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Perceptions of Patient Safety Culture of Dentistry Students and Dentists in a Faculty of Dentistry

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Abstract

Aim: Recently, the importance of patient safety culture in dentistry has been discussed. This study aims to evaluate the perceptions of dentists and dentistry students about patient safety culture.

Methods: The population of this cross-sectional study consisted of senior lecturers and research assistants (N=109) and 4th and 5th year dentistry students (N=197) at the Faculty of Dentistry Hospital. 107 dentists and 177 students, agreed to voluntarily participate in the study. Data were collected by using Turkish version of the "Agency for Healthcare Research and Quality Hospital Survey on Patient Safety Culture". SPSS 22 program was used to evaluate the data.

Results: The mean of the total score of the Scale was found as "moderate" (X=2.81). Overall, "teamwork within units" had the highest average (X=3.16), "frequency of event reported" had the

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lowest score ($X=2.41$). Dentists had a higher average than students in all dimensions except for "teamwork across hospital units," "hospital handoffs and transitions," and "staff." 72.1% of dentists and 66.7% of students have not received any courses or training on patient safety issues. Overall, 83.7% of dentists and 92% of students have not reported any medical errors so far. **Conclusion:** Participants' perceptions of the patient safety culture were "moderate", that is, the average score of the participants means neither high nor low. It is suggested that hospital managers should establish a more positive patient safety culture.

Keywords: Patient Safety Culture, Dentist, Dental Students, AHRQ, Patient Safety Culture Hospital Questionnaire

Introduction

The concept of patient safety in healthcare has become an increasingly important issue in the literature. The ultimate goal of all health services is to provide safe, effective care (Bailey & Dungarwalla 2021). An important component of health services is patient safety. It is known that strengthening the patient safety culture in health institutions is important for improving the quality of care (Reis et al. 2018). Patient safety aims to prevent healthcare-related errors and reduce the damage caused by these errors. One of the ways to prevent these mistakes in health care is to create a culture of patient safety. The establishment and dissemination of systems related to patient safety culture in health institutions will ensure the establishment of systems to prevent medical errors and thus prevent harm to patients and health workers (Gündoğdu and Bahçecik, 2012)

In 1999, the American Institute of Medicine (IOM) published a report on patient safety and medical errors titled "To Err Is Human: Building a Safer Health System". According to the report, in two studies with hospitalized patients, the incidence of errors during medical care was 2.9% and 3.7%, and 58% and 53% of these errors were defined as preventable medical errors. The report also states that approximately 44,000-98,000 Americans die annually due to medical errors (Kohn et al., 2000). As a result of these striking figures, the World Health Organization (WHO) revealed the importance of medical errors in health services, drew attention to the problem of patient safety with its report published in 2004 and established a patient safety unit. According to the report, in developed countries such as Australia, the UK and Canada, the problem of medical errors or patient safety was more than expected, and these errors were mostly system-related and similar. It also called on all member states to develop strategies in this regard. Thus, practices for patient safety

have begun to be addressed and carried out more systematically worldwide in all areas of health services, including dentistry (WHO, 2004).

Dentistry clearly aims to provide safe dental care for overall health, minimize risks, and establish a culture of patient safety (Pemberton 2014). It is stated that the literature on patient safety culture in dentistry has developed later than the literature in medicine and still needs to be developed (Pemberton 2014; Al-Mahalawy et al (2020). In their systematic review, Ensaldó-Carrasco et al. (2021) concluded that patient safety research is largely unexplored in dentistry. Al-Mahalawy et al. (2020) researched the term "patient safety" in PubMed by the end of June 2019 and found that <1.5% of the publications of patient safety studies were in the field of dentistry. The main reason for this condition is that the overall morbidity and mortality associated with dentistry is less than that of medicine. The harm done to the patient in dentistry may not be as fatal as in medicine, but incidents that threaten patient safety can occur and these can adversely affect the health of the patient (Pemberton 2014; Al Sweleh et al. 2018). Obadan et al. (2015) have shown that adverse events are also common in dental practice. They conducted a retrospective review of dental adverse events reported in the literature. The authors reviewed 270 adverse event cases in which 24.4% of cases caused permanent damage and 11.1% caused patient mortality. Another recent study in Finland identified the two most common types of patient safety events related to dentomaxillofacial radiology as laboratory, medical imaging, or other patient-examination-related events and events related to information flow or control.

In fact, patient safety incidents involving medical errors have become an important issue in dentistry, especially in developed countries (Chohan et al. 2022). In the UK, "false tooth extraction" in 2015 was explicitly incorporated into the "Never Events" (NE) framework by the National Health Service Development (NHSI). NEs are defined as events that are classified as a "Serious Event" (SE) type and are fully preventable when all available measures are taken. The NHSI's data indicated that a "false tooth extraction case" was the most commonly reported "never event". (NHS England 2015; Chohan et al. 2022). Yamalik and Pérez (2012) have argued that the nature of adverse events reported in the medical literature is different from those seen in dentistry, and that significant adverse events in dentistry are rarely life-threatening. It was evaluated in 3 main categories as error (40%), accident (20%) and complication (40%). In dentistry, it is of great importance to identify and categorize errors in order to keep application errors at a minimum level and to ensure patient safety. (Kandemir, 1991). Most of the errors in the

oral and maxillofacial surgery unit are related to tooth extraction. Errors such as the roots remaining in the mouth (*radix relicta*), leaving the cyst formed after extraction, not being able to control the sinus opened after tooth extraction, etc. are among the frequently encountered errors in this unit. Almost all of the errors in the prosthetic dental treatment unit are made during the construction of fixed prosthesis (crown-bridge). However, damage to the pulp during cutting, devitalization of the supporting teeth, fixed prosthesis before the age of 18, problems caused by high fixed prosthesis (temporomandibular joint-TMJ) and damage to neighboring teeth during the preparation of teeth are also common errors in this unit (Halıcı 1990). The most common mistake in the orthodontic unit is the extraction of canine teeth in the vestibule. Replacing the impacted tooth in the arch with another tooth is one of the common errors in this unit (Abuhan, 2014: 8-10). Black & Bowie (2017) worked with 250 dentists and at the end of their study they stated that the following events may be considered as adverse or never events related to dentistry. *“Not checking past medical history; inhaling or swallowing a crown or tool; restore wrong tooth; lack of oxygen and/or emergency medication; allergic reaction due to not checking the medical history; Removal of the wrong tooth; iatrogenic damage to an adjacent tooth; delay in routine shipment; delay in emergency dispatch; using dirty tools; treating the wrong patient”* (Black & Bowie 2017).

When patient safety studies in dentistry are examined on an international basis, dentistry-related organizations such as the World Federation of Dentists (FDI), the European Council of Dentists (CED), the Annapolis Development Center (ADS) and the Safety Asepsis and Prevention Organization - OSAP have taken a number of initiatives to improve the safety of patients receiving services from dental clinics. The Spanish Dental Association (SDA) established the Spanish Observatory for Dental Patient Safety (Observatorio Español de Seguridad del Paciente Odontológico-OESPO) and adopted the nationwide "Dental Clinical Risk Prevention Plan" (Perea-Pérez et al 2020). With this plan, patient safety has become even more important in the field of dentistry.

The determination of quality and accreditation standards carried out within the scope of patient safety studies and oral and dental health in dentistry in Turkey is quite new. In this context, the first step was taken in 2009 and the "Quality Standards in Health-Oral and Dental Health Centers" (SKS-ADSM) set consisting of 51 standards was published. With the regulation made in 2011, these standards were increased to 165. The revised standards in 2015 and 2017 were published as SAS-ADSH booklets through TUSKA in 2018 (TUSEB, 2018). Within these

standards, important concepts such as patient and employee safety committee, employee health, patient and employee safety risk management, negative event notification system, etc. are included.

The concept of patient safety culture in dentistry has been discussed recently (Chohan et al 2022). Pemberton (2014) states four strategies to develop safer healthcare “1. *Identifying threats to patient safety by incident reporting.* 2. *Evaluating incidents and identifying best practice.* 3. *Communication and education about patient safety.* 4. *Building a safety culture, this means a priority is given to patient safety and commitment to overall continuous improvement within the workplace*” (Pemberton 2014). The most widely used tool in the world to measure patient safety culture is the "Hospital Survey of Patient Safety Culture" (HSPSC) developed by the Agency for Healthcare Research and Quality (AHRQ). The questionnaire consists of 12 dimensions. Although scientific studies on patient safety are becoming increasingly widespread, it is seen that most of these studies are carried out with physicians and nurses in hospitals. At the international and national level, there are few studies evaluating the culture of patient safety in dentistry. Developing a safety culture provides tools to manage risks in healthcare organizations. The first step in developing a patient safety culture is to investigate the current situation in an organization (Rizvan et al 2021). The aim of this study is to evaluate dentists and students' perceptions of patient safety culture.

1. RESEARCH METHODOLOGY

Sampling and Data Collection: The population of this cross-sectional study was determined as senior lecturers and research assistants (N=109) and 4th and 5th year students of dentistry (N=197) working at the Faculty of Dentistry Hospital in Sivas, Turkiye. Senior lecturers include assistant professors, associate professors and professors who have completed specialized training in dentistry. Research assistants refer to dentists who continue their specialized training in dentistry. Dentistry 4th and 5th year students are students who take an active part in patient examination and treatment under the supervision of a senior lecturer or research assistant. Questionnaires were distributed to a total of 306 participants. A total of 284 participants, 107 dentists and 177 students agreed to participate in the study. Senior lecturers and research assistants make up the "**dentist**" group, while the "**student**" group consists of 4th and 5th grade students. Dentists and students were given a self-administered questionnaire through face-to-face communication. Participants

were informed about the purpose of the study and their questions, if any, were answered. It was emphasized that the participation in the study was voluntary, and that the data were confidential and private. Participants who did not return the survey were contacted for the second time. The data were collected between 01.12.2019-31.01.2020. The questionnaire was distributed to dentistry 4th and 5th grade students (N=197) and dentists (N=109). Almost all dentists (N = 107) agreed to participate in the study. The participation rate of the students was also quite high, with 177 out of 197 students (N=284) (89.8%).

Data Collection Tools: The data was collected through the "Patient Safety Culture Hospital Survey" (HSPSC) developed by the "Health Research and Quality Agency" (AHRQ) in 2004. The validity and reliability of the Turkish version of HSPSC was realized by Bodur and Filiz in 2010. This is a 5-point Likert scale, consisting of 42 questions and 12 dimensions, consisting of five points (which I strongly disagree with). In the evaluation of the scale, the questions in A5, A7, A8, A10, A12, A14, A16, A17, B3, B4, C6, F2, F3, F5, F6, F7, F9 and F11 were coded inversely. In addition, since the hospital where the research was conducted was a day hospital, two questions related to shift work, F5 and F11, were deleted from the questionnaire and 40 items were applied.

Data analysis was performed with SPSS 22.0. statistics (percentage, mean, SD), "independent t test" were used for the analysis. $P < 0.05$ was used for statistical significance. HSPSC's Cronbach's Alpha was 0.899.

Ethical Issues: Before starting the study, the approval of "Sivas Cumhuriyet University Non-Invasive Clinical Research Ethics Committee" dated 13.11.2019 and numbered 2019-11/26 was obtained. In addition, the necessary written permissions were obtained from the Dean's Office of the Hospital. In addition, written permission was obtained from the author of the scale in order to use the scale in the research.

2. FINDINGS

Table 1 Distribution of Demographic Characteristics of Participants

Age (N= 278)	Number	%
20-23 years	119	42.8
24-26 years	94	33.8
27-29 years	35	12.6
30+ years	30	10.8
Gender (N= 278)		
Female	164	59.0
Male	114	41.0
Marital Status (N= 278)		
Married	29	10.4
Single	249	89.6
Position (N= 278)		
Faculty Members (Prof., Assoc. Prof. Dr. & Asst. Prof. Dr.)	18	6.5
Research Assistant	86	30.9
Student	174	62.6
School Student Year (N=174)		
4th year	92	52.9
5th year	82	47.1
Working Years of Dentists (N=107)		
Less than 5 years	74	69.2
More than 5 years	30	28.0
No answer	3	2.8
Year of Dentists Working in the Same Hospital (N=107)		
Less than 5 years	83	77.6
More than 5 years	19	17.8
no answer	5	4.6

In Table 1, it is seen that 59% of the participants were women, 89.6% were single, 62.6% were students and 52.9% were 4th grade students. In addition, 69.2% of dentists have been in their profession for less than 5 years and 77.6% have been working in the same hospital for less than 5 years.

Table 2 Participants' Encountering and Reporting a Medical Error

Have you encountered a medical error? (N=278)	Number	Percentage (%)
Yes	61	21.9
No	217	78.1
Have You Reported the Medical Error You Encountered? (N=61)		
Yes	21	34.4
No	40	65.6
Sum	61	100.0

It was determined that 21.9% (61) of the participants had encountered medical errors in their working life to date, but 65.6% of those who encountered medical errors did not report the medical error they encountered (Table 2).

Table 3 Number of Medical Errors Reported by Participants Regarding Patient Safety

	Number	%
Never	247	88.8
1-2 incident reports	21	7.6
3-5 incident reports	8	2.9
11-20 incident reports	1	0.4
Report 20 or more incidents	1	0.4
Sum	278	100.0

It was determined that 88.8% of the participants had not reported any medical errors in their working life to date (Table 3).

Table 4 Status of Patient Safety Training Participants

Have you received any training on patient safety?	Dentist		Student	
	N	%	N	%
Yes	29	27.9	58	33.3
No	75	72.1	116	66.7
Sum	104	100	174	100

It was determined that 72.1% of dentists and 66.7% of students did not receive any training on patient safety issues (Table 4).

Table 5 HSBC Average Total Score of Participants and Average Total Score by Dimensions

Dimensions	Min.	Max.	Say	S.D.
General perceptions of patient safety	1.00	5.00	2.98	0.738
Frequency of reported event	1.00	5.00	2.41	0.931
Teamwork between hospital units	1.00	5.00	3.04	0.695
Handoffs and transition	1.00	5.00	2.92	0.869
Executive expectations and actions that promote safety	1.00	5.00	2.76	0.798
Organizational learning and continuous improvement	1.00	5.00	2.79	0.715
Teamwork within units	1.00	5.00	3.16	0.866
Openness of communication	1.00	5.00	2.67	0.845
Feedback and communication about the error	1.00	5.00	3.03	0.766
Non-punitive response to errors	1.00	5.00	2.57	0.722
Personnel	1.25	4.50	3.02	0.492
Management support for patient safety	1.00	5.00	2.64	0.711
Total Points	1.48	4.21	2.81	0.448

It was determined that the participants' perceptions of patient safety culture were moderate ($X=2.81$). The dimensions "Teamwork within units" and "Teamwork between hospital units" had the highest average score, with $X=3.16$ and $X=3.04$, respectively, while "reported incident frequency" and "Non-punitive response to errors" had the lowest score with $X=2.41$ and $X=2.57$, respectively.

Table 6 Perceptions of Participants According to Their Positions According to HSPSC Dimensions

	Participant	N	Say	Standard deviation	t	Df	Sig. (2-tailed)
General perceptions of patient safety	Dentist	104	3.18	0.793	3.712	276	0.000
	Student	174	2.85	0.675			
Frequency of reported event	Dentist	104	2.56	1.054	2.055	276	0.041
	Student	174	2.33	0.840			
Teamwork between hospital units	Dentist	104	2.98	0.782	-1.096	276	0.274
	Student	174	3.07	0.637			
Hospital handoffs and transitions	Dentist	104	2.81	0.932	-1.637	276	0.103
	Student	174	2.98	0.825			
Executive expectations and actions that promote safety	Dentist	104	3.02	0.885	4.227	276	0.000
	Student	174	2.61	0.701			
Organizational learning and continuous improvement	Dentist	104	2.90	0.805	1.912	276	0.057
	Student	174	2.73	0.650			
Teamwork within units	Dentist	104	3.36	0.833	3.068	276	0.002
	Student	174	3.04	0.865			
Openness of communication	Dentist	104	3.03	0.861	5.951	276	0.000
	Student	174	2.45	0.756			
Feedback and communication about the error	Dentist	104	3.20	0.823	2.889	276	0.004
	Student	174	2.93	0.713			
Non-punitive response to errors	Dentist	104	2.70	0.751	2.325	276	0.021
	Student	174	2.50	0.694			
Personnel	Dentist	104	2.95	0.54980	-1.998	276	0.047
	Student	174	3.07	0.45061			
Management Support for Patient Safety	Dentist	104	2.70	0.85005	1.030	276	0.304
	Student	174	2,61	,61357			
Total Points	Dentist	104	2.93	.504	3.616	276	.000
	Student	174	2.73	.395			

Table 6 shows that dentists have a higher average score than students in all sizes except "teamwork across hospital units," "hospital handoffs and transitions," and "staff." Participants' perceptions of the dimensions of HSPSC showed statistically significant differences between "Teamwork between hospital units" and "hospital handoffs and transitions".

The results showed that dentists had the highest scores in the dimensions of "Cross-unit teamwork" ($X=3.36$) and "Feedback and communication about the error" ($X=3.20$), while they had the lowest score in the dimensions of "reported frequency of events" ($X=2.56$). Students had the highest scores in the areas of "Teamwork" and "Staff" ($X = 3.07$) among hospital units, while they had the lowest scores in terms of "reported frequency of incidents" ($X = 2.33$). The total score of dentists ($X=2.93$) was higher than that of students ($X=2.73$) ($p<0.05$).

Additional analyses revealed that there were statistically significant differences between the total score average of the scale and the participants' gender, marital status, working year, length of work in the profession and patient safety culture training ($p<0.05$). In terms of the total score of the scale, the scores of dentists ($X= 2.93$), married participants ($X= 2.99$), participants who worked for more than five years ($X= 3.17$) and participants who received patient safety training ($X= 2.90$) were higher than the other groups ($p<0.05$).

3. CONCLUSIONS AND RECOMMENDATIONS

This study was conducted with 284 participants, 107 dentists and 177 dentistry students. The aim of this study is to evaluate dentists and students' perceptions of patient safety culture. Participants' perceptions of a culture of patient safety were moderate. Dentists' perceptions of patient safety culture were found to be statistically significantly higher than the students ($p<0.05$). Studies in this area support our findings (Ramoni et al., 2014; Al Sweleh et al. 2018; Al-Surumi et al., 2018; AlOlayan 2020). Al Sweleh et al (2018) conducted a study on dental students, interns, dental assistants, and general dentists using the modified version of HSPSC, similar to our results, the researchers noted that a negative result was obtained in many items of the survey among dental students.

In this study, it was found that "teamwork within units and across hospital units" was the highest average, while the lowest average score was "reported incidence of events" The results of the current study are similar to other studies that found that students and staff at the College of Dentistry in Saudi Arabia had high scores of teamwork within units (Al Sweleh et al 2018). Another study in Pakistan found that teamwork achieved the highest positive response rate (Rizvan 2021). This result may show that the participants are motivated to help each other, to work as a team. Although teamwork had the highest scores, students had lower scores than dentists on the dimensions of "general perceptions about patient safety," "openness of communication,"

"feedback and communication about error," and "Executive expectations and actions that promote safety." It can be said that these are the areas that need to be developed in terms of students' perceptions.

One of the remarkable findings from our study is the number of medical errors reported regarding patient safety. Overall, 83.7% of dentists and 92% of students have not reported any medical errors so far. In addition, the "reported event frequency" dimension had the lowest average score in our study. The results of the current study are similar to other studies (Rizvan et al. 2021; Chohan et al. 2022). While significant adverse events in dentistry are rarely life-threatening, they are also common in dental practice (Yamalik and Pérez 2012, Obadan et al 2015). Pemberton (2014) emphasizes that incident reporting is crucial in the development of patient safety strategies. The author states that the extent of the problems cannot be known without reporting events and learning from mistakes. Reporting any patient safety incidents or errors is important for both the patient and the medical staff. In addition, incident reporting provides a tool to monitor the quality of maintenance. "Personnel reporting" can be used as a tool for the improvement and development of organizational systems and structures.

The reasons for not reporting medical errors in our study were not investigated, but the reasons were identified in similar studies in the literature. Polisen et al. (2015) suggests that the reasons for this are varied. Fear of punishment and time constraints prevent negative events from being identified and reported. One of the reasons why dentists and students do not report incidents may be the fear of being blamed by their colleagues and managers (Çakır and Tütüncü, 2009). A recent study of 104 dentists in the UK asked: "What are the barriers preventing dentists from reporting patient safety incidents? According to the results, "fear of litigation", "loss of professional respect among colleagues", "loss of respect from patients", "fear of repercussions of the General Dental Council/Quality of Care Commission", "fear of losing a job" , time-consuming and unnecessary paperwork' were among the reasons why patient safety incidents were not reported. In addition, 48.1% of dentists stated that they were not familiar with how to report patient safety incidents (Chohan et al. 2022). These findings may indicate that the reasons for not reporting patient safety incidents, including medical errors, remain similar around the world.

In the current study, it was determined that 72.1% of dentists and 66.7% of students did not take any courses or training on patient safety issues. Pemberton (2014) believes that one of the

strategies for developing safer healthcare is to train staff on patient safety. In some studies in the literature, the level of education of the participants on patient safety is high, while the findings of some are similar to ours. In a recent study, the dentist's knowledge of drug safety was insufficient, and targeting dental safety education and training in the undergraduate and graduate faculty of dentistry was strongly recommended to improve patient safety in dental care (Alomi et al. 2021). The low level of education on patient safety in our study may indicate that the reluctance of dentists and students to attend training courses on patient education is mostly due to the fact that this training does not comply with the working days and hours. It can also be said that there are not enough training programs organized by the institution or supported participation. Bailey & Dungarwalla states that the ultimate goal of all health care should be to provide care safely and effectively. The responsibility for protecting and improving patient safety in the field of dentistry belongs to the dentist. They believed that it was necessary for dental professionals to feel competent to address these issues and to have access to the necessary materials to implement tools to improve patient safety. They also need to be confident enough to talk about and contribute to patient safety discussions when things are not as they should be at Bailey & Dungarwalla 2021. For this, dentists and dental students should have sufficient knowledge about patient safety as dentists of the future.

Dentist and dentistry students' perceptions of the culture of patient safety were moderate. However, students' perceptions of patient safety culture were statistically significantly lower than dentists. The percentage of medical error reports was quite low. The majority of participants did not receive any training on patient safety issues. In line with these results, the following recommendations were made. The training and communication needs of dentists and students on patient safety issues should be determined and in-service training should be provided to increase their awareness of these issues. Students studying dentistry, as future dentists and pioneers of the dental profession, should learn all the principles and principles of the concepts of "patient safety culture". "Patient safety" is closely related to all practices in the field of dentistry. Communication and understanding among dental students will allow them to assess their impact on dental care quality and safety in their future careers (AlOlayan et al. 2021) Therefore, as WHO (2011) suggests, patient safety issues should be integrated into health science education, including dentistry, to prepare students for patient safety practices. Finally, we recommend that the

administrators of the hospital where the research was conducted establish a clear patient safety culture, including patient safety incident reporting systems.

The results of this study are limited to a Faculty of Dentistry students and lecturers. It is recommended that similar studies should be carried out, by expanding the population and sample size, in private hospitals, private practices and oral and dental health outpatient clinics. It is thought that the increase and development of the number of studies conducted in this area will contribute to the formation of a patient safety culture in dentistry.

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Cynical Brand Distance: Is it a response or not?

Its Relationship with Social Distance, Brand Congruency and Brand Switch

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Research Article

Abstract

Aim: The present article examines the brand-contextual effects of the recent pandemic in the form of cynical brand distance conceptualization. The study aims to determine whether the consumers' perception of social distance and brand congruency perceptions affects the cynical brand distance and then brand shift perception.

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Methods: The research was carried out in the form of a web survey on social media on 298 consumers and analysis was done with PLS algorithm with SmartPLS software.

Results: It is found that a positive relationship between brand congruency and cynical brand distance. A positive association between social distance and cynical brand distance is determined. It was also positive effect of cynical brand distance on brand switch.

Conclusion: They are considering that the impact of the social distance comes from pandemic on the consumer's preferences, especially on their attitudes towards brands, it has been considered that the consumer may create a subjective or general negative attitude or distance to the brand or brands. Especially because it triggers brand cynicism, the validity of the brand distance scale based on brand cynicism, again, its relationship with social distance, and brand switch concepts were examined. Brand cynicism items created in the form of netnography were handled as brand distance and an item pool was created.

Keywords: Social Distance, Segment Shift, Pandemic, Brand Distance

Introduction

Consumers' negative attitudes towards brands that affect social desirability or social integration of the brand can be more towards a single brand (Dessart et al., 2016) and it can be based on micro or macro causality (Romani et al., 2015) and even a perception process may arise that brands are not what they appear to be (Guèvremont, 2019) or brand aversion in context (Lee et al., 2009). In addition to singular brand attitudes, brand attitudes may develop, and consumer opposition may develop in response to a general stance with an anti-consumption context (Chatzidakis et.al, 2012). It may be in the transformation of resisting being a brand society or not defining oneself with the brand (Lam et al., 2012). As a result, they can stand against brands that may also have an ideological reflection. Some factors can create reasons and environments that may negatively affect the importance level of consumers towards brands. The concept of anti-consumption, anti-capitalism, and anti-branding has been made and it has been stated that reflexive consumers interact with brands in the context of identity creation and will not define anti-branding in this context. It can be deduced that the phenomenon of anti-branding is not seen as an identity tool and

does not overlap with itself. Thus, resistance can be seen in consumers within an ideological framework (Cherrier, 2009).

Brands act as a social identity tool in terms of adaptation to the consumers' selves and work as a tool of the identification process of consumers (Wolter et al., 2016). From this point of view, it is necessary to separate the consumers' anti-consumption stance and their attitudes towards the brands they consume. There are conceptualizations like Brand avoidance (Lee et al., 2009; Liao et al., 2015), Brand rejection (Sandikci and Ekici, 2009; Nenycz-Thiel and Romaniuk, 2011), Brand dislike (Dalli et al., 2007), Anti-loyalty (Rindell et al., 2014), Negative emotions toward brands (Romani et al., 2012), brand Attachment-aversion model (Park et al. 2013), Brand Hate (Hegner et al., 2017; Zarantonello et al., 2016), Bad relation with brands (Fournier and Alvarez, 2013), Negative emotion to brands (Romani et al., 2009), Brandlessness (Lee et al., 2012), Brand attachment-anti-brand reactions (Thomson et al., 2012), Consumer Embarrassment Tendency (Walsh et al., 2016). However, Anti-consumption (Cherrier, 2009; Cromie and Ewing, 2009; Hogg, 1998; Iyer and Muncy, 2009), Boycott (Yuksel and Mryteza, 2009), Anti-branding (Dessart et al., 2016; Romani et al., 2015), Brand opposition (Wolter et al., 2016), Consumer resistance (Cherrier, 2009), Consumer rebellion (Austin et al., 2005), anti-consumption and materialism (Lee and Ahn, 2016), Corporate distrust (Adams et al., 2010), Consumer Cynicism (Helm et al., 2015), Cynicism and scepticism (Helm, 2004) are the conceptualizations that express a negative attitude towards consumer culture or firms in general.

Actually, there is a cognitive and emotional distance between consumers and brands and it has an effect on brand attitudes of consumers. Some individual or societal factors may determine and feed this attitude and create a perception for brands. It can be assumed that the perception of social distance / physical distance in question reveals the concepts of brand cynicism and brand distance, and these phenomena become clear. An important reflection of the purchasing behavior of consumers is attitudes towards brands. Considering that consumers' social stances can also be analyzed in terms of brand interaction; It seems possible to have an attitude towards brands. While consumers may generally have attitudes towards the consumption algorithm, they also have positive and negative attitudes towards the brands they use. In this context, the basic equation is that consumers generally have a structure that depends on consumption opposition and a positive polarity that depends on consumption attitudes. Social distance is one of the most focused

measures introduced in the context of Covid 19 (Williamson et al., 2020). However, one of the primary motives of people is to belong and stay in touch (Baumeister and Leary, 1995). People have to come up with highly creative solutions to this problem, using guaranteeing and virtual interaction and communication (Murphy et.al, 2019), which means spending the quarantine period with their families or friends Telepresence in digital technologies reduces the perception of social distance as a form of psychological distance (Trope and Liberman, 2010). Social distance perception was examined as an essential substructure in terms of CLT theory. Basically, distance, in the context of social distance, is stated that consumers' perceptions of power trigger or increase social distance (Liberman et al., 2007). The negative-positive qualities of the events/objects that form the core of the concept will naturally affect the distance drawn (Von Boven et al., 2010). At this point, it should be noted that the consumer's pandemic process can affect the attitudes of consumers towards brands directly or indirectly. Therefore, considering that consumers with high correlation with the brand have lower construal levels and those with low connectivity have higher construal levels (Kim and Song, 2019), consumers' perceptions of social distance affect the interaction with the brand (Mantovani et al., 2017).

Negative attitudes of consumers towards brands also will trigger switch behavior as a behavior. In this sense, understanding consumer behavior changes and adaptation is the most important aspect of surviving in a constantly changing environment (Kim et al., 2005). As segmentation criteria (1) geographic; (2) demographic; (3) psychographic; (4) behavioral; and (5) benefits sought might be classified. There is a relationship between segmentation and customer profile in terms of data mining (Jansen et.al, 2007). In customer segmentation, perceptual, emotional, and behavioral variables are examined (Ruiz et al., 2004). Customer segmentation is the most important strategic marketing activity that considers the dynamic nature of today's consumer behavior (Noughabi et al., 2015). This structure considers customer dynamics in segmentation analysis with a "dynamic customer segmentation" perspective. This perspective is based on consumer wants and needs change and creates segment instability (Kim et al., 2005; Chong and Chen, 2010). The main goal of a business in the marketing context is to win and retain new customers. After a certain period of time, due to certain reasons, the customer group will either exit the system, turn to other company products or switch within the company's product group. At this point; It is necessary to protect a qualitative segment profile beyond the numerical protection

of the company's product/brand customers. Segment profile transformation is experienced as a process that needs to be managed. At this point, the concept of customer escape is in question. Customer switch focuses on the customer leaving the current product/brand by turning to another product or brand. In this context, the focus of the present article is to find main relationship brand distance, customer switch intention, brand congruency and social distance perspective. Below, first, the theoretical conceptualization is made, and then the results and findings of the field research are discussed.

1. THEORETICAL FRAMEWORK

Social Distance and Cynical Brand Distance

Construal level theory (CLT) refers to how individuals decide about an object or event over the psychological distance (Trope and Liberman 2003, 2010). Psychological distance is subjective between the target and the perceiver and has four main types; temporal, spatial, social, and probable (Liberman and Förster, 2009). The concrete quality of consumers closer to social distance as a basic approach (Frechette et al., 2020) will increase the brand's abstract quality as the social distance increases. Consumers' getting closer to the current and future products affects their divergence (Dhar and Kim, 2007) and affects the preference in consumers' mindfulness of brands and products and their mental placement (Lynch and Zauberman, 2007). On the other hand, targeting the product/brand in the context of features-suitability is another special issue in temporal distance (Freitas et al., 2008), which is essential for the consumer's mental-distance conceptualization of what the brand should be. Consumer behavior has drastically changed due to existing social distance measures (Chauhan and Shah, 2020).

It is more important how and to what extent the construal level theory conceptualizes goals and the opposite object / event (discussed as a brand in this article) as a goal (Trope and Liberman, 2010). There are conceptualizations that what is mentally transferred to the consumer is not interrupted by the consumer (Hernandez et al., 2015). In this respect, as the social or physical distance increases, the decrease of consumers' connection with the brand will create interruption, and this will generate brand distance. The person makes a comparison between himself and the person he/she interacts with and others in terms of distance and performs the positioning of social distance (Bar-Anan et al., 2006) with processing (Yan et al., 2016). From here, the brand used by the consumer will naturally use the abstraction-concrete pole among other brands. Therefore,

consumers' brands in the context of construal level distance are effective in mental evaluation-preference decisions (Kardes et al., 2006). Because social distance is also effective in the contextual affective distance (Friedler, 2008). Brand distance is also in this sense, as it follows a path depending on how much importance it gives to the object or event (Tangari et al., 2015) and abstraction refers to the main structure and meta-meaning of the subject and ignores sub-elements (Lieberman et al., 2002) can be treated as an abstraction.

According to Feather (2020), two switches will be observed in the social distance and consumer behavior. These; there will be channel and product switching. Channel switching is rarer and will occur in switch to delivery and click n collect with shopping from online channels. Product switches will be in the form of testing new brands and cheaper alternatives. Shopping habits will be shaped into four necessary forms. These are the form of shopping where the essential shopping is made as much as possible where the demand decreases, the way online channels are basically used in parallel with the remote work where the demand changes, the way of shopping where the demand increases because the stock is made and consumed. It is the form of hoarding where the demand does not change. According to Tan et al. (2020), the requirements of covid 19 regarding social distance will dominate the evolution of e-commerce in shopping channels. Evans (2020) similarly emphasizes e-commerce and draws attention to contactless payment systems. Thus, the absence of intermediaries increases profitability, more targeted customer data is obtained, a structure where personalization is more dominant and more control over profit (Thompson, 2020).

Major changes in consumer behavior caused by COVID-19 with stay-at-home calls, panic buying, home-cooked food, and hoarding is the evolution of online purchasing, with bans on tourism and travel (Grover et al., 2020). Measures related to Covid 19, especially the emphasis on social distance, will be healthier, interested, thrifty, higher awareness, less active but more productive of the new consumer (Biswas et al., 2020). Cynicism can be actively manifested in an introvert or outward direction in the context of objecting to the existence of a hegemonic structure against brands (Bertilson, 2015). There is a system of creating a consumer identity based on an individual and social representation of consumption (Totaro and Marinho, 2017). However, when considered based on consumption culture, cynicism symbolizes a counter-stance led by a more naive and sufficient consumption and a mode of consumption that has gone to extremes (Lee et al., 2016). At this point, cynicism works as a consumer response to generate distrust towards

companies (Adams et al., 2010). In terms of the brand, it is an internal dynamics of the consumer attributing a meaning to the brand and creates avoidance, aversion, and abandonment (Hogg et al., 2009; Østergaard et al., 2015).

In the conceptualization of consumer cynicism, it works as a part of an active resistance phenomenon and "putting distance" (Chylinski and Chu, 2010). On the other hand, consumer cynicism is based on the basis that businesses consider their interests. Helm et al. (2015). Cynicism works as a phenomenon with the concept of anti. Anti-consumption focuses on the individual or social perception of consumption as an element of pressure and threat (Portwood-Stacer, 2012). Consumers should actively consider a resistance or anti-consumption stance (Pentina and Amos, 2011) in this context. This structuring lays the groundwork for consumers to act activism against certain brands (Kozinets and Handelman, 2004). Consumer resistance conceptualization towards market structure is evaluated whether it is a radical-reformist in the individual-collective context (Penaloza and price 1993). Consumers' anti-consumption attitudes can reach the level of exceeding social norms in action (Amine and Gicquel, 2011).

The concept of consumer resistance includes an area of study, firm behavior and market; As a result of the individual's cognitive and emotional evaluation of the situations, a counteraction and thought system develops (Roux, 2007). As stated above, a structural or individual opposing stance of consumers also emerges as a rebellion in the form of "cynicism"; This effect of cynicism is examined in the context of items such as sneaky and generating cynical suspicion (Austin et al., 2005). The consumer's perception of hegemonic pressure against brands refers to an imbalance of power (Cromie and Ewing, 2009). Cynicism is also used in negative attitudes towards brands. For example, consumer cynicism in terms of "moral avoidance" comes among the reasons for the concept of Brand avoidance (Lee et a., 2009). Brand avoidance is theorized as not turning towards the brand and adopting a negative attitude due to the damages in the individual, social and ideological harmony. However, consumers can focus on the brand (Kavaliauske and Simanaviciute, 2015).

Consumers see brands as a threat to society and themselves. In a sense, a threat has a negative effect on existing existence (Simberloff, 2003) and this threat can turn into animosity (Fescbach 1994). The concept of threat is a theory that can explain the xenophobic attitude and works with bias (Yakusho, 2009). Brands can be seen as a foreign phenomenon in the life or mental

opening of the consumer. Here, this reaction or resistance to brands can turn into a threat perception. Threat theory can be classified as realistic, symbolic, and intergroup anxiety and negative stereotyping; While realistic threats are concrete structures that go over their effect on the entity, symbolic threats are abstract in values and beliefs (Stephan et al., 2000). Since the perception of threat creates successors such as conflict, identification with its group (Stephan et al., 1999), brands may manifest as consumers not identifying with brands and entering into conflict with them. Threat perception may occur individually or as a group (Pettigrew, 2008), as well as preventing the expansion of the social space of the person or the loss of the existing structure (Burns et al., 2008), further disrupting cohesion (Lewin, Epstein and Levanon 2005). When analyzed in segregation, assimilation, exclusion or integration structures, it can be determined that brand cynicism is closer to exclusion (Florack et. al, 1992). These threat perceptions are among the group anxiety, fear, and anger etc. it creates emotions and eventually appear as intergroup behaviors and outgroup attitudes (Riek et al., 2006). Consumers make a match between themselves and brands by looking at the level of congruence (Wijnands and Gill, 2020). When the decrease in the congruence level of the person is considered in terms of the conceptualization that she can turn into a socially cynical structure (Byza et al., 2017), the weakness of the congruence that the consumers will experience with the brand may increase the brand cynicism. In this light, there are evaluations regarding implicit (Priluck and Till, 2010) and self-object relationship regarding brand perceptions on implicit evaluations and attitude (Perkins and Forehand, 2006). It is possible to predict consumers' behavior / preferences through implicit and explicit attitudes (Maison et al., 2004). Implicit attitudes are considered sufficient to demonstrate automatic behavior (Maison et al., 2004). The coercion of time in consumers' purchasing processes strengthens the influence of implicit attitudes (Friese et al., 2006). It successfully develops and influences the communication strategies and implicit attitudes established by companies (Madhavaram and Appan, 2010; Horcajo et al., 2010). Implicit measurements represent a structure placed from the customer's cognitive structure and emerge when connected (Dimofte, 2010). On the other hand, implicit tests are organized to reveal their counterpart in the mind (Yang et al., 2006) and express an indirect or implicit system (Gawronski et al., 2007). Explicit attitudes can be expressed as self-reported behavior, liking, and beliefs (Maison et al., 2001). In the light of the explanations, the scale development process developed based on the following theoretical background is included. The fundamental opposition to the existence of brands can be expressed in an implicit-explicit way in

the consumer. Cynical brand distance can be analyzed with value-based perspective. Anti-materialism is vital for design the cynical brand distance. While anti-materialism avoids the drive of ownership, anti-consumption emphasizes the causality of consumption; It is stated that the society is harmed, the inability to reach a simpler lifestyle, and the consumer has a negative impact on well-being as a suppression factor (Lee and Ahn, 2016). When working as a personal value, personal values constitute an important subject of study as they affect consumer behavior and provide powerful explanations for consumer behavior (Shrum and McCarty, 1997). Forsyth (1980) evaluates idealism to minimize negative consequences, especially for others, and maximizing gains. Idealism is inherently the perspective of placing society's welfare above individual interests (Tsai and Shih, 2005). From this perspective, individuals with high idealism believe that the desired results will be achieved as long as they are realized correctly (Mathur 2001). Individualist western societies are less idealistic than eastern cultures (Karande et al., 2002). Idealism is defined as post materialism as an application of modern societies (Benedikter, 2002). At this point, Holt (1995) emphasizes the value attributed to experience and people more than they support roles. There is an interest in spiritual elements (Uebersax, 2013). Materialism's phenomenon focuses on the role that commodity possessions play for happiness (Lee et al., 2014) and prioritizes physical comfort over spiritual values (Oxford English Dictionary, 2014). As people get older, they become more materialistic (Benedikter, 2002). Idealism and materialism provide two different interpretations of the same question or two opposing explanation approaches to each question (Mohsin, 2014). Materialists give causal priority to technical and economic forces. On the other hand, idealists prioritize influence with human factors such as power, language, desire, norms (Adler and Borys, 1993). Idealism and materialism can inherently be made sense of the relationship between having and being (Shankar and Fitchett, 2002). It can be thought that the increase in materialist attitude has increased both consumer and brand cynicism as a pressure factor.

Social Distance and Consumer Switch Intention

It is stated that two basic concepts trigger this decision, considering that different factors affect the customer's escape-decision. These are situational and influential elements. Situational triggers tend more towards the customer's value structure, while the other includes the content of the competition and a reactive structure (Roos et al., 2004). Therefore, the process includes a choice,

one of the essential elements for segmentation (Auty, 1992). The customer's choice factor has an important place in customer behavior. In this context, it is necessary to construct a mindset for customer acquisition, development, and protection processes (Kamakura et al., 2005). The fact that the selection process is discrete and continuous in the context of demand affects the process (Haneman, 1984). The preference density of the customer appears as another factor (Fudenberg and Tirole, 2000). The customer runs a choice system in the form of utility maximization while switching to another brand/product (Givon, 1984). Therefore, firms think that protecting the customers they bring to the firm in a competitive environment defines a less costly process than gaining new ones (Heskett, 1990). This system of thinking brings up the phenomenon of customer satisfaction, which focuses more on the "expectation threshold" paradigm developed for customers' expectations from the company and the product (Spreng et.al, 1995), and this is true with the direction of customer loyalty. It can work proportionally (Richards, 1998). Although it prevents the customer from escaping or is a strong predictor of repurchase probability, the situation may not always work linearly (Dube et al., 1994). Therefore, the loyalty of the customer who is loyal to the company, and the product is an integral function of the switch concept with the satisfaction level (Fornell, 1994). This simple network of relationships follows the motto of leaving the company/dissatisfaction during the exit process, evaluating the alternatives, becoming aware, and abandoning (Stewart, 1998). This is why companies need to focus their main marketing aspects on maintaining the number of customers as the first and priority business (Weiser, 1995). The fact that customers leave the company or enter the product/service of another firm indicates a relationship in the way that attitude change changes behavior (Schultz and Oskamp, 1996). To develop customer segmentation analysis and marketing strategy, it is necessary to consider the dynamic nature of consumer behavior (Chen et al., 2005; Chong and Chen, 2010; Song et al., 2001; Liu et al., 2000; Böttcher et al., 2009; Ha and Bae, 2006; Ha, 2007). Dynamic customer segmentation was introduced to evaluate the dynamic nature of customer behavior in segmentation analysis. There are two main areas of work for dynamic customer segmentation. These are "tracking customer shifts between segments" and "mining segment changes." Like mining segment change, the segment can be called segment structural change (Blocker and Flint, 2007). Businesses need to define customer segments and examine the changes in segments over time (Wang and Lei, 2010). It can emerge, disappear, merge, contract, or grow (Böttcher et al., 2009). The most promising area of research concerns modeling the complex nature of structural segment changes.

