A Renewal within the Scope of Transformation in Health: Central Hospital Appointment System (CHAS)

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ABSTRACT: *Central hospital appointment system for hospitals assist the time management of healthcare personnel and patients as well as increase the service and patient satisfaction quality. In this research, it has been aimed to determine the satisfaction of users making appointments over the central hospital appointment system in terms of the tools and demographic characteristics. In the research, a conceptual frame has been established through a national and an international literature search on central hospital appointment system which is considered as a renewal in the transformation in health. The questionnaire created as a result of the literature search has been conducted with the people who have used the central hospital appointment system. Analyses have been conducted and evaluations have been conducted according to the research data obtained. Because there are many users using the central hospital appointment system in Turkey, users coming to public hospitals in Ankara within the time frame determined have been included in the research sample. This study has been done in a hospital in service in the Turkey's capital Ankara between 25.05.2016-06.07.2016 applying to the Central hospital appointment system. During the research period in average daily 27 patients have been applied to the central hospital appointment system to the research hospital which is in service in Ankara. During the research period totally 1134 patient have applied to the central hospital appointment system. An questionnaire was applied to 280 of the patients who have applied to the central hospital appointment system. Using the data obtained from the 244 patients whose questionnaires were acceptable, relationship between the variables has been analyzed. Data have been evaluated through descriptive statistics methods. The frequency values of the data obtained as a result of the questionnaire have been centered. In the analysis of the hypotheses, single direction variance analysis (ANOVA), T-Test and correlation coefficient have been used. 48.0% of the participants are female and 52.0% are male. 46.7% of participants are between the ages of 18-28, 13.5% are between the ages of 29-39, 16.8% are between the ages of 40-50, 23.0% are between the ages of 51-61. In terms of their education, 13.9% are secondary education graduates, 36.1 are high school graduates, 3.7% are associate degree graduates and 46.3% are bachelor's degree graduates. While the satisfaction average of those making appointments on the internet is 3.017, the average of those making appointments on the telephone is 3.412. According to research results, there is a significant difference between secondary education graduates ($\overline{x}$ =4.155; p<0,05), associate degree graduates ($\overline{x}$ =3.474; p<0,05) and bachelor's degree graduates ($\overline{x}$ =3.400; p<0,05). While there are significant differences in terms of satisfaction between the people between the ages of 18-28 ($\overline{x}$ =3.536; p<0,05) and 51 and older ($\overline{x}$ =4.546; p<0,05), no significant difference was found between the satisfaction rates of males and females. According to research results, there is a significant difference between users making appointment on the internet and on the telephone. Moreover, it has been concluded that there are significant differences between the demographic characteristics (gender, age, education) of people who make appointments through the central hospital appointment system and their levels of satisfaction.*
Keywords: *Transformation in Health, Renewal, Health Sector, Central Hospital Appointment System (CHAS), Patient.*

I. INTRODUCTION

With the changes in world conditions, the expectation and needs of people have also changed, the expectations of people have been revealed and thus the interactions between people have increased. As a result of all these changes, service businesses have gained importance and became widespread [1]. With the increase in population, problems occur in service businesses from time to time. Many renewal activities are conducted within the transformation of health in order to solve these problems, increase quality in health and ensure equality of opportunities. Renewal in health activities are conducted within the transformation in health project. With this project, it is aimed to conduct productive, effective and equal health services. Within the transformation in health program, it is aimed to provide human centered, sustainable, participant, agreeable and competitive service. Central hospital appointment system within the transformation in health project has been

put in practice in order to prevent time loss of health service users, to ensure easier access to health services and to increase service quality and satisfaction. Ministry of Health has implemented the central hospital appointment system in order to offer better service to citizens. Health service users who want to make an appointment through the central hospital appointment system can easily make an appointment from a desired physician via their telephones or internet on any given time of the day.

Transformation in Health

It is a situation that enables the individual to make correct decisions about himself and his surroundings through the compatible activity of the head and the body about health, social and physical environment [2]. The true objective of health is to prevent the appearance of environmental, social, parental, individual and biological factors that can prevent the advancement of humanity or to completely wipe them out [3].

There have been developments in the health policies in Turkey from time to time. Among these developments; Ministry of Health was established between the years 1920 and 1938 and thus institutions that could provide new health services were established in cities and fight against widespread contagious diseases were initiated [4]. Between the years 1939-1960, the health situation of the country deteriorated due the war [5], and the monopoly of the Ministry of Health was annihilated with the Work Safety Act in 1945 [6]. Between the years 1961 and 1980, the referral chain was established with the state hospitals being supported by public healthcare laboratories [7] and with the Socializing of Healthcare Services Act, it has been aimed to take healthcare services to everybody [8]. From 1980 to the 2000s, private healthcare institutions were encouraged [9] and the green card implementation was initiated in 1992 for people with a small income [10].

