as a part of society and the culture they belong to. 'Sources' include the workforce and capital allocated for healthcare services. 'Organization of supply' identifies how healthcare systems will make use of the sources and how the distribution of healthcare services will be controlled and organized.

'Location' signifies the allocation of facilities (and workforce) to ensure **equal** and **efficient** provision of healthcare services in order to provide coverage for the entire population without wasting the sources (Berkman, 1994). During the planning process, the distribution and the profile of the population (demand)

for the long-run and the sufficient number of facilities required to serve this population (supply) should be taken into account (Daskin and Dean, 2004).

The main components listed above and their interrelation defines the scope of access to healthcare.

3. Access to healthcare

Detailed discussions and explanations were made on the definition and the scope of 'access to healthcare' (Penchansky and Thomas, 1981; Guagliardo, 2004). This is due to the fact that access to healthcare is a multi-dimensional and complex concept that depends on the characteristics of the supply (healthcare system) and demand (population) (Delamater et al, 2012). Since supply and demand are not equally distributed, some spatial differences are inevitable in terms of access to healthcare, because the location of the supply (health professionals, health facilities, etc.) and demand (the population which benefits from healthcare services) directly affect access to healthcare (Luo and Wang, 2003).

Researchers addressed the notion of access to healthcare with two different approaches: in terms of process and in terms of dimensions of the access (Guagliardo, 2004).

In terms of process, there are two different stages of access to healthcare. The first stage, "potential access", refers to the population which needs and has the opportunity to access healthcare services, and "realized access" defines the population who actually benefits from healthcare services (examination, diagnosis, analysis, treatment, etc.) (Guagliardo, 2004).

Loh et al. (2009) claim that in addition to "potential accessibility", actual utilization of healthcare facilities by real users/patients should also be calculated while healthcare services are located. According to them, potential accessibility and actual utilization are equally important to determine whether healthcare services are distributed 'equally' (distance between residential areas and healthcare facilities, ratio between the number of hospital beds and population, etc.) and whether these services are utilized efficiently (healthcare access of the population at risk, etc.).

In order to ensure that the population in need of healthcare services can benefit from these services, in other words in order to turn the potential into actual utilization, some obstacles should be eliminated. These obstacles refer to the dimensions of access to healthcare as well. Travis et al. (2004) classify the constraints that hinder access to healthcare as financial obstacles (such as payment difficulties and informal payments) and physical obstacles (such as distance to healthcare facilities).

Penchansky and Thomas (1981) define five different dimensions to access to healthcare: availability, accessibility, accommodation, affordability and acceptability.

'Availability' is the relation between the supply of and demand for healthcare. It expresses whether the supply of healthcare (health professionals, healthcare facilities, private healthcare services, emergency healthcare services, etc.) is adequate to meet the needs of the population.

‘Accessibility’ is the relation between the locations of the supply and the demand. It expresses how accessible the location of the demand is to the location of the supply (in terms of distance, time or cost).

‘Accommodation’ expresses how the sources of supply are organized (appointment system, waiting and treatment terms, etc.) to meet the demand, and it defines the relation between the capacity of the clients in terms of being accommodated by the organization and how they evaluate the accommodation level of the organization.

‘Affordability’ is the relation between the price of healthcare services and the clients’ levels of income, health insurance and resources.

‘Acceptability’ implies the attitudes of the clients depending on the characteristics of healthcare providers and vice versa.

Different approaches and definitions of access to healthcare, which are summarized above, present the difficulty of comprehending access in its entirety by suggesting some generalizations. It is necessary to address the issue by pointing out the individual characteristics of access and identifying the relations between them.

3.1 Spatial accessibility

According to Khan (1992), two of the factors of access to healthcare (namely availability and accessibility) indicate the spatial dimension, and the remaining three factors present the non-spatial dimension of access to healthcare (Delamater et al (2013). Spatial dimension emphasizes the importance of distance – as an obstacle or facilitator – while non-spatial dimension deals with issues such as level of income, culture, ethnicity, age and sex. In the related literature, the spatial dimensions (availability, accessibility) of access are combined and the concept of ‘spatial accessibility’ is commonly used (Luo and Wang, 2003; Guagliardo, 2004).

In order to measure spatial accessibility to healthcare services, many studies and researches have been conducted by social scientists and those who plan healthcare services. However, questions such as how the methods utilized in measuring spatial accessibility differ between the cases examined (in terms of degree of urbanization, socio-economic characteristics, etc.), how the expected value of spatial accessibility differs according to the disease or the type of healthcare services, what the acceptable supply-demand rate should be, how the relation between the spatial and non-spatial dimensions of access (accommodation, affordability and acceptability) should be established, how change in spatial accessibility affect the health of society are yet to be answered, and new studies are necessary to do so (Guagliardo, 2004).

3.2 Distance Problem

In addition to the healthcare supply in a specific settlement (medical institutions with and without beds, health professionals, etc.), access to healthcare is shaped based on the healthcare supply in neighboring settlements, distance and ease of travel between these settlements (Luo and Wang, 2003).

Because of the time/distance-depending nature of healthcare, distance is discussed in detail almost in every study which refers to access to healthcare. According to many researches (Goodman et al. 1997; Jones et al 1998; Hare

and Barcus 2007; Hiscock et al., 2008, Chan et al.. 2006, Buchmueller et al. 2006) the longer the distance to a healthcare facility is, the less these facilities are utilized and the higher the incidents of death in emergency occur.

In studies on spatial accessibility, different methods such as Euclidean distance (straight line) (Kara and Egresi, 2013; Guagliardo, 2004; Guagliardo et al. 2004), travel distance (Buchmueller .et al., 2006) and travel time (Luo and Qi, 2009; Hiscock et al., 2008; Wang and Luo, 2005; Luo and Wang, 2003) are utilized to measure the distance. In some researches, only two or all three of them are employed (Chan et al., 2006; Govind et al., 2008; Fortney et al 2000).