There is an emphasis on that these behavioral traits are a precursor to ensuring customer loyalty (Stum and Thiry, 1991). This situation inevitably brings the firm's behavior model towards the customer and its associated profile (Chung-Hoon and Young-Gul, 2003; Day and Van den Bulte, 2002). In other words, it tends to a preference feature point and makes it a preference area.

Preference is a vital classification element in segmentation (Yüksel and Yüksel, 2002; Koo et al., 1999). This process is called a discrepancy of preference (Tripsas, 2008). The importance of segments is included in the organization of companies' CRM strategy (Rigby et al., 2002). It is stated that segments should be structured within the framework of customer needs and purchasing models (Berger et al., 2002). These segments form the basis for customer profitability (Reinartz et al. 2005). Within the framework of modeling, it is seen that there may be variation between segments, especially in terms of satisfaction and performance (Herrman et al., 2002). At the same time, customer loss analysis is also considered on a segment basis (Jamal and Bucklin, 2006). Segments can be subjected to a created value-based classification (Floh et al., 2004). Segment or customer profile management is of vital importance here. In segment management, establishing an emotional connection with the consumer requires focusing on the hidden patterns of consumers and monitoring the reactions of consumers to the products in the context of what they do. Therefore, it has a structure that works in conjunction with market dynamics and requires revision when necessary (Yankelovich and Meer, 2006). Changes that occur depending on customer behaviors become important in segment management within the scope of customer profile change. It is possible to examine the customer profile's change models under three or four main headings (Song et al., 2001; Mu-Chen et al., 2005); emerging, added, perished an unexpected changes.

Generally, decision trees are used to identify the variation between two data sets, and a rule agreement is looked at (Kim et al., 2005), and numerical weights are significant (Song et al., 2001). However, structural changes are not looked at, from coffee consumption to tea consumption (Kim et al., 2005). In the segment shift, we are trying to conceptualize, there are structural transformations with numerical density and even beyond. In addition, in the approaches examined numerically, there are temporary changes (Böttcher et al., 2009). Mainly considered as an element of CRM processes, customer segment management is part of a decision system that matures based on customer segments entering a classification over time and then shifts in time (Akhondzadeh-Noughabi and Albadvi, 2015) and classification as segmentation models, establishing

relationships, combining, clustering practices are implemented (Chen et al., 2007). It is seen that customer-firm interactions are handled passively-intermittently-actively in the relational platform (Netzer et al., 2008). When these are considered data, it is seen that the transition between segments of the customer individually appears (Ha, 2007). In the context of CRM, the customer profile (socio-demographics) for LTV is structured as an antecedent (Hwang et al., 2004), and these socio-economic variables are a segment determining factor (Teichert et al., 2008). Customer segmentation is a revenue-related concept from a long-term perspective (Jonker et al., 2004).

Segment shift refers to the concept of customer switching. When examining the models constructed in the conceptualization of escape, In addition to the effect of factors such as product complexity (Burnham et al., 2003), presented to the customer (Chang and Chen, 2007; Loker and Perdue, 1992), affective commitment (N'Goala, 2007; Bansal et al., 2004), problems experienced (Wieringa and Verhoef, 2007), communication structure living with the product (Lopez et al., 2006), demographics (Shin and Kim, 2008), lack of alternative (Han et al., 2011) habit are important factors in terms of staying in the company (Woisetschläger et al., 2011). The main antecedents of customer flight are price, quality, value, trust, commitment, alternatives, social impacts, escape costs, previous flight behavior, and tendency to seek variety (Ranaweera et al., 2005). In segment change, it is seen that some studies have been analyzed according to socio-demographic (Lees and Winchester, 2014), geographical (Rindfleisch, 2003), and attitude (Kennedy and Ehrenberg, 2001) changes, on the other hand, a relationship is also established between the dynamic behavior change of the customer and CLV (Lemon and Mark, 2006), which is related to the customer churn referring to the length of time the customer remains in the company (Neslin et al., 2006).

In addition, suggestions are made that the customer engagement structure will increase the efficiency in the management of segment management (Van Doorn et al., 2010). In this context, it is included as a stability factor in segment management (Balasubramanian et.al, 1998). However, it should not be forgotten that the customer staying in the segment is also a concept related to the length of the customer interaction in staying with the product/brand (Thomas, 2001). Noughabi et al. (2015) drew attention to a consumer group that determines consumer dynamics in segmentation analysis and defined this group as "structure breakers". The main feature of the group is that its changing behavior causes structural changes. These customers cause segments' instability. The

structure conceptualized in the context of segment instability refers to the customer's mobility and, in a sense, focuses on the customer-based change of segments (Blocker and Flint, 2007). In other words, it is customer shift management. It is possible to define the relationship that the customer establishes with the company, product, brand, based on the interaction, the customer profile of a brand, product or company that has been marketing activities in a certain period of time, again transforming into a different profile after a specific time. The segment that businesses construct over time may consciously / unconsciously (willingly or unintentionally) transform. The basic logic of the concept is that the profile that uses the company's product/brand is destroyed, evolved, and altered. The effect of this situation can be positive/negative on the company. The dangerous is the unconscious- the involuntary

2. RESEARCH METHODOLOGY

2.1. Purpose

The study aims to determine whether the consumers' perception of physical/social distance during pandemic periods affects the cynical brand distance and the segment shift trend through this.

2.2. Sampling and Survey

The research was carried out in the form of a web survey on social media on 298 consumers. The survey form of the research consists of two main groups. The first group of questions is about the demographic structure of the participants. The second group includes the scales used. Scales include questions expressing Covid19 fear, Brand distance, physical distance, and switch tendency. The important point here is that physical distance, cynic brand distance, and switch trend scales are used for the first time in this article since the subject is new. First of all, the cynical brand distance items were subjected to exploratory factor analysis. A four-factor structure was obtained. However, each factor was considered as an independent composite variable. The main reason for this is the existence of different and independent reflections of the cynical brand distance. In other words, an uncorrelated first order contextual perspective was evaluated.

2.3. Scales

The research basically uses four basic structures and six scales expressing them. The first is Covid19 attitudes / perception; the second is the perception of physical distance, the third is brand distance, which is the center of the study, and the fourth is consumers segment shift intention. All

the measurement items were measured on a five-point Likert-type scale that was anchored by 1 = strongly disagree to 5 = strongly agree to express the degree of agreement. All scales items can be seen at below.

a) Social Distance Scale

Social distance perception is expressed as two separate questions with one item considering that it may have positive and negative reflections on consumers. Questions from adapted from Popovic et al. (2003) and Dabbs(1971). Items are seen below.

1. The pandemic process made me understand life better
2. Physical distancing helped me return to myself.

b) Brand Switch Scale

Considered in the context of anti-loyalty as a segment shift trend, insisting on switching to other brands and insisting on replacement, Delgado-Ballester et al., 2003; Adapted and / or the opposite expressions of the items in the scales developed by Bloemer et al., 1999 and Spears and Singh, 2004 were preferred. First statement Adapted from Delgado-Ballester et al. 2003 is taken as the opposite of the issue of loyalty. The second statement Adapted from Bloemer et al., 1999. The third statement, Spears and Singh, 2004) has been adapted as the answer to the question of the extent of definitely and probably not taking. Brand switch statements are shown below.

1. I have a high probability of changing the brands I use.
2. I will probably switch to other brands.
3. I will insist not changing the brands I use

c) Brand Congruency Scale

Similarly, three expressions were preferred if the consumer's harmony with the brand is mainly influenced by lifestyle (together with income) and the perceptions of other customers who use the brands they use. The first two statements focus on adaptation towards lifestyle. These statements are adapted from Del Rio et al., 2001. The third statement was added by the authors in the context of the impact of interaction between customers that used same brand.

1. I think the brands I use don't appeal to me anymore
2. I think the brands I use do not perceive me correctly.

3. It is now very difficult for the brands I use to win and protect me.

d) Cynical Brand Distance Scale

The elements of the brand distance scale, which is at the center of the study, include the use of the classical scale development process and the determination of the elements and their direct analysis. The process of determining the cynical brand distance items is explained below. The item development process is used as the equivalent of a reductionist approach in some sources. In a sense, the general structure of the content is determined, and then the relevant items are reduced by various methods in line with the target and purpose. Among these methods, literature review, determining the items by interviewing subject experts when necessary, and approaching the subject with content analysis can be specified. Later, the most important of these items are selected and analyzed (Holt et al., 2007). When evaluating the number of items, the detail of the subject has not been covered before, and the researcher's expertise is important. The researcher's primary goal is to try to describe the scale related to the subject of interest with as few items as possible. Therefore, having a certain number of items in terms of understanding and interpretation will provide a better evaluation of the subject. While 26 items (Walsh et al., 2007) or 30 items (Eastman et al., 1999) are examined in some sources, they are reduced to 63 items (Tsai et al., 2010) in some sources.

As mentioned above, expert panels are also used in the reduction of content. These panels reduce the content according to their own views in terms of repetition of the contents of the content and their suitability to the structure (Vandala et al., 2010). Experts on the subject are asked to evaluate not only the relevant concepts or items, but also the readability and general appearance of the items in the item pool, and in a sense, these people subject the items to a pre-evaluation (Chaudhuri et al., 2011). Therefore, with item identification, reduction of items, and content validity can be accomplished simultaneously. The preliminary pool items determined by the researcher should be critically reviewed and refined if necessary, and similar ones should also be removed and avoided (Latner et al., 2014). Especially in experts' evaluations, it is examined that the relevant item on a particular Scale is unrelated, it needs revision or can be used with minor regulations, and ultimately, it is an Item that fully represents the subject (Kwon et al., 2013). As another method, evaluating items through individual interviews also brings a higher validity to the agenda (Rat et al., 2007).

The study involved textual discourse analysis with recourse to netnography methodology, which examines online communities' communication acts and discourse (Kozinets, 2002). The netnographical-based discourse method was employed in this study as a qualitative analysis. It was thought that the data obtained from online platforms without the research strain and allowing people to express their opinions freely will yield a much more realistic result. By typing, imaging, coding and posting ourselves into being, we can create and recreate ourselves endlessly, liberated from our bodies and the identity markers they carry (Rybas and Gajjala, 2007). A community discourse observation similar to Hemetsberger's (2006) research methodology was conducted, and data taken from the archives were investigated. Discourse analysis as a method relies on the social or collective process, rather than the individual's perceptions (Elliott, 1996), to clarify social design, semantic perspective (Sitz, 2008) and the origin of meaning (Çelik and Eksi, 2008), which is why the netnography method was employed in this study to determine and classify the cynic behavior of the consumers. As mentioned above, this methodology can analyze the daily routines of consumers (Catterall and Maclaran, 2002; Broillet et al., 2008) and is very effective in the determination of consumer behavior (Sandlin, 2007). This study has investigated online communities, social media tools and other news and comments on the internet. The context of the concept were chosen using cynicism and cynic keyword postings. The examination of discourses that are related to the cynicism talks in the websites and blogs lead us to an improved understanding of the discourses related to reality, meaning, social relationship, and identity. The qualitative data analysis involved the application of requisite categorization, abstraction, comparison, and dimensionalization criteria. The posts involved two phases. First, the authors coded the text according to the constant comparative method (Glaser and Strauss, 1967), reading the postings several times, moving from the specific to the general, and devising categories. The categories were then clarified by revisiting the data several times, grouping responses into like categories. Then, the themes were audited and suggestions and corrections were provided in the interpretation and writing phases. There was a qualitative assignment of analyzed texts to super-ordinate and subordinate semantic dimensions. The basic dimensions are shown below. In total, the study resulted in 19 dimensions which are presented in direct quotes. Then we have created questions that reflect or match with this items' meaning. Proposed scale items can be seen at below:

Cynical Brand Distance Themes and Items

1. Lack of passion
"I am cold from brands now"
2. Not being sincere
"I realized that I am a more natural person without a brand"
3. Disappointed
"I have no faith in brands"
4. Rejecting brand civilization
"I reject the statements of brands"
5. critical idealism
"I realized a more idealistic life without a brand"
6. Scepticism
"Brands do not tell the truth"
7. Nihilism
"I find brands meaningless"
8. Antagonistic distrust
"I think we should say stand against brands"
9. Seeking happiness beyond the established structure
"I feel happier without brands"
10. Simplicity
"I realized that unbranded life is better"
11. Not needing others' approval
"Brands are just social class enforcement"
12. Strain
"Brands create despair in me"
13. True-self
"I think brands are constraining me"
14. Disbelief
"Now I am more distant from brands"
15. Sarcasm
"I do not take brands seriously anymore"
16. Stripping out of the requirements
"Life without brand is better"
17. Displaying ambition
"I think I disclose myself using branded products"
18. Contempt of humanity
"Brands prevent an idealistic life"
19. Selfish
"Brands take people away from the realities of the world"

The next step includes testing the relationships between structures using the PLS technique of all scales and the SmartPLS software, and essentially conceptualizing and modeling brand distance perception.

FINDINGS

Demographics

Considering the demographic information of the participants, 59.4% are women and 40.2% men. The rate of those who are married is 52.4%, and the rate of those who are single is 46.9%. Considering the age distribution, the age of 20 and under is 3.8%; Those between the ages of 21-30 31.5%; Those in the range of 31-40 37.1; The 41-50 age range is 21.3%, the 51-65 age range is 4.9 and the distribution of those over 65 is 1.4%. Considering their educational status, 5.6% of them are secondary education, 49.7% are high school graduates and 44.8% are university graduates. Income distributions are 42.7% of which are 5000 TL and below, 36% between 5001-9999 TL, 21.3% have an income of 10000 TL and above.

Model

The main reason for measuring the model with PLS is the direct estimation of the structures and the direct testing of the methodological power associated with it (Hair et al., 2017). Using the Consistent PLS logic, a verification system was tried to be studied (Dijkstra and Henseler, 2015). On the other hand, since predictive validity is based on the relationship with the output variables (Matthews et al., 2010; Singh and Krishnan, 2007), the effects of Physical Distance, Brand Distance and also Brand Switch and Congruency were investigated.

Hypothesis

In the study, three main hypotheses and a total of six hypotheses were developed and tested in the model. The hypotheses are:

H1: Brand congruency has a positive effect on Cynical Brand Distance

H2: Social Distance has a positive effect on cynical brand distance.

H3: Cynical Brand Distance has a positive effect on the brand switch.

Measurement Model

SmartPLS 3.0 software was used (Ringle et al., 2015) to analyze the model developed. Following the recommended two-stage analytical procedures by Anderson and Gerbing (1988), this study tested the measurement model and the structural model. The preference of the PLS technique is due to the fact that the relevant model is directly predictive. For this reason, two-step measurement was carried out in testing. The first of these is the measurement model. At this stage, their loads, R^2 , f^2 , discriminant validity, and Cronbach alpha examinations were examined. In the second stage,

structural equation modeling was carried out. At this stage, together with the beta coefficients, the Q^2 , value where the difference from 0 is sought (Chin, 1998) was examined. In the literature, tests such as R^2 , and Q^2 , cross-validation tests for the variable variable and non-parametric tests such as f^2 , that explain the power of the effects are used (Fornell and Cha, 1994). In structural model evaluations, f^2 , (effect size) and Q^2 (estimation ability of the model) criteria are used in basic evaluations (Cohen, 1988; Gim et al., 2015). Basically, if Q^2 , is greater than zero, exogenous variables have predictability for a particular endogenous variable, while Q^2 , is less than zero indicates that it has no prediction ability (Gim et al., 2015). The effect level (f^2 ,) is a value obtained by adding and subtracting models one by one and evaluates how useful a structure is to the model (Ringle et al., 2014). Klesel et al. (2019), instead of analyzing alternative parameters among groups, the area that showed the whole model, proposed two general tests for multi-group comparisons in PLS-SEM (Sarstedt et al., 2011). In the structural model evaluation, the path coefficients (path-coefficients) of the endogenous structures of the model are determined (Sarstedt and Henseler, 2011). The Q^2 test, which is processed as a blindfolding process in the SmartPLS 3.0 version, is a process that reveals results regarding the endogenous variables of the structure and is performed by repeated use of the sample (Hair et al., 2014). An error range of 5-10 is recommended for calculation and values are expected to be greater than 0 (Hair et al., 2014). The Q^2 value used to reveal the predicted value of the model assumes that the model should estimate each endogenous variable appropriately (Sarstedt et al., 2014). The value evaluates how close the model is to what is expected from it / estimation quality (Ringle et al., 2014). Effect size (f^2 ,) is a test used to evaluate the strength or magnitude of the relationship between endogenous variables; it predicts each of the exogenous variables that explain the intrinsic variable in the structural model. These values can be evaluated as low effect size at 0.02, medium level at 0.15 and high effect size at 0.35 (Cohen, 1988). Depending on the f^2 , values, removing any latent variable from the analysis may have a higher / lower effect on revealing the observed variable (Gim et al., 2015). In order to test the significance of the path coefficients and the loadings, a bootstrapping (resampling 5,000) method was used. Reliability was measured with composite reliability (CR) and Cronbach alpha values. Convergent validity has been examined in terms of factor loads of the building materials being .50 and above. Discriminant validity was measured by AVE. Loadings of elements in the measurement model; Internal structure reliability is stated as convergent validity and discriminant validity. The most important factor in using the PLS technique and choosing the Smart PLS

program is to directly test whether the model works with analysis.

Convergent Validity

The 19-item reflective factors indicated convincing evidence of convergent validity with strong and significant factor loadings ($p < .05$), ranging from 0.70 to 0.95, AVEs well above 0.50 (Fornell and Larcker, 1981). The first step of testing the research model is the validity and reliability analysis of the structures in the model. Internal consistency, composite reliability, and discriminant validity have been tested. Cronbach alpha and CR values were taken into consideration for internal consistency. In addition, AVE value was examined. The square root of the AVE value is greater than the correlations of the structures. Decomposition validity is proved. Composite reliability and Cronbach alpha values show that measurement tools are reliable. (The values were between .80 and .90). Relevant results can be seen below. The outer factor loadings were positive as expected and change with .617-.921 range.

Discriminant Validity

Discriminant validity involves a comparison, which means that the distance to each other is similar in a sense with similar but structural differences (Tian et al., 2001). Since there is no expression below .50 in factor loadings in the relevant structures (Nunnally and Bernstein, 1994), item analysis was not excluded. All factor loadings are within acceptable limits. Next, the discriminant analysis used criteria by Fornell-Larcker. The requirement that must be met is the AVE square root value must be greater than the correlation coefficient between constructs. Below, Table 3 shows that all square root values of each construct are greater than the correlation coefficient between constructs. Thus, all requirements have been met with exceeding the .50 value limit. The lowest AVE value is .586 that matches .50 limit advised (Fornell and Larcker, 1981). The shared values between the constructs are square correlations. Comparing the loadings across the columns, Table 1 indicates that in all cases an indicator's loadings on its own construct are higher than all of its cross-loadings with other constructs, thus, the results indicate there is discriminant validity between all the constructs.

TABLE 1. Discriminant Validity Result

	Brand Switch	Brand Congruency	Cynical Brand Distance	Social Distance
BrandSwitch	0.918			
Brand Congruency	0.730	0.862		
Cynical Brand Distance	0.633	0.701	0.781	
Social Distance	0.214	0.148	0.286	0.867

Structural Model

We have preferred for the analysis by SmartPLS 3 software to estimate the model parameters. We use path-weighting process with 300 iterations in the PLS-SEM algorithm settings. To assess the structural model, Hair et al. (2017) suggested looking at the R^2 , beta (β) and the corresponding t-values via a bootstrapping procedure with a resample of 5,000. They also suggested that in addition to these basic measures researchers should also report the predictive relevance (Q^2) as well as the effect sizes (f^2). In testing the structural model, firstly, if there was no collinearity problem ($VIF < 5.0$), the R^2 , beta and t values and Q^2 and f^2 values of the endogenous structures were examined. Q^2 is measured for prediction accuracy. Factor loads $> .70$; $AVE > .50$ HTMT $< .90$ criteria are in question. $VIF \leq 5$ for the structural model; R^2 minimum 0.25; Q^2 is expected to be higher than zero (Hair et al. , 2019). Bootstrapping used to examine the significance of the loadings and these are reported in Table 1., with significant loadings being demonstrated where $p < .05$ (5% significance level). The SRMR is expected to be less than < 0.08 saturated (Fassot et al., 2016). The SRMR value obtained from the research is within acceptable limits (SRMR = .056).

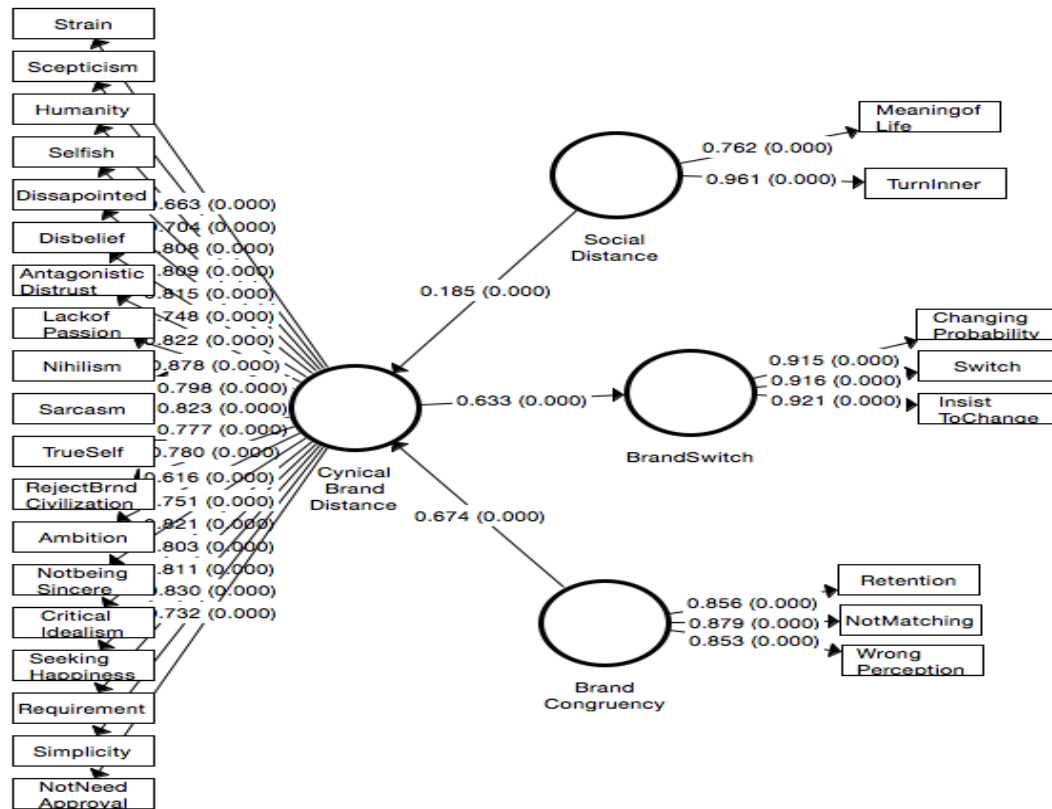


Figure 1. Model Test (SmartPLS Result)

According to Hair et al. (2013), in SEM models, Q^2 values bigger than zero for a reflective endogenous construct imply the path model's predictive relevance for a particular construct. By performing blindfolding procedures, all Q^2 values are considerably above zero, which supports the model's (Fig.1) predictive relevance for the four endogenous constructs. Both R^2 and Q^2 mainly focus on the accuracy and relevance of the model (Hair et al., 2014). In addition, the f^2 effect size, which shows the impact of a specific predictor construct on an endogenous latent construct, and the Q^2 effect size for the predictive relevance are presented in Table 3. The results in Table 4 and Figure 2 provide support for all the six hypotheses. All the three hypotheses were posited to be positive and significant and accepted. H1 posited a positive relationship between brand congruency and cynical brand distance, while H2 hypothesised a positive association between social distance and cynical brand distance. H2 was accepted. H3 was also accepted regarding of the positive effect of cynical brand distance on brand switch. The hypotheses testing results obtained using Smart PLS analysis are shown in Figure 1 and Table 2. Support is provided

for all hypotheses with path coefficients (0.674, 0.189, 0.633, respectively) at .000 significant level as shown in Figure 1 and Table 3.

TABLE 2. Research Model Result

	Original Sample (O)	R2	f2	Q2	Hypothesis
Brand_Congruency -> Cynical_Brand_Distance	0.674***	.522	.934	.315	Accepted
Social_Distance -> Cynical_Brand_Distance	0.185***		.007		Accepted
Cynical_Brand_Distance -> BrandSwitch	0.633***	.398	.667	.327	Accepted
BrandSwitch(Cr.Alp=.907;Com.Rel=.941; AVE=.842); BrandCongruency(Cr.Alp=.828;Com.Rel=.897; AVE=.744); CynicalBrandDistance(Cr.Alp=.964;Com.Rel=.967; AVE=.610); SocialDistance(Cr.Alp=.712;Com.Rel=.855; AVE=.750);					

3. CONCLUSIONS AND RECOMMENDATIONS

The present article examines the brand-contextual effects of the recent pandemic in the form of brand distance conceptualization. They are considering that the impact of the social distance comes from pandemic on the consumer's preferences, especially on their attitudes towards brands, it has been considered that the consumer may create a subjective or general negative attitude or distance to the brand or brands. Especially because it triggers brand cynicism, the validity of the brand distance scale based on brand cynicism, again, its relationship with social distance, and brand switch concepts were examined. Brand cynicism items created in the form of netnography were handled as brand distance and an item pool was created.

The study's main difference is to determine the structure of consumer attitudes towards brands in the context of cynicism-brand distance. In this context, the study approaches context from a different point of view compared to other studies in the related literature. It is seen that there is a contrast within the general or brand scope according to the level of personal and social importance of the consumers in the context of anti-consumption (Iyer and Muncy, 2009). From the point of view, idealism can be considered as the integration and harmonization of materialism and anti-materialism (Uebersax, 2013). Especially in the context of opposition, it may appear as an ideological phenomenon that emerges as an element of the oppression of capitalism (Ellis et al. 2018), as well as a sphere of influence that reduces the effect of consumers' perception of justice (Balaji et al., 2018). On the other hand, cynicism is a structure that emphasizes an idealism in the

search for happiness (Forman, 2016) that does not take into account the necessity of "necessity" in a sense (Forman, 2016), and emphasizes worthlessness in the form of apathy (Yamamoto et al., 2017). It is seen that the items that make up the scale are compatible with the relevant theoretical structure.

Social Axiom (Leung et al., 2002) Cynicism (Floberg et al., 2014), cynicism (Turner and Valentine, 2001), Cynicism sub-dimension (Austin et al., 2005; Neiderhoffer, 1967), cynicism scale, sub-dimension cynicism scales (Stanley et al., 2005), consumer cynicism (Helm et al., 2015) are scales used in the context of cynicism in the literature. However, there is no scale as a cynical context brand distance. While establishing a weak or strong bond with brands is expressed as defining-not identifying on the brand, brand cynicism can be built on the line of non-opposition. It is necessary to explain that consumers do not want to create a social identity on brands, but a contrasting system for brands or companies. Cynicism is included as an anomie sub-dimension (Rosenbaum and Kuntze, 2003). The cynicism phenomenon is structurally related to a congruence between two phenomena (Byza et al., 2017). Cynicism, which can be conceptualized with disaffection, acts with premises such as insecurity and rupture, and over time tends to apathy (Yamamoto et al., 2017). Trust is vital to cynicism. Dispositional trust takes a lot of space (Helm, 2004). It also represents a trait of reaching conclusions, chipping ethics, and insecurity as a social axiom (Leung et al., 2002).

In a sense, when examined as a negative attitude towards method and process (Pinkleton and Austin, 2002), it can be thought that the discourse of brands is effective because the perceived importance attributed to the source of the transferred information (Pinkleton and Austin, 2001) affects cynicism. It is seen that the suggestion of a valid scale that is compatible with the cynicism measures existing in the literature but has its own internal dynamics will be a difference in terms of meaning orientation to the brand. In determining the items, it was thought that it would be more effective to base the individual opinions about real life by using netnography method instead of making a reflective measurement using many items and determining the main groups as items. The substances and the brand cynicism structure they create are shaped according to the reflective measurement model. In future studies, it may be suggested to examine existing items through the formative measurement model.

In the study, nomological validity was evaluated with the materialism scale and Discriminant and Convergent Validity with social distance and brand switch concepts. It may be suggested to use different scales in this context in future studies. Being the subject of an intercultural study is considered important in terms of general validity. In terms of managerial contribution of the scale, it can be determining how consumers' cynicism attitudes in brand management should be examined in a perceptual sense, what should be taken into consideration in conveying messages and developing brand perception, and what might be related to social responsibility or cause-related marketing practices, especially in marketing communication.

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The Effect Of Perceived Stress of Health Care Professionals on Servant Leadership Behaviors In The Covid-19 Period: NMRT Example

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Abstract

Aim: The research aims to determine the effect of servant leadership behaviors on the perceived stress levels of healthcare professionals during the COVID 19 pandemic.

Methods: The population of the study is 1107 health employees (NMRT - National Medical Rescue Team) in Ankara region. The sample consists of 215 people. Pearson correlation analysis was applied in the study. Simple linear regression test was implemented for the relation level of the sub-dimensions. In the correlation analysis, a medium strong positive correlation was determined between the dependent and independent variables.

Results: It is seen that servant leadership behaviors and perceived stress levels of employees are be positively affected. It has been revealed that with the servant leadership behaviors shown during the pandemic process, the stress levels of the employees decreased, the service quality increased and the motivation was provided in a positive way.

Conclusion: It can be stated that there is a moderate positive correlation between the dimensions of strengthening, courage, trust, and realism. The model established for the correlation between the stress/discomfort perception dimension and the inadequate self-efficacy perception dimension, and the servant leadership dimensions was determined as significant. Also the servant leadership behaviors exhibited by the ministry managers during the COVID 19 process are thought to make the level of stress perceived by the employees feel low. It can be said that the NMRT employees' servant leadership behaviors, especially in the COVID 19 process, positively affected the people in the working environment and with whom they contacted.

Keywords: Stress, Leadership, Health Staff

INTRODUCTION

Since humanity has existed in the world, many disasters have emerged until today, and epidemic diseases have undoubtedly caused serious damage to humanity among these disasters and delayed the development of societies and states (Yıldız, 2014; Yiğit and Gümüüşçü, 2016). In disasters and emergencies that affect life, the health system continues to work, and necessary measures must be taken for this (Çınar, 2019; 167). Many of the studies indicate that outbreaks cause serious traumas and anxieties on people (Lau et al, 2005; Taylor et al, 2008; Yıldız, 2014; Zhang et al, 2020). The epidemic called COVID 19 or 1019-nCOV, which emerged in Wuhan, the administrative center and largest city of Hubei province of China and spread to the world with great speed, has seriously damaged the economy and social life. A member of the coronavirus family, COVID 19, is from a very large family of coronaviruses, such as viruses known as the Middle East Respiratory

Syndrome (MERS-CoV) and Severe Acute Respiratory Syndrome (SARS-CoV) (Zhu et al, 2020; Kıroğlu, 2020). In these pandemic-level outbreaks, healthcare workers are at the highest risk group, and intensive work, not getting enough rest, missing opportunities, unsafe environment, and intense virus environment cause serious psychological distress (Kaya, 2020).

Stress is called as "estricitia" in Latin. Stress was expressed in the form of disaster, trouble, grief, and grief in the 17th century whereas it was expressed in the 18th and 19th centuries in terms of power, oppression, and use of force towards the individual and his spiritual structure (Güçlü, 2001). It was first stated by the scientific community as the "relationship between the elastic object and the external force applied to it" in the 17th century by the physicist Robert Hook (Graham, 1999). Selye stress appeared as follows, which causes the disappearance of energy in the person. The energy normally used to adapt to stress has extinction. Stress that harms individuals cause physiological wear and tear of cells. It is also stated that stress has positive and negative features (Selye, 1974). For this reason, it can be defined as "positive stress" if the positive changes the work ability and capacities of the employees, and "negative stress" if the negative changes (Quick and Quick, 1984).

One of the situations in which stress is most common is the business environment. Job stress definitions were made by many researchers. For example, the work stress is the tension on the workplace because of being affected by the work environment (Lazarus, 1991). Job stress is a serious problem for the employees of the organization and the organization itself. Job stress, difficulties, and inadequacies in the work environment, undermining physical stress, are undesirable, resulting in illness (Leong, 1996). In their studies conducted by Eskin and friends (2013) they stated that the concept of stress is a two-dimensional structure: insufficient self-efficacy and perception of stress / discomfort.

The most important feature of servant leadership that distinguishes it from other leadership approaches is that it provides integration between people and emphasizes establishing long-term relationships with employees (Kılıç and Aydın, 2016: 107).

Servant leaders, as a role model themselves, reinforce mutual trust by accelerating the flow of information, resources and feedback between themselves and their employees. Benevolence, support and personal attention are among the most important elements of servant leadership, and these benevolent behaviors of the leader reinforce trust in the leader. In addition, servant leaders

are leaders who inform their followers in advance, include them in decisions and take initiative, in other words, strengthen their followers. The fact that servant leaders deal with subordinates at a personal level and follow their professional and personal development, behave according to ethical values and be honest also helps employees express themselves comfortably without any concern. Servant leaders create a safe environment for their employees. In this way, employees can use their skills without stress and fear. (Akgemci et al, 2019).

Patterson has developed a value-based model of servant leadership that structures and shapes the behavior of servant leaders. Servant leadership contains seven virtues, according to Patterson. These virtues are moral love, humility, sacrifice, vision, trust, reinforcement, and service are listed (Patterson, 2003: 570).

According to Page et al, personality is at the focal point of servant leadership approach in terms of conceptual dimension. The combination of an individual's physical, cognitive, and emotional capacities creates his personality. Servant leaders also transform their abilities in cognitive, physical, and emotional aspects into behavior within the framework of leadership, wisdom and servitude formats with a unique mix (as cited in Fındıkçı, 2013: 309).

Many people have been guided by the servant leadership approach and philosophy to mediate people's spiritual, emotional, intellectual, and professional development; however, it has become the main expression of the mission definition of many organizations and a valuable and determinant part of its corporate philosophy (Spears, 2004: 7-11).

Hunter argues that the concepts of patience, encouragement, humility, respect, not thinking, forgiveness, honesty, and promise, which he describes as "the eight qualities of love," are not only the perfect qualities of love, but also the essence of servant leadership. According to him, these qualities do not only explain the requirements of leadership, but also reveal the real meaning of being a servant in a concrete way (Hunter, 2004: 90-110).

1. RESEARCH METHODOLOGY

Purpose of the research: The aim of this study is to determine the effect of servant leadership behaviors on perceived stress levels of national health workers in the Ankara region (Ankara, Çankırı, Kastamonu, Kırıkkale, Çorum, Yozgat, Kırşehir – see ref. ASHGM). With the approval of the Ministry of Health dated 30.12.2003 and numbered 5442, the “Health Organization

Project in Disasters” was put into practice and the National Medical Rescue Teams (UMKE) were formed. During the COVID 19 pandemic from 21 NMRT regions according to the information received from the Disaster and Emergency Management Department of the Ministry of Health of the Republic of Turkey.

Research Hypothesis and Model: The research was carried out with a descriptive research model. The aim of the study is to define the direction and degree of the correlation between independent and dependent variables. In this context, the conceptual model related to the correlations of these variables can be expressed as in Figure 1.

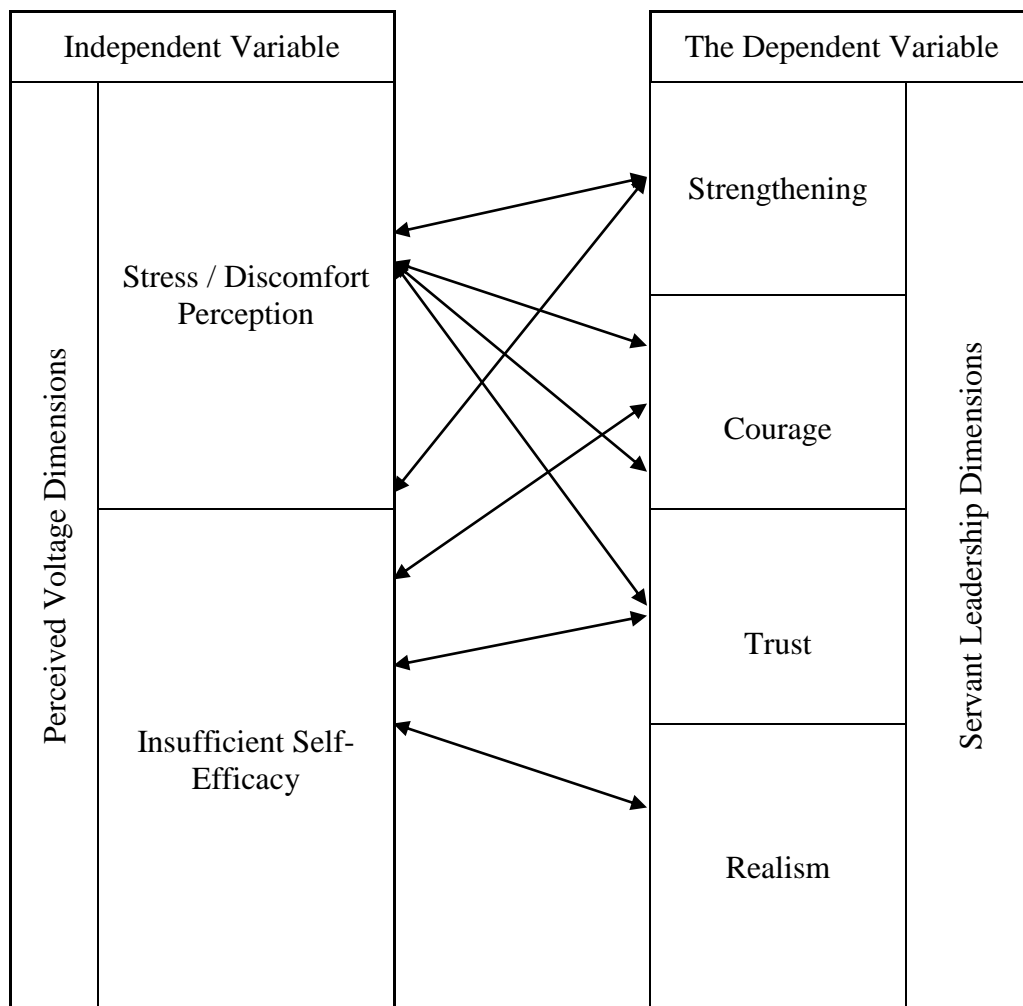


Figure 1. Conceptual Model of the Research.

Based on this conceptual model, the hypotheses of the research can be listed as follows:

Research Hypothesis: The following hypotheses have been explored.

H1: There is a correlation between perceived stress levels and servant leadership behaviors of NMRT personnel working in the Ankara region (Ankara, Çankırı, Kastamonu, Kırıkkale, Çorum, Yozgat, and Kırşehir).

The sub-hypotheses developed based on this main hypothesis are:

h1.1. There is a correlation between perceived stress levels and reinforcement dimension in NMRT employees.

h1.2. There is a correlation between perceived stress levels and courage in NMRT employees.

h1.3. There is a correlation between perceived stress levels and trust in NMRT employees.

h1.4. There is a correlation between perceived stress levels and realism dimension in NMRT employees.

Location and Features of the Research: The target universe of this study consists of NMRT employees working in a pandemic in seven provinces within the Ankara region (Ankara, Çankırı, Kastamonu, Kırıkkale, Çorum, Yozgat, Kırşehir). The research was carried out between January and December 2021 by online method. NMRT is characteristically a community of volunteer health workers. The reason for the existence of this community is to save people. While carrying out this process, it contains all the functions of an organized organization. It has been a matter of curiosity, how this organized organization, which acts with the unity of the leader and team members, acts in changing conditions. The relationship and existence of this organization during the period of Covid-19 have been tried to be revealed by this study.

Population and Sample of the Research: All employees working in the Ankara Region NMRT team within the specified date range constituted the universe of the research. However, due to the difficulty of being reached despite the researchers' desire to reach, the accessible or concrete universe constitutes 1107 personnel. Simple random sampling method was used in the research. In the research, the following formula was used to determine the number of people to be reached through the universe in question (Yamane, 2001: 116-117).

$n = \frac{(Nt^2 pq)}{(d^2 (N-1) + t^2 pq)}$	$n = \frac{(1107 * 1,96^2 * 0,10 * 0,90)}{(0,05^2 * 100 + 1,96^2 * 0,10 * 0,90)}$	$n = 123$
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According to the results obtained, the number of people to be reached in the research is 123. In this study, analyzes were made on the data obtained from 215 employees, 32 from Ankara,

30 from Çankırı, 30 from Kastamonu, 31 from Kırıkkale, 30 from Çorum, 31 from Yozgat and 31 from Kırşehir. In this study, analyzes were made (T.R. Ministry of Health, 2020).

Data collection tool: In the collection of information and data, a questionnaire form consisting of 46 questions in total, 16 questions measuring the perceived stress level and 30 questions measuring servant leadership behaviors were used.

Perceived Stress Scale: A Likert type with Perceived Stress Scale (5) developed by Cohen (1983) and adapted to Turkish by (Eskin, 2013) was used. Scale items are filled in by selecting one of the options ranging from “Never (0)” to “Very often (4)”. Of the items in the scale, “7” containing positive expression are scored in reverse. The scores that can be obtained from the scale vary between “0” and “56” and the high score indicates that the perception of stress is high. There are two sub-dimensions called Insufficient Self-Efficacy Perception and Stress / Disturbance perception, and the internal consistency coefficient is "0.84" and the test-retest reliability coefficient is "0.87" (Eskin, 2013).

Servant Leadership Scale: The Servant Leadership Scale consists of 5-point Likert-type 30 questions (Dierendonck - Nuijten, 2011). The statements contain positive and negative statements classified as "1. I strongly disagree", "I disagree 2.", "3. I am uncertain", "I agree" and "I totally agree." Scale sections consist of 4 parts as "Reinforcement", "trust", "realism" and "is courage". In terms of the reliability coefficients of the sub-sections of the Servant Leadership Scale, reinforcement was found as "0.93", courage, "0.87", trust "0.74", and realism as "0.84" (Yılmaz, 2013).

Reliability of the Servant Leadership Scale: The Cronbach's alpha coefficient ranged from 0 to 1, and according to the evaluation criteria, it was stated that “if $0.00 < 0.40$ the scale is unreliable, if $0.40 < 0.60$ the scale has low reliability, if $0.60 < 0.80$ the scale is highly reliable and if $0.80 < 1.00$ the scale is highly reliable”. is expressed (Tavşancıl, 2005).

The 1st factor of the Servant Leadership scale consists of 12 elements that vary between 0.764 and 0.585 in terms of load. The factor total variance explanation level was 26.838%, and the reliability coefficient was obtained as 0.940. As a result, the factor provides a high degree of reliability. The second factor consists of 12 elements that differ between 0.779 and 0.549 in terms of load. The factor total variance explanation level was 24.543%, and the reliability coefficient was 0.937. As a result, the factor provides a high degree of reliability. The third factor consists of

4 elements that differ in the range of 0.835 to 0.518 in terms of load. The factor total variance explanation level was 9.093% and the reliability coefficient was 0.754. As a result, the factor provides a high degree of reliability.

