INTERNATIONAL JOURNAL OF HEALTH MANAGEMENT AND TOURISM

Volume: 6 Issue: 2 Year: 2021 E-ISSN: 2458-9608

IJHMT

International Journal of Health Management and Tourism (IJHMT)

Address Kavaklıdere Neighborhood, Esat Street, No: 7
Kavaklıdere, ANKARA, TURKEY

Telephone + 90 586 88 39

Full-text articles of IJHMT can be downloaded freely from the journal website, at **https://dergipark.org.tr/tr/pub/ijhmt**

Abstracting and indexing: Google Scholar, Scientific Indexing Services (SIS), Infobase Index, Researchbib Academic Resource Index, Arastirmax Scientific Publication Index, Internationla Institute of Organized Research (I2OR), Directory of Research Journal Indexing (DRJI), Root Indexing – Journal Abstracting and Indexing Service, ASOS İndeks, Bielefeld academic Search Engine (BASE), SOBIAD, Scilit, Türkiye Atıf Dizini

Volume 6, Issue 2 , **ISSN: 2458-9608 (Online)**

INTERNATIONAL EDITORIAL BOARD

CONTENTS

https://dergipark.org.tr/tr/pub/ijhmt Doi Number: 10.31201/ijhmt.817515

Int Journal Of Health Manag. And Tourism 2021

JHMT Editorial

International Journal of Health Management and Tourism

EXAMINATION OF GRADUATE THESIS IN TERMS OF CONTENT AND STRUCTURE IN THE FIELD OF HEALTH MANAGEMENT BETWEEN 2010-2018

Zeynep Merve UÇAR*, Mahmut AKBOLAT**

*Lecturer, İstanbul Arel University, Turkey
zeynepucar@arel.edu.tr
ORCID Number: 0000-0003-1862-2361
**Prof. Dr., Sakarya University, Turkey
ORCID Number: 0000-0002-2899-6722
makbolat@sakarya.edu.tr

Received: 28.10.2020
Accepted: 16.07.2021
Research Article

Abstract

Aim: The aim of this study is to identify the current situation, to draw attention to mistakes made, and to raise awareness for students who want to write a thesis in this area in the future by examining the aims, abstracts, methods, results and bibliographies of postgraduate theses in the field of Health Management between 2010-2018.

Methods: In this study, the department of Health Management has been scanned in the thesis database of the Council of Higher Education (CoHE) in Turkey. As a result of the examination, 463 theses were reached and 409 theses, which were open to access, have been subjected to content analysis by using Microsoft excel program.

Findings: As a result of the study, 70% of the theses in the field of Health Management consist of quantitative researches. 23% of the scales used in quantitative studies were adapted from foreign scales.

There were various problems in writing of the abstract section of the theses. In addition, while the aims and results were compatible in 48.65% of the theses, 51.35% of them had some inconsistencies.

Conclusion: When the bibliographies of the theses were examined, it was determined that while 20% or less of the sources used in 219 theses included foreign sources, there were also theses that did not use any foreign resources.

Keywords: Health Management, Thesis Writing, Graduate Theses

Introduction

Management has become a concept that is given importance by organizations because of the changes in today's healthcare world, globalization, developing technology and changes in the business world. However, success in making decisions that can use human resources, raw materials, materials, equipment, fixtures and time in harmony, efficiently and effectively in order to achieve the goals determined by the management, and the success in the processes of implementing these decisions have started to become a priority for organizations (Yeşilaydın et al., 2018:1529).

A series of managerial activities that are public oriented and require inter-sectoral cooperation in the management of preventive health services and primary health care services are necessary. However, the necessity of a wide range of managerial activities such as polyclinic, laboratory, x-ray, operating room services in addition to hotel services in hospitals where secondary and tertiary health services are provided complicates Health Management (Çimen, 2010: 136). Increased complexity in these organizations, increased willingness to pay for services, many of which are based on new and emerging technologies, and subsequent increase in health expenditures bring together the concepts of qualified managers and health. This situation increases the interest in Health Management and Health Management education (Thomasson, 2002: 235). While the rapid change in the healthcare industry in the world and in Turkey has led to the renewal of curriculum and accreditation standards in the field of health management, it is expected that both undergraduate education and postgraduate research subjects has a tendency towards this direction (Taylor et al., 2007: 60).

Health Management is also called as health administration. While it is defined as the management or supervision of health systems, public health systems and hospitals, it includes tasks such as the smooth running of individual departments, the recruitment of qualified employees, efficient coordination of information throughout the organization, and more efficient use of resources (www.healthcare-administration-degree. net, 10.05.2020).

It has been understood that it is not sufficient to use only health or only management science approaches in managing the health sector by the necessary experts. Thereupon, Health Management started to take place in national and international university education as a separate discipline (Yenimahalleli Yaşar et al., 2008: 158). The history of Health Management education is quite short. The first master's program in business administration was established at the University of Pennsylvania in 1881, and the first public health school was established at Johns Hopkins University in 1916. The Rockefeller Foundation was the first institution to sponsor Health Management education studies in 1922. The same study was also very effective in establishing the first undergraduate program at Marquette University in Milwaukee in 1926 (Hilsenrath, 2012: 1).

The first postgraduate Health Management program began in 1934 at the University of Chicago under the name of Health Administration and Policy. The Health Management education in Turkey started in 1963 with the establishment of the School of Health Administration affiliated to the Ministry of Health. Afterwards, the School of Hospital Administration was established in 1970 within the body of Hacettepe University and provided postgraduate education until 1975 (Yeşilaydın et al., 2015: 1731). With the Health Management training programs, a human resource that is committed to the fundamental principles and values of the sector, has a grasp of its processes, is knowledgeable about managerial practices, is trained in patient / customer relations and effective communication is provided in line with the needs of the health sector. Therefore, areas such as management theories, communication, organizational behaviour, health law, cost accounting, human resources management, health economics, quantitative techniques are included in the Health Management curriculum (www.anadolu.edu.tr, 10.05.2020).

The lack of standards in institutions providing education in this field and in the content of a given training in this area has led to an increase in Health Management departments in universities in Turkey. The health management department has increased its number day by day by taking part in different faculties or schools as in different names (Gül et al., 2016: 243). But, in

most countries, the development of individuals who have received Health Management education has been negatively affected by the competition of Business Administration and Medicine, and it has been observed that there are some deficiencies in the training of qualified manpower (Aaronson et al., 2010: 323). However, as of 2020, 108 Health Management departments (82 states, 26 foundations) registered in the information system of higher education are operating in universities (https://istatistik.yok.gov.tr/, 2020).

In line with this information, with the increasing interest in Health Management day by day, the number of theses in the field of master's and doctorate has increased and the quality problem in theses has started to emerge. Theses made are the most important outputs of postgraduate education. Therefore, their general characteristics are very important in revealing the development tendency of that discipline (Sahin and Ocak, 2019: 547). With this study, it is aimed to determine the current situation, to draw attention to the mistakes made, to raise awareness for students who want to write thesis in the field of Health Management by ranking the theses written between 2010-2018 according to the years, universities, undergraduate status of the student and examining the aims, abstracts, methods, results and bibliographies of theses in detail.

1. Research Methodology

The departments of "Health Institutions Management" and "Health Management" between 2010-2018 were scanned in the database of the Council of Higher Education (CoHE). 463 theses were reached as a result of the scanning. 54 theses that are closed to access were excluded from the scope of the research. A total of 409 theses were examined within the scope of the research.

While examining the theses, firstly, the information about the year, the university, the city where the university is located, the faculty / institute it is affiliated with, and the graduate-undergraduate departments of the author have been examined. Then, the aims and method; whether the validity and reliability analysis was performed, the result, abstract and bibliography of the study were examined in detail according to the relevant thesis writing guidelines and the consistency relationship between them were examined. Excel content analysis was used in data analysis.

2. Analysis

The characteristics of the theses within the scope of the research, including the type, language, author's license status, access status, and universities where they were written are given in Table 1.

Looking at Table 1, it is determined that 89.24% of the theses are master's theses, 99.02% of them are written in Turkish, 25.82% of the authors are Health Management graduates, 88.52% of them are open to access. According to the university where the theses were written, respectively in state universities; Süleyman Demirel University (9.29%), Hacettepe University (7.09%) and Gazi University (6.60%) were higher; in foundation universities; Okan University (7.57%), Atılım University (7.33%) and Beykent University (6.60%) were found to be the top 3 universities in which the most theses were submitted. In this period, it was determined that with the opening of new universities and the beginning of Health Management graduate and doctorate education to existing universities, theses (25.18%) started to be written in universities other than those listed.

Table 1: The Characteristics of the Theses within the Scope of the Research

Category		Number	%
Type of Theses	Master Thesis	365	89,24
	Doctoral Thesis	44	10,75
Language of Thesis	Turkish	405	99,02
	English	4	0,97
License Status of the Author	Indicated license status	306	74,81
	Health Management	79	25.82
	Nursing Department	61	19.93
	Business Administration	45	14.70
	Other	121	39.54
Access status	Open to Access	409	88,52
	Closed to Access	54	11,47
Universities where the Theses are Written	Süleyman Demirel University	38	9.29
	Okan University	31	7.57
	Atılım University	30	7.33
	Hacettepe University	29	7.09
	Beykent University	27	6.60

(Table 1 cont.)

Gazi University	27	6.60
Başkent University	20	4.88
İstanbul University	20	4.88
Dokuz Eylül University	16	3.91
Selçuk University	15	3.66
İstanbul Medipol University	13	3.17
Cumhuriyet University	12	2.93
Sakarya University	11	2.98
Ankara University	10	2.44
Namık Kemal University	7	1.71
Other	103	25.18

Table 2 shows the distribution of theses according to the data collection tool. As can be seen in the table, the most used data collection tool is the quantitative research method (70%). While qualitative research methods are used in 12% of theses, it was determined that theses are carried out using 11% compilation, 3% cost analysis, 2% data envelopment analysis method and 1% other (secondary data, time series, swot, etc.) data collection methods.

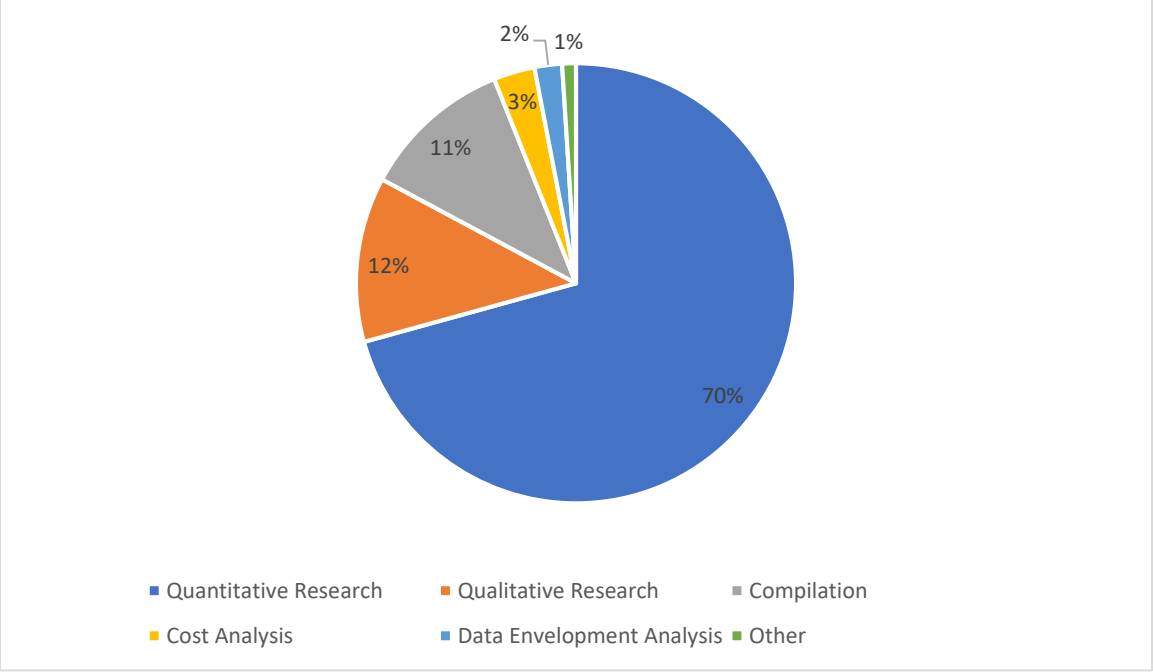


Figure 1: Distribution of Theses Within the Scope of the Research According to Data Collection Method

In the research, it was also examined whether the written theses had validity and reliability analysis or not. Validity is the degree to which a measuring tool can accurately measure the property it aims to measure without confusing any other feature. A reliable measurement tool is that it gives approximately the same numerical result in consecutive measurements for the same feature. Therefore, it is very important to have validity and reliability analyses of the scale to be used in studies in terms of generalizability of the results. (Taşkoparan, 2011).

Figure 2 shows the distribution of scales used in quantitative studies. 23% of the scales consist of scales obtained from international literature and translated into Turkish; 18% of them were analysed for validity and reliability. As the questions of 17% of the scales were prepared by the author; In 16% of these theses, the validity and reliability analysis was made by the author. 4% of the scales were taken from another thesis about the subject. As a result of the examinations, it was determined that 19% of the thesis authors did not share any information about the questionnaire form they used.

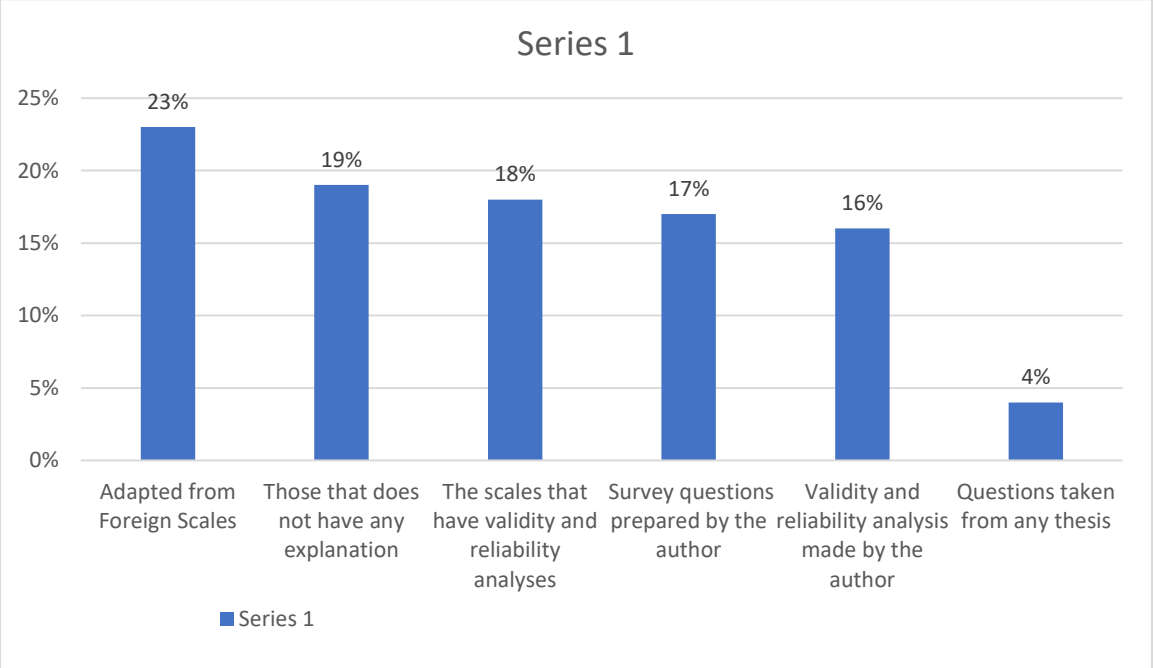


Figure 2: Distribution of Scales Used in Quantitative Studies

The abstracts of the theses were examined in the study; In this context, it was examined whether the researcher wrote the abstract in a way to cover the aims, method, findings and results of his study. As seen in Figure 3, 63% (260) of the examined 409 theses were appropriate in this regard,

18.82% (77) did not have at most one of the aims, methods and results, 7.57% (31) did not have more than one and 4.40% (18) did not have any of them but instead information about the literature was given. Another important issue regarding the abstracts is that keywords should be chosen from the words that best reflect the content of the thesis (Sakarya, 2017: 25). It was determined that 69% (285) of the theses examined were suitable for this definition, 3% (14) did not include any keywords and 26% (110) used words that were not suitable for the content.

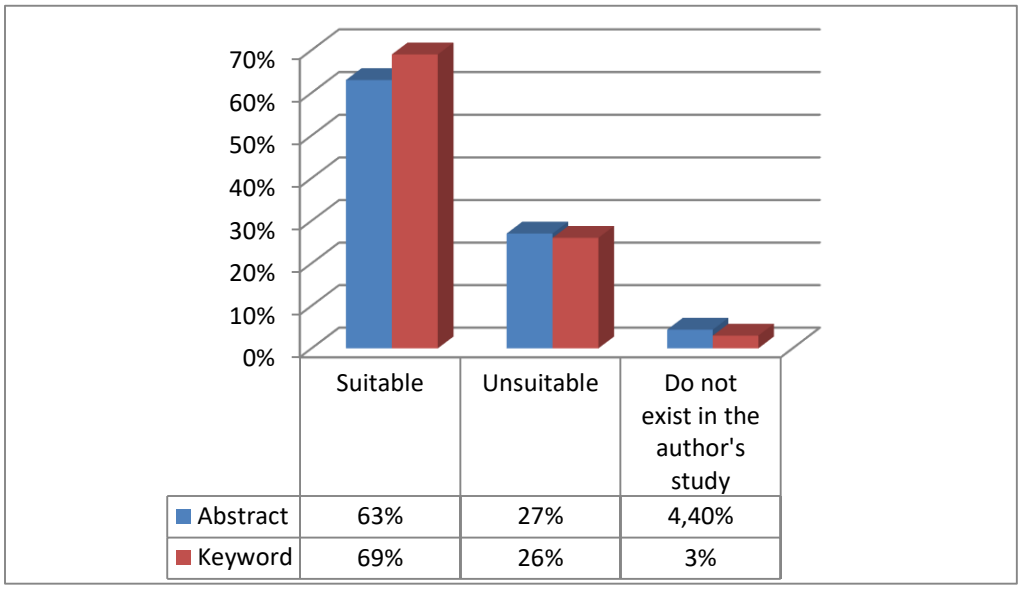


Figure 3: Theses According to the Relevance of Abstract and Keywords

The author is expected to present the results by interpreting the findings obtained from the research in line with the purpose stated in the thesis. This issue is not just a repetition of the findings; It should be in the form of expressing the research results and the contribution of the findings (theoretical, methodological, application) (Sakarya, 2017: 35). The theses have been evaluated in this context; As seen in Figure 4, it was determined that the aims and results of 48.65% (199) of the examined 409 theses were consistent with each other, and 51.35% (210) of the remaining thesis were inconsistent.

Among the reasons for the aim-result inconsistency, the difference in the aims and results of the thesis (32.77%) and the results not being based on the findings, having more than one aim or method-aim inconsistency (19.07%) take an important place.

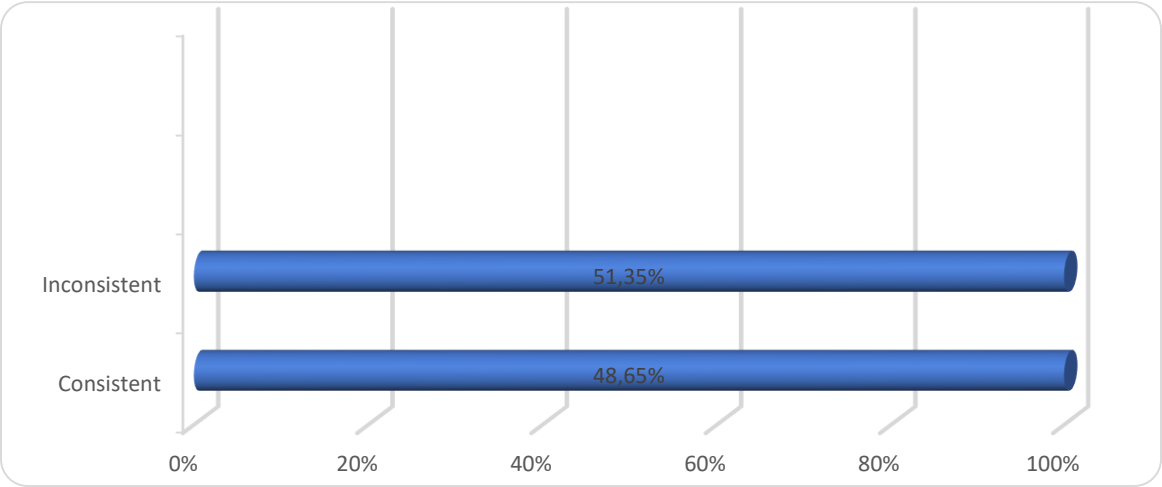


Figure 4: Evaluation of Theses

In the theses examined, the type and amount of bibliography has also been examined, and the results are presented in Table 2 and Figure 5. Accordingly, while an average of 111 sources were used in the theses, an average of 33 foreign sources were used from the sources used. Besides, the thesis that uses the most resources is the doctoral thesis with 364 sources. In addition, the thesis using the most foreign sources is another doctoral thesis with 283 sources. Among the theses examined, there are theses that have no bibliography and the number of theses without foreign sources is quite high.

Table 2: Evaluation of the Bibliographies of Theses

	Maximum	**Minimum**	**Average**
Total Resource	364	0	111
Foreign Recourse	283	0	33

Table 5 proportionally shows how many of the sources used in the theses are foreign sources. Accordingly, the use of foreign resources varying between 0% and 20% was determined in 219 of the theses. In addition, while there was a foreign resource use between 21% and 40% in 105 of the theses, it was determined that foreign resource use varied between 41% and 60% in 42 of them. In 21 of the 409 theses examined, it was determined that 80% or more, in other words quite a high rate of foreign resources was used.

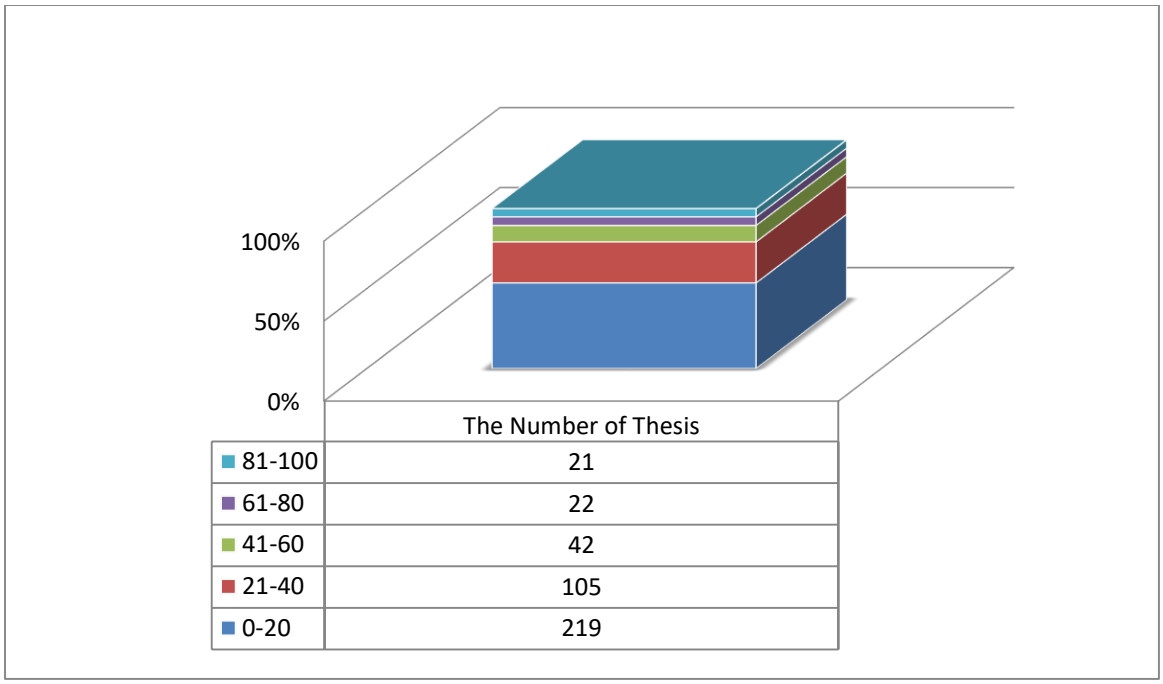


Figure 5: The Evaluation of Bibliographies of Theses

3. Conclusion and Recommendations

When examining the distribution of graduate thesis in health management field in Turkey by years, it is seen that the first thesis was made in 1978 and approximately two-thirds of thesis were written in the last 5 years. Considering the distribution of postgraduate thesis studies on Health Management written in other world countries ,especially in America and Canada, by years from the Proquest database, it was determined that the thesis studies started in 1950 and approximately 90% of them were written in 2000 and after (Yeşilaydın et al., 2015: 1739).When looking at the increasing number of graduate programs opened in the field of Health Management in Turkey and in the world in the last 10 years, it can be said that it is directly proportional to the increase in the number of theses.