Especially in regions with undulating topography, the total distance traveled and total time spent for traveling differ significantly. Besides, total travel time becomes critical in case of emergency healthcare services (Loh et al, 2009). However, factors such as traffic jam, road quality, vehicle type (personal car, mass transportation, etc.), which may change the travel time, are usually neglected.

According to Bosanac et al. (1974), the maximum accepted travel time to access a non-emergency healthcare service is 30 minutes in many countries around the world (Loh et al., 2009). Similarly, researchers who adopt the 'travel time' for measuring the distance, generally accept the distance traveled in 30 minutes as a threshold (Fortney et al., 2000; Luo and Wang, 2003).

Moreover, in order to explain the connection between accessibility and socio-economic status, 'social distance' and 'physical distance' are differentiated. Those who advocate that physical distance cannot be a dominant factor when measuring accessibility, suggest the 'social distance' concept which signifies the change in the level of access to services due to socio-economic status (Berkman ,1994; Vaguet, 2008).

While hospitals are located, 'equity' in access to healthcare should be taken as a base for all segments of society, and necessary measures should be taken to ensure that vulnerable groups benefit from health services adequately.

4. Dimensions of access to healthcare in Istanbul: An evaluation of the general hospitals

Previous chapters shed light on how a healthcare system is established according to the characteristics of the supply and demand, and elaborated more on these characteristics. It also pointed out the spatial and non-spatial dimensions of access which are necessary for turning the potential into actual utilization. In addition, the importance and variations of distance and distance thresholds from the spatial perspective were pointed out.

Studies on access to healthcare in Istanbul are quite few in number. While Senturk et al. (2011) investigated the spatial distribution of public and private healthcare institutions in Istanbul and how the distribution is related to level of income and educational attainment level with a descriptive approach, Kara and Egresi (2013) measured accessibility to healthcare institutions within 1- and 3-km buffer zones in only Buyukcekmece district. Therefore, this study fills a gap in the available literature on access to healthcare in Istanbul.

In order to examine the dimensions of access to healthcare facilities in overall Istanbul based on the supply and demand characteristics, a survey was conducted on 756 households[2]. According to the survey results, relation between the supply characteristics and hospital preferences will be examined over five dimensions of access to healthcare (availability, accessibility, accommodation, affordability and acceptability).

In addition, changes in distance thresholds and border-crossing of patients will be explained via the travels made to different types of hospitals.

According to the statistics dated 2012, Istanbul inhabits18.3% of the population in Turkey, while only 16.1% of the total hospital beds and 20.3% of doctors are located in the city. If the mobile segments of the population (such as students and tourists) are taken into account, it is apparent that the health supply in the city is insufficient. After all, the fact that the percentage of private hospital beds in Istanbul (35.6%) is higher than that in Turkey (17.9%) shifts the public-private balance in favor of private hospitals, and consequently vulnerable groups suffer in terms of access to healthcare. The findings of the survey support this predicament.

Ministry of Health divides Turkey into 29 health regions under the scope of healthcare planning. 6 out of 29 regions (Anatolian-North, Anatolian-South, Bakırkoy, Beyoglu, Fatih, and Cekmece) are located in Istanbul, and the ministry aims to provide sufficient and diverse health supply in each region (THGM,2011). Border-crossing of patients between the districts in Istanbul, which is revealed with the survey, proves how appropriate this regional division is.

In order to obtain a sample that reflects the health choices of the urban population in Istanbul, the districts in Istanbul were grouped by hierarchic clustering method based on three descriptive variables, which represent access to healthcare in three dimensions (supply, demand and accessibility):

- 1st variable: Annual income per capita by districts (2009)
- 2nd variable: Number of hospital beds for each ten thousand persons by districts (2012)
- 3rd variable: Accessibility levels of the districts (total travel distance between districts in km).

The survey was conducted in 21 districts and in proportion with the population size of the corresponding clusters. The respondents of the survey were asked to provide the name of the hospital they frequently visit and explain why they prefer these hospitals. Following these open-ended questions, listed list of criteria were provided to the respondents, and they were requested to make an assessment on a 5-point Likert scale (‘not important at all’ - ‘not important’ – ‘somewhat important’ – ‘important’ – ‘very important’).

In response to the open-ended question which inquired about **the reasons behind their hospital preferences**, 60.3% of the respondents stated that the main reason is proximity to their houses. This reveals that the most important reason is the availability of a hospital at an accessible location (spatial accessibility). The second most important reason is the quality of doctors. 11.2% of the respondents were not satisfied with the closest hospital available, but embarked on a quest of doctors with the qualifications they desire. The third most important reason is the level of satisfaction with the services of

[2] The survey was financed by the Rectorate of Istanbul Technical University, and GENAR research company was commissioned to conduct the surveys. The field survey was conducted between 28 August 2013 and 15 September 2013. After the preliminary evaluation, 65 of the surveys were decided to be renewed, and these were conducted again between 13-15 December 2013.

the hospital in question. This points to the relation between hospital-patient ('consumer'). Furthermore, this is a critical finding since it reveals the 'private sector' dimension of healthcare services. Other answers given in response to this question and the dimension of access to healthcare they represent are listed in Table 1. It is apparent in the table that each dimension of access to healthcare has a different level of importance for the participants of the survey. However, hospital preferences were observed to differ based on income groups (One-way ANOVA: F:6.733, sig:0.000). According to the Duncan test, the reasons behind the hospital preference of the upper and upper-middle income groups are similar. The importance of proximity reaches up to 69.1% in the low income group, while it decreases to 49.7% in the upper income group. Upper and upper-middle income groups pay more attention to the reliability of the hospital, insurance and the qualifications of doctors in comparison to the middle and low income groups.