Reliability Of The Perceived Stress Scale: As a result of the reliability analysis, the Cronbach Alpha coefficient of the scale was found to be 0.83, and the Alpha coefficients of the sub-dimensions were found to be 0.82 and 0.83. It was determined that the item-total correlations were high for all items in the scale. As a result, the factor provides a high degree of reliability.

Data Collection: The questionnaires prepared online were directed to social media and the employees were able to respond to these questionnaires as soon as they found a space for them. In addition, they were reminded to fill out the questionnaire as the shifts changed. It takes 10-15 minutes to fill out the questionnaire.

Analysis of Data: The data of the research were analyzed using the SPSS 22.0 package program. Descriptive statistics about the participants are included. Descriptive statistics on perceived stress and servant leadership situations were averaged and their distributions were revealed. Perceived stress and servant leadership correlation analysis was performed, and the correlation was determined ($p < 0.05$). Pearson Correlation analysis was used to determine the effect of the stress/discomfort perception dimension on the servant leadership dimensions.

Ethical Aspect of Research: This study was approved by the e-mail sent from the T.C. Ministry of Health General Directorate of Health Services, dated 27.05.2020, "portal@saglik.gov.tr". In addition, T.C. Approved by giving the necessary permission to conduct this study with the letter dated 18.06.2020 and numbered by the General Directorate of Emergency Health Services of the Ministry of Health. These two documents are presented at the end of the article. Also, the ethics committee approval of the study, which was carried out in accordance with the ethical principles, was taken as the 1st Decision with the decision numbered E-33490967-044-121213 of the Social and Human Sciences Research Ethics Committee of Tokat Gaziosmanpaşa University.

Limitations of the Research: The results of the study cannot be generalized since it is based on data obtained from NMRT personnel working in a regional group.

2. FINDINGS

The correlation between the data scale scores was analyzed with the Pearson correlation test and the extent to which the dependent variable was affected by the independent variable was analyzed with the simple linear regression test.

Table 1. Demographic Characteristics of the Participants

Demographic Variables	Type	f	%
Gender	Female	87	46.6
	Male	128	53.4
	Total	215	100.0
Age (29.21±7.77)	20 Years and Under	19	7.8
	21-30 Age	111	55.4
	31-40 Age	58	26.9
	41-50 Age	23	8.8
	51 Years and Above	4	1.1
	Total	215	100.0
Marital Status	Single	123	57.2
	Married	92	42.8
	Total	215	100.0
Educational Status	Primary	3	2.0
	High School	67	31.4
	Vocational School	86	42.3
	Licenses	45	19.4
	Graduate	14	5.9
	Total	215	100.0
Job	Physician	11	4.8
	Emergency Medical Technician	67	31.5
	Other Health Personnel	63	29.2
	Ambulance Driver	27	12.0
	Other Personnel	47	22.1
	Total	215	100.0
Working Time	0-5 Years	120	57.9
	6-10 Years	50	23.6

	11-15 Years	21	9.2
	16-20 Years	12	4.8
	21-25 Years	8	3.3
	Over 26 Years	4	1.2
	Total	215	100.0
Overall Total		215	

Table 1 shows the demographic characteristics of NMRT employees who participated in the research. Looking at the gender distribution of the participants, it was determined that 45.3% were female and 51.5% were male. Considering the age distribution of health personnel, 7.0% of them are 20 years old and under, 49.8% are 21-30 years old, 24.2% are 31-40 years old, 7.9% are 41-50 years old, and it was determined that 1.0% of them were 51 years old and over. It was determined that 55.2% of the participants were single and 41.1% were married. According to the results obtained for the education levels of health personnel, 0.5% of them are primary school graduates, 29.9% of them are high school graduates, 40.5% are associate degree graduates, 18.7% are undergraduate graduates, and 5.5% are postgraduate degree.

Considering the duties of the participants, 4.6% are doctors, 30.2% are emergency medical technicians, 28.2% are other health personnel, 11.5% are ambulance drivers, and 21.2% are other personnel. Considering the working time of the participants in this line of work, 54.9% of them are 0-5 years, 22.3% are 6-10 years, 8.8% are 11-15 years, 4.6% are 16-years. It was determined as 20 years, 3.1% as 21-25 years and 1.1% as 26 years and above.

Table 2. Descriptive Statistics on Perceived Stress and Servant Leadership Dimensions

n=215	Minimum	Maximum	Mean	Standard Deviation	Level%	Skewness	Kurtosis
Stress/ Disturbance Perception	10	30	20.32	4.04	67.7	0.62	-0.13
Inadequate Self- Efficacy Perception	10	30	22.21	4.17	74.0	-0.46	-0.05
Perceived Stress	37	86	63.17	8.79	73.5	-0.06	0.03
Reinforcement	8	25	18.72	3.70	74.9	-0.38	-0.15
Courage	6	20	14.89	2.92	74.4	-0.38	0.06
Trust	5	15	11.15	2.19	74.4	-0.24	-0.27
Realism	7	20	15.07	2.90	75.4	-0.28	-0.13
Servant Leadership	29	80	59.84	9.78	74.8	-0.29	0.15

Descriptive statistics of perceived stress and servant leadership scores are shown in Table 2. Reinforcement score average (18.72 ± 3.70) courage point average (14.89 ± 2.92). Trust score average (11.15 ± 2.19). The servant leadership average is also (59.84 ± 9.78); The perceived stress score average is (63.17 ± 8.79). Stress / Disturbance perception score average (20.32 ± 4.04). Inadequate self-efficacy score average (22.21 ± 4.17).

Table 3. Pearson correlation analysis of Perceived Stress and Servant Leadership Scores

		Reinforcement	Courage	Trust	Realism	Servant Leadership
Stress/ Disturbance Perception	r	0.307	0.283	0.191	0.225	0.295
	p	0.000	0.000	0.000	0.000	0.000
Inadequate Self-Efficacy Perception	r	0.353	0.305	0.253	0.288	0.362
	p	0.000	0.000	0.000	0.000	0.000
Perceived Stress	r	0.467	0.439	0.349	0.426	0.513
	p	0.000	0.000	0.000	0.000	0.000

p < 0.01, p < 0.05 significant correlation. p > 0.05 no significant correlation

Table 3 shows the perceived stress and servant leadership points. Strengthening with perception of Stress / Disturbance ($r = 0.307$). Among the servant leadership perceptions ($r = 0.295$), a positive medium; Reinforcement with inadequate self-efficacy perception ($r = 0.353$). Perceptions of Courage ($r = 0.305$); There is a positive correlation between servant leadership ($r=0.362$) scores ($p<0.05$); reinforcement with perceived stress score ($r = 0.467$). Courage ($r = 0.439$). Trust ($r = 0.349$). Realism ($r = 0.426$). There is a moderately positive relationship between servant leadership and perceived stress ($r = 0.513$), ($p < 0.05$). As a result of the Pearson Correlation analysis, it is possible to accept all hypotheses by determining that there is a correlation between dependent and independent variables in some, if weak. However, Regression analysis was performed to determine which dependent variables can be explained with which independent variables and what the degree of the correlation is, and the results are given in table 4.

Table 4. Regression Analysis of Dependent Variable Servant Leadership and Independent Variable Perceived Stress Scores

Dependent Variable: Perceived Stress sizes	Independent Variable: Servant leadership dimensions	Coefficients			Model		
		B	t	p	F	p	R2
Stress/ Disturbance Perception	Constant	13.197	11.453	0.000*	11.752	0.000	0.099
	Reinforcement	0.274	3.831	0.000*			
	Courage	0.034	0.359	0.719			
	Trust	0.016	0.135	0.893			
	Realism	0.087	0.995	0.320			
Inadequate Self-Efficacy Perception	Constant	13.167	11.326	0.000*	17.190	0.000	<0.138
	Reinforcement	0.266	3.685	0.000*			
	Courage	0.130	1.365	0.173			
	Trust	0.030	0.255	0.799			
	Realism	0.119	1.343	0.180			

* p <0.05 has significant effect. p > 0.05 no significant effect

As can be seen in Table 4, the model established to determine the degree of influence of Stress / Disturbance perception dimension on servant leadership dimensions is meaningful. In terms of the empowerment dimension, while the Stress/Discomfort perception dimension is positively affected, it does not affect the courage, confidence and realism dimensions ($p > 0.05$). Reinforcement the Stress / Disturbance perception change explains the dimension. The model established to test the influence of the perception of insufficient self-efficacy from the servant leadership dimensions is meaningful. Reinforcement, Courage, and Realism dimensions affect the perception of insufficient self-efficacy positively, while the Trust dimension does not seem to have a significant effect ($p > 0.05$). The Reinforcement and realism dimensions explain the change in the perception of insufficient self-efficacy. It is seen that some sub-dimensions of servant leadership have a statistically significant correlation with the dependent variable.

3. DISCUSSION

Established in the country under the Ministry of Health, General Directorate of Emergency Health Services, NMRT unit provides emergency health services by performing medical rescue in case of domestic and international disasters and emergencies. NMRT teams were among the officers who made the first contact with the disease with the onset of the pandemic. As time progressed, this process took a long time, vaccination was not sufficient and the course of the disease was constantly fluctuating, which made it difficult for NMRT employees. During the restriction practices, NMRT teams, together with other officials, provided fever and pulse measurements, vaccination services, health services to people in quarantined guesthouses and

dormitories, and took part in disasters that developed in this process. NMRT basic training includes working under intense, stressful and pressure. The health worker who successfully completes these trainings is included in the NMRT team. Each team has a leader in training. In addition, each NMRT officer consists of people with servant leadership characteristics. With this research, they worked in the COVID 19 pandemic process.

The perceived stress level of those who worked under very difficult conditions and participated in this study was determined as 73.5% with (63.17±8.79) points, 67.7% with Stress/Discomfort (20.32±4.04) points, and 74.0% with Insufficient Self-Efficacy Perception (22.21±4.17) points. As a result, it is seen that perceived stress levels are high during the pandemic process. This situation is consistent with the literature.

It is reported in the literature that the COVID-19 epidemic, which affects the earth, causes psychiatric problems. In a study with 4872 participants over the age of 18 during the COVID-19 outbreak in Wuhan. The prevalence of mental illness and its correlation with social media exposure was investigated. In this study prevalence of depression in the general population over 18 years of age during the COVID-19 outbreak. prevalence of anxiety is 22.6%. The prevalence of the combination of depression and anxiety was 19.4%. Over 80% of respondents reported that they were frequently exposed to news and information about COVID-19 on social media. In the same study, the level of anxiety of those with high social media exposure in the last week is related to this situation. it was found to be significantly higher than those with lower social media exposure. As a result, those with high social media exposure have been reported to develop higher mental illness (Gao et al., 2020).

In another study, it was conducted with 144 patients who were hospitalized with COVID-19. It was reported that 34.72% of patients had anxiety symptoms and 28.47% had depression symptoms. In the same study, it was stated that there was a significant correlation between the high rate of anxiety and depression symptoms and less social support in patients treated with COVID-19 (Kong et al., 2020).

In this study, the difference between perceived stress sub-dimensions and servant leadership sub-dimensions (Stress/Discomfort and Empowerment ($r=0.307$). Positive median between servant leadership perceptions ($r=0.295$), insufficient self-efficacy perception and Empowerment ($r=0.353$). Courage perceptions ($r=0.305$), Servant leadership ($r=0.362$), positive

mean ($p < 0.05$), Perceived stress score and Empowerment ($r = 0.467$), Courage ($r = 0.439$), Confidence ($r = 0.349$), Realism ($r = 0.426$). There is a positive, moderately strong correlation between servant leadership ($r = 0.513$) scores ($p < 0.05$). There is a positive, moderately strong relationship. It is seen that servant leadership behaviors and perceived stress levels of employees are positively affected. It has been revealed that with the servant leadership behaviors shown during the pandemic process, the stress levels of the employees decreased, the service quality increased and the motivation was provided in a positive way.

However, the COVID-19 pandemic, like other pandemics in the past, has caused mental and psychological problems in individuals (Chua et al, 2004). In a study conducted in China during the COVID-19 pandemic, it was determined that health workers experienced significant stress (71%) (Lai et al, 2019). In a similar study, it was determined that health workers experienced intense pressure in the COVID-19 epidemic due to stress, anxiety and depression symptoms, and it was reported that the symptoms mentioned were severe in 2.2-14.5% of the participants (Pappa et al, 2020).

This study bears serious similarities with the causes and levels of discomfort of healthcare workers during the pandemic process in the world. In a study conducted on 85 physicians, the work-related stress score was found to be statistically significantly higher among the groups with longer working hours compared to those with less working time (Sunter, 2006: 12).

In the study conducted with intensive care workers, it was determined that they experienced moderate emotional burnout (Akalın and Modanlıoğlu, 2021). In a similar study, it was determined that the contact of the healthcare worker providing COVID 19 patient care with the patient increased the level of stress and burnout. Compared to the group that doesn't encounter the patient, it has been determined that the health care worker who has no contact has less stress and burnout levels (Kannampallil et al., 2020).

In this study, as a result of Pearson Correlation analysis, it is possible to accept all hypotheses by determining that there is a correlation between dependent and independent variable. In this sense, it can be said that all servant leadership dimensions, especially reinforcement, courage, and realism, have an effect on perceived stress dimensions. The model created to determine the dimension of stress/discomfort perception and the effect of the dimension of self-efficacy perception on servant leadership dimensions was found to be significant.

In similar studies, it has been determined that nurses experience low and moderate stress, and the causes of stress are usually work-related (Javadi-Pashaki and Darvishpour, 2019). When the rapid development of the pandemic process and the effects of this process on health workers are examined, it's thought that the level of response may be different depending on the development of the health system of each country, therefore the effect on health workers may be at different levels (Bohlken et al.,2020).

Healthcare professionals have treated COVID-19 patients by putting their own health at risk, increasing their knowledge about the disease as well as their mental state and stress levels. According to the study, the level of knowledge of healthcare professionals about COVID-19 was determined as 75%; it was understood that 88.4% of the health workers had good knowledge. (Huynh et al., 2020).

In another study, it was reported that 10% of healthcare workers involved in the pandemic process developed moderate to severe depression, anxiety, and stress symptoms (Lenzo et al., 2021). However, in a study conducted on Jordanian healthcare workers, it was determined that 35% of them were under severe stress (Alnazly et al., 2021). The perceived stress level score of health sector workers in Turkey is 29.8, which is Limcaoco and friends (2020) (PSS 10 score 17.4), Gao and friends (2020) (PSS score 13.81).

Many traumas have been experienced during the COVID-19 pandemic process due to problems such as pre-hospital healthcare workers working in risky areas, tiring, long and intense duty periods, and lack of protective materials and information. Acute stress reaction disorder, depression, anxiety, and post-traumatic stress disorder can be seen in prehospital emergency health workers due to heavy working conditions during the pandemic process (Akgün at al., 2021).

In addition to the studies mentioned above, in this study, it was seen that the Perception of Stress/Discomfort and Perception of Inadequate Self-Efficacy, which are the sub-dimensions of Perceived Stress, interacted positively with the Empowerment sub-dimension of Servant Leadership. It has been understood that if empowerment processes such as sharing, cooperation, team spirit, decision making, improving working conditions, giving authority and responsibility, continuous on-the-job training, providing control and feeling valuable are carried out among NMRT employees, the level of perceived stress will develop in a positive way. In this study, it was seen that the Perception of Insufficient Self-Efficacy and the dimensions of Empowerment,

Courage and Realism were in a significant interaction, and the perception of Stress/Comfort and the Empowerment dimension had a significant interaction.

It's understood that there are similarities between this study and similar studies. In particular, there may be differences between perceived stress levels. It's thought that the reason for this may be due to the suitability of the work area and the intensity of the workload, as well as the level of awareness. In addition, it's thought that the health policies implemented by the countries and the level of public awareness may be effective.

4. CONCLUSIONS AND RECOMMENDATIONS

In the study, when the correlation between variables is examined in the COVID 19 process, it's seen that there is a positive correlation between perceived stress and servant leadership behaviors. When NMRT employees exhibit servant leadership behaviors, it's understood that there is a positive effect on stress perception levels.

Necessary steps should be taken to reduce the stress levels of NMRT teams, which provide effective service in the field during the pandemic period. The first of these steps should be servant leadership behaviors among NMRT teams. For this, they should be given on-the-job applied servant leadership behaviors and their perceived stress levels should be reduced.

It is necessary to increase the activities to improve servant leadership behaviors especially for NMRT employees. However, the servant leadership behaviors exhibited by the ministry managers during the COVID 19 process are thought to make the level of stress perceived by the employees feel low. It can be said that the NMRT employees' servant leadership behaviors, especially in the COVID 19 process, positively affected the people in the working environment and with whom they contacted. However, it was understood that the perceived stress in the process of COVID 19 was caused by a wide variety of factors, depending on the situation, the person, and the effect varied. It is seen that NMRT employees exhibiting servant leadership behavior in the process of COVID 19 increased the success rate in the pandemic struggle. Employees' relations with their leaders.

To alleviate the workload of health workers, social distance, mask use and hygiene measures dissemination is important. The community should be educated, visit restrictions should

be imposed. Effective treatment and preventive measures should be implemented. To control the pandemic, researchers must continue biological and clinical studies without interruption.

It is understood that the leadership behaviors of healthcare professionals during the pandemic process can positively affect their stress levels. The fact that the study conducted on this subject is not encountered during the literature review increases the importance of the research and can be perceived as a limitation.

Despite this, managers should identify the causes of stress,

- By determining the workload, sufficient number of employees should be planned,
- Frequent meetings and social organizations should be organized to combat stress,
- Employees should be trained on work stress,
- Psychological counseling and guidance services should be provided,
- Rewarding practices should be carried out,
- Health screenings should be done for those working in places with high stress levels.

Also, to researchers who will do similar work. By increasing the sample size, we can suggest that they conduct studies in accordance with the structure of the subject and between regions.

This study has limitations as it is regional. A general study is needed to eliminate this situation. To do this, a study can be carried out by the ministry to make a country generalization regarding the situation of the organization, NMRT, which is a unit under the Ministry of Health.

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Investigation of Prospective Medical Secretaries' Perspectives of Online Education: The Example Of February 6, 2023 Earthquake

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Abstract

Aim: In the present study, we aimed to investigate the perspectives of medical secretariat students, one of the important branches of the health services sector, about the distance education decision made by the CoHE due to the earthquake.

Methods: In line with this purpose, an e-survey was administered to the first and second year students studying in the Medical Documentation and Secretarial Program of a public university in Anatolia between February 13 and 17, 2023 (N: 285). In the analysis of the data, both the descriptive statistics and the Chi-square analysis were used. The data were analyzed in the Statistical Package for the Social Sciences (SPSS) V.26.

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Results: Of the students, about three quarters were female students, a little more than half were second year students, and the vast majority stayed in state dormitories. The number of the students who lived in the earthquake zone and lost their relatives in the earthquake and whose houses were damaged was less than was that of the other students. Approximately three quarters of the Medical Documentation and Secretarial Program students did not favor online education, in other words, they wanted to have all the courses face-to-face.

Conclusion: In short, necessary suggestions were made to heal traumas throughout the country and not to compromise on the quality of education.

Keywords: Medical secretary, university student, online education, distance education, earthquake

INTRODUCTION

Natural disasters are events that cause significant damage to humans and nature. Since the existence of our planet, this negative effect of natural disasters has manifested itself in every age, and millions of people in the world are faced with negative situations caused by natural disasters every year. One of these natural disasters is earthquakes and they have extremely destructive effects both on the earth and on people.

One of the important natural disasters in Turkey is earthquakes. Earthquakes are in the group of ground-based disasters. Earthquakes are short-lasting natural events that take their source from the depths of the earth and cause vibrations on the earth (Aksoy and Sözen, 2014). Among other words used by people to mean earthquake are ground shaking, tremor, shock, seism, and temblor. Turkey is located on the Alpide earthquake zone, which is one of the three most important earthquake belts in the world. It stretches from Java to Sumatra, across the Himalayas, the Mediterranean, and then into the Atlantic. The other two are the Circum-Pacific Seismic Belt, which surrounds the Pacific Ocean, and the mid-Atlantic Ridge or Oceanic Ridge belt most of which lies deep below and remote from human activity. Almost all of the earthquakes in Turkey have occurred on the following three main belts. The North Anatolian Fault Line, the Southeastern Anatolian Fault Line and the West Anatolian Fault Line (Karakuş, 2013). According to the earthquake zone map, 96% of Turkey's lands are located in regions with different levels of earthquake hazard and 98% of the population lives in these regions (Aksoy, 2013).

On February 06, 2023, two earthquakes occurred in Kahramanmaraş, a province in southeastern Turkey. The center of the first earthquake with a magnitude of 7.7 was Pazarcık district of Kahramanmaraş, and the center of the second earthquake with a magnitude of 7.6 was its Elbistan district. After the earthquakes occurred thousands of aftershocks. The earthquakes were felt in a wide area covering Southeastern Anatolia, Eastern Anatolia, Central Anatolia and Mediterranean Regions (Press Bulletin, 2023). The first reports from the area where the earthquakes took place point to heavy damage and loss of life. According to AFAD's (Turkish acronym for "Disaster and Emergency Management Presidency") report released on February 19, 2023, 40,689 citizens lost their lives, thousands of people were injured, and thousands of disaster victims living in the provinces of Kahramanmaraş, Gaziantep, Şanlıurfa, Diyarbakır, Adana, Adıyaman, Osmaniye, Hatay, Kilis, Malatya and Elazığ were evacuated from the region to other provinces. A state of emergency was declared for three months in these 11 provinces where the disaster took place.

Earthquakes have an impact on the population size in a place, can adversely reverse economic indicators, and have serious effects on macro-economic balances. In addition, it is known that the phenomenon of earthquake leads to some short- or long-term psychological disorders as it settles in people's subconscious mind (Öcal, 2005). It is also a fact that many public services could not be provided or that there could be disruptions in their delivery after the earthquake. One of these services is education services.

The Ministry of National Education announced that education would start on February 20, 2023 outside the earthquake zone and on March 1, 2023 in the earthquake zone. According to the first decision made by the Turkish Higher Education Council (CoHE) on February 9, 2023, the start of the spring semester education at universities was temporarily postponed until a second announcement. In the press release of CoHE on February 11, 2023, it was stated that due to the earthquake, it would be appropriate to complete the spring semester of the 2022-2023 academic year through distance education. In the simplest terms, distance education is an education method based on the use of information technologies when the instructor and students are not in the same environment (Valentine, 2002). After it was decided to transition to distance education, the process of relocating earthquake victims' families to empty state dormitories started. It was also announced that new decisions on how to give applied courses such as internship and workplace

training in certain fields such as medicine and dentistry would be made in the coming days. On February 17,2023, CoHE President Erol Özvar said, *"It was decided to continue with distance education for the 2022-2023 period. Some decisions were taken to limit it to the spring semester. The decisions taken will be re-evaluated in April. The hybrid education system will be evaluated."*

The decisions made by the CoHE and announced to the public led to great reactions throughout the country. For example, Eğitim Sen (Turkish acronym for “Education, Science and Culture Workers Union”) filed a lawsuit demanding to stop the execution of the decision made by the CoHE to switch to distance education in universities as of February 14, 2023. The TTB (Turkish acronym for “Turkish Medical Association”) also stated that face-to-face education should not be abandoned, emphasizing that distance education in the health sciences, especially medical education, would lead to irreparable errors and deficiencies and prevent the provision of a qualified health service in the future.

Huseyin Celik, Former Minister of National Education of the Republic of Turkey, criticized the decision about distance education in universities due to the earthquake and said, *“I do not consider it a right decision. For instance, many university students did not have the face-to-face education at the university throughout the COVID-19 pandemic. Now they will receive diplomas and will be graduates without adequate skills and competence”* (Ege Postası, 2023). In addition, many education experts drew attention to the fact that distance education would not be possible due to the lack of internet infrastructure in the region, and that even if there were internet infrastructure, students would not have the equipment to receive this education. In this context, determining the opinions of students studying in health-related departments regarding the decision of distance education is of great importance because, in health services, unlike other service sectors, substitutability of the service and compensation of the errors is not possible. The cost of these errors can result in illness, disability or, in the worst case, death.

1. RESEARCH METHODOLOGY

Although students attending an associate degree program in the Medical Documentation and Secretarial Program do not take a direct role in patient care, they facilitate the work of other health professionals when they enter data and systematize medical documents. In many countries, in Turkey in particular, it is a well-known fact that most of the work that should be done by medical secretaries is usually done by nurses. In a natural disaster such as an earthquake, where great loss

of life is experienced, medical secretariat students' being at work and their being able to carry out their professional practices in hospitals will alleviate the workload of other health workers, especially nurses, and will enable nurses to focus only on patient care. Therefore, in the present study, we aimed to investigate the perspectives of medical secretariat students, one of the important branches of the health services sector, about the distance education decision made by the CoHE due to the earthquake.

In line with this purpose, an e-survey was administered to the first and second year students studying in the Medical Documentation and Secretarial Program of a public university in Anatolia between February 13 and 17, 2023. In the study, in which the universe sampling method was used, 285 usable data were obtained. In this descriptive study, seven survey questions were created by the researchers considering the current situation in Turkey. Before the data were collected, the participants were informed about the study, and their informed consent indicating that they volunteered to participate in the study was obtained.

We utilized Google Forms to prepare the e-survey. In the analysis of the data, in addition to descriptive statistics, the Chi-square analysis was used. The data were analyzed in the SPSS V.26 package program. The data were collected only from a single program of a university; thus, the results obtained in the present study are applicable only to the participants surveyed and they cannot be generalized to all medical secretariat students, which is the most important limitation of the study. On the other hand, it is expected that the study will contribute to the medical secretariat and health management literature.

2. FINDINGS

Of the participants, 71.2% were female students, 50.5% were second year students, 64.9% lived in a state dormitory, 17.2% lived with their family, 11.9% lived in a rented house and 6% lived in a private dormitory (Table 1).

Table 1. Descriptive Characteristics of the Participants

	Variables	f	%
Sex	Women	203	71.2
	Men	82	28.8
Year at school	1 st year	141	49.5
	2 nd year	144	50.5
Place of residence	State dormitory	185	64.9
	Private dormitory	17	6.0
	Family's home	49	17.2
	Rented house	34	11.9
Total		285	100.0

Of the participants, 9.8% lived in one of the provinces struck by the earthquake, 7.0% lost their relatives in the earthquake, 3.2% had houses/apartments completely damaged by the earthquake and 3.2% had houses/apartments partially damaged by the earthquake (Table 2).

Table 2. Earthquake-Related Characteristics of the Participants

	Variables	f	%
Do you live in one of the provinces affected by the February 6, 2023 earthquake?	Yes	28	9.8
	No	257	90.2
Did you lose any of your relatives in the February 6, 2023 earthquake?	Yes	20	7.0
	No	265	93.0
Was your house/apartment damaged in the February 6, 2023 earthquake?	Yes	9	3.2
	Partially	9	3.2
	No	267	93.7
Total		285	100.0

While 73.3% of the participants wanted all the courses in the 2023 spring semester to be given face to face, 26.7% wanted the courses to be given online (online) (Figure 1).

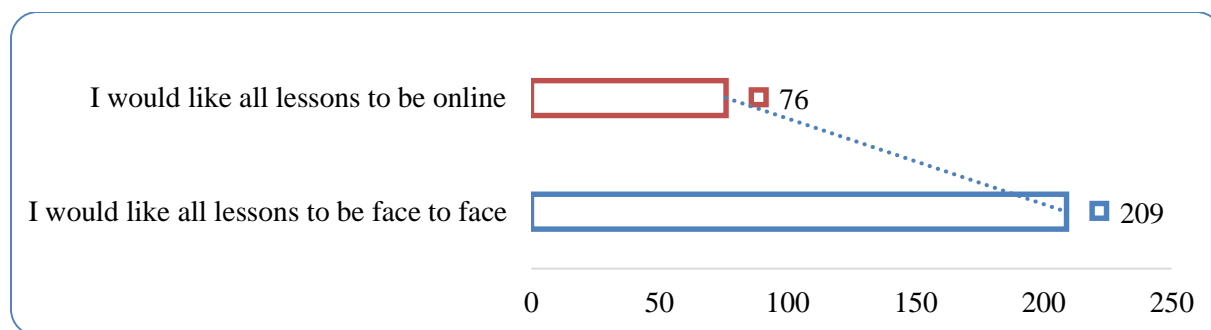


Figure 1. Opinions of the Participants Regarding Online Education

The relationships between the descriptive characteristics of the participants and their education preferences were analyzed with the Chi-Square analysis. According to the results of the analysis, a statistically significant ($p < 0.05$) relationship was determined between the variables

such as sex, place of residence, loss of a relative in the earthquake and damage to the house in the earthquake and the participants' preferences for the education type. The differences stemmed from the female participants, those who stayed in the state dormitory, those who did not lose their relatives in the earthquake and those whose houses were not damaged in the earthquake. On the other hand, there was a statistically insignificant relationship ($p>0.05$) between the participants' preferences for the education type and the variables such as year at school and whether they lived in the earthquake-affected areas.

Table 3. Relationship between the Participants' Descriptive Characteristics and their Preferences for the Education Type

Sex	Preference for the education type		X ²	p
	Face-to-face	Online		
Women	156	47	4.45	<i>0.035*</i>
Men	53	29		
Year at school	Preference for the education type		X ²	p
	Face-to-face	Online		
1 st year	105	36	0.18	0.668
2 nd year	104	40		
Place of residence	Preference for the education type		X ²	p
	Face-to-face	Online		
State dormitory	141	44	7.35	<i>0.043*</i>
Private dormitory	8	9		
Family's home	34	15		
Rented house	26	8		
Do you live in one of the provinces struck by the earthquake?	Preference for the education type		X ²	p
	Face-to-face	Online		
Yes	19	9	0.48	0.490
No	190	67		
Did you lose any relatives in the earthquake?	Preference for the education type		X ²	p
	Face-to-face	Online		
Yes	7	13	16.16	<i>0.000*</i>
No	202	63		
Was your house/apartment damaged in the earthquake?	Preference for the education type		X ²	p
	Face-to-face	Online		
Yes	3	6	7.91	<i>0.019*</i>
No	200	67		
Partially	6	3		

p<0.05

3. CONCLUSIONS AND RECOMMENDATIONS

The present study, carried out to investigate the perspectives of medical secretariat students, one of the important branches of the health services sector, on the distance education decision made by the CoHE due to the earthquake, included 285 associate degree students. Of the participating students, about three-quarters were women, and slightly more than half were second-year students. While the majority of them lived in state dormitories, very few of them stayed in private state dormitories.

The number of the students who lived in the earthquake zone and lost their relatives in the earthquake and whose houses were damaged was less than was that of the other students, which, of course, can be perceived as a positive result in terms of less loss of life. Approximately three quarters of the Medical Documentation and Secretarial Program students did not prefer online education, in other words, they wanted to have all the courses face to face.

Education is one of the areas affected by natural disasters and epidemics most. For example, with the impact of the COVID-19 pandemic all over the world, most countries suspended education and started the distance education process. In Turkey, education suspended at all levels continued through distance education at primary and high school levels with the Education Information Network system. As for universities, the CoHE decided that the semester should be completed with distance education (Bulut, 2021, Işık et al., 2021). During the COVID-19 pandemic, the efficacy of online education was intensively discussed in terms of the future of countries and students studying at different education levels.

In a study conducted with lecturers (Sayan, 2020), it was reported that online education was not an effective way. In a study conducted with teachers (Avcı and Akdeniz), the teachers had problems with the technological infrastructure and internet, and inequality of opportunity in education emerged. At the beginning of the COVID-19 pandemic, teachers and parents had serious problems in adapting to distance education.

In a study conducted on the effects of online education on parents (Arslan et al., 2021), it was determined that parents could not use the applications used in online education sufficiently,

that they lacked internet, and technological tools, that they could not connect with teachers in the online classroom and could not access the course materials, that the students' sense of responsibility, technology and social skills decreased and that their social media addiction increased.

In another study conducted with the students of the faculty of theology (Genç and Gümrukçüoğlu, 2020), it was reported that the students were satisfied with the opportunities offered by distance education such as saving of time, easy access to the online classroom and listening to the repetition of the lesson, but they criticized online education because they were far from the socialization and face-to-face interaction of formal education.

In the literature, results on online education experiences of students studying in health-related fields during the COVID-19 pandemic are available. For example, in a study conducted to investigate medical school students' perspectives of emergency distance education processes (Atılğan et al., 2020), most of the students stated that the cognitive load in online education was high and tiring, that there were missing points in their education, that they had difficulty in developing self-discipline and that this process increased their social isolation levels.

In a study in which nursing students' views of online education given during the COVID-19 pandemic were investigated (Kurtüncü and Kurt, 2020), most of the students stated that both theory and practical courses would be insufficient with distance education, that they did not think to freeze registration, but that they thought that the school year would be extended. In their study (2021), Michel et al. concluded that most of the nursing students were worried about not being able to perform clinical practice during online education. In another study conducted with nursing students in Egypt (Diab & Elgahsh, 2020), it was determined that more than half of the students displayed a negative attitude towards distance education.

In a study (Kaya and Karaşin, 2022) in which Medical Documentation and Secretarial Program students' opinions of online education during the COVID-19 pandemic were investigated, it was concluded that the students were generally not satisfied with the online education given during the COVID-19 pandemic, and that online education was less efficient. In a study conducted with Physiotherapy and Rehabilitation Department students (A. Yılmaz, 2020),

87.5% and 78.5% of the students considered the efficiency of online education as low for applied and theoretical courses respectively.

In a study conducted with students of Vocational School of Health Services (Sarman and Günay, 2022), of the students, 80.3% stated that distance education was not as effective as face-to-face education, 24.4%, 37.4% and 54.6% stated that distance education did not contribute to their theoretical knowledge, their general culture level, and their professional practice skills at all respectively. The most common problem that the students had due to distance education was internet interruptions (15.8%).

In another study conducted by Yorulmaz and Söyler (2022), health management students' opinions about distance education was highly negative. These results suggest that our study results are largely consistent with the results of the current studies in the literature.

The results of our study demonstrated that the female participants, those who stayed in state dormitories, those who did not lose their relatives in the earthquake and those whose houses were not damaged in the earthquake preferred the face-to-face education model at a statistically significant level. These results can be interpreted as the female students staying in state dormitories were more familiar with the face-to-face education method compared to the male students staying in different places and they considered this method more suitable for them.

On the other hand, the placement of the citizens affected by the 6 February 2023 earthquake in the state dormitories affiliated to the Credit and Dormitories Institution paved the way for online education, which causes the students to experience accommodation problems. These decisions made by the CoHE caused great reactions throughout the country. For example, while the Education, Science and Culture Workers Union filed a lawsuit against this decision of the CoHE, the Turkish Medical Association underlined that the online education model in health-related fields would pave the way for irreversible mistakes and problems. Unlike other service sectors, it is not possible to substitute the service and compensate for the errors in health services. The cost of these errors can result in illness, disability or, in the worst case, death.

Considering the fact that online education carried out during the COVID-19 pandemic led to serious learning losses in students, it will be inevitable to face similar scenarios after this earthquake disaster. It should not be forgotten that many healthcare professionals who provide

healthcare services today received their education online during the COVID-19 pandemic. Moreover, due to the earthquake, students' houses were destroyed, tools such as tablets, computers and smart phones which are indispensable part of information technologies became unusable, their psychology was deeply injured and the internet infrastructure of the region was damaged. Therefore, due to such a serious picture, it does not seem rational for universities to make decisions to shift to distance education. Universities are the most valuable institutions because not only are they a place of education for students, but also they enable students to socialize. These contributions of universities to socialization will also have a positive impact on the psychosocial structures of all students who were affected by the earthquake directly or indirectly.

Another significant result obtained in the present study was that the students who did not lose their relatives and whose houses were not damaged in the earthquake displayed a more favorable attitude towards face-to-face education compared to the others. These results are not surprising because it is quite natural for students who were not affected by the earthquake directly to want to return to their face-to-face education. In the Medical Documentation and Secretarial Program, students should participate in the compulsory practice courses such as hospital practice and summer internship in addition to the theoretical courses, which may have influenced such decisions of the students.

In a study conducted on the issue in Turkey (Kızıltepe & Kurtgöz, 2020), no significant difference was reported between the nursing students' attitudes towards online education in terms of the variables such as sex, year at school and place of residence. Similarly, in another study conducted with nursing students (Uysal et al., 2022), no significant difference was reported between the nursing students' attitudes towards online education in terms of the variables such as sex, year at school and place of residence. In a study conducted with undergraduate students (Buluk ve Eşitti, 2020), it was reported that compared to female students, male students considered online education statistically more effective and they were satisfied with it. Within this context, we can say that while some of the results obtained in our study are similar to those in the existing literature, some are different.

Given the fact that the majority of the students in the present study wanted face-to-face education, it would be possible to list the following suggestions:

☑ The number of universities and students affected by the earthquake in the earthquake region is limited. Therefore, it is not the right policy to switch to distance education throughout the country. Therefore, the decision of how the universities that are not affected by the earthquake will continue their education should not be made by a single center.

☑ It is more suitable to allocate not dormitories affiliated to the General Directorate of Credit and Dormitories Agency but public guesthouses or hotels to families with children who are the victims of the earthquake.

☑ For the temporary use of dormitories affiliated to the General Directorate of Credit and Dormitories Agency, the beginning of the spring semester of universities can be postponed, and even a new academic calendar can be determined to include the summer season.

☑ Since electricity, internet and mobile phone lines have come to the point of collapse in the earthquake zone, it will be very difficult for thousands of students and instructors to access education if education is switched to distance education. Thus, students from universities in the earthquake zone can be admitted to the appropriate departments of universities in different provinces as guest students. Thus, it can be ensured that students can continue their education, and their wounds heal faster.

☑ Universities are places where students can meet their social and emotional needs during trauma periods. Returning to routine is very important for trauma. Therefore, the decision of distance education can be much more devastating, especially for the psychological and physical health of earthquake survivors.

☑ Students who request to freeze registration can be allowed, and academic staff can be given semester leave.

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The Effect Of Talent Management On Nurses' Perceptions Of Work Motivation And Organizational Trust

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Abstract

Aim: This study was conducted to determine the Effect of Talent Management on Nurses' Perceptions of Work Motivation and Organizational Trust.

Methods: In this context, data obtained from all nurses working in ministry of health hospitals and university hospitals in Ankara were evaluated. For the data, the talent management practices scale consisting of 7 sub-dimensions (attraction, selection and placement, commitment, retention, training, rewarding, talent pool), nurse work motivation scale consisting of 25 factors and the organizational trust scale, which consists of 3 sub-dimensions (trust in the institution, trust in colleagues, trust in the manager) was used.

Results: As a result of the research, nurses' perceptions of talent management were found to be moderate ($x=3,146$), their perceptions of work motivation ($x=3,839$) and organizational trust perceptions ($x=3,566$) were found to be higher than the average. According to the findings, nurses' perceptions of talent management, work motivation and organizational trust have positive

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correlation to each other. The perception of talent management of nurses working in the ministry of health was found to be higher than those in the university. It has been concluded that the nurses working at the university trust their institution more than the ministry of health.

Conclusion: The effect of talent management on work motivation was found to be higher in university hospitals. On the other hand, it has been concluded that the effect of talent management on organizational trust is higher in ministry of health hospitals.

Keywords: Talent Management, Work Motivation, Organizational Trust, Nurse

INTRODUCTION

It is significant to implement the talent management process in all health institutions, whether private or public, and to follow the talent management dimensions. With the effect of globalization and the advancement of technology, scientific and legal developments have increased the competition among health institutions as well as in all businesses. When we look at the literature; increasing and renovating the number of hospitals, specialization of the employees, being more conscious of the patients, new medical applications, software and hardware changes in the hospital depending upon technological progress, change of job, cost increase, intense competitive environment etc. and considering many reasons as such, health services should provide quality service and be evaluated professionally (Yılmaz 2015, 103).

The quality of service provided in healthcare services depends on the knowledge, skills, motivation, work environment, career development and satisfaction in the institution of the people who provide the service. It cannot be expected that the service quality provided to the patient is high where the employee is not satisfied. The quality of healthcare service delivery is directly proportional to the performance of the staff. Employee performance is mainly affected by factors such as communication within the organization, teamwork, leadership and motivation. With talent management implementations, the performance management process can be carried out more consciously. Unlike other sectors, due to the fact that the service provided in the health sector is on human health, there is no compensation for mistakes. For this reason, it is very important in the health sector to employ and retain talent in the appropriate place and to attract new talents to the institution. Talent management contributes to the development of employees constantly and also helps to protect the health and interests of patients in terms of patient safety (Karakuş, 2019).

As well as the employees being employed in accordance with the principles of talent management, the perception of trust and motivation of the employees in the institution are also important. In modern organizational structures, various strategic management tools are used to increase success, and traditional hierarchical structures are excluded. Organizations have undergone rapid change and the importance given to human resources has increased. In addition, various efforts have been carried out to ensure that talented employees do not leave their organizations. It is observed that the motivation of the employees who have a high level of trust towards their organizations also increases and the rate of absenteeism decreases.

In this study, based on the growing importance of talent management and employee retention, the effect of talent management implementations on employees' perceptions of organizational trust and work motivation was investigated.

The Importance of Talent Management in Healthcare

Even though talent management implementations that increase efficiency in healthcare have become increasingly common lately, they are not yet at the desired level (Nojedeh and Ardabili 2014, Ingram and Glod, 2016). American College of Healthcare Executives (ACHE) managers support that hospitals should give the necessary importance to talent management and assert that talent management implementations are very required in the health sector (Mutairi 2013). With talent management, we reveal that the selection of the right employee for the right job, innovation studies, the orientation of the employee and their adaptation to change, the competitiveness and the ability to use technology effectively (Gregoire 2006, 6).

Talent management implementations in nurses are used to create expertise and experience, increase quality and improve corporate culture (Douglas 2013). To reach their future goals, health institutions need to both embrace the talents they have and reveal new talents. In the study conducted on healthcare providers, it was emphasized that the perception of talent management has a positive increasing effect on employee motivation (Atasoy, 2021). If we consider the importance of employee motivation in terms of both individual and corporate productivity, talent management is very important in this respect. In another study, the effects of talent management on the performance of healthcare providers were investigated and it was revealed that talent management applied in hospitals would increase the performance of employee (Çayan, 2011). Healthcare businesses have to keep employee performance high in order to increase the

performance of the institution. In this case, healthcare businesses need to use talent management implementations in order to provide competitive advantage and quality service. In another study conducted in the pharmaceutical industry, the relationship between talent management, intention to leave of employment and organizational commitment was investigated, and it was observed that as talent management scores increased, intention to leave of employment scores decreased (Sarıkçe, 2019). Talent management implementations are also very important in terms of retaining talented employee. The use of talent management implementations in healthcare businesses is important not only for the employee but also for the organization. In the study conducted by Kurşun (2019), it is emphasized that there is a positive and significant relationship between healthcare professionals' talent management and organizational culture. As the perception of talent management increases, the perception of organizational culture and organizational commitment increases. In another study, it is seen that the effect of talent management on nurses' job satisfaction and organizational commitment is positively significant (Gül,2018). The relationship between nurses' perception of talent management and organizational culture was examined and it was seen that creating expertise and experience increases quality and improves organizational culture (Douglas, 2013). In another study conducted on healthcare professionals, a significant difference was found on the perceptions of talent management of the personality traits of healthcare professionals (Akbay, 2019). Talent management implementations in the healthcare sector were investigated and it was emphasized that there was a great necessity in this sector (Mutairi 2013).