Looking at the results of the study, it was determined that 86.24% of the theses written in the field of Health Management between 2010 and 2018 were master's theses, 99.02% were written in Turkish, and 25.82% of the authors were graduates of Health Management. Considering the universities where the theses were written; It was determined that the universities with the highest number of thesis publishing were Süleyman Demirel University in state universities and Okan University among private universities. Beykent University, on the other hand, has more than

200 theses in a year and since most of the theses were written within the department of Business Administration, only some of them were examined within the scope of the research. With the increasing number of theses, most of the studies have started to turn into studies that do not contribute to the method, field, and application (Tutar, 2018: 33). For this reason, writing the theses by taking into consideration the thesis writing guides and their content being compatible with each other are very important. As a result of the examinations, only 63% of the abstract part were written in accordance with the thesis writing guidelines, and 31% of the keywords did not reflect the content. When the bibliographies of the theses were examined, it was determined that only 21 of them had substantially foreign literature research and reference to foreign sources. It is very important for the Health Management department, which is in the competition of Business Administration and Medicine, to train well-equipped students in order to beat this competition. According to the results of the study, it was determined that the thesis quality decreased with the increase of theses; In this area, it is recommended to develop spelling guides in terms of both content and form. In order to increase the quality of theses, it is important to give lectures and seminars that can raise awareness of tudents regarding thesis writing during the course of graduate education, and to have a second faculty member to control the process of the thesis writing in addition to the thesis supervisor.

References

Aaronson, W. M., Counte, B. Ramirez. D, West. (2010). Global Health Management Education: Challenges and Opportunities For Academic Programs, Journal of Health Administration Education, 4, 323-325.

Anadolu Üniversitesi. (2020). Sağlık Yönetimi Bölümü Ders İçeriği.(10. 05. 2020) www.anadolu.edu.tr

Çimen, M. (2010). Sağlık Yönetimi ve Sağlık Yönetim Eğitimi, Acıbadem Üniversitesi Sağlık Bilimleri Dergisi, 1/3, 136-139.

Çoşkun, R. (2015). Sosyal Bilimlerde Araştırma Yöntemleri Spss Uygulamalı, Sakarya Kitapevi, İstanbul.

Gül, İ., Yeşiltaş, A., ve Keklik, B. (2016). Sağlık Yönetimilisansüstü Programlarında Yapılan tezlerin Profili, Mehmet Akif Ersoy Üniversitesi Sosyal Bilimler Dergisi, 7/13, 231-244.

Healthcare Administration.(2020). Degree Programs. (10.05.2020). www.healthcare-administration-degree.net

Hılsenrath, P. E. (2012), Health Management education settings in the United States: History and perspective, Journal of Management History, 18/4, 386-401.

Sakarya Üniversitesi. (2017). İşletme Enstitüsü Tez Yazım Kılavuzu, 1-54, http://gsb.sakarya.edu.tr/tr/icerik/14889/80216/tez-proje-yazim-kilavuzu

Sahin, T., Ocak, S. (2019). Türkiye'de Sağlık Yönetimi Disiplininde Yürütülen Tezlerin Bibliyometrik Analizi. Hacettepe Sağlık İdaresi Dergisi, 22/3, 543-558.

Taşkoparan, Ö. (2011). Ölçmede Güvenilirlik vee Geçerlilik. (15.07.2019).https://taskoparan.wordpress.com/2011/03/16/olcmede-guvenilirlik-ve-gecerlilik/

Taylor M. K., Gebremechiael M. D. Wagner C. E. (2007). Mapping The Literature of Health Care Management. Journal of the Medical Library Association,95/2, 58-65.

Thomasson, M. (2002). From Sickness to Health: The Twentieth-Century Development of U.S. Health Insurance, Explorations in Economic History, Elsevier Science, 39, 233-253.

Tutar, H., (2018). Örgütsel Davranış Kongreleri Bildirilerinde "Metaforik Neolojizm" Sorunu Üzerine Eleştirel Bir İnceleme, İşletme Bilimi Dergisi, 6/3, 1-38.

Yeşilaydın, G., Doner, G., ve Turaç, İ. (2015). Sağlık Yönetimi Alanında Yapılan Lisansüstü Tezlerin İncelenmesi. ResearchGate, 1729-1741.

Yeşilaydın, G., Göktaş, B., ve Arslan, D. (2018). Sağlık Yönetimi Bölümü Öğrencilerinin Sayısal Yetkinlik Düzeylerinin Belirlenmesi, 2. Uluslararası 12. Ulusal Sağlık ve Hastane İdaresi Kongresi Bildiri Kitabı, Muğla, 1524-1539.

Yeşilmahalleli, Y., Esatoğlu, A., Ağırbaş, İ., Önder, Ö., ve Sarp, N. (2008). Ankara Üniversitesi Sağlık Yönetimi Eğitim Programlarının Hollanda ve Yunanistan'daki Programlar ile Karşılaştırmalı Değerlendirilmesi, Sağlık ve Hastane İdaresi Kongresi Bildiriler Kitabı, Antalya, 147-159.

Yüksek Öğretim Kurumu (2019). Sağlık Yönetimi Lisans Dersi Veren Bölüm Sayısı (07. 07. 2019). https://istatistik.yok.gov.tr/

https://dergipark.org.tr/tr/pub/ijhmt Doi Number: 10.31201/ijhmt.880169

Int Journal of Health Manag. And Tourism 2021

JHMT Editorial

International Journal of Health Management and Tourism

QUALITATIVE STUDY ON THE LEVEL OF KNOWLEDGE ABOUT THE HEALTH LITERACY CONCEPT OF TEACHING STAFF

Duygu DENİZ *, Esra SEVİMLİ ** Tuğçe Nuriye ÜNLÜ***

*Lecturer, İstanbul Arel University, Turkey
duygudeniz@arel.edu.tr
ORCID Number: 0000-0001-5754-9916
** Lecturer, İstanbul Arel University, Turkey
esra.sevimli429@gmail.com
ORCID Number: 0000-0001-7119-0882
*** Lecturer, Biruni University, Turkey
tugcesanci@gmail.com
ORCID Number: 0000-0003-1406-6433

Received: 14.02.2021
Accepted: 26.07.2021
Research Article

Abstract

Aim: This research was planned to determine, examine and explore the views of faculty members about health literacy and to determine the factors affecting health literacy behaviors.

Methods: The research is a qualitative research based on descriptive analysis. The sample of the study consists of health department lecturers who have been working at a foundation university in Istanbul for at least one year. The maximum diversity sampling method, one of the purposeful sampling methods, was used in the sample selection. In this direction, a "semi-structured" interview form consisting of 9 open-ended questions was used to learn the opinions of the participants on the subject.

Findings: The participants (n=10; 100%) agreed on the idea that "the media is not reliable and there is a lot of information pollution in the media" has been observed. At the same time some of the participants (n=2, 20%) cited the reliability of scientific publications.

Conclusion: It is thought that the fact that faculty members serving an important part of the society have an understanding of health literacy will be a role model in making positive contributions to the health level of the society.

Keywords: Health Literacy, Academics, Health Literacy Knowledge Level

Introduction

Health literacy is a concept developed in 1974 (Simonds, 2017). According to the definition of the World Health Organization (WHO), "health literacy" is the capacity of people to reach health-related information in order to make a decision about health services, to protect and improve their current health, to improve their quality of life, and to understand this information and the messages they receive from health personnel correctly (WHO, 2013). Health literacy includes the ability to enforce rules for health care, understand medical education leaflets, instructions on prescribed medications, appointment cards, doctor's explanations, consent forms in hospitals, and cope with complex healthcare systems. At the same time, health literacy is the ability to access the right information and service and to use this information and service in order to improve the health of the individual and the public (Sorensen et. al, 2012; Nutbeam, 2008).

Health literacy is influenced by personal skills, health system, education system, family, work; and social and cultural factors in society. By increasing the level of health literacy, people can benefit from health services effectively and their quality of life can be increased. In addition, the costs of healthcare services can be reduced by ensuring the correct use of resources (Guzys et. al, 2015; Pleasant, 2014).

Inadequate health literacy causes less use of preventive health services, delay in seeking health care in the symptomatic period, inadequate understanding of the individual's medical condition and adherence to medical instructions, increase in health care costs and increase in mortality. Low health literacy also negatively affects patient-doctor communication (Jessup et. al, 2017).

Adequate health literacy, on the other hand, improves the quality of life, improves the level of effective use of health services, increases the quality of health services and reduces costs (Baker et. al, 2007).

In many studies, it has been observed that individuals with insufficient health literacy are more prone to negative health behaviors. It is important to increase health literacy in order to change behavioral risk factors such as smoking, nutrition, alcohol, physical activity and being overweight (Jessup et. al, 2017; Svendsen et. al, 2020; Aaby et. al, 2017).

In order to define the level of health literacy, health literacy is framed by considering three important factors: education, health and society. The classification proposed by Don Nutbeam, one of the important researchers in this field, divided into three levels as functional, interactive and critical has been considered the most accepted classification. The explanations of these classification are as follows (Nutbeam, 2008).

Functional health literacy: Basic reading and writing skills are expressed. People at this level can read and understand educational materials (prescriptions, prospectuses and information required for care) on health risks and the use of health services.

Interactive health literacy: It includes greater cognitive acquisition and social skills. People at this level are competent to participate in health activities, to understand health messages and to use their existing knowledge when health conditions change.

Critical health literacy: It includes advanced cognitive and social skills used in analyzing health-related information critically and making health decisions. People at this level can critically analyze health knowledge and act according to the social and economic determinants of health. They can also make decisions about their own health conditions and communicate effectively with healthcare professionals.

This research was planned to determine, examine and explore the views of faculty members about health literacy and to determine the factors affecting health literacy behaviors.

1.Research Methodology

1.1.Research Type

The research is a qualitative research based on descriptive analysis. Qualitative research design was preferred by the researcher, as it enables in-depth and multidimensional (qualitative) data utilization (Yıldırım and Şimşek, 2008).

1.2. Purpose and Problematic of the Research

This research was planned to determine, examine and explore the views of faculty members about health literacy and to determine the factors affecting health literacy behaviors.

The research focused on the dimensions of health literacy proposed by Don Nutbeam, classified in three levels as functional, interactive and critical (Nutbeam, 2008). Within the scope of the specified dimensions, the main question of the research asked as "What are the activities and opinions of the academic staff about health and health sector in the context of health literacy concept?" This question aims to understand the views, activities and suggestions of faculty members about health literacy.

1.3. The Importance of Research

It is thought that when academic staff serving to an important part of the society has a high level of health literacy, they will be a role model in making positive contributions to the health level of the society. Therefore, determining, analyzing and exploring the views of faculty members about health literacy will contribute to other studies in the field of health literacy.

1.4. Research Sample

The sample of the study consists of health department lecturers who have been working at a foundation university in Istanbul for at least one year. The maximum diversity sampling method, one of the purposeful sampling methods, was used in the sample selection. In order to obtain a great number of data with different types and to ensure external validity, the sample has been taken into consideration by ensuring maximum diversity (Yıldırım and Şimşek, 2008). Accordingly, within the sampling framework, diversity is provided from the programs of First and Emergency

Aid, Medical Imaging Techniques, Medical Laboratory Techniques, Physiotherapy, Anesthesia, Opticians.

1.5. Collection of Data

The research was conducted using observation and in-depth face-to-face interview technique, focusing on field research. The interviews were conducted in a semi-structured form. The list of the lecturers who meet the criteria to be included in the study was made and "written consent" was obtained from the lecturers who met the participation criteria before the interview. An "in-depth face-to-face meeting" was held with 10 instructors who accepted the interview. In order to avoid any loss of words and meaning in the interviews, written consent was obtained from the participants and the interviews were recorded as audios. The duration of the interviews differed between approximately one hour to one and a half.

After the approval of the ethics committee, the field application of the study was carried out between May 2020 - July 2020. At the data collection process, the study referred to Biçer et al. (2018); İzoğlu, (2017); Ministry of Health, (2016); and Sorensen et al. (2012). In this direction, a "semi-structured" interview form consisting of 9 open-ended questions was used to learn the opinions of the participants on the subject. Research questions are as follows (Sorensen et. al, 2012; Biçer et. al, 2018; İzoğlu, 2017; Ministry of Health, 2016).

1. What do you generally think about the level of knowledge and access of members of the community about health?
2. How do you access information about the diseases and treatments that concern you?
3. What do you pay attention to while using medication for your illness?
4. What can you say about the reliability of your doctor's decisions regarding your illness?
5. What do you think about the reliability of information about diseases in the media (TV, social media, internet, etc.)? What is the applicability of information in the media?
6. What do you pay attention to improve the quality of health?
7. Which health service unit would you prefer in case of illness? What are your views on this topic?
8. What can you say about how family or relatives can affect you in order to avoid illnesses?

9. In general, what do you think can be done to make health or disease related information more effective and reliable?

1.6. Data Analysis

The data obtained as a result of the interviews were analyzed with the "content analysis" method. The data were coded and themes were determined accordingly. The determined themes were organized, the results were interpreted and the analysis was concluded. Participants were coded on the basis of confidentiality as Participant-1, Participant-2 etc. "Number of statements" and "percentages of statement" were presented and interpreted in a table in line with the data (Deniz and Gemlik, 2021; Gemlik et. al, 2019).

1.7. Limitations

The results of the research include the evaluations of the academic staff who agreed to participate in the study at the time of the research.

2. Analysis

The research results are discussed under two separate headings: demographic results and the activities and opinions of the academic staff in the context of health literacy.

2.1. Demographic Results

10 instructors participated in this research. 6 of the participants are married and 5 are single. While 70% of the participants interviewed are women, 30% are men. In addition, 30% of the participants are between the ages of 20-29, 60% between the ages of 30-39 and 10% between the ages of 40-49. All of the participants have masters level education (Table 1).

Table 1: Demographic Characteristics of the Participants

	Gender	Age	Education Status	Marital Status
Participant 1	Woman	39	Graduate	Married
Participant 2	Woman	29	Graduate	Single
Participant 3	Woman	38	Graduate	Married
Participant 4	Male	29	Graduate	Married
Participant 5	Male	34	Graduate	Married

(Table 1 cont.)				
Participant 6	Woman	34	Graduate	Married
Participant 7	Male	32	Graduate	Married
Participant 8	Woman	29	Graduate	Single
Participant 9	Woman	49	Graduate	Single
Participant 10	Woman	34	Graduate	Single

2.2. Results related to Activities and Opinions of Faculty Members about Health / Health Sector within the Context of Health Literacy

In this section, open-ended questions prepared for the instructors and the results based on thedata collected to discover the activities and views of the participants in the context of health literacy are presented. The themes based on the answers given by the participants regarding the main question of the study were presented as results and comments in a tabular form.

When the expressions of the participants about "the general opinions of individuals about the level of knowledge and access to health" were examined,

It has been observed that they agree on the opinion that the public's knowledge level is low and that internet access creates information pollution. According to the majority opinion of the participants, the media has a negative effect on individuals with a low education level. The statements of the participants revealed the idea that there is a relationship between education level and media influence, as well as education level and internet use.

Table 2: Participants' general opinions about the level of knowledge about health and community members' access to health

Participants' general opinions about the level of knowledge about health and community members' access to health	**Number of statement**	**Percentage of statement**
Low level of health knowledge of the society	10	100%
Easy access to the internet creates information pollution	10	100%
People with low education levels being adversely affected by the media	6	60%

(Table 2 cont.)		
Educated individuals can access correct information with internet access	3	30%
Society's lack of knowledge about correct drug use	1	10%
Inability to talk about sexual diseases prevents the possibility of early diagnosis	1	10%
It is difficult to change previously acquired attitudes and behaviors related to health with education	1	10%
Low level of basic education about health	1	10%

When the expressions of the participants about "access to information preferences for diseases and treatments" were examined (Table 3), it was found that most of the participants preferred access to scientific information in the field of health. At the same time, the high rate of expressions of the participants emphasizing that they prefer to consult the knowledge of familiar experts indicates the existence of a relational link between the health literacy level and the social network. In addition, it was observed that the participants' information access preferences were mostly "trusted doctor sites and internet mediation". Moreover, the participants' "easy access due to working in the field of health" draws attention to the relationship between social networking and health literacy.

Table 3: Participants' preferences related to accessing information about diseases and treatments

Preference related to accessing information by reading books and articles in the field of health	**Number of statements**	**Percentage of statements**
Preference related to accessing information by reading books and articles in the field of health	7	70%
Preference about accessing information through familiar experts	6	60%
Choice of access to information with trusted doctor sites	4	40%
The idea that working in the field of health facilitates access to information	3	30%
Preference about accessing information via the Internet	3	30%

According to the statements of the participants about "the factors that they pay attention to in the use of drugs related to their own diseases" (Table 4), it was found that 50% of the participants adapted to the drug treatment administered by the physician. On the other hand, the result that almost half of the participants did not pay attention to drug use is striking. This suggests the possibility that this difference between the expressions may be related to past health behaviors.

Table 4: The factors that participants pay attention to while using drugs related to their own illnesses

The factors that participants pay attention to when using drugs related to their own illnesses	Number of statement	Percentage of statement
Compliance with the doctor's drug recommendation	5	50%
Not paying attention to drug use despite having knowledge in the field of health	4	40%
Paying attention to the use of medication in simple ailments by using the information obtained in the field of health	1	10%
Failure to comply with doctor's advice despite having knowledge in the field of health	1	10%
Compliance with the medication advice of the trusted physician	1	10%
Following the doctor's drug recommendation, checking the drug on the internet and choosing to comply with the recommendation	1	10%
Choosing to use medicines with your own health knowledge without taking doctor's advice into consideration	1	10%

When the statements of the participants about "the reliability of the doctor's decisions about their own disease" were examined (Table 5), it was observed that most of the participants agreed to investigate the physician well first. The emphasis in the statements is on the importance of trust in the physician. The thought that 40% of the participants "will be sure of reliability by being selective and investigating in detail" is among the expressions that continue the emphasis on trust. On the other hand, some of the participants stated that "the physician is reliable, but a distinction should be made between private and public hospitals".

Table 5: Participants' opinions about the reliability of doctor's decisions about their own diseases

Participants' opinions about the reliability of doctor's decisions about their illnesses	Number of statement	Percentage of statement
The thought that the physician should be well known for reliability	6	60%
The thought that reliability is possible if the choice of physician is selective	4	40%
The thought that it is necessary to visit more than one physician to ensure reliability	4	40%
The belief that physicians are reliable but that a distinction should be made between private and public hospitals	3	30%
The thought that it will be more reliable if the physician's communication is strong	2	20%
The thought that he/she cannot immediately trust the physician due to his health sector experience	1	10%
The thought that physicians can be trusted directly	1	10%

When the statements of the participants about "the reliability and applicability of information published in the media (TV, social media, internet, etc.) about diseases" (Table 6), the participants agreed on the idea that "the media is not reliable and there is a lot of information pollution in the media". has been observed. While some of the participants cited the reliability of scientific publications, some of them mentioned that physicians' social media tools could be reliable. Some of the participants emphasize that social media is not reliable.

Table 6: Participants' opinions about the reliability and applicability of information published on the media (TV, social media, internet, etc.)

Participants' views on the reliability and applicability of the information published on the media about the diseases	Number of statement	Percentage of statement
The opinion that the media is unreliable	10	100%
The opinion that there is too much information pollution in the media	10	100%
The opinion that TV and the newspaper is reliable	3	30%
The opinion that physicians' social media posts are reliable	2	20%
The opinion that social media is unreliable	2	20%
Considering that scientific publications are reliable if researched	2	20%

When the statements of the participants on "increasing the quality of health" are examined (Table 7), it is observed that the majority of the participants pay attention to the issue of "healthy eating". On the other hand, the statement that "the participants did not pay attention to the quality of health by showing their working life and academic intensity" draws the attention. In addition, the statement of some of the participants that "I could not do despite knowing what needs to be done to improve the quality of health" is among the other striking results.

Table 7: The activities and views of the participants to increase the quality of health

The activities and views of the participants to increase the quality of health	Number of statement	Percentage of statement
Healthy eating activity	6	60%
Not paying attention to increasing the quality of health, although the things to be considered are known	5	50%
The activity of trying to pay attention to the sleep disorder but not being able to succeed.	4	40%
The thought that attention is not paid to improving the quality of health due to the intensity of academic life	3	30%
Activity to pay attention to protective measures	2	20%
Sports activity for health	1	10%

When the expressions of the participants about "health units preferred in case of illness" are examined (Table 8), their expressions emphasizing preventive health services and referring to the effectiveness of family medicine are striking. Other remarkable statements include statements drawing attention to the crowded public hospitals. There are also expressions emphasizing under which conditions tertiary level institutions can only be preferred.

Table 8: Health service units preferred by the participants in case of illness and their opinions

Health service units preferred by the participants in case of illness and their opinions	**Number of statement**	**Percentage of statement**
Choosing family physicians to benefit from preventive health services	5	50%
Family physicians are not preferred because they are not believed to provide effective health care.	5	50%
Preferring private hospitals due to crowded public hospitals	4	40%
State hospitals are not preferred due to crowd and low health quality	4	40%
Preferring the state hospitals because they are economical and equipped.	2	20%
Choosing 3rd level health institutions in serious health problems	1	10%

When the statements of the participants about "the effect of the environment (relatives, family, friends, etc.) in order to protect against diseases" are examined (Table 9), it is striking that some of the participants said that "it is the party that affects him because he is in the health sector". Statements that refer to the psychological impact of the environment are among the other remarkable statements. The statement "The presence of wrong health behaviors acquired from the family and the effect of doctor-hospital selection in the immediate environment on reference information" refers to the previously acquired health behaviors and the effect of the social network.

Table 9: Participants' views on the impact of the environment (relatives, family, friends, etc.)

Participants' views on the impact of the environment in order to prevent diseases	Number of statement	Percentage of statement
The opinion that the participant is the party that has an effect due to being in the health sector.	5	50%
The view that the environment has a psychological effect	3	30%
Presence of wrong health behaviors learned from family	2	20%
The opinion that the environment has a negative impact	2	20%
The presence of an influence on the reference information in the choice of physician-hospital in the immediate environment	1	10%
The opinion that the environment has no influence	1	10%
The opinion that the environment has a positive effect	1	10%

When the statements of the participants about "the information about health or disease can be more effective and reliable" (Table 10), the majority of the participants stated that it is necessary to create social awareness in the name of health literacy. At the same time, some of the participants emphasized that they should be added to the education curriculum as a course in order to improve health literacy. In addition, reducing information pollution, using the media consciously, concentrating more on health education, increasing the effectiveness of family medicine, providing psychological counseling services in family medicine, providing more frequent information about gynecological, sexual and mental diseases, increasing conferences, seminars, consultancy services by municipalities, increasing alternative medicine supervision, restoring trust in physicians and increasing public service advertisements on health are other suggestions that the participants included in the interviews.

Table 10: Participants' opinions and suggestions in order to make health or disease-related information more effective and reliable

Participants' opinions and suggestions in order to make health or disease-related information more effective and reliable	Number of statement	Percentage of statement
The idea that basic health knowledge should be instilled in all individuals	8	80%
The idea that social awareness about health should be raised	8	80%
The idea that general health and disease information should be given as a course throughout the education period	5	50%
The idea that information pollution about health in social media should be reduced	4	40%
The idea that the conscious and effective use of the media on health should be ensured	3	30%
The idea that health education should be included in family health centers	3	30%
The idea that the state should focus on health education	3	30%
The idea that the effective use of family medicine should be increased	3	30%
The idea that perspectives on sexually transmitted diseases and mental diseases should be changed	2	20%
The idea that there should be psychologist support in family medicine	1	10%
The idea that education given to women should be increased	1	10%
The idea that municipalities should increase their conferences, seminars and consultancy services	1	10%
The idea that the control of alternative medicine should be increased	1	10%
The idea that trust in the physician should be restored	1	10%
The idea that public service ads about health should be increased	1	10%

3. Conclusion and Recommendations

Health literacy is the degree to which individuals have the capacity to obtain, process and understand basic health information and services (Hersh et. al, 2015). Researching, understanding, and using health information is critical to health decision making (Sevimli et. al, 2019). Information about health issues, self-care, and disease prevention can increase understanding of personal risk factors and preventive strategies, thereby helping individuals improve their health outcomes (Chen et. al, 2018). Nowadays, with the development of technology and the special interest in the use of digital media for health purposes in the last decade, individuals' access to health-related information is increasing gradually through media, social media, mobile applications and internet channels (Zamir et. al, 2018).

This study was conducted to determine, examine and explore the views of faculty members about health literacy and to determine the factors affecting health literacy behaviors. When the expressions of the participants about the general opinion of the members of the society about the level of knowledge and access to health are examined, the emphasis on the relationship between all participants especially education level and access to accurate information is included in the heading of results.

