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Editörden

Pandemi ve ardından yaşadığımız deprem yıkımının ağırlığının gölgesinde yeni sayımızı sunuyoruz. Bu sayımızın sunuş yazısını depremi yaşayan ve halen deprem bölgesinde çalışmaya devam eden Prof. Dr. Tacettin İnandı'ya ayırmayı uygun gördük.

Kahramanmaraş Depremi ve Toplumsal Dayanıklılık

Deprem ve etkileri

Kahramanmaraş Pazarcık merkezli, 6 Şubat 2023 tarihinde sabah saat 04.17'de başlayan ve 65 saniye kadar süre bir deprem bölgede büyük bir afete dönüştü. Afet ve Acil Durum Yönetimi Başkanlığı yayınladığı ilk bültende depremin büyüklüğünü önce 7.4, daha sonra aynı gün içinde yayınladığı 5. bültende ise 7.7 olarak değiştirdi. Deprem Türkiye'de on ili etkiledi ve Ortadoğu'daki çok sayıda ülkede de hissedildi. Ancak Kahramanmaraş, Pazarcık, Nurdağı, İslahiye, Hassa, Kırıkhan, Antakya, Defne ve Samandağ ilçeleri depremden en çok etkilenen yerler oldu. Bunların yanı sıra, Adıyaman, Malatya, Gaziantep, Şanlıurfa, Osmaniye, Diyarbakır ve Adana'da da önemli hasarlar oluştu. En ağır hasar Hatay ve Kahramanmaraşta ortay çıktı.

Cumhurbaşkanlığı 18 Mart 2023'de ölü sayısının 49 bin 589'a ulaştığını bildirdi. Kayıp kişi sayısı, yaralı ve sakatlar hakkında bir açıklama yapılmadı. Kaç kişinin enkaz altında kalmış olabileceğine ilişkin bir bilgi de verilmedi. Kahramanmaraş, Gaziantep, Şanlıurfa, Diyarbakır, Adana, Adıyaman, Osmaniye, Hatay, Kilis, Malatya ve Elazığ'dan 1.971.589 kişinin komşu illere giderek depremzede kaydı yaptırdığı bildirilmiştir. Kayıt yaptırmayanlarda hesaba katıldığında büyük bir göç dalgası yaşandığını söylemek yanlış olmayacaktır.

Onbinlerce bina çöktü ya da ağır hasar aldı. Çevre, Şehircilik ve İklim Değişikliği Bakanlığı, "depremlerde 507 bin bağımsız bölümden oluşan 156 bin binanın yıkık, acil yıkılacak ve ağır hasarlı "olduğunu açıkladı. Pek çok kamu hastanesi ağır hasar gördü bir kısmı çöktü. Çöken iki hastaneye ilişkin güçlendirmesi gerektiğinin belirtildiği ve depremden önce yazılmış olan raporlar olduğu ileri sürüldü. Henüz hasar tespit işlemleri de devam etmekte olduğundan hasarlı bina sayısının daha fazla olacağı da açıktır.

Toplumsal Yanıt

Hem afetin büyüklüğü hem de yetersiz toplumsal hazırlık sonucunda arama kurtarma çabaları çoğu yerde 3.günde başladı. Kurtarma açısından kritik dönem içerisinde binaların büyük kısmında arama kurtarma çalışması yürütülemedi. Zarar azaltma açısından son derece kritik olan ilk günler saatler ve dakikalarda gereken yanıt verilemedi. Enkaz altında kalıp kurtulanların büyük bir kısmı ya kendi ya da çevredeki insanların çabası ile kurtarıldı. Ancak, enkaz altında sağ kalan çok sayıda insan soğuktan, kan kaybından ya da benzeri nedenlerden yaşamını yitirdi.

Kriz sırasında yaşanan başka sorunlar da yağmacılık, gasp ve soygun olayları idi. Gerekli güvenlik önlemleri alınmamış idi. Karanlık ve güvensiz ortam insanlarda panik, korku ve çaresizlik durumunu artırdı.

Depremden etkilenen bu illerden çevre illere büyük bir göç dalgası oluştu. Geride kalanların önemli bir kısmının halen barınma, beslenme, yeterli ve güveli su, sağlık ve eğitim gibi temel gereksinimlerinin karşılanamadığını ilişkin gözlemler mevcuttur.

Kriz yönetim sürecinde ve artçı depremler devam ederken iyileştirme dönemine ilişkin çabaların başlatıldığı, yeni kalıcı konutların planı ve ihale sürecine girdiği haberleri verildi.

Tüm bunlar göstermiştir ki;

1- Afetin büyüklüğü risk yönetimi, risk azaltma ve hazırlık çalışmalarının başarısızlığının bir göstergesidir. Toplumsal dayanıklılığın iyi olmadığının bir kanıtıdır.

2- Deprem sırasında kriz yönetimi yetersiz ve planların işlevselliği zayıftır. Mevcut afet organizasyon yapısı önemli zayıflıkları barındırmaktadır.

3- Bu deneyimler depreme hazırlıkta temel olan yaklaşımın deprem öncesinde yapılan sağlam risk yönetimi planları ve risk küçültme çabalarının olduğunu desteklemektedir.

4- Acele ile iyi planlanmamış kalıcı yapıların ve yerleşim yerlerinin oluşturulması önemli riskleri beraberinde taşır. Yerleşim yerlerinin atıl kalması, kültürel değerlerin ve eski dokunun kaybolması bunlar arasında sayılabilir.

Kurnaz yaklaşımların, popülizmin, kar ve rant anlayışı ile gelinen yer burasıdır. Adalet, eşitlik, güvenlik, dayanışma, yardımlaşma, paylaşma gibi sosyal değerlerin güçlü olduğu toplumlar hedeflenmelidir. Depreme karşı toplumsal dayanıklılık, doğa ile barışık yatay bir mimari, akılcı, bilimsel ve çevreci bir yaklaşımla, etik ve halk sağlığı yaklaşımı ile sağlanabilir.