Table 1. *Reasons for preferring the most frequented hospital (open-ended question).*

Reason for hospital preference	**%**	**Dimensions**	
Because it is close to my house	60,3	1-2	Accessibility/Availability
Because doctors are qualified	11,6	5	Acceptability
Because I like the services	5,8	3-5	Acceptability /Accommodation
Because it is covered by SSI	4,0	4	Affordability
I find it reliable	2,8	5	Acceptability
Because my doctor is there	2,4	5	Acceptability
Because there are specialized doctors	2,1	1	Availability
Habitude	0,9	5	Acceptability
Because it is a research hospital	0,9	1	Availability
Because it is familiar	0,8	5	Acceptability
Because it is a university hospital	0,8	1	Availability
Because I am transferred	0,5	3	Accommodation
Because it is a big hospital	0,5	1	Availability
Clean/hygienic	0,5	3	Accommodation
Because the hospital is nice	0,4	3	Accommodation
Because I have private insurance	0,4	4	Affordability
Because it is easy and comfortable to access	0,3	1-2	Accessibility/Availability
Because I do not have private insurance	0,3	4	Affordability
Free service	0,3	4	Affordability
Because there are female doctors	0,1	5	Acceptability
It serves to patients with green card	0,1	4	Affordability
Because I can handle my work easily	0,1	3	Accommodation
It has all departments	0,1	1	Availability
No answer	2,7		
Other	1,1		

Following this question, a list of various preference criteria was provided to the respondents, and they were asked to assess these criteria by indicating a value between 1 and 5 on a Likert scale. The results of this five-point assessment are presented in Table 2. Accordingly, 'price' is the most important criterion.

The most important reason why the respondents did not express 'price' when responding to the open-ended question is because they generally prefer the hospitals which fall under the coverage of their insurance, so they do not consider the cost of healthcare services in the first place. When the responses provided to this question and the rest of the survey are analyzed together, it becomes apparent that the majority of the respondents who replied to the previous open-ended question as "because it is close to my house" actually mean the 'closest public hospital to their houses'.

Table 2. *Hospital preference criteria, average scores and dimensions.*

Hospital Reference Criteria	Scores	Dimensions
Price (paid by the user)	4,66	Affordability
Cleaning	4,59	Accommodation
Trust to doctor	4,44	Acceptability
Proximity to main transport axis	4,42	Accessibility
Proximity to metro/metrobus/tram	4,40	Accessibility
Waiting time	4,40	Accommodation
Medical devices/equipment and technological means	4,39	Availability
Proximity to the house (travel time)	4,39	Accessibility
Experience	4,38	Acceptability
Competency of the doctor	4,35	Acceptability
Physical conditions of the hospital	4,34	Accommodation
Treatment term	4,33	Accommodation
Attention / amiability of the hospital staff	4,32	Acceptability
Attention / amiability of the doctor	4,32	Acceptability
Convention between the insuring institution or private insurance and the relevant hospital	4,31	Affordability
Recommendation about the hospital	4,30	Acceptability
Prestige and fame of the hospital	4,30	Acceptability
Recommendation about the doctor	4,29	Acceptability
Guidance by the family physician or other doctor	4,28	Acceptability
The doctor's being an acquaintance	4,26	Acceptability
Size of the hospital	4,19	Availability

'Hygiene' is the second most important criterion, and this indicates that lack of hygienic conditions in a hospital, which is supposed to grant 'health', is unacceptable. The third most important criterion is 'trust to doctors'. This emphasizes the significance of trust to doctors to whom individuals entrust their lives and personal secrets.

In the five-point assessment, dimension of accessibility was inquired from three different aspects. Accordingly, proximity to main transportation axis and major public transportation stations proved to be more important than proximity to the house. This finding provides evidence on how critical transportation issue in Istanbul is.

Response options provided for the 'acceptability' dimension indicate similar meanings, therefore their preference rates are close to each other.

Among the preference criteria inquired on a five-point Likert scale, 'price', 'cleanliness', 'trust to doctor', 'particular recommendation of the doctor', 'proximity to main transportation axis' and 'proximity to metro/metrobus/tram stops' have meaningful differences based on income levels. These criteria are more important for the middle and low income groups.

4.1 Non-spatial dimension of 'access': Affordability

Out of the non-spatial dimensions of access to healthcare, 'affordability' is the most important for the respondents. This dimension of access was investigated further in the field survey, and results were classified by income groups.

Participants of the survey were inquired about t**he maximum amount of money they can spend for examination, diagnosis and treatment.** The amounts go up to TRY3,500 in some of the households. However, the average values were calculated as TRY20, TRY35 and TRY227 for examination, diagnosis and treatment, respectively. Significant differences were ascertained between the amounts spent by different income groups. Average values were determined between TRY9-33 in the low income group, TRY16-68 in the middle income group and TRY96-344 in the high income group. According to the Duncan test, middle and low income groups exhibit similar behaviors in terms of the amount of money they spend on examination; the highest income group differs from others in terms of the amount they spend on diagnosis, and the lowest and highest income groups apparently differ from the other groups in terms of the amount they spend on treatment.

Participants of the survey were also inquired about the **average monthly healthcare expenses in their households (including the cost of private health insurance, if any).** According to the findings of the research, the average monthly health expense is TRY226. This expense item varies between TRY130-415 in different income groups. As suggested by the Duncan test, the lowest and highest income groups greatly differ from the others. Table 3 shows the average healthcare expenses per month and the highest acceptable expense within each income group.

Table 3. *Acceptable and realized healthcare expenses in different income groups.*

	Acceptable Upper Expence Limit (average, TL)			Monthly Average Health-care Expense (TL)
Income Groups	**For Examination**	**Diagnosis (Analyses, X-ray, etc.)**	**Treatment (Operation, delivery, etc.)**	
Low income group	9	16	96	130
Low-middle income group	12	29	259	179
Middle income group	15	33	216	220
High-middle income group	32	35	242	227
High income group	33	68	344	415
TOTAL	20	35	227	226

56.8% of 710 families who responded to the question, that seeks **the change of hospital preference depending on the chance to go any hospital free of charge** said that they would prefer a public hospital even then; 12.5% and 30.6% expressed that they would prefer university hospitals and private hospitals, respectively (Some of the respondents who answered this question directly indicated the name of a hospital, some of them simply responded as 'public', 'private' or 'university'). As seen in Figure 1, 12% of the respondents' preferences shift from public to private hospitals when the price factor is disregarded. The reason to why the differentiation remains at such a level can be explained by the fact that public hospitals are more equipped in comparison to many private hospitals and by personal habits/lifestyle.