One other important structure of a social state is the healthcare service [11]. The Turkish Republic Constitution states the citizens of the state have a right to social security and that this right is under the responsibility of the state [12]. In order to develop and improve healthcare services with the awareness of a social state understanding, transformation in health program was initiated by the Ministry of Health. The objective of this program is to organize, finance and offer fair and effective healthcare services [13]. Ministry of Health has established and continues to establish many renewals and applications within the transformation of health. Many renewals such as rationalist use of medication, gradual referral chain, accessible healthcare services, and central hospital appointment system have been implemented.

Renewal

Terminologically, it refers to an innovation or the adaptation of development of new behaviors and ideas [14]. Renewal also includes the distribution of the current information and the creation of new information [15]. As a concept, renewal is a time and process [16]. The radical changes caused by renewals or innovations within an economic cycle are the true components of development and enhancement [17]. Institutions need innovations in order for institutions to adapt to the renewal and changes within the information age [18].

Among services, the healthcare sector encounters many difficulties in the healthcare services and needs to offer effective expertise, services and renewals in order to meet the demand [19]. Healthcare systems appear as a result of healthcare services offered to citizens by each country depending on its socio-economic, cultural and socio-demographic characteristics [20]. Each country needs to conduct transformation activities in order to offer effective and socially acceptable healthcare services at an affordable fee [21]. There are many renewal activities that have been conducted or likely to be conducted in Turkey in healthcare and other fields. When the renewal activities are looked at, it is seen that many activities are conducted in Turkey within the transformation in health program. One of these is the central hospital appointment system.

Central Hospital Appointment System

The Turkish Ministry of Health conducts many activities in terms of creating a healthcare information system that consists of the entire dimensions of the healthcare sector [22] and one of the important branches of transformation is the e-transformation activities. With e-transformation, it is aimed to ensure the flow of data, analysis of data, saving of resources and to increase effectiveness through electronic individual health records [23]. Within the e-transformation activities, central hospital appointment system has been established in order to enable patients to access healthcare services in a short period of time. With this system, health service users can make appointments at state hospitals and dental health centers through the internet and telephone with an exception of university and private hospitals [24]. The objective of this system is to ensure appointments through live operators at call centers in order to improve the healthcare services [25]. The call centers can be reached by telephones as well as through the internet. Central hospital appointment system within healthcare services are services where productivity and timely access intersect. Timely access to service is an important determiner in terms of patient satisfaction [26].

The time spent in hospitals for treatment is rather long and there are uncertainties in the waiting periods. With this system, access to healthcare services is easier and services are comfortable. Thus, a more

effective healthcare system is established. The patient reception line and time is shortened once the work load of healthcare staff is less. Unnecessary paper waste is prevented. Each patient can predict when the turn will be theirs. Accumulation in the waiting lounges decrease and patients can access physicians in a shorter period of time without wasting unnecessary time.

II. THE METHODOLOGY OF THE RESEARCH

The Aim of the Research
The aim of the research is to determine the relationship between the demographic characteristics of central hospital appointment system users and their levels of satisfaction as well as to reveal the method most used when accessing the system. Within the research, it has been aimed to determine whether there is a significant relationship between demographic characteristics and levels of satisfaction and whether there is a difference of satisfaction between users preferring the telephone and the internet. In accordance with these aims, the questions "are there differences in levels of satisfaction among those making appointments over the telephone and those making appointments over the internet?" and "are there differences between the demographic characteristics of central hospital appointment system users and their levels of satisfaction?" have been determined as the problem statements of the research.

The Method of the Research
In order to obtain data, the satisfaction scale in the Turkish Ministry of Health Application Manual of the Satisfaction Surveys (2015) has been made use of. This scale has been adapted to the research after the necessary literature search. The survey form developed consists of two parts. The first part contains questions on the demographic information of participants and the second part contains questions on determining satisfaction. The questions in the second part that measure satisfaction have been graded according to the five point Likert scale (from completely agree to completely disagree). 244 people using the central hospital appointment system within the city of Ankara constitute the universe of the research. As the study has been done only in Ankara, this study is limited to the participants in Ankara. Data have been obtained between the dates 25.05.2016 – 06.07.2016. During the gathering of research data, instead of the entire universe, the sample representing the universe has been selected to conduct the research. The people to make up the sample have been determined through simple random sampling method. In order to reach the sample number, a face to face survey has been conducted with 280 people who have been determined as central hospital appointment system users. Because 36 of the questionnaire forms were inappropriate, 244 of them were taken into consideration. It has been identified that during the research period daily in average 27 patients have been applied to the central hospital appointment system to the research hospital. During the research period totally 1134 patient have applied to the central hospital appointment system.