Depremin afete dönüşmesinde depremin gücü kadar toplumun dayanıklılığı etkilidir. Bir toplumun dayanıklılığı sosyal, siyasal, ekonomik, kültürel pek çok faktörle ilişkilidir. Kaderci, bir şey olmaz yaklaşımı yerine güvenlik kültürünün geliştirilmesi; ranta ve rekabete dayalı çıkarcı yaklaşımlara karşın güçlü sosyal destek mekanizmalarının yerleşmesi, şeffaflık, katılımcılık, işbirliği, eşgüdüm, bilgi üretimi ve teknolojinin doğru kullanımı gibi pek çok etken buna örnek verilebilir. İnsan yaşamına ve çevreye duyarlı halk sağlığı yaklaşımlarının gerek kriz öncesi gerekse de kriz sırasındaki önemi çok açıktır.

Bugünkü kanıtlar tüm bu olayların tamamen önlenebilir bir durum olduğunu desteklemektedir.

Dileğim bu bölgenin, ülkenin ve dünyanın son deprem afeti olmasıdır. Bu acı sonun aynı zamanda yeni bir başlangıca yol açmasını umuyorum. Deprem onbinlerce binayı yıkarak hemen hiçbir gücün sunamayacağı bir fırsat yaratmıştır. Şimdi doğa ile barışık, doğal risklere karşı dayanıklı, güvenli bir yaşam kültürünü yeni baştan dokumanın zamanıdır.

iD Prof. Dr. Tacettin İnandı

From the Editor,

We are presenting our new issue in the shadow of the pandemic and the earthquake destruction we experienced. We thought to give the editorial presentation of this issue to Prof. Dr. Tacettin İnandı, who experienced the earthquake and still continues to work in the earthquake region.

Kahramanmaraş Earthquake and Social Resilience

Earthquake and its effects

The earthquake centered in Kahramanmaraş, Pazarcık which started at 04:17 AM on 6th February 2023 and lasted for 65 seconds, turned into a major disaster in the region. The Disaster and Emergency Management Presidency published the magnitude of the earthquake as 7.4, then changed it to 7.7 on the same day. The earthquake affected ten cities in Turkey and was felt in many countries in the Middle East. However, the districts of Kahramanmaraş, Pazarcık, Nurdağı, İslahiye, Hassa, Kırıkhan, Antakya, Defne and Samandağ were the distircts most affected by the earthquake. In addition to these, significant damage occurred in Adıyaman, Malatya, Gaziantep, Şanlıurfa, Osmaniye, Diyarbakır and Adana. The worst damage occurred in Hatay and Kahramanmaraş.

The Presidency of the Republic of Turkey reported that the death toll reached 49,589 on March 18, 2023. No statement was made about the number of missing persons, injured and disabled people. No information was given on how many people may have been trapped under the debris. It has been reported that 1,971,589 people from Kahramanmaraş, Gaziantep, Şanlıurfa, Diyarbakır, Adana, Adıyaman, Osmaniye, Hatay, Kilis, Malatya and Elazığ went to neighboring provinces and registered as earthquake victims. It would not be wrong to say that there are even a greater number of immigrats when those who have not registered are taken into account.

Tens of thousands of buildings collapsed or were heavily damaged. The Ministry of Environment, Urbanization and Climate Change announced that "156 thousand buildings, consisting of 507 thousand independent sections were destroyed, will be demolished immediately and severely damaged". Many public hospitals were severely damaged and some collapsed. It was claimed that there were reports about the two collapsed hospitals, which were written before the earthquake, stating that they needed to be strengthened. It is clear that the number of damaged buildings will be higher, as damage

assessment procedures are still ongoing.

Social Response

As a result of both the magnitude of the disaster and insufficient preparation, search and rescue efforts began in most places on the third day. Search and rescue could not be carried out in most of the buildings during the critical period for rescue. In the first days, which are extremely critical in terms of reducing the damage of the disaster, the required response could not be given in the hours and minutes. Most of the survivors, who were trapped under the debris, were rescued either by themselves or by the efforts of the people around. However, many people who survived under the debris died from cold, blood loss or similar causes. Other problems experienced during the crisis were plunder, extortion and robbery. Necessary security measures were not taken. The fuzzy and insecure environment has increased the state of panic, fear and helplessness in people. A great wave of migration occurred from the region to the surrounding provinces. There are observations that a significant part of the survivors still cannot meet their basic needs such as shelter, nutrition, adequate and safe water, health and education. In the crisis management process and while aftershocks continue, it was reported that efforts for the recovery period were initiated, the plan for new permanent residences and the tender process had begun.

All this has shown that;

1- The magnitude of the disaster is an indicator of the failure of risk management, risk reduction and preparedness efforts. It is proof that social resilience is not good.

2- Crisis management is inadequate and the functionality of the plans is weak. The current disaster organizational structure contains significant weaknesses.

3- These experiences support that the fundemental approach in earthquake preparedness is the sound risk management plans and risk reduction efforts made before the earthquake.

4- The creation of permanent structures and settlements that are not well planned in a hurry carries significant risks. These include the inactivity of the settlements, the loss of cultural values and the historic texture.

This is the place where we come with deception approaches, populism, greed of profit. A society with strong social values such as justice, equality, security, solidarity and cooperation should be targeted. Social resilience against earthquakes can be achieved with a horizontal architecture in harmony with nature, a rational, scientific and environmental approach, an ethical and public health approach.

The strength of the society is as effective as the strength of the earthquake in the transformation of an earthquake into a disaster. The resilience of a society is related to many social, political, economic and cultural factors. Developing a safety culture instead of a fatalistic, do-nothing approach; Developing a safety culture instead of a fatalistic, do-nothing approach; The establishment of strong social support mechanisms instead of profit making and competitive approaches; Factors such as transparency, participation, cooperation, coordination, knowledge production and correct use of technology can be given as examples. The importance of public health approaches sensitive to human life and the environment, both before and during the crisis, is very clear. The available evidence supports that all these events are completely preventable.