Employees generally plan to change to a business that allows them to develop their skills, is innovative rather than oppressive, has better promotion opportunities, provides their own wishes and expectations, and thinks that they are compatible with the goals and objectives of the institution (Ece and Esen, 2017: 143). For this reason, it can be stated that it is very difficult to ensure the talent development of the employees. The most important reason for this difficulty is that talented people developed in some special departments usually need to form a stronger bond. In order to establish this strong bond, the performance criteria and duties of the employees must be continuous (Doz, 2002: 65). It is assumed that this situation, which requires a long-term process, will increase the trust of talented employees in the institution.

1. RESEARCH METHODOLOGY

With this research, the effect of talent management on nurses' work motivation and organizational trust perceptions was tried to be measured. It has been tried to reveal whether there are significant differences according to these variables in nurses working in ministry of health hospitals and university hospitals. In addition, the relationship between talent management, work motivation and organizational trust perception was also studied. Another aim of the study is to guide the healthcare sector and healthcare managers with the findings of the research. In the researches, there are studies on the concepts of general work motivation, organizational trust or talent management, however since talent management is a new concept, there has not been enough work in the field of health yet, so it is expected that our study will contribute to the literature.

Research Question: Does Perception of Talent Management in Nurses Affect Perceptions of Work Motivation and Organizational Trust?

H1: Nurses' attitudes towards talent management implementations affect their perceptions of work motivation.

H2: Nurses' attitudes towards talent management implementations affect their perceptions of organizational trust.

H3a: Nurses' perception of talent management shows a statistically significant difference according to the gender variable of nurses.

H3b: Nurses' perception of talent management shows a statistically significant difference depending on the marital status.

H6: There is a significant relationship between nurses' perception of talent management and work motivation.

H7: There is a significant relationship between nurses' perception of talent management and organizational trust.

H8: There is a significant relationship between nurses' perception of work motivation and organizational trust.

The population of the research consisted of nurses working in University Hospitals and Ministry of Health hospitals in Ankara. The population of the research consists of 18188 nurses, 13412 in the Hospitals of the Ministry of Health and 4776 in the University Hospitals, according to the report obtained on 01.06.2021 from the SPTS (Ministry of Health Personnel Tracking System) data system of the Ministry of Health. According to the framework and limitations of the study, it

was deemed appropriate to have a sample size of 95% confidence and 5% sensitivity. In this direction, it has been calculated that a sample selection consisting of 277 nurses from Ministry of Health hospitals, 99 nurses from university hospitals and 376 nurses in total is required. For the design of the research, the hospitals of the ministry of health and the university hospitals were evaluated as a stratum and the stratified sampling method was preferred. In the implementation phase of the research, data were collected by applying a questionnaire to 342 nurses from the ministry of health hospitals and 230 nurses from the university hospitals.

Quantitative research method was used in the research and questionnaire technique was used as a data collection tool. The questionnaire form used in the research consists of four parts. In the first part, questions about demographic variables were included. In the second part, the talent management implementations scale, in the third part, the nurse work motivation scale and in the fourth part, the organizational trust scale was used. Demographic variables scale consists of 7 variables including gender, marital status, age, level of education, working sector, duty period and department. Talent Management Implementations Scale; taken from the "Validity and Reliability Study of the Talent Management Implementations Scale" conducted by C., DURAN, D., BOZ, S., BEHDİOĞLU and S., KUTLU in 2019. Scale of talent management implementations consists of 49 statements in 7 sub-dimensions: attraction, selection and placement, commitment, retention, training, rewarding and talent pool. "Nurse Work Motivation Scale" used to measure the work motivation levels of the participants was taken from the study called "Nurse Work Motivation Scale: Validity, Reliability" developed by E., ENGİN, O., ÇAM (2016). The work motivation scale for nurses consists of 25 statements. "Organizational Trust Scale" used to measure the organizational trust perceptions of the participants was taken from the study named "Organizational Trust: A Scale Development Study" developed by ÇALIŞKAN (2021). Organizational trust scale consists of 17 statements, three sub-dimensions: trust in the manager, trust in the institution, and trust in colleagues. The scales planned to be used for research purposes were selected from among the scales used in the literature with proven validity and reliability. For the statements in the scales used, a 5-point Likert-type scale was used as "I Strongly Disagree" 1 point, "I Disagree" 2 points, "I Am Undecided" 3 points, "I Agree" 4 points, "I Strongly Agree" 5 points.

In order to measure perceptions of talent management, work motivation and organizational trust, the reliability of the collected data was examined using the Cronbach Alpha method.

Cronbach Alpha coefficients of the talent management implementations scale ($\alpha= 0.972$), organizational trust scale ($\alpha=0.961$) and work motivation scale ($\alpha=0.934$) were found to have “high reliability” in the range ($0.80 \leq \alpha < 1.00$). Factor analysis was performed to measure the suitability of the scales used in the study. Confirmatory factor analysis was applied to determine the structural validity of the Talent Management Implementations Scale, the Nurse Work Motivation Scale, and the Organizational Trust Scale. The fit indices values for the effect model of all scales were found to be within the acceptable range. In order to test the research hypotheses; Structural Equation Modeling analysis method was used in modeling the relationships between dependent and independent variables. In this model, correlations between dependent and independent variables are also included in the model. Fit statistics were made for the validity of the model. The effect coefficients of talent management implementations and its sub- dimensions on the perception of Work Motivation and Organizational Trust were calculated. In addition, the relationship between talent management, work motivation and organizational trust in nurses was revealed by using correlation analysis.

2. FINDINGS

Table1. Frequency distribution and descriptive statistics for Talent Management Implementations Scale items

Variable	Mean	Standard deviation
Talent Management the dimension of Attraction	2,958	0.899
Talent Management the dimension of Selection-Placement	3,151	0.934
Talent Management the dimension of Commitment	4,226	0.780
Talent Management the dimension of Retention	3,100	0.880
Talent Management the dimension of Training	3,230	0.843
Talent Management the dimension of Rewarding	2,571	0.893
Talent Management the dimension of Talent Pool	3,114	1,026
Talent Management Scale Mean	3,146	0.697
Work Motivation Scale Mean	3,839	0.571
Organizational Trust the dimension of Trust in Colleague	3,658	0.777
Organizational Trust the dimension of Trust in the Institution	3,402	0.914
Organizational Trust the dimension of Trust in the Manager	3,601	0.841
Organizational Trust Scale Mean	3,566	0.752

According to the findings, the highest average of 4.37 in the sub-dimension of the talent management implementation scale in the item “Talent Management Commitment 17” (Physical working conditions affect my motivation), and the lowest average in the rewarding sub-dimension of the talent management implementation scale with 2.36 in the “Talent Management Rewarding

35” item (Doing my job in the best way allows me to get a raise in my salary) was found. Nurses generally emphasize that physical working conditions are important for them and highly affect their work motivation. In addition, nurses state that when they do their job well, they do not receive an additional increase in their salaries and are not rewarded in this way. Considering the findings, nurses' perception of work motivation was above the average and their motivation was considered high. In general, nurses stated that they like to receive feedback while working in terms of their motivation. According to the results, it is seen that the average of nurses' perception of organizational trust is high and it is observed that they generally trust the organization they work for. They express that they trust the work skills of their colleagues within their organizational trust perceptions.

H3a hypothesis was accepted. (H3a: Nurses’ perception of talent management shows a statistically significant difference according to the gender variable of nurses). Talent management perception was found to be higher in male participants than in female participants.

H3b hypothesis was rejected. (H3b: Nurses’ perception of talent management shows a statistically significant difference depending on the marital status).

Table 2. Correlation Analysis Findings of the Research

		Talent management	Work motivation	Organizational trust
Talent management	Correlation coefficient	1	,503**	,512**
	p		,000	,000
Work motivation	Correlation coefficient	,503**	1	,548**
	p	,000		,000
Organizational trust	Correlation coefficient	,512**	,548**	1
	p	,000	,000	

According to the results obtained, the correlation coefficients were statistically significant. The positive value of the correlation coefficients indicates that there is a positive relationship between the variables. Even though the relationships between the variables changing according to the correlation coefficients are close to each other, the highest relationship is between organizational trust and work motivation variables, and the lowest relationship is between talent management and work motivation variables. According to these findings, H6 Hypothesis, H7 Hypothesis and H8

Hypothesis were accepted (**H6**: There is a significant relationship between nurses' perception of talent management and work motivation. **H7**: There is a significant relationship between nurses' perception of talent management and organizational trust . **H8**: There is a significant relationship between nurses' perception of work motivation and organizational trust).

Structural Equation Modeling Analysis

Table 3. Effect coefficients of Talent Management Implementations Scale on “Organizational Trust” and “Nurse Work Motivation” in Ministry of Health Hospitals and University Hospitals

	Talent Management Imp.	Estimate	S. Estimate	S. Error	Critical Value	P
Ministry of Health Hospitals	organizational _trust	0.462	0.652	0.056	8,272	***
	Work motivation	0.138	0.322	0.037	3,772	***
University Hospitals	organizational _trust	0.474	0.630	0.071	6,687	***
	Work motivation	0.303	0.448	0.067	4,492	***

H1: Nurses' attitudes towards talent management implementations affect their perceptions of work motivation. H1 Hypothesis was accepted. It can be said that the effect of talent management on motivation is higher in university hospitals than in Ministry of Health hospitals.

H2: Nurses' attitudes towards talent management implementations affect their perceptions of organizational trust. H2 hypothesis was accepted. It has been observed that the effect of talent management on organizational trust is higher in Ministry of Health hospitals. According to the standard estimation values, it was observed that the "Organizational Trust" effect coefficients were higher than the "Nurse Work Motivation" effect coefficients in the Ministry of Health Hospitals and University Hospitals.

3. DISCUSSION

In the research findings, it can be said that there is a positive significant relationship between talent management, organizational trust and work motivation due to the positive correlation coefficients. Accordingly, as nurses' perception of talent management increases, their trust in the organization increases and their work motivation rises. In addition, a positive significant relationship was found between nurses' perception of work motivation and organizational trust. Bahadınlı (2012) stated in her study that when the right talent is employed in the right place, job satisfaction increases. Gülşen (2020) stated in his study that there is a low level of correlation between the participants'

perceptions of talent management and their perceptions of intrinsic motivation. In the study of Yılmaz (2019), it was stated that staff empowerment practices had an increasing effect on organizational trust and employee motivation perceptions.

When the effect of Talent Management Implementations Scale on “Organizational Trust” and “Nurse Work Motivation” is investigated, a statistically significant difference is observed for Ministry of Health hospitals and university hospitals. According to the standard estimation values, it was observed that the "Organizational Trust" effect coefficients were higher than the "Nurse Work Motivation" effect coefficients in the Ministry of Health Hospitals and University Hospitals. In addition, while the "Organizational Trust" effect coefficient was higher in the Ministry of Health Hospitals than the University Hospitals, it was determined that the "Nurse Work Motivation" effect coefficient was higher in the University Hospitals. In the literature, Çetin (2021)'s research titled "The effect of talent management implementations in businesses on the organizational justice perception and motivation of employees" has a positive and significant effect on the total motivation perception of abstract and concrete talent management. Güner (2016) states in her study that there is a high positive relationship between talent management and motivation. Accordingly, as the perception of talent management increased, work motivation rose. In the study of Kontoghiorghes (2015) and in the study of Novinda and Eeng (2020), it has been seen that the motivation of the employees increases in companies where talent management implementations are applied regularly. Rastgoo (2016) emphasizes that talent management implementations have a positive effect on employee motivation. Karadayı (2018) states in his study that the perception of talent management has a positive effect on employee motivation. Kaleem (2019) emphasizes that talent management has a direct and positive effect on employee motivation in his research on public sector employees. In the study conducted in Karaman province by Akgemci et al. (2020), there is a positive and significant relationship between talent management and perception of motivation. When we look at the relationship between talent management and organizational trust perception; Erdoğan (2020) reached the conclusion that talent management implementations positively affect organizational trust perceptions. Accordingly, the effective execution of talent management implementations increases the organizational trust levels of employees. In their study conducted in 2013, Altınöz, Çakıroğlu and Çöp investigated the effect of talent management perception on organizational trust levels and stated that there was a strong positive relationship between them. In the literature; it is seen that talent management perceptions have a significant

effect on organizational trust (Dağ, S., 2018). The dimensions of talent identification, talent development and talent culture have significant effects on organizational trust.

4. CONCLUSION and RECOMMENDATIONS

In the findings of the research, the nurses' perceptions of talent management were found to be moderate in general. Nurses generally emphasize that physical working conditions are important for them and highly affect their work motivation. In addition, nurses state that when they do their job well, they do not receive an additional increase in their salaries and are not rewarded in this way. It can be suggested that institution managers in the health sector should give more importance to the physical conditions of the hospitals and that they should bring a transparent and fair reward system by making a payment plan suitable for the performance of the employees. While measuring nurses' perceptions of talent management; in general, nurses stated that they could not easily criticize their managers about their job or duties. Accordingly, effective communication skills can be developed between nurses working in hospitals and managers, and leaders with a spirit of leadership who are open to criticism can be brought to the management staff. Nurses stated that their institutions recruited qualified employees, but less emphasis was placed on candidate skills. Since the health service has a direct effect on human health, the service providers should have a high level of practical skills as well as theoretical knowledge. It may help to increase success if managers include candidates' skills in the evaluation while selecting and placing personnel.

It was found that nurses' perceptions of work motivation were high, and it was revealed that nurses like to receive feedback while working. The work motivation of nurses can be increased by using open communication techniques within the institution and applying an effective feedback system between managers and employees.

It is seen that the average of nurses' organizational trust perceptions is high and it is observed that they trust the organization they work for. They express that they trust the work skills of their colleagues within their organizational trust perceptions. The level of trust in colleagues was found to be higher than the level of trust in the institution. Hospitals should include nurses in their institutional policies and encourage them to develop suggestions. The institution should supply with the personal rights of its employees fairly and support its employees in all matters.

Considering the organizational trust levels of nurses working in university and ministry of health hospitals, university employees trust their institution more than the employees of the ministry of health. The reason for this can be explained by the simpler organizational structure of university hospitals. Organization employees with this structure can communicate more easily and their sense of belonging to the organization can be higher. In order to increase the trust of the employees in the Ministry of Health hospitals, it may be beneficial to respond to the wishes and needs of the employees by using effective communication techniques. The perception of talent management implementations was found to be higher in nurses working in the ministry of health than those working in universities. It can be said that more importance is given to talent management in the hospitals of the Ministry of Health. It may be beneficial for university hospitals to attach more importance to talent management infrastructure studies in order to retain talented nurses, survive in a competitive environment and work with high efficiency.

It can be said that there is a positive relationship between the variables of talent management, organizational trust and work motivation in the research. Despite the fact that the relationships between the variables changing according to the correlation coefficients are close to each other, the highest relationship is between organizational trust and work motivation variables, and the lowest relationship is between talent management and work motivation variables. Accordingly, as nurses' perceptions of talent management increase, their level of trust in the institution increases and their work motivation rises. Hence, all employees should be treated equally and fairly, and appropriate opportunities should be offered in all processes, starting from employee selection and recruitment, to training and development opportunities, career planning, promotion opportunities and performance management. If employees think that talent management implementations are done with fair and equal opportunities, their organizational trust levels will increase even more. When we look at the effect of talent management on organizational trust and work motivation in nurses, it can be said that the effect of talent management implementations on organizational trust is significant for the ministry of health and university hospitals, and it has a higher effect in ministry of health hospitals. According to this result, university hospitals should give more importance to talent management implementations. Perceptions of organizational trust will increase in an institution where talent management practices are carried out appropriately. Because training and development opportunities positively affect the trust of nurses towards the institution. Nurses want to have a work environment where

they can develop themselves and learn continuously. It is important for nurses to be constantly innovative and progressive in healthcare service delivery in terms of themselves and the efficiency of the institution.

When employees think that their career plans are hindered, their trust in the organization decreases. For this reason, performance management and talent management implementations should be carried out appropriately and continuously in order to effectively manage talented nurses working with high performance and to increase the perception of trust they have towards the institution. Institutions with a working culture focused on continuous change and learning are more successful in talent management practices and survive longer. On the other hand, it can be said that the effect of talent management on motivation is higher on university hospitals than on the public. It can be said that if the right talent is employed in the right place, the level of motivation increases. More talent management implementations should be given importance in order to increase work motivation in Ministry of Health hospitals.

Since the nature of the talent management process has not been fully resolved due to the lack of research on talent management in the healthcare sector, studies should be conducted with more diverse variables in order to better understand the concept of talent management. Some of these variables were mentioned in the study. The relationship between talent management implementations and organizational processes in nurses can be studied and the relationship between organizational climate, job satisfaction, performance, job stress, leadership type, etc. and talent management can also be investigated.

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Artificial Intelligence in Metabolomic Research

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Review Article

Abstract

The term "metabolomics" refers to high-throughput methods for detecting various metabolites and small molecules in biological samples. Undirected metabolomics, also known as unbiased global metabolome analysis, can be used to discover key metabolites as variables or measurements of human health and illness. From this vantage point, it is investigated how artificial intelligence and machine learning enable significant advances in non-targeted metabolic processes as well as significant findings in the early detection and diagnosis of diseases. Metabolomics is important for finding cures for many diseases. In the development of innovations in the field of biotechnology, it is of great importance to collect, filter, analyse, and use biological information in smart data. For this reason, many biotechnology companies and various healthcare organizations around the world have created large biological databases. This biological data accelerates the development of products in many areas. Algorithms are being developed for biological data analysis. It is thought that many disease treatments will be found when the human genome is edited. Machine learning techniques are effective tools for metabolomic investigation; however, they can only be used in straightforward computing scenarios. When used functionally, data formatting frequently calls for the use of sub-computational resources that are not covered in this area.

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INTRODUCTION

Modern science has a form in which it is thought possible to formulate "how" the events observed in nature occur, and therefore to "know" how things will happen before they happen. A paradigm shifts in science began when computers made possible operations that could not be calculated by hand. Computer-aided experimental equipment has developed very rapidly and has begun to scan and produce data at a speed that was unimaginable before. This situation has revealed many previously unforeseen problems. Making sense of the produced data requires a completely different scientific study methodology. Now, numerical approaches such as mathematical modeling, complex networks, and machine learning and the application of these approaches as software tools have become inevitable for almost every branch of science. With technological developments, reading of all DNA sequences in the cell (genomics), determination of all RNA amounts (transcriptomics), or determination of all protein amounts (proteomics)-omic data has become available. All these have led to the establishment of an approach to evaluate the system instead of understanding the whole by interpreting and combining the intracellular mechanisms into small parts. This new approach is called systems biology. Apart from the genomic, transcriptomic, and proteomic data that correspond to the main activities in the cell, there are many different layers of big data. With the emergence of metabolic models at the genome-scale, metabolomic data has emerged and it is aimed to simultaneously analyze complex structures consisting of, for example, 7500 reactions and 5000 metabolomics for a human cell.

Interactions of proteins, whose number is approaching 20,000 in the cell, are examined in the form of network structures with the help of interatomic data, and unknown mechanisms are tried to be clarified (Jung-Ming G. Lin, et al. 2022). Analyzing the three-dimensional (3D) structures of proteins is of vital importance in the determination of their functional parts and, therefore, in the development of specific drugs for diseases caused by proteins. Computational structural biology, which tries to predict the structure of proteins whose amino acid sequence is known but whose three-dimensional (3D) structure is unknown, by machine learning methods using proteins of known three-dimensional (3D) structure, has become an almost independent discipline. (Lander ES et al., 2001).

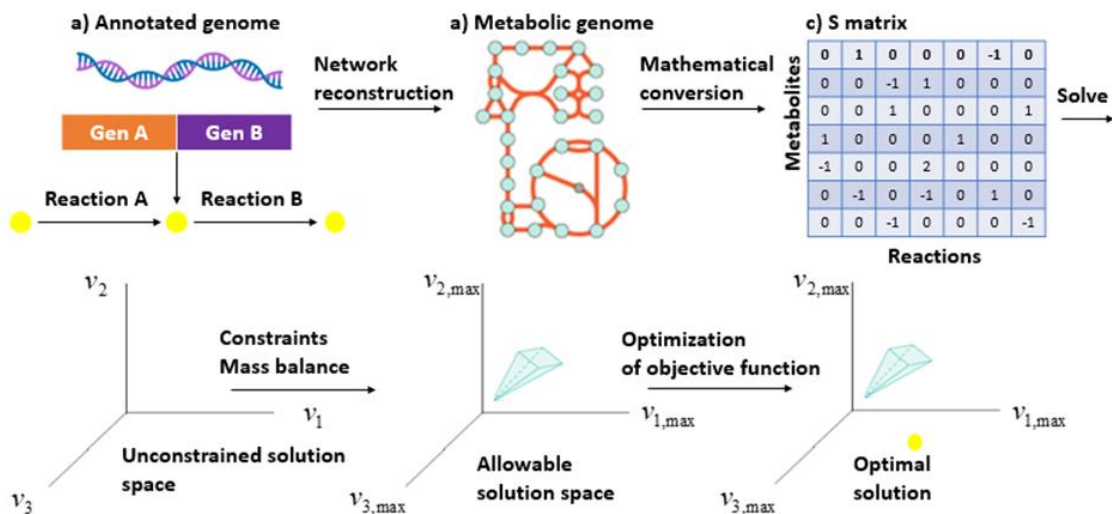


Figure 1. Structure of proteins with known amino acid sequence but unknown three-dimensional structure using proteins with known three-dimensional structure (Xin Fang et al., 2020).

Metabolomic applications include monitoring clinical disease, evaluating therapeutic applications, and understanding the effects of genetic modifications. All metabolomics found in the body are defined by metabolomics techniques. Metabolomics is very diverse and exists in different concentrations. In this technique, detection, separation, identification, and analysis of metabolomics are performed. Performing all these processes in a short time without loss of sensitivity and high efficiency is one of the important parameters of metabolism (Bren L., 2005).

Purpose

The process through which the body's chemical reactions create the numerous metabolites required for human life is known as metabolism. The two fundamental processes of metabolism are anabolism, or the creation of compounds required by the cell, and catabolism, or the breakdown of molecules for energy. Inactivation, detoxification, and the elimination of foreign or undesirable substances are additional functions of metabolism. Understanding these systems and how they relate to human physiology in terms of health and disease is crucial. The measurement of small molecules in biological samples is the basis of metabolomics, a thorough, high-throughput study that may be used to explore these processes individually or collectively (usually blood, urine, or

saliva) (J.D. (2018)). Phenotypic changes in metabolite profiles may result from disruption of the omic layer. Exposomics (shaded in blue above) expands this to measure phenotype-related metabolite profiles, including exogenous small molecules and the effect of exogenous and non-genetic variants on "omic" cascades. Sample collection times based on phenotypic identification can help determine whether metabolite biomarkers or pathways are relevant to disease etiology, diagnosis, or progression (Topfer, N. 2021).

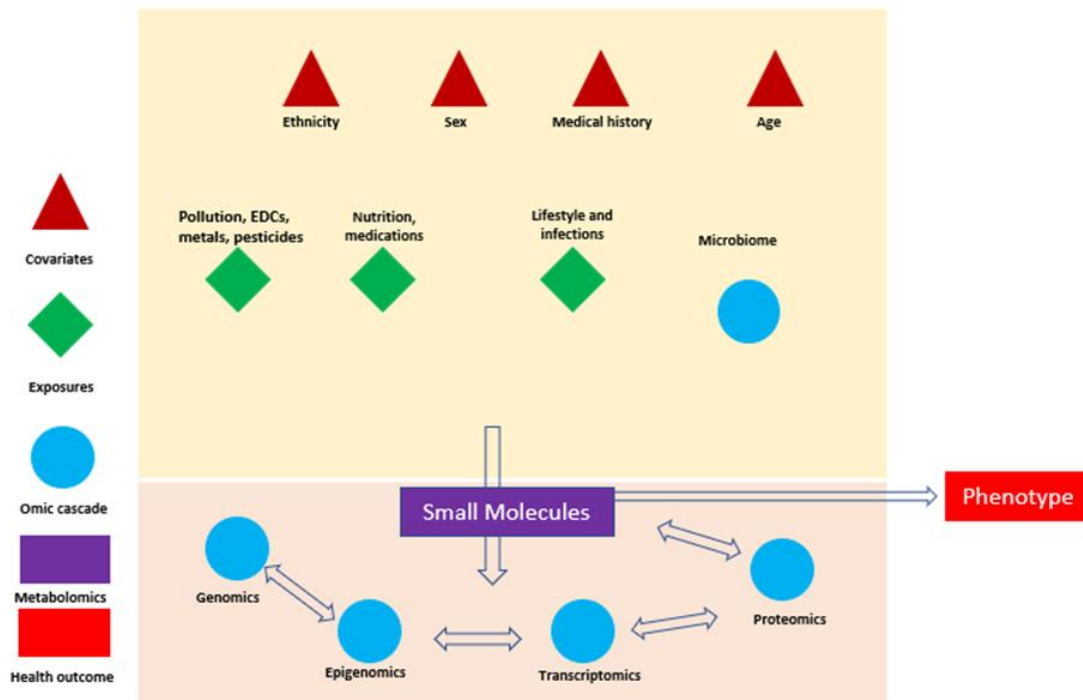


Figure 2. Metabolomics supports the discovery process. Metabolomics (pink shading, bottom) focuses on endogenous small molecules as outputs of metabolic systems.

Many researchers wonder what the potential for artificial intelligence could be in the future of medicine and healthcare. Looking at AI studies, the general implication is that the way modern machines draw inferences is very different, and that complementarity is ultimately a source of strength, as well as an opportunity for researchers to make better decisions, but that there are no more important decisions than the decisions physicians have to make every day. Therefore, it is believed that physicians who partner with artificial intelligence in decision-making will see their healing powers increase even more. It can be said that the artificial intelligence revolution of this century is really a renaissance, a rebirth today. Artificial intelligence and machine learning have

significant advantages for medicine, health, science, and engineering today. Artificial intelligence and machine learning-derived technologies enable faster and larger processing of data as well as advanced analytics. It allows the identification of inconsistencies, minimizing the need for human intervention. Based on data from many patients, the proposed approach is trained, and feature distributions are examined to identify the most important features (Jacobs DM. 2017). It is then trained using selected interesting features to construct a diagnostic classifier and evaluate data from different patients (Jialal, I. 2019).

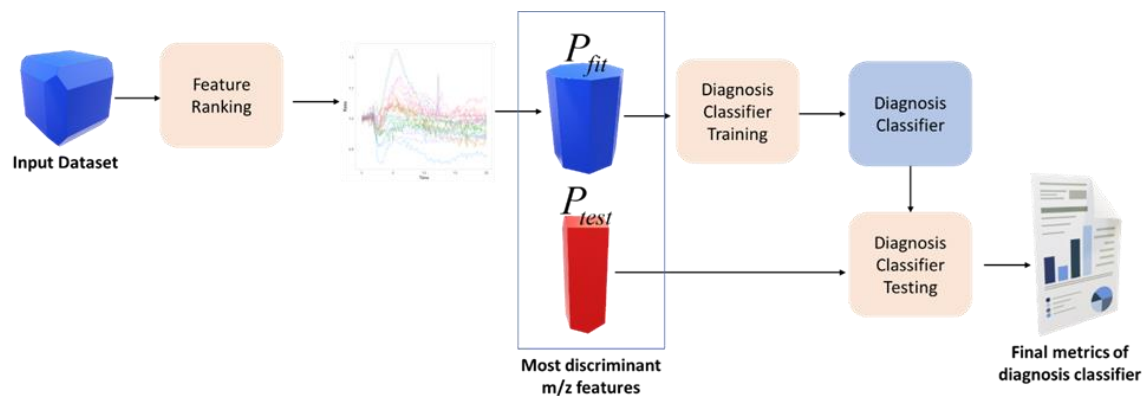


Figure 3. Steps to train and test the diagnostic classifier.

Collecting, filtering, analyzing, transforming, and transforming biological information into smart data is of great importance in the development of innovations in the field of biotechnology. For this reason, many biotechnology companies and various healthcare organizations around the world have created large biological databases. This biological data accelerates the development of products in many areas. The scope of health biotechnology, which is one of the most important areas of biotechnology, can be listed as the development and production of biopharmaceuticals; chemical analysis of different compounds; diagnosis and treatment models based on RNA and DNA data; and planning; personalized medicine and others; the development of health methods; enzyme research and other similar biological processes. The main elements that feed the bioinformatics methods are the omic data presented within the scope of biological sciences. All methods of identifying hereditary material, genomes, and studying structural and functional features in organisms are defined as genomics. Studies to elucidate the biological function journey of information in the genome have advanced with other omics technologies such as transcriptomics, proteomics, and metabolomics. There are metabolomic approaches that enable the

identification, detection, and analysis of relevant small molecules, as well as transcriptomic technologies that allow the study of all RNA products created in vivo and proteomic technologies that examine the structures, modifications, positions, and functions of translated proteins. The structures of functional components in the organism, such as carbohydrates, lipids, and vitamins, are used to understand biological processes in the organism. makes a major contribution (Genetic Engineering and Biotechnology News publishing).

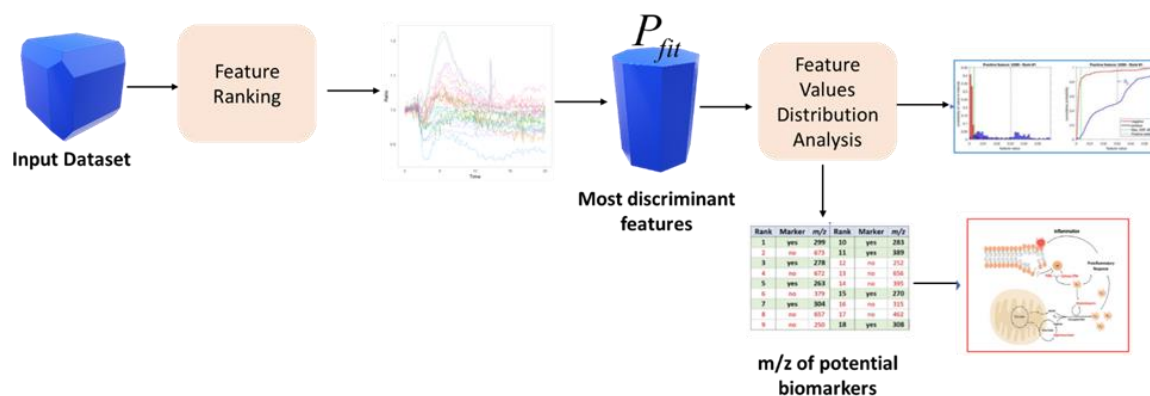


Figure 4. Identification of possible biomarkers using the proposed machine learning approach and the most salient features (Dabaja, M. Z., et al., 2019).

1. RESEARCH METHODOLOGY

Vaccines, drugs, and other therapeutic applications developed within the framework of health biotechnology use living organisms, cells, molecules (e.g., DNA, RNA, peptides, proteins) and biological information obtained from these structures. Information technology tools such as artificial intelligence and machine learning are used at very important stages in all stages, from molecular discovery, which is the first stage of drug development, to in vitro tests, from animal experiments to clinical research. The discovery of drug molecules, whether a conventional chemical drug or a biotech drug, is a very long and arduous step. For classical molecules, only 1 out of 8,000 molecules on average is released as a drug. It takes a lot of time, effort, and money to develop even this single molecule. Thanks to artificial intelligence, these molecular scanning processes have been reduced from 5 to 10 years to months or even days. The best example of this is the work of Alex Zhavoronkov and colleagues, who reduced years of molecular scanning to 21

days. Likewise, artificial intelligence solutions are used in the design and execution of in vitro studies. Thanks to artificial intelligence and deep learning, laboratory studies are better optimized, and the repetition of experiments is reduced, resulting in significant time and cost savings. In the animal testing phase, AI-powered programs ensure that research is time-consuming and done with fewer animals. In addition, it is thought that the use of organ-on-chip and tissue-on-chip will reduce the need for animal experiments thanks to biochip technology. When it comes to the clinical trial phase, AI plays an undeniable accelerator role in the entire human phase study design, the right recruitment of volunteers (patients), and the collection of efficacy and safety data. Artificial intelligence-assisted predictive measures can be planned by collecting, reviewing, and analyzing information about all adverse events that occur during the clinical trial process and after drug release. For example, the unexpected situations of a drug or vaccine developed according to a certain age, gender, concomitant disease or some other conditions can be determined by big data analysis, and these special groups can be detected quickly with artificial intelligence (Kurnaz I. Ed. (2019); Zhavoronkov A (2019); Zacharoula & Yannakakis, Georgios (2020); Tekade, R. K. (2021)). They are used in the processes of collecting, analyzing, interpreting, and transforming biological information into a solution with artificial intelligence (Ünver and Kurnaz, 2019).

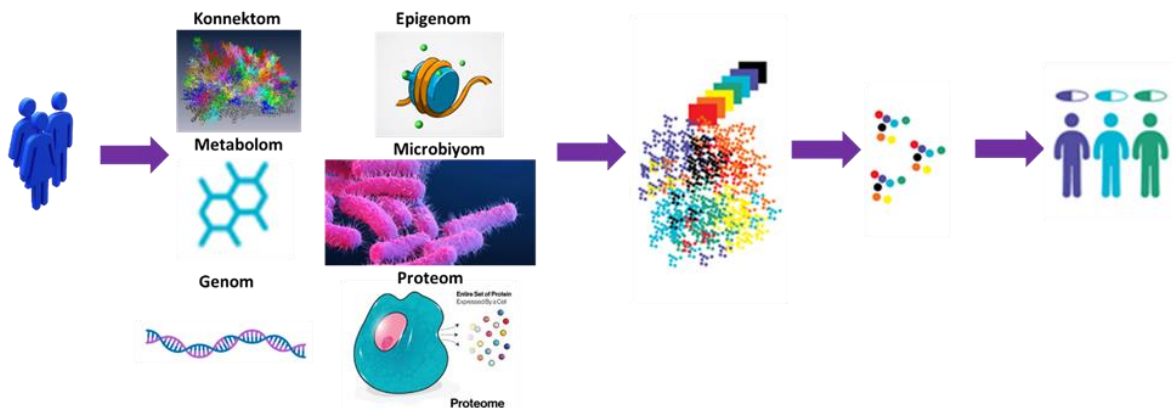


Figure 5. Many new technologies, from implantable biosensors to wearable sensors

To survive while balancing a wide range of varied environmental variables, cellular life requires a vast diversity of metabolic phenotypes (Gray A et al. (2009); Barnhill S et al. (2002); Li JV et al. (2011); Porfirio B et al. (2009)). Due to the technology's capacity to quantitatively test numerous metabolomic targets simultaneously, liquid chromatography-mass spectrometry (LC-

MS) is the most effective method for differentiating these phenotypes (Brandon TR et al. (2005); Neumann S et al. (2008); Siuzdak G et al. (2011). As a result, non-targeted metabolomic profiles are excellent at detecting environmental, stress, or disease-related indicators. However, this may be complicated by the typical biological variance in metabolic response (Bothner B et al. 2014). The best way to properly apply machine learning to metabolomic datasets is likely to combine it with data mining techniques like principal component analysis and hierarchical clustering. This is primarily since data mining methods may be used unsupervised, which reduces the danger of human bias and enables the machine to discover significant associations between samples. Machine learning techniques are effective tools for metabolomic investigation; however, they can only be used in straightforward computing scenarios. It is frequently necessary to use sub-computational resources not addressed in this section when preparing data for functional purposes (Istanbul, February 16, 2021— Harvard T.H.). Harvard Chan School of Public Health researchers have utilized machine learning, a branch of artificial intelligence, to pinpoint the elements more precisely in walnuts that may be lowering the risk of type 2 diabetes and cardiovascular disease (two of the leading causes of death in the US). This study, funded by the California Walnut Commission and featured in *The Journal of Nutrition*, identified 19 metabolomics linked to walnut consumption using a novel method called agnostic machine learning. Various metabolites are produced by the body based on the type of food eaten. A 37% reduced incidence of type 2 diabetes and a 63% lower risk of cardiovascular disease were linked to the walnut metabolomics profile. This work adds to the three decades of prior research on walnuts and heart health by being the first to investigate the link between walnut metabolomics and the risk of cardiometabolic illness.

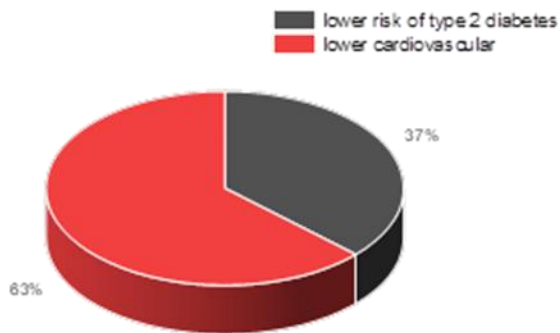


Figure 6. The relationship between walnut metabolomics and the risk of cardiometabolic disease.

The PREvención con Dieta Mediterránea (PREDIMED) project, a large-scale, multi-year investigation of the benefits of the Mediterranean diet on avoiding cardiovascular disease in persons at high risk of heart disease, included 1,833 participants, whose data were reviewed by the researchers.

Table 1. Participants were between the ages of 55 and 80 and followed one of the three diets.

1	Adding mixed nuts to a Mediterranean diet (50 percent walnuts, 25 percent almonds, and 25 percent hazelnuts)
2	Olive oil extra virgin enriches the Mediterranean diet.
3	Low-fat diet: walnut metabolomics reveals a walnut metabolomic signature linked to a decreased risk of cardiovascular disease and type 2 diabetes.

These results underline the connection between eating walnuts as part of a balanced diet and cardiometabolic health. This epidemiology study's new methods will aid in establishing associations between food and illness. The results, however, do not imply causation. Because this study only looked at older Hispanic people, more research in other demographics is needed. Future research will be required to uncover other walnut intake indicators that were not monitored in this study as well as to comprehend individual metabolic reactions following walnut eating, given the quickly developing area of metabolomics.

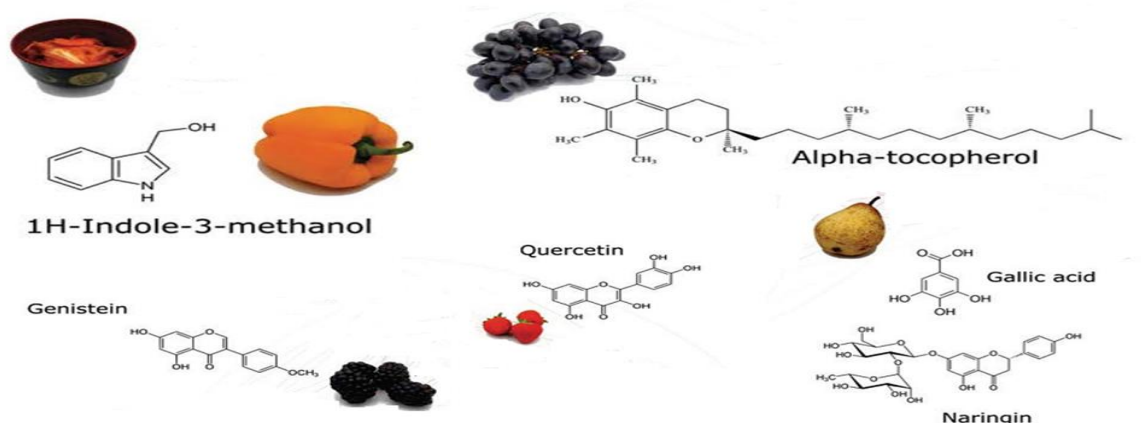


Figure 7. Profiles of compounds in certain foods with predicted efficacy in targeting the SARS-CoV-2-host interactome (Xian Y, et al., 2020; Gordon DE, et al. 2020).

Potential bioactive anti-COVID-19 compounds in foods were found using the network machine learning approach in the study "Network machine learning maps phytochemically rich "Hyperfoods" to combat COVID-19," which was published in the journal Human Genomics. Among the 5658 experimental and clinically licensed medications that are effective against COVID-19, it has been calibrated using a machine learning model to forecast anti-COVID-19 candidates with a balanced classification accuracy of 80–85%. These have been found to be the most promising therapeutic candidates that may be "reused" to treat COVID-19, including popular medications like simvastatin, atorvastatin, and metformin that are cycled to treat metabolic and cardiovascular diseases. 52 biologically active compounds from different chemical classes, including flavonoids, terpenoids, coumarins, and indoles, were found after a database of 7694 bioactive food-based molecules was put through a calibrated machine learning algorithm. These compounds are predicted to target the SARS-CoV-2-host interactome networks. Based on the variety and relative concentrations of probable compounds with antiviral capabilities, this was utilized to build a "food map" with the theoretical anti-COVID-19 potential of each projected component. According to the conventional approach to developing antiviral drugs, a medication must target a viral protein. In this regard, comprehensive computational molecular docking simulations have been conducted to identify plant-based bioactive compounds for certain SARS-CoV-2 protein targets. The durability of intricate virus-host interaction networks against specific protein degradation is one of this method's many shortcomings. In addition, escaping viral variants may confuse the potential effects of vaccinations and medications against genes or protein targets unique to SARS-CoV-2. In order to find food-based bioactive compounds targeting the SARS-CoV-2 and human interactome networks, we integrated network-based machine learning techniques with mobile supercomputing and interatomic data. First, experimentally confirmed medicines' anti-COVID-19 characteristics were predicted using the suggested machine learning technique. The models were used to find drug-like compounds in food after calibration. Medication repurposing and reuse in cancer research, population stratification based on mutations, drug repurposing, and food-based anti-cancer molecular therapies have all benefited from similar network propagation techniques. Machine learning algorithm parameters were tuned to forecast experimentally confirmed medications against COVID-19 in the cross-validation context (Vázquez-Calvo et al. 2017; Gysi DM et al., 2020; Xian Y, et al. 2020; Boozari M, et al. 2020; Veselkov, K. et al. 2021).