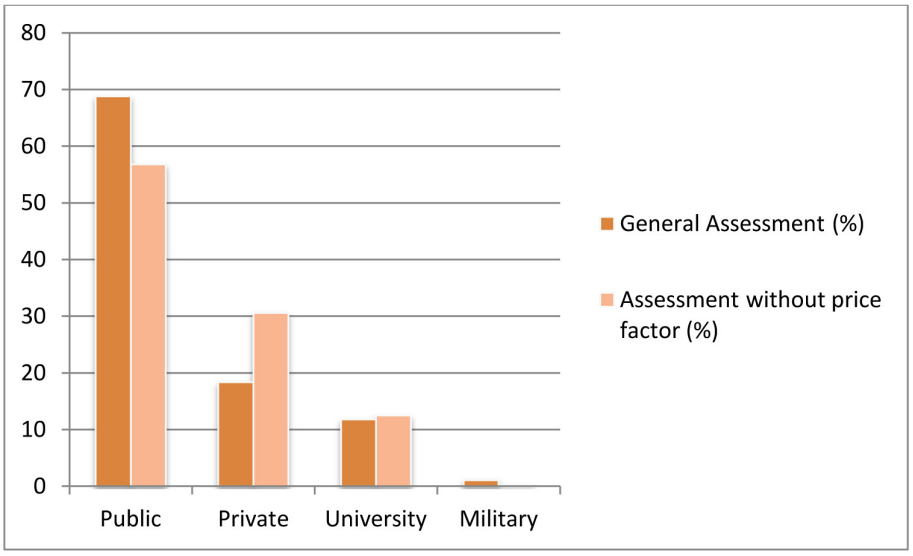

Figure 1. *Change of hospital preferences according to price factor.*

4.2 Spatial accessibility

The previous chapter explained that 'spatial accessibility' refers to the spatial dimensions (namely, accessibility and availability) of access to healthcare.

The most important measure of accessibility is 'distance'. In order to measure distance, different methods such as Euclidean distance, travel time and travel distance are used.

The participants of the survey were asked about **the average travel time they spend for going to hospital (one way).** 86.5% of 745 households who answered the question stated that they arrive at the hospital within 0-30 minutes, 13.3% spend between 30-60 minutes and only 0.3% spend more than 1 hour. However, the duration of travel can vary based on the vehicle used for transportation (One-way ANOVA, F:14.081, sig:0.000). As presented in Table 4, the respondents who prefer public transportation comprise the group with the highest flexibility of travel duration. The respondents who own personal cars follow those who use public transportation. Commercial taxis or walking are not generally preferred for travels which last more than 30 minutes.

When the respondents were inquired about **the maximum travel time that they can tolerate to reach a hospital**, 89% stated that they would like to

reach a hospital within 0-30 minutes. According to international standards and literature on the topic, the maximum amount of time which is acceptable to access a hospital is 30 minutes, and this is in parallel with the results of the survey.

Table 4. *Comparison of the average travel duration spent for going to hospital and mode of transportation.*

	Average Travel Time		
Type of Vehicle	**0-30 minutes**	**31-60 minutes**	**More than 1 hour**
Private car	88,2%	11,3%	0,5%
Taxi	98,0%	2,0%	0,0%
Mass transportation	74,3%	25,7%	0,0%
Hospital shuttle	83,3%	8,3%	8,3%
On foot	98,6%	1,4%	0,0%

Out of the 651 households which provided an answer to the question on **the maximum travel distance that they can tolerate to reach a hospital**, 79.7% stated 0-5 km as the maximum acceptable distance; while 10% said 5-10 km, 5.5% said 10-20 km and 3.5% said 20-40 km. Only 12% of the respondents expressed that they can tolerate to travel more than 40 km to reach a hospital (see Fig.2).

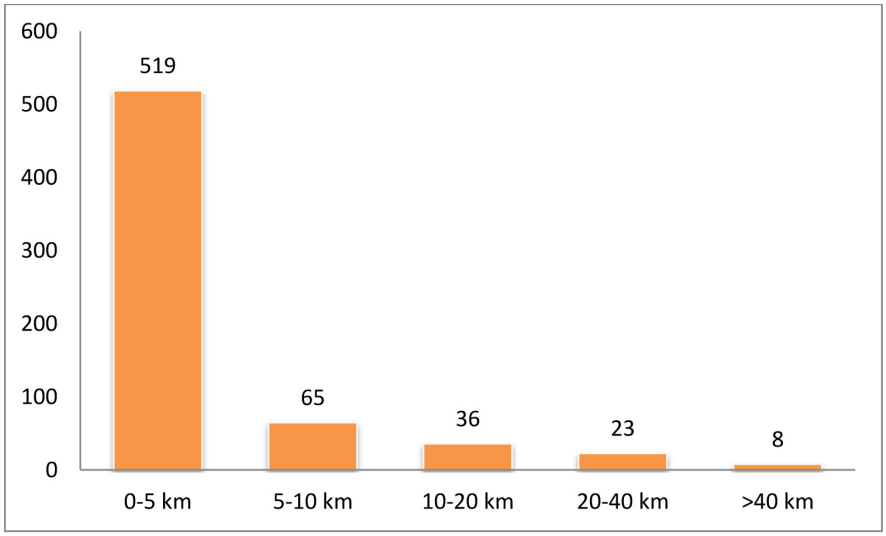

Figure 2*. Maximum acceptable travel distance to reach a hospital.*

Respondents were also requested to name the hospital which they frequently visit, and the travel distances between the district where the survey was conducted and where the corresponding hospital is located were calculated separately. Calculations imply that 69.7% of the 2440 respondents prefer the hospitals within 0-5 km. 9.1% of the respondents prefer the hospitals located within 5-10 km, 17.3% within 10-20 km, 3.8% within 20-40 km and 0.1% prefer the hospitals further than 40 km (see Fig.3). According to these results, the average distance traveled to reach the most frequently vilocated hospital is 5.65 km.