In a study conducted in Turkey through Doktorsitesi.com and Social Touch (2013), when a need for information about a health issue arises, with the participation of 8 thousand people, the sources they accessed were asked and it was stated that they could mark more than one option. Finally, according to the data, 78.77% of the participants stated that they went online, 60.29% went for direct examination, 22.41% collected information with the references of their relatives, and 1.55% stated that they did not need information about health (Social Touch, 2013). Therefore, it has been observed that the results of the data in that study support the results of our research. In addition, it is striking that the statements of the lecturers in our study emphasize the idea that internet access creates information pollution. According to the study of Cline and Haynes (2001), the internet provides a lot of information. However, the process of accessing health information via the internet can reveal problems related to technical language and medical language. Users face problems understanding medical terms. Incorrect or incomplete understanding of health information in line with such problems may lead to wrong practices or wrong health behaviors in some cases. All of these can cause a negative impact on health (Cline and Haynes, 2001). In the

study, the statements observed include "the society does not have information about the correct use of drugs, not talk about sexual diseases prevents early diagnosis, that it is difficult to change previously acquired health habits with education, and that basic education about health is inadequate". These statements show that factors such as individual characteristics, experiences, situations related to previous behaviors, personal factors (biological-psychological-sociocultural) may be related to the effect of health behaviors on health (Bahar and Açıl, 2014). Although this related situation, which is not the focus of the research, is not emphasized, it is recommended to conduct studies that will shed light on the subject. Information access options that participants prefer in diseases and treatments can give clues about health literacy behaviors. It is the statement that the majority of the participants, who emphasized this idea during the research, 'preferred access to information by reading books and articles in the field of health'. The statement emphasizing this opinion during the research is the statement of the majority of the participants that they prefer to access information by reading books and articles in the field of health. As a common classification, health literacy is considered in three dimensions as functional, interactive, and critical (Nutbeam, 2008) and critical health literacy defines having advanced cognitive and social skills and critical thinking ability (Sykes et. al, 2013). The fact that faculty members prefer to read academic publications in the field of health and reach an opinion also suggests that they have critical health literacy. In the research, it was also observed that the statement that "I preferred access to information through familiar experts" was another frequent one. As a result of the involvement of academic staff in the health sector, it is thought that an expert network has been formed. This situation supports the statement that "working in the field of health facilitates access to information".

Another data that emerged as a result of the interviews and attracted attention is that the statement "I do not pay attention to drug use" is almost equal in addition to the saying "I comply with the drug recommendation". Families, peers and health professionals around individuals who are in contact with individual health behaviors suggest that they are an important resource in interpersonal interaction. The existence of this network can reveal effects that can increase or decrease the probability of health behavior turning into action (Bahar and Açıl, 2014). Therefore, it is necessary to evaluate their own health behaviors and their own health developments together with their environment within the framework of the health literacy of academic staff.

When the statements of the participants about the reliability of the doctor's decisions regarding their own diseases were examined, the participants mainly stated that "the physicians should be well known for reliability, reliable can be possible if the physician is chosen selectively and it is necessary to go to more than one physician to have reliability". It is noteworthy that the participants also say that "the physician is reliable but there is a need to distinguish between private and public hospitals". "It would be more reliable if the physician's communication is strong, you cannot trust the physician immediately because of the health sector experience, and the physicians can be trusted directly" are the other statements that the participants expressed in the interviews (Table 5). All these statements of the participants, which reflect the reliability of physician decisions, show that they reflect the critical health literacy dimension and also refer to the factors that affect health literacy. Factors affecting health literacy are classified under two headings as individual and systemic factors. Health system related factors consist of access level to healthcare services, complexity of the system, doctor-patient relationship, and health insurance coverage (Balçık et. al, 2014). When the statements of the participants were examined, it was observed that subjects such as "distinction between private-state health institutions" and "physician communication" were emphasized. It can be inferred from this situation that health system may affect the health literacy level.

Participants' opinions about the reliability and applicability of the information published in the media were mostly defined as negative effects. The statements made by the participants showed themselves as two separate views that the media is not reliable and that it can be reliable when certain conditions are established. People are subjected to intensive flow of information both through the internet and the media, and it is expected that those who need and demand health services will be able to make basic health-related decisions. At this point, the correct perception of the intense flow of information from the internet and media, reaching the right decision and being applicable are considered as related to health literacy. Therefore, it can be said that the media being reliable or being reliable under necessary conditions has a positive or negative effect in parallel with the health literacy of the individual (Güven, 2016).

Modifiable behavioral characteristics such as lack of physical activity, unhealthy diet, tobacco and alcohol use are among the behavioral factors that determine the level of health literacy. Accordingly, when the statements of the participants about increasing the quality of health were

examined, it was observed that the 'healthy eating' statements came to the fore (Doğan and Çetinkaya, 2019). Accordingly, when the statement of the participants to increase the quality of health is examined, it has been observed that the 'healthy eating' statement comes to the fore.

When the statements of the participants about the health units they prefer in case of illness are examined, it is noteworthy that the participants predominantly say that "they prefer family physicians to benefit from preventive health services" and "family physicians are not preferred because they are not believed to provide effective health care". While some of the participants stated that they preferred the state hospitals because they are economical and equipped, some of them stated that they did not prefer state hospitals due to their crowdedness and low quality of health, and added that private hospitals and tertiary health institutions were preferred in serious health problems (Table 8). As a result of the analysis of the statements, it is understood that the participants know the flow of the healthcare service chain. The thought arises that conditions such as "the idea that the family physician system is not effective, economic conditions, the equipment of health institutions, the level of access to health services" have an effect on the level of health literacy.

As a result, it can be thought that having an understanding of health literacy of academic staff serving an important part of the society will serve as a role model in making positive contributions to the health level of the society. Since the faculty members participating in our research teach in the field of health, it is very important that they transfer their knowledge of health literacy to education and training.

For this reason, the participants' statements given below are considered as the recommendations of the study:

- Increasing basic health education,
- Organizing the curricula in this direction in the education sector,
- Providing conferences and seminars that can appeal to all segments of the society,
- Safely increasing the efficiency of the media,
- Regaining trust in the physician,
- Statements such as increasing the effectiveness of family medicine practices and providing additional consultancy services in family medicine, and informing women about sexual diseases.

It is thought that research should be conducted in this direction so that it will increase the effectiveness of the suggestions and contribute to the applications.

References

Aaby, A., Friis, K. Christensen, B. Rowlands, G. and Maindal, H.T. (2017). Health literacy is associated with health behaviour and self-reported health: A large population-based study in individuals with cardiovascular disease. European Journal of Preventive Cardiology. 24(17), 1880–1888. Doi: 10.1177 / 2047487317729538.

Bahar, Z. and Açıl, D. (2014). Sağlığı Geliştirme Modeli: Kavramsal Yapı. Dokuz Eylül Üniversitesi Hemşirelik Yüksekokulu Elektronik Dergisi. 7(1), 59-67.

Baker, D.W. Wolf, M.S. Feinglass, J. et al. (2007). Health literacy and mortality among elderly persons. Archives of Internal Medicine. 167(14), 1503-1509. Doi:10.1001/ archinte.167.14.1503.

Balçık, P.Y. Taşkaya, S. and Şahin, B. (2014). Sağlık Okur-Yazarlığı, TAF Preventive Medicine Bulletin. 13(4), 321-326. Doi: 10.5455/pmb1-1402386162.

Biçer, İ. Kartal, N. Yalçın Balçık, P. (2018). Öğrencilerin Sağlık Okuryazarlık Bilgi Düzeylerinin Belirlenmesi. Sağlık Bilimlerinde Güncel Akademik Çalışmalar. Editör: Asst. Prof. Dr. Ayhan GÜLER. 1(1), 239-253.

Chen, X. Haw, F. Waters, E. et al. (2018). Health Literacy and Use and Trust in Health Information, Journal of Health Communication. 23(8), 724–734. Doi:10.1080 / 10810730.2018.1511658.

Cline, R.J.W. and Haynes, K.M. (2001). Consumer health information seeking on the Internet: the state of the art, Health Education Research. 16(6), 671–692. DOI: 10.1093 / her / 16.6.671.

Deniz, D. and Gemlik, H.N. (2021). Z Kuşağı Sağlık Yönetimi Öğrencilerinin Kişilik Özellikleri Bağlamında İş Hayatına Yönelik Görüşlerinin İncelenmesi. Sağlık ve Sosyal Refah Araştırmaları Dergisi.

Doğan, M. and Çetinkaya, F. (2019). The Level Of Health Literacy Of Academicians And Factors Affecting It, Hacettepe Sağlık İdaresi Dergisi. 22(2), 389-400.

Gemlik, H.N. Saruhan, E. Arslanoğlu, A. (2019). Yaşlı Hastaların Yaşlı Dostu Hastanelerden Beklentileri Üzerine İçerenköy Bayındır Hastanesi'nde Nitel Bir Araştırma. Yönetim, Ekonomi ve Pazarlama Araştırmaları Dergisi. 3(5), 144-156. Doi: 10.29226 / TR1001.2019.148

Guzys, D. Kenny, A. Dickson-Swif, V. and Threlkeld, G.A. (2015). Critical review of population health literacy assessment. BMC Public Health. 15(215). DOI: 10.1186 / s12889-015-1551-6

Güven, A. (2016). Sağlık Okuryazarlığını Etkileyen Faktörler ve Sağlık Okuryazarlığı ile Hasta Güvenliği İlişkisi Yüksek Lisans Tezi. Danışman: Prof. Dr. Sıdıka Kaya, Ankara.

Hersh, L. Salzman, B. Snyderman, D. (2015). Health Literacy İn Primary Care Practice, American Family Physician. 92 (2), 118-124. PMID: 26176370.

İzoğlu, A. (2017). 15-17 Yaş Arası Ergenlerde Sağlık Okuryazarlığı. Hacettepe Üniversitesi Sağlık Bilimleri Enstitüsü Çocuk Gelişimi ve Eğitimi Programı. Yüksek Lisans Tezi. Danışman: Doç. Dr. Özcan DOĞAN. Ankara.

Jessup, R.L. Osborne, R.H. Beauchamp, A. Bourne, A. and Buchbinder, R. (2017). Health literacy of recently hospitalised patients: a cross-sectional survey using the Health Literacy Questionnaire (HLQ). BMC Health Services Research. 17(52). Doi: 10.1186 / s12913-016-1973-6.

Ministry of Health. (2016). Turkey Health Literacy Scale Reliability and Validity. May.

Nutbeam, D. (2008). The evolving concept of health literacy. Social science & medicine. 67 (12), 2072-2078. Doi: 10.1016 / j.socscimed.2008.09.050

Pleasant, A. (2014). Advancing Health Literacy Measurement: A Pathway to Better Health and Health System Performance. Journal of Health Communication, 19(12): 1481–1496. Doi: 10.1080 / 10810730.2014.954083.

Sevimli, E. Altıngöz, E. Şisman N. et al. (2019). An Assessment of Health Information Systems Through the Perspective of Computer Engineering Students and Medical Students. Acta Informatica Medica. 27(5), 300-304. DOI: 10.5455 / aim.2019.27.300-304.

Simonds, S.K. (2017). Health education as social policy. Health Education Monograph. (2), 1–25. doi: 10.1177/10901981740020S102.

Social Touch & doktorsitesi.com. (2013). Türkiye'de İnternetin Sağlık Bilgi ve Hizmetlerine Ulaşma Amaçlı Kullanım Alışkanlıkları. http://www.socialtouch.com.tr/trend bulteni/turkiyede_internetin_saglik_amacli_kullanimi_eylul2013/index.html Accessed in 2020 (22.09.2020).

Sorensen, K. Broucke, S.V. Fullam, J. et al. (2012). (HLS-EU) Consortium Health Literacy Project European, Health literacy and public health: A systematic review and integration of definitions and models, BMC Public Health. 12(80). Doi: 10.1186/1471-2458-12-80.

Svendsen, M.T. Bak, C.K. Sorensen, K. et al. (2020). Associations of health literacy with socioeconomic position, health risk behavior, and health status: a large national population-based survey among Danish adults, BMC Public Health. 20(565). Doi: 10.1186 / s12889-020-08498-8.

Sykes, S. Wills, J. Rowlands, G. and Popple, K. (2013). Understanding critical health literacy: a concept analysis, BMC Public Health. 13(150). Doi:10.1186 / 1471-2458-13-150.

WHO. (2013). Health Literacy. In: Kickbusch I, Pelikan LM, Apfel F, Tsouros AD, editors. World Health Organization, Regional Office for Europe.

Yıldırım, A. and Şimşek, H. (2008). Sosyal bilimlerde nitel arastirma yontemleri. Ankara: Seçkin Yayınları.

Zamir, D.L. and Bertschi, I. (2018). Media Health Literacy, e-Health Literacy, and the Role of the Social Environment in Context, International Journal of Environmental Research and Public Health. 15. 1643 Doi:10.3390 / ijerph15081643.

https://dergipark.org.tr/tr/pub/ijhmt Doi Number: 10.31201/ijhmt.918595

Int Journal of Health Manag. And Tourism 2021

JHMT Editorial

Internatıonal Journal of Health Management and Tourism

ADVANCED AGE AND DISABLED HEALTH TOURISM CONCEPT, PROBLEMS AND SOLUTION SUGGESTIONS

Tuğçe SAYGILI *, Sibel OYMAK YALÇIN** Haluk ÖZSARI ***

*MS. Student, Çanakkale Onsekiz Mart University, Turkey
tugcesaygili@gmail.com
ORCID Number: 0000-0001-7459-1219
** Associate Professor, Çanakkale Onsekiz Mart University, Turkey
sibeloymak@comu.edu.tr
ORCID Number: 0000-0001-7979-8892
*** Prof.Dr.,İstanbul-Cerrahpaşa University, Turkey
hozsari@iuc.edu.tr
ORCID Number: 0000-0003-4057-2524

Received: 17.04.2021
Accepted: 18.07.2021
Research Article

Abstract

Disabled health tourism, which is one of the sub-branches of health tourism, is in the development stage as a sector. The number of people with disability is a considerable amount of in the world and Turkey is substantial degree. The increase in life expectancy at birth increases the elderly population, an increase in the prevalence of chronic diseases and disability. With this increase, there is an increase in the demand for service procurement and the costs to be incurred. In this study, the definition of elderly and disabled tourism in the world and Turkey, the detection of needs by presenting the current situation with demographic and other health indicators, national and discussion of the issue in the presence of international literature and aimed to present proposals for the improvement of elderly and disabled tourism in Turkey. As

a result, disabilities that cannot be cured but lead to a decrease in self-care skills in quality of life and physiological disability with advanced age are also beginning to create a separate burden on health services. To alleviate this burden, the field of health tourism should be developed to support services such as rehabilitation and care.

Keywords: Disabled Health Tourism, Disabled Population, Health Tourism, Elderly Population

Introduction

Health tourism started with travels to mineral and hot water resources in the Neolithic and Bronze Age. Beliefs that some thermal springs in the Middle Ages, especially in Japan relieved people's pain and healed their wounds started to make travel to countries with similar resources attractive. In the sixteenth century, the belief in the youth fountain gained importance, in 1513, the explorer named Ponce de Leon discovered the state of Florida and began to search for the water source that would bring youth to everyone. The wealthy people of the period living in the seventeenth and eighteenth centuries began to travel to other countries to live healthier and to reach the thermal (SPA, Salus Per Aquam, Health/Well-being from Water) and medical services they needed. In the nineteenth century, new infectious diseases such as tuberculosis emerged with the effect of rapid urbanization and industrialization. As a result, people started to go to regions with different climatic conditions to get sea and mountain air and to regain their health (Bilge and Cabi, 2020). Over time, these travels have led to the development of the concept of health tourism, and today it has become one of the alternative tourism types with its economic resource size of 100 billion dollars in the World (Tengilimoğlu, 2017).

The concept of health tourism originated from the definition of "Traveling to health facilities located in touristic areas in different countries, especially with thermal springs and unique natural resources" by the International Association of Official Travel Organizations (1973) a member of the United Nations World Tourism Organization. It generally includes various medical treatment services such as plastic surgery, rehabilitation, and personal care (Lee and Li, 2019; WHO, 2018). The concept of international health tourism 'All kinds of health services and related support services received by real persons who come to our country from abroad for health purposes, who are not citizens of the Republic of Turkey, or who are citizens of the Republic of Turkey and reside abroad state. (Regulation on International Health Tourism and Tourist Health -Clause 4/d). The World Tourism Organization defines health tourism as "Tourism associated with travel to health spas or resort destinations where the primary purpose

is to improve the traveller's physical well-being through a regimen of physical exercise and therapy, dietary control, and medical services relevant to health maintenance."(Hofer et al. 2012). People who benefit from health tourism services are named 'health tourists'. Health tourism services are generally presented under 3 subtitles according to national and international sources (Health Tourism and Tourist Health Application Guide, 2011):

- Medical Tourism
- Thermal (Hod Spring and Spa &Wellness) Tourism
- Advanced Age and Disabled Tourism

Medical tourism is a type of tourism that consisted as a result of people travelling to a different country from their own country to benefit from the planned treatment practices carried out by physicians in 2nd and 3rd level health institutions and organizations for tourists with a certain disease (Advanced treatments- Cardiovascular Surgery, Radiotherapy, Transplantation, Infertility – IVF Applications, Aesthetic Surgery, Eye, Dental, Dialysis Treatments, etc.) (Health Tourism and Tourist Health Application Guide,2011, OECD Medical Tourism, Akbolat and Deniz,2017). Thermal tourism, together with the environmental and climate factors in the place where geothermal waters containing various minerals and above 20 degrees temperature, is a type of tourism that is provided with practices such as physical therapy, rehabilitation, exercise, psychotherapy, diet within the supervision and programming of the physician to provide opportunities to improve human health and consists of more than one rehabilitative health services activities (Dalkıran,2017). SPA tourism is the tourism service provided by institutions that serve to increase general health with various professional services that help renew the mind, body, and spiritual. Wellness tourism, defined as activity, is a tourism that aims to improve and balance all the basic areas of human life, including physical, mental, emotional, professional, intellectual and spiritual (World Tourism Organization (UNWTO) and European Travel Commission (ETC), 2018).

Advanced Age and Disabled Tourism

Advances Age Tourism is the practice performed by certified personnel who have been trained in Clinical Guesthouses- Geriatric Treatment Centers- Nursing Homes to protect, rehabilitate, and improving the health of elderly people in need of care, usually through tourism agencies. Disabled tourism, on the other hand, is defined as the types of tourism offered to provide

preventive, curative, and rehabilitative health services to reduce the disability of disabled individuals or to integrate them into society (Bozça et, al 2017, Health Tourism and Tourist Health Application Guide,2011).

Health tourism is a type of tourism that requires technical equipment and labor force and the health institution providing the service must provide services by international standards. In the health institution providing services in this type of tourism, there must be personnel who know the common foreign language. In addition, institutions that will serve in this sector are required to carry out promotional and marketing activities in different languages with state support for the selected target market. It is one of the important factors to choose insurance and health institutions that support patients to receive service abroad as a target in introductions (Altın et., al 2012). Health tourism attraction of the countries which the US, Turkey, India, Malaysia, Cuba, Singapore, Thailand, South Korea, Hungary, Brazil, Argentina, South Africa, Mexico, Greece, Germany, France, Italy, Poland, Spain and the United Arab Emirates (Bozça et., al 2017). The World Tourism Organization and the European Travel Commission have recommended that studies be carried out to enable people with disabilities to act healthily and safely in health tourism as part of the health tourism strategy (World Tourism Organization (UNWTO) and European Travel Commission (ETC), 2018).

This study in the world and in Turkey, defining the advanced age and disabled tourism, determination of the need by presenting the current situation with demographic and other health indicators, aimed national and international literature discussion of the issue in the presence of and for solutions submission.

1. Disability Concept

The main term used for disability, inability, activity limitations, and participation restrictions, referring to the negativities between the individual (with any health condition) and contextual factors (environmental and personal factors) related to that individual (World Disability Report,2011).

When we examine the concept of disability, we come across more than one definition. The disabled definition made by the Turkish Language Institution is defined as ' have a disability, have a lacking in their body or have a defect'. In-Law No. 5378 on the Disabled, published in 2005, the concept of disability refers to "Individuals affected by attitudes and environmental conditions that restrict their full and effective participation in society on equal terms with

other individuals due to various levels of loss in their physical, mental, spiritual and sensory abilities." (Law on the Disabled, 2005, Clause 3/1-c). United Nations (UN) person with disabilities; it is defined as "as a result of a hereditary or later deficiency in his physical or mental abilities those who cannot do things that a normal person should do to on one's hook his personal or social life " (Koca,2010).

It is the science of public health that covers the social and political fields and develops studies on the aim of improving health, increasing the life expectancy and quality of the whole population through disease prevention and other health interventions (Health Promotion and Promotion Glossary,2011). As a result of epidemiological and demographic factors, the number of disabled individuals is increasing due to diseases that develop as a result of both biological and physiological health problems due to the aging of the population and the increase of chronic diseases. WHO has defined the problems faced by people with disabilities when trying to access healthcare services as follows (WHO, Disability and Health,2020):

- **Costs preventing access to services**: Health services and transportation expenses are not covered, which is one of the main reasons why people with disabilities cannot get the healthcare they need in low-income countries. More than half of the person disabled do not receive health care compared to approximately one - third of those without disabilities.

- **Limited service availability**: There are also deficiencies in terms of limited resources in the services that disabled people should receive. Many studies reveal that people with disabilities have an unmet amount of health services, especially in areas far from city centers, due to the lack of services.
- **Physical disabilities**: Access and transportation problems to buildings (hospitals, health centers), inaccessible medical equipment, lack of markings, narrow doors, internal steps, inadequate washbasin, bathroom arrangements, and barriers to basic vital needs such as inaccessible parking areas make it difficult to access health facilities. Women with movement difficulties generally cannot benefit from breast and cervical cancer screening services. Because the height of the examination tables cannot be adjusted and the mammography equipment is in ergonomics that can only be used by standing women. Ergonomic problems should be resolved for disabled individuals to benefit from these services.

- **Insufficient knowledge and skills of health professionals**: Disabled people provide feedback on the problems they encounter. When the probability of reporting these adversities they encountered was examined, it was observed that the healthcare personnel who were exerciser the treatment were double as likely to report that their skills were insufficient to meet their needs, four times more likely to report that they were exposed to bad behavior and three times more likely to report that the treatment was not accepted.

The United Nations (UN) first mentioned the issue of disability in the Universal Declaration of Human Rights published in 1948 within the scope of the principle of "Equality for All". The Americans with Disabilities Act of 1990 in the USA and the Disability Discrimination Act of 1995 in the UK were enacted. With these laws, important developments have started especially in the tourism sector. Obligations have been imposed for unimpeded access to services such as the use of bookmarks in hotel businesses. The England law also acknowledged that service providers must provide the physically necessary conditions to accommodate disabled people (Tengilimoğlu,2017). In Turkey in 2005 *'Encouraging and ensuring the enjoyment of fundamental rights and freedoms by persons with disabilities and strengthening the respect for their innate dignity, ensuring their full and effective participation on an equal basis with other individuals in social life and making the necessary arrangements to take measures to prevent disability.'* order 5378 The 'Law on the Disabled' has been published (Law on the Disabled, 2005). In June 2019, the UN Disability Inclusion Strategy (UNDIS) was launched by the UN Secretary-General to promote sustainable and transformative progress in the inclusion of disability among all employees of the United Nations. This strategy aims to ensure that the many aspects of disability are included in all the work of UN agencies consistently and systematically (WHO, Disability and Health,2020). The social and economic conditions of persons with disabilities and their families are at a worse level compared to persons without disabilities and their households, and in many countries with disabilities and their families need additional financial resources to reach the standard of living of non-disabled individuals. Often they have to spend out-of-pocket because these resources are not available. These costs include access to healthcare, access to assistive devices, access to more expensive means of transport, heating costs, laundry, special needs, special diets, or services for personal assistance. In recent years, studies have been carried out to calculate the additional costs brought about by disability. According to these studies, although the additional costs vary by country it has been reported

to have a rate of, between 11% and 69% of the income in the UK, between 29% and 37% depending on the severity of the disability in Australia, in Ireland, it is between 20% and 37% of the weekly income depending on the severity and duration of the disability, 9% in Vietnam and 14% in Bosnia Herzegovina (World Disability Report, 2011).

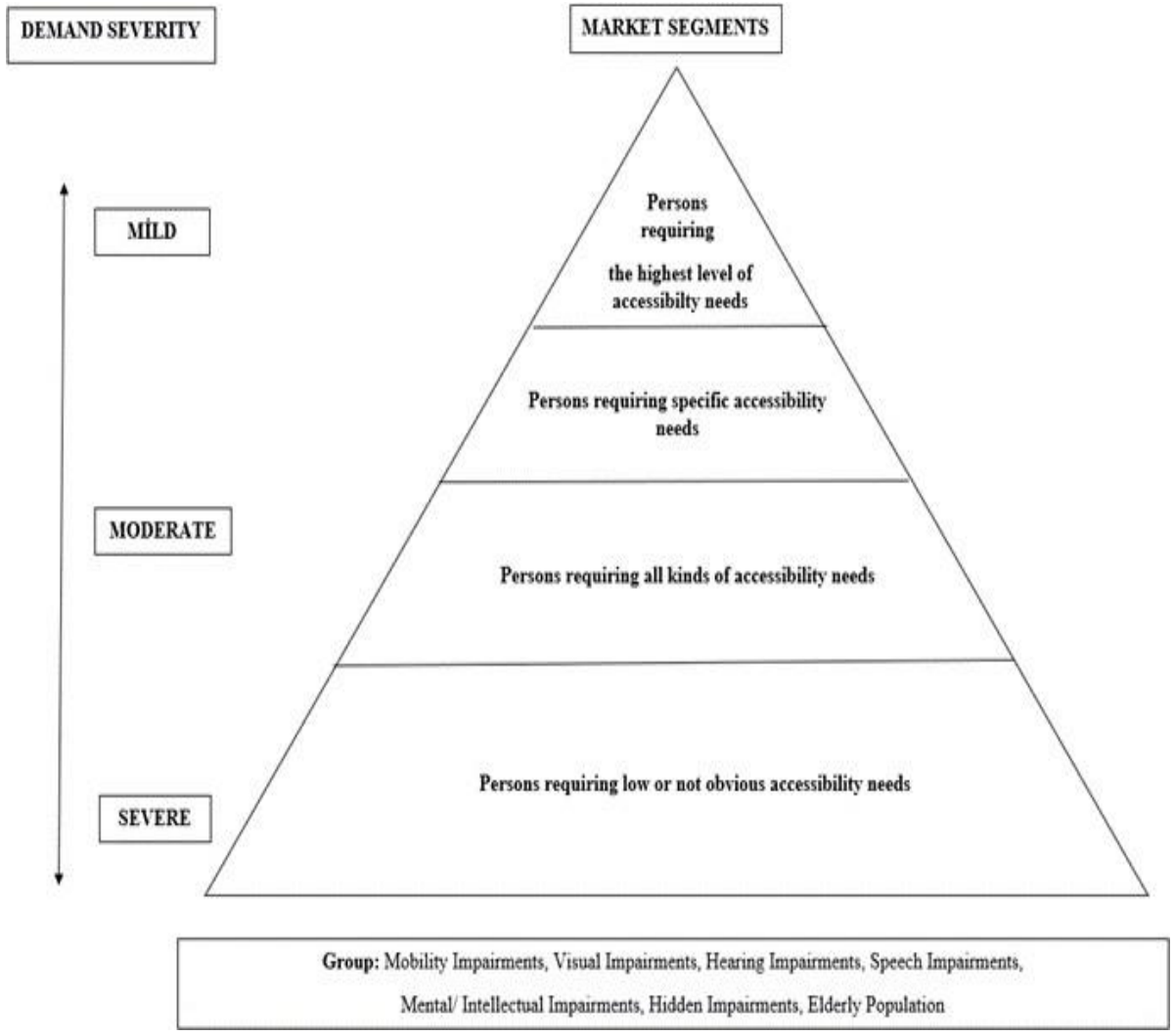


Figure 1: Pyramid of demand types: the continuum of abilities (Source: Buhalis and Darcy, 2011)

Represents a combination of challenges and opportunities in the travel and tourism industry for individuals with all kinds of needs. Serving these market segments requires considerable effort as different needs must be met.