2. CONCLUSION

The algorithm will thus improve as we gather more metabolomics data and come to comprehend the shift in metabolomics, helping us find the best medicines for the right patients. It will get closer to achieving its goal of saving lives with every line of code written. It will be easier to find connections between nutrition and disease with the use of new epidemiological study technologies. This study suggested new avenues for metabolomics, which need high-end tools and skilled workers, but also suggested simplified sample preparation, a shorter turnaround time for metabolite analysis, and the use of cutting-edge data processing methods for decision-making. Important metabolomics discoveries have already been made and are anticipated to be made thanks to developments in artificial intelligence and machine learning in computers. A new era of discovery was ushered in by the success of deep learning algorithms on unstructured data as well as the fusion of new artificial intelligence and machine learning techniques that aren't commonly used in metabolomics with existing datasets or samples that contain low and high concentrations of well-known chemicals, trained training and peak aggregation algorithms, environments, and precision health. They serve as crucial launching pads for refueling.

Conflict of Interest: The authors have no conflicts of interest to declare.

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Perceptions of Patient Safety Culture of Dentistry Students and Dentists in a Faculty of Dentistry

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Abstract

Aim: Recently, the importance of patient safety culture in dentistry has been discussed. This study aims to evaluate the perceptions of dentists and dentistry students about patient safety culture.

Methods: The population of this cross-sectional study consisted of senior lecturers and research assistants (N=109) and 4th and 5th year dentistry students (N=197) at the Faculty of Dentistry Hospital. 107 dentists and 177 students, agreed to voluntarily participate in the study. Data were collected by using Turkish version of the "Agency for Healthcare Research and Quality Hospital Survey on Patient Safety Culture". SPSS 22 program was used to evaluate the data.

Results: The mean of the total score of the Scale was found as "moderate" (X=2.81). Overall, "teamwork within units" had the highest average (X=3.16), "frequency of event reported" had the

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lowest score ($X=2.41$). Dentists had a higher average than students in all dimensions except for "teamwork across hospital units," "hospital handoffs and transitions," and "staff." 72.1% of dentists and 66.7% of students have not received any courses or training on patient safety issues. Overall, 83.7% of dentists and 92% of students have not reported any medical errors so far.

Conclusion: Participants' perceptions of the patient safety culture were "moderate", that is, the average score of the participants means neither high nor low. It is suggested that hospital managers should establish a more positive patient safety culture.

Keywords: Patient Safety Culture, Dentist, Dental Students, AHRQ, Patient Safety Culture Hospital Questionnaire

Introduction

The concept of patient safety in healthcare has become an increasingly important issue in the literature. The ultimate goal of all health services is to provide safe, effective care (Bailey & Dungarwalla 2021). An important component of health services is patient safety. It is known that strengthening the patient safety culture in health institutions is important for improving the quality of care (Reis et al. 2018). Patient safety aims to prevent healthcare-related errors and reduce the damage caused by these errors. One of the ways to prevent these mistakes in health care is to create a culture of patient safety. The establishment and dissemination of systems related to patient safety culture in health institutions will ensure the establishment of systems to prevent medical errors and thus prevent harm to patients and health workers (Gündoğdu and Bahçecik, 2012)

In 1999, the American Institute of Medicine (IOM) published a report on patient safety and medical errors titled "To Err Is Human: Building a Safer Health System". According to the report, in two studies with hospitalized patients, the incidence of errors during medical care was 2.9% and 3.7%, and 58% and 53% of these errors were defined as preventable medical errors. The report also states that approximately 44,000-98,000 Americans die annually due to medical errors (Kohn et al., 2000). As a result of these striking figures, the World Health Organization (WHO) revealed the importance of medical errors in health services, drew attention to the problem of patient safety with its report published in 2004 and established a patient safety unit. According to the report, in developed countries such as Australia, the UK and Canada, the problem of medical errors or patient safety was more than expected, and these errors were mostly system-related and similar. It also called on all member states to develop strategies in this regard. Thus, practices for patient safety

have begun to be addressed and carried out more systematically worldwide in all areas of health services, including dentistry (WHO, 2004).

Dentistry clearly aims to provide safe dental care for overall health, minimize risks, and establish a culture of patient safety (Pemberton 2014). It is stated that the literature on patient safety culture in dentistry has developed later than the literature in medicine and still needs to be developed (Pemberton 2014; Al-Mahalawy et al (2020). In their systematic review, Ensaldó-Carrasco et al. (2021) concluded that patient safety research is largely unexplored in dentistry. Al-Mahalawy et al. (2020) researched the term "patient safety" in PubMed by the end of June 2019 and found that <1.5% of the publications of patient safety studies were in the field of dentistry. The main reason for this condition is that the overall morbidity and mortality associated with dentistry is less than that of medicine. The harm done to the patient in dentistry may not be as fatal as in medicine, but incidents that threaten patient safety can occur and these can adversely affect the health of the patient (Pemberton 2014; Al Sweleh et al. 2018). Obadan et al. (2015) have shown that adverse events are also common in dental practice. They conducted a retrospective review of dental adverse events reported in the literature. The authors reviewed 270 adverse event cases in which 24.4% of cases caused permanent damage and 11.1% caused patient mortality. Another recent study in Finland identified the two most common types of patient safety events related to dentomaxillofacial radiology as laboratory, medical imaging, or other patient-examination-related events and events related to information flow or control.

In fact, patient safety incidents involving medical errors have become an important issue in dentistry, especially in developed countries (Chohan et al. 2022). In the UK, "false tooth extraction" in 2015 was explicitly incorporated into the "Never Events" (NE) framework by the National Health Service Development (NHSI). NEs are defined as events that are classified as a "Serious Event" (SE) type and are fully preventable when all available measures are taken. The NHSI's data indicated that a "false tooth extraction case" was the most commonly reported "never event". (NHS England 2015; Chohan et al. 2022). Yamalik and Pérez (2012) have argued that the nature of adverse events reported in the medical literature is different from those seen in dentistry, and that significant adverse events in dentistry are rarely life-threatening. It was evaluated in 3 main categories as error (40%), accident (20%) and complication (40%). In dentistry, it is of great importance to identify and categorize errors in order to keep application errors at a minimum level and to ensure patient safety. (Kandemir, 1991). Most of the errors in the

oral and maxillofacial surgery unit are related to tooth extraction. Errors such as the roots remaining in the mouth (*radix relicta*), leaving the cyst formed after extraction, not being able to control the sinus opened after tooth extraction, etc. are among the frequently encountered errors in this unit. Almost all of the errors in the prosthetic dental treatment unit are made during the construction of fixed prosthesis (crown-bridge). However, damage to the pulp during cutting, devitalization of the supporting teeth, fixed prosthesis before the age of 18, problems caused by high fixed prosthesis (temporomandibular joint-TMJ) and damage to neighboring teeth during the preparation of teeth are also common errors in this unit (Halıcı 1990). The most common mistake in the orthodontic unit is the extraction of canine teeth in the vestibule. Replacing the impacted tooth in the arch with another tooth is one of the common errors in this unit (Abuhan, 2014: 8-10). Black & Bowie (2017) worked with 250 dentists and at the end of their study they stated that the following events may be considered as adverse or never events related to dentistry. *“Not checking past medical history; inhaling or swallowing a crown or tool; restore wrong tooth; lack of oxygen and/or emergency medication; allergic reaction due to not checking the medical history; Removal of the wrong tooth; iatrogenic damage to an adjacent tooth; delay in routine shipment; delay in emergency dispatch; using dirty tools; treating the wrong patient”* (Black & Bowie 2017).

When patient safety studies in dentistry are examined on an international basis, dentistry-related organizations such as the World Federation of Dentists (FDI), the European Council of Dentists (CED), the Annapolis Development Center (ADS) and the Safety Asepsis and Prevention Organization - OSAP have taken a number of initiatives to improve the safety of patients receiving services from dental clinics. The Spanish Dental Association (SDA) established the Spanish Observatory for Dental Patient Safety (Observatorio Español de Seguridad del Paciente Odontológico-OESPO) and adopted the nationwide "Dental Clinical Risk Prevention Plan" (Perea-Pérez et al 2020). With this plan, patient safety has become even more important in the field of dentistry.

The determination of quality and accreditation standards carried out within the scope of patient safety studies and oral and dental health in dentistry in Turkey is quite new. In this context, the first step was taken in 2009 and the "Quality Standards in Health-Oral and Dental Health Centers" (SKS-ADSM) set consisting of 51 standards was published. With the regulation made in 2011, these standards were increased to 165. The revised standards in 2015 and 2017 were published as SAS-ADSH booklets through TUSKA in 2018 (TUSEB, 2018). Within these

standards, important concepts such as patient and employee safety committee, employee health, patient and employee safety risk management, negative event notification system, etc. are included.

The concept of patient safety culture in dentistry has been discussed recently (Chohan et al 2022). Pemberton (2014) states four strategies to develop safer healthcare “1. *Identifying threats to patient safety by incident reporting.* 2. *Evaluating incidents and identifying best practice.* 3. *Communication and education about patient safety.* 4. *Building a safety culture, this means a priority is given to patient safety and commitment to overall continuous improvement within the workplace*” (Pemberton 2014). The most widely used tool in the world to measure patient safety culture is the "Hospital Survey of Patient Safety Culture" (HSPSC) developed by the Agency for Healthcare Research and Quality (AHRQ). The questionnaire consists of 12 dimensions. Although scientific studies on patient safety are becoming increasingly widespread, it is seen that most of these studies are carried out with physicians and nurses in hospitals. At the international and national level, there are few studies evaluating the culture of patient safety in dentistry. Developing a safety culture provides tools to manage risks in healthcare organizations. The first step in developing a patient safety culture is to investigate the current situation in an organization (Rizvan et al 2021). The aim of this study is to evaluate dentists and students' perceptions of patient safety culture.

1. RESEARCH METHODOLOGY

Sampling and Data Collection: The population of this cross-sectional study was determined as senior lecturers and research assistants (N=109) and 4th and 5th year students of dentistry (N=197) working at the Faculty of Dentistry Hospital in Sivas, Turkiye. Senior lecturers include assistant professors, associate professors and professors who have completed specialized training in dentistry. Research assistants refer to dentists who continue their specialized training in dentistry. Dentistry 4th and 5th year students are students who take an active part in patient examination and treatment under the supervision of a senior lecturer or research assistant. Questionnaires were distributed to a total of 306 participants. A total of 284 participants, 107 dentists and 177 students agreed to participate in the study. Senior lecturers and research assistants make up the "**dentist**" group, while the "**student**" group consists of 4th and 5th grade students. Dentists and students were given a self-administered questionnaire through face-to-face communication. Participants

were informed about the purpose of the study and their questions, if any, were answered. It was emphasized that the participation in the study was voluntary, and that the data were confidential and private. Participants who did not return the survey were contacted for the second time. The data were collected between 01.12.2019-31.01.2020. The questionnaire was distributed to dentistry 4th and 5th grade students (N=197) and dentists (N=109). Almost all dentists (N = 107) agreed to participate in the study. The participation rate of the students was also quite high, with 177 out of 197 students (N=284) (89.8%).

Data Collection Tools: The data was collected through the "Patient Safety Culture Hospital Survey" (HSPSC) developed by the "Health Research and Quality Agency" (AHRQ) in 2004. The validity and reliability of the Turkish version of HSPSC was realized by Bodur and Filiz in 2010. This is a 5-point Likert scale, consisting of 42 questions and 12 dimensions, consisting of five points (which I strongly disagree with). In the evaluation of the scale, the questions in A5, A7, A8, A10, A12, A14, A16, A17, B3, B4, C6, F2, F3, F5, F6, F7, F9 and F11 were coded inversely. In addition, since the hospital where the research was conducted was a day hospital, two questions related to shift work, F5 and F11, were deleted from the questionnaire and 40 items were applied.

Data analysis was performed with SPSS 22.0. statistics (percentage, mean, SD), "independent t test" were used for the analysis. $P < 0.05$ was used for statistical significance. HSPSC's Cronbach's Alpha was 0.899.

Ethical Issues: Before starting the study, the approval of "Sivas Cumhuriyet University Non-Invasive Clinical Research Ethics Committee" dated 13.11.2019 and numbered 2019-11/26 was obtained. In addition, the necessary written permissions were obtained from the Dean's Office of the Hospital. In addition, written permission was obtained from the author of the scale in order to use the scale in the research.

2. FINDINGS

Table 1 Distribution of Demographic Characteristics of Participants

Age (N= 278)	Number	%
20-23 years	119	42.8
24-26 years	94	33.8
27-29 years	35	12.6
30+ years	30	10.8
Gender (N= 278)		
Female	164	59.0
Male	114	41.0
Marital Status (N= 278)		
Married	29	10.4
Single	249	89.6
Position (N= 278)		
Faculty Members (Prof., Assoc. Prof. Dr. & Asst. Prof. Dr.)	18	6.5
Research Assistant	86	30.9
Student	174	62.6
School Student Year (N=174)		
4th year	92	52.9
5th year	82	47.1
Working Years of Dentists (N=107)		
Less than 5 years	74	69.2
More than 5 years	30	28.0
No answer	3	2.8
Year of Dentists Working in the Same Hospital (N=107)		
Less than 5 years	83	77.6
More than 5 years	19	17.8
no answer	5	4.6

In Table 1, it is seen that 59% of the participants were women, 89.6% were single, 62.6% were students and 52.9% were 4th grade students. In addition, 69.2% of dentists have been in their profession for less than 5 years and 77.6% have been working in the same hospital for less than 5 years.

Table 2 Participants' Encountering and Reporting a Medical Error

Have you encountered a medical error? (N=278)	Number	Percentage (%)
Yes	61	21.9
No	217	78.1
Have You Reported the Medical Error You Encountered? (N=61)		
Yes	21	34.4
No	40	65.6
Sum	61	100.0

It was determined that 21.9% (61) of the participants had encountered medical errors in their working life to date, but 65.6% of those who encountered medical errors did not report the medical error they encountered (Table 2).

Table 3 Number of Medical Errors Reported by Participants Regarding Patient Safety

	Number	%
Never	247	88.8
1-2 incident reports	21	7.6
3-5 incident reports	8	2.9
11-20 incident reports	1	0.4
Report 20 or more incidents	1	0.4
Sum	278	100.0

It was determined that 88.8% of the participants had not reported any medical errors in their working life to date (Table 3).

Table 4 Status of Patient Safety Training Participants

Have you received any training on patient safety?	Dentist		Student	
	N	%	N	%
Yes	29	27.9	58	33.3
No	75	72.1	116	66.7
Sum	104	100	174	100

It was determined that 72.1% of dentists and 66.7% of students did not receive any training on patient safety issues (Table 4).

Table 5 HSBC Average Total Score of Participants and Average Total Score by Dimensions

Dimensions	Min.	Max.	Say	S.D.
General perceptions of patient safety	1.00	5.00	2.98	0.738
Frequency of reported event	1.00	5.00	2.41	0.931
Teamwork between hospital units	1.00	5.00	3.04	0.695
Handoffs and transition	1.00	5.00	2.92	0.869
Executive expectations and actions that promote safety	1.00	5.00	2.76	0.798
Organizational learning and continuous improvement	1.00	5.00	2.79	0.715
Teamwork within units	1.00	5.00	3.16	0.866
Openness of communication	1.00	5.00	2.67	0.845
Feedback and communication about the error	1.00	5.00	3.03	0.766
Non-punitive response to errors	1.00	5.00	2.57	0.722
Personnel	1.25	4.50	3.02	0.492
Management support for patient safety	1.00	5.00	2.64	0.711
Total Points	1.48	4.21	2.81	0.448

It was determined that the participants' perceptions of patient safety culture were moderate ($X=2.81$). The dimensions "Teamwork within units" and "Teamwork between hospital units" had the highest average score, with $X=3.16$ and $X=3.04$, respectively, while "reported incident frequency" and "Non-punitive response to errors" had the lowest score with $X=2.41$ and $X=2.57$, respectively.

Table 6 Perceptions of Participants According to Their Positions According to HSPSC Dimensions

	Participant	N	Say	Standard deviation	t	Df	Sig. (2-tailed)
General perceptions of patient safety	Dentist	104	3.18	0.793	3.712	276	0.000
	Student	174	2.85	0.675			
Frequency of reported event	Dentist	104	2.56	1.054	2.055	276	0.041
	Student	174	2.33	0.840			
Teamwork between hospital units	Dentist	104	2.98	0.782	-1.096	276	0.274
	Student	174	3.07	0.637			
Hospital handoffs and transitions	Dentist	104	2.81	0.932	-1.637	276	0.103
	Student	174	2.98	0.825			
Executive expectations and actions that promote safety	Dentist	104	3.02	0.885	4.227	276	0.000
	Student	174	2.61	0.701			
Organizational learning and continuous improvement	Dentist	104	2.90	0.805	1.912	276	0.057
	Student	174	2.73	0.650			
Teamwork within units	Dentist	104	3.36	0.833	3.068	276	0.002
	Student	174	3.04	0.865			
Openness of communication	Dentist	104	3.03	0.861	5.951	276	0.000
	Student	174	2.45	0.756			
Feedback and communication about the error	Dentist	104	3.20	0.823	2.889	276	0.004
	Student	174	2.93	0.713			
Non-punitive response to errors	Dentist	104	2.70	0.751	2.325	276	0.021
	Student	174	2.50	0.694			
Personnel	Dentist	104	2.95	0.54980	-1.998	276	0.047
	Student	174	3.07	0.45061			
Management Support for Patient Safety	Dentist	104	2.70	0.85005	1.030	276	0.304
	Student	174	2,61	,61357			
Total Points	Dentist	104	2.93	.504	3.616	276	.000
	Student	174	2.73	.395			

Table 6 shows that dentists have a higher average score than students in all sizes except "teamwork across hospital units," "hospital handoffs and transitions," and "staff." Participants' perceptions of the dimensions of HSPSC showed statistically significant differences between "Teamwork between hospital units" and "hospital handoffs and transitions".

The results showed that dentists had the highest scores in the dimensions of "Cross-unit teamwork" ($X=3.36$) and "Feedback and communication about the error" ($X=3.20$), while they had the lowest score in the dimensions of "reported frequency of events" ($X=2.56$). Students had the highest scores in the areas of "Teamwork" and "Staff" ($X = 3.07$) among hospital units, while they had the lowest scores in terms of "reported frequency of incidents" ($X = 2.33$). The total score of dentists ($X=2.93$) was higher than that of students ($X=2.73$) ($p<0.05$).

Additional analyses revealed that there were statistically significant differences between the total score average of the scale and the participants' gender, marital status, working year, length of work in the profession and patient safety culture training ($p<0.05$). In terms of the total score of the scale, the scores of dentists ($X= 2.93$), married participants ($X= 2.99$), participants who worked for more than five years ($X= 3.17$) and participants who received patient safety training ($X= 2.90$) were higher than the other groups ($p<0.05$).

3. CONCLUSIONS AND RECOMMENDATIONS

This study was conducted with 284 participants, 107 dentists and 177 dentistry students. The aim of this study is to evaluate dentists and students' perceptions of patient safety culture. Participants' perceptions of a culture of patient safety were moderate. Dentists' perceptions of patient safety culture were found to be statistically significantly higher than the students ($p<0.05$). Studies in this area support our findings (Ramoni et al., 2014; Al Sweleh et al. 2018; Al-Surumi et al., 2018; AlOlayan 2020). Al Sweleh et al (2018) conducted a study on dental students, interns, dental assistants, and general dentists using the modified version of HSPSC, similar to our results, the researchers noted that a negative result was obtained in many items of the survey among dental students.

In this study, it was found that "teamwork within units and across hospital units" was the highest average, while the lowest average score was "reported incidence of events" The results of the current study are similar to other studies that found that students and staff at the College of Dentistry in Saudi Arabia had high scores of teamwork within units (Al Sweleh et al 2018). Another study in Pakistan found that teamwork achieved the highest positive response rate (Rizvan 2021). This result may show that the participants are motivated to help each other, to work as a team. Although teamwork had the highest scores, students had lower scores than dentists on the dimensions of "general perceptions about patient safety," "openness of communication,"

"feedback and communication about error," and "Executive expectations and actions that promote safety." It can be said that these are the areas that need to be developed in terms of students' perceptions.

One of the remarkable findings from our study is the number of medical errors reported regarding patient safety. Overall, 83.7% of dentists and 92% of students have not reported any medical errors so far. In addition, the "reported event frequency" dimension had the lowest average score in our study. The results of the current study are similar to other studies (Rizvan et al. 2021; Chohan et al. 2022). While significant adverse events in dentistry are rarely life-threatening, they are also common in dental practice (Yamalik and Pérez 2012, Obadan et al 2015). Pemberton (2014) emphasizes that incident reporting is crucial in the development of patient safety strategies. The author states that the extent of the problems cannot be known without reporting events and learning from mistakes. Reporting any patient safety incidents or errors is important for both the patient and the medical staff. In addition, incident reporting provides a tool to monitor the quality of maintenance. "Personnel reporting" can be used as a tool for the improvement and development of organizational systems and structures.

The reasons for not reporting medical errors in our study were not investigated, but the reasons were identified in similar studies in the literature. Polisena et al. (2015) suggests that the reasons for this are varied. Fear of punishment and time constraints prevent negative events from being identified and reported. One of the reasons why dentists and students do not report incidents may be the fear of being blamed by their colleagues and managers (Çakır and Tütüncü, 2009). A recent study of 104 dentists in the UK asked: "What are the barriers preventing dentists from reporting patient safety incidents? According to the results, "fear of litigation", "loss of professional respect among colleagues", "loss of respect from patients", "fear of repercussions of the General Dental Council/Quality of Care Commission", "fear of losing a job" , time-consuming and unnecessary paperwork' were among the reasons why patient safety incidents were not reported. In addition, 48.1% of dentists stated that they were not familiar with how to report patient safety incidents (Chohan et al. 2022). These findings may indicate that the reasons for not reporting patient safety incidents, including medical errors, remain similar around the world.

In the current study, it was determined that 72.1% of dentists and 66.7% of students did not take any courses or training on patient safety issues. Pemberton (2014) believes that one of the

strategies for developing safer healthcare is to train staff on patient safety. In some studies in the literature, the level of education of the participants on patient safety is high, while the findings of some are similar to ours. In a recent study, the dentist's knowledge of drug safety was insufficient, and targeting dental safety education and training in the undergraduate and graduate faculty of dentistry was strongly recommended to improve patient safety in dental care (Alomi et al. 2021). The low level of education on patient safety in our study may indicate that the reluctance of dentists and students to attend training courses on patient education is mostly due to the fact that this training does not comply with the working days and hours. It can also be said that there are not enough training programs organized by the institution or supported participation. Bailey & Dungarwalla states that the ultimate goal of all health care should be to provide care safely and effectively. The responsibility for protecting and improving patient safety in the field of dentistry belongs to the dentist. They believed that it was necessary for dental professionals to feel competent to address these issues and to have access to the necessary materials to implement tools to improve patient safety. They also need to be confident enough to talk about and contribute to patient safety discussions when things are not as they should be at Bailey & Dungarwalla 2021. For this, dentists and dental students should have sufficient knowledge about patient safety as dentists of the future.

Dentist and dentistry students' perceptions of the culture of patient safety were moderate. However, students' perceptions of patient safety culture were statistically significantly lower than dentists. The percentage of medical error reports was quite low. The majority of participants did not receive any training on patient safety issues. In line with these results, the following recommendations were made. The training and communication needs of dentists and students on patient safety issues should be determined and in-service training should be provided to increase their awareness of these issues. Students studying dentistry, as future dentists and pioneers of the dental profession, should learn all the principles and principles of the concepts of "patient safety culture". "Patient safety" is closely related to all practices in the field of dentistry. Communication and understanding among dental students will allow them to assess their impact on dental care quality and safety in their future careers (AlOlayan et al. 2021) Therefore, as WHO (2011) suggests, patient safety issues should be integrated into health science education, including dentistry, to prepare students for patient safety practices. Finally, we recommend that the

administrators of the hospital where the research was conducted establish a clear patient safety culture, including patient safety incident reporting systems.

The results of this study are limited to a Faculty of Dentistry students and lecturers. It is recommended that similar studies should be carried out, by expanding the population and sample size, in private hospitals, private practices and oral and dental health outpatient clinics. It is thought that the increase and development of the number of studies conducted in this area will contribute to the formation of a patient safety culture in dentistry.

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Editorial

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Cynical Brand Distance: Is it a response or not?

Its Relationship with Social Distance, Brand Congruency and Brand Switch

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Research Article

Abstract

Aim: The present article examines the brand-contextual effects of the recent pandemic in the form of cynical brand distance conceptualization. The study aims to determine whether the consumers' perception of social distance and brand congruency perceptions affects the cynical brand distance and then brand shift perception.

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Methods: The research was carried out in the form of a web survey on social media on 298 consumers and analysis was done with PLS algorithm with SmartPLS software.

Results: It is found that a positive relationship between brand congruency and cynical brand distance. A positive association between social distance and cynical brand distance is determined. It was also positive effect of cynical brand distance on brand switch.

Conclusion: They are considering that the impact of the social distance comes from pandemic on the consumer's preferences, especially on their attitudes towards brands, it has been considered that the consumer may create a subjective or general negative attitude or distance to the brand or brands. Especially because it triggers brand cynicism, the validity of the brand distance scale based on brand cynicism, again, its relationship with social distance, and brand switch concepts were examined. Brand cynicism items created in the form of netnography were handled as brand distance and an item pool was created.

Keywords: Social Distance, Segment Shift, Pandemic, Brand Distance

Introduction

Consumers' negative attitudes towards brands that affect social desirability or social integration of the brand can be more towards a single brand (Dessart et al., 2016) and it can be based on micro or macro causality (Romani et al., 2015) and even a perception process may arise that brands are not what they appear to be (Guèvremont, 2019) or brand aversion in context (Lee et al., 2009). In addition to singular brand attitudes, brand attitudes may develop, and consumer opposition may develop in response to a general stance with an anti-consumption context (Chatzidakis et.al, 2012). It may be in the transformation of resisting being a brand society or not defining oneself with the brand (Lam et al., 2012). As a result, they can stand against brands that may also have an ideological reflection. Some factors can create reasons and environments that may negatively affect the importance level of consumers towards brands. The concept of anti-consumption, anti-capitalism, and anti-branding has been made and it has been stated that reflexive consumers interact with brands in the context of identity creation and will not define anti-branding in this context. It can be deduced that the phenomenon of anti-branding is not seen as an identity tool and

does not overlap with itself. Thus, resistance can be seen in consumers within an ideological framework (Cherrier, 2009).

Brands act as a social identity tool in terms of adaptation to the consumers' selves and work as a tool of the identification process of consumers (Wolter et al., 2016). From this point of view, it is necessary to separate the consumers' anti-consumption stance and their attitudes towards the brands they consume. There are conceptualizations like Brand avoidance (Lee et al., 2009; Liao et al., 2015), Brand rejection (Sandikci and Ekici, 2009; Nenycz-Thiel and Romaniuk, 2011), Brand dislike (Dalli et al., 2007), Anti-loyalty (Rindell et al., 2014), Negative emotions toward brands (Romani et al., 2012), brand Attachment-aversion model (Park et al. 2013), Brand Hate (Hegner et al., 2017; Zarantonello et al., 2016), Bad relation with brands (Fournier and Alvarez, 2013), Negative emotion to brands (Romani et al., 2009), Brandlessness (Lee et al., 2012), Brand attachment-anti-brand reactions (Thomson et al., 2012), Consumer Embarrassment Tendency (Walsh et al., 2016). However, Anti-consumption (Cherrier, 2009; Cromie and Ewing, 2009; Hogg, 1998; Iyer and Muncy, 2009), Boycott (Yuksel and Mryteza, 2009), Anti-branding (Dessart et al., 2016; Romani et al., 2015), Brand opposition (Wolter et al., 2016), Consumer resistance (Cherrier, 2009), Consumer rebellion (Austin et al., 2005), anti-consumption and materialism (Lee and Ahn, 2016), Corporate distrust (Adams et al., 2010), Consumer Cynicism (Helm et al., 2015), Cynicism and scepticism (Helm, 2004) are the conceptualizations that express a negative attitude towards consumer culture or firms in general.

Actually, there is a cognitive and emotional distance between consumers and brands and it has an effect on brand attitudes of consumers. Some individual or societal factors may determine and feed this attitude and create a perception for brands. It can be assumed that the perception of social distance / physical distance in question reveals the concepts of brand cynicism and brand distance, and these phenomena become clear. An important reflection of the purchasing behavior of consumers is attitudes towards brands. Considering that consumers' social stances can also be analyzed in terms of brand interaction; It seems possible to have an attitude towards brands. While consumers may generally have attitudes towards the consumption algorithm, they also have positive and negative attitudes towards the brands they use. In this context, the basic equation is that consumers generally have a structure that depends on consumption opposition and a positive polarity that depends on consumption attitudes. Social distance is one of the most focused

measures introduced in the context of Covid 19 (Williamson et al., 2020). However, one of the primary motives of people is to belong and stay in touch (Baumeister and Leary, 1995). People have to come up with highly creative solutions to this problem, using guaranteeing and virtual interaction and communication (Murphy et.al, 2019), which means spending the quarantine period with their families or friends Telepresence in digital technologies reduces the perception of social distance as a form of psychological distance (Trope and Liberman, 2010). Social distance perception was examined as an essential substructure in terms of CLT theory. Basically, distance, in the context of social distance, is stated that consumers' perceptions of power trigger or increase social distance (Liberman et al., 2007). The negative-positive qualities of the events/objects that form the core of the concept will naturally affect the distance drawn (Von Boven et al., 2010). At this point, it should be noted that the consumer's pandemic process can affect the attitudes of consumers towards brands directly or indirectly. Therefore, considering that consumers with high correlation with the brand have lower construal levels and those with low connectivity have higher construal levels (Kim and Song, 2019), consumers' perceptions of social distance affect the interaction with the brand (Mantovani et al., 2017).

Negative attitudes of consumers towards brands also will trigger switch behavior as a behavior. In this sense, understanding consumer behavior changes and adaptation is the most important aspect of surviving in a constantly changing environment (Kim et al., 2005). As segmentation criteria (1) geographic; (2) demographic; (3) psychographic; (4) behavioral; and (5) benefits sought might be classified. There is a relationship between segmentation and customer profile in terms of data mining (Jansen et.al, 2007). In customer segmentation, perceptual, emotional, and behavioral variables are examined (Ruiz et al., 2004). Customer segmentation is the most important strategic marketing activity that considers the dynamic nature of today's consumer behavior (Noughabi et al., 2015). This structure considers customer dynamics in segmentation analysis with a "dynamic customer segmentation" perspective. This perspective is based on consumer wants and needs change and creates segment instability (Kim et al., 2005; Chong and Chen, 2010). The main goal of a business in the marketing context is to win and retain new customers. After a certain period of time, due to certain reasons, the customer group will either exit the system, turn to other company products or switch within the company's product group. At this point; It is necessary to protect a qualitative segment profile beyond the numerical protection

of the company's product/brand customers. Segment profile transformation is experienced as a process that needs to be managed. At this point, the concept of customer escape is in question. Customer switch focuses on the customer leaving the current product/brand by turning to another product or brand. In this context, the focus of the present article is to find main relationship brand distance, customer switch intention, brand congruency and social distance perspective. Below, first, the theoretical conceptualization is made, and then the results and findings of the field research are discussed.

1. THEORETICAL FRAMEWORK

Social Distance and Cynical Brand Distance

Construal level theory (CLT) refers to how individuals decide about an object or event over the psychological distance (Trope and Liberman 2003, 2010). Psychological distance is subjective between the target and the perceiver and has four main types; temporal, spatial, social, and probable (Liberman and Förster, 2009). The concrete quality of consumers closer to social distance as a basic approach (Frechette et al., 2020) will increase the brand's abstract quality as the social distance increases. Consumers' getting closer to the current and future products affects their divergence (Dhar and Kim, 2007) and affects the preference in consumers' mindfulness of brands and products and their mental placement (Lynch and Zauberman, 2007). On the other hand, targeting the product/brand in the context of features-suitability is another special issue in temporal distance (Freitas et al., 2008), which is essential for the consumer's mental-distance conceptualization of what the brand should be. Consumer behavior has drastically changed due to existing social distance measures (Chauhan and Shah, 2020).

It is more important how and to what extent the construal level theory conceptualizes goals and the opposite object / event (discussed as a brand in this article) as a goal (Trope and Liberman, 2010). There are conceptualizations that what is mentally transferred to the consumer is not interrupted by the consumer (Hernandez et al., 2015). In this respect, as the social or physical distance increases, the decrease of consumers' connection with the brand will create interruption, and this will generate brand distance. The person makes a comparison between himself and the person he/she interacts with and others in terms of distance and performs the positioning of social distance (Bar-Anan et al., 2006) with processing (Yan et al., 2016). From here, the brand used by the consumer will naturally use the abstraction-concrete pole among other brands. Therefore,

consumers' brands in the context of construal level distance are effective in mental evaluation-preference decisions (Kardes et al., 2006). Because social distance is also effective in the contextual affective distance (Friedler, 2008). Brand distance is also in this sense, as it follows a path depending on how much importance it gives to the object or event (Tangari et al., 2015) and abstraction refers to the main structure and meta-meaning of the subject and ignores sub-elements (Lieberman et al., 2002) can be treated as an abstraction.

According to Feather (2020), two switches will be observed in the social distance and consumer behavior. These; there will be channel and product switching. Channel switching is rarer and will occur in switch to delivery and click n collect with shopping from online channels. Product switches will be in the form of testing new brands and cheaper alternatives. Shopping habits will be shaped into four necessary forms. These are the form of shopping where the essential shopping is made as much as possible where the demand decreases, the way online channels are basically used in parallel with the remote work where the demand changes, the way of shopping where the demand increases because the stock is made and consumed. It is the form of hoarding where the demand does not change. According to Tan et al. (2020), the requirements of covid 19 regarding social distance will dominate the evolution of e-commerce in shopping channels. Evans (2020) similarly emphasizes e-commerce and draws attention to contactless payment systems. Thus, the absence of intermediaries increases profitability, more targeted customer data is obtained, a structure where personalization is more dominant and more control over profit (Thompson, 2020).

Major changes in consumer behavior caused by COVID-19 with stay-at-home calls, panic buying, home-cooked food, and hoarding is the evolution of online purchasing, with bans on tourism and travel (Grover et al., 2020). Measures related to Covid 19, especially the emphasis on social distance, will be healthier, interested, thrifty, higher awareness, less active but more productive of the new consumer (Biswas et al., 2020). Cynicism can be actively manifested in an introvert or outward direction in the context of objecting to the existence of a hegemonic structure against brands (Bertilson, 2015). There is a system of creating a consumer identity based on an individual and social representation of consumption (Totaro and Marinho, 2017). However, when considered based on consumption culture, cynicism symbolizes a counter-stance led by a more naive and sufficient consumption and a mode of consumption that has gone to extremes (Lee et al., 2016). At this point, cynicism works as a consumer response to generate distrust towards

companies (Adams et al., 2010). In terms of the brand, it is an internal dynamics of the consumer attributing a meaning to the brand and creates avoidance, aversion, and abandonment (Hogg et al., 2009; Østergaard et al., 2015).

In the conceptualization of consumer cynicism, it works as a part of an active resistance phenomenon and "putting distance" (Chylinski and Chu, 2010). On the other hand, consumer cynicism is based on the basis that businesses consider their interests. Helm et al. (2015). Cynicism works as a phenomenon with the concept of anti. Anti-consumption focuses on the individual or social perception of consumption as an element of pressure and threat (Portwood-Stacer, 2012). Consumers should actively consider a resistance or anti-consumption stance (Pentina and Amos, 2011) in this context. This structuring lays the groundwork for consumers to act activism against certain brands (Kozinets and Handelman, 2004). Consumer resistance conceptualization towards market structure is evaluated whether it is a radical-reformist in the individual-collective context (Penaloza and price 1993). Consumers' anti-consumption attitudes can reach the level of exceeding social norms in action (Amine and Gicquel, 2011).

The concept of consumer resistance includes an area of study, firm behavior and market; As a result of the individual's cognitive and emotional evaluation of the situations, a counteraction and thought system develops (Roux, 2007). As stated above, a structural or individual opposing stance of consumers also emerges as a rebellion in the form of "cynicism"; This effect of cynicism is examined in the context of items such as sneaky and generating cynical suspicion (Austin et al., 2005). The consumer's perception of hegemonic pressure against brands refers to an imbalance of power (Cromie and Ewing, 2009). Cynicism is also used in negative attitudes towards brands. For example, consumer cynicism in terms of "moral avoidance" comes among the reasons for the concept of Brand avoidance (Lee et a., 2009). Brand avoidance is theorized as not turning towards the brand and adopting a negative attitude due to the damages in the individual, social and ideological harmony. However, consumers can focus on the brand (Kavaliauske and Simanaviciute, 2015).

Consumers see brands as a threat to society and themselves. In a sense, a threat has a negative effect on existing existence (Simberloff, 2003) and this threat can turn into animosity (Fescbach 1994). The concept of threat is a theory that can explain the xenophobic attitude and works with bias (Yakusho, 2009). Brands can be seen as a foreign phenomenon in the life or mental

opening of the consumer. Here, this reaction or resistance to brands can turn into a threat perception. Threat theory can be classified as realistic, symbolic, and intergroup anxiety and negative stereotyping; While realistic threats are concrete structures that go over their effect on the entity, symbolic threats are abstract in values and beliefs (Stephan et al., 2000). Since the perception of threat creates successors such as conflict, identification with its group (Stephan et al., 1999), brands may manifest as consumers not identifying with brands and entering into conflict with them. Threat perception may occur individually or as a group (Pettigrew, 2008), as well as preventing the expansion of the social space of the person or the loss of the existing structure (Burns et al., 2008), further disrupting cohesion (Lewin, Epstein and Levanon 2005). When analyzed in segregation, assimilation, exclusion or integration structures, it can be determined that brand cynicism is closer to exclusion (Florack et. al, 1992). These threat perceptions are among the group anxiety, fear, and anger etc. it creates emotions and eventually appear as intergroup behaviors and outgroup attitudes (Riek et al., 2006). Consumers make a match between themselves and brands by looking at the level of congruence (Wijnands and Gill, 2020). When the decrease in the congruence level of the person is considered in terms of the conceptualization that she can turn into a socially cynical structure (Byza et al., 2017), the weakness of the congruence that the consumers will experience with the brand may increase the brand cynicism. In this light, there are evaluations regarding implicit (Priluck and Till, 2010) and self-object relationship regarding brand perceptions on implicit evaluations and attitude (Perkins and Forehand, 2006). It is possible to predict consumers' behavior / preferences through implicit and explicit attitudes (Maison et al., 2004). Implicit attitudes are considered sufficient to demonstrate automatic behavior (Maison et al., 2004). The coercion of time in consumers' purchasing processes strengthens the influence of implicit attitudes (Friese et al., 2006). It successfully develops and influences the communication strategies and implicit attitudes established by companies (Madhavaram and Appan, 2010; Horcajo et al., 2010). Implicit measurements represent a structure placed from the customer's cognitive structure and emerge when connected (Dimofte, 2010). On the other hand, implicit tests are organized to reveal their counterpart in the mind (Yang et al., 2006) and express an indirect or implicit system (Gawronski et al., 2007). Explicit attitudes can be expressed as self-reported behavior, liking, and beliefs (Maison et al., 2001). In the light of the explanations, the scale development process developed based on the following theoretical background is included. The fundamental opposition to the existence of brands can be expressed in an implicit-explicit way in

the consumer. Cynical brand distance can be analyzed with value-based perspective. Anti-materialism is vital for design the cynical brand distance. While anti-materialism avoids the drive of ownership, anti-consumption emphasizes the causality of consumption; It is stated that the society is harmed, the inability to reach a simpler lifestyle, and the consumer has a negative impact on well-being as a suppression factor (Lee and Ahn, 2016). When working as a personal value, personal values constitute an important subject of study as they affect consumer behavior and provide powerful explanations for consumer behavior (Shrum and McCarty, 1997). Forsyth (1980) evaluates idealism to minimize negative consequences, especially for others, and maximizing gains. Idealism is inherently the perspective of placing society's welfare above individual interests (Tsai and Shih, 2005). From this perspective, individuals with high idealism believe that the desired results will be achieved as long as they are realized correctly (Mathur 2001). Individualist western societies are less idealistic than eastern cultures (Karande et al., 2002). Idealism is defined as post materialism as an application of modern societies (Benedikter, 2002). At this point, Holt (1995) emphasizes the value attributed to experience and people more than they support roles. There is an interest in spiritual elements (Uebersax, 2013). Materialism's phenomenon focuses on the role that commodity possessions play for happiness (Lee et al., 2014) and prioritizes physical comfort over spiritual values (Oxford English Dictionary, 2014). As people get older, they become more materialistic (Benedikter, 2002). Idealism and materialism provide two different interpretations of the same question or two opposing explanation approaches to each question (Mohsin, 2014). Materialists give causal priority to technical and economic forces. On the other hand, idealists prioritize influence with human factors such as power, language, desire, norms (Adler and Borys, 1993). Idealism and materialism can inherently be made sense of the relationship between having and being (Shankar and Fitchett, 2002). It can be thought that the increase in materialist attitude has increased both consumer and brand cynicism as a pressure factor.

Social Distance and Consumer Switch Intention

It is stated that two basic concepts trigger this decision, considering that different factors affect the customer's escape-decision. These are situational and influential elements. Situational triggers tend more towards the customer's value structure, while the other includes the content of the competition and a reactive structure (Roos et al., 2004). Therefore, the process includes a choice,

one of the essential elements for segmentation (Auty, 1992). The customer's choice factor has an important place in customer behavior. In this context, it is necessary to construct a mindset for customer acquisition, development, and protection processes (Kamakura et al., 2005). The fact that the selection process is discrete and continuous in the context of demand affects the process (Haneman, 1984). The preference density of the customer appears as another factor (Fudenberg and Tirole, 2000). The customer runs a choice system in the form of utility maximization while switching to another brand/product (Givon, 1984). Therefore, firms think that protecting the customers they bring to the firm in a competitive environment defines a less costly process than gaining new ones (Heskett, 1990). This system of thinking brings up the phenomenon of customer satisfaction, which focuses more on the "expectation threshold" paradigm developed for customers' expectations from the company and the product (Spreng et.al, 1995), and this is true with the direction of customer loyalty. It can work proportionally (Richards, 1998). Although it prevents the customer from escaping or is a strong predictor of repurchase probability, the situation may not always work linearly (Dube et al., 1994). Therefore, the loyalty of the customer who is loyal to the company, and the product is an integral function of the switch concept with the satisfaction level (Fornell, 1994). This simple network of relationships follows the motto of leaving the company/dissatisfaction during the exit process, evaluating the alternatives, becoming aware, and abandoning (Stewart, 1998). This is why companies need to focus their main marketing aspects on maintaining the number of customers as the first and priority business (Weiser, 1995). The fact that customers leave the company or enter the product/service of another firm indicates a relationship in the way that attitude change changes behavior (Schultz and Oskamp, 1996). To develop customer segmentation analysis and marketing strategy, it is necessary to consider the dynamic nature of consumer behavior (Chen et al., 2005; Chong and Chen, 2010; Song et al., 2001; Liu et al., 2000; Böttcher et al., 2009; Ha and Bae, 2006; Ha, 2007). Dynamic customer segmentation was introduced to evaluate the dynamic nature of customer behavior in segmentation analysis. There are two main areas of work for dynamic customer segmentation. These are "tracking customer shifts between segments" and "mining segment changes." Like mining segment change, the segment can be called segment structural change (Blocker and Flint, 2007). Businesses need to define customer segments and examine the changes in segments over time (Wang and Lei, 2010). It can emerge, disappear, merge, contract, or grow (Böttcher et al., 2009). The most promising area of research concerns modeling the complex nature of structural segment changes.