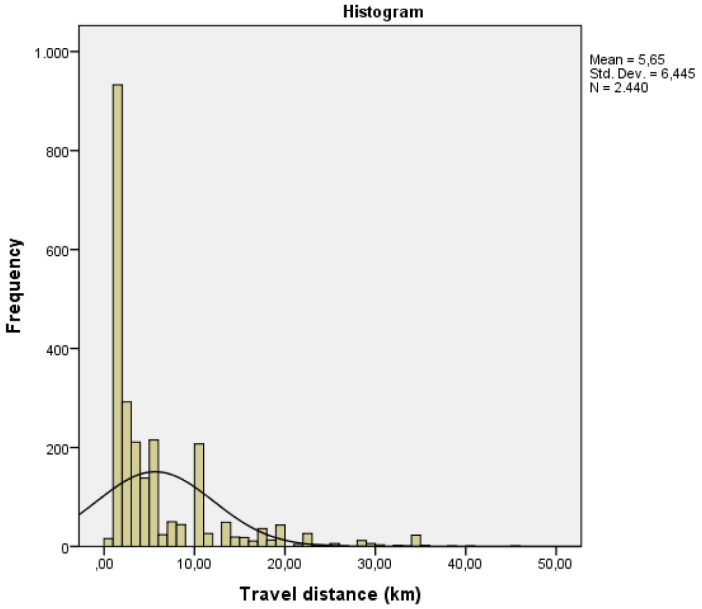

Figure 3. *Travel distance to reach the hospitals which respondents visit frequently.*

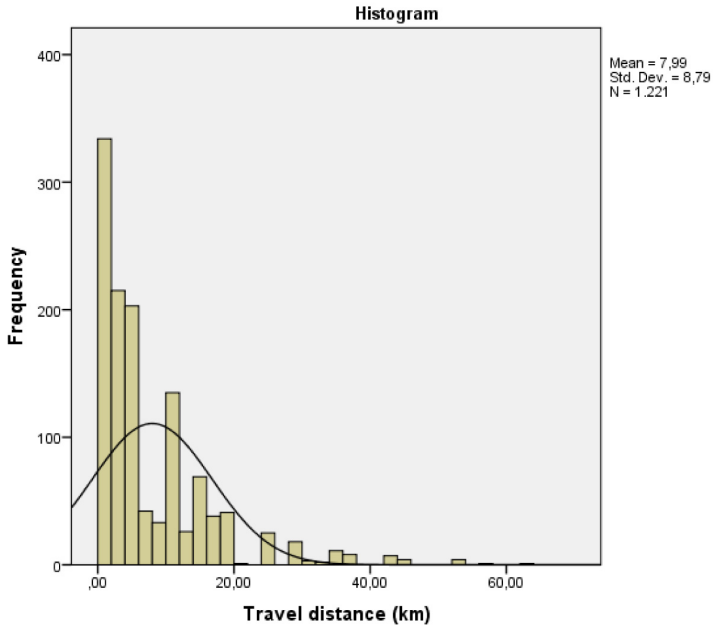

Figure 4. *Travel distance to reach the second hospital that respondents visit frequently.*

1203 of the 2509 respondents who participated in the survey also provided the name of the second hospital they visit frequently. In parallel to the findings of the previous question, 54.4% of the respondents prefer the hospitals located within 0-5 km. 13.6% prefer the hospitals located within 5-10 km, 25.2% within 10-20 km, 5.4% within 20-40 km and 1.4% prefer the hospitals further than 40 km (see Fig.4). Consequently, the average travel distance to arrive at the second hospital that respondents visit frequently is 7.90 km.

In terms of site selection preferences of healthcare facilities, it is critical whether or not the distance covered to arrive at the hospital changes by the type of hospitals.. Therefore, a boxplot was produced to visualize the distribution of distance values and outliers. Figure 5 shows the outliers by the types of hospitals.

In the second phase, the outliers under each hospital type were eliminated, and maximum, minimum and average travel distances were calculated for the most frequented hospitals. As presented in Table 5, the members of the households who participated in the survey cover maximum 14.4 km to go to any hospital. The maximum travel distance is higher to access teaching and research hospitals and university hospitals.

Maximum distances travelled in relation to hospital types provide clues on whether patients prefer the hospitals located within the districts they reside or outside. When the travel rates within/outside the districts are observed in relation to hospital types; it is apparent that travels with a destination outside the district of residence are higher for teaching and research, and university hospitals (Table 5). This finding implies the regional nature of these two types of hospitals.