According to the access needs, there should be severe-medium-mild inclusive demand types in different market segments of the disabled and elderly population. Therefore, the need for inclusive design on the one hand good market segmentation on the other guides organizations to provide adequate tourism products and services to these groups. Separate the market into different groups of people with similar needs and wants can allow tourism planners and managers to understand what matters to consumers and create unique product offerings. By targeting these groups, competitive advantage can be achieved through differentiation. In addition, the creation of well-defined demand types has significant implications for the marketing and positioning of destinations and organizations. The higher the access needs, the more attention should be paid to certain accessibility criteria. For this reason, expert personnel with detailed knowledge and skills about the problems of individuals with the greatest need for access (movement, visual, auditory, speech, mental, unknown disorders, and advanced age) can provide better service. People with moderate needs, for example, many people with a temporary disability, such as a broken limb, generally do not need special services and buy tourism services that include people without disabilities. In addition, low-grade disabled individuals are hesitant to use facilities that would stigmatize them. In such cases, tourism providers need to increase their legal and social responsibility and accelerate their efforts to adapt their services to all types and levels of disability (Buhalis and Darcy, 2011).

2. Disabled Population in the World and Turkey

According to WHO, 15% of the world's population has a disability. It is thought that this number will gradually increase with the aging of the population and the increase in the prevalence of chronic diseases (WHO, International Day of Persons with Disabilities 2020). It is thought that in 2030, of the 8.2 billion population in the world, 1 billion will be 65 and over, more than 2 billion will be chronic illness, more than 2 billion will be obese (Tontuş, 2016). When analyzed by gender of the number of registered people with disabilities National Disability Data System in Turkey; 1,425,667 are men, 1,109,566 are women (This number does not include individuals who have not to authorized hospitals to obtain a Disability Health Board Report and who have not contacted the state hospitals for service). The number of people with extremely disabilities is 764,271 according to statistics (Disability and Elderly Statistics Bulletin-October 2020).

In European countries, the number of disabled individuals has a significant share of the total population. When the percentage of persons with disabilities in the population of the country is examined, among the top five countries in 2016, Finland (32.2%), England (27.2%), Netherlands (25.4%), France (24.6%), and Estonia (23.7%) (Tablo 1). When considered in terms of health tourism, the right and need of persons with disabilities to travel, have fun, and be treated constitute a potential market.

Table 1: Total population, disability population rates, and disability numbers of european union member countries (2016)

Country	Population	Disabilitiy Rate (%)	Number of Disability
England	65.092.000	27.2	17.705.024
France	64.346.720	24.6	15.829.293
Germany	81.132.000	11.2	9.086.784
Poland	38.478.001	11.7	4.501.926
Netherlands	16.942.373	25.4	4.303.362
Spain	46.368.000	8.7	4.034.016
Italy	62.466.780	6.6	4.122.807
Czech Republic	10.551.227	20.2	2.131.347
Portugal	10.349.000	19.9	2.059.451
Belgium	11.211.064	18.4	2.062.835
Sweden	9.804.792	19.9	1.951.153
Finland	5.476.031	32.2	1.763.281
Romania	19.838.662	5.8	1.150.642
Greece	11.520.785	10.3	1.186.640
Hungary	9.835.030	11.4	1.121.193
Denmark	5.676.025	19.9	1.129.528
Austria	8.615.955	12.8	1.102.842
Ireland	4.630.308	11	509.333
Slovenia	2.064.000	19.5	402.480
Estonia	1.310.504	23.7	310.589
Lithuania	2.911.203	8.4	244.541
Bulgaria	7.181.000	3.3	236.973
Latvia	1.978.454	5	98.922
Cyprus	862.000	12.2	105.164
Luxembourg	569.202	11.7	66.596
Malta	431.486	8.5	36.676

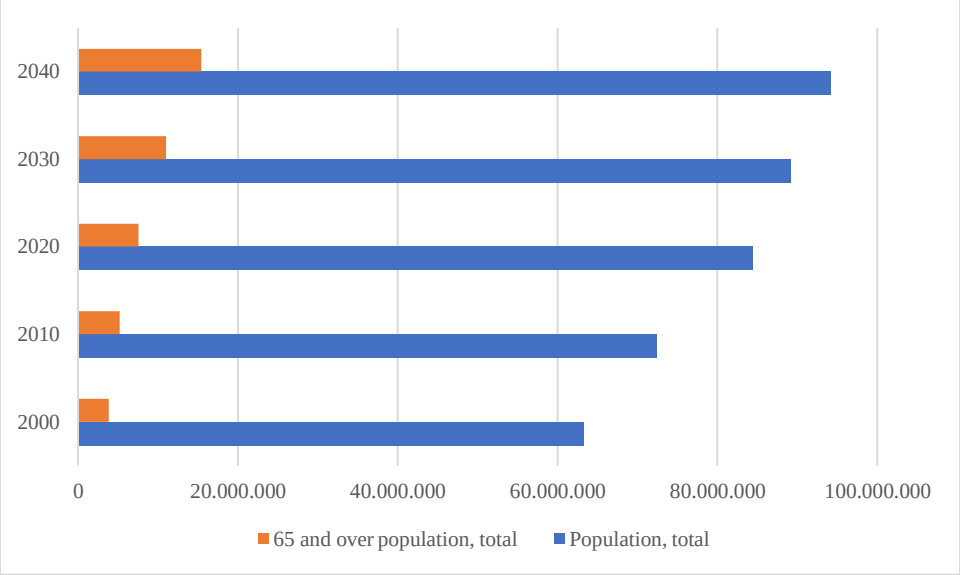
(**Source:** Tengilimoğlu, 2017)

Although the individual does not experience physical, psychological, and social disability due to any health problem throughout his life, he necessarily experiences temporary or permanent functional losses with advanced age, changes in biological, physiological, and consequently disability. Nowadays, more than 1

billion people (about 15% of the world's population) are living with some kind of disability, according to the Who's publication on January 1, 2020. 190 million individuals elderly fifteen and over (3.8% of the world's population) experience functional loss and significant difficulties and generally need health services (WHO, Disability and Health 2020). Disabled individuals need general health services, as well as general health and care services that non-disabled individuals receive. According to article 25 of the UN Convention on the Rights of Persons with Disabilities (CRPD), the right of persons with disabilities to reach the highest standard of health care without discrimination is emphasized. However, very few countries can provide sufficient quality services for disabled people. There is an urgent need to expand treatment and care services for the disabled in primary health care services, especially in rehabilitation and intervention activities at the tertiary protection level. In addition, very few countries can collect data to determine the need for health service delivery according to the type of disability (WHO, Disability and Health,2020).

In a study conducted in England in 2009, it was determined that 12% of those engaged in local tourism (at least 1-night stay outside the home) were disabled or people with a long-term health problem. In a study conducted in the USA, it was determined that people with disabilities with mobility restrictions have to spend an average of 13.6 billion dollars per year to travel (Tontuş, 2016).

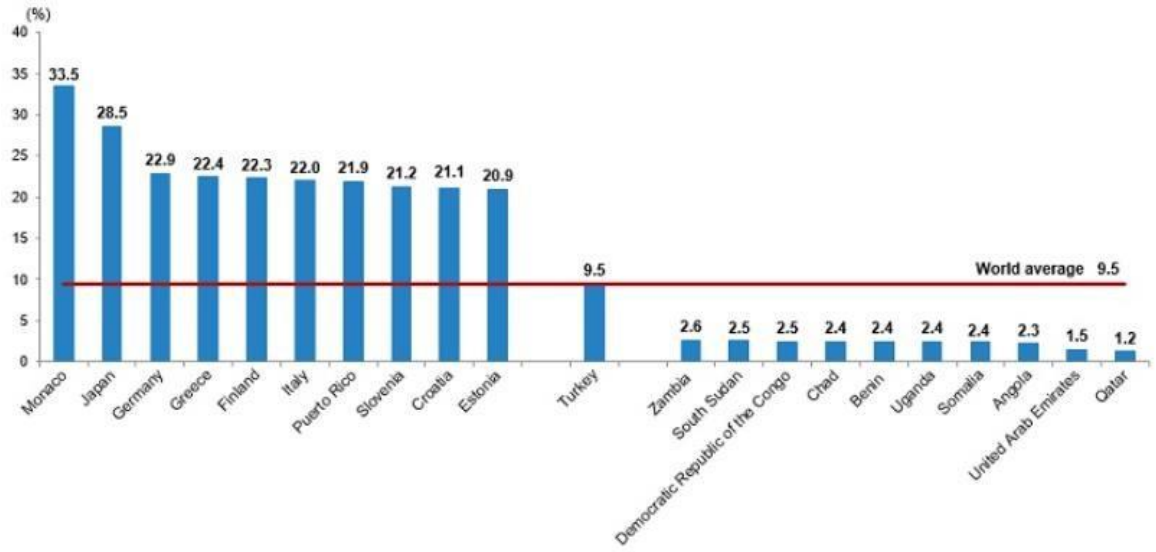
According to Graphic 1, it is seen that the ratio of the population aged 65 and over to the total population in the world will increase rapidly between 2000-2040.



Graphic 1: The share of the population elderly 65 and over in the total population in the world, 2000-2040**. Source:** Compiled by authors using data from The World Bank The World Bank- Share of the population aged 65 and over in the total population.

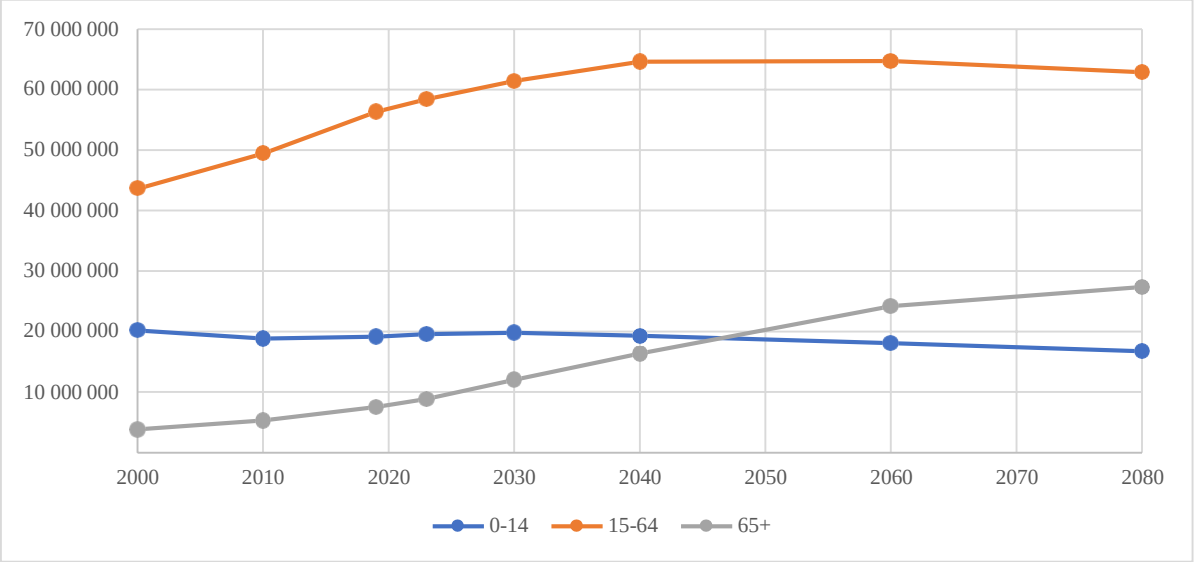
Considering the chronic diseases that will increase due to the rapidly aging world population, the number of population that will need care will increase at the same rate. In this increase, there is an urgent need for studies that project the chronic, nano-degenerative diseases that different middle age groups may encounter in advanced ages and the types of disabilities they may experience. Keeping up with this rapid increase, it will be necessary to focus on the planning of health tourism for the disabled and the medical and care services that can be provided. Nowadays, while 1 in 10 people in the world is over the age of 60, it is estimated that 1 out of every 5 people will be over the age of 60 by 2050. (Help Page International- Global Ageing Statistics). TUIK According to population projections, the ratio of the elderly population in Turkey, in the year 2060 and 22.6%, in the year 2080 is expected to be 25.6% (TUIK, Elderly Statistics,2018). In addition, considering the disability types of disabled individuals, their level of access to health, care and other services, making population projections within 40-50 age groups will be useful in determining the needs of elderly and disabled individuals in the future and creating social policies.

According to Graphic 2, it is seen that the top 3 countries respectively with the highest rate of the elderly population in 2020 are Monaco, Japan and Germany. The world advanced age population ratio is 9.5 and Turkey reached this limit. Turkey ranks 66 among 167 countries in this ranking (TUIK March 2021 News Bulletin).



Graphic 2: The first 10 countries with the highest and lowest proportion of elderly population, 2020.
Source: TUIK March 2021 News Bulletin.

According to Graphic 3 'e, when it comes to 2080, it is predicted that the population aged 65 and over will exceed the population aged 0-14 in Turkey. With the decrease in the young population and the increase in the elderly population, the service sector will have to change in a way that will meet the physical, social and psychological needs of the elderly and disabled individuals within the framework of these conditions.



Graphic 3: The proportion of population by age group in Turkey, 2000-2080. **Source:** TUIK, Compiled by the authors using data from the March 2020 News Bulletin.

An increase in the elderly population means an increase in health and social care needs in societies (World Tourism Organization (UNWTO) and European Travel Commission (ETC), 2018). The dependent elderly population ratio refers to the number of elderly people per 100 persons of working age. While this rate was 11.8% in 2014, it increased to 12.9% in 2018. According to population projections, it is estimated that the dependent elderly ratio will be 15.2% in 2023, 19.6% in 2030, 25.3% in 2040, 37.5% in 2060 and 43.6% in 2080 (TUIK, Elderly Statistics,2018). The aging of the population, especially the demand for health services necessary to meet long-term treatment and care needs, is also increasing. In most OECD countries, there were 47 beds per 1,000 people elderly 65 and over in 2017. Less than 20 beds per 1000 adults aged 65 and over in Italy, Latvia, Poland, Turkey and Greece, and more than 70 beds per 1000 adults aged 65 and over in Luxembourg, the Netherlands, Belgium, and Sweden capacity has been reported. Between 2007 and 2017, OECD countries reduced the number of long-term care beds in facilities by 3.4 beds per 1000 people elderly 65 and over. It is thought that the difference that has occurred over the decade is due to epidemiological and demographic changes in countries and changes in health social policies (Health at a Glance 2019: OECD Indicators).

The COVID-19 epidemic, which has affected the world today, causes many problems for

individuals with disabilities. Disabled individuals who receive rehabilitation services have discontinued their treatment due to the risk of disease transmission. In addition, non-disabled individuals caught with COVID-19 caused an increase in the demands for rehabilitation services due to their long inpatient treatment. The World Health Organization, in its briefing report on the situation of people with disabilities in the COVID 19 outbreak, stated that it caused serious disruptions to existing rehabilitation services in 60-70% of countries worldwide (WHO, Disabilities in the COVID - 19 outbreak 2020). Globally, it is estimated that 2.4 billion people currently suffer from a health problem that cannot benefit from rehabilitation services. In addition, it is estimated that the need for rehabilitation services in the world will increase as a result of changes in the health of the population and social determinants. As people live longer, chronic diseases and disabilities occur more frequently. It is thought that any person may need rehabilitation services at some point in their life with the loss of physiological, mental, and social function in the post-illness period or with advanced age. Situations that require some rehabilitation service (WHO, Rehabilitation,2020);

- Exercises to improve the speech, language and communication of a person with a brain injury,
- Changes to the home environment to improve an older person's safety and independence at home and reduce the risk of falling,
- Exercise training to promote healthy living for a person with heart disease,
- Support and training the individual to use a prosthesis after leg amputation,
- Positioning and splinting techniques to help skin heal, reduce swelling, and then regain movement to functional tissues and organs in burn surgery,
- Providing different humane treatment care rehabilitation supports such as horse assisted therapy to reduce muscle stiffness in a child with cerebral palsy,
- Providing psychological support to a person diagnosed with depression,
- Training to use a white cane for a person with vision loss.

Rehabilitation services are not just a need for long-term treatment and care for people with physical disabilities. Rehabilitation is the primary health care service for individuals with acute or chronic health problems, dysfunction, or injuries that limit functioning. It should be noted that this service should be made accessible to everyone who needs it (WHO, Rehabilitation,2020).

3. Studies Conducted for the Individuals with Disabilities in Turkey

Multiple organizations are available for people with disabilities in Turkey. There are many associations and organizations such as the Confederation of the Disabled, Turkey Federation of the Blind, Turkey Cripples Association, Barrier-Free, and Happy Living Association, Accessible Access Association, Disabled Women's Association, Disabled Child Rights Network, Association for the Visually Impaired in Education, Altınokta Association of the Blind. The General Directorate of Disabled and Elderly Services, under the Ministry of Family, Labor, and Social Services, was established in 2011 as the General Directorate of Services for the Disabled and the Elderly, and in 2013 it took its current name. In Istanbul Metropolitan Municipality, there is a Directorate for the Disabled under the Social Services Department.

A treatment plan has been created within the scope of the Ministry of Health's Circular No. 2011/20 on Patient Transport Service, and individuals who are determined to receive outpatient treatment are transported from their homes to health institutions by an accessible means of transportation in order not to interrupt their treatment. According to the Circular No. 2010/79 on the Provision of Health Services for Disabled Persons, open and closed areas of hospitals should be accessible to persons with disabilities, providing parking spaces and assistance for people with disabilities, employment of a sign language interpreter, facilitating the transfer of disabled patients to another hospital and It was emphasized that transformations must be done that will facilitate the lives of disabled individuals, such as training in certain periods for the personnel working in the institution. In addition, the Ministry of Health's Priority Order Circular No. 2010 / 73-80 for Outpatient Clinic Services includes giving priority to individuals with disabilities in outpatient services. The General Directorate of Treatment Services established "Social Service Units" in 2011 to provide psycho-social activities planned by social workers for disabled individuals and their families receiving services from health institutions, guidance and counselling on services, home visits, informing families about disability, etc. issued a Circular on the Implementation of Medical Social Services for regulations on the dissemination and development of social service interventions. (UNCRPD- Turkey Disability Report, 2018). With the publication of the Regulation on the Provision of Home Health Care Services by the Ministry of Health and its Affiliates in 2015, examination, analysis, treatment, medical care and rehabilitation services for individuals in need will be provided in the home environment. In addition, it is aimed to establish home health services to be provided through the Ministry and its affiliates to provide social and psychological support services, to ensure coordination between referral institutions, and to ensure

that these services are implemented in an equal, accessible, quality, effective and efficient manner (Regulation on the Provision of Home Health Care Services by the Ministry of Health and Its Affiliates, 2015).

The Presidency has declared 2020 as the "Year of Accessibility" in our country. The aim is to ensure that the work of existing institutions and organizations within the scope of accessibility studies is carried out in a planned, programmed, standards-compliant manner, and to create a culture of accessibility by ensuring physical, digital, and mental transformation (Labour And Social Services General Directorate Of Services For Persons With Disabilities And The Elderly, Clause 2020/1).

4. Online Information Access for Persons with Disabilities

Nowadays, the internet mediates the purchase of most services. In this context, disabled individuals face problems in accessing online information. In order to improve the access of people with disabilities to websites, it is necessary to work on determining website design criteria (for example, text alternatives, the content presented in different ways, compatibility with assistive technologies and navigation, etc.). Disabled Persons Federation and Barrier-Free Living Association in Turkey on the website, disabled individuals have created the Accessibility menu in order to use the website more comfortable and grow here text size, and contrast adjustment, dyslexia friendly and so on with the help of buttons, the site has been made more useful for disabled individuals. Raymaker et al. (2019), it has been seen that the currently used websites are intended for individuals without disabilities, not suitable for use by autistic individuals, and studies on this subject are mostly new. It is also thought that it would be beneficial to create a website to improve access to health services for autistic adults.

5. Discussion

This work with a description of the elderly and impaired health tourism in the world and Turkey demographic and other health indicators and discuss with the national and international literature, current situation and Turkey aimed to present proposals for the improvement of elderly and disabled tourism. According to the literature, the number of disabled individuals in the world is more than 1 billion. According to the January 2021 report of the Disabled and Elderly Statistics Bulletin published by the General Directorate of Disabled and Elderly Services of the Ministry of

Family, Labor and Social Services, the number of individuals with disabilities is 2,511,950 and the number of individuals with severe disabilities is 775,012. However, the number of elderly people in the world for the year 2020 is 729,887,660. In Turkey, this number is 7.953.55 constitutes older individuals 9,5'n% of the population in Turkey (TUIK, March News Bulletin 2021).

Every society should prepare their populations for the chronic diseases and disabilities they may encounter by making population projections at earlier ages without waiting for their population to be 65 years or older. The population is elderly 50 and over in Turkey in social, economic monitoring in terms of health indicators, the providing of the population of active and healthy aging, will ensure reduction in disability results of that may be encountered in later years and prevented.

According to the literature examined in the study, there is a lack of studies and resources related to health tourism with disabilities. Within the scope of disabled tourism (accessible tourism), tourism companies carry out various studies. However, there is a shortage of resources related to elderly and disabled health tourism, which is within the scope of health tourism. In this regard, Bauer (2018) stated in her study that priority should be given to the field of travel medicine because there are not enough studies in this field. Problems, needs, and solutions in health tourism for the disabled should be addressed quickly. Because the number of disabled individuals is increasing rapidly. However, it is thought that people with disabilities avoid travelling due to health conditions. (Bauer,2018). Rowinski et al.'s (2017) research supports Bauer (2018) research. The health status of elderly people deteriorates with aging and their addiction levels increase. In addition, disabled individuals engage in fewer activities than non-disabled individuals. In a study conducted in Poland, it was observed that elderly individuals prefer to spend their holidays in a garden or stay in a house. It has been determined that the reasons for this preference are generally due to health conditions (Rowinski et., al 2017). In the World disability report published in 2011, it was observed that the number of disabled women is higher than the number of disabled men. Disabled people do not have enough information about the places they will receive service. In addition, they experience difficulties when leaving their living environment or travelling because they are worried about transportation problems. Bergier et al. (2011) research result also reveals this problem. It has been determined that in the disabled population, men have insufficient information and face more obstacles in getting help than women, and women have more transportation problems. Considering these details, these problems experienced by persons with disabilities should be taken into account to protect and improve the health of persons with disabilities.

Facilitating factors that remove barriers should be taken into account in the planning and delivery of promotional and marketing activities and transportation services, especially for disabled health tourism. Vila et al. (2018) reported that facilitating access to online information while meeting the rehabilitation services needs of individuals with disabilities and their relatives is an important factor for higher benefits from this service.

Disabled people have to pay a certain cost to solve their daily functional problems. Since the services they claim and receive are a service that requires special expertise, they require more payment than the services that non-disabled individuals receive. One of the most important problems is that the areas where they can socialize are limited. The most basic need of individuals who want to receive services within the scope of disability health tourism, which is their desire to receive service, also significantly affects negatively.

According to the literature, the most important factors determining the participation of people with disabilities in tourism are price, friend group and doctor's recommendation (Bergier et., al ,2010). Kubinska et al. (2013) found that people with disabilities want to stay in the spa, which provides more rehabilitation services, and are interested in activities and trips that may be continuous. Mrcela et al. (2015) according to the results of the study, elderly people with disabilities need health tourism more than the young population due to the fact that the population elderly 65 and over has more than one chronic disease and their functional inadequacies. Especially the demands of elderly and disabled individuals for health tourism activities are affected by climatic conditions, geographical location, and the existence of regional natural resources.