When the size of the universe is taken as 1134, alpha 0.05 is 88 at ±7.08 error margin and alpha 0.01 is 143 at ±10 error margin is considered sufficient [27]. It can be accepted that the number of samples is sufficient in representing the universe. The analysis of the data in the research has been conducted in a statistic program. Reliability analysis has been applied to the survey questions and the study has been initiated upon the reliable outcome. During the evaluation of research data, T-Test and One Way Variance Analysis (ANOVA) has been used in the comparison of data as well as defining statistical methods (average, standard deviation). T-Test has been used to check whether there is a difference between two independent groups and One Way Variance Analysis (ANOVA) have been used to check whether there is a difference between more than two independent group. Moreover, in cases of a difference, a Tukey Test has been conducted to determine the cause of the difference. The reliability of the research has been determined through a Cronbach Alpha Coefficient. The satisfaction scale Cronbach Alpha Coefficient in the research has been found to be 0.80. The value found indicates that the scale is highly reliable.

Hypotheses of the Research
In accordance with the aim of the research, hypotheses have been developed in order to determine the relationships between the variables. The research hypotheses have been developed as the following. H_1: The levels of satisfaction of those making appointments on the telephone and those making appointments over the internet demonstrate differences. H_2: There is a significant difference between the education of central hospital appointment system users and their levels of satisfaction. H_3: There is a significant difference between the age of central hospital appointment system users and their levels of satisfaction. H_4: There is a significant difference between the gender of central hospital appointment system users and their levels of satisfaction.

III. FINDINGS OF THE RESEARCH

52.0% of research participants are male and 48.0% are females. 46.7% of participants are between the ages of 18-28, 13.5% of participants are between the ages of 29-39, 16.8% of participants are between the ages of 40-50, 23.0% of participants are between the ages of 51-61. 13.9% of the central hospital appointment system users' secondary school graduates, 36.1% high school graduates, 3.7% associate degree graduates and 46.35% are bachelor's degree graduates. According to the data obtained, it has been revealed that 33.2% have been introduced to the central appointment system on the internet, 50.0% through recommendation and 16.8% have been introduced to the system by other.

Table. 1. Satisfactions of Research Participants on the Central Hospital Appointment System

Satisfaction Levels of Patients on a Question Base	N	SD	$\bar{x}$
I can access any hospital I desire when I call the call center.	244	1.057	3.857
I don't spend too much time at the hospital because I have an appointment.	244	1.026	3.877
I can select my own doctor when I call the call center.	244	1.203	3.807
I can get necessary information on my doctor and hospital when I call the call center.	244	1.034	3.393
The web site is fast and user-friendly.	244	.867	3.742
The knowledge of the call center staff is sufficient to answer the questions and problems of patients.	244	1.063	3.598
They provide feedback when there is a change in my appointment.	244	1.052	3.262
I am happy with the quality of the service provided.	244	.793	3.996
I recommend others to use the call center.	244	.654	4.193
I like the attitude of the call center.	244	.838	4.021
I am happy with their feedback in case of any issues.	244	.945	3.582
I am happy with the service quality.	244	.798	3.840
I am happy with the service periods of the call center staff.	244	.898	3.857
I can easily access at any time I want.	244	1.151	3.791

The average of the answers given by central hospital appointment system users on satisfaction can be seen on table 1. According to table 1, the average of the statements I don't spend too much time at the hospital because I have an appointment (3.877), I am happy with the quality of the service provided (3.995), I recommend others to use the call center (4.192) are high. According to the answers of those using the central hospital appointment system, it is concluded that people save time because of this system and they perceive the service to be of good quality. According to the answers of the participants, it is concluded that they are generally satisfied with the central hospital appointment system.

In order to test the hypotheses in the research, T-Test, One Way Variance Analysis (ANOVA) and Tukey Test have been conducted.