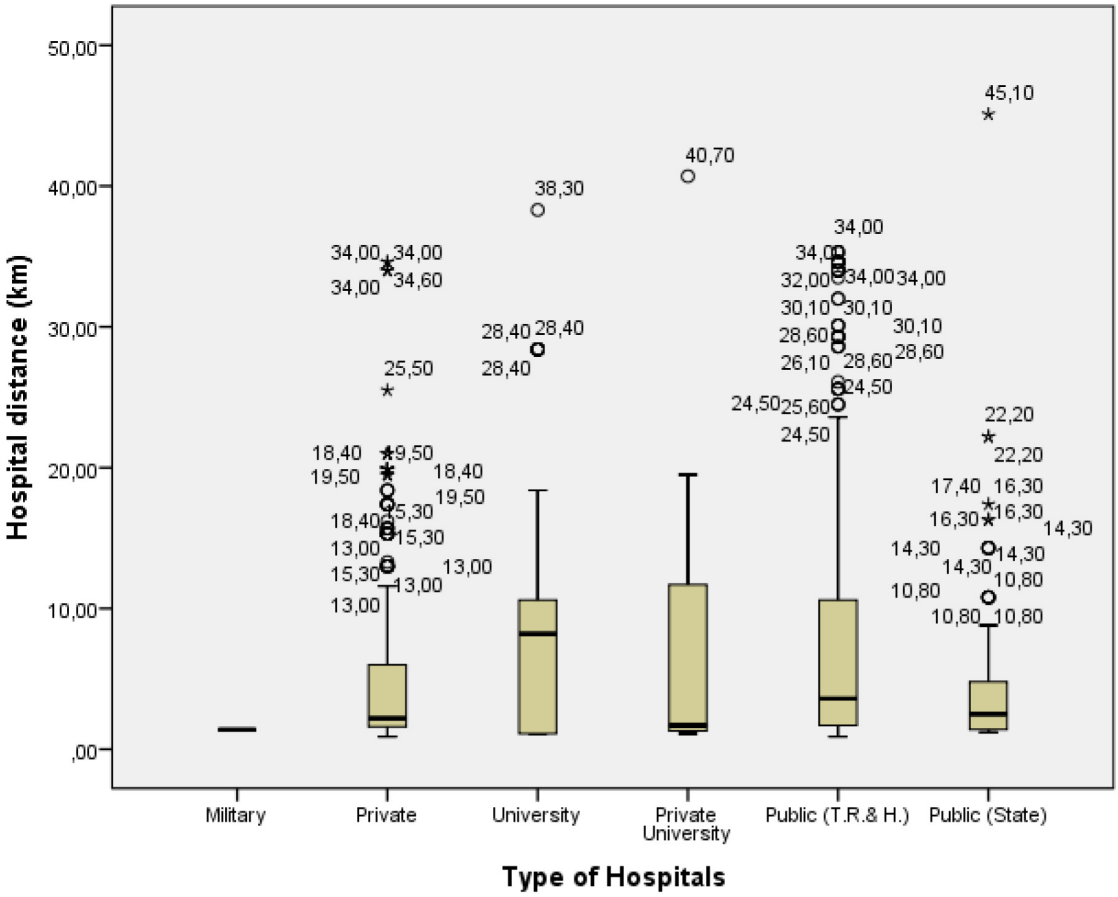

Figure 5. *Boxplot which shows distance ranges by hospital types (produced with the aid of SPSS software).*

Table 5. *Distance covered for the most frequented hospital by hospital type.*

Hospital Type	Frequency** (Number of Patients)	The Covered Distance (km)*			Travel Within the District (%)	Travel Outside the District (%)
		Minimum	Maximum	Average		
Public (Training and Research Hospitals)	1231	0,9	23,6	5,91	41,2	58,8
Public (State Hospitals)	703	1,2	8,8	2,91	94,7	5,3
Private Hospitals	350	0,9	11,6	3,06	61,8	38,2
University Hospitals	97	1,1	18,4	6,17	35,1	64,9
Private University Hospitals	58	1,1	19,5	4,93	58,6	41,4
Military Hospitals	1	1,4	1,4	1,4	100	0
TOTAL	2440	0,9	14,4	4,02	59,7	40,3

*These are the results of the calculation made after the outliers are excluded.
**Outliers are included in the number of patients as well. But those who specified the hospital type without stating the name of it are not included.

4.3 Travels made within and outside the districts according by districts

In 21 districts where the field survey was conducted, the travels that patients make to reach general hospitals within the borders of the district they reside and to the hospitals outside the borders of the district were separated in order to reveal the relation between the demand and supply.

According to Table 6, the findings below are worth noting:

- **Number of hospital beds (availability) and hospital diversity (public-private-university)** are the most prevalent factors which determine the frequency of the travels made to other districts. In Fatih and Sisli, hospital supply is above average, and all kinds of hospitals are available, so out-of-district travelavels are not required in Fatih and Sisli.travel Due to the same reason, Fatih, Sisli and Bakirkoy on the European side and Kadikoy, Uskudar and Kartal on the Anatolian side are the centers of attraction for the patients in other districts. Similarly, patients who reside in districts such as Kagithane and Cekmekoy where hospital supply is low and in districts such as Bahcelievler, Maltepe and Basaksehir where various types of hospitals are not available flow to other districts to receive healthcare services. This result implies the importance of a balanced supply of public and private hospitals in any district in the city.
- **Location of the district of residence and travel distance to other districts (accessibility)** are other important factors which affect the rate of the travels made outside the district. The very low rate of out-of-district travelss made from districts such as Arnavutkoy, Beykoz and Silivri, which are located on the peripheries, provides an evidence to this remark. Similarly, Buyukcekmece, Silivri, Beykoz, Tuzla, Arnavutkoy, etc. which are located on the peripheries of the city receive no patients from outside of their borders.
- **Border crossing of the patients** is quite high in districts which are close to each other, such as Bagcilar-Esenler-Gungoren, Kartal-Maltepe-Pendik, Kadikoy-Uskudar, Bahcelieveler-Bakirkoy, Zeytinburnu-Fatih, and Besiktas-Sisli-Kagithane. This finding indicates that clusters may be established by taking account of border crossing travels for the site selection of regional hospitals.
- In addition to distance thresholds mentioned above in relation to the types of hospitals, it is also observed that the Bosphorus forms an important threshold for the travels made to hospitals. Only 0.1% of the patients (i.e. only 3 out of 2440 patients) venture to cross the Bosporus to access the hospital they visit the most frequently. As to the second most frequented hospitals, the rate of cross-Bosphorus travels increases to 1% (i.e. 16 patients out of 1203 patients). It was observed that these respondents make the majority of these travels to reach university hospitals or specialized hospitals (such as chest diseases hospital).

5. Conclusion

According to Amartya Sen (2012:660), health is “among the most important conditions of human life and a critically significant constituent of human capabilities which we have reason to value”. Therefore, one of the most important indicators of an effective healthcare system is that people in need of healthcare services can access the services at a sufficient level.