6. Conclusion and Recommendations

During the literature review, it was observed that up-to-date data were not available. Up-to-date and unclear population information on the number of people with disabilities is an obstacle to working in this area. Nowadays, more than 1 billion people (about 15% of the world's population) live with some form of disability. While the proportion of the dependent elderly population was 11.8% in 2014, it increased to 12.9% in 2018. According to population projections, the rate of dependent advanced age is estimated to be 15.2% in 2023, 19.6% in 2030, 25.3% in 2040, 37.5% in 2060 and 43.6% in 2080. When it comes to 2080, it is predicted that the population aged 65 and over will exceed the population aged 0-14 in Turkey. Increasing the number of elderly and disabled people with each passing year, health services, education, travel, vacation, etc. it significantly affects the

increase in the demand for service procurement. In order to ensure the adaptation of these individuals to social life and the provision of adequate, attentive, and quality services that increase the quality of life, states should plan studies for the rapid implementation of these issues by developing a program. In case of need, the inability to receive the service as a result of high costs and disruptions in transportation will cause the individual to be adversely affected psychologically and sociologically. Cost, transportation problems, etc. in health service procurement the issue of not being able to access the service due to issues should be minimized. Many individuals with disabilities and their families who are concerned about the cost burden hesitate to receive health services. For these individuals, the share of out-of-pocket payments should be reduced, and private health insurance system authorities should step in and develop a system to reduce the burden on this issue. Transport areas should be organized and developed. In order for disabled and elderly individuals to travel alone, assistants can be created to accompany people according to their disability levels. Travel brochures can be prepared according to the types of disabilities in order to inform people with disabilities. Studies in this area should be developed and worked on. The COVID-19 epidemic, which has affected the world today, causes many problems for individuals with disabilities. Disabled individuals who receive rehabilitation services have discontinued their treatment due to the risk of disease transmission. The development of a disabled individual, who cannot receive rehabilitation services, has entered a regression period in thetreatment process she has received so far, and creates a burden in terms of both time and cost. It has been realized how important it is to increase the number of institutions and personnel providing rehabilitation services during this epidemic process. In addition, such epidemics, etc. in such cases, it is necessary to put applications such as subtitles and sign language in television programs and increase the number of these applications to be aware of the problems experienced in their countries. In order to inform individuals with intellectual disabilities and cognitive impairments, it will be beneficial to provide news flow in public areas in a format accessible to these people and to create resources prepared in the Braille alphabet for visually impaired individuals. The state can prepare a support program for caregiver support in case family members are responsible for the care of disabled individuals to become ill. In addition, special nursing homes for disabled individuals can be established to eliminate the worry that family members will be alone when something happens to them. Training can be organized for personnel working in all healthcare institutions and organizations.

In this regard, most staff do not know how to behave when encountering a disabled person. In

addition, only the training of those working in the health sector will not be sufficient. The inclusion of the public in education on this subject will facilitate the integration of individuals with disabilities into social life. For disabled individuals, a system that informs aloud which bus is the bus coming to the stops should be switched to. A marking system should be established on the floor so that visually impaired individuals can easily find the doors and seating places inside the buses. In the food and beverage sector, it should be obligatory to use the Braille alphabet on the packaging. Rarely, there are menus in Braille alphabet in some restaurants and cafes, but additional studies should be planned for this to become widespread. Most importantly, the system in which the visually impaired people find their way with the markings on the walking paths on the hospital and on the road must be urgently compulsory. Ramps and elevators should be brought to a sufficient level in health institutions for individuals with physical disabilities and elderly people. Many applications that can be done like these will facilitate the lives of elderly and disabled individuals and ensure their participation in life more.

References

Akbolat, M., and Deniz, N. (2017), Development Of Medical Tourism in Turkey And Its Comparison With Other Countries, *International Journal of Global Tourism Research*, 1(2), 123-139.

Altın, U., Bektaş, G., Antep Z., and İrban, A. (2012), Medical Tourism And Turkish Marketing For International Patients, *Acıbadem University Journal of Health Sciences,* 3(3), 157-163.

Bauer, I. (2018), When Travel is A Challenge: Travel Medicine and The 'Dis-Abled' Traveller, *Travel Medicine and Infectious Disease,* Vol. 22,66-72.

Bergier, B., Bergier, J., and Kubinska, Z. (2010), Environmental Determinants of Participation in Tourism and Recreation of People with Varying Degrees of Disability, *Journal of Toxicology and Environmental Health Part A,* Vol. 73,1134-1140.

Bergier, J., Dąbrowski, D., and Zbikowski, J. (2011), Conditioning of Participation of Disabled Males and Females from Eastern Regions of Poland in Tourism and Recreation, *Annals of Agricultural and Environmental Medicine,* 18(2),350-354.

Bilge, A., and Cabi, A. (2020), *Professional Approach to Tourism Types*, Konya: Sage Publishing.

Bozça, R., Kıraç, F., and Kıraç, R. (2017), Health Tourism SWOT Analysis: Erzincan, *Gümüşhane UniversityJournal Of HealthSciences*, 6(3), 157-163.

Buhalis, D., and Darcy, S. (2011), Accessible Tourism: Concepts And Issues, *Channel Vıew Publıcatıons Bristol-Buffalo-Toronto*, eBook, pp.38-42, 01.12.2020.

Dalkıran, G. (2017), Trakya Region as a Health Tourism Destination, *Social 'Sciences' Research Journal*, 6(4),162-178.

Health at a Glance 2019: OECD Indicators, https://www.oecd-ilibrary.org/sites/4dd50c09-en/1/3/11/10/index.html?itemId=/content/publication/4dd50c09-en&_csp_=82587932df7c06a6a3f9dab95304095d&itemIGO=oecd&itemContentType=book, 01.12.2020.

Help Page International- Global Ageing Statistics, https://www.helpage.org/resources/ageing-data/global-ageing-statistics/ , 18.12.2020.

Hofer, S., Honegger, F., and Hubeli, J. (2012), Health Tourism: Definition Focused on The Swiss Market and Conceptualisation of Health(i)ness, *Journal of Health Organization and Management*, 26(1), 60-80.

Koca, C. (2010), World Handicapped Foundation, Barrier-Free Urban Planning Information Report, https://acikders.ankara.edu.tr/pluginfile.php/9259/mod_resource/content/0/engelsiz%C5%9Fehir planlama%20raporu.pdf, 30.03.2021.

Kubinska, Z., Bergier, B., and Bergier, J. (2013), Usage of Leisure Time By Disabled Males And Females From The Lublin Region, *Annals of Agricultural and Environmental Medicine*, 20(2), 341-345.

Law on the Disabled (2005), https://www.mevzuat.gov.tr/mevzuat?MevzuatNo=5378&MevzuatTur=1&MevzuatTertip=5, 30.11.2020.

Lee, CW., and Li, C. (2019), The Process of Constructing a Health Tourism Destination Index. *Int J Environ Res Public Health*. 16(22),4579.

Mrcela, N., Borovac, J., Vrdoljak, D., Grazio, S., Luetic, A., and Roksandic, T. (2015), When Elders Choose: Which Factors Could Influence The Decision-Making Among Elderly in The Selection Of Health Tourism Services?, *Medical Hypotheses*, 85(6), 898-904.

OECD-Medical Tourism: Treatments, Markets and Health System Implications: A Scoping Review, https://www.oecd.org/els/health-systems/48723982.pdf , 25.12.2020.

Rowinski, R., Morgulec-Adamowicz, N., Ogonowska-Slodownik, A., Dąbrowski, A., and Geigle,

P.R. (2017), Participation In Leisure Activities And Tourism Among Older People With And Without Disabilities In Poland, *Archives of Gerontology and Geriatrics,* Vol. 73, 82-88.

Raymaker, D., Kapp, S., McDonald, K., Weiner, M., Ashkenazy, E., and Nicolaidis, C. (2019), Development of the AASPIRE Web Accessibility Guidelines for Autistic Web Users, *Autısm In Adulthood,* 1(2), 146-157.

Tengilimoğlu, D. (2017), *Health Tourism,* Ankara: Siyasal Bookstore.

The World Bank- Share of the population aged 65 and over in the total population, https://databank.worldbank.org/reports.aspx?source=Health%20Nutrition%20and%20Population%20Statistics:%20Population%20estimates%20and%20projections# , 25.12.2020.

Turkish Statistical Institute (TUIK), March 2020 News Bulletin, https://data.tuik.gov.tr/Bulten/Index?p=Istatistiklerle-Yaslilar-2019-33712, 27.11.2020.

Turkish Statistical Institute (TUIK), March 2021 News Bulletin https://turkstatweb.tuik.gov.tr/PreHaberBultenleri.do?id=37227, 14.04.2021.

Turkish Statistical Institute (TUIK), Elderly Statistic 2018, https://data.tuik.gov.tr/Bulten/Index?p=Istatistiklerle-Yaslilar-2018-30699, 08.12.2020.

Tontuş, Ö. (2016), What is Health Tourism? Healthcare Tourism Coordination Committee (HTCC), http://www.saturk.gov.tr/images/pdf/tyst/02.pdf , 20.11.2020.

T.R. Ministry Of Family, Labour And Social Services, General Directorate Of Services For Persons With Disabilities and The Elderly, Disability And Ageing Statistical Bulletin- January 2021, https://www.ailevecalisma.gov.tr/media/67975/eyhgm_istatistik_bulteni_ocak_2021.pdf 25.12.2020.

T.R. Ministry Of Health, Health Services General Directorate- Health Tourism Department- Health Tourism and Tourist Health Application Guide,2011.

T.R. Ministry of Health, General Directorate of Primary Health Care Services, Health Promotion and Promotion Glossary, 2011, https://sbu.saglik.gov.tr/Ekutuphane/kitaplar/Sa%C4%9Fl%C4%B1%C4%9F%C4%B1n%20Te%C5%9Fviki%20S%C3%B6zl%C3%BCk.pdf, 02.03.2020.

T.R. Ministry of Health, Regulation on International Health Tourism and Tourist Health, https://www.resmigazete.gov.tr/eskiler/2017/07/20170713-3.htm , 30.11.2020.

T.R. Ministry Of Family, Labour And Social Services General Directorate Of Services For Persons With Disabilities And The Elderly, Clause 2020/1, https://www.ailevecalisma.gov.tr/media/35649/genelge-2020-1.pdf , 03.03.2020.

T.R. Ministry of Health, Regulation On The Provision Of Home Health Services By The Ministry Of Health And Its Affiliates,2015. https://www.resmigazete.gov.tr/eskiler/2015/02/20150227-14.htm , 02.03.2020.

T.R. Ministry of Family, Labor and Social Services, General Directorate of Disabled and Elderly Services, Disability and Elderly Statistics Bulletin-October 2020, https://www.ailevecalisma.gov.tr/media/60415/istatistik_bulteni_ekim20.pdf , 23.12.2020.

UNCRPD- Turkey Disability Report (2018), https://www.engellilerkonfederasyonu.org.tr/wp-content/uploads/2020/04/UNCRPD-T%C3%BCrkiye-%C3%9Clke-Raporu.pdf, 02.03.2020.

Vila, T., Gonzalez, E., and Darcy, S. (2018), Website accessibility in the tourism industry: an analysis of official national tourism organization websites around the World, *Disability and Rehabilitation*, 40(24).

World Disability Report (2011), https://static.ohu.edu.tr/uniweb/media/portallar/engelsizuniversite/duyurular/1345/diwnu3i5.pdf, 07.12.2020.

World Tourism Organization (UNWTO) and European Travel Commission (ETC) (2018), Exploring Health Tourism – Executive Summary, UNWTO, Madrid. https://www.e-unwto.org/doi/epdf/10.18111/9789284420308, 08.11.2020.

WHO, Rehabilitation (2020), https://www.who.int/news-room/fact-sheets/detail/rehabilitation, 14.12.2020.

WHO, Disability and Health (2020), https://www.who.int/news-room/fact-sheets/detail/disability-and-health, 25.11.2020.

WHO, International Day of Persons with Disabilities 2020, https://www.who.int/news-room/events/detail/2020/12/03/default-calendar/international-day-of-persons-with-disabilities, 10.12.2020.

WHO, Disabilities in the COVID - 19 outbreak 2020, https://apps.who.int/iris/bitstream/handle/10665/332015/WHO-2019-nCov-Disability-2020.1-tur.pdf, 18.12.2020.

https://dergipark.org.tr/tr/pub/ijhmt Doi Number: 10.31201/ijhmt.949500

Int Journal Of Health Manag. And Tourism 2021

JHMT Editorial

International Journal of Health Management and Tourism

EFFECT OF HEALTHCARE EXPENDITURE ON THE CORRELATION BETWEEN THE NUMBER OF NURSES AND DOCTORS EMPLOYED

Abdulkadir ATALAN*,

* Assistant Professor, Gaziantep Islam Science and Technology University , Turkey
abdulkadiratalan@gmail.com
ORCID Number: 0000-0003-0924-3685

Received: 8.06.2021
Accepted: 16.07.2021
Research Article

Abstract

Aim: The aim of this study is to analyze the correlation between the numbers of doctors and nurses, as well as the effect of health expenditure (HE) on the employment of doctors and nurses.

Methods: The study data belong to the Turkish health system and cover the years 1975-2018. The amount of HE data was handled as the ratio of Turkey to national income (GDP). Pearson correlation test and linear regression model methods were used in this study. The doctor-nurse ratio was examined in order to see the interaction levels of the relationship between the doctor and the nurse apart from the correlation.

Findings: There is a strong correlation between nurse and doctor employment, and the correlation value was calculated as 0.973 (p-value=0.001, n=44 samples). Correlation coefficients between dependent variables and independent (HE) variables were analyzed as 0.715 (p-value=0.001) for nurse employment and 0.840 (p-value=0.001) for physician employment, respectively.

Conclusion: The amount of HE was very effective on both the number of physicians and the nurses based on the regression analysis.

Keywords: The number of physicians, The number of nurses, Healthcare expenditure, Pearson correlation, Linear regression model

Introduction

Healthcare systems generally develop according to the economic structures of countries (Pellegrini et al., 2014). Countries make investments in healthcare systems by allocating a certain amount of budget in gross domestic product (Atalan, 2020; Eriksen & Wiese, 2019). Spending for healthcare systems is defined in the literature as healthcare expenditure. HE amounts are usually shown as a ratio to GDP (Nghiem & Connelly, 2017). The resources of healthcare, technological systems required for treatment/examination, medicines, and physical structures are included in the amount of HE in countries (Craven et al., 2009). It varies depending on factors such as population, disease, and pandemic in determining this budget amount. In this study, only the effect of the amount of HE on the employment of doctors and nurses was examined.

There are two types of definitions in healthcare systems: healthcare resources and healthcare components (Atalan & Donmez, 2020; Siciliani et al., 2009). The description of healthcare resources is divided into two parts: human structure and physical structure. The human factors such as a doctor, nurse, technician, technician, officer, secretary, etc., are included in the structures created by human professionals. The locations such as beds, treatment rooms, triage units, etc., are defined physical structures. In this study, although it does not include physical structures, human factors are included. Hospitals, insurance organizations, pharmacy structures, and the states defined as rule makers are defined as components of the healthcare system (Mihaylova et al., 2011). The patient factor is at the center of both healthcare components and resources.

Statistical analysis methods are at the forefront of studies for healthcare systems (Briggs & Gray, 1999; Malehi et al., 2015; Rachmani et al., 2019). The relationships between healthcare status, HE, and healthcare resources, which have an impact on healthcare inequalities in the healthcare systems of some European countries, were analyzed using multidimensional statistical methods (Pacáková et al., 2019). Regression statistical analyses were preferred, especially healthcare economics and resources (Folland et al., 2013; Gerdtham et al., 1992; Jaba et al., 2014;

Yang, 2019). Kurtzman and Barnow selected multivariate regression analysis to compare the healthcare service quality and practice models provided by general practitioner nurses and practitioner physicians, and physician assistants in community health centers (Kurtzman & Barnow, 2017).

Researchers have used simple regressions, analysis of variance tests, and chi-square tests to determine the importance of employing nurse practitioners in both rural and non-rural primary care practices (Barnes et al., 2018). The logistic regression model was used to determine the barriers encountered during the treatment between the medical emergency team and the doctors and nurses employed in the wards (Radeschi et al., 2015). Abedi et al. used the regression method to analyze healthcare and economic inequalities in the United Kingdom during the Covid-19 pandemic (Abedi et al., 2021).

Doctors and nurses have an important place in the healthcare system as much as the patient (Svensson, 1996). The number of employments in these two professions depends on many factors. In a study, the effect of population data on healthcare resource employment was statistically measured. In another study, the impact of healthcare resources on per capita health expenditure (HEpc) and the amount of general HE was analyzed with multi-objective statistical optimization models (Atalan, 2018). In this study, unlike other studies, the effect of HE on healthcare resources was analyzed statistically. In addition, the correlation effect of nurse employment depending on doctor employment was analyzed.

This study consists of four parts. The literature review on healthcare systems and the methods used for healthcare systems analysis was discussed in the first section. Theoretical and mathematical information about the data and methods used in this study were given in the second part. The third section includes the numerical and statistical results obtained from the methods used. The last part of the study involves the conclusion part of the study.

1. Research Methodology

The data of the Turkish healthcare system were taken into account in this study. Data on doctors, nurses, and HE were used for 44 years, between 1975 and 2018. These data were obtained from the Turkish Statistical Institute (TUIK, 2021). Ethics committee approval is not required as

the data used is publicly available and references the data used for this study. The distribution of the number of doctors and nurses employed by years was shown in Figure 1 and Figure 2.

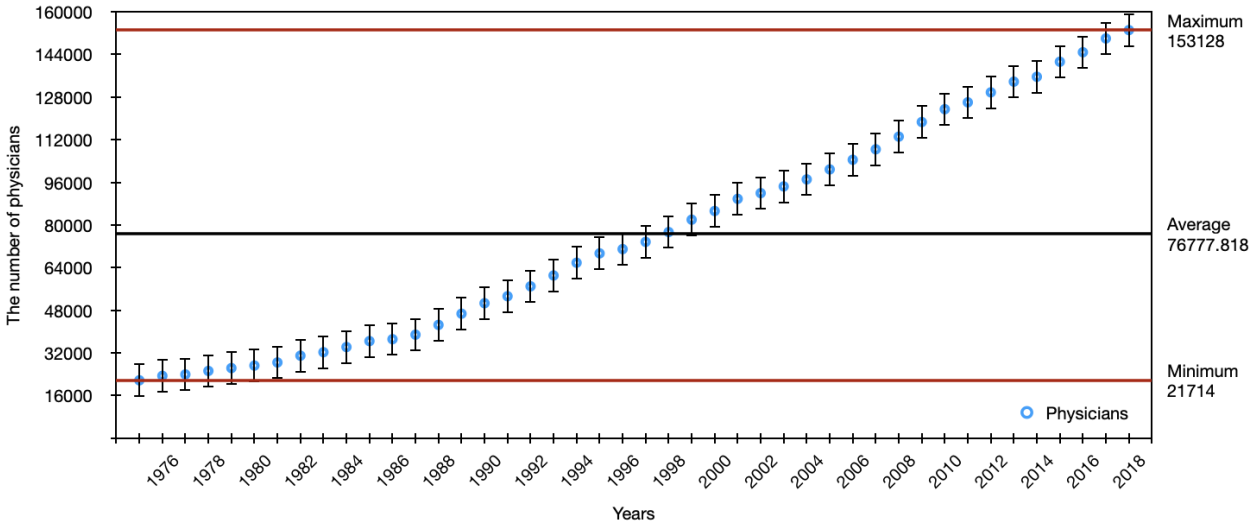


Figure 1. The number of physicians employed between 1975-2018

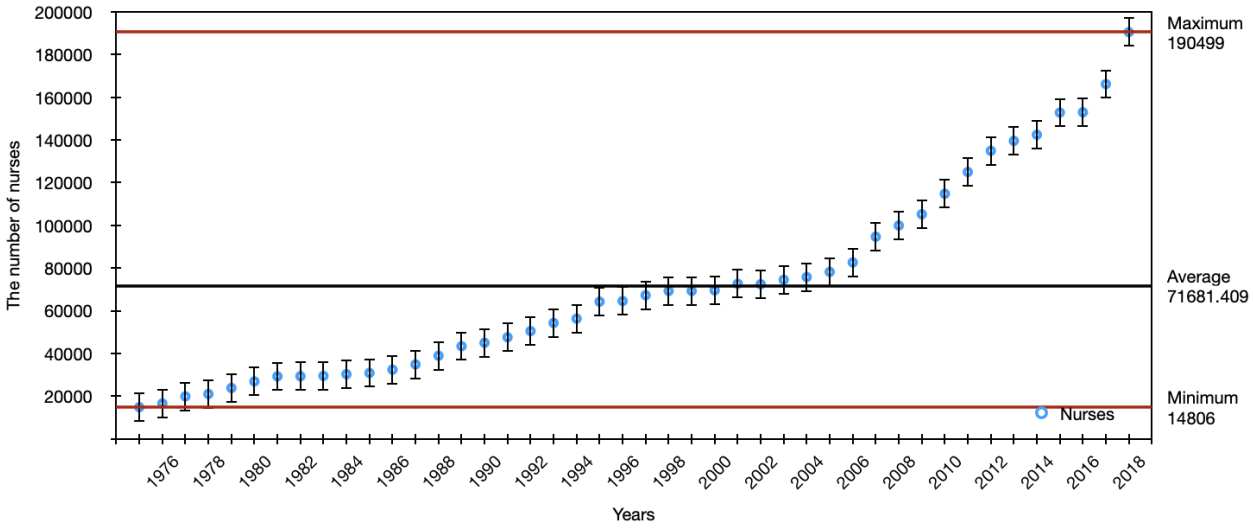


Figure 1. The number of nurses employed between 1975-2018

According to 43 years of data, an average of 77 thousand doctors are employed in the employment of doctors, and it is understood that this rate is equal to the rate in 1998. At the maximum level, 153128 doctors were employed in Turkey. The average nurse employment is at the level of 72 thousand. However, at the top level, it has been observed that with the employment of 190 thousand nurses, it is more than the number of most employed doctors. Descriptive statistics of dependent and independent variable data were given in **Table 1.**

Table 1. The descriptive statistics for the dependent and independent variables

Variables/Statistics	HE	Physicians	Nurses
Sample Size	44.0000	44.00000000	44.00000000
Mean of the samples	3.44600	76778.00000	71681.00000
Standard error of the mean	0.19400	6259.000000	6857.000000
Standard deviation	1.28700	41521.00000	45485.00000
Variance	1.65500	1723978729	2068895062
Coefficient of variance	37.3400	54.08000000	63.45000000
Sum of Squares	593.519	3.340000000	3.150000000
Minimum value	1.49000	21714.00000	14806.00000
Q_1 (the first quartile)	2.23800	36606.00000	31239.00000
Median or Q_2 value	2.94700	72303.00000	65896.00000
Q_3 (the third quartile)	4.67200	111964.0000	98598.00000
Maximum value	5.53400	153128.0000	190499.0000
Skewness	0.15000	0.290000000	0.880000000
Kurtosis	-1.63000	-1.230000000	-0.050000000

As a general perception in healthcare management, nurses are perceived as physician assistants. For this reason, it is assumed that the number of nurse employment depends on the number of physician employment. The Pearson correlation method was used to calculate the correlation value between these two healthcare resources. Correlation value for data set of two variables (Minitab, 2021)

$$r = \frac{\sum_{i=1}^{t}(n_i - \bar{n})(m_i - \bar{m})}{(t-1)(s_n s_m)} \quad (1)$$

is calculated with the formula. Where, the Pearson correlation coefficient is denoted by r. The number of observation data in the sample data set is expressed as t. n_i and m_i are the sample data in the n and m data sets, respectively. The mean values of the data in the n and m data sets are shown as $\bar{n}$ and $\bar{m}$. s_n and s_m are the standard deviation values of the n and m data sets. Correlation values range from -1 to 1. As the correlation coefficient value approaches -1 and +1, it is assumed that there is a strong variable among the variables. Two variables were calculated the correlation value limits as $|0.1 \leq r \leq 0.3|$ for a weak correlation, $|0.3 < r \leq 0.5|$ for an/a average/moderate, and $|0.5 < r|$ for a strong (Cohen, 1988).

There is one independent factor and two dependent factors in this study. The effect of the independent factor on the dependent factors was measured using the linear regression analysis

method. If there is only one independent variable in a simple linear regression, the following formula is used (Montgomery et al., 2015):

$$y_r = \beta_0 + \beta_1 x + \in \quad (2)$$

where, the y_r and x variables represent the dependent and independent variables, respectively. β_0 refers to the constant regression coefficient, while β_1 denotes the coefficient of the independent variable. $\in$ is the margin of error of the regression equation. Two different regression equations were obtained in this study since there are two dependent and one independent variables. These equations are formed as follows:

$$y_{physician} = \beta_0 + \beta_1 x_{he} + \in \quad (3)$$

$$y_{nurses} = \beta_0 + \beta_1 x_{he} + \in \quad (4)$$

Minitab 18 statistical program was used for both Pearson correlation and linear regression analysis.