There is an emphasis on that these behavioral traits are a precursor to ensuring customer loyalty (Stum and Thiry, 1991). This situation inevitably brings the firm's behavior model towards the customer and its associated profile (Chung-Hoon and Young-Gul, 2003; Day and Van den Bulte, 2002). In other words, it tends to a preference feature point and makes it a preference area.

Preference is a vital classification element in segmentation (Yüksel and Yüksel, 2002; Koo et al., 1999). This process is called a discrepancy of preference (Tripsas, 2008). The importance of segments is included in the organization of companies' CRM strategy (Rigby et al., 2002). It is stated that segments should be structured within the framework of customer needs and purchasing models (Berger et al., 2002). These segments form the basis for customer profitability (Reinartz et al. 2005). Within the framework of modeling, it is seen that there may be variation between segments, especially in terms of satisfaction and performance (Herrman et al., 2002). At the same time, customer loss analysis is also considered on a segment basis (Jamal and Bucklin, 2006). Segments can be subjected to a created value-based classification (Floh et al., 2004). Segment or customer profile management is of vital importance here. In segment management, establishing an emotional connection with the consumer requires focusing on the hidden patterns of consumers and monitoring the reactions of consumers to the products in the context of what they do. Therefore, it has a structure that works in conjunction with market dynamics and requires revision when necessary (Yankelovich and Meer, 2006). Changes that occur depending on customer behaviors become important in segment management within the scope of customer profile change. It is possible to examine the customer profile's change models under three or four main headings (Song et al., 2001; Mu-Chen et al., 2005); emerging, added, perished an unexpected changes.

Generally, decision trees are used to identify the variation between two data sets, and a rule agreement is looked at (Kim et al., 2005), and numerical weights are significant (Song et al., 2001). However, structural changes are not looked at, from coffee consumption to tea consumption (Kim et al., 2005). In the segment shift, we are trying to conceptualize, there are structural transformations with numerical density and even beyond. In addition, in the approaches examined numerically, there are temporary changes (Böttcher et al., 2009). Mainly considered as an element of CRM processes, customer segment management is part of a decision system that matures based on customer segments entering a classification over time and then shifts in time (Akhondzadeh-Noughabi and Albadvi, 2015) and classification as segmentation models, establishing

relationships, combining, clustering practices are implemented (Chen et al., 2007). It is seen that customer-firm interactions are handled passively-intermittently-actively in the relational platform (Netzer et al., 2008). When these are considered data, it is seen that the transition between segments of the customer individually appears (Ha, 2007). In the context of CRM, the customer profile (socio-demographics) for LTV is structured as an antecedent (Hwang et al., 2004), and these socio-economic variables are a segment determining factor (Teichert et al., 2008). Customer segmentation is a revenue-related concept from a long-term perspective (Jonker et al., 2004).

Segment shift refers to the concept of customer switching. When examining the models constructed in the conceptualization of escape, In addition to the effect of factors such as product complexity (Burnham et al., 2003), presented to the customer (Chang and Chen, 2007; Loker and Perdue, 1992), affective commitment (N'Goala, 2007; Bansal et al., 2004), problems experienced (Wieringa and Verhoef, 2007), communication structure living with the product (Lopez et al., 2006), demographics (Shin and Kim, 2008), lack of alternative (Han et al., 2011) habit are important factors in terms of staying in the company (Woisetschläger et al., 2011). The main antecedents of customer flight are price, quality, value, trust, commitment, alternatives, social impacts, escape costs, previous flight behavior, and tendency to seek variety (Ranaweera et al., 2005). In segment change, it is seen that some studies have been analyzed according to socio-demographic (Lees and Winchester, 2014), geographical (Rindfleisch, 2003), and attitude (Kennedy and Ehrenberg, 2001) changes, on the other hand, a relationship is also established between the dynamic behavior change of the customer and CLV (Lemon and Mark, 2006), which is related to the customer churn referring to the length of time the customer remains in the company (Neslin et al., 2006).

In addition, suggestions are made that the customer engagement structure will increase the efficiency in the management of segment management (Van Doorn et al., 2010). In this context, it is included as a stability factor in segment management (Balasubramanian et.al, 1998). However, it should not be forgotten that the customer staying in the segment is also a concept related to the length of the customer interaction in staying with the product/brand (Thomas, 2001). Noughabi et al. (2015) drew attention to a consumer group that determines consumer dynamics in segmentation analysis and defined this group as "structure breakers". The main feature of the group is that its changing behavior causes structural changes. These customers cause segments' instability. The

structure conceptualized in the context of segment instability refers to the customer's mobility and, in a sense, focuses on the customer-based change of segments (Blocker and Flint, 2007). In other words, it is customer shift management. It is possible to define the relationship that the customer establishes with the company, product, brand, based on the interaction, the customer profile of a brand, product or company that has been marketing activities in a certain period of time, again transforming into a different profile after a specific time. The segment that businesses construct over time may consciously / unconsciously (willingly or unintentionally) transform. The basic logic of the concept is that the profile that uses the company's product/brand is destroyed, evolved, and altered. The effect of this situation can be positive/negative on the company. The dangerous is the unconscious- the involuntary

2. RESEARCH METHODOLOGY

2.1. Purpose

The study aims to determine whether the consumers' perception of physical/social distance during pandemic periods affects the cynical brand distance and the segment shift trend through this.

2.2. Sampling and Survey

The research was carried out in the form of a web survey on social media on 298 consumers. The survey form of the research consists of two main groups. The first group of questions is about the demographic structure of the participants. The second group includes the scales used. Scales include questions expressing Covid19 fear, Brand distance, physical distance, and switch tendency. The important point here is that physical distance, cynic brand distance, and switch trend scales are used for the first time in this article since the subject is new. First of all, the cynical brand distance items were subjected to exploratory factor analysis. A four-factor structure was obtained. However, each factor was considered as an independent composite variable. The main reason for this is the existence of different and independent reflections of the cynical brand distance. In other words, an uncorrelated first order contextual perspective was evaluated.

2.3. Scales

The research basically uses four basic structures and six scales expressing them. The first is Covid19 attitudes / perception; the second is the perception of physical distance, the third is brand distance, which is the center of the study, and the fourth is consumers segment shift intention. All

the measurement items were measured on a five-point Likert-type scale that was anchored by 1 = strongly disagree to 5 = strongly agree to express the degree of agreement. All scales items can be seen at below.

a) Social Distance Scale

Social distance perception is expressed as two separate questions with one item considering that it may have positive and negative reflections on consumers. Questions from adapted from Popovic et al. (2003) and Dabbs(1971). Items are seen below.

1. The pandemic process made me understand life better
2. Physical distancing helped me return to myself.

b) Brand Switch Scale

Considered in the context of anti-loyalty as a segment shift trend, insisting on switching to other brands and insisting on replacement, Delgado-Ballester et al., 2003; Adapted and / or the opposite expressions of the items in the scales developed by Bloemer et al., 1999 and Spears and Singh, 2004 were preferred. First statement Adapted from Delgado-Ballester et al. 2003 is taken as the opposite of the issue of loyalty. The second statement Adapted from Bloemer et al., 1999. The third statement, Spears and Singh, 2004) has been adapted as the answer to the question of the extent of definitely and probably not taking. Brand switch statements are shown below.

1. I have a high probability of changing the brands I use.
2. I will probably switch to other brands.
3. I will insist not changing the brands I use

c) Brand Congruency Scale

Similarly, three expressions were preferred if the consumer's harmony with the brand is mainly influenced by lifestyle (together with income) and the perceptions of other customers who use the brands they use. The first two statements focus on adaptation towards lifestyle. These statements are adapted from Del Rio et al., 2001. The third statement was added by the authors in the context of the impact of interaction between customers that used same brand.

1. I think the brands I use don't appeal to me anymore
2. I think the brands I use do not perceive me correctly.

3. It is now very difficult for the brands I use to win and protect me.

d) Cynical Brand Distance Scale

The elements of the brand distance scale, which is at the center of the study, include the use of the classical scale development process and the determination of the elements and their direct analysis. The process of determining the cynical brand distance items is explained below. The item development process is used as the equivalent of a reductionist approach in some sources. In a sense, the general structure of the content is determined, and then the relevant items are reduced by various methods in line with the target and purpose. Among these methods, literature review, determining the items by interviewing subject experts when necessary, and approaching the subject with content analysis can be specified. Later, the most important of these items are selected and analyzed (Holt et al., 2007). When evaluating the number of items, the detail of the subject has not been covered before, and the researcher's expertise is important. The researcher's primary goal is to try to describe the scale related to the subject of interest with as few items as possible. Therefore, having a certain number of items in terms of understanding and interpretation will provide a better evaluation of the subject. While 26 items (Walsh et al., 2007) or 30 items (Eastman et al., 1999) are examined in some sources, they are reduced to 63 items (Tsai et al., 2010) in some sources.

As mentioned above, expert panels are also used in the reduction of content. These panels reduce the content according to their own views in terms of repetition of the contents of the content and their suitability to the structure (Vandala et al., 2010). Experts on the subject are asked to evaluate not only the relevant concepts or items, but also the readability and general appearance of the items in the item pool, and in a sense, these people subject the items to a pre-evaluation (Chaudhuri et al., 2011). Therefore, with item identification, reduction of items, and content validity can be accomplished simultaneously. The preliminary pool items determined by the researcher should be critically reviewed and refined if necessary, and similar ones should also be removed and avoided (Latner et al., 2014). Especially in experts' evaluations, it is examined that the relevant item on a particular Scale is unrelated, it needs revision or can be used with minor regulations, and ultimately, it is an Item that fully represents the subject (Kwon et al., 2013). As another method, evaluating items through individual interviews also brings a higher validity to the agenda (Rat et al., 2007).

The study involved textual discourse analysis with recourse to netnography methodology, which examines online communities' communication acts and discourse (Kozinets, 2002). The netnographical-based discourse method was employed in this study as a qualitative analysis. It was thought that the data obtained from online platforms without the research strain and allowing people to express their opinions freely will yield a much more realistic result. By typing, imaging, coding and posting ourselves into being, we can create and recreate ourselves endlessly, liberated from our bodies and the identity markers they carry (Rybas and Gajjala, 2007). A community discourse observation similar to Hemetsberger's (2006) research methodology was conducted, and data taken from the archives were investigated. Discourse analysis as a method relies on the social or collective process, rather than the individual's perceptions (Elliott, 1996), to clarify social design, semantic perspective (Sitz, 2008) and the origin of meaning (Çelik and Eksi, 2008), which is why the netnography method was employed in this study to determine and classify the cynic behavior of the consumers. As mentioned above, this methodology can analyze the daily routines of consumers (Catterall and Maclaran, 2002; Broillet et al., 2008) and is very effective in the determination of consumer behavior (Sandlin, 2007). This study has investigated online communities, social media tools and other news and comments on the internet. The context of the concept were chosen using cynicism and cynic keyword postings. The examination of discourses that are related to the cynicism talks in the websites and blogs lead us to an improved understanding of the discourses related to reality, meaning, social relationship, and identity. The qualitative data analysis involved the application of requisite categorization, abstraction, comparison, and dimensionalization criteria. The posts involved two phases. First, the authors coded the text according to the constant comparative method (Glaser and Strauss, 1967), reading the postings several times, moving from the specific to the general, and devising categories. The categories were then clarified by revisiting the data several times, grouping responses into like categories. Then, the themes were audited and suggestions and corrections were provided in the interpretation and writing phases. There was a qualitative assignment of analyzed texts to super-ordinate and subordinate semantic dimensions. The basic dimensions are shown below. In total, the study resulted in 19 dimensions which are presented in direct quotes. Then we have created questions that reflect or match with this items' meaning. Proposed scale items can be seen at below:

Cynical Brand Distance Themes and Items

1. Lack of passion
"I am cold from brands now"
2. Not being sincere
"I realized that I am a more natural person without a brand"
3. Disappointed
"I have no faith in brands"
4. Rejecting brand civilization
"I reject the statements of brands"
5. critical idealism
"I realized a more idealistic life without a brand"
6. Scepticism
"Brands do not tell the truth"
7. Nihilism
"I find brands meaningless"
8. Antagonistic distrust
"I think we should say stand against brands"
9. Seeking happiness beyond the established structure
"I feel happier without brands"
10. Simplicity
"I realized that unbranded life is better"
11. Not needing others' approval
"Brands are just social class enforcement"
12. Strain
"Brands create despair in me"
13. True-self
"I think brands are constraining me"
14. Disbelief
"Now I am more distant from brands"
15. Sarcasm
"I do not take brands seriously anymore"
16. Stripping out of the requirements
"Life without brand is better"
17. Displaying ambition
"I think I disclose myself using branded products"
18. Contempt of humanity
"Brands prevent an idealistic life"
19. Selfish
"Brands take people away from the realities of the world"

The next step includes testing the relationships between structures using the PLS technique of all scales and the SmartPLS software, and essentially conceptualizing and modeling brand distance perception.

3. FINDINGS

Demographics

Considering the demographic information of the participants, 59.4% are women and 40.2% men. The rate of those who are married is 52.4%, and the rate of those who are single is 46.9%. Considering the age distribution, the age of 20 and under is 3.8%; Those between the ages of 21-30 31.5%; Those in the range of 31-40 37.1; The 41-50 age range is 21.3%, the 51-65 age range is 4.9 and the distribution of those over 65 is 1.4%. Considering their educational status, 5.6% of them are secondary education, 49.7% are high school graduates and 44.8% are university graduates. Income distributions are 42.7% of which are 5000 TL and below, 36% between 5001-9999 TL, 21.3% have an income of 10000 TL and above.

Model

The main reason for measuring the model with PLS is the direct estimation of the structures and the direct testing of the methodological power associated with it (Hair et al., 2017). Using the Consistent PLS logic, a verification system was tried to be studied (Dijkstra and Henseler, 2015). On the other hand, since predictive validity is based on the relationship with the output variables (Matthews et al., 2010; Singh and Krishnan, 2007), the effects of Physical Distance, Brand Distance and also Brand Switch and Congruency were investigated.

Hypothesis

In the study, three main hypotheses and a total of six hypotheses were developed and tested in the model. The hypotheses are:

H1: Brand congruency has a positive effect on Cynical Brand Distance

H2: Social Distance has a positive effect on cynical brand distance.

H3: Cynical Brand Distance has a positive effect on the brand switch.

Measurement Model

SmartPLS 3.0 software was used (Ringle et al., 2015) to analyze the model developed. Following the recommended two-stage analytical procedures by Anderson and Gerbing (1988), this study tested the measurement model and the structural model. The preference of the PLS technique is due to the fact that the relevant model is directly predictive. For this reason, two-step measurement was carried out in testing. The first of these is the measurement model. At this stage, their loads, R^2 , f^2 , discriminant validity, and Cronbach alpha examinations were examined. In the second stage,

structural equation modeling was carried out. At this stage, together with the beta coefficients, the Q^2 , value where the difference from 0 is sought (Chin, 1998) was examined. In the literature, tests such as R^2 , and Q^2 , cross-validation tests for the variable variable and non-parametric tests such as f^2 , that explain the power of the effects are used (Fornell and Cha, 1994). In structural model evaluations, f^2 , (effect size) and Q^2 (estimation ability of the model) criteria are used in basic evaluations (Cohen, 1988; Gim et al., 2015). Basically, if Q^2 , is greater than zero, exogenous variables have predictability for a particular endogenous variable, while Q^2 , is less than zero indicates that it has no prediction ability (Gim et al., 2015). The effect level (f^2 ,) is a value obtained by adding and subtracting models one by one and evaluates how useful a structure is to the model (Ringle et al., 2014). Klesel et al. (2019), instead of analyzing alternative parameters among groups, the area that showed the whole model, proposed two general tests for multi-group comparisons in PLS-SEM (Sarstedt et al., 2011). In the structural model evaluation, the path coefficients (path-coefficients) of the endogenous structures of the model are determined (Sarstedt and Henseler, 2011). The Q^2 test, which is processed as a blindfolding process in the SmartPLS 3.0 version, is a process that reveals results regarding the endogenous variables of the structure and is performed by repeated use of the sample (Hair et al., 2014). An error range of 5-10 is recommended for calculation and values are expected to be greater than 0 (Hair et al., 2014). The Q^2 value used to reveal the predicted value of the model assumes that the model should estimate each endogenous variable appropriately (Sarstedt et al., 2014). The value evaluates how close the model is to what is expected from it / estimation quality (Ringle et al., 2014). Effect size (f^2 ,) is a test used to evaluate the strength or magnitude of the relationship between endogenous variables; it predicts each of the exogenous variables that explain the intrinsic variable in the structural model. These values can be evaluated as low effect size at 0.02, medium level at 0.15 and high effect size at 0.35 (Cohen, 1988). Depending on the f^2 , values, removing any latent variable from the analysis may have a higher / lower effect on revealing the observed variable (Gim et al., 2015). In order to test the significance of the path coefficients and the loadings, a bootstrapping (resampling 5,000) method was used. Reliability was measured with composite reliability (CR) and Cronbach alpha values. Convergent validity has been examined in terms of factor loads of the building materials being .50 and above. Discriminant validity was measured by AVE. Loadings of elements in the measurement model; Internal structure reliability is stated as convergent validity and discriminant validity. The most important factor in using the PLS technique and choosing the Smart PLS

program is to directly test whether the model works with analysis.

Convergent Validity

The 19-item reflective factors indicated convincing evidence of convergent validity with strong and significant factor loadings ($p < .05$), ranging from 0.70 to 0.95, AVEs well above 0.50 (Fornell and Larcker, 1981). The first step of testing the research model is the validity and reliability analysis of the structures in the model. Internal consistency, composite reliability, and discriminant validity have been tested. Cronbach alpha and CR values were taken into consideration for internal consistency. In addition, AVE value was examined. The square root of the AVE value is greater than the correlations of the structures. Decomposition validity is proved. Composite reliability and Cronbach alpha values show that measurement tools are reliable. (The values were between .80 and .90). Relevant results can be seen below. The outer factor loadings were positive as expected and change with .617-.921 range.

Discriminant Validity

Discriminant validity involves a comparison, which means that the distance to each other is similar in a sense with similar but structural differences (Tian et al., 2001). Since there is no expression below .50 in factor loadings in the relevant structures (Nunnally and Bernstein, 1994), item analysis was not excluded. All factor loadings are within acceptable limits. Next, the discriminant analysis used criteria by Fornell-Larcker. The requirement that must be met is the AVE square root value must be greater than the correlation coefficient between constructs. Below, Table 3 shows that all square root values of each construct are greater than the correlation coefficient between constructs. Thus, all requirements have been met with exceeding the .50 value limit. The lowest AVE value is .586 that matches .50 limit advised (Fornell and Larcker, 1981). The shared values between the constructs are square correlations. Comparing the loadings across the columns, Table 1 indicates that in all cases an indicator's loadings on its own construct are higher than all of its cross-loadings with other constructs, thus, the results indicate there is discriminant validity between all the constructs.

TABLE 1. Discriminant Validity Result

	Brand Switch	Brand Congruency	Cynical Brand Distance	Social Distance
BrandSwitch	0.918			
Brand Congruency	0.730	0.862		
Cynical Brand Distance	0.633	0.701	0.781	
Social Distance	0.214	0.148	0.286	0.867

Structural Model

We have preferred for the analysis by SmartPLS 3 software to estimate the model parameters. We use path-weighting process with 300 iterations in the PLS-SEM algorithm settings. To assess the structural model, Hair et al. (2017) suggested looking at the R^2 , beta (β) and the corresponding t-values via a bootstrapping procedure with a resample of 5,000. They also suggested that in addition to these basic measures researchers should also report the predictive relevance (Q^2) as well as the effect sizes (f^2). In testing the structural model, firstly, if there was no collinearity problem ($VIF < 5.0$), the R^2 , beta and t values and Q^2 and f^2 values of the endogenous structures were examined. Q^2 is measured for prediction accuracy. Factor loads $> .70$; $AVE > .50$ HTMT $< .90$ criteria are in question. $VIF \leq 5$ for the structural model; R^2 minimum 0.25; Q^2 is expected to be higher than zero (Hair et al. , 2019). Bootstrapping used to examine the significance of the loadings and these are reported in Table 1., with significant loadings being demonstrated where $p < .05$ (5% significance level). The SRMR is expected to be less than < 0.08 saturated (Fassot et al., 2016). The SRMR value obtained from the research is within acceptable limits (SRMR = .056).

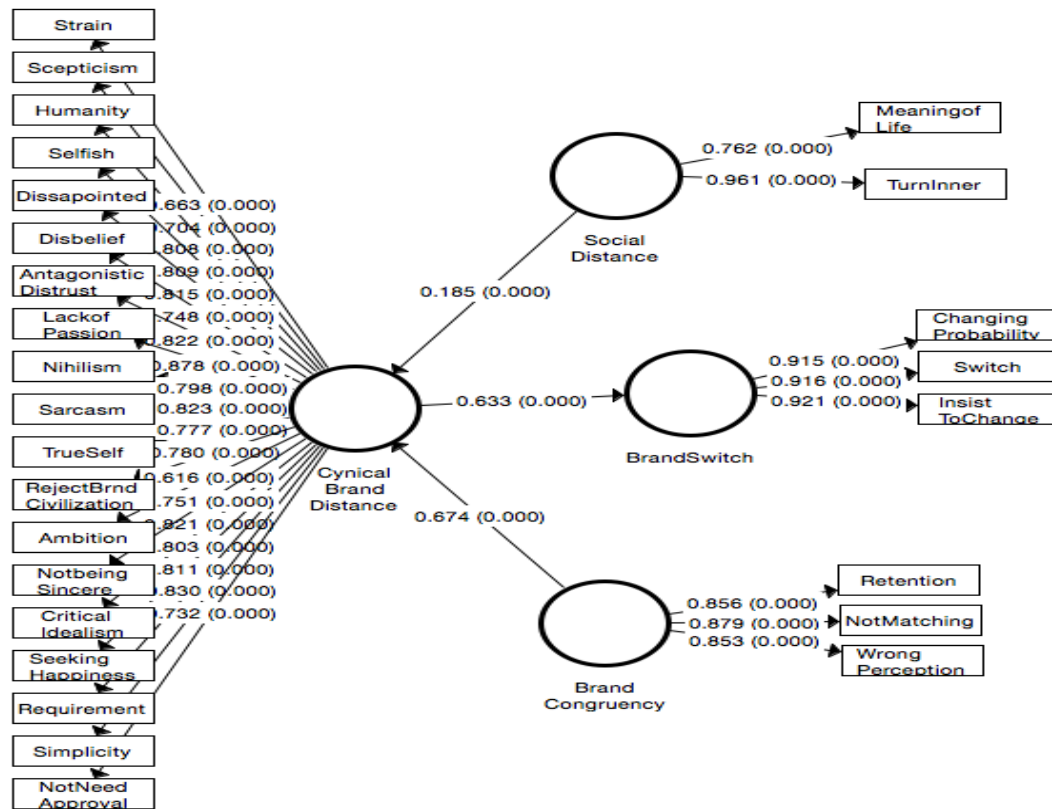


Figure 1. Model Test (SmartPLS Result)

According to Hair et al. (2013), in SEM models, Q2 values bigger than zero for a reflective endogenous construct imply the path model's predictive relevance for a particular construct. By performing blindfolding procedures, all Q2 values are considerably above zero, which supports the model's (Fig.1) predictive relevance for the four endogenous constructs. Both R2 and Q2 mainly focus on the accuracy and relevance of the model (Hair et al., 2014). In addition, the f^2 effect size, which shows the impact of a specific predictor construct on an endogenous latent construct, and the Q^2 effect size for the predictive relevance are presented in Table 3. The results in Table 4 and Figure 2 provide support for all the six hypotheses. All the three hypotheses were posited to be positive and significant and accepted. H1 posited a positive relationship between brand congruency and cynical brand distance, while H2 hypothesised a positive association between social distance and cynical brand distance. H2 was accepted. H3 was also accepted regarding of the positive effect of cynical brand distance on brand switch. The hypotheses testing results obtained using Smart PLS analysis are shown in Figure 1 and Table 2. Support is provided

for all hypotheses with path coefficients (0.674, 0.189, 0.633, respectively) at .000 significant level as shown in Figure 1 and Table 3.

TABLE 2. Research Model Result

	Original Sample (O)	R2	f2	Q2	Hypothesis
Brand Congruency -> Cynical Brand Distance	0.674***	.522	.934	.315	Accepted
Social Distance -> Cynical Brand Distance	0.185***		.007		Accepted
Cynical Brand Distance -> BrandSwitch	0.633***	.398	.667	.327	Accepted
BrandSwitch(Cr.Alp=.907;Com.Rel=.941; AVE=.842); BrandCongruency(Cr.Alp=.828;Com.Rel=.897; AVE=.744); CynicalBrandDistance(Cr.Alp=.964;Com.Rel=.967; AVE=.610); SocialDistance(Cr.Alp=.712;Com.Rel=.855; AVE=.750);					

4. CONCLUSIONS AND RECOMMENDATIONS

The present article examines the brand-contextual effects of the recent pandemic in the form of brand distance conceptualization. They are considering that the impact of the social distance comes from pandemic on the consumer's preferences, especially on their attitudes towards brands, it has been considered that the consumer may create a subjective or general negative attitude or distance to the brand or brands. Especially because it triggers brand cynicism, the validity of the brand distance scale based on brand cynicism, again, its relationship with social distance, and brand switch concepts were examined. Brand cynicism items created in the form of netnography were handled as brand distance and an item pool was created.

The study's main difference is to determine the structure of consumer attitudes towards brands in the context of cynicism-brand distance. In this context, the study approaches context from a different point of view compared to other studies in the related literature. It is seen that there is a contrast within the general or brand scope according to the level of personal and social importance of the consumers in the context of anti-consumption (Iyer and Muncy, 2009). From the point of view, idealism can be considered as the integration and harmonization of materialism and anti-materialism (Uebersax, 2013). Especially in the context of opposition, it may appear as an ideological phenomenon that emerges as an element of the oppression of capitalism (Ellis et al. 2018), as well as a sphere of influence that reduces the effect of consumers' perception of justice (Balaji et al., 2018). On the other hand, cynicism is a structure that emphasizes an idealism in the

search for happiness (Forman, 2016) that does not take into account the necessity of "necessity" in a sense (Forman, 2016), and emphasizes worthlessness in the form of apathy (Yamamoto et al., 2017). It is seen that the items that make up the scale are compatible with the relevant theoretical structure.

Social Axiom (Leung et al., 2002) Cynicism (Floberg et al., 2014), cynicism (Turner and Valentine, 2001), Cynicism sub-dimension (Austin et al., 2005; Neiderhoffer, 1967), cynicism scale, sub-dimension cynicism scales (Stanley et al., 2005), consumer cynicism (Helm et al., 2015) are scales used in the context of cynicism in the literature. However, there is no scale as a cynical context brand distance. While establishing a weak or strong bond with brands is expressed as defining-not identifying on the brand, brand cynicism can be built on the line of non-opposition. It is necessary to explain that consumers do not want to create a social identity on brands, but a contrasting system for brands or companies. Cynicism is included as an anomie sub-dimension (Rosenbaum and Kuntze, 2003). The cynicism phenomenon is structurally related to a congruence between two phenomena (Byza et al., 2017). Cynicism, which can be conceptualized with disaffection, acts with premises such as insecurity and rupture, and over time tends to apathy (Yamamoto et al., 2017). Trust is vital to cynicism. Dispositional trust takes a lot of space (Helm, 2004). It also represents a trait of reaching conclusions, chipping ethics, and insecurity as a social axiom (Leung et al., 2002).

In a sense, when examined as a negative attitude towards method and process (Pinkleton and Austin, 2002), it can be thought that the discourse of brands is effective because the perceived importance attributed to the source of the transferred information (Pinkleton and Austin, 2001) affects cynicism. It is seen that the suggestion of a valid scale that is compatible with the cynicism measures existing in the literature but has its own internal dynamics will be a difference in terms of meaning orientation to the brand. In determining the items, it was thought that it would be more effective to base the individual opinions about real life by using netnography method instead of making a reflective measurement using many items and determining the main groups as items. The substances and the brand cynicism structure they create are shaped according to the reflective measurement model. In future studies, it may be suggested to examine existing items through the formative measurement model.

In the study, nomological validity was evaluated with the materialism scale and Discriminant and Convergent Validity with social distance and brand switch concepts. It may be suggested to use different scales in this context in future studies. Being the subject of an intercultural study is considered important in terms of general validity. In terms of managerial contribution of the scale, it can be determining how consumers' cynicism attitudes in brand management should be examined in a perceptual sense, what should be taken into consideration in conveying messages and developing brand perception, and what might be related to social responsibility or cause-related marketing practices, especially in marketing communication.

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The Effect Of Perceived Stress of Health Care Professionals on Servant Leadership Behaviors In The Covid-19 Period: NMRT Example

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Abstract

Aim: The research aims to determine the effect of servant leadership behaviors on the perceived stress levels of healthcare professionals during the COVID 19 pandemic.

Methods: The population of the study is 1107 health employees (NMRT - National Medical Rescue Team) in Ankara region. The sample consists of 215 people. Pearson correlation analysis was applied in the study. Simple linear regression test was implemented for the relation level of the sub-dimensions. In the correlation analysis, a medium strong positive correlation was determined between the dependent and independent variables.

Results: It is seen that servant leadership behaviors and perceived stress levels of employees are be positively affected. It has been revealed that with the servant leadership behaviors shown during the pandemic process, the stress levels of the employees decreased, the service quality increased and the motivation was provided in a positive way.

Conclusion: It can be stated that there is a moderate positive correlation between the dimensions of strengthening, courage, trust, and realism. The model established for the correlation between the stress/discomfort perception dimension and the inadequate self-efficacy perception dimension, and the servant leadership dimensions was determined as significant. Also the servant leadership behaviors exhibited by the ministry managers during the COVID 19 process are thought to make the level of stress perceived by the employees feel low. It can be said that the NMRT employees' servant leadership behaviors, especially in the COVID 19 process, positively affected the people in the working environment and with whom they contacted.

Keywords: Stress, Leadership, Health Staff

INTRODUCTION

Since humanity has existed in the world, many disasters have emerged until today, and epidemic diseases have undoubtedly caused serious damage to humanity among these disasters and delayed the development of societies and states (Yıldız, 2014; Yiğit and Gümüşçü, 2016). In disasters and emergencies that affect life, the health system continues to work, and necessary measures must be taken for this (Çınar, 2019; 167). Many of the studies indicate that outbreaks cause serious traumas and anxieties on people (Lau et al, 2005; Taylor et al, 2008; Yıldız, 2014; Zhang et al, 2020). The epidemic called COVID 19 or 1019-nCOV, which emerged in Wuhan, the administrative center and largest city of Hubei province of China and spread to the world with great speed, has seriously damaged the economy and social life. A member of the coronavirus family, COVID 19, is from a very large family of coronaviruses, such as viruses known as the Middle East Respiratory

Syndrome (MERS-CoV) and Severe Acute Respiratory Syndrome (SARS-CoV) (Zhu et al, 2020; Kıroğlu, 2020). In these pandemic-level outbreaks, healthcare workers are at the highest risk group, and intensive work, not getting enough rest, missing opportunities, unsafe environment, and intense virus environment cause serious psychological distress (Kaya, 2020).

Stress is called as "estricitia" in Latin. Stress was expressed in the form of disaster, trouble, grief, and grief in the 17th century whereas it was expressed in the 18th and 19th centuries in terms of power, oppression, and use of force towards the individual and his spiritual structure (Güçlü, 2001). It was first stated by the scientific community as the "relationship between the elastic object and the external force applied to it" in the 17th century by the physicist Robert Hook (Graham, 1999). Selye stress appeared as follows, which causes the disappearance of energy in the person. The energy normally used to adapt to stress has extinction. Stress that harms individuals cause physiological wear and tear of cells. It is also stated that stress has positive and negative features (Selye, 1974). For this reason, it can be defined as "positive stress" if the positive changes the work ability and capacities of the employees, and "negative stress" if the negative changes (Quick and Quick, 1984).

One of the situations in which stress is most common is the business environment. Job stress definitions were made by many researchers. For example, the work stress is the tension on the workplace because of being affected by the work environment (Lazarus, 1991). Job stress is a serious problem for the employees of the organization and the organization itself. Job stress, difficulties, and inadequacies in the work environment, undermining physical stress, are undesirable, resulting in illness (Leong, 1996). In their studies conducted by Eskin and friends (2013) they stated that the concept of stress is a two-dimensional structure: insufficient self-efficacy and perception of stress / discomfort.

The most important feature of servant leadership that distinguishes it from other leadership approaches is that it provides integration between people and emphasizes establishing long-term relationships with employees (Kılıç and Aydın, 2016: 107).

Servant leaders, as a role model themselves, reinforce mutual trust by accelerating the flow of information, resources and feedback between themselves and their employees. Benevolence, support and personal attention are among the most important elements of servant leadership, and these benevolent behaviors of the leader reinforce trust in the leader. In addition, servant leaders

are leaders who inform their followers in advance, include them in decisions and take initiative, in other words, strengthen their followers. The fact that servant leaders deal with subordinates at a personal level and follow their professional and personal development, behave according to ethical values and be honest also helps employees express themselves comfortably without any concern. Servant leaders create a safe environment for their employees. In this way, employees can use their skills without stress and fear. (Akgemci et al, 2019).

Patterson has developed a value-based model of servant leadership that structures and shapes the behavior of servant leaders. Servant leadership contains seven virtues, according to Patterson. These virtues are moral love, humility, sacrifice, vision, trust, reinforcement, and service are listed (Patterson, 2003: 570).

According to Page at al, personality is at the focal point of servant leadership approach in terms of conceptual dimension. The combination of an individual's physical, cognitive, and emotional capacities creates his personality. Servant leaders also transform their abilities in cognitive, physical, and emotional aspects into behavior within the framework of leadership, wisdom and servitude formats with a unique mix (as cited in Fındıkçı, 2013: 309).

Many people have been guided by the servant leadership approach and philosophy to mediate people's spiritual, emotional, intellectual, and professional development; however, it has become the main expression of the mission definition of many organizations and a valuable and determinant part of its corporate philosophy (Spears, 2004: 7-11).

Hunter argues that the concepts of patience, encouragement, humility, respect, not thinking, forgiveness, honesty, and promise, which he describes as "the eight qualities of love," are not only the perfect qualities of love, but also the essence of servant leadership. According to him, these qualities do not only explain the requirements of leadership, but also reveal the real meaning of being a servant in a concrete way (Hunter, 2004: 90-110).

1. RESEARCH METHODOLOGY

Purpose of the research: The aim of this study is to determine the effect of servant leadership behaviors on perceived stress levels of national health workers in the Ankara region (Ankara, Çankırı, Kastamonu, Kırıkkale, Çorum, Yozgat, Kırşehir – see ref. ASHGM). With the approval of the Ministry of Health dated 30.12.2003 and numbered 5442, the “Health Organization

Project in Disasters” was put into practice and the National Medical Rescue Teams (UMKE) were formed. During the COVID 19 pandemic from 21 NMRT regions according to the information received from the Disaster and Emergency Management Department of the Ministry of Health of the Republic of Turkey.

Research Hypothesis and Model: The research was carried out with a descriptive research model. The aim of the study is to define the direction and degree of the correlation between independent and dependent variables. In this context, the conceptual model related to the correlations of these variables can be expressed as in Figure 1.

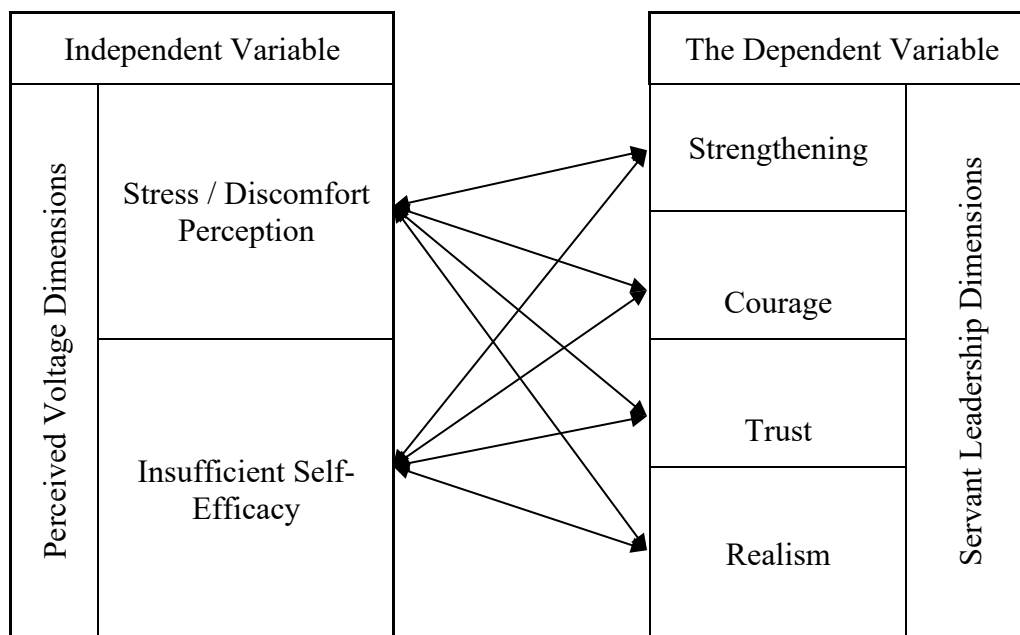


Figure 1. Conceptual Model of the Research.

Based on this conceptual model, the hypotheses of the research can be listed as follows:

Research Hypothesis: The following hypotheses have been explored.

H1: There is a correlation between perceived stress levels and servant leadership behaviors of NMRT personnel working in the Ankara region (Ankara, Çankırı, Kastamonu, Kırıkkale, Çorum, Yozgat, and Kırşehir).

The sub-hypotheses developed based on this main hypothesis are:

h1.1. There is a correlation between perceived stress levels and reinforcement dimension in NMRT employees.

h1.2. There is a correlation between perceived stress levels and courage in NMRT employees.

h1.3. There is a correlation between perceived stress levels and trust in NMRT employees.

h1.4. There is a correlation between perceived stress levels and realism dimension in NMRT employees.

Location and Features of the Research: The target universe of this study consists of NMRT employees working in a pandemic in seven provinces within the Ankara region (Ankara, Çankırı, Kastamonu, Kırıkkale, Çorum, Yozgat, Kırşehir). The research was carried out between January and December 2021 by online method. NMRT is characteristically a community of volunteer health workers. The reason for the existence of this community is to save people. While carrying out this process, it contains all the functions of an organized organization. It has been a matter of curiosity, how this organized organization, which acts with the unity of the leader and team members, acts in changing conditions. The relationship and existence of this organization during the period of Covid-19 have been tried to be revealed by this study.

Population and Sample of the Research: All employees working in the Ankara Region NMRT team within the specified date range constituted the universe of the research. However, due to the difficulty of being reached despite the researchers' desire to reach, the accessible or concrete universe constitutes 1107 personnel. Simple random sampling method was used in the research. In the research, the following formula was used to determine the number of people to be reached through the universe in question (Yamane, 2001: 116-117).

$n = \frac{(Nt^2 pq)}{(d^2 (N-1) + t^2 pq)}$	$n = \frac{(1107 * 1,96^2 * 0,10 * 0,90)}{(0,05^2 * 100 + 1,96^2 * 0,10 * 0,90)}$	$n = 123$
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According to the results obtained, the number of people to be reached in the research is 123. In this study, analyzes were made on the data obtained from 215 employees, 32 from Ankara, 30 from Çankırı, 30 from Kastamonu, 31 from Kırıkkale, 30 from Çorum, 31 from Yozgat and 31 from Kırşehir. In this study, analyzes were made (T.R. Ministry of Health, 2020).

Data collection tool: In the collection of information and data, a questionnaire form consisting of 46 questions in total, 16 questions measuring the perceived stress level and 30 questions measuring servant leadership behaviors were used.

Perceived Stress Scale: A Likert type with Perceived Stress Scale (5) developed by Cohen (1983) and adapted to Turkish by (Eskin, 2013) was used. Scale items are filled in by selecting one of the

options ranging from “Never (0)” to “Very often (4)”. Of the items in the scale, “7” containing positive expression are scored in reverse. The scores that can be obtained from the scale vary between “0” and “56” and the high score indicates that the perception of stress is high. There are two sub-dimensions called Insufficient Self-Efficacy Perception and Stress / Disturbance perception, and the internal consistency coefficient is "0.84" and the test-retest reliability coefficient is "0.87" (Eskin, 2013).

Servant Leadership Scale: The Servant Leadership Scale consists of 5-point Likert-type 30 questions (Dierendonck - Nuijten, 2011). The statements contain positive and negative statements classified as "1. I strongly disagree", "I disagree 2.", "3. I am uncertain", "I agree" and "I totally agree." Scale sections consist of 4 parts as "Reinforcement", "trust", "realism" and "is courage". In terms of the reliability coefficients of the sub-sections of the Servant Leadership Scale, reinforcement was found as "0.93", courage, "0.87", trust "0.74", and realism as "0.84" (Yılmaz, 2013).

Reliability of the Servant Leadership Scale: The Cronbach's alpha coefficient ranged from 0 to 1, and according to the evaluation criteria, it was stated that “if $0.00 < 0.40$ the scale is unreliable, if $0.40 < 0.60$ the scale has low reliability, if $0.60 < 0.80$ the scale is highly reliable and if $0.80 < 1.00$ the scale is highly reliable”. is expressed (Tavşancıl, 2005).

The 1st factor of the Servant Leadership scale consists of 12 elements that vary between 0.764 and 0.585 in terms of load. The factor total variance explanation level was 26.838%, and the reliability coefficient was obtained as 0.940. As a result, the factor provides a high degree of reliability. The second factor consists of 12 elements that differ between 0.779 and 0.549 in terms of load. The factor total variance explanation level was 24.543%, and the reliability coefficient was 0.937. As a result, the factor provides a high degree of reliability. The third factor consists of 4 elements that differ in the range of 0.835 to 0.518 in terms of load. The factor total variance explanation level was 9.093% and the reliability coefficient was 0.754. As a result, the factor provides a high degree of reliability.

Reliability Of The Perceived Stress Scale: As a result of the reliability analysis, the Cronbach Alpha coefficient of the scale was found to be 0.83, and the Alpha coefficients of the sub-dimensions were found to be 0.82 and 0.83. It was determined that the item-total correlations were high for all items in the scale. As a result, the factor provides a high degree of reliability.