Table 6. *Distribution of the hospital demands by districts.*

Districts	Travel from the District			Travel to the District			Hospital Bed Availability**
	Within the District	Outside the District	Total	Within the District	Outside the District	Total	
Arnavutköy	110	15	125	110	0	110	11,88
Ataşehir	N.C.*	N.C.	N.C.		18	18	21,3
Avcılar	N.C.	N.C.	N.C.				6,58
Bağcılar	153	45	198	153	62	215	16,85
Bahçelievler	37	139	176	37	13	50	20,48
Bakırköy	N.C.	N.C.	N.C.		150	150	104,37
Başakşehir	91	55	146	91	0	91	3,16
Bayrampaşa	N.C.	N.C.	N.C.		1	1	4,82
Beşiktaş	25	46	71	25	0	25	26,33
Beykoz	82	1	83	82	0	82	16,36
Beylikdüzü	N.C.	N.C.	N.C.		9	9	12,18
Beyoğlu	N.C.	N.C.	N.C.		5	5	30,39
Büyükçekmece	72	11	83	72	0	72	5,37
Çatalca	N.C.	N.C.	N.C.		1	1	7,88
Çekmeköy	0	128	128				0
Esenler	13	70	83	13	6	19	5,34
Esenyurt	N.C.	N.C.	N.C.				3,78
Eyüp	N.C.	N.C.	N.C.				5,97
Fatih	108	0	108	108	129	237	118,83
Gaziosmanpaşa	N.C.	N.C.	N.C.		2	2	10,75
Güngören	N.C.	N.C.	N.C.		23	23	6,99
Kadıköy	29	49	78	29	57	86	38,14
Kağıthane	0	119	119				2,66
Kartal	65	16	81	65	112	177	37,2
Küçükçekmece	66	56	122	66	35	101	17,95
Maltepe	5	80	85	5	13	18	21,37
Pendik	77	29	106	77	17	94	18,81
Sancaktepe	N.C.	N.C.	N.C.		2	2	1,11
Sarıyer	N.C.	N.C.	N.C.		10	10	15,14
Silivri	71	0	71	71	0	71	28,5
Sultanbeyli	178	34	212	178	1	179	6,12
Sultangazi	N.C.	N.C.	N.C.				4,71
Şile	N.C.	N.C.	N.C.				8,27
Şişli	137	1	138	137	152	289	97,32
Tuzla	N.C.	N.C.	N.C.				6,68
Ümraniye	135	36	171	135	71	206	10,46
Üsküdar	N.C.	N.C.	N.C.		79	79	52,02
Zeytinburnu	3	54	57	3	15	18	33,79

Dimensions of access to healthcare also put emphasis on the level of access. Results of the field survey conducted with the participation of 756 households in Istanbul show that different dimensions of access to healthcare affect hospital choices at varying degrees. However, hospital preferences change in correspondence to a change in the level of income. Middle and low income households have limited budgets to reserve for healthcare services and the rate of car ownership is lower among these groups, so flexibility of the demand among middle and low income groups is lower in comparison to the upper and upper-middle income groups. Therefore, 'accessibility' and 'affordability' dimensions of access to healthcare are more important for middle and low income groups, while 'acceptability' is more important for upper and upper-middle income groups.

The characteristics of supply are also determinant factors in hospital preferences. Distance covered to access regional hospitals (i.e. teaching and research hospitals, and university hospitals) and travel rate outside the district are higher than the corresponding rates to access local hospitals. Likewise, distance covered for private hospitals is more than the distance tolerated to access public hospitals.

While selecting sites for hospitals, the multi-dimensional characteristic of access to healthcare should be analyzed in detail, decision-makers should carefully consider the relation between the needs and preferences of the demand, and the availability and diversity of the supply.

Results of the field survey conducted for the purposes of this research provide findings on both the demand- and supply-side barriers in access to healthcare and evaluate the changes in hospital preferences in relation to the type and nature of supply and city form. Therefore, they should be taken into account by those who plan health facilities when measuring the spatial accessibility of healthcare services in different districts and neighborhoods of Istanbul and when selecting locations for hospitals.

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Sağlık Hizmetlerine Erişim: İstanbul'da bir alan araştırması

Sağlık sisteminin varoluş nedeni, 'daha sağlıklı olma' amacını gerçekleştirmektir. Sağlık sistemlerinin geliştirilmesi, sağlık arzı ile sağlık hizmetlerine olan talebin eş zamanlı düşünülmesi, talebin ihtiyaç ve beklentilerine göre sağlığa erişimin ve sağlık kapsamının da geliştirilmesi anlamına gelmektedir.

Makalede, öncelikle sağlık sistemi, amaçları ve bileşenleri tanımlanmış, bu sistem içerisinde sağlığa erişimin yeri ve önemi belirtilmiştir. Daha sonra sağlığa erişim kavramı, mekânsal veya mekânsal olmayan boyutlarıyla irdelenmiş, mekânsal boyut ve mesafe problemi üzerinde ayrıca durulmuştur. Takip eden bölümde, örnek alan İstanbul'da 756 hanehalkı ile yapılan bir anketin sonuçları, sağlığa erişimin boyutları bağlamında bir değerlendirmeye tabi tutulmuş, İstanbul'da yataklı sağlık hizmetlerine erişimin mekânsal kalıpları, anket sonuçları üzerinden irdelenmiştir.

Sağlık hizmetlerine erişim, arz (sağlık sistemi) ve talebin (nüfus) karakteristiğine bağımlı, çok boyutlu bir kavramdır. Makalede, sağlık hizmetlerine erişim, beş farklı boyutu ile ele alınmıştır: yeterlilik, erişilebilirlik, uyum kabiliyeti, ödeme kapasitesi ve kabul edilebilirlik. Bu beş faktörün ikisi (yeterlilik ve erişilebilirlik) erişimin mekânsal boyutunu, diğer üçü ise mekânsal olmayan boyutunu göstermektedir. Mekânsal boyutta, mesafenin -engel veya kolaylaştırıcı- bir değişken olarak önemine vurgu yapılırken, mekânsal olmayan boyutta, gelir düzeyi, kültür, etnik yapı, yaş, cinsiyet gibi faktörler incelenmektedir. Literatürde, erişimin mekânsal iki boyutu birleştirilerek, 'mekânsal erişebilirlik' kavramı yaygın olarak kullanılmaktadır. Sağlık tesisleri yer seçiminde, sağlığa erişimin tüm boyutları birlikte değerlendirilmelidir.