2. Analysis

The correlation value between the two dependent variables, the number of doctors and nurses employed, was calculated as 0.973 (p-value=0.001). Correlation coefficients between dependent variables and independent (HE) variables were analyzed as 0.715 (p-value=0.001) for nurse employment and 0.840 (p-value=0.001) for physician employment, respectively. With these correlation values, it is understood that the number of physician employment has a significant effect on nurse employment. The results of linear regression analysis of dependent and independent variables are given in **Table 2.**

Table 2. Statistical analysis results of dependent and independent variables

Variables/Statistics	The number of Physicians	The number of Nurses	HE
Sum of Squares	52354972629	45519282584	----------
Mean of Squares	52354972629	45519282584	----------
f-values	100.98	44.010	----------
p-value	< 0.0001	< 0.0001	----------
intercept	-16670 (±9913)	-15453 (± 14001)	0.6146-0.6110
95% Confidence Intervals	-36683 to 3343	-43720 to 12814	-0.1520 to 1.143 -0.7122 to 1.356
R-square (%) Goodness of Fit	70.62	51.17	----------

There is a positive interaction between the dependent and independent variables. According to table 2, it was statistically analyzed that the amount of HE was very effective on both the number of doctors and the nurses. In other words, we can assume that the employment of doctors and nurses is effective with HE separately. The regression equations for the defined dependent and independent variables were formed as follows:

$$y_{physician} = -16669.98028 + 27121.69452x_{he} + \in \quad (5)$$

$$y_{nurses} = 15452.62278 + 25289.22707x_{he} + \in \quad (6)$$

The doctor-nurse ratio should be examined in order to see the interaction levels of the relationship between the doctor and the nurse apart from the correlation. To analyze the relationship between nurses, one of the assistant doctors in health systems, the following formula was used:

$$The\ ratio\ of\ the\ healthcare\ resources\ = \frac{nurses_{t_i}}{physicians_{t_i}} \quad (7)$$

where, the year $t_i;\ i = \{1975, 1976, \ldots, 2018\}$ of each data value from the data in the data set was shown. According to this formula, the number of nurses assisting a doctor was calculated. The doctor-nurse ratio is shown in **Figure 2**.

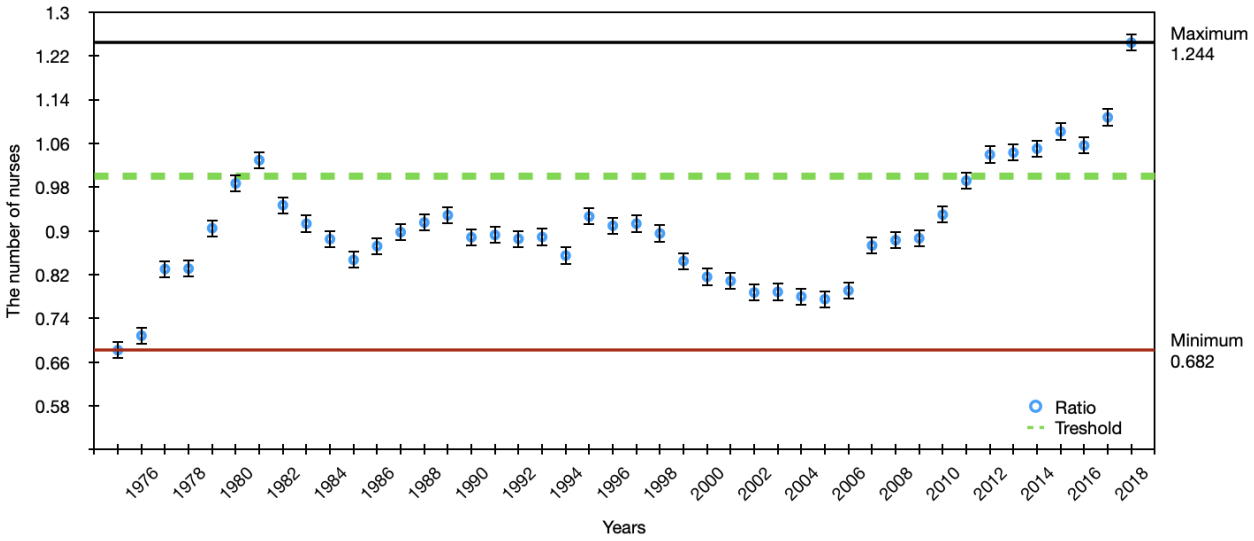


Figure 2. The ratio of the number of nurses to the number of doctors

According to **Figure 3**, the doctor-nurse ratio fluctuates over the years. Based on the correlation analysis, although the relationship between the number of nurse employment and the number of physician employment is strong, there are fluctuations in the 44-year doctor-nurse ratio. We defined the values where the number of doctors equals the number of nurses as a threshold line in these data. We suppose that according to the threshold line, it is possible to work with a doctor and a nurse. According to Turkey data, the threshold line has been exceeded for only eight years (1980, 2012, 2013, 2014, 2015, 2016, 2017, 2018). The doctor-nurse ratio increased continuously after 2011. Based on the calculated doctor-nurse ratio, the number of nurses per doctor in the last eight years has been more than 1.00. However, this does not mean that this ratio is the same in every hospital, regardless of the distribution of nurses and doctors. For this reason, it is necessary to obtain the number of doctors and nurses working in each hospital to determine this rate in the studies to be carried out.

3. Conclusions and Recommendations

This study was created by using the data of the Turkish healthcare system. The dependent and independent data defined for the study cover the years 1975-2018. Two methods were used in the study. By calculating the correlation values between the dependent and independent variables, the number of nurse employment numbers on the number of physician employment was analyzed. In the second method, the regression equations were obtained using the statistical analysis of the

relationship between the dependent variables and the independent variable. As a result, the employment of doctors and nurses from healthcare sources has great effects on the determination of the amount of HE. In future studies, using these data will lead to calculating the estimation data of the healthcare resources to be employed in a country.

References

Abedi, V., Olulana, O., Avula, V., Chaudhary, D., Khan, A., Shahjouei, S., Li, J., & Zand, R. (2021). Racial, Economic, and Health Inequality and COVID-19 Infection in the United States. *Journal of Racial and Ethnic Health Disparities*, *8*(3), 732–742. https://doi.org/10.1007/s40615-020-00833-4

Atalan, A. (2018). Türkiye Sağlık Ekonomisi için İstatistiksel Çok Amaçlı Optimizasyon Modelinin Uygulanması. *İşletme Ekonomi ve Yönetim Araştırmaları Dergisi*, *1*(1), 34–51. http://dergipark.gov.tr/download/article-file/414076

Atalan, A. (2020). Forecasting for Healthcare Expenditure of Turkey Covering the Years of 2018-2050. *Gümüşhane Üniversitesi Sağlık Bilimleri Dergisi*, *9*(1), 8–16. https://doi.org/10.37989/gumussagbil.538111

Atalan, A., & Donmez, C. C. (2020). Developing Optimization Models To Evluate Healthcare Systems. *Sigma Journal of Engineering and Natural Sciences*, *38*(2), 853–873.

Barnes, H., Richards, M. R., McHugh, M. D., & Martsolf, G. (2018). Rural And Nonrural Primary Care Physician Practices Increasingly Rely On Nurse Practitioners. *Health Affairs*, *37*(6), 908–914. https://doi.org/10.1377/hlthaff.2017.1158

Briggs, A. H., & Gray, A. M. (1999). Handling uncertainty when performing economic evaluation of healthcare interventions. In *Health Technology Assessment*.

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd Editio). Lawrence Erlbaum Associates.

Craven, M. P., Morgan, S. P., Crowe, J. A., & Lu, B. (2009). Deploying a spreadsheet tool for early economic value assessment of medical device innovations with healthcare decision

makers. *Journal of Management & Marketing in Healthcare*, *2*(3), 278–292. https://doi.org/10.1179/mmh.2009.2.3.278

Eriksen, S., & Wiese, R. (2019). Policy induced increases in private healthcare financing provide short-term relief of total healthcare expenditure growth: Evidence from OECD countries. *European Journal of Political Economy*. https://doi.org/https://doi.org/10.1016/j.ejpoleco.2019.02.001

Folland, S., Goodman, A. C., & Stano, M. (2013). *The Economics of Health and Health Care* (Internatio). Routledge.

Gerdtham, U. G., Søgaard, J., Andersson, F., & Jönsson, B. (1992). An econometric analysis of health care expenditure: A cross-section study of the OECD countries. *Journal of Health Economics*, *11*(1), 63–84. https://doi.org/https://doi.org/10.1016/0167-6296(92)90025-V

Jaba, E., Balan, C. B., & Robu, I.-B. (2014). The Relationship between Life Expectancy at Birth and Health Expenditures Estimated by a Cross-country and Time-series Analysis. *Procedia Economics and Finance*. https://doi.org/10.1016/S2212-5671(14)00454-7

Kurtzman, E. T., & Barnow, B. S. (2017). A Comparison of Nurse Practitioners, Physician Assistants, and Primary Care Physicians' Patterns of Practice and Quality of Care in Health Centers. *Medical Care*, *55*(6), 615–622. https://doi.org/10.1097/MLR.0000000000000689

Malehi, A. S., Pourmotahari, F., & Angali, K. A. (2015). Statistical models for the analysis of skewed healthcare cost data: a simulation study. *Health Economics Review*, *5*, 11. https://doi.org/10.1186/s13561-015-0045-7

Mihaylova, B., Briggs, A., O'Hagan, A., & Thompson, S. G. (2011). Review of statistical methods for analysing healthcare resources and costs. *Health Economics*, *20*(8), 897–916. https://doi.org/10.1002/hec.1653

Minitab. (2021). *Pearson's correlation using Minitab*.

Montgomery, D. C., Jennings, C. L., & Kulahci, M. (2015). *Introduction to time series analysis and forecasting*. John Wiley & Sons.

Nghiem, S. H., & Connelly, L. B. (2017). Convergence and determinants of health expenditures in OECD countries. *Health Economics Review*, *7*(1), 29. https://doi.org/10.1186/s13561-

017-0164-4

Pacáková, V., Jindrová, P., & Kopecká, L. (2019). Statistical Analysis of Health Inequalities in European Countries. *ITM Web of Conferences*, *24*, 02002. https://doi.org/10.1051/itmconf/20192402002

Pellegrini, L. C., Rodriguez-Monguio, R., & Qian, J. (2014). The US healthcare workforce and the labor market effect on healthcare spending and health outcomes. *International Journal of Health Care Finance and Economics*. https://doi.org/10.1007/s10754-014-9142-0

Rachmani, E., Hsu, C. Y., Nurjanah, N., Chang, P. W., Shidik, G. F., Noersasongko, E., Jumanto, J., Fuad, A., Ningrum, D. N. A., Kurniadi, A., & Lin, M. C. (2019). Developing an Indonesia's health literacy short-form survey questionnaire (HLS-EU-SQ10-IDN) using the feature selection and genetic algorithm. *Computer Methods and Programs in Biomedicine*. https://doi.org/10.1016/j.cmpb.2019.105047

Radeschi, G., Urso, F., Campagna, S., Berchialla, P., Borga, S., Mina, A., Penso, R., Di Pietrantonj, C., & Sandroni, C. (2015). Factors affecting attitudes and barriers to a medical emergency team among nurses and medical doctors: A multi-centre survey. *Resuscitation*, *88*, 92–98. https://doi.org/10.1016/j.resuscitation.2014.12.027

Siciliani, L., Stanciole, A., & Jacobs, R. (2009). Do waiting times reduce hospital costs? *Journal of Health Economics*, *28*, 771–780.

Svensson, R. (1996). The interplay between doctors and nurses -- a negotiated order perspective. *Sociology of Health and Illness*, *18*(3), 379–398. https://doi.org/10.1111/1467-9566.ep10934735

TUIK. (2021). *Sağlık İstatistikleri, istatistiksel Tablolar ve Dinamik Sorgulama*. Türkiye İstatistik Kurumu. https://tuikweb.tuik.gov.tr/PreTablo.do?alt_id=1095

Yang, X. (2019). Health expenditure, human capital, and economic growth: an empirical study of developing countries. *International Journal of Health Economics and Management*, 1–14. https://doi.org/10.1007/s10754-019-09275-w

https://dergipark.org.tr/tr/pub/ijhmt Doi Number: 10.31201/ijhmt.961939

Int Journal of Health Manag. And Tourism 2021

JHMT Editorial

Internatıonal Journal of Health Management and Tourism

PLANNED BEHAVIOR THEORY: A STUDY ON HEALTHCARE PROFESSIONALS' BEHAVIOR OF DONATING BLOOD

Sezer KORKMAZ*, Kenan BİRSEN** , Yasemin KURUMLU*** ,G. Gülcan ŞEREMET****, Nesrin KAHRAMAN*****, Ferhat Afşar İKBALİ******

* Prof. Dr., Ankara Hacı Bayram Veli University, Turkey
ORCID Number: 0000-0001-9393-5136
sezer.korkmaz@hbv.edu.tr/
** Hospital Assisrant Manager, Gazi University, Turkey
ORCID Number: 0000-0001-5571-0470
kenanbirsen@gazi.edu.tr
***Expert Nurse, Ankara Dışkapı Yıldırım Beyazıt Training and Research Hospital, Turkey
ORCID Number: 0000-0001-8569-2285
yaskur@hotmail.com
**** Research Assistant, Çankırı Karatekin University, Turkey
ORCID Number: 000-0002-5790-2780
gulcansisman09@gmail.com

***** Dental Prodthesis technician, Ankara Topraklık Dental Health Center, Turkey
ORCID Number: 0000-0002-6652-9754
nesrinkahraman06@gmail.com
******Dr., University of Health Sciences 29 May State Hospital, Turkey
ORCID Number: 0000-0002-3813-1087
drfiafsar@gmail.com

Received: 3.07.2021
Accepted: 26.07.2021
Research Article

Abstract

Aim: Healthy individuals are the only sources of blood product supply. However, inequality between voluntary donations and blood product requirement is a global problem. The need for

blood is an important concern for the society as a whole. Volunteer blood donors are the most important factor of safety blood donation. The aim of the study is to determine the level of cognitive perception of healthcare professionals in order to encourage blood donation.

Methods: Accordingly, the intention of health care professionals, who are considered as role models, towards voluntary blood donation has been investigated according to Theory of Planned Behavior This cross-sectional study was carried out in 233 healthcare professionals who were the employees of a tertiary education research hospital in Ankara.

Findings: The participants' intention towards voluntary blood donation is substantially positive ($\bar{X}$= 4.41). Chronic diseases and previous experiences have significant impact on intention (p= .01). Perceived behavioral control (β= 0.407) is the strongest variable that predicts the intention.

Conclusion: The study scale has explained the 41% of overall intention-related variances. It is expected that the positive intentions of the participants towards voluntary blood donation will affect the behavior of the public in this regard positively.

Keywords: Theory of Planned Behavior, Voluntary Blood Donation, Healthcare Professionals, Behavior, Health Management

Introduction

The availability of safe and adequate blood and blood components is critical for the treatment of many patients (WHO, 2019). Today, despite all the developments in medicine and technology, an alternative treatment tool has not been found that can replace blood, blood components and products obtained from blood. For this reason, blood services are carried out systematically in the world. Donation blood banking as one of these services; includes voluntary, regular, conscious, without expecting anything in return; collecting blood voluntarily, performing the necessary laboratory procedures on the collected blood, storing the blood and delivering it to hospitals (Hablemitoğlu, Özkan, Yıldırım, 2010). Services covering the use of blood for patients and the follow-up of the information recorded after use are provided under the name of transfusion blood banking. Transfusion of blood is an important form of therapy in medicine. Without blood donation there cannot be transfusion of blood. A well-functioning blood transfusion service is dependent on forthcoming blood donors who are willing to donate voluntarily without being mandated (Sandborg, 2000). The blood transfusion services (BTS) in the study area are dependent

on hospital blood banks that are responsible for blood supplies and blood testing. The primary sources of donated blood are direct donation (mainly patients' relatives), voluntary non-remunerated donors, and mobile blood drives (Amar, Yahia, 2020). Maintaining blood supply is essential because blood transfusions are lifesaving in many situations.

Blood and blood components are continuously needed during especially the pandemic for patients with blood diseases, cancers, trauma, and emergency surgeries. Without proper management of blood supply and demand, hospitals will face a shortage of blood, with the result that many patients may die or suffer unnecessarily.

Desire for improving duration and quality of life connects pertaining to human all ideas to health care services. The enormous advancements achieved in medical technology within the last two decades as well support this philosophy; in particular, highlighting that health care service is a global right, efforts made to increase the rate of access to health care services and implementation of modern operational procedures more intensively are the evidences. However, efforts made to improve health status can increase the need for blood donation indirectly (Maratidou et. al, 2007). Moreover, the only source of supply of blood products is healthy individuals. Therefore, global health organizations recommend establishing the highest standard possible for voluntary blood donors (Canturk et. al, 2013).

Behavioral intentions towards voluntary blood donation can be attributed to the populations' level of social awareness and development. Official data indicate that nearly 5% of overall population in the developed countries voluntarily donates blood (WHO, 2018). In Turkey, nearly 2% of overall population voluntarily donates blood (Kizilay, 2017). Although the rates vary among countries, the balance between requirement for blood products and voluntary donations is a global problem. The specific barriers that would restrain potential volunteers of blood donation from transforming their intention into behavior include prejudices, incomplete information, incorrect religious rituals, and social pressure (Cevizci et. al, 2010).

Theory of Planned Behavior (TPB) which enables anticipation of intention and behavior towards a particular situation, was propounded in 1985 by Icek Ajzen (Akinci and Kiymalioglu, 2015). The theory is based on the hypothesis that the individuals act usually reasonably and, before exhibiting a behavior, they indirectly or clearly evaluate the effects of that behavior (Fishbein and Ajzen, 2010). The most critical determinant of behavior is the intention. According to the TPB, intention is directed by three main variables; attitude, subjective norm, and perceived behavioral

control (Lawson, 2010). Attitude is characteristically a rater (beautiful – not beautiful) in nature and leads the individual to a specific target (Fishbein and Ajzen, 2010). Subjective norm is the effort made to harmonize the individual's intention towards behavior with the intentions of the others, who are important to the individual (Ajzen, 2005). Nevertheless, the actual control of behaviors emerges with the influences of internal and external factors, which Ajzen defines as perceived behavioral control (Fishbein and Ajzen, 2010). Internal factors that influence the performance of a behavior include the knowledge, skills, emotions and the ability possessed, whereas external factors include opportunities and the level of dependence to the others (Akinci and Kiymalioglu, 2015). Finally, the relative burden of these three main variables that drive intention may differ from person to person or from one population to another (Fishbein and Ajzen, 2010). The theoretical model of the TPB is shown in Figure 1.

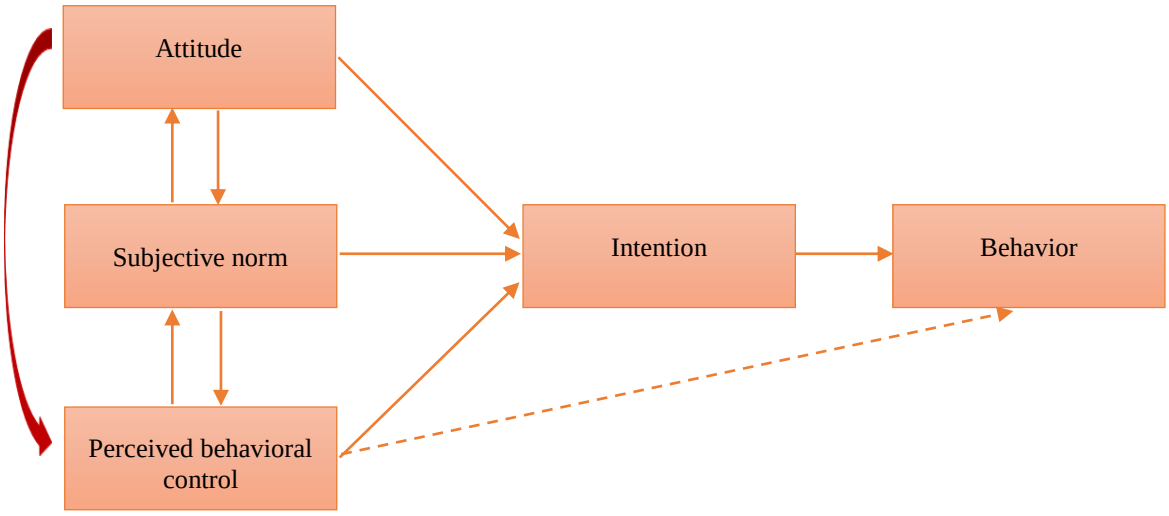


Figure 1. Theoretical model of planned behavior theory

According to the theory of planned behavior, the main determinant of a behavior is intention. The stronger the intention, the more likely the behavior will occur. According to this theory, if the individual thinks that the resources and opportunities required for a behavior lacks, a strong intention regarding that behavior will not occur (Korkmaz, Sertoğlu; 2013). Also, even if the person has an intention, that behavior may not occur if he cannot control his individual will. Intention is a function of attitude towards behavior, subjective norms, and perceived behavioral

control. Attitude towards behavior reflects the positive or negative general evaluations of the individual towards realizing the behavior. Subjective norms are the social pressure that a person perceives to perform or not perform the behavior in question. In other words, it is a reflection of the individual's perception towards what other people want him to do (Akıncı & Kıymalıoğlu, 2014). Perceived behavioral control refers to the individual's perception of his ability or sufficiency to perform the behavior in question.

There are two important points to note in the basic model presented in Figure 1 (Ajzen 2005). The first of these is that perceived behavioral control has an effect on the individual's motivation to perform the behavior on intention. The second important issue is the direct relationship between perceived behavioral control and behavior. The performance of a behavior depends not only on motivation, but also on control towards that behavior. Therefore, perceived behavioral control can determine behavior regardless of the intention to perform the behavior.

The most important reason for using the theory of planned behavior in this study is that it contributes to the development of behavior, behavioral intention and the information process, and shows a systematic approach to to defining, measuring and conceptualizing determinants (Montano et al., 1997). In this direction, the research part of the study was designed based on the above model.

In this context, the attitude in the model describes the attitudes of health workers towards blood donation. Towards the blood donation of the healthcare professionals; the thoughts of the people who are important to healthcare professionals and a reflection of the perception of the behavior they want the person to show refers the subjective norm. Perceived behavioral control is what healthcare professionals think about themselves if they donate blood.

The perception of control towards realizing the behavior should be created in a way that is close to reality. For this reason, it is necessary to ensure the continuity of perception and involvement in blood donation for the motivation that will transform the positive attitude of healthcare professionals towards blood donation into behavior.

1. Research Methodology

This study was carried out in a tertiary hospital in Ankara. The data in the study were collected using the convenience sampling method. Within the scope of this study, 233 of a total of 865 health care professionals (254 doctors and 611 nurses) working in the relevant hospital could be reached. However, 29 (10.3%) of these 281 health care professionals declared they have not enough time to participate in the study, whereas 19 (6.8%) were excluded from the analysis as their answers were not suitable for statistical analysis. The remaining participants (n= 233) represented the population eligible for this study.

Data from this study was collected via a questionnaire consisting of two sections. The items in the first section were retrieved from the questionnaire prepared and implemented according to the principles of TPB in an early study (Argan, 2016). However, as the target population was different in the present study, some of the items were revised, and then a pre-survey was performed. After revision, the number of items in the first section of the questionnaire was 28, of which 26 were the items representing the main variables that direct the intention and the intention itself and were evaluated by 5-item Likert-type scale. The remaining two were close-ended questions to be answered as Yes or No; “Do you have a chronic illness?” and “Have you ever donated blood before?” In the second section of the questionnaire, gender, marital status, age, education level and monthly income were inquired to assess the socio-demographic characteristics of the participants.

The study was approved by the top executives of relevant hospital. Moreover, according to the international principals of ethics, all of the participants were reassured that their personal information will be kept confidential and that the study data will be used for scientific purpose only. Each interview, including the participants' questions and comments about the research, was lasted almost twenty minutes.

The data obtained in this study were analyzed using SPSS package. It was conducted exploratory factor analysis after the validity and reliability analysis of the scale. This study parametric tests were performed because the data were distributed normally. Multiple regression and correlation analyses were used to measure the predictive power of the variables and the relationship between

them the demographic profile of participants were analyzed with *t*-test and ANOVA test. Finally, p value of < .05 was considered statistically significant.

This research; This is an empirical study that explains the behavioral intentions of healthcare profesionals towards blood donation within the framework of PDT principles. In this context, based on the conceptual model of PDT shown in Figure 1, the main hypothesis of the research is "H1: Attitude, subjective norm and perceived behavioral control affect the intention of healthcare profesionals to donate blood." sentence. The sub-hypotheses within the scope of the basic hypothesis of the study are as follows:

H1a = The opinions of healthcare professionals about donating blood differ significantly according to socio-demographic characteristics.

H1b = The status of healthcare professionals with a chronic disease affects their attitude towards donating blood.

H1c: Previous blood donation status of healthcare workers affects their perspective towards donating blood.

H1d: There is a relationship between healthcare professionals' attitude towards blood donation, subjective norm, perceived behavioral control and their intentions.

2. Analysis

The findings regarding the statistical analysis of the study data are listed below in tables. Socio-demographic characteristics of the participants are shown in Table 1.

Table 1. Socio-demographic characteristics of the participants

		n	%
Gender			
	Female	133	57.1
	Male	100	42.9
Age			
	18 - 29	35	15.0
	30 - 39	123	52.8
	> 40	75	32.2
Marital status			
	Single	52	22.3
	Married	181	77.7
Educational status			
	Associate degree	53	22.7
	Bachelor’s	151	64.8

(Table 1 cont.)