Data Collection: The questionnaires prepared online were directed to social media and the employees were able to respond to these questionnaires as soon as they found a space for them. In addition, they were reminded to fill out the questionnaire as the shifts changed. It takes 10-15 minutes to fill out the questionnaire.

Analysis of Data: The data of the research were analyzed using the SPSS 22.0 package program. Descriptive statistics about the participants are included. Descriptive statistics on perceived stress and servant leadership situations were averaged and their distributions were revealed. Perceived stress and servant leadership correlation analysis was performed, and the correlation was determined ($p < 0.05$). Pearson Correlation analysis was used to determine the effect of the stress/discomfort perception dimension on the servant leadership dimensions.

Ethical Aspect of Research: This study was approved by the e-mail sent from the T.C. Ministry of Health General Directorate of Health Services, dated 27.05.2020, “portal@saglik.gov.tr”. In addition, T.C. Approved by giving the necessary permission to conduct this study with the letter dated 18.06.2020 and numbered by the General Directorate of Emergency Health Services of the Ministry of Health. These two documents are presented at the end of the article. Also, the ethics committee approval of the study, which was carried out in accordance with the ethical principles, was taken as the 1st Decision with the decision numbered E-33490967-044-121213 of the Social and Human Sciences Research Ethics Committee of Tokat Gaziosmanpaşa University.

Limitations of the Research: The results of the study cannot be generalized since it is based on data obtained from NMRT personnel working in a regional group.

2. FINDINGS

The correlation between the data scale scores was analyzed with the Pearson correlation test and the extent to which the dependent variable was affected by the independent variable was analyzed with the simple linear regression test.

Table 1. Demographic Characteristics of the Participants

Demographic Variables	Type	f	%
Gender	Female	87	46.6
	Male	128	53.4
	Total	215	100.0
Age (29.21±7.77)	20 Years and Under	19	7.8
	21-30 Age	111	55.4
	31-40 Age	58	26.9
	41-50 Age	23	8.8
	51 Years and Above	4	1.1
	Total	215	100.0
Marital Status	Single	123	57.2
	Married	92	42.8
	Total	215	100.0
Educational Status	Primary	3	2.0
	High School	67	31.4
	Vocational School	86	42.3
	Licenses	45	19.4
	Graduate	14	5.9
	Total	215	100.0
Job	Physician	11	4.8
	Emergency Medical Technician	67	31.5
	Other Health Personnel	63	29.2
	Ambulance Driver	27	12.0
	Other Personnel	47	22.1
	Total	215	100.0
Working Time	0-5 Years	120	57.9
	6-10 Years	50	23.6
	11-15 Years	21	9.2
	16-20 Years	12	4.8
	21-25 Years	8	3.3
	Over 26 Years	4	1.2
	Total	215	100.0
Overall Total		215	

Table 1 shows the demographic characteristics of NMRT employees who participated in the research. Looking at the gender distribution of the participants, it was determined that 45.3% were female and 51.5% were male. Considering the age distribution of health personnel, 7.0% of them are 20 years old and under, 49.8% are 21-30 years old, 24.2% are 31-40 years old, 7.9% are 41-50 years old, and it was determined that 1.0% of them were 51 years old and over. It was determined that 55.2% of the participants were single and 41.1% were married. According to the results

obtained for the education levels of health personnel, 0.5% of them are primary school graduates, 29.9% of them are high school graduates, 40.5% are associate degree graduates, 18.7% are undergraduate graduates, and 5.5% are postgraduate degree.

Considering the duties of the participants, 4.6% are doctors, 30.2% are emergency medical technicians, 28.2% are other health personnel, 11.5% are ambulance drivers, and 21.2% are other personnel. Considering the working time of the participants in this line of work, 54.9% of them are 0-5 years, 22.3% are 6-10 years, 8.8% are 11-15 years, 4.6% are 16-years. It was determined as 20 years, 3.1% as 21-25 years and 1.1% as 26 years and above.

Table 2. Descriptive Statistics on Perceived Stress and Servant Leadership Dimensions

n=215	Minimum	Maximum	Mean	Standard Deviation	Level%	Skewness	Kurtosis
Stress/ Disturbance Perception	10	30	20.32	4.04	67.7	0.62	-0.13
Inadequate Self-Efficacy Perception	10	30	22.21	4.17	74.0	-0.46	-0.05
Perceived Stress	37	86	63.17	8.79	73.5	-0.06	0.03
Reinforcement	8	25	18.72	3.70	74.9	-0.38	-0.15
Courage	6	20	14.89	2.92	74.4	-0.38	0.06
Trust	5	15	11.15	2.19	74.4	-0.24	-0.27
Realism	7	20	15.07	2.90	75.4	-0.28	-0.13
Servant Leadership	29	80	59.84	9.78	74.8	-0.29	0.15

Descriptive statistics of perceived stress and servant leadership scores are shown in Table 2. Reinforcement score average (18.72 ± 3.70) courage point average (14.89 ± 2.92). Trust score average (11.15 ± 2.19). The servant leadership average is also (59.84 ± 9.78); The perceived stress score average is (63.17 ± 8.79). Stress / Disturbance perception score average (20.32 ± 4.04). Inadequate self-efficacy score average (22.21 ± 4.17).

Table 3. Pearson correlation analysis of Perceived Stress and Servant Leadership Scores

		Reinforcement	Courage	Trust	Realism	Servant Leadership
Stress/ Disturbance Perception	r	0.307	0.283	0.191	0.225	0.295
	p	0.000	0.000	0.000	0.000	0.000
Inadequate Self-Efficacy Perception	r	0.353	0.305	0.253	0.288	0.362
	p	0.000	0.000	0.000	0.000	0.000
Perceived Stress	r	0.467	0.439	0.349	0.426	0.513
	p	0.000	0.000	0.000	0.000	0.000

p <0.01, p <0.05 significant correlation. p > 0.05 no significant correlation

Table 3 shows the perceived stress and servant leadership points. Strengthening with perception of Stress / Disturbance ($r = 0.307$). Among the servant leadership perceptions ($r = 0.295$), a positive medium; Reinforcement with inadequate self-efficacy perception ($r = 0.353$). Perceptions of Courage ($r = 0.305$); There is a positive correlation between servant leadership ($r=0.362$) scores ($p<0.05$); reinforcement with perceived stress score ($r = 0.467$). Courage ($r = 0.439$). Trust ($r = 0.349$). Realism ($r = 0.426$). There is a moderately positive relationship between servant leadership and perceived stress ($r = 0.513$), ($p < 0.05$). As a result of the Pearson Correlation analysis, it is possible to accept all hypotheses by determining that there is a correlation between dependent and independent variables in some, if weak. However, Regression analysis was performed to determine which dependent variables can be explained with which independent variables and what the degree of the correlation is, and the results are given in table 4.

Table 4. Regression Analysis of Dependent Variable Servant Leadership and Independent Variable Perceived Stress Scores

Dependent Variable: Perceived Stress sizes	Independent Variable: Servant leadership dimensions	Coefficients			Model		
		B	t	p	F	p	R2
Stress/ Disturbance Perception	Constant	13.197	11.453	0.000*			
	Reinforcement	0.274	3.831	0.000*			
	Courage	0.034	0.359	0.719	11.752	0.000	0.099
	Trust	0.016	0.135	0.893			
	Realism	0.087	0.995	0.320			
Inadequate Self-Efficacy Perception	Constant	13.167	11.326	0.000*			
	Reinforcement	0.266	3.685	0.000*			
	Courage	0.130	1.365	0.173	17.190	0.000	<0.138
	Trust	0.030	0.255	0.799			
	Realism	0.119	1.343	0.180			

* p < 0.05 has significant effect. p > 0.05 no significant effect

As can be seen in Table 4, the model established to determine the degree of influence of Stress / Disturbance perception dimension on servant leadership dimensions is meaningful. In terms of the empowerment dimension, while the Stress/Discomfort perception dimension is positively affected, it does not affect the courage, confidence and realism dimensions ($p > 0.05$). Reinforcement the Stress / Disturbance perception change explains the dimension. The model established to test the influence of the perception of insufficient self-efficacy from the servant leadership dimensions is meaningful. Reinforcement, Courage, and Realism dimensions affect the perception of insufficient self-efficacy positively, while the Trust dimension does not seem to have

a significant effect ($p > 0.05$). The Reinforcement and realism dimensions explain the change in the perception of insufficient self-efficacy. It is seen that some sub-dimensions of servant leadership have a statistically significant correlation with the dependent variable.

3. DISCUSSION

Established in the country under the Ministry of Health, General Directorate of Emergency Health Services, NMRT unit provides emergency health services by performing medical rescue in case of domestic and international disasters and emergencies. NMRT teams were among the officers who made the first contact with the disease with the onset of the pandemic. As time progressed, this process took a long time, vaccination was not sufficient and the course of the disease was constantly fluctuating, which made it difficult for NMRT employees. During the restriction practices, NMRT teams, together with other officials, provided fever and pulse measurements, vaccination services, health services to people in quarantined guesthouses and dormitories, and took part in disasters that developed in this process. NMRT basic training includes working under intense, stressful and pressure. The health worker who successfully completes these trainings is included in the NMRT team. Each team has a leader in training. In addition, each NMRT officer consists of people with servant leadership characteristics. With this research, they worked in the COVID 19 pandemic process.

The perceived stress level of those who worked under very difficult conditions and participated in this study was determined as 73.5% with (63.17±8.79) points, 67.7% with Stress/Discomfort (20.32±4.04) points, and 74.0% with Insufficient Self-Efficacy Perception (22.21±4.17) points. As a result, it is seen that perceived stress levels are high during the pandemic process. This situation is consistent with the literature.

It is reported in the literature that the COVID-19 epidemic, which affects the earth, causes psychiatric problems. In a study with 4872 participants over the age of 18 during the COVID-19 outbreak in Wuhan. The prevalence of mental illness and its correlation with social media exposure was investigated. In this study prevalence of depression in the general population over 18 years of age during the COVID-19 outbreak. prevalence of anxiety is 22.6%. The prevalence of the combination of depression and anxiety was 19.4%. Over 80% of respondents reported that they were frequently exposed to news and information about COVID-19 on social media. In the same study, the level of anxiety of those with high social media exposure in the last week is related to

this situation. it was found to be significantly higher than those with lower social media exposure. As a result, those with high social media exposure have been reported to develop higher mental illness (Gao et al., 2020).

In another study, it was conducted with 144 patients who were hospitalized with COVID-19. It was reported that 34.72% of patients had anxiety symptoms and 28.47% had depression symptoms. In the same study, it was stated that there was a significant correlation between the high rate of anxiety and depression symptoms and less social support in patients treated with COVID-19 (Kong et al., 2020).

In this study, the difference between perceived stress sub-dimensions and servant leadership sub-dimensions (Stress/Discomfort and Empowerment ($r=0.307$). Positive median between servant leadership perceptions ($r=0.295$), insufficient self-efficacy perception and Empowerment ($r=0.353$). Courage perceptions ($r=0.305$), Servant leadership ($r=0.362$), positive mean ($p<0.05$), Perceived stress score and Empowerment ($r=0.467$), Courage ($r=0.439$), Confidence ($r=0.349$), Realism ($r=0.426$). There is a positive, moderately strong correlation between servant leadership ($r=0.513$) scores ($p<0.05$). There is a positive, moderately strong relationship. It is seen that servant leadership behaviors and perceived stress levels of employees are be positively affected. It has been revealed that with the servant leadership behaviors shown during the pandemic process, the stress levels of the employees decreased, the service quality increased and the motivation was provided in a positive way.

However, the COVID-19 pandemic, like other pandemics in the past, has caused mental and psychological problems in individuals (Chua et al, 2004). In a study conducted in China during the COVID-19 pandemic, it was determined that health workers experienced significant stress (71%) (Lai et al, 2019). In a similar study, it was determined that health workers experienced intense pressure in the COVID-19 epidemic due to stress, anxiety and depression symptoms, and it was reported that the symptoms mentioned were severe in 2.2-14.5% of the participants (Pappa et al, 2020).

This study bears serious similarities with the causes and levels of discomfort of healthcare workers during the pandemic process in the world. In a study conducted on 85 physicians, the work-related stress score was found to be statistically significantly higher among the groups with longer working hours compared to those with less working time (Sunter, 2006: 12).

In the study conducted with intensive care workers, it was determined that they experienced moderate emotional burnout (Akalın and Modanlıoğlu, 2021). In a similar study, it was determined that the contact of the healthcare worker providing COVID 19 patient care with the patient increased the level of stress and burnout. Compared to the group that doesn't encounter the patient, it has been determined that the health care worker who has no contact has less stress and burnout levels (Kannampallil et al., 2020).

In this study, as a result of Pearson Correlation analysis, it is possible to accept all hypotheses by determining that there is a correlation between dependent and independent variable. In this sense, it can be said that all servant leadership dimensions, especially reinforcement, courage, and realism, have an effect on perceived stress dimensions. The model created to determine the dimension of stress/discomfort perception and the effect of the dimension of self-efficacy perception on servant leadership dimensions was found to be significant.

In similar studies, it has been determined that nurses experience low and moderate stress, and the causes of stress are usually work-related (Javadi-Pashaki and Darvishpour, 2019). When the rapid development of the pandemic process and the effects of this process on health workers are examined, it's thought that the level of response may be different depending on the development of the health system of each country, therefore the effect on health workers may be at different levels (Bohlken et al.,2020).

Healthcare professionals have treated COVID-19 patients by putting their own health at risk, increasing their knowledge about the disease as well as their mental state and stress levels. According to the study, the level of knowledge of healthcare professionals about COVID-19 was determined as 75%; it was understood that 88.4% of the health workers had good knowledge. (Huynh et al., 2020).

In another study, it was reported that 10% of healthcare workers involved in the pandemic process developed moderate to severe depression, anxiety, and stress symptoms (Lenzo et al., 2021). However, in a study conducted on Jordanian healthcare workers, it was determined that 35% of them were under severe stress (Alnazly et al., 2021). The perceived stress level score of health sector workers in Turkey is 29.8, which is Limcaoco and friends (2020) (PSS 10 score 17.4), Gao and friends (2020) (PSS score 13.81).

Many traumas have been experienced during the COVID-19 pandemic process due to problems such as pre-hospital healthcare workers working in risky areas, tiring, long and intense duty periods, and lack of protective materials and information. Acute stress reaction disorder, depression, anxiety, and post-traumatic stress disorder can be seen in prehospital emergency health workers due to heavy working conditions during the pandemic process (Akgün at al., 2021).

In addition to the studies mentioned above, in this study, it was seen that the Perception of Stress/Discomfort and Perception of Inadequate Self-Efficacy, which are the sub-dimensions of Perceived Stress, interacted positively with the Empowerment sub-dimension of Servant Leadership. It has been understood that if empowerment processes such as sharing, cooperation, team spirit, decision making, improving working conditions, giving authority and responsibility, continuous on-the-job training, providing control and feeling valuable are carried out among NMRT employees, the level of perceived stress will develop in a positive way. In this study, it was seen that the Perception of Insufficient Self-Efficacy and the dimensions of Empowerment, Courage and Realism were in a significant interaction, and the perception of Stress/Comfort and the Empowerment dimension had a significant interaction.

It's understood that there are similarities between this study and similar studies. In particular, there may be differences between perceived stress levels. It's thought that the reason for this may be due to the suitability of the work area and the intensity of the workload, as well as the level of awareness. In addition, it's thought that the health policies implemented by the countries and the level of public awareness may be effective.

4. CONCLUSIONS AND RECOMMENDATIONS

In the study, when the correlation between variables is examined in the COVID 19 process, it's seen that there is a positive correlation between perceived stress and servant leadership behaviors. When NMRT employees exhibit servant leadership behaviors, it's understood that there is a positive effect on stress perception levels.

Necessary steps should be taken to reduce the stress levels of NMRT teams, which provide effective service in the field during the pandemic period. The first of these steps should be servant

leadership behaviors among NMRT teams. For this, they should be given on-the-job applied servant leadership behaviors and their perceived stress levels should be reduced.

It is necessary to increase the activities to improve servant leadership behaviors especially for NMRT employees. However, the servant leadership behaviors exhibited by the ministry managers during the COVID 19 process are thought to make the level of stress perceived by the employees feel low. It can be said that the NMRT employees' servant leadership behaviors, especially in the COVID 19 process, positively affected the people in the working environment and with whom they contacted. However, it was understood that the perceived stress in the process of COVID 19 was caused by a wide variety of factors, depending on the situation, the person, and the effect varied. It is seen that NMRT employees exhibiting servant leadership behavior in the process of COVID 19 increased the success rate in the pandemic struggle. Employees' relations with their leaders.

To alleviate the workload of health workers, social distance, mask use and hygiene measures dissemination is important. The community should be educated, visit restrictions should be imposed. Effective treatment and preventive measures should be implemented. To control the pandemic, researchers must continue biological and clinical studies without interruption.

It is understood that the leadership behaviors of healthcare professionals during the pandemic process can positively affect their stress levels. The fact that the study conducted on this subject is not encountered during the literature review increases the importance of the research and can be perceived as a limitation.

Despite this, managers should identify the causes of stress,

- By determining the workload, sufficient number of employees should be planned,
- Frequent meetings and social organizations should be organized to combat stress,
- Employees should be trained on work stress,
- Psychological counseling and guidance services should be provided,
- Rewarding practices should be carried out,
- Health screenings should be done for those working in places with high stress levels.

Also, to researchers who will do similar work. By increasing the sample size, we can suggest that they conduct studies in accordance with the structure of the subject and between regions.

This study has limitations as it is regional. A general study is needed to eliminate this situation. To do this, a study can be carried out by the ministry to make a country generalization regarding the situation of the organization, NMRT, which is a unit under the Ministry of Health.

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Investigation of Prospective Medical Secretaries' Perspectives of Online Education: The Example Of February 6, 2023 Earthquake

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Abstract

Aim: In the present study, we aimed to investigate the perspectives of medical secretariat students, one of the important branches of the health services sector, about the distance education decision made by the CoHE due to the earthquake.

Methods: In line with this purpose, an e-survey was administered to the first and second year students studying in the Medical Documentation and Secretarial Program of a public university in Anatolia between February 13 and 17, 2023 (N: 285). In the analysis of the data, both the descriptive statistics and the Chi-square analysis were used. The data were analyzed in the Statistical Package for the Social Sciences (SPSS) V.26.

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Results: Of the students, about three quarters were female students, a little more than half were second year students, and the vast majority stayed in state dormitories. The number of the students who lived in the earthquake zone and lost their relatives in the earthquake and whose houses were damaged was less than was that of the other students. Approximately three quarters of the Medical Documentation and Secretarial Program students did not favor online education, in other words, they wanted to have all the courses face-to-face.

Conclusion: In short, necessary suggestions were made to heal traumas throughout the country and not to compromise on the quality of education.

Keywords: Medical secretary, university student, online education, distance education, earthquake

INTRODUCTION

Natural disasters are events that cause significant damage to humans and nature. Since the existence of our planet, this negative effect of natural disasters has manifested itself in every age, and millions of people in the world are faced with negative situations caused by natural disasters every year. One of these natural disasters is earthquakes and they have extremely destructive effects both on the earth and on people.

One of the important natural disasters in Turkey is earthquakes. Earthquakes are in the group of ground-based disasters. Earthquakes are short-lasting natural events that take their source from the depths of the earth and cause vibrations on the earth (Aksoy and Sözen, 2014). Among other words used by people to mean earthquake are ground shaking, tremor, shock, seism, and temblor. Turkey is located on the Alpidic earthquake zone, which is one of the three most important earthquake belts in the world. It stretches from Java to Sumatra, across the Himalayas, the Mediterranean, and then into the Atlantic. The other two are the Circum-Pacific Seismic Belt, which surrounds the Pacific Ocean, and the mid-Atlantic Ridge or Oceanic Ridge belt most of which lies deep below and remote from human activity. Almost all of the earthquakes in Turkey have occurred on the following three main belts. The North Anatolian Fault Line, the Southeastern Anatolian Fault Line and the West Anatolian Fault Line (Karakuş, 2013). According to the earthquake zone map, 96% of Turkey's lands are located in regions with different levels of earthquake hazard and 98% of the population lives in these regions (Aksoy, 2013).

On February 06, 2023, two earthquakes occurred in Kahramanmaraş, a province in southeastern Turkey. The center of the first earthquake with a magnitude of 7.7 was Pazarcık district of Kahramanmaraş, and the center of the second earthquake with a magnitude of 7.6 was its Elbistan district. After the earthquakes occurred thousands of aftershocks. The earthquakes were felt in a wide area covering Southeastern Anatolia, Eastern Anatolia, Central Anatolia and Mediterranean Regions (Press Bulletin, 2023). The first reports from the area where the earthquakes took place point to heavy damage and loss of life. According to AFAD's (Turkish acronym for "Disaster and Emergency Management Presidency") report released on February 19, 2023, 40,689 citizens lost their lives, thousands of people were injured, and thousands of disaster victims living in the provinces of Kahramanmaraş, Gaziantep, Şanlıurfa, Diyarbakır, Adana, Adıyaman, Osmaniye, Hatay, Kilis, Malatya and Elazığ were evacuated from the region to other provinces. A state of emergency was declared for three months in these 11 provinces where the disaster took place.

Earthquakes have an impact on the population size in a place, can adversely reverse economic indicators, and have serious effects on macro-economic balances. In addition, it is known that the phenomenon of earthquake leads to some short- or long-term psychological disorders as it settles in people's subconscious mind (Öcal, 2005). It is also a fact that many public services could not be provided or that there could be disruptions in their delivery after the earthquake. One of these services is education services.

The Ministry of National Education announced that education would start on February 20, 2023 outside the earthquake zone and on March 1, 2023 in the earthquake zone. According to the first decision made by the Turkish Higher Education Council (CoHE) on February 9, 2023, the start of the spring semester education at universities was temporarily postponed until a second announcement. In the press release of CoHE on February 11, 2023, it was stated that due to the earthquake, it would be appropriate to complete the spring semester of the 2022-2023 academic year through distance education. In the simplest terms, distance education is an education method based on the use of information technologies when the instructor and students are not in the same environment (Valentine, 2002). After it was decided to transition to distance education, the process of relocating earthquake victims' families to empty state dormitories started. It was also announced that new decisions on how to give applied courses such as internship and workplace

training in certain fields such as medicine and dentistry would be made in the coming days. On February 17,2023, CoHE President Erol Özvar said, *"It was decided to continue with distance education for the 2022-2023 period. Some decisions were taken to limit it to the spring semester. The decisions taken will be re-evaluated in April. The hybrid education system will be evaluated."*

The decisions made by the CoHE and announced to the public led to great reactions throughout the country. For example, Eğitim Sen (Turkish acronym for “Education, Science and Culture Workers Union”) filed a lawsuit demanding to stop the execution of the decision made by the CoHE to switch to distance education in universities as of February 14, 2023. The TTB (Turkish acronym for “Turkish Medical Association”) also stated that face-to-face education should not be abandoned, emphasizing that distance education in the health sciences, especially medical education, would lead to irreparable errors and deficiencies and prevent the provision of a qualified health service in the future.

Huseyin Celik, Former Minister of National Education of the Republic of Turkey, criticized the decision about distance education in universities due to the earthquake and said, *“I do not consider it a right decision. For instance, many university students did not have the face-to-face education at the university throughout the COVID-19 pandemic. Now they will receive diplomas and will be graduates without adequate skills and competence”* (Ege Postası, 2023). In addition, many education experts drew attention to the fact that distance education would not be possible due to the lack of internet infrastructure in the region, and that even if there were internet infrastructure, students would not have the equipment to receive this education. In this context, determining the opinions of students studying in health-related departments regarding the decision of distance education is of great importance because, in health services, unlike other service sectors, substitutability of the service and compensation of the errors is not possible. The cost of these errors can result in illness, disability or, in the worst case, death.

1. RESEARCH METHODOLOGY

Although students attending an associate degree program in the Medical Documentation and Secretarial Program do not take a direct role in patient care, they facilitate the work of other health professionals when they enter data and systematize medical documents. In many countries, in Turkey in particular, it is a well-known fact that most of the work that should be done by medical secretaries is usually done by nurses. In a natural disaster such as an earthquake, where great loss

of life is experienced, medical secretariat students' being at work and their being able to carry out their professional practices in hospitals will alleviate the workload of other health workers, especially nurses, and will enable nurses to focus only on patient care. Therefore, in the present study, we aimed to investigate the perspectives of medical secretariat students, one of the important branches of the health services sector, about the distance education decision made by the CoHE due to the earthquake.

In line with this purpose, an e-survey was administered to the first and second year students studying in the Medical Documentation and Secretarial Program of a public university in Anatolia between February 13 and 17, 2023. In the study, in which the universe sampling method was used, 285 usable data were obtained. In this descriptive study, seven survey questions were created by the researchers considering the current situation in Turkey. Before the data were collected, the participants were informed about the study, and their informed consent indicating that they volunteered to participate in the study was obtained.

We utilized Google Forms to prepare the e-survey. In the analysis of the data, in addition to descriptive statistics, the Chi-square analysis was used. The data were analyzed in the SPSS V.26 package program. The data were collected only from a single program of a university; thus, the results obtained in the present study are applicable only to the participants surveyed and they cannot be generalized to all medical secretariat students, which is the most important limitation of the study. On the other hand, it is expected that the study will contribute to the medical secretariat and health management literature.

2. FINDINGS

Of the participants, 71.2% were female students, 50.5% were second year students, 64.9% lived in a state dormitory, 17.2% lived with their family, 11.9% lived in a rented house and 6% lived in a private dormitory (Table 1).

Table 1. Descriptive Characteristics of the Participants

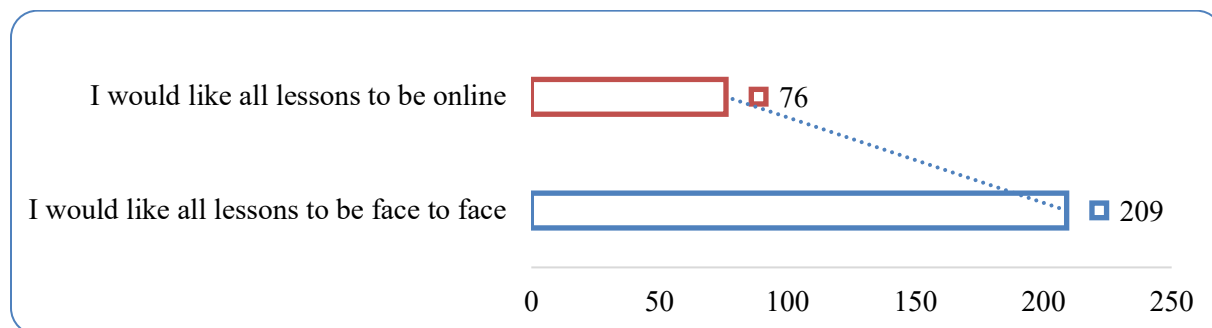
	Variables	f	%
Sex	Women	203	71.2
	Men	82	28.8
Year at school	1 st year	141	49.5
	2 nd year	144	50.5
Place of residence	State dormitory	185	64.9
	Private dormitory	17	6.0
	Family's home	49	17.2
	Rented house	34	11.9
Total		285	100.0

Of the participants, 9.8% lived in one of the provinces struck by the earthquake, 7.0% lost their relatives in the earthquake, 3.2% had houses/apartments completely damaged by the earthquake and 3.2% had houses/apartments partially damaged by the earthquake (Table 2).

Table 2. Earthquake-Related Characteristics of the Participants

	Variables	f	%
Do you live in one of the provinces affected by the February 6, 2023 earthquake?	Yes	28	9.8
	No	257	90.2
Did you lose any of your relatives in the February 6, 2023 earthquake?	Yes	20	7.0
	No	265	93.0
Was your house/apartment damaged in the February 6, 2023 earthquake?	Yes	9	3.2
	Partially	9	3.2
	No	267	93.7
Total		285	100.0

While 73.3% of the participants wanted all the courses in the 2023 spring semester to be given face to face, 26.7% wanted the courses to be given online (online) (Figure 1).

**Figure 1. Opinions of the Participants Regarding Online Education**

The relationships between the descriptive characteristics of the participants and their education preferences were analyzed with the Chi-Square analysis. According to the results of the

analysis, a statistically significant ($p < 0.05$) relationship was determined between the variables such as sex, place of residence, loss of a relative in the earthquake and damage to the house in the earthquake and the participants' preferences for the education type. The differences stemmed from the female participants, those who stayed in the state dormitory, those who did not lose their relatives in the earthquake and those whose houses were not damaged in the earthquake. On the other hand, there was a statistically insignificant relationship ($p > 0.05$) between the participants' preferences for the education type and the variables such as year at school and whether they lived in the earthquake-affected areas.

Table 3. Relationship between the Participants' Descriptive Characteristics and their Preferences for the Education Type

Sex	Preference for the education type		X ²	p
	Face-to-face	Online		
Women	156	47	4.45	0.035*
Men	53	29		
Year at school	Preference for the education type		X ²	p
	Face-to-face	Online		
1 st year	105	36	0.18	0.668
2 nd year	104	40		
Place of residence	Preference for the education type		X ²	p
	Face-to-face	Online		
State dormitory	141	44	7.35	0.043*
Private dormitory	8	9		
Family's home	34	15		
Rented house	26	8		
Do you live in one of the provinces struck by the earthquake?	Preference for the education type		X ²	p
	Face-to-face	Online		
Yes	19	9	0.48	0.490
No	190	67		
Did you lose any relatives in the earthquake?	Preference for the education type		X ²	p
	Face-to-face	Online		
Yes	7	13	16.16	0.000*
No	202	63		
Was your house/apartment damaged in the earthquake?	Preference for the education type		X ²	p
	Face-to-face	Online		
Yes	3	6	7.91	0.019*
No	200	67		
Partially	6	3		

p < 0.05

3. CONCLUSIONS AND RECOMMENDATIONS

The present study, carried out to investigate the perspectives of medical secretariat students, one of the important branches of the health services sector, on the distance education decision made by the CoHE due to the earthquake, included 285 associate degree students. Of the participating students, about three-quarters were women, and slightly more than half were second-year students. While the majority of them lived in state dormitories, very few of them stayed in private state dormitories.

The number of the students who lived in the earthquake zone and lost their relatives in the earthquake and whose houses were damaged was less than was that of the other students, which, of course, can be perceived as a positive result in terms of less loss of life. Approximately three quarters of the Medical Documentation and Secretarial Program students did not prefer online education, in other words, they wanted to have all the courses face to face.

Education is one of the areas affected by natural disasters and epidemics most. For example, with the impact of the COVID-19 pandemic all over the world, most countries suspended education and started the distance education process. In Turkey, education suspended at all levels continued through distance education at primary and high school levels with the Education Information Network system. As for universities, the CoHE decided that the semester should be completed with distance education (Bulut, 2021, Işık et al., 2021). During the COVID-19 pandemic, the efficacy of online education was intensively discussed in terms of the future of countries and students studying at different education levels.

In a study conducted with lecturers (Sayan, 2020), it was reported that online education was not an effective way. In a study conducted with teachers (Avcı and Akdeniz), the teachers had problems with the technological infrastructure and internet, and inequality of opportunity in education emerged. At the beginning of the COVID-19 pandemic, teachers and parents had serious problems in adapting to distance education.

In a study conducted on the effects of online education on parents (Arslan et al., 2021), it was determined that parents could not use the applications used in online education sufficiently, that they lacked internet, and technological tools, that they could not connect with teachers in the online classroom and could not access the course materials, that the students' sense of responsibility, technology and social skills decreased and that their social media addiction increased.

In another study conducted with the students of the faculty of theology (Genç and Gümrükçüoğlu, 2020), it was reported that the students were satisfied with the opportunities offered by distance education such as saving of time, easy access to the online classroom and listening to the repetition of the lesson, but they criticized online education because they were far from the socialization and face-to-face interaction of formal education.

In the literature, results on online education experiences of students studying in health-related fields during the COVID-19 pandemic are available. For example, in a study conducted to investigate medical school students' perspectives of emergency distance education processes (Atılğan et al., 2020), most of the students stated that the cognitive load in online education was high and tiring, that there were missing points in their education, that they had difficulty in developing self-discipline and that this process increased their social isolation levels.

In a study in which nursing students' views of online education given during the COVID-19 pandemic were investigated (Kurtüncü and Kurt, 2020), most of the students stated that both theory and practical courses would be insufficient with distance education, that they did not think to freeze registration, but that they thought that the school year would be extended. In their study (2021), Michel et al. concluded that most of the nursing students were worried about not being able to perform clinical practice during online education. In another study conducted with nursing students in Egypt (Diab & Elgahsh, 2020), it was determined that more than half of the students displayed a negative attitude towards distance education.

In a study (Kaya and Karaşin, 2022) in which Medical Documentation and Secretarial Program students' opinions of online education during the COVID-19 pandemic were investigated, it was concluded that the students were generally not satisfied with the online education given during the COVID-19 pandemic, and that online education was less efficient. In

a study conducted with Physiotherapy and Rehabilitation Department students (A. Yılmaz, 2020), 87.5% and 78.5% of the students considered the efficiency of online education as low for applied and theoretical courses respectively.

In a study conducted with students of Vocational School of Health Services (Sarman and Günay, 2022), of the students, 80.3% stated that distance education was not as effective as face-to-face education, 24.4%, 37.4% and 54.6% stated that distance education did not contribute to their theoretical knowledge, their general culture level, and their professional practice skills at all respectively. The most common problem that the students had due to distance education was internet interruptions (15.8%).

In another study conducted by Yorulmaz and Söyler (2022), health management students' opinions about distance education was highly negative. These results suggest that our study results are largely consistent with the results of the current studies in the literature.

The results of our study demonstrated that the female participants, those who stayed in state dormitories, those who did not lose their relatives in the earthquake and those whose houses were not damaged in the earthquake preferred the face-to-face education model at a statistically significant level. These results can be interpreted as the female students staying in state dormitories were more familiar with the face-to-face education method compared to the male students staying in different places and they considered this method more suitable for them.

On the other hand, the placement of the citizens affected by the 6 February 2023 earthquake in the state dormitories affiliated to the Credit and Dormitories Institution paved the way for online education, which causes the students to experience accommodation problems. These decisions made by the CoHE caused great reactions throughout the country. For example, while the Education, Science and Culture Workers Union filed a lawsuit against this decision of the CoHE, the Turkish Medical Association underlined that the online education model in health-related fields would pave the way for irreversible mistakes and problems. Unlike other service sectors, it is not possible to substitute the service and compensate for the errors in health services. The cost of these errors can result in illness, disability or, in the worst case, death.

Considering the fact that online education carried out during the COVID-19 pandemic led to serious learning losses in students, it will be inevitable to face similar scenarios after this

earthquake disaster. It should not be forgotten that many healthcare professionals who provide healthcare services today received their education online during the COVID-19 pandemic. Moreover, due to the earthquake, students' houses were destroyed, tools such as tablets, computers and smart phones which are indispensable part of information technologies became unusable, their psychology was deeply injured and the internet infrastructure of the region was damaged. Therefore, due to such a serious picture, it does not seem rational for universities to make decisions to shift to distance education. Universities are the most valuable institutions because not only are they a place of education for students, but also they enable students to socialize. These contributions of universities to socialization will also have a positive impact on the psychosocial structures of all students who were affected by the earthquake directly or indirectly.

Another significant result obtained in the present study was that the students who did not lose their relatives and whose houses were not damaged in the earthquake displayed a more favorable attitude towards face-to-face education compared to the others. These results are not surprising because it is quite natural for students who were not affected by the earthquake directly to want to return to their face-to-face education. In the Medical Documentation and Secretarial Program, students should participate in the compulsory practice courses such as hospital practice and summer internship in addition to the theoretical courses, which may have influenced such decisions of the students.

In a study conducted on the issue in Turkey (Kızıltepe & Kurtgöz, 2020), no significant difference was reported between the nursing students' attitudes towards online education in terms of the variables such as sex, year at school and place of residence. Similarly, in another study conducted with nursing students (Uysal et al., 2022), no significant difference was reported between the nursing students' attitudes towards online education in terms of the variables such as sex, year at school and place of residence. In a study conducted with undergraduate students (Buluk ve Eşitti, 2020), it was reported that compared to female students, male students considered online education statistically more effective and they were satisfied with it. Within this context, we can say that while some of the results obtained in our study are similar to those in the existing literature, some are different.

Given the fact that the majority of the students in the present study wanted face-to-face education, it would be possible to list the following suggestions:

☑ The number of universities and students affected by the earthquake in the earthquake region is limited. Therefore, it is not the right policy to switch to distance education throughout the country. Therefore, the decision of how the universities that are not affected by the earthquake will continue their education should not be made by a single center.

☑ It is more suitable to allocate not dormitories affiliated to the General Directorate of Credit and Dormitories Agency but public guesthouses or hotels to families with children who are the victims of the earthquake.

☑ For the temporary use of dormitories affiliated to the General Directorate of Credit and Dormitories Agency, the beginning of the spring semester of universities can be postponed, and even a new academic calendar can be determined to include the summer season.

☑ Since electricity, internet and mobile phone lines have come to the point of collapse in the earthquake zone, it will be very difficult for thousands of students and instructors to access education if education is switched to distance education. Thus, students from universities in the earthquake zone can be admitted to the appropriate departments of universities in different provinces as guest students. Thus, it can be ensured that students can continue their education, and their wounds heal faster.

☑ Universities are places where students can meet their social and emotional needs during trauma periods. Returning to routine is very important for trauma. Therefore, the decision of distance education can be much more devastating, especially for the psychological and physical health of earthquake survivors.

☑ Students who request to freeze registration can be allowed, and academic staff can be given semester leave.

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**THE EFFECT OF TALENT MANAGEMENT ON NURSES'
PERCEPTIONS OF WORK MOTIVATION AND ORGANIZATIONAL
TRUST**

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Research Article

Abstract

Aim: This study was conducted to determine the Effect of Talent Management on Nurses' Perceptions of Work Motivation and Organizational Trust.

Methods: In this context, data obtained from all nurses working in ministry of health hospitals and university hospitals in Ankara were evaluated. For the data, the talent management practices scale consisting of 7 sub-dimensions (attraction, selection and placement, commitment, retention, training, rewarding, talent pool), nurse work motivation scale consisting of 25 factors and the organizational trust scale, which consists of 3 sub-dimensions (trust in the institution, trust in colleagues, trust in the manager) was used.

Results: As a result of the research, nurses' perceptions of talent management were found to be moderate ($x=3,146$), their perceptions of work motivation ($x=3,839$) and organizational trust perceptions ($x=3,566$) were found to be higher than the average. According to the findings, nurses'

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perceptions of talent management, work motivation and organizational trust have positive correlation to each other. The perception of talent management of nurses working in the ministry of health was found to be higher than those in the university. It has been concluded that the nurses working at the university trust their institution more than the ministry of health.

Conclusion: The effect of talent management on work motivation was found to be higher in university hospitals. On the other hand, it has been concluded that the effect of talent management on organizational trust is higher in ministry of health hospitals.

Keywords: Talent Management, Work Motivation, Organizational Trust, Nurse

INTRODUCTION

It is significant to implement the talent management process in all health institutions, whether private or public, and to follow the talent management dimensions. With the effect of globalization and the advancement of technology, scientific and legal developments have increased the competition among health institutions as well as in all businesses. When we look at the literature; increasing and renovating the number of hospitals, specialization of the employees, being more conscious of the patients, new medical applications, software and hardware changes in the hospital depending upon technological progress, change of job, cost increase, intense competitive environment etc. and considering many reasons as such, health services should provide quality service and be evaluated professionally (Yılmaz 2015, 103).

The quality of service provided in healthcare services depends on the knowledge, skills, motivation, work environment, career development and satisfaction in the institution of the people who provide the service. It cannot be expected that the service quality provided to the patient is high where the employee is not satisfied. The quality of healthcare service delivery is directly proportional to the performance of the staff. Employee performance is mainly affected by factors such as communication within the organization, teamwork, leadership and motivation. With talent management implementations, the performance management process can be carried out more consciously. Unlike other sectors, due to the fact that the service provided in the health sector is on human health, there is no compensation for mistakes. For this reason, it is very important in the health sector to employ and retain talent in the appropriate place and to attract new talents to the institution. Talent management contributes to the development of employees constantly and also helps to protect the health and interests of patients in terms of patient safety (Karakuş, 2019).

As well as the employees being employed in accordance with the principles of talent management, the perception of trust and motivation of the employees in the institution are also important. In modern organizational structures, various strategic management tools are used to increase success, and traditional hierarchical structures are excluded. Organizations have undergone rapid change and the importance given to human resources has increased. In addition, various efforts have been carried out to ensure that talented employees do not leave their organizations. It is observed that the motivation of the employees who have a high level of trust towards their organizations also increases and the rate of absenteeism decreases.

In this study, based on the growing importance of talent management and employee retention, the effect of talent management implementations on employees' perceptions of organizational trust and work motivation was investigated.

The Importance of Talent Management in Healthcare

Even though talent management implementations that increase efficiency in healthcare have become increasingly common lately, they are not yet at the desired level (Nojedeh and Ardabili 2014, Ingram and Glod, 2016). American College of Healthcare Executives (ACHE) managers support that hospitals should give the necessary importance to talent management and assert that talent management implementations are very required in the health sector (Mutairi 2013). With talent management, we reveal that the selection of the right employee for the right job, innovation studies, the orientation of the employee and their adaptation to change, the competitiveness and the ability to use technology effectively (Gregoire 2006, 6).

Talent management implementations in nurses are used to create expertise and experience, increase quality and improve corporate culture (Douglas 2013). To reach their future goals, health institutions need to both embrace the talents they have and reveal new talents. In the study conducted on healthcare providers, it was emphasized that the perception of talent management has a positive increasing effect on employee motivation (Atasoy, 2021). If we consider the importance of employee motivation in terms of both individual and corporate productivity, talent management is very important in this respect. In another study, the effects of talent management on the performance of healthcare providers were investigated and it was revealed that talent management applied in hospitals would increase the performance of employee (Çayan, 2011). Healthcare businesses have to keep employee performance high in order to increase the

performance of the institution. In this case, healthcare businesses need to use talent management implementations in order to provide competitive advantage and quality service. In another study conducted in the pharmaceutical industry, the relationship between talent management, intention to leave of employment and organizational commitment was investigated, and it was observed that as talent management scores increased, intention to leave of employment scores decreased (Sarıkçe, 2019). Talent management implementations are also very important in terms of retaining talented employee. The use of talent management implementations in healthcare businesses is important not only for the employee but also for the organization. In the study conducted by Kurşun (2019), it is emphasized that there is a positive and significant relationship between healthcare professionals' talent management and organizational culture. As the perception of talent management increases, the perception of organizational culture and organizational commitment increases. In another study, it is seen that the effect of talent management on nurses' job satisfaction and organizational commitment is positively significant (Gül,2018). The relationship between nurses' perception of talent management and organizational culture was examined and it was seen that creating expertise and experience increases quality and improves organizational culture (Douglas, 2013). In another study conducted on healthcare professionals, a significant difference was found on the perceptions of talent management of the personality traits of healthcare professionals (Akbay, 2019). Talent management implementations in the healthcare sector were investigated and it was emphasized that there was a great necessity in this sector (Mutairi 2013).