Sağlığa erişim, sadece bir yerleşmedeki sağlık arzına (yataklı ve yataksız sağlık kurumları, sağlık profesyonelleri vd.) değil, komşu yerleşmelerdeki sağlık arzına, bu yerleşmeler arasındaki mesafeye ve seyahat kolaylığına bağlı olarak şekillenmektedir.

Mekânsal erişebilirlik çalışmalarında, mesafenin ölçülmesinde, kuş uçuşu mesafe (Öklid mesafesi), seyahat mesafesi, seyahat zamanı gibi farklı yöntemler kullanılmaktadır. Topografya, yol kalitesi, trafik durumu, kullanılan araç türü, sağlık hizmetlerinin niteliği v.b. faktörler, farklı mesafe yaklaşımlarının kullanılmasını gerekli kılmaktadır.

Sağlığa erişim konusunda yapılan çalışmalar, erişimdeki farklılaşmayı talebin özellikleriyle açıklamakta, arzın özelliklerine göre değişimi hesaba katmamaktadır. Bu makalede detayları verilen araştırma ise, sağlığa erişimin mekânsal ve mekânsal olmayan faktörlerini birlikte değerlendirdiği gibi, sağlık arzını farklı yönleriyle (yeterlilik ve çeşitlilik) ele alması, arzın özelliklerine, kentin karakterine ve konumuna göre farklılaşan kullanıcı davranışlarını ve buna bağlı mesafe eşiklerini ve hasta geçirgenliğini ortaya koyması açısından literarüte katkı sunmaktadır.

İstanbul'da sağlığa erişimin boyutları, İstanbul ilinin kentsel nüfusunun tamamının sağlıkla ilgili tercihlerini yansıtacak şekilde, 21 ilçede, 756 hanehalkı ile yapılan anket ile incelenmiştir. Kentte, hem kamuya hem özel sektöre ait, yerel düzeyden uluslararası düzeye kadar, her türlü hastanenin yer alması ve kentin tüm Türkiye'yi temsil eden çok kültürlü ve kompleks karakteri, İstanbul'da hastane tercihi ve sağlığa erişim kalıplarının nasıl olduğunu anlamayı daha önemli hale getirmektedir. Ayrıca, İstanbul metropolitan alanının çok merkezli yapısı ve kenti fiziksel olarak ikiye ayıran İstanbul Boğazı, kentteki ilçeler arasındaki hasta geçirgenliğinin düzeyini ortaya koymayı gerekli kılmaktadır. Tüm bunlarla birlikte, İstanbul'da sağlığa erişim konusunda yapılan çalışmaların dar kapsamlı ve sınırlı sayıda olması nedeniyle, çalışma alanı olarak İstanbul seçilmiştir.

Anket sonuçları, gelir düzeyine göre, sağlık hizmetleri için kabul edilen ve gerçekleşen harcama miktarının, hastane tercihlerinin ve tercih sebeplerinin farklılaştığını ortaya koymaktadır. Orta ve altı gelir gruplarının sağlık hizmetleri için ayırabilecekleri bütçe daha sınırlı ve özel araç sahipliliği daha düşük olduğu için, talep esnekliği üst ve üst-orta gelir gruplarına nazaran daha düşüktür. Bu sebeple, orta ve altı gelir gruplarında erişimin erişilebilirlik ve ödeme kapasitesi boyutları ön plana çıkarken, üst ve üst-orta gelir gruplarında 'kabul edilebilirlik' daha fazla önemsenmektedir.

Makalede, İstanbul'da hastaneye gidiş için kabul edilen ve gerçekleşen seyahat süresi ve seyahat mesafesi de irdelenmiştir. Uluslararası uygulamalarda ve literatürde, hastaneye erişim için maksimum seyahat süresi, çoğunlukla '30 dakika' kabul edilmektedir ve bu kabul anket sonuçlarıyla paralellik göstermektedir. Bununla birlikte İstanbul'da, diğer şehirlerden farklı olarak İstanbul Boğazı'nın da hastane için yapılan seyahatlerde önemli bir eşik olduğu görülmüştür.

Hastane tercihinde, arzın özellikleri de belirleyici olmaktadır. Araştırmada, gerçekleşen seyahat mesafesinin, hastane türüne (kamu, özel) ve hastanenin niteliğine (bölgesel-yerel) göre farklılaştığı, hastane yatak sayısı (yeterlilik) ve hastane çeşitliliğinin (kamu-özel-üniversite), ilçe dışına seyahati belirleyen en önemli unsur olduğu tespit edilmiştir. Bölgesel hastanelere gitmek (eğitim ve araştırma hastaneleri ile üniversite hastaneleri) için katedilen mesafe ve ilçe dışı seyahat oranı, yerel nitelikli hastanelere göre, benzer şekilde, özel hastanelere gitmek için katedilen mesafe, kamu hastanelerine göre daha yüksektir. Bu sonuç, her ilçede kamu ve özel hastane arzının dengeli olmasının önemini göstermektedir. İlçenin konumu ve diğer ilçelere olan seyahat mesafesi (erişilebilirlik), ilçe dışına seyahatleri ve hasta geçirgenliğini etkileyen diğer önemli unsurdur. Bölgesel nitelikli hastanelerin yer seçiminde, bu geçirgenlikleri dikkate alarak kümeler oluşturulması gerekmektedir.

Hastane yer seçimi yapılırken, toplumun tüm kesimleri için sağlığa erişimde 'eşitlik' ilkesi merkeze alınmalı, korunmasız grupların sağlık hizmetlerinden yeterli düzeyde yararlanması için gerekli tedbirler alınmalıdır.