I wish this is the last earthquake disaster of the region, country and the world. I hope this bitter end also leads to a new beginning. The earthquake destroyed tens of thousands of buildings, creating an opportunity that nothing could offer. Now is the time to re-establish a safe living culture that is in harmony with nature, resistant to natural risks.

iD Prof. Dr. Tacettin İnandı

Kaynaklar

Kahramanmaraş-Pazarcık'ta Meydana Gelen Deprem Hk. Basın Bülteni-1

Kahramanmaraş-Pazarcık'ta Meydana Gelen Deprem Hk. Basın Bülteni–5

Kahramanmaraş'ta Meydana Gelen Depremler Hk. Basın Bülteni-36

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ORIGINAL ARTICLE /ORİJİNAL MAKALE

Attitude and acceptance toward COVID-19 vaccines among Kabul city's residents: A cross sectional study

Kabil şehri'nde yaşayanlar arasında COVID-19 aşılarına yönelik tutum ve kabul kabulü: Kesitsel bir çalışma

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Abstract

Objective: The present study aimed to assess the attitude and perception of Kabul city's residents toward COVID-19 vaccines hesitancy and acceptance.

Methods: Applying a cross-sectional study design, the data was collected from 665 participants in Kabul city using a predesigned validated questionnaire. For statistical analysis, Spearman correlation, chi-square, and logistic regression techniques were used.

Results: Although the vaccine availability was limited for the public during the survey period, 70.5% of the participants were willing to receive COVID-19 vaccines. Meanwhile, 49.2% participants were concerned about the COVID-19 vaccines side effects. The presence of positive COVID-19 cases among family members and friends (OR: 2.7), presence of fears during COVID-19 pandemic (OR: 4.4) and beliefs that vaccine has important and vital role in people's protection against COVID-19 (OR: 5.3), increase the likelihood of vaccine acceptance among the participants. On the other hand, participant's mistrust of the safety of COVID-19 vaccines (OR: 0.21) and disbelief on ministry of public health "MoPH" advice about COVID-19 vaccine safety and efficiency (OR: 0.27) decrease the odds of COVID-19 vaccine acceptance among the respondents. In addition, a strong correlation was found between vaccine attitude and vaccine acceptance scales (Spearman ρ=0.52, p<0.001).

Conclusion: Although majority of the participants were willing to receive the COVID-19 vaccines, due to high level of participant's concerns about COVID-19 vaccines-related side effects, a great proportion of the respondents were hesitate to receive the COVID-19 vaccines. Accordingly, public awareness about COVID-19 vaccines must be increased to counteract incorrect and misleading propaganda about vaccination and immunization.

Keywords: COVID-19, Vaccine Hesitancy, Vaccination Awareness, Cross-Sectional survey, Afghanistan

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Öz

Amaç: Bu çalışmada, Kabil şehri sakinlerinin, COVID-19 aşılarına karşı tereddüt ve kabulüne yönelik tutumlarının ve algılarının değerlendirilmesi amaçlanmıştır.

Yöntem: Kesitsel bir çalışma tasarımı uygulanarak, önceden tasarlanmış ve doğrulanmış bir anket kullanılarak Kabil şehrinde 665 katılımcıdan veriler toplanmıştır. İstatistiksel analiz için Spearman korelasyonu, ki-kare ve lojistik regresyon teknikleri kullanılmıştır.

Bulgular: Anket döneminde aşı bulunabilirliği halk için sınırlı olmasına rağmen, katılımcıların %70.5'i COVID-19 aşısı olmaya istekliyken, katılımcıların %49.2'si COVID-19 aşılarının yan etkilerinin olduğunu düşündüklerini bildirdiler. Aile üyeleri ve arkadaşlar arasında pozitif COVID-19 vakalarının varlığını (OR: 2.7), COVID-19 pandemisi sırasında korkuların varlığını (OR: 4.4) ve aşının insanların COVID-19'a karşı korunmasında önemli ve hayati bir role sahip olduğuna dair inançların varlığını (OR: 5.3) katılımcılar arasında aşıya karşı olumlu tutumun arttığını gösterdi. Öte yandan, Katılımcıların COVID-19 aşılarına karşı güvensizliği (OR: 0.21) ve halk sağlığı bakanlığının "MoPH" COVID-19 aşısının güvenliği ve etkinliği hakkında tavsiyesine inanılmaması (OR: 0.27) katılımcılar arasında COVID-19 aşısının kabul edilme olasılığını azaltmıştır. Ayrıca, COVID-19 aşısına karşı yönelik tutum ve kabul arasında güçlü bir korelasyon bulunmuştur (Spearman ρ=0.528, p<0.001).

Sonuç: Katılımcıların çoğunluğunun, COVID-19 aşılarını olmayı kabul etmesine rağmen, COVID-19 aşıları ile ilgili yan etkiler konusundaki endişelerin yüksek olması nedeniyle, katılımcıların büyük bir kısmında da tereddüt saptandı. Buna göre, aşılama ve bağışıklama konusunda yanlış ve yanıltıcı propagandaya karşı koymak için COVID-19 aşıları hakkında kamuoyununun bilinçlendirilmesi gerekmektedir.

Anahtar Kelimeler: COVID-19, Aşı Reddi, Aşı Farkındalığı, Kesitsel Anket, Afghanistan

INTRODUCTION

With the emergence of SARS-CoV-2 (severe acute respiratory syndrome coronavirus 2) in Wuhan, China in late December 2019[1] and pandemic occurrence of the coronavirus disease 2019 (COVID-19),[2] global efforts to develop safe and effective vaccines against this globally threatening emergency disease have begun.[3]

Vaccines are one of the most effective and cost-benefit intervention tools for many infectious, particularly viral diseases[3] and for the ongoing pandemic of COVID-19 with no effective antiviral therapies, vaccines and hygienic measures are the main practical measures against the disease.[4] Since the emergence of the COVID-19 pandemic, many pharmaceutical companies across the globe have been struggling to produce safe vaccines against this devastating disease. As of Sep 09th 2022, 11 COVID-19 vaccines have been approved by WHO, manufactured by Pfizer, AstraZeneca, Serum Institute of India, Janssen, Moderna, Sinopharm, Sinovac, Bharat, Novavax and CanSinoBio companies;[5] and 172 are on clinical and 199 are on pre-clinical development.[6,7]

Despite the fact that vaccines are accepted as a safe tool for preventing contagious diseases, mistrust, hesitancy and unacceptance of

vaccines are common phenomena in many societies[8] and are considered one of the ten global health threats worldwide.[9,10]

With the identification of the first case of COVID-19 in the west part of Afghanistan (Herat province) on 24th Feb 2020;[11] Afghanistan is now experiencing the fifth wave of this pandemic. As of Sep 10, 2022, 195,471 confirmed cases including 7,786 deaths have been reported by the MoPH of Afghanistan,[12] but the real situation of COVID-19 might be different, and it has been confirmed that the actual positive cases of COVID-19 would be much higher than that of reported data.[11]

The first dose of the COVID-19 vaccine was administered in the UK on 8th Dec 2020.[13] According to the most recent data (Sep 04, 2022), 12.6 billion doses of COVID-19 vaccines have been administered globally in which 67.7% of the world population has received at least one dose of the vaccine. Meanwhile, only 21.0% of people in low-income countries have received the first dose of the COVID-19 vaccines.[14] In Afghanistan, COVID-19 vaccination campaign has been started on 23rd Feb 2021, using Covishield vaccine, a viral vector vaccine which require a booster dose, 4 – 12 weeks after the first dose.[15,16] According to the MoPH-approved national plan for COVID-19 vaccination campaign in Afghanistan, health workers, school and university teachers, security personnel, prisoners, people with co-morbidities (e.g. heart disease, TB, diabetes), and people over the age of 50 were the main prioritized target groups to receive the COVID-19 vaccines.[17] Due to a shortage of available vaccine (Covishield) at the started point of the present study (5th June 2021), the vaccination campaign was halted on June 6, 2021 for a week until the

new batch of Sinopharm-BBIBP China aided vaccine arrived in Afghanistan on June 12, 2021. Accordingly, during the study period, only a limited number of doses of these two vaccines (Covishield and Sinopharm-BBIBP) were available in the country, and they were administered only to high-risk prioritized groups, not to the general public. This scarcity resulted the third wave of COVID-19 cases in Afghanistan.[18,15]

As of Sep 04, 2022, 10.7 million people has received at least one dose of COVID-19 vaccines in Afghanistan and 9.96 million are completely immunized against the disease in the country, which constitutes only 25.6% of total population of Afghanistan.[14,19] Although COVID-19 vaccines are currently available in all health centers across the country, a massive drop in COVID-19 vaccination campaign has been observed following Afghanistan's recent political situation.[20]

Due to misconception, illiteracy, insecurity, and social media misleading propagandas, vaccine refusal is a common practice in other vaccination campaigns including Polio in Afghanistan,[21–24] so it is likely to have the same scenario in COVID-19 vaccination program in the country. The present study aimed to evaluate the knowledge, attitude and perception of individuals regarding COVID-19 vaccines in Kabul city. The results of the present study are likely to contribute in setting further successful strategies for the prevention of COVID-19 in Afghanistan.

METHODS

Study Design

A cross-sectional study was conducted in Kabul city, the capital of Afghanistan, from 5th

to 27th June 2021. The data were collected from nine out of 16 central districts of Kabul city which were selected by convenience sampling method, visiting two to nine locations of each district at different times of the day. According to the most recent estimation of the National Statistics and Information Authority (NSIA) of Afghanistan, the settled population of Kabul city was estimated to be more than 4.6 million which constituted almost 13.7% of Afghanistan's total population in 2020.[25]

Data Collection Method

For data collection, a structured interview with a well-designed validated questionnaire was used. A predefined questionnaire developed by other researchers[20, 21] was adapted to Afghan custom and translated into Dari language. A pilot study was performed on 40 non-surveyed participants to ensure clarity and comprehension of the questions.

The questionnaire was divided into four sections: (1) respondent's demographic information, including age, gender, marital status, monthly income, education, duty, habits, and history of chronic diseases; (2) respondent's knowledge about COVID-19 preventive measures, and their experiences and history about its cases and deaths in family members, colleagues, and friends, which included six questions; (3) respondent attitude toward vaccines and immunization, including COVID-19 vaccines, their main concern during the pandemic; (4) the perspective toward COVID 19 vaccination, hesitancy and acceptance had nine close-ended questions with a five-point Likert scale (5 = strongly agree, 4 = agree, 3 = neutral, 2 = disagree, 1 = strongly disagree) and a Cronbach's Alpha value of 0.87, indicating very good reliability.

At the end of the questionnaire, there was a question about COVID-19 vaccine receipt (yes/no) and its types, as well as two open-ended questions about the participant's experience after vaccination and their general ideas about COVID-19 and its vaccines.

Sample Size and Sampling Strategy

The sample size was calculated by Raosoft calculator (http://www.raosoft.com/samplesize.html), assuming 5% accepted margin of error, 99% confidence level and estimated 4.6 million total population, with 50% response distribution, to have maximum possible sample size. By these specifications, the total sample size was estimated to be 664, but 682 questionnaires were filled during the survey, from which 665 were valid for data analysis. Meanwhile, the differences in the total numbers in the result section are caused by missing data. A convenience sampling strategy was applied during data collection, where the enumerators filled the questionnaires in face-to-face interviews. The enumerators approached the study participants in Kabul city's streets, markets, schools, universities, hospitals, national identity card distribution centers and residential areas, and collected the data from those who were agreed and showed willingness to participate in the survey.

Statistical Analysis

Excel datasheets and SPSS software 20 (IBM, version 20, USA) were used to analyze the data. The p-value was set at ≤0.05 to determine whether there was a statistically significant relationship between the variables, vaccine attitude and perception. All negatively worded items on the vaccine attitude and acceptance scales were reversed, and the total values of

the vaccine attitude and perception scales were calculated, as well as the correlation between these two scales using the Spearman rho correlation coefficient. The relationship between dichotomous variables was calculated by the chi-square test (χ^2; $p \leq 0.05$). Binary logistic regression model using a dichotomous dependent variable (will receive the COVID-19 vaccine or not) was performed as a final model to calculate the odds ratio (OR) of each factor with their confidence intervals. For this model, the five-point Likert scale (5 = strongly agree, 4 = agree, 3 = neutral, 2 = disagree, 1 = strongly disagree) variable of vaccine acceptance (dependent variable) was converted into a dichotomous variable, "yes/no" ("strongly agree" and "agree" to yes; "disagree" and" strongly disagree" to no,) but "neutral" category was not considered in the final model. All other independent variables with such characteristics were converted into three main categories (neutral = 0 (ref); strongly agree/agree = 1 and disagree/ strongly disagree =2) for logistic regression model. In the final binary logistic regression model, backward LR condition was applied to identify the most statistically significant variables among those that had $p \leq 0.05$ in chi-square test results and to find the best-fitted logistic regression model. A second binary logistic regression model was applied with almost the same specifications mentioned above, but the dependent variable (vaccine acceptance) was converted into a different dichotomous variable, "Yes/No" ("strongly agree/agree" to Yes and "neutral" to No) but "disagree/strongly disagree" categories were not considered in the model. It's worth to be mentioned that the independent variables values were manipulated many times to find the effects of such manipulation on the final logistic regression models and on the beliefs of the participants about COVID-19 vaccines, and to find the most fitted logistic regression model.

Ethical Declaration

This article does not contain any invasive studies with human participants or animals performed by any of the authors, since all of the data were collected just by face-to-face structured interviews using predesigned questionnaire. The research plan has been approved by Paraclinic department of Faculty of Veterinary Science of Kabul University (April, 2021) and Helsinki Declaration rules were followed to conduct this study. Written informed consent was obtained from the participants prior to data collection and anonymity was also maintained in the questionnaire as well.

RESULTS

Demographic information of the participants: The data was collected from 682 participants in nine (56.3%) of Kabul's central districts, however, due to the high proportion of missing values, data of 17 questionnaires were omitted, resulting in a final sample size of 665. The participants consisted of 83.4% male and 16.6% female with an almost equal proportion of single (51.6%) and married (48.4%). According on the age categories, 15.6% were ≤20 years old, 62.7% were 21-35 years old, 13.9% were 36-49 years old and only 7.7% were ≥ 50 years old. The median and mean age of the participants were 26 and 29.3±10.9 years old (range = 14 – 75 years old). Based on literacy and education level background, 5.5% of them were illiterate, 39.2% of them had education up to high school; 8.5% were graduated from technical institutes (14th

grade) and the rest held bachelor (39.2%), master (6.1%) and PhD (1.5%) degrees. From the total of 364 participants that held technical institute and above degrees (bachelor, master. and PhD), 31.5% (n=115) were graduated from medical-related fields. Sixty-seven percent of the participants were employed, representing a diverse range of community branches including doctors, nurses, pharmacists, teachers/professors, students, governmental and private sectors civilian and security employees, farmers, shopkeepers and workers. In turn, 1.3% were retired, while 31.7% were jobless. Almost one-third of the respondents (29.3%) earned less than $100 per month, 81.5% earned less than $300 per month, and only 4.0% earned ≥ $600 per month. Although chronic health problems were uncommon in the majority of participants (85.1%), chronic respiratory (3.5%), cardiac (1.1%), liver (1.2%) and kidney problems (2.3%); high blood sugar (1.2%), high blood cholesterol (1.7%), and high blood pressure (0.8%) were all present. Nevertheless, 3.1% of the participants had more than one mentioned health problems at the same time (Table 1).

The history of COVID-19 infection in the participants and their main concerns during the pandemic: Almost four-fifths of the participants (79.9%) have experienced COVID-19 infection themselves, in their family members, colleagues, friends or neighbors. To be specific, 33.2% of the respondents mentioned that they suffered from COVID-19, 34.4% indicated that they had COVID-19 cases in their family members, 40.0% reported cases of COVID-19 in their friends and relatives, 18.7% in their colleagues, and 20.0% in their neighbors. Almost half of the respondents

(48.3%) indicated cases of deaths of their family members, relatives and friends due to COVID-19 infections. The fear was present in 88.2% of all respondents, but it was vary based on the cases and deaths due to COVID-19 infection in their family members or others. The most prominent fear and concerns of the respondents during COVID-19 pandemic was infection in their family members (46.3%), followed by infection in themselves (36.8%), economic problems (36.3%), hospital unavailability (24.9%), and death of family members (24.8%).

Table 1. Demographic information of the participants and history of chronic diseases among Kabul city's residents, June 2021

Variable	Categories	Frequency	Percent
Sex	Female	107	16.1
	Male	538	80.9
	Non-respondents	20	3.0
Marital status	Single	336	50.5
	Married	315	47.4
	Non-respondents	14	2.1
Age categories	≤20 years old	101	15.2
	21-35 years old	405	60.9
	36-49 years old	90	13.5
	≥50 years old	50	7.5
	Non-respondents	19	2.9
Education level	Illiterate	36	5.4
	Up to high school	259	38.9
	Community college (14th grade)	56	8.4
	Bachelor and above	309	46.5
	Non-respondents	5	0.8
Employment status	Employed	410	61.7
	Retired	8	1.2
	Jobless	194	29.2
	Non-respondents	53	8.0
Chronic diseases	Yes	97	14.6
	No	554	83.3
	Non-respondents	14	2.1

The attitude toward routine vaccination and immunization: Over four-fifths of the respondents (81.8%) agreed that vaccination is necessary for diseases prevention; 55.3% concluded that all vaccines are safe to be administrated, but 23.2% believed that almost all freely administered vaccines are of poor quality. The findings of this study also revealed that 75.0% of subjects vaccinate themselves or family members against endemic diseases, and their willingness to vaccinate their children was nearly 90%. According to the data collected, 15.3% of the participants had a negative reaction to vaccination in their life or among their family members. More than half of respondents (53.0%) like and trust public hospitals for vaccination, while 19.2% have no trust in vaccines or service areas at all. The MoPH, private doctors, and pharmacists were the most trusted sources of information about vaccine quality and safety for 93.0% of participants. Despite the fact that limited doses of Covishield and Sinopharm-BBIBP COVID-19 vaccines were available during the survey period; American (32.3%), Chinese (26.7%), and Russian (15.4%) vaccines were the most trusted and vaccines of choice for the participants, respectively.

Perception toward COVID-19 vaccine acceptance and administration: From the total of 651 participants who responded to this question, 119 (18.3%) received at least the first dose of COVID-19 vaccine up to the end of the survey period (27th June 2021). However, majority of the respondents (70.5%) showed the willingness to receive the COVID-19 vaccines and administrate them in their family members, but 15.7% of them were reluctant about that (Figure 1). Meanwhile, 65.4% of the participants showed the willingness to

take the COVID-19 vaccine if it became freely available, but only 57% were ready to buy and take the vaccine after its availability. More than three-fourths of the respondents (75.5%) believed that receiving the vaccine has a vital role in people's protection against COVID-19 and 68.8% of them agreed that vaccinated individuals will become resistant to infection. Although 46.5% of the participants thought that COVID-19 vaccines are safe and 43.3% trusted on available vaccines, about half of the participants (49.2%) have some concerns about COVID-19 safety and related side effects (Table 2 & Table 3).
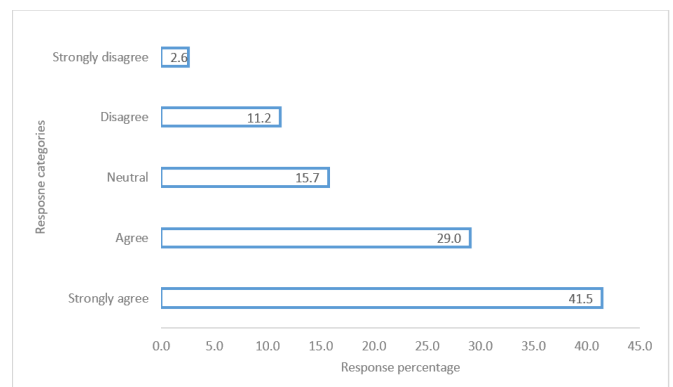
Figure 1. The attitude of Kabul city's residents for COVID-19 vaccine acceptance when it becomes available, June 2021

Correlation and logistic regression results: There was a strong correlation between vaccine attitude and vaccine acceptance scales (Spearman ρ=0.528, p<0.001) of the study participants. Based on chi-square test results, 23 variables had statistically significant association with COVID-19 vaccine acceptance (yes/no; p<0.05; data now shown). Binary logistic regression was performed to assess the impact of specific factors on the likelihood of COVID-19 vaccine acceptance among the participants. The final model contained six independent variables. Hosmer and Lemeshow test results indicated that the model was good fit (chi-square=

4.2, *p*=0.651). The full model containing all predictors was also statistically significant, (6, N = 545) = 272.5, *p*<0.001 (Omnibus test for model coefficients), indicating that the model was able to distinguish between those who will accept and those who will not accept the COVID-19 vaccine. The model as a whole explained between 39.3% (Cox and Snell R square) and 67.7% (Nagelkerke R squared) of the variance in participant's willingness to

receive the COVID-19 vaccine, and correctly classified 93.3% of respondent's ideas (Table 4). As shown in Table 4, all of the six independent variables made a unique statistically significant contribution to the model.

Table 2. Descriptive statistics of vaccine attitude and COVID-19 vaccine acceptance scale's items among Kabul city's residents, June 2021

The five-point Likert scale (5 = strongly agree, 4 = agree, 3 = neutral, 2 = disagree, 1 = strongly disagree) questions	Mean	Median	Standard Deviation
Vaccination is necessary for diseases prevention	1.7	1.0	0.95
All vaccines are safe	2.4	2.0	1.1
All freely available vaccine have poor quality	3.1	3.0	1.1
I trust on the information and suggestion of the MoPH about COVID-19 vaccines	2.0	2.0	1.0
Vaccination is one of the most effective measures against COVID-19 infection	1.9	2.0	0.97
COVID-19 vaccines are safe	2.6	3.0	0.92
I trust on all those COVID-19 vaccines that are available in Afghanistan	2.8	3.0	1.2
When COVID-19 vaccine becomes available, I will vaccinate myself and my family members	2.0	2.0	1.1
Due to the side effects of COVID-19 vaccines, I will not vaccinate myself and my family members	2.6	3.0	1.3
If COVID-19 vaccine becomes freely available, I will vaccinate myself and my family members	2.2	2.0	1.2
Even if COVID-19 vaccines are sold, I will buy them and vaccinate myself and my family members	2.4	2.0	1.2
The vaccinated individuals become resistant to COVID-19 infection	2.2	2.0	0.98

Table 3. The attitude toward COVID-19 vaccination among Kabul city's residents based on the three categories of the responses, June 2021

Questions	Strongly agree / agree		Neutral		Disagree/ strongly disagree	
	n	(%)	n	(%)	n	(%)
When COVID-19 vaccine becomes available, I will vaccinate myself and my family members	466	70.5	104	15.7	91	13.8
Due to the side effects of COVID-19 vaccines, I will not vaccinate myself and my family members	325	49.2	164	24.8	171	25.9
If COVID-19 vaccine become freely available, I will vaccinate myself and my family members	429	65.4	114	17.4	113	17.2
Even if COVID-19 vaccines are sold I will buy them and vaccinate myself and my family members	381	57.5	139	21.0	142	21.5

Table 4. Binary logistic regression model results of predictor variables for the acceptance of COVID-19 vaccines in Kabul city population in June 2021

Variable	B	Standard error	Wald	df	p-value	OR	95% CI for OR
Positive COVID-19 cases among family members and friends	0.978	0.425	5.299	1	0.021	2.66	1.16-6.11
Presence of fears and concerns during COVID-19 pandemic	1.488	0.480	9.628	1	0.002	4.43	1.73-11.34
Trust on COVID-19 available vaccines in Afghanistan			13.833	2	0.001		
Neutral (ref)*							
Strongly agree/agree	-0.314	0.575	0.298	1	0.585	.73	0.24-2.26
Disagree/strongly disagree	-1.586	0.497	10.183	1	0.001	.21	0.08-0.54
Trust on MoPH recommendations about COVID-19 vaccines			15.329	2	0.000		
Neutral (ref)							
Strongly agree/agree	0.910	0.484	3.536	1	0.060	2.48	0.96-6.41
Disagree/strongly disagree	-1.319	0.644	4.201	1	0.040	0.27	0.08-0.94
Receiving the vaccine has an important and vital role in people's protection against COVID-19			31.988	2	0.000		
Neutral (ref)							
Strongly agree/agree	1.676	0.412	16.521	1	0.000	5.34	2.38-11.99
Disagree/strongly disagree	-1.776	0.751	5.594	1	0.018	0.17	0.04-0.74
The vaccinated individuals become resistant to COVID-19 infection			13.661	2	0.001		
Neutral (ref)							
Strongly agree/agree	1.464	0.427	11.739	1	0.001	4.32	1.87-9.99
Disagree/strongly disagree	-0.105	0.579	0.033	1	0.856	0.90	0.29-2.80
Constant	-1.59	0.718	4.918	1	0.027	0.20	

    *Assigned as reference category.

Positive COVID-19 cases among family members and friends were a good predictor of vaccine acceptance (OR: 2.7; 95%CI: 1.2, 6.1; $p<0.05$). Those who had positive cases in their family members and friends were 2.7 times more likely to get the COVID-19 vaccine than those who did not, after controlling for other variables in the model. During the COVID-19 pandemic, fears (yes/no) were a statistically significant factor in vaccine acceptance (OR: 4.4; 95%CI: 1.7, 11.3; $p<0.05$). So, when other variables in the model are controlled for, people who had fears during COVID-19 were 4.4 times more likely to take the vaccine than those who had no fears at all.

Participant's trust in the safety of COVID-19 available vaccines was a good predictor of vaccine acceptance ($p<0.05$), and those who did not trust on COVID-19 available vaccines were less likely to accept the vaccines (OR: 0.205; 95%CI: 0.07, 0.54; $p<0.05$). Furthermore, participants who did not believe/trust MoPH advice on COVID-19 vaccine safety and efficacy were less likely to receive the vaccines (OR: 0.3; 95%CI: 0.07, 0.94; $p<0.05$).

The participants who believed that vaccine played an important and vital role in protecting people against COVID-19 was a statistically significant variable ($p<0.001$). The respondents who held such beliefs were 5.3 times more likely to receive the vaccine than those who were neutral about such beliefs (95%CI: 2.38, 11.98; $p<0.001$). On the other hand, the participants who did not believe on the vital role of COVID-19 vaccine in people's protection, were less likely to take the vaccine (OR: 0.17; 95%CI: 0.04, 0.74; $p<0.05$). Meanwhile, those who believed that, vaccinated individuals become resistant to COVID-19 infection were 4.3 times more likely to take the vaccines (95%CI: 1.9, 9.9; $p<0.05$), than those who did not believe (Table 4).

In the second logistic regression model, where the effects of predictors were examined based on the COVID-19 vaccines acceptant and neutral participants (data details not shown), the odds of COVID-19 vaccines acceptance among those participants that have administered routine vaccines to themselves and their family members was 2.4 times more than the neutral group (95%CI: 1.4, 4.5; $p<0.005$). Identical to the previous model, the participant's trust on the MoPH recommendations about COVID-19 vaccines increased the likelihood of vaccine acceptance among the participants by 6.9 times (95%CI: 3.4, 13.9; $p<0.001$), controlling for the other variables effects in the model. On the other hand, the participants believe that "most of the freely available vaccines have low quality" decrease the odds of COVID-19 vaccine acceptance by almost four times than the neutral group (OR: 3.8; 95%CI: 1.6, 9.3; p<0.005).

DISCUSSION

The negative attitude and refusal to receive the COVID-19 vaccines are major barriers to control the ongoing SARS-CoV-2 pandemic.[26] In the present study, nearly one-third of the participants (29.5%) did not show the willingness to take the COVID-19 vaccines and this hesitation increased (43%) when vaccines will not be distributed free of charge. The findings of this study were in agreement with a global survey of COVID-19 vaccine acceptance, where Lazarus et al.[27] found that on average only 71.0% of the people surveyed in 19 countries showed the willingness to take the COVID-19 vaccines, in which the highest acceptance rate was in China (90%) and the lowest was in Russia (55%). Meanwhile, Nemate et al.[28] conducted an online survey in Dec 2020 and found that 63% of the respondents showed willingness to take the COVID-19 vaccines after their availability. In addition, based on a survey conducted in Bangladesh, a country with an almost similar demographic profile to Afghanistan, only 68% of the participants were willing to take the COVID-19 vaccine.[29] Meanwhile, based on the Pew Research Center estimates, 39% of Americans may not get a vaccine against COVID-19.[10] Since financial satisfaction is an important determinant in vaccine acceptance worldwide;[30] increment of unwillingness to take the COVID-19 vaccine when it is not distributed with no cost reasonably could be considered a barrier factor, because poverty is prevalent among Afghanistan people, and 81.5% of the study participants in this study had <$300 income per month and gross national income per capita in Afghanistan is US$680,[31,32] that might become lower with the current political situation in the country. Paul

et al.[26] reported that lower annual income is one of the key constraining factors in COVID-19 vaccine uncertainty and refusal. Although vaccine refusal and hesitancy is common in other vaccination campaigns including Polio in Afghanistan,[21-24] with the infectious characteristics of SARS-CoV-2 and its related morbidity, mortality and socio-economic burden,[33] the results of such refusal would be devastating for Afghanistan, and its consequence will affect the whole world. In addition, it has been indicated that COVID-19 vaccine hesitancy is a common but varying phenomenon among people across the globe, which is considered as a stumbling block against achieving the herd immunity in this ongoing pandemic.[30]

Although the psychological conditions of Afghanistan people due to nearly five decades of war, are not normal,[34] but still MoPH and other health service providers (medical doctors and pharmacists) were the main trusted source of information about COVID-19 vaccine safety and efficacy for the participants. Mistrust on MoPH advices and recommendations about COVID-19 vaccines was a key predictor for COVID-19 vaccine unacceptance, indicating that subjects who did not believe on MoPH suggestions on COVID-19 vaccines were less likely to get the vaccine than those who accepted such recommendations and neutral group. It has been approved that poor communication with people, misinformation and mistrust are considered the key drivers in vaccine hesitancy worldwide.[10] El-Elimat et al.[35] reported that untrusted Jordanians on any source of information regarding COVID-19 vaccines were less likely to take the vaccines (OR = 0.27, 95CI% = 0.18, 0.40, p<0.001) than the trusted group. As the same as this study results, they also found that healthcare providers were the most trusted sources of information for their study participants. Almost the same results were also reported by Cordina et al.[9] which indicated that trust on the advices of health professionals regarding the effectiveness of the COVID-19 vaccines will increase the likelihood of vaccine uptake by the people.

The odds of COVID-19 acceptance were 5.5 times higher among subjects who believed that receiving the vaccine played an important and vital role in people's protection against COVID-19 than among those who did not agree or were neutral about the concept. Meanwhile, respondents who believed that being vaccinated made them resistant to COVID-19 infection, were more likely to receive a COVID-19 vaccine than unbelievers and neutral participants. The findings of this study agreed with those of Cordina et al.[8] who discovered a strong correlation between such beliefs and COVID-19 vaccine acceptance (r=0.79, p<0.001).

Although the study's findings revealed many important aspects of COVID-19 vaccine acceptance and refusal among Kabul city's residents, the study had some limitations. The main limitation of the study was non-random convenience sampling of districts and participants. In addition, disagreements among some people to participate in the interview, cultural constraints during interviews with females, security issues during

the survey period, and the researchers' limited financial resources were the other important factors in this regard. These limitations may have significant impact on the generalization of the study results to Kabul city residents.

CONCLUSION

The findings of this study indicated a high level of skepticism about COVID-19 vaccine acceptance, particularly if it is not distributed free of charge to the entire population. This could have a significant impact on the herd immunity concept in COVID-19 battle in Afghanistan. This survey was conducted in the capital of Afghanistan, where most of the people have good access to the public health services and are fully covered by public Medias. Misconception about vaccines, infection transmission and prevention, and vaccine refusal might be much higher in the country's deprived rural areas. To counteract incorrect and misleading propaganda about vaccination and immunization with such vaccines, public awareness and communication about COVID-19 infection and vaccine safety and protection must be increased in general.

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ORIGINAL ARTICLE /ORİJİNAL MAKALE

The relationship of e-health literacy levels of university students studying other than health sciences with health literacy, digital literacy, media and television literacy

Sağlık bilimleri alanı dışında okuyan üniversite öğrencilerinin e-sağlık okuryazarlığı düzeylerinin sağlık okuryazarlığı, dijital okuryazarlık, medya ve televizyon okuryazarlığı ile ilişkisi

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Abstract

Objectives: Electronic health literacy plays an increasing role for people to protect and promote their health today. To increase the level of eHealth literacy of individuals helps to increase their capacity to meet their health needs. The aim of this study was to define the level of eHealth literacy of university students studying other than health science and its correlation with health literacy, digital literacy, media and television literacy, and screen time.

Methods: This cross-sectional study was carried out by 476 trained undergraduate students in Bartin University, Turkey. In this study, a questionnaire, Health Literacy Scale, E-health Literacy Scale in Adolescents, Digital Literacy Scale, and Scale of Media and Television Literacy Levels were used as data collection tools.

Results: The eHEALS score did not significantly differ according to sociodemographic characteristics of students. Multiple linear regression analysis found that digital literacy, the addiction of media and television, literacy of media and television, and health literacy significantly affect electronic health literacy.

Conclusion: To increase students' digital and media literacy will provide a significant contribution to improve their eHealth literacy skills to be healthier adults and older adults in their future life. Additionally, it is recommended that curriculum should include courses that develop students' digital literacy levels.

Keywords: Health Literacy, Digital Technology, Mass Media, Television, Screen Time

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Öz

Amaç: Elektronik sağlık okuryazarlığı, günümüzde insanların sağlıklarını korumaları ve geliştirmeleri için artan bir rol oynamaktadır. Bireylerin E-Sağlık okuryazarlık düzeylerini artırmak, sağlık ihtiyaçlarını karşılama kapasitelerini artırmalarına yardımcı olur. Bu çalışmanın amacı, sağlık bilimleri alanı dışındaki üniversite öğrencilerinin E-Sağlık okuryazarlık düzeylerinin sağlık okuryazarlığı, dijital okuryazarlık, medya ve televizyon okuryazarlığı ve ekran süresi ile ilişkisini belirlemektir.

Yöntem: Bu kesitsel çalışma, Türkiye'de Bartın Üniversitesi'nde eğitim gören 476 lisans öğrencisi ile gerçekleştirilmiştir. Veri toplama aracı olarak anket formu, Sağlık Okuryazarlığı Ölçeği, Ergenlerde E-Sağlık Okuryazarlığı Ölçeği, Dijital Okuryazarlık Ölçeği ve Medya ve Televizyon Okuryazarlık Düzeyleri Ölçeği kullanılmıştır.

Bulgular: Öğrencilerin sosyodemografik özelliklerine göre E-Sağlık Okuryazarlık puanları anlamlı farklılık göstermemiştir. Çoklu doğrusal regresyon analizine göre dijital okuryazarlık, medya ve televizyon bağımlılığı, medya ve televizyon okuryazarlığı ile sağlık okuryazarlığının E- sağlık okuryazarlığını önemli ölçüde etkilediğini görülmüştür.

Sonuç: Öğrencilerin dijital ve medya okuryazarlığını artırmak, E-Sağlık okuryazarlığı becerilerinin ileriki yaşamlarında daha sağlıklı yetişkinler olmalarına önemli katkı sağlayacağı öngörülmektedir. Bu bağlamda, müfredatta öğrencilerin dijital okuryazarlık düzeylerini geliştiren derslerin yer alması önerilmektedir.

Anahtar Kelimeler: Sağlık Okuryazarlığı