Postgraduate	29	12.5
Income status		
520 – 695 $	113	48.5
696 – 870 $	88	37.8
> 871 $	32	13.7
Dou you have a chronic illness?		
Yes	56	24.0
No	177	76.0
Have you ever donated blood before?		
Yes	158	67.8
No	75	32.2
Total	233	100.0

As shown in table 1, participants in this study 57.1% were female and, 67.8% were under of age 40. 77.7's% of the participants stated that they were married while 77.3% stated that they had bachelor's and postgraduate levels of education. The overwhelming majority of participants income less than $ 871 per month (86.3%). In addition to this, 75.9% of the participants stated that they did not have a chronic disease and 67.8% had previously experienced voluntary blood donation.

Table 2. Validity analysis results

Factors	KMO test	Barlett's test	Sig.
Attitude	.797	370.898	.0001*
Subjective norm	.810	471.239	.0002*
Perceived behavioral control	.823	625.649	.0001*
Niyet	.758	383.140	.0001*

*$p < .05$

Field (2009) stated that in order to test the suitability of the scale to "Factor Analysis", the value of KMO test must be greater than .50. In the validity analysis, as shown in table 2, the KMO values were distributed between .758 and .823 and the scale met the requirements for "Factor Analysis".

Table 3. Reliability analysis results

Factors	Number of item	Cronbach's Alpha (α)
Attitude	5	.793
Subjective norm	6	.796
Perceived behavioral control	8	.820
Intention	5	.784
Total of scale	24	.911

Murphy and Davidshofer (2015) stated that "Cronbach's Alpha" value should be above .60 for the scale to have sufficient security. In the reliability analysis, as shown in table 3, the Cronbach alpha value of all factors > .60 and the scale was reliable.

Table 4. Mean and standard deviation values results

Factors	n	Mean	Standard dev.
Attitude	233	4.53	.47
Subjective norm	233	4.06	.65
Perceived behavioral control	233	3.90	.63
Intention	233	4.41	.50

Data obtained with scales of five, "Never" if $\bar{X}$ = 1.00-1.79, "Rarely" if $\bar{X}$ = 1.80-2.59, "Occasionally" if $\bar{X}$= 2.60-3.39, "Frequently" if $\bar{X}$= 3.40-4.19 and, "Every time" if $\bar{X}$= 4.20-5.00, it is interpreted as (Uzun and Yigit, 2011). As shown in table 4, the items under the subjective norm and perceived behavioral control factors were answered "Frequently", and the items under the attitude and intention factors were answered as "Always".

Table 5. Results of explanatory factor analysis

Items	Burden of factor			
	Attitude	Subjective norm	Perceived behavioral control	Intention
A1- I believe donating blood is a social responsibility	.657			
A2- Donating blood is in line with my principles	.790			
A3- My personal values encourage me to donate blood	.832			
A4- I have the responsibility to donate blood	.810			
A5- I can stand interventions to donate blood	.637			
A6- Blood donation is a way of doing favor	.330*			
SN1- My parents want me to have donate blood		.772		
SN2- My around people think donating blood is a good thing		.736		
SN3- To me important people want me to donate blood		.805		
SN4- If I donate blood, those my around will think I'm a good person		.723		
SN5- My around people accept donating blood as exemplary behavior		.714		
SN6- My friends expect me to be the first blood donor		.575		
PBC1- I'm healthy to donate blood			.751	
PBC 2- I am well-being that physical and mental, which is necessary for blood donation			.758	
PBC 3- I have necessary information for blood donation			.311*	
PBC 4- I can take time to donate blood			.810	
PBC 5- I can rest after donating blood			.643	
PBC 6- Whether or not I donate blood is entirely up to me.			.403	
PBC 7- It's easy for me to donate blood			.628	
PBC 8- My lifestyle requires me to donate blood			.752	
PBC9- A health facility close to the my environment, it is encourage me to donate blood.			.588	
I1- I think donating blood is a good idea				.736
I2- I think donating blood is a wisely behavior to do				.774
I3- I like the idea of donating blood				.785
I4- I am positive about the idea of donating blood				.815
I5- I donate, if I hear about blood donate close to me				.639

** Burden of factor < .40*

As a result of explanatory factor analysis; It has been observed that 1, 2, 3, 4, 5 and 19th items were gathered under the variable "Attitude". Also, it has been observed that 6, 7, 8, 9, 10 and 20th items were gathered under the variable "Subjective Norm". In addition to this, the items gathered under the variable "Perceived Behavioral Control" are 11, 12, 13, 14, 15, 16, 17, 18 and 26th. Also, the items gathered under the variable "Intention" are 21, 22, 23, 24 and 25th. Furthermore, 2 items were removed from the scale since their factor burden were lower than 40 (Büyüköztürk, 2010). The first one was" I have necessary information for blood donation" which is the 13th item and

the other one was "Blood donation is a way of doing favor" which is 19th item. Thus, the number of items in the study scale decreased from 26 to 24.

Table 6. Gender variable t-Test results

	Gender	n	Mean	Standart dev.	t	p
Attitude	Female	133	4.47	.47	2.04	.04*
	Male	100	4.60	.48	2.03	.04*
Subjective norm	Female	133	3.94	.64	3.21	.00*
	Male	100	4.21	.63	3.23	.00*
Perceived behavioral control	Female	133	3.74	.60	4.57	.00*
	Male	100	4.11	.62	4.55	.00*
Intention	Female	133	4.34	.49	2.38	.01*
	Male	100	4.50	.50	2.38	.01*

$p < .05$

As shown in table 6, the health care professionals' intention to donate blood voluntarily showed significant difference according to gender ($p < .05$). In addition, males had higher intention to donate blood voluntarily than females (Male $\bar{X}$ > Female $\bar{X}$).

Table 7. Age variable ANOVA test results

	Age	n	Mean	Standart dev.	F	p
Attitude	18-29	35	4.52	.47	1.393	.25
	30-39	123	4.48	.48		
	≥ 40	75	4.60	.48		
Subjective norm	18-29	35	3.83	.69	3.374	.02
	30-39	123	4.04	.66		
	≥ 40	75	4.19	.60		
Perceived behavioral control	18-29	35	3.75	.70	1.816	.17
	30-39	123	3.88	.59		
	≥ 40	75	3.99	.66		
Intention	18-29	35	4.40	.50	0.29	.75
	30-39	123	4.38	.49		
	≥ 40	75	4.44	.52		

$p < .05$

As shown in table 7, the health care professionals' intention to donate blood voluntarily was not significantly different in terms of attitude (p= .25), perceived behavioral control (p= .17) and intention (p= .75). Subjective norm was the only variable showing difference between the age groups (p= .02), and the difference was observed between the subjects aged 18-29 year-old and those at and over the age of 40 years (p= .00). Furthermore, those at and over the age of 40 years had higher intention to donate blood voluntarily as compared to the other age groups (≥40-year-old $\bar{X}$ > Other age groups $\bar{X}$).

Table 8. Marital status variable t-Test results

	Marital status	n	Mean	Standart dev.	t	p
Attitude	Single	52	4.42	.55	1.75	.08
	Married	181	4.55	.45	1.58	.11
Subjective norm	Single	52	4.00	.75	0.60	.54
	Married	181	4.07	.62	0.55	.59
Perceived behavioral control	Single	52	3.88	.60	0.21	.83
	Married	181	3.90	.65	0.22	.82
Intention	Single	52	4.31	.53	1.43	.15
	Married	181	4.43	.49	1.37	.17

**p< .05*

As shown in table 8, The health care professionals' intention to donate blood voluntarily showed significant indifference according to marital status (p <.05). Nevertheless, married had higher intention to donate blood voluntarily than single (Married $\bar{X}$ > Single $\bar{X}$).

Table 9. Educational status variable ANOVA test results

	Educational status	n	Mean	Standart dev.	F	p
Attitude	Associate degree	53	4.54	.49	3.83	.02*
	Bachelor's	151	4.57	.48		
	Postgraduate	29	4.30	.42		
Subjective norm	Associate degree	53	3.95	.63	2.57	.08
	Bachelor's	151	4.13	.65		
	Postgraduate	29	3.90	.65		

(Table 9 cont.)

Perceived behavioral control	Associate degree	53	3.82	.59		
	Bachelor's	151	3.94	.66	0.99	.40
	Postgraduate	29	3.82	.58		
Intention	Associate degree	53	4.44	.54		
	Bachelor's	151	4.45	.47	3.94	.02*
	Postgraduate	29	4.17	.50		

*p< .05

As shown in table 9, the health care professionals' intention to donate blood voluntarily was not significantly different in terms of subjective norm (p= .08) and perceived behavioral control (p= .40). The variables that showed difference were the attitude (p= .02) and intention (p= .02); the difference was observed between those with associate degree and postgraduate degree (p= .01) as well as between those with bachelor's degree and postgraduate degree (p= .00) for both variables. Furthermore, those with bachelor's degree had higher intention to donate blood voluntarily as compared to the other levels of education (Bachelor's degree $\bar{X}$ > Other levels of education $\bar{X}$).

Table 10. Income status variable ANOVA test results

	Income status	n	Mean	Standart dev.	F	p
Attitude	385-515 $	113	4.54	.45		
	516-639 $	88	4.60	.50	4.057	.01*
	≥ 640 $	32	4.32	.47		
Subjective norm	385-515 $	113	3.94	.67		
	516-639 $	88	4.21	.61	4.381	.01*
	≥ 640 $	32	4.07	.64		
Perceived behavioral control	385-515 $	113	3.86	.63		
	516-639 $	88	3.95	.67	0.481	.61
	≥ 640 $	32	3.90	.58		
Intention	385-515 $	113	4.44	.50		
	516-639$	88	4.43	.48	3.234	.04*
	≥ 640 $	32	4.20	.53		

*p< .05

As shown in table 10, the health care professionals' intention to donate blood voluntarily was not significantly difference in terms of perceived behavioral control (p= .61). The variables that showed difference were the attitude (p= .01), subjective norm (p= .01) and intention (p= .04). The

difference was between those having monthly income of 385-515 $ and more than 640 $ (p= .02) as well as 516-639 $ and more than 640 $ (p= .00) for attitude; 385-515 $ and 516-639 $ (p= .00) for subjective norm; 385-515 $ and more than 640 $ (p=.01) as well as 516-639 $ and more than 640 $ (p= .02) for intention. Furthermore, intention to donate blood voluntarily was higher in those with monthly income of 516-639 $ as compared to the others (516-639 $ $\bar{X}$ > Other groups $\bar{X}$).

Table 11. Have a chronic illness variable t-Test results

	Chronic illnes	n	Mean	Standart dev.	t	p
Attitude	Yes	56	4.50	.50	0.45	.65
	No	177	4.53	.47	0.43	.66
Subjective norm	Yes	56	4.03	.67	0.25	.08
	No	177	4.06	.65	0.25	.80
Perceived behavioral control	Yes	56	3.84	.69	0.75	.45
	No	177	3.91	.61	0.70	.48
Intention	Yes	56	4.24	.52	2.85	.01*
	No	177	4.46	.48	2.74	.01*

**p< .05*

As shown in table 11, the health care professionals' intention to donate blood voluntarily was significantly difference in terms of only intention (p= .01). Nevertheless, those without chronic illness had higher intention to donate blood voluntarily (Without chronic illness $\bar{X}$ > With chronic illness $\bar{X}$).

Table 12. Having donated blood before variable t-Test results

	Having donated blood before	n	Mean	Standart dev.	t	p
Attitude	Yes	158	4.57	.45	1.96	.05
	No	75	4.44	.53	1.84	.07
Subjective norm	Yes	158	4.15	.60	3.37	.00*
	No	75	3.85	.71	3.17	.00*

(Table 12 cont.)

Perceived behavioral control	Yes	158	4.01	.58	4.14	.00*
	No	75	3.66	.68	3.90	.00*
Intention	Yes	158	4.46	.47	2.52	.01*
	No	75	4.29	.53	2.42	.02*

**p< .05*

As shown in table 12, according to having donated blood before, the health care professionals' intention to donate blood voluntarily was not significantly difference in terms of only attitude (p= .05). Nevertheless, intention towards voluntary blood donation was higher among those who have experienced blood donation previously (Those who have donated blood before $\bar{X}$ > Those who have not donated blood before).

Table 13. Multiple regression analysis results

	B	Standard error	β	t	p
Stable	1.776	.251	-	7.074	.000*
Attitude	0.198	.064	0.189	3.067	.002*
Subjective Norm	0.118	.059	0.154	1.998	.047*
Perceived Behavioral Control	0.322	.055	0.407	5.829	.000*

** p< .05; R= .638; R^2= .407; F= 52.355*

As shown in table 13, it was a linear and significant relationship between the participants predicting the voluntary blood donation. While the strongest relationship between the variables is between the subjective norm and the perceived behavioral control (.-685), the weakest relationship is between attitude and perceived behavioral control (.-411). The predictive power of the variables is respectively like this; perceived behavioral control (β = 0,407), attitude (β = 0,189) and subjective norm (β = 0,154).

Table 14. Correlation analysis results

		Attitude	Subjective norm	Perceived behavior control	Intention
Attitude	Pearson p	1	.561- .000*	.411- .000*	.442- .000*
Subjective norm	Pearson p	.561- .000*	1	.685- .000*	.539- .000*
Perceived behavioral control	Pearson p	.411- .000*	.685- .000*	1	.590- .000*
Intention	Pearson p	.442- .000*	.539- .000*	.590- .000*	1

**p< .05*

As shown in table 14, in terms of all factors determined that correlation coefficient was negative and statistically significant. Nevertheless, the strongest relationship between subjective norm and perceived behavioral control (.685-) and, weakest relationship is between attitude and perceived behavioral control (.411-).

3. Conclusion and Recommendations

Health professionals' intention towards voluntary blood donation is of critical importance as these intentions are characterized by high level of positive point of view and have the ability of influencing the whole population (Nwogoh et. al, 2013; Radunz et. al, 2010; Topbas et. al, 2005; Ahlawat et. al, 2013). For example, a survey performed in 811 health care professionals from Australia demonstrated that 96.2% of the participants look positive towards organ donation and that 90% wants to donate organ after death (Mark et. al, 2012). Another survey carried out in 482 health care professionals from Spain reported that 78% of the participants look positive towards organ donation (Rios et. al, 2008). In a similar survey from Qatar, 89% of the doctors, 82% of the nurses and 70.5% of the health technicians among 418 participants had positive point of view towards organ donation, however, 55% of the participants reported that they do not want to donate their organs (Alsaied et. al, 2012). Finally, a study from Turkey carried out with the participation of 309 health care professionals determined that 90% of the participants look positive towards organ donation but that only 22.98% possess he donor card (Demir et. al, 2011). The results of the

present study as well as the other studies in the literature demonstrated that health care professionals have high intention to donate blood voluntarily ($\bar{X}$= 4.41). Nevertheless, health care professionals' high intention towards voluntary blood donation alone does not mean that donation would occur as adequate as intended. Therefore, contributions of future studies that will be performed in different population are required. Thus, the awareness is enhanced, and all parts of the population can be encouraged to support voluntary blood donation and to widen the existing donation pool. Within this context, producing strategies that keep the population away from misinformation and negative prejudices may be a good start.

It was reported that there are numerous variables that influence the intention of individuals who have the potential of donating blood voluntarily (Floden and Forsberg, 2009); however, there is no consensus about the power of these variables on intention. For example, a survey performed in 380 health care professionals from Barcelona determined that demographic variables do not have an impact on the attitude towards voluntary blood donation (Lomero et. al, 2015). A survey from Israel, which represented 2366 health care professionals, reported significant relationship between voluntary blood donation and age and marital status but not with gender (Cohen et. al, 2008). The results of another survey performed in 400 health care professionals from Germany revealed that voluntary blood donation behavior does not differ according to age, marital status or occupational status but differs according to gender (Radunz et. al, 2010). Finally, in Nigeria, the results of a survey performed in 163 health care professionals demonstrated that voluntary blood/organ donation behavior shows difference according to gender and age (Nwogoh et. al, 2013). The results of the present study reveal that health care professionals' intention to donate blood voluntarily shows difference according to gender, age, education level and monthly income but not to marital status. Therefore, taking the socio-demographic profiles differences into account during incentive campaigns for voluntary blood/organ donation is recommended.

Meanwhile, in 2010 III. Presented at the National Blood Centers and Transfusion Medical Congress, How Aware Are We? As a result of the survey conducted in the study titled A Survey Among Doctors on Blood Donation, 33 of 55 doctors who had not given blood before stated that they wanted to donate blood (Yaşar at el, 2010). this study was to evaluate the knowledge, behaviour and attitude of doctors working in various departments a hospital in Antalya of toward blood donation. A questionnaire with 20 questions was filled out by 100 doctors. Forty-five per

cent of participants donated blood at least one time before, whereas 55% of them had never seriously considered becoming donor. Eighty-four per cent of nondonors were between 25-35 years old and 62% of them were female in this study. The half of nondonors wanted to donate only to their relatives in emergency situations. Surprisingly, seven refrained from blood donating due to the fear of catching an infectious disease during it.

Individuals can donate blood voluntarily if they are healthy enough. Current health status may either strengthen or limit the positive intentions towards voluntary donation to transform into behavior. For example; the behaviors related to voluntary blood donation were compared in a sample of 210 individuals which include spatients with organ failure and their relatives, patients with chronic diseases and healthy individuals. As a result, relatives of patients with organ failure were found to have a more positive attitude than healthy ones (Kaca et. al, 2009). As a result of a study representing 1484 health professionals in Brazil; 87% of the healthy participants stated that they lean towards to voluntary blood donation, while this rate was reported to be 76% in patients with chronic disease (Araujo and Siqueira, 2016). Likewise, the results of the present study reveal that health care professionals with chronic illness have lower intention to donate blood voluntarily. Within this context, extension of regular health screening programs that cover the whole population and focusing on diagnosing the chronic diseases that have not detected yet may be beneficial. Thus, both the potential blood donors would be determined and the population's health status would be indirectly improved.

Assessment of intention towards a particular situation reflects mostly the loyalty of personal opinions (Sharp, 2013). When individuals are questioned about their intention towards the behaviors they have experienced for many times, they usually state that they would behave as was in the past. However, it is not possible to say that previous experiences influence all behaviors always in the same way. For example, a study carried out in 263 health care professionals from Spain determined no significant relationship between the attitudes towards voluntary blood donation and previous experiences (Rios et. al, 2005). On the contrary, the results of the present study indicate significant relationship between the health care professionals' previous experiences and their intention to donate blood voluntarily.

Theory of Planned Behavior hypothesizes that relative burden of the intention-directing variables may show differences between individuals and between the populations (Fishbein and Ajzen, 2010). This hypothesis has been confirmed by the scientific studies, in which TPB was used. For example, in a cohort that continue smoking after attending a clinical incentive program for quitting smoking, perceived behavioral control was determined to be the strongest variable that predicts the intention to smoke (Norman et. al, 1999). In another study investigating the patients' intention to adhere with the prescribed medications, perceived behavioral control was the strongest variable that predicts the intention, while subjective norm was the weakest (Peleg et. al, 2017). Likewise, the results of the present study demonstrate that the strongest and the weakest variables that predict the health care professionals' intention to donate blood voluntarily are perceived behavioral control (β= 0.407) and subjective norm (β= 0.154), respectively. Our results indicate two critical conclusions: first, TPB can be used in health surveys as an effective method for assessing the intention. Second, subjective norm items in the questionnaires need to be enriched to enhance the theoretical power of TPB.

The study has some limitations. First of all, our results reflect only the health care professionals' intention to donate blood voluntarily because of absence of different populations in the study. Second, the results do not provide evidences representative of overall health care professionals as they are based on a limited sample size. Third, the present study has focused only on assessing the intention towards voluntary blood donation, but to what extend the intention turns into behavior has not been evaluated. The reason for this is the concern that time required for two-phase researches might cause disconnection between intention and behavior. Finally, ready-to-use scales measure only the things the researcher wants to measure but not the further. In fact, scientific researches should include open-ended questions, which allow the participants to convey all of their opinions about a specific issue. However, open-ended items were not used in the present study as the questionnaire was performed in a study sample having limited time.

The most important step in encouraging blood donation is education and blood donation rates can only increase as the level of education increases. Since the healthcare professionals who are related to the subject, who have a certain level of education and are aware of the importance of blood donation, were considered as the target group in our study, blood donation rates were found to be higher compared to community-based studies. During the pandemic, which is

experienced all over the world and our country was heavily affected, 2 million 370 thousand 912 units of blood were donated to the Red Crescent in 2020. Thanks to the collected immune plasmas, a significant support has been given to the fight against coronavirus. Blood donation is an important issue not only in pandemic and epidemic conditions, but also in natural disasters such as in earthquakes, floods, etc. and in such cases, the sensitivity of the society to this issue increases. Therefore, it is important to create strategic plans to increase the rate of blood donation. The barriers to donating blood will differ according to the cultural and sociological variables of each society. By determining them, it is a fact that there is a need for promotion programs that will increase the motivation for blood donation. The society should be enlightened about the importance, benefits and side effects of blood donation and misunderstandings should be prevented. In addition, blood donation should be encouraged with the support of the Red Crescent, relevant ministries, administrative staff, non-governmental organizations, opinion leaders of the society, intellectuals and the media.

References

Ahlawat, R. Kumar, V. Gupta, A.K. Sharma, R.K. and Minz, M. (2013). Attitude and knowledge of healthcare workers in critical areas towards deceased organ donation in a public sector hospital in India, *The National Medical Journal of India*, Vol. 26 (6).

Ajzen, I (2005). Attitudes, personality and behavior (2. Edition) Open University Press McGraw-Hill Education: England.

Çabuk,S. and Yağcı, M.İ.(Edt). (2014). MediaCat Kitapları, İstanbul.

Alsaied, O. Bener, A. Al-Mosalamani, Y. And Nour, B. (2012). Knowledge and attitudes of healthcare professionals toward organ donation and transplantation, *Saudi Journal of Kidney Discases and Transplantation*, Vol. 23 (6).

Amar, İ. And Yahia, O.(2020). Management of blood supply and demand during the COVID-19 pandemic in King Abdullah Hospital, Bisha, Saudi Arabia, *Transfusion and Apheresis Science*, 59, 102836.

Araujo, C. and Siqueira, M. (2016). Brazilian healthcare professioanls: a study of attitudes toward organ donation, *Transplantation Proceedings*, Vol. 48 (10).

Argan, M.T. (2016). Examination on the framework of the theory of planned behavior of factors that affect blood donation behavior, *Acıbadem University Journal of Health Science*, Vol. 7 (2).

Blood safety and availability (2018). World Health Organization blood donation statistics report, retrived 28 Aralık 2019'da from website: https://www.who.int/en/news-room/fact-sheets/detail/blood-safety-and-availability.

Büyüköztürk, S. (2010). Data Analysis Handbook for Social Sciences (12th Edition), Pegem Academy: Ankara.

Cantürk, E. Ceylan, S. Akgün, U.Y. Kulular, A.Y. Kurtuluş, Y. Alnawajha, A. Şengelen, M. and Aslan, D. (2013). " Gönüllülük" kan merkezlerine başvuruda fark yaratır mı? Ankara'da seçilmiş kan merkezleri başvuruları üzerinden bir değerlendirme, *Türkiye Halk Sağlığı Dergisi*, Vol. 11 (2).

Cevizci, S. Erginoz, E. and Yuceokur, A. (2010). Voluntary blood donation and factors affecting the behavior of giving blood, *Turkey Clinics Cardiovasculer Sciences*, Vol. 22 (1).

Cohen, J. Ben Ami, S. Ashkenazi, T. and Singer, P. (2008). Attitude of healthcare professionals to brain death: influence on the organ donation process, *Clinical Transplantation*, Vol. 22.

Demir, T. Selimen, D. Yildirim, M. and Kucuk, H.F. (2011). Knowledge and attitudes toward organ/tissue donation and transplantation among healthcare professionals working in organ transplantation or dialyses units, *Transplantation Proceedings*, Vol. 43 (5).

Field, A. (2009). Discovery Statistics Using SPSS (Third Edition). SAGE Publications: London.

Fishbein, M. Ajzen, I. (2010). Predicting and chancing behavior, Psychology Press Taylor & Francis Group: United States of America.

Floden, A. and Forsberg, A. (2009). A phenomenographic study of ICU-nurses' perceptions of and attitudes to organ donation and care of potential donors, *Intensive and Critical Care Nursing*, Vol. 25 (6).

Hablemitoğlu Ş., Y. Özkan and F. Yıldırım. (2010). Bir Fedakarlık Örneği Olarak Kan Bağışı, *Aile ve Toplum*, Yıl: 11, Cilt: 5, Sayı: 20 Ocak-Şubat-Mart.

Kaca, G. Amado, S. Kikici, İ. Cilasin, S. Dag, E. Leylek, İ. And Sahin, Ö. (2009). Examination of attitudes towards organ donation within the framework of planned behavior theory, *Turkish Journal of Psychology*, Vol. 24 (64).

Korkmaz, S. and Sertoğlu, Ermeç, A. (2013) Genç tüketicilerin sürdürülebilir gıda tüketimi davranışının güven ve değerlere dayanan planlı davranış teorisi kapsamında tartışılması, *H.Ü. İktisadi ve İdari Bilimler Fakültesi Dergisi,* Cilt 31.

Lawson R. (Ed). (2010). Marketing theory a student text (2. Edition),SAGE Publications, London.

Lomero, M.M. Rasero, M.J. Fuentes, L. And Jaume, M. (2015). Knowledge and attitude of health personnel at the garraf health consortium regarding donation and transplantation, *Transplantation Proceedings*, Vol. 47 (8).