Table 2: T-Test on the Patients' Satisfaction Levels getting an appointment from the Internet and Telephone

Accessing Method to the hospital appointment system	N	$\bar{x}$	SD	t	p
Internet	49	3.017	.0664		.000
Telephone	195	3.412	.0410	2.853	.000

According to the results of the T-Test conducted in order to determine the difference between the methods central hospital appointment system users select and their satisfaction, there is a significant difference between the satisfaction of those accessing the system on the internet and on the telephone (t=2.853; p<0.05). According to this, the average satisfaction of those making appointment on the internet (3.017) is significantly higher than those making appointment on the telephone (3.412). It is seen that central hospital appointment system users are more satisfied when making appointment on the telephone. Because the rate of internet usage in Turkey among some (elderly) is low, accessing by telephone being easier and safer might have increased satisfaction levels. According to this result, the H_1 hypothesis of the research has been accepted.

Table 3: Relation between the Education Levels and Satisfaction Levels

Education Level	N	$\overline{x}$	SD	F	p
Secondary School	34	4.155	.1120		.000
High school	88	4.049	.0535	21.683	.816
Higher Education (2 year)	9	3.474	.0714		.005
Bachelor Degree	113	3.400	.0664		.000
Total	244				.000

One Way Variance Analysis (ANOVA) has been conducted in the research in order to determine whether there is a difference between the education levels of central hospital appointment system users and their satisfaction. In order to determine the groups in which there are differences, a Tukey Test has been conducted. According to analysis results, while significant differences were observed between secondary school graduates ($\overline{x}$=4.155; p<0.05) and associate degree graduates ($\overline{x}$=3.474; p<0.05) and bachelor's degree graduates ($\overline{x}$ =3.400; p<0.05), no significant differences were observed with high school graduates ($\overline{x}$=4.049; p>0.05). According to this result, the satisfaction levels of secondary and high school graduates on central hospital appointment system is higher. The H2 hypothesis we had determined within the research is partially accepted.

Table 4: Relation between Age and Satisfaction Levels

Age	N	$\overline{x}$	SD	F	p
18-28	114	3.536	.6725		.000
29-39	33	3.773	.1984		.091
40-50	41	3.373	.3078	59.354	.296
51 and over	56	4.546	.3406		.000
Total	244				

An ANOVA Test has been conducted in order to determine whether there is a significant difference between the age range of central hospital appointment system users and their satisfaction levels and a Tukey Test has been conducted in order to determine the differences. As a result of the analysis, while a significant difference is observed between age groups 18-28 ($\overline{x}$=3.536; p<0.05) and 51 and above ($\overline{x}$=4.546; p<0.05) in terms of satisfaction, no significant difference is seen between the age groups 29-39 ($\overline{x}$=3.773; p>0.05) and 40-50 ($\overline{x}$=3.373; p>0.05). It is seen that the satisfaction of age group 51 and above is higher than the other age groups in terms of the central appointment system. H$_3$ hypothesis of the research is partially accepted.

Table 5: Relation between Gender and Satisfaction Levels

Gender	N	$\overline{x}$	SD	F	t	p
Female	117	3.769	.0670			
Male	127	3.776	.0540	19.560	-.074	.941
Total	244					

According to the results of the Independent Sample T-Test conducted in order to determine whether there is a significant difference between the genders of central hospital appointment system users and their satisfaction levels, there is no significant difference between females (3.769) and (3.776) males (p>0.05). According to this, no significant difference was found in the female satisfaction levels and male satisfaction levels. H$_4$ hypothesis of the research is refused.

IV. CONCLUSION AND SUGGESTIONS

According to the research findings, the satisfaction levels of patients using central hospital appointment system are very high. In the research, significant results have been found between demographic characteristics and satisfaction. According to these results, the satisfaction levels of those accessing the system on the telephone is higher and there are significant differences between the satisfaction levels of secondary school graduates and associate and bachelor's degree graduates. In terms of age groups, there are significant differences between 18-28 and 51 and above age groups. No significant difference was found between gender and satisfaction levels.

In the evaluation conducted according to the research results, activities should be conducted on patient satisfaction, it should be developed according to the data obtained from the central hospital appointment system users, the system problems and flaws should be eliminated. Obstacles in the offering of productive and effective healthcare services in the presentation of the central hospital appointment system should be eliminated. According to the questionnaires conducted with participants, it is seen that the system has many advantages.

Patients not waiting unnecessarily, having a more peaceful and calm environment in the hospitals, having an easier examination process, and having the right to choose a hospital and physician are among the advantages of the system. Although the advantages of the system are seen, it also has disadvantages. The system should be improved and developed and whilst doing so, the following should be considered; the system should be more comprehensive for the visually and hearing impaired, the system connection period should be shorter, not giving appointments to future dates on appointments made on the system and enabling appointments on fields requiring expertise can be considered among the renewal activities that could be conducted.

Consent
It is not applicable.
Ethical Approval
It is not applicable.
Competing Interests
Authors have declared that no competing interests exist.

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