Employees generally plan to change to a business that allows them to develop their skills, is innovative rather than oppressive, has better promotion opportunities, provides their own wishes and expectations, and thinks that they are compatible with the goals and objectives of the institution (Ece and Esen, 2017: 143). For this reason, it can be stated that it is very difficult to ensure the talent development of the employees. The most important reason for this difficulty is that talented people developed in some special departments usually need to form a stronger bond. In order to establish this strong bond, the performance criteria and duties of the employees must be continuous (Doz, 2002: 65). It is assumed that this situation, which requires a long-term process, will increase the trust of talented employees in the institution.

1. RESEARCH METHODOLOGY

With this research, the effect of talent management on nurses' work motivation and organizational trust perceptions was tried to be measured. It has been tried to reveal whether there are significant differences according to these variables in nurses working in ministry of health hospitals and university hospitals. In addition, the relationship between talent management, work motivation and organizational trust perception was also studied. Another aim of the study is to guide the healthcare sector and healthcare managers with the findings of the research. In the researches, there are studies on the concepts of general work motivation, organizational trust or talent management, however since talent management is a new concept, there has not been enough work in the field of health yet, so it is expected that our study will contribute to the literature.

Research Question: Does Perception of Talent Management in Nurses Affect Perceptions of Work Motivation and Organizational Trust?

H1: Nurses' attitudes towards talent management implementations affect their perceptions of work motivation.

H2: Nurses' attitudes towards talent management implementations affect their perceptions of organizational trust.

H3a: Nurses' perception of talent management shows a statistically significant difference according to the gender variable of nurses.

H3b: Nurses' perception of talent management shows a statistically significant difference depending on the marital status.

H6: There is a significant relationship between nurses' perception of talent management and work motivation.

H7: There is a significant relationship between nurses' perception of talent management and organizational trust.

H8: There is a significant relationship between nurses' perception of work motivation and organizational trust.

The population of the research consisted of nurses working in University Hospitals and Ministry of Health hospitals in Ankara. The population of the research consists of 18188 nurses, 13412 in the Hospitals of the Ministry of Health and 4776 in the University Hospitals, according to the report obtained on 01.06.2021 from the SPTS (Ministry of Health Personnel Tracking System) data system of the Ministry of Health. According to the framework and limitations of the study, it

was deemed appropriate to have a sample size of 95% confidence and 5% sensitivity. In this direction, it has been calculated that a sample selection consisting of 277 nurses from Ministry of Health hospitals, 99 nurses from university hospitals and 376 nurses in total is required. For the design of the research, the hospitals of the ministry of health and the university hospitals were evaluated as a stratum and the stratified sampling method was preferred. In the implementation phase of the research, data were collected by applying a questionnaire to 342 nurses from the ministry of health hospitals and 230 nurses from the university hospitals.

Quantitative research method was used in the research and questionnaire technique was used as a data collection tool. The questionnaire form used in the research consists of four parts. In the first part, questions about demographic variables were included. In the second part, the talent management implementations scale, in the third part, the nurse work motivation scale and in the fourth part, the organizational trust scale was used. Demographic variables scale consists of 7 variables including gender, marital status, age, level of education, working sector, duty period and department. Talent Management Implementations Scale; taken from the "Validity and Reliability Study of the Talent Management Implementations Scale" conducted by C., DURAN, D., BOZ, S., BEHDİOĞLU and S., KUTLU in 2019. Scale of talent management implementations consists of 49 statements in 7 sub-dimensions: attraction, selection and placement, commitment, retention, training, rewarding and talent pool. "Nurse Work Motivation Scale" used to measure the work motivation levels of the participants was taken from the study called "Nurse Work Motivation Scale: Validity, Reliability" developed by E., ENGİN, O., ÇAM (2016). The work motivation scale for nurses consists of 25 statements. "Organizational Trust Scale" used to measure the organizational trust perceptions of the participants was taken from the study named "Organizational Trust: A Scale Development Study" developed by ÇALIŞKAN (2021). Organizational trust scale consists of 17 statements, three sub-dimensions: trust in the manager, trust in the institution, and trust in colleagues. The scales planned to be used for research purposes were selected from among the scales used in the literature with proven validity and reliability. For the statements in the scales used, a 5-point Likert-type scale was used as "I Strongly Disagree" 1 point, "I Disagree" 2 points, "I Am Undecided" 3 points, "I Agree" 4 points, "I Strongly Agree" 5 points.

In order to measure perceptions of talent management, work motivation and organizational trust, the reliability of the collected data was examined using the Cronbach Alpha method.

Cronbach Alpha coefficients of the talent management implementations scale ($\alpha= 0.972$), organizational trust scale ($\alpha=0.961$) and work motivation scale ($\alpha=0.934$) were found to have “high reliability” in the range ($0.80 \leq \alpha < 1.00$). Factor analysis was performed to measure the suitability of the scales used in the study. Confirmatory factor analysis was applied to determine the structural validity of the Talent Management Implementations Scale, the Nurse Work Motivation Scale, and the Organizational Trust Scale. The fit indices values for the effect model of all scales were found to be within the acceptable range. In order to test the research hypotheses; Structural Equation Modeling analysis method was used in modeling the relationships between dependent and independent variables. In this model, correlations between dependent and independent variables are also included in the model. Fit statistics were made for the validity of the model. The effect coefficients of talent management implementations and its sub- dimensions on the perception of Work Motivation and Organizational Trust were calculated. In addition, the relationship between talent management, work motivation and organizational trust in nurses was revealed by using correlation analysis.

2. FINDINGS

Table1. Frequency distribution and descriptive statistics for Talent Management Implementations Scale items

Variable	Mean	Standard deviation
Talent Management the dimension of Attraction	2,958	0.899
Talent Management the dimension of Selection-Placement	3,151	0.934
Talent Management the dimension of Commitment	4,226	0.780
Talent Management the dimension of Retention	3,100	0.880
Talent Management the dimension of Training	3,230	0.843
Talent Management the dimension of Rewarding	2,571	0.893
Talent Management the dimension of Talent Pool	3,114	1,026
Talent Management Scale Mean	3,146	0.697
Work Motivation Scale Mean	3,839	0.571
Organizational Trust the dimension of Trust in Colleague	3,658	0.777
Organizational Trust the dimension of Trust in the Institution	3,402	0.914
Organizational Trust the dimension of Trust in the Manager	3,601	0.841
Organizational Trust Scale Mean	3,566	0.752

According to the findings, the highest average of 4.37 in the sub-dimension of the talent management implementation scale in the item “Talent Management Commitment 17” (Physical working conditions affect my motivation), and the lowest average in the rewarding sub-dimension of the talent management implementation scale with 2.36 in the “Talent Management Rewarding

35” item (Doing my job in the best way allows me to get a raise in my salary) was found. Nurses generally emphasize that physical working conditions are important for them and highly affect their work motivation. In addition, nurses state that when they do their job well, they do not receive an additional increase in their salaries and are not rewarded in this way. Considering the findings, nurses' perception of work motivation was above the average and their motivation was considered high. In general, nurses stated that they like to receive feedback while working in terms of their motivation. According to the results, it is seen that the average of nurses' perception of organizational trust is high and it is observed that they generally trust the organization they work for. They express that they trust the work skills of their colleagues within their organizational trust perceptions.

H3a hypothesis was accepted. (H3a: Nurses’ perception of talent management shows a statistically significant difference according to the gender variable of nurses). Talent management perception was found to be higher in male participants than in female participants.

H3b hypothesis was rejected. (H3b: Nurses’ perception of talent management shows a statistically significant difference depending on the marital status).

Table 2. Correlation Analysis Findings of the Research

		Talent management	Work motivation	Organizational trust
Talent management	Correlation coefficient	1	,503**	,512**
	p		,000	,000
Work motivation	Correlation coefficient	,503**	1	,548**
	p	,000		,000
Organizational trust	Correlation coefficient	,512**	,548**	1
	p	,000	,000	

According to the results obtained, the correlation coefficients were statistically significant. The positive value of the correlation coefficients indicates that there is a positive relationship between the variables. Even though the relationships between the variables changing according to the correlation coefficients are close to each other, the highest relationship is between organizational trust and work motivation variables, and the lowest relationship is between talent management and work motivation variables. According to these findings, H6 Hypothesis, H7 Hypothesis and H8

Hypothesis were accepted (**H6**: There is a significant relationship between nurses' perception of talent management and work motivation. **H7**: There is a significant relationship between nurses' perception of talent management and organizational trust . **H8**: There is a significant relationship between nurses' perception of work motivation and organizational trust).

Structural Equation Modeling Analysis

Table 3. Effect coefficients of Talent Management Implementations Scale on “Organizational Trust” and “Nurse Work Motivation” in Ministry of Health Hospitals and University Hospitals

	Talent Management Imp.	Estimate	S. Estimate	S. Error	Critical Value	P
Ministry of Health Hospitals	organizational trust	0.462	0.652	0.056	8,272	***
	Work motivation	0.138	0.322	0.037	3,772	***
University Hospitals	organizational trust	0.474	0.630	0.071	6,687	***
	Work motivation	0.303	0.448	0.067	4,492	***

H1: Nurses' attitudes towards talent management implementations affect their perceptions of work motivation. H1 Hypothesis was accepted. It can be said that the effect of talent management on motivation is higher in university hospitals than in Ministry of Health hospitals.

H2: Nurses' attitudes towards talent management implementations affect their perceptions of organizational trust. H2 hypothesis was accepted. It has been observed that the effect of talent management on organizational trust is higher in Ministry of Health hospitals. According to the standard estimation values, it was observed that the "Organizational Trust" effect coefficients were higher than the "Nurse Work Motivation" effect coefficients in the Ministry of Health Hospitals and University Hospitals.

3. DISCUSSION

In the research findings, it can be said that there is a positive significant relationship between talent management, organizational trust and work motivation due to the positive correlation coefficients. Accordingly, as nurses' perception of talent management increases, their trust in the organization increases and their work motivation rises. In addition, a positive significant relationship was found between nurses' perception of work motivation and organizational trust. Bahadınlı (2012) stated in her study that when the right talent is employed in the right place, job satisfaction increases. Gülşen (2020) stated in his study that there is a low level of correlation between the participants'

perceptions of talent management and their perceptions of intrinsic motivation. In the study of Yılmaz (2019), it was stated that staff empowerment practices had an increasing effect on organizational trust and employee motivation perceptions.

When the effect of Talent Management Implementations Scale on “Organizational Trust” and “Nurse Work Motivation” is investigated, a statistically significant difference is observed for Ministry of Health hospitals and university hospitals. According to the standard estimation values, it was observed that the "Organizational Trust" effect coefficients were higher than the "Nurse Work Motivation" effect coefficients in the Ministry of Health Hospitals and University Hospitals. In addition, while the "Organizational Trust" effect coefficient was higher in the Ministry of Health Hospitals than the University Hospitals, it was determined that the "Nurse Work Motivation" effect coefficient was higher in the University Hospitals. In the literature, Çetin (2021)'s research titled "The effect of talent management implementations in businesses on the organizational justice perception and motivation of employees" has a positive and significant effect on the total motivation perception of abstract and concrete talent management. Güner (2016) states in her study that there is a high positive relationship between talent management and motivation. Accordingly, as the perception of talent management increased, work motivation rose. In the study of Kontoghiorghes (2015) and in the study of Novinda and Eeng (2020), it has been seen that the motivation of the employees increases in companies where talent management implementations are applied regularly. Rastgoo (2016) emphasizes that talent management implementations have a positive effect on employee motivation. Karadayı (2018) states in his study that the perception of talent management has a positive effect on employee motivation. Kaleem (2019) emphasizes that talent management has a direct and positive effect on employee motivation in his research on public sector employees. In the study conducted in Karaman province by Akgemci et al. (2020), there is a positive and significant relationship between talent management and perception of motivation. When we look at the relationship between talent management and organizational trust perception; Erdoğan (2020) reached the conclusion that talent management implementations positively affect organizational trust perceptions. Accordingly, the effective execution of talent management implementations increases the organizational trust levels of employees. In their study conducted in 2013, Altınöz, Çakıroğlu and Çöp investigated the effect of talent management perception on organizational trust levels and stated that there was a strong positive relationship between them. In the literature; it is seen that talent management perceptions have a significant

effect on organizational trust (Dağ, S., 2018). The dimensions of talent identification, talent development and talent culture have significant effects on organizational trust.

4. CONCLUSION and RECOMMENDATIONS

In the findings of the research, the nurses' perceptions of talent management were found to be moderate in general. Nurses generally emphasize that physical working conditions are important for them and highly affect their work motivation. In addition, nurses state that when they do their job well, they do not receive an additional increase in their salaries and are not rewarded in this way. It can be suggested that institution managers in the health sector should give more importance to the physical conditions of the hospitals and that they should bring a transparent and fair reward system by making a payment plan suitable for the performance of the employees. While measuring nurses' perceptions of talent management; in general, nurses stated that they could not easily criticize their managers about their job or duties. Accordingly, effective communication skills can be developed between nurses working in hospitals and managers, and leaders with a spirit of leadership who are open to criticism can be brought to the management staff. Nurses stated that their institutions recruited qualified employees, but less emphasis was placed on candidate skills. Since the health service has a direct effect on human health, the service providers should have a high level of practical skills as well as theoretical knowledge. It may help to increase success if managers include candidates' skills in the evaluation while selecting and placing personnel.

It was found that nurses' perceptions of work motivation were high, and it was revealed that nurses like to receive feedback while working. The work motivation of nurses can be increased by using open communication techniques within the institution and applying an effective feedback system between managers and employees.

It is seen that the average of nurses' organizational trust perceptions is high and it is observed that they trust the organization they work for. They express that they trust the work skills of their colleagues within their organizational trust perceptions. The level of trust in colleagues was found to be higher than the level of trust in the institution. Hospitals should include nurses in their institutional policies and encourage them to develop suggestions. The institution should supply with the personal rights of its employees fairly and support its employees in all matters.

Considering the organizational trust levels of nurses working in university and ministry of health hospitals, university employees trust their institution more than the employees of the ministry of health. The reason for this can be explained by the simpler organizational structure of university hospitals. Organization employees with this structure can communicate more easily and their sense of belonging to the organization can be higher. In order to increase the trust of the employees in the Ministry of Health hospitals, it may be beneficial to respond to the wishes and needs of the employees by using effective communication techniques. The perception of talent management implementations was found to be higher in nurses working in the ministry of health than those working in universities. It can be said that more importance is given to talent management in the hospitals of the Ministry of Health. It may be beneficial for university hospitals to attach more importance to talent management infrastructure studies in order to retain talented nurses, survive in a competitive environment and work with high efficiency.

It can be said that there is a positive relationship between the variables of talent management, organizational trust and work motivation in the research. Despite the fact that the relationships between the variables changing according to the correlation coefficients are close to each other, the highest relationship is between organizational trust and work motivation variables, and the lowest relationship is between talent management and work motivation variables. Accordingly, as nurses' perceptions of talent management increase, their level of trust in the institution increases and their work motivation rises. Hence, all employees should be treated equally and fairly, and appropriate opportunities should be offered in all processes, starting from employee selection and recruitment, to training and development opportunities, career planning, promotion opportunities and performance management. If employees think that talent management implementations are done with fair and equal opportunities, their organizational trust levels will increase even more. When we look at the effect of talent management on organizational trust and work motivation in nurses, it can be said that the effect of talent management implementations on organizational trust is significant for the ministry of health and university hospitals, and it has a higher effect in ministry of health hospitals. According to this result, university hospitals should give more importance to talent management implementations. Perceptions of organizational trust will increase in an institution where talent management practices are carried out appropriately. Because training and development opportunities positively affect the trust of nurses towards the institution. Nurses want to have a work environment where

they can develop themselves and learn continuously. It is important for nurses to be constantly innovative and progressive in healthcare service delivery in terms of themselves and the efficiency of the institution.

When employees think that their career plans are hindered, their trust in the organization decreases. For this reason, performance management and talent management implementations should be carried out appropriately and continuously in order to effectively manage talented nurses working with high performance and to increase the perception of trust they have towards the institution. Institutions with a working culture focused on continuous change and learning are more successful in talent management practices and survive longer. On the other hand, it can be said that the effect of talent management on motivation is higher on university hospitals than on the public. It can be said that if the right talent is employed in the right place, the level of motivation increases. More talent management implementations should be given importance in order to increase work motivation in Ministry of Health hospitals.

Since the nature of the talent management process has not been fully resolved due to the lack of research on talent management in the healthcare sector, studies should be conducted with more diverse variables in order to better understand the concept of talent management. Some of these variables were mentioned in the study. The relationship between talent management implementations and organizational processes in nurses can be studied and the relationship between organizational climate, job satisfaction, performance, job stress, leadership type, etc. and talent management can also be investigated.

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Artificial Intelligence in Metabolomic Research

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Review Article

Abstract

The term "metabolomics" refers to high-throughput methods for detecting various metabolites and small molecules in biological samples. Undirected metabolomics, also known as unbiased global metabolome analysis, can be used to discover key metabolites as variables or measurements of human health and illness. From this vantage point, it is investigated how artificial intelligence and machine learning enable significant advances in non-targeted metabolic processes as well as significant findings in the early detection and diagnosis of diseases. Metabolomics is important for finding cures for many diseases. In the development of innovations in the field of biotechnology, it is of great importance to collect, filter, analyse, and use biological information in smart data. For this reason, many biotechnology companies and various healthcare organizations around the world have created large biological databases. This biological data accelerates the development of products in many areas. Algorithms are being developed for biological data analysis. It is thought that many disease treatments will be found when the human genome is edited. Machine learning techniques are effective tools for metabolomic investigation; however, they can only be used in straightforward computing scenarios. When used functionally, data formatting frequently calls for the use of sub-computational resources that are not covered in this area.

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INTRODUCTION

Modern science has a form in which it is thought possible to formulate "how" the events observed in nature occur, and therefore to "know" how things will happen before they happen. A paradigm shifts in science began when computers made possible operations that could not be calculated by hand. Computer-aided experimental equipment has developed very rapidly and has begun to scan and produce data at a speed that was unimaginable before. This situation has revealed many previously unforeseen problems. Making sense of the produced data requires a completely different scientific study methodology. Now, numerical approaches such as mathematical modeling, complex networks, and machine learning and the application of these approaches as software tools have become inevitable for almost every branch of science. With technological developments, reading of all DNA sequences in the cell (genomics), determination of all RNA amounts (transcriptomics), or determination of all protein amounts (proteomics)-omic data has become available. All these have led to the establishment of an approach to evaluate the system instead of understanding the whole by interpreting and combining the intracellular mechanisms into small parts. This new approach is called systems biology. Apart from the genomic, transcriptomic, and proteomic data that correspond to the main activities in the cell, there are many different layers of big data. With the emergence of metabolic models at the genome-scale, metabolomic data has emerged and it is aimed to simultaneously analyze complex structures consisting of, for example, 7500 reactions and 5000 metabolomics for a human cell.

Interactions of proteins, whose number is approaching 20,000 in the cell, are examined in the form of network structures with the help of interatomic data, and unknown mechanisms are tried to be clarified (Jung-Ming G. Lin, et al. 2022). Analyzing the three-dimensional (3D) structures of proteins is of vital importance in the determination of their functional parts and, therefore, in the development of specific drugs for diseases caused by proteins. Computational structural biology, which tries to predict the structure of proteins whose amino acid sequence is known but whose three-dimensional (3D) structure is unknown, by machine learning methods using proteins of known three-dimensional (3D) structure, has become an almost independent discipline. (Lander ES et al., 2001).

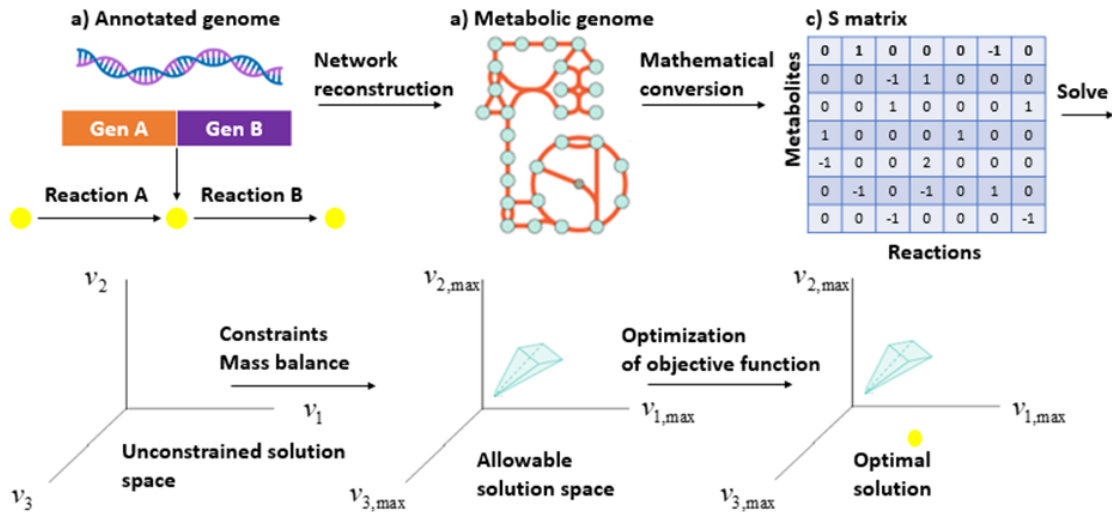


Figure 1. Structure of proteins with known amino acid sequence but unknown three-dimensional structure using proteins with known three-dimensional structure (Xin Fang et al., 2020).

Metabolomic applications include monitoring clinical disease, evaluating therapeutic applications, and understanding the effects of genetic modifications. All metabolomics found in the body are defined by metabolomics techniques. Metabolomics is very diverse and exists in different concentrations. In this technique, detection, separation, identification, and analysis of metabolomics are performed. Performing all these processes in a short time without loss of sensitivity and high efficiency is one of the important parameters of metabolism (Bren L., 2005).

Purpose

The process through which the body's chemical reactions create the numerous metabolites required for human life is known as metabolism. The two fundamental processes of metabolism are anabolism, or the creation of compounds required by the cell, and catabolism, or the breakdown of molecules for energy. Inactivation, detoxification, and the elimination of foreign or undesirable substances are additional functions of metabolism. Understanding these systems and how they relate to human physiology in terms of health and disease is crucial. The measurement of small molecules in biological samples is the basis of metabolomics, a thorough, high-throughput study that may be used to explore these processes individually or collectively (usually blood, urine, or

saliva) (J.D. (2018)). Phenotypic changes in metabolite profiles may result from disruption of the omic layer. Exposomics (shaded in blue above) expands this to measure phenotype-related metabolite profiles, including exogenous small molecules and the effect of exogenous and non-genetic variants on "omic" cascades. Sample collection times based on phenotypic identification can help determine whether metabolite biomarkers or pathways are relevant to disease etiology, diagnosis, or progression (Topfer, N. 2021).

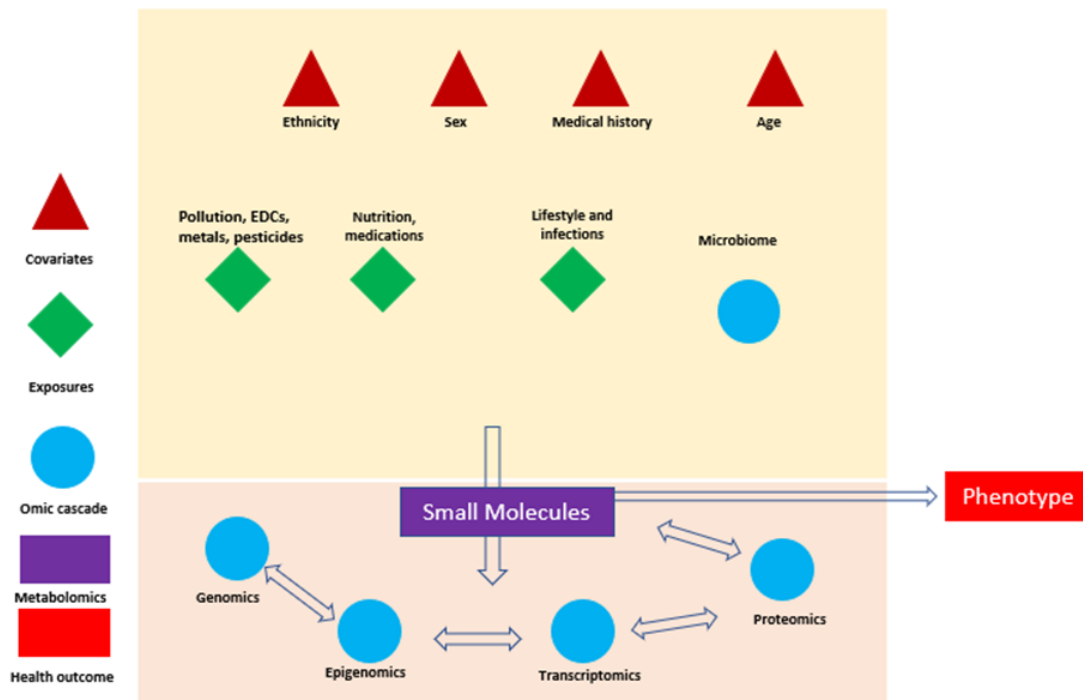


Figure 2. Metabolomics supports the discovery process. Metabolomics (pink shading, bottom) focuses on endogenous small molecules as outputs of metabolic systems.

Many researchers wonder what the potential for artificial intelligence could be in the future of medicine and healthcare. Looking at AI studies, the general implication is that the way modern machines draw inferences is very different, and that complementarity is ultimately a source of strength, as well as an opportunity for researchers to make better decisions, but that there are no more important decisions than the decisions physicians have to make every day. Therefore, it is believed that physicians who partner with artificial intelligence in decision-making will see their healing powers increase even more. It can be said that the artificial intelligence revolution of this century is really a renaissance, a rebirth today. Artificial intelligence and machine learning have

significant advantages for medicine, health, science, and engineering today. Artificial intelligence and machine learning-derived technologies enable faster and larger processing of data as well as advanced analytics. It allows the identification of inconsistencies, minimizing the need for human intervention. Based on data from many patients, the proposed approach is trained, and feature distributions are examined to identify the most important features (Jacobs DM. 2017). It is then trained using selected interesting features to construct a diagnostic classifier and evaluate data from different patients (Jialal, I. 2019).

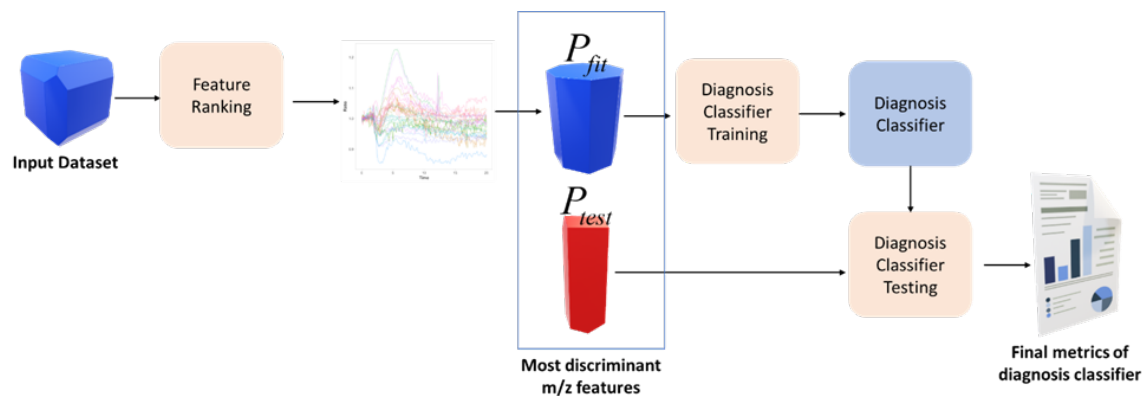


Figure 3. Steps to train and test the diagnostic classifier.

Collecting, filtering, analyzing, transforming, and transforming biological information into smart data is of great importance in the development of innovations in the field of biotechnology. For this reason, many biotechnology companies and various healthcare organizations around the world have created large biological databases. This biological data accelerates the development of products in many areas. The scope of health biotechnology, which is one of the most important areas of biotechnology, can be listed as the development and production of biopharmaceuticals; chemical analysis of different compounds; diagnosis and treatment models based on RNA and DNA data; and planning; personalized medicine and others; the development of health methods; enzyme research and other similar biological processes. The main elements that feed the bioinformatics methods are the omic data presented within the scope of biological sciences. All methods of identifying hereditary material, genomes, and studying structural and functional features in organisms are defined as genomics. Studies to elucidate the biological function journey of information in the genome have advanced with other omics technologies such as transcriptomics, proteomics, and metabolomics. There are metabolomic approaches that enable the

identification, detection, and analysis of relevant small molecules, as well as transcriptomic technologies that allow the study of all RNA products created in vivo and proteomic technologies that examine the structures, modifications, positions, and functions of translated proteins. The structures of functional components in the organism, such as carbohydrates, lipids, and vitamins, are used to understand biological processes in the organism. makes a major contribution (Genetic Engineering and Biotechnology News publishing).

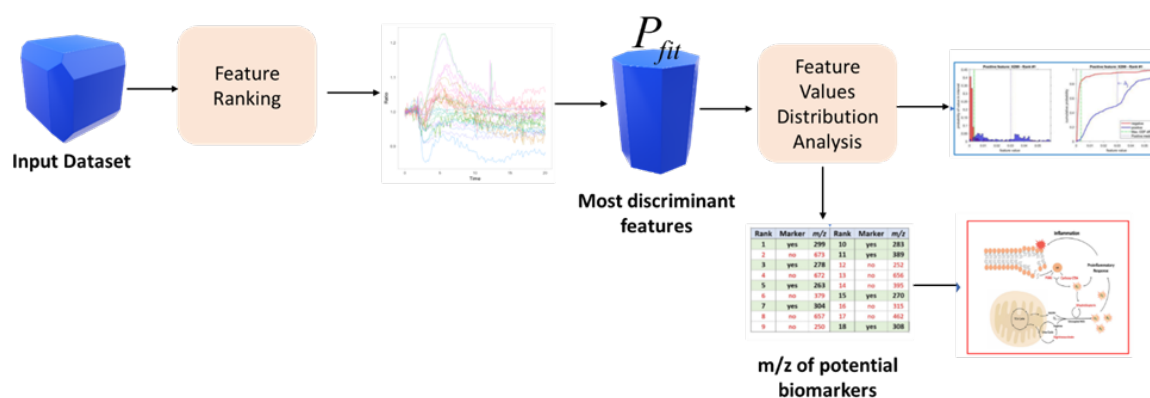


Figure 4. Identification of possible biomarkers using the proposed machine learning approach and the most salient features (Dabaja, M. Z., et al., 2019).

1. RESEARCH METHODOLOGY

Vaccines, drugs, and other therapeutic applications developed within the framework of health biotechnology use living organisms, cells, molecules (e.g., DNA, RNA, peptides, proteins) and biological information obtained from these structures. Information technology tools such as artificial intelligence and machine learning are used at very important stages in all stages, from molecular discovery, which is the first stage of drug development, to in vitro tests, from animal experiments to clinical research. The discovery of drug molecules, whether a conventional chemical drug or a biotech drug, is a very long and arduous step. For classical molecules, only 1 out of 8,000 molecules on average is released as a drug. It takes a lot of time, effort, and money to develop even this single molecule. Thanks to artificial intelligence, these molecular scanning processes have been reduced from 5 to 10 years to months or even days. The best example of this is the work of Alex Zhavoronkov and colleagues, who reduced years of molecular scanning to 21

days. Likewise, artificial intelligence solutions are used in the design and execution of in vitro studies. Thanks to artificial intelligence and deep learning, laboratory studies are better optimized, and the repetition of experiments is reduced, resulting in significant time and cost savings. In the animal testing phase, AI-powered programs ensure that research is time-consuming and done with fewer animals. In addition, it is thought that the use of organ-on-chip and tissue-on-chip will reduce the need for animal experiments thanks to biochip technology. When it comes to the clinical trial phase, AI plays an undeniable accelerator role in the entire human phase study design, the right recruitment of volunteers (patients), and the collection of efficacy and safety data. Artificial intelligence-assisted predictive measures can be planned by collecting, reviewing, and analyzing information about all adverse events that occur during the clinical trial process and after drug release. For example, the unexpected situations of a drug or vaccine developed according to a certain age, gender, concomitant disease or some other conditions can be determined by big data analysis, and these special groups can be detected quickly with artificial intelligence (Kurnaz I. Ed. (2019); Zhavoronkov A (2019); Zacharoula & Yannakakis, Georgios (2020); Tekade, R. K. (2021)). They are used in the processes of collecting, analyzing, interpreting, and transforming biological information into a solution with artificial intelligence (Ünver and Kurnaz, 2019).

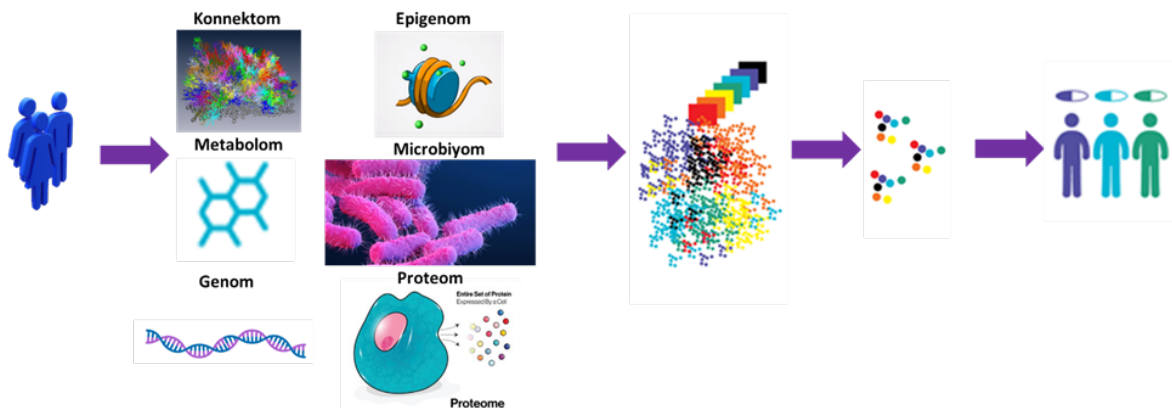


Figure 5. Many new technologies, from implantable biosensors to wearable sensors

To survive while balancing a wide range of varied environmental variables, cellular life requires a vast diversity of metabolic phenotypes (Gray A et al. (2009); Barnhill S et al. (2002); Li JV et al. (2011); Porfirio B et al. (2009)). Due to the technology's capacity to quantitatively test numerous metabolomic targets simultaneously, liquid chromatography-mass spectrometry (LC-

MS) is the most effective method for differentiating these phenotypes (Brandon TR et al. (2005); Neumann S et al. (2008); Siuzdak G et al. (2011). As a result, non-targeted metabolomic profiles are excellent at detecting environmental, stress, or disease-related indicators. However, this may be complicated by the typical biological variance in metabolic response (Bothner B et al. 2014). The best way to properly apply machine learning to metabolomic datasets is likely to combine it with data mining techniques like principal component analysis and hierarchical clustering. This is primarily since data mining methods may be used unsupervised, which reduces the danger of human bias and enables the machine to discover significant associations between samples. Machine learning techniques are effective tools for metabolomic investigation; however, they can only be used in straightforward computing scenarios. It is frequently necessary to use sub-computational resources not addressed in this section when preparing data for functional purposes (Istanbul, February 16, 2021— Harvard T.H.). Harvard Chan School of Public Health researchers have utilized machine learning, a branch of artificial intelligence, to pinpoint the elements more precisely in walnuts that may be lowering the risk of type 2 diabetes and cardiovascular disease (two of the leading causes of death in the US). This study, funded by the California Walnut Commission and featured in *The Journal of Nutrition*, identified 19 metabolomics linked to walnut consumption using a novel method called agnostic machine learning. Various metabolites are produced by the body based on the type of food eaten. A 37% reduced incidence of type 2 diabetes and a 63% lower risk of cardiovascular disease were linked to the walnut metabolomics profile. This work adds to the three decades of prior research on walnuts and heart health by being the first to investigate the link between walnut metabolomics and the risk of cardiometabolic illness.

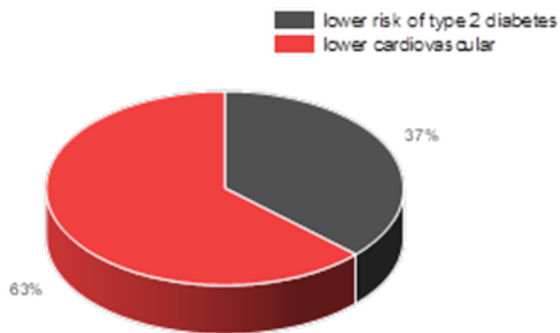


Figure 6. The relationship between walnut metabolomics and the risk of cardiometabolic disease.

The PREvención con Dieta Mediterránea (PREDIMED) project, a large-scale, multi-year investigation of the benefits of the Mediterranean diet on avoiding cardiovascular disease in persons at high risk of heart disease, included 1,833 participants, whose data were reviewed by the researchers.

Table 1. Participants were between the ages of 55 and 80 and followed one of the three diets.

1	Adding mixed nuts to a Mediterranean diet (50 percent walnuts, 25 percent almonds, and 25 percent hazelnuts)
2	Olive oil extra virgin enriches the Mediterranean diet.
3	Low-fat diet: walnut metabolomics reveals a walnut metabolomic signature linked to a decreased risk of cardiovascular disease and type 2 diabetes.

These results underline the connection between eating walnuts as part of a balanced diet and cardiometabolic health. This epidemiology study's new methods will aid in establishing associations between food and illness. The results, however, do not imply causation. Because this study only looked at older Hispanic people, more research in other demographics is needed. Future research will be required to uncover other walnut intake indicators that were not monitored in this study as well as to comprehend individual metabolic reactions following walnut eating, given the quickly developing area of metabolomics.

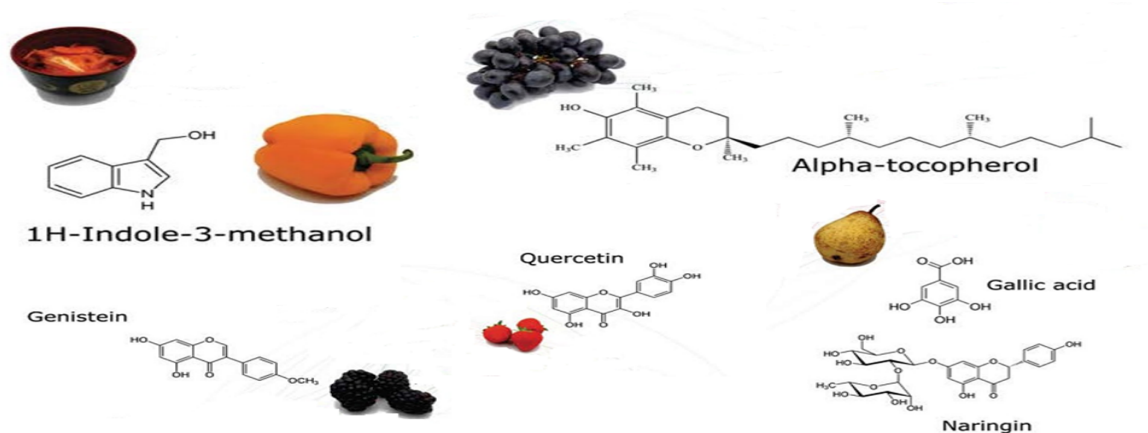


Figure 7. Profiles of compounds in certain foods with predicted efficacy in targeting the SARS-CoV-2-host interactome (Xian Y, et al., 2020; Gordon DE, et al. 2020).

Potential bioactive anti-COVID-19 compounds in foods were found using the network machine learning approach in the study "Network machine learning maps phytochemically rich "Hyperfoods" to combat COVID-19," which was published in the journal Human Genomics. Among the 5658 experimental and clinically licensed medications that are effective against COVID-19, it has been calibrated using a machine learning model to forecast anti-COVID-19 candidates with a balanced classification accuracy of 80–85%. These have been found to be the most promising therapeutic candidates that may be "reused" to treat COVID-19, including popular medications like simvastatin, atorvastatin, and metformin that are cycled to treat metabolic and cardiovascular diseases. 52 biologically active compounds from different chemical classes, including flavonoids, terpenoids, coumarins, and indoles, were found after a database of 7694 bioactive food-based molecules was put through a calibrated machine learning algorithm. These compounds are predicted to target the SARS-CoV-2-host interactome networks. Based on the variety and relative concentrations of probable compounds with antiviral capabilities, this was utilized to build a "food map" with the theoretical anti-COVID-19 potential of each projected component. According to the conventional approach to developing antiviral drugs, a medication must target a viral protein. In this regard, comprehensive computational molecular docking simulations have been conducted to identify plant-based bioactive compounds for certain SARS-CoV-2 protein targets. The durability of intricate virus-host interaction networks against specific protein degradation is one of this method's many shortcomings. In addition, escaping viral variants may confuse the potential effects of vaccinations and medications against genes or protein targets unique to SARS-CoV-2. In order to find food-based bioactive compounds targeting the SARS-CoV-2 and human interactome networks, we integrated network-based machine learning techniques with mobile supercomputing and interatomic data. First, experimentally confirmed medicines' anti-COVID-19 characteristics were predicted using the suggested machine learning technique. The models were used to find drug-like compounds in food after calibration. Medication repurposing and reuse in cancer research, population stratification based on mutations, drug repurposing, and food-based anti-cancer molecular therapies have all benefited from similar network propagation techniques. Machine learning algorithm parameters were tuned to forecast experimentally confirmed medications against COVID-19 in the cross-validation context (Vázquez-Calvo et al. 2017; Gysi DM et al., 2020; Xian Y, et al. 2020; Boozari M, et al. 2020; Veselkov, K. et al. 2021).

2. CONCLUSION

The algorithm will thus improve as we gather more metabolomics data and come to comprehend the shift in metabolomics, helping us find the best medicines for the right patients. It will get closer to achieving its goal of saving lives with every line of code written. It will be easier to find connections between nutrition and disease with the use of new epidemiological study technologies. This study suggested new avenues for metabolomics, which need high-end tools and skilled workers, but also suggested simplified sample preparation, a shorter turnaround time for metabolite analysis, and the use of cutting-edge data processing methods for decision-making. Important metabolomics discoveries have already been made and are anticipated to be made thanks to developments in artificial intelligence and machine learning in computers. A new era of discovery was ushered in by the success of deep learning algorithms on unstructured data as well as the fusion of new artificial intelligence and machine learning techniques that aren't commonly used in metabolomics with existing datasets or samples that contain low and high concentrations of well-known chemicals, trained training and peak aggregation algorithms, environments, and precision health. They serve as crucial launching pads for refueling.

Conflict of Interest: The authors have no conflicts of interest to declare.

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