Marantidou, O. Loukopoulou, L. Zervou, E. Martinis, G. Egglezou, A. Fountouli, P. Dimoxenous, P. Parara, M. Gavalaki, M. and Maniatis, A. (2007). Factors that motivate and hinder blood donation in Greece, *Transfusion Medicine*, Vol. 17 (6).

Mark, C.H. Weiland, T.J. Neate, S.L. Hickey, B.B. and Jelinek, G.A. (2012). Personal attitudes and beliefs regarding organ and tissue donation: A cross sectional survey of Australian emergency department clinicians, *Progress in Transplantation*, Vol. 22 (3).

Glanz, K. Rimer, B.K. and Viswanath K.(eds.), Health Behavior and Health Education: Theory Research and Practice, San Francisco, Jossey-Bass.

Murphy, K.R. and Davidshoper, C.O. (2005). Psychological Testing Principles and Applications (Six Edition), Pearson Prentice Hall: USA.

Norman, P. Conner, M. and Bell, R. (1999). The theory of planned behavior and smoking cessation, *American Psychological Association Health Psychology*, Vol. 18 (1).

Nwogoh, B. Aigberadion, U. and Nwannadi, A.I. (2013). Knowledge, attitude, and practice of voluntary blood donation among healthcare workers at the university of Benin Teaching Hospital, Benin City, Nigeria, *Journal of Blood Transfusion*, Article ID 797830.

Peleg, S. Vilchinsky, N. Fisher, W.A. Khaskia, and A. Mosseri, M. (2017). Personality makes a difference: attachment orientation moderates theory of planned behavior prediction of cardiac medication adherence, *Journal of Personality*, Vol. 85 (6).

Radunz, S. Hertel, S. Schmid, K.W. Heuer, M. Stommel, P. Frühauf , N.R. Saner F.H. Paul, A. and Kaieser G.M. (2010). Attitude of health care professionals to organ donation: the surveys among the staff of a Germany University Hospital, *Transplantation Proceedings*, Vol. 42 (1).

Rios, A. Conesa, C. Ramirez, P. Galindo, P.J. Martinez, L. Montaya, M.J Pons, J.A. Rodriguez, M.M. and Parrilla. P.(2005). Attitude toward deceased organ donation and transplantation among the workers in the surgical services in a hospital with a transplant program, *Transplantation Proceedings*, Vol. 37 (9).

Rios, A. Ramirez, P. Galindo, P.J. Sanchez, E. Martinez, A.L. and Parrilla, P. (2008). Primary health care personnel faced with cadaveric organ donation: a multicenter study in south-eastern Spain, *Clinical Transplantation*, Vol. 22.

Sandborg, E. (2000). Getting People to Donate, Vox Sanguinis,78. (Suppl. 2).

Sharp, B. (2013). Marketing theory, evidence, practice, Oxford University Press:Australia.

Topbas, M. Can, G. Can, M.A. and Ozgun, S. (2005). Outmoded attitudes toward organ donation among Turkish health care professionals, *Transplantation Proceedings*, Vol. 37 (5).

Voluntary blood donation in Turkey (2017). Turkish Red Crescent blood donation news, retrived 28 December 2019from website: https://www.kizilay.org.tr/Haber/HaberDetay/3290.

Uzun, O. and Yigit, E. (2011). A Study on Mid-Level Hotel Managers on the Relationship between Orgutsel Stress and Organizational Loyalty. *Eskisehir Osmangazi University, Journal of FEAS*, Vol. 6 (1).

World Health Organization. (2010).Toward 100% Voluntary Blood Donation: A global framework fo Action, retrived 18 Mart 2020 from website: http//www.who.int/world blood donor day//Melbourne Decleration WBDD09.pdf.

Yaflar K., Kadriye , F. Pehlivanoğlu, M., E., Işık, G., Çiçek, S., Gürsoy, M., Şimşek, S., Sandıkçı, H., Özkan, G., Şengöz, (2010), How Aware Are We? A Survey Among Doctors on Blood Donation, III. Ulusal Kan Merkezleri ve Transfüzyon Tibbi Kongresi, 24-28 Kasım Antalya.

https://dergipark.org.tr/tr/pub/ijhmt Doi Number: 10.31201/ijhmt.938495

Int Journal of Health Manag. And Tourism 2021

JHMT Editorial

International Journal of Health Management and Tourism

EXAMINATION OF COVID-19 DEATHS IN G-7 COUNTRIES BY PANEL DATA ANALYSIS METHOD

Osman ŞENOL*, Durmuş GÖKKAYA**

* Research Assistant, Süleyman Demirel University, Turkey
ORCID Number: 0000-0001-5626-2921
osmansenol32@hotmail.com

** Research Assistant Dr., Yozgot Bozok University, Turkey
ORCID Number: 0000-0002-6713-1748
durmusgokkaya@gmail.com

Received: 17.05.2021
Accepted: 27.07.2021
Research Article

Abstract

The Covid-19 epidemic continues today as a pandemic that affects all societies. Thousands of people have died from the virus in question. With the cooperation of national and international organizations, a struggle is being made to get rid of this pandemic. As part of the struggle, tests are carried out to detect infected people, while vaccination programs are applied to ensure permanent recovery. But deaths from Covid-19 are increasing inexorably. In this context, the number of tests applied, the number of vaccine doses administered, the number of cases encountered and the number of deaths from Covid-19 in the 7 most developed countries of the world were analyzed by panel data analysis method. Panel data analysis method is an econometric method that can analyze time series and cross-section data simultaneously. It was predicted that the vaccines administered could reduce deaths from Covid-19. It was estimated that if each dose of vaccine administered was increased, deaths from Covid-19 could decrease by 0.57 units. On the

other hand, it was observed that the increase in the number of cases led to an increase in deaths from Covid-19. The importance of the number of tests applied in the fight against Covid-19 was also determined. As a result, the importance of vaccination activities in the fight against Covid-19 has been scientifically demonstrated with the model obtained. On average, it is estimated that both vaccines can save a person's life.

Keywords: Covid-19, Covid-19 Vaccine Number, Covid-19 Death Number, Panel Data Analysis, G-7 Countries

Introduction

The Covid-19 pandemic in the first quarter of the 21st century has affected the whole world in all its aspects. As of March 11, 2020, the World Health Organization (who) announced the declaration of a pandemic, with the outbreak caused by the Covid-19 virus starting to appear in many countries. The covid-19 epidemic, which quickly spread to all countries of the world, has taken over humanity. Death rates increased at the same rate as the outbreak increased and intensified. On May 10, 2021, nearly 160 million cases and nearly 3 million 300 thousand deaths due to Covid-19 were detected all over the world (covid19.who.int). It is known that this epidemic causes more deaths, especially in the elderly, people with chronic conditions, and weak immune systems. In addition, it is obvious that it causes serious damage in healthy people, both physiologically and psychologically.

States, on the one hand, are fighting the epidemic, and on the other hand, they are conducting various drug and vaccine studies to find a cure for this disease. The most important factor in protecting humanity from the Covid-19 epidemic and overcoming the epidemic is the vaccine. With the onset of the Covid-19 epidemic and turning into a pandemic, vaccination studies have also started. Many countries and institutions have entered the vaccine development process and the first vaccine was found within a year. With the implementation of the first vaccine in England on December 8, 2020, humanity took a step forward in the fight against the Covid-19 outbreak. With the discovery and proliferation of vaccines, states have started to vaccinate their citizens. As of May 10, 2021 (covid19.who.int), nearly 1 million 200 thousand vaccines have been administered in the world. There have been declines in death rates with the introduction of

vaccines. Death rates were very high, especially in developed countries such as America[1] and the United Kingdom[2] before the vaccine was found, while death rates fell significantly as vaccination rates increased. At the same time as vaccination rates increased, Covid-19 case rates decreased significantly. Similar situations exist in other countries (covid19.who.int). As can be seen, the most important source of fighting the covid-19 epidemic is vaccines. People who are vaccinated with the protective effect of vaccines have a low level of this disease. People who are sick get over it easily. Thus, the mortality rate decreases. It is an important issue to scientifically demonstrate the effects of the applied vaccines. This research tries to reveal the effect of vaccines within the framework of mathematical modeling and analysis.

On the other hand, although there is fluctuation in the number of cases seen in countries, it is seen that it tends to increase in general. Case increases are not unique to developed countries, but are also seen in other country groups. Although the epidemic is common in all countries, there are differences in the methods of struggle. Each country is in the process of developing different treatment methods according to its own possibilities and perspective against the disease (Gennaro et al., 2020: 41; Lipsitch, Swerdlow and Fineli, 2020: 1195). The most preferred vaccine method is preferred in the epidemic treatment method. Although the degree of effectiveness of each vaccine is different, it is important to econometrically reveal how it has a reducing effect on epidemic prevention and deaths.

On the other hand, one of the important means of combating the Covid-19 epidemic is the number of tests applied. With the increase in the number of tests, more sick individuals are diagnosed. Thus, it is used as an important parameter both in the treatment process and in preventing contamination to other individuals. In other words, the more tests performed as a society, the faster the sick individuals are diagnosed. After the patients are diagnosed early, their treatment starts early. Mortality rates of patients receiving early treatment are also decreasing. In addition, the rate of transmission decreases by quarantining individuals diagnosed with the disease, isolating them from society, and following contact traces. In this way, the increase of the epidemic is prevented. The more tests are performed, the more cases are reached. Therefore, the ratio of test

[1] https://covid19.who.int/region/amro/country/us
[2] https://covid19.who.int/region/euro/country/gb

numbersprovides an important function in terms of reducing cases and deaths. In this context, the impact of both vaccine and test numbers on death numbers is an important issue to examine and focus on.

1. Research Methodology

In this part of the research, firstly, the aim of the study, the sample group, the data set and the findings of the panel models obtained will be included.

1.1. The Objective and Scope of the Research

The purpose of this study is to evaluate the number of deaths from Covid-19, the number of tests performed, the number of cases encountered and the number of vaccines applied, which cause significant changes and loss of life world-wide. The secondary aim of the study is to determine the effect of vaccines on deaths.

1.2. Model and Data

6 of the G-7 country group have been included in this research. Countries included; USA, UK, France, Italy, Japan, and Canada. The covid-19 death cases of these countries will be evaluated within the framework of the number of tests performed, the number of vaccines administered and the number of cases encountered. Using the panel data analysis method, the universe of this study is composed of G-7 countries. Among the G-7 countries, Germany was not included in the sample due to missing data on the time dimension covered by the study. The other 6 countries were included in the research. The reasons for the inclusion of G-7 countries in the study are that these countries are the most developed group of countries, as well as the high capacity to conduct vaccines and tests, and the availability of data for research purposes. The time dimension of the research covers the periods of 01.03.2021-30.04.2021 and the data type is daily. The data used within the scope of the research were obtained from https://ourworldindata.org/covid-vaccinations.

Table 1. Definition of Variables

Variables	Symbol
Covid-19 Deaths per Day	lnolum
Daily Number of Vaccines	lnasisayisi
Number of Tests Performed per Day	lntest
Number of Covid-19 Cases Detected Daily	dlnvaka

The variables to be used in the model are shown in table 1. In the research, the number of deaths from Covid-19 was selected as the dependent variable as the dependent variable. The variables of daily number of vaccines, number of daily tests and number of cases encountered per day are the independent variables. First, natural logarithmic transformation was applied to the series due to the fact that the numerical values of the variables were large. Other variables, except for the number of cases, were found to be stationary at the level, and the series was made stationary by taking the difference in the number of cases variable.

Since the main purpose of the study is to examine deaths from Covid-19, a single dependent variable will be used and a single model will be produced. The mathematical representation of the model in question is shown in the table below.

Table 2. Mathematical Representation of the Model

Model Equation	Program Output
$lnolumi,t = c + \alpha1(lnasisayisi)i,t + \alpha2(dlnvaka)i,t + \alpha3(lntest)i,t + \varepsilon i,t$	LNOLUM = 0.573153227381*LNASISAYISI + 1.44962663207e-05*DVAKA + 0.166077617292*LNTEST - 4.47446570328

As shown above, while the first column of the table 2 contains the equation of the model, the second column contains the equation output of the model by the program. The left sides of the equations represent the dependent variable. On the right side of the equations, c represents the constant variable, α represents the estimator coefficients of the independent variables, ε represents the error term, i represents the horizontal section, and finally t represents information about the period. In panel data analysis modeling, the dependent variable cannot be estimated at 100%. There

are also different factors affecting deaths caused by Covid-19. But in this study, variables that are thought to be most closely related to Covid-19 deaths were included in the analysis. In addition, the effect of variables that we cannot predict within the model or are not included in the model is summed up in the error term ε.

1.3. Determination of Panel Data Model Methods

When the literature is examined, it is seen that the cross-section and time series data are analyzed separately. When the researches are examined, it is seen that either only the cross-section data is used or only the time dimension of the data is concerned. However, due to the fact that there are many factors affecting a situation today, the necessity of multidimensional analyzes has emerged. To meet this emerging need, a panel data analysis method has emerged, which can examine the data both in terms of cross-section and time series. At the point reached in the studies, besides the multitude of data types, there are also many types of analysis that examine the data in question. The panel data analysis method, on the other hand, is based on three basic approaches. This three different approaches are encountered when modeling in a panel data study. These approaches are the random effects approach the constant effects approach and the pooled model approach. Different tests have been developed to determine which model the data set considered as part of the research fits. First, the F test is applied to see which is valid between the fixed effects model and the pooled model. If the fixed effects model is valid as a result of this test, the next step is to determine which of the random effects and fixed effects model is valid. The determination in question is made thanks to Hausman test statistics. After the necessary tests, the most suitable model for the data set is determined.

2. Analysis

The validity and reliability of the results obtained in panel data studies depend on the models providing basic assumptions. Firstly, it is desired that the model obtained does not have a multi-linear connection problem. Different methods and tests have been developed to test the multiple linear connection problem in a model. One of the methods in question is the calculation of variation Inflation Factor (VIF) values. Having a multiple linear connection problem in a model will result in the calculation of incorrect estimator coefficients (Gujarati, 2004: 342). In order to prevent this problem, care should be taken not to use variables with high correlation with each other within the same model. VIF values of the variables are calculated in order to detect multiple linear problems.

The way of calculating VIF values is obtained by using the formula ($1/1-R^2$) (Brien, 2007: 673). It has been stated that the mentioned VIF threshold value can be accepted as 4 in some studies, 5 or even 10 in some studies (Açıkgöz et al., 2015: 427).

Table 3. Variance Inflation Factor Values of the Variables

Variable	R^2	VIF Value
lnolum	0.35	1.53
lnasisayisi	0.66	2.94
lntest	0.62	2.63
dlnvaka	0.17	1.20

In Table 3, the VIF values of the variables to be used in the model are given. It was found that all variables included in the analysis had VIF values even lower than the smallest threshold value of 4. In other words, there are no variables in variables included in the model that will cause the problem of multiple linear connections. For this reason, all variables will be included in the analysis.

In panel data analysis, it is necessary to determine which of the three different approaches is best suited for the research in question. In order to determine this, it is necessary to apply the tests related to the developed model and examine the test results.

Table 4. Panel Data Model Identification Tests

Model / Test	Model 1 (Lnunderfivemortality)	
	Statistics Value	Probability Value
F-Fixed Effects	34.21	0.000
Hausman Test	24.82	0.15

The model was first tested to whether the pooled model was valid. The established H_0 hypothesis that unit effects are equal to zero has been rejected. In other words, the pooled model was found to be unsuitable. In order to determine which of the constant effects and random effects are valid, the Hausman test was also performed. The H_0 hypothesis, which tests the validity of the random-effects model, has been accepted and the model must be formed by the random effects approach. Another assumption that should not be in the model is the testing of the presence of autocorrelation.

3.1. Autocorrelation Test

Panel data models developed should not be autocorrelated. Effective estimator coefficients cannot be obtained in the case of autocorrelation in the model. Different tests have been developed to detect the presence of autocorrelation in Panel data models. To detect the presence of autocorrelation in the model developed in this study, Bhargava et al. The Durbin Watson test and the Baltagi-Wu LBI test will be applied.

Table 5. Autocorrelation Test Results in Models

Model / Test	Model 1 (Lnunderfivemortality)	
	Statistics Value	Probability Value
Baltagi-Wu's Local Best Fixed Test	**1.41**	**0.000**
Durbin-Watson Test	**1.37**	**0.000**

As seen in Table 5 above, autocorrelation test results of the model are given. According to the results of two different autocorrelation tests, the H_0 hypothesis for zero of the autocorrelation coefficients was rejected. On the other hand, these test values are asked to take a value close to 2. The fact that the test values are lower than 2 indicates that the model has been autocorrelated.

After testing the other assumptions of the model, the problem of autocorrelation in question will be corrected using robust correction tests. Another issue that should be considered in the model after testing the autocorrelation is whether there is a changing variance or not.

Table 6. Changing Variance Heteroskedasite

Model / Test	Model 1 (Lnunderfivemortality)	
	Chi2	p
W_0	**8.38**	**0.0000**
W_{50}	**7.95**	**0.000**
W_{10}	**7.96**	**0.000**

Models established in panel data modeling are based on constant variance. The fact that there is a changing variance in an established model causes the correct estimator coefficients to not be obtained. The H_0 hypothesis, established as “variance of units equals”, is rejected by comparing Levente, Brown, and Forsythe's Test statistics (W0, W50, and W10) with the Snedecor F table with the degree of freedom (5, 354). In other words, there is a problem of variance that changes in the model. Another basic assumption that needs to be checked in Panel data analysis is to check whether there is horizontal cross-section dependence.

Table 7. Cross Section Dependency Test

Test \ Model	Model 1 (Lnunderfivemortality)	
	Statistic	Prob
Breusch-Pagan LM	**156.28**	**0.000**
Pesaran Scaled LM	**25.79**	**0.000**
Pesaran CD	**10.14**	**0.000**

Finally, whether the resulting model meets the horizontal cross-section dependence was checked by 3 different tests. As a result of each test, the absence hypothesis, which was established as no horizontal cross-section dependence, was rejected. In other words, it was observed that there is a problem of horizontal cross-section adherence in the model. When it is checked whether the model meets the basic assumptions, it is seen that there is autocorrelation, changing variance, and cross-sectional dependencies. Driscoll and Kraay estimators from robust correction tests were used to eliminating these problems. Thanks to the robust correction test, the model was cleared of these errors and more resistant estimators were obtained.

Table 8. Panel Data Results for Driscoll and Kraay Standard Faulty Model 1

Dependent Variable: Lnunderfivemortality				
Method: Regression with Driscoll-Kraay standard errors				
Period: 2000-2019				
Horizontal Section: 49				
Total Number of Observations: 980				
Variable	**Coefficient**	**Standard Error**	**t-Statistic Value**	**Probability Value**
lnasisayisi	0.106	1.4429	-4.75	0.000
lntest	-0.3060	1.2425	2.47	0.01
dlnvaka	-1.284	5.342	13.64	0.000
C	-1.318	1.187	2.28	0.000
R^2 : 0.59	**F-statistic:** 125.29		**Prob (F-Statistic):** 0.0000	

Table 8 shows the result table for the model created. The values in question were obtained by purifying the errors of the basic assumptions. The number of deaths from Covid-19 was taken as the dependent variable in the model. Independent variables are the number of vaccines administered daily, the number of tests administered daily, and the number of cases detected daily. Whether the model created with these variables provided the basic assumptions was checked one by one. Autocorrelation, variance and cross-section dependence problems were found in the model. Driscoll and Kraay estimator of resistant robust tests were used to solve these problems. The values obtained with the applied robust correction test were cleared of errors and more effective predictive coefficients were obtained. When the significance of the model as a whole is examined, it is seen that the model is significant since the F statistic value is 125.29 and the F probability value is 0.000. The R^2 value of the model is seen to be 0.59. Thus, the percentage of explanation for dependent variables of the independent variables used in the model was found to be 0.59.

Although there are different reasons affecting the deaths from Covid-19, the main focus of this study is to reveal the relationships between the variables in question and Covid-19 deaths in line with the purpose of the study. It is seen that the test and case number variables are in a positive relationship with the variable of death from Covid-19. In case of an increase in the number of tests and cases detected, it is predicted that there may be an increase in the number of deaths from Covid-19. Increases in the number of tests performed enable more Covid-19 patients to be detected. At-risk patients diagnosed are treated early, preventing an increase in the number of deaths. At the same time, increasing the number of tests, patients diagnosed earlier are quarantined and the rate of transmission to society is also reduced. There is a negative relationship between the vaccine number variable and the number of deaths from Covid-19. In other words, it has been determined econometrically that the more the number of vaccines increases, the number of deaths from Covid-19 may decrease in that size.

It is seen that all the variables included in the model are significant at the 1% significance level. When the findings are examined, it is predicted that if each unit increase in the number of cases occurs, it may increase the deaths from Covid-19 by 0.13 units. On the other hand, it is seen that the increase in the number of tests has positively reflected in the fight against Covid-19. Thanks to the increase in the number of tests, it is predicted that it can increase the number of potential

patients and increase at the level of 0.21. Thanks to the test, it is predicted that there will be a decrease in mortality rates thanks to the application of the relevant treatment method to people diagnosed with Covid-19. On the other hand, it is predicted that if there is an increase by each unit in the number of vaccines administered, deaths from Covid-19 can be reduced by 0.57 units. The importance of vaccination activities in the fight against Covid-19 can be seen from the model obtained. It is predicted that both vaccines administered on average could save a human life. It is a fact that the main factor that ensures the transmission of Covid-19 and the mild transmission after the transmission is the vaccine. Vaccines have played and continue to play an important role in humanity's destiny. This situation is clearly seen in the Covid-19 outbreak. In this study, the importance of this has been scientifically demonstrated.

3. Conclusion and Recommendations

It is seen that the relationship between coovid-19 deaths and the number of vaccines and tests performed has not been clearly demonstrated in the literature to date. Examining the relationship between Covid-19 tests and the cases encountered, Çıraklı et al. (2021) measured how the number of tests could affect the cases. As a result of the study, they stated that if there is an increase in the number of tests, there will be no decrease in the number of cases. In this study, it was revealed econometrically how the deaths caused by covid-19 are related to the encountered cases, tests and vaccines.

The fight against the covid-19 vaccine, which affects the whole world, is very important. Different vaccines and drugs are being developed to combat the epidemic in question. Although different vaccines have been developed by different countries in the fight against the epidemic, an effective solution has not been found at the point reached. Although vaccine studies have been accelerated in order to intervene early in the epidemic, the effectiveness of vaccines has not been adequately measured. On the other hand, it is important to econometrically examine the relationship between vaccinations and deaths. In this study, the relationship between the deaths caused by Covid 19, the vaccine applied, the test applied and the number of cases encountered was examined econometrically**.**

The Covid-19 pandemic stands before us today as the biggest global health problem. When infectious diseases on a global scale are studied historically, Covid-19 can be seen as the fastest and most widely spread outbreak since the Spanish flu. The covid-19 pandemic has affected and continues to affect almost all countries of the world in many different areas, especially in the economic, social, and cultural areas. However, success has not yet been achieved in the face of the epidemic in question. The Covid-19

pandemic and its effects continue to be examined and investigated by researchers from different aspects. In this study, its relationship with the variables specified in the model was examined. As can be seen at the end of the research, the importance of the vaccine in the fight against Covid-19 was once again understood. When the results are examined, it is seen that both vaccines performed on average can prevent a death caused by Covid-19. On the other hand, it seems that increases in the number of tests lead to the detection of more potential Covid-19 patients. By detecting more patients, it allows you to detect more Covid-19-related deaths in the deaths that occur.

The contribution of vaccination to human health is an undeniable fact. Childhood vaccinations have prevented many children from dying and being disabled. The last century of human history has experienced this by living. Today, child mortality rates are quite high due to the lack of vaccines such as measles, pertussis, diphtheria, mumps, smallpox, tetanus, cholera, hepatitis B, and yellow fever in still underdeveloped countries. Humanity's salvation from these diseases has been through vaccination. In the Covid-19 epidemic, the most important weapon of struggle is vaccines. As a result of this study, the importance of this and the positive effect of the vaccine on deaths were revealed.

References

Açıkgöz, E., Uygurtürk, H. ve Korkmaz, T. (2015). Analysis of factors affecting growth of pension mutual funds in Turkey, International Journal of Economics and Financial Issues, 5(2): 427- 433.

Brien, R.M., (2007). A Caution Regarding Rules of Thumb for Variance Inflation Factors, Quality and Quantity, 41(5): 673-690.

Cirakli, U., Dogan, I. & Gozlu, M. The Relationship Between COVID-19 Cases and COVID-19 Testing: a Panel Data Analysis on OECD Countries. *J Knowl Econ* (2021). https://doi.org/10.1007/s13132-021-00792-z

Gennaro FD, Pizzol D, Marotta C, (2020), Coronavirus Diseases (COVID-19) Current Status and Future Perspectives: A Narrative Review, Int. J. Environ. Res. Public Health, 1(7): 26-90.

Gujarati, D.N. (2004). Basic Econometrics, McGraw Hill: New York.

https://covid19.who.int/ Date of Access: 10.05.2021.

https://covid19.who.int/region/amro/country/us Date of Access: 11.05.2021.

https://covid19.who.int/region/euro/country/gb Date of Access: 11.05.2021.

Lipsitch M, Swerdlow DL, Finelli L., (2020), Defining The Epidemiology Of COVID-19–Studies Needed. N Engl J Med, 382:1194–1196.

World Health Organization (WHO)., 2020a. WHO coronavirus disease (COVID-19) dashboard, https://covid19.who.int/ Date of access: 10.05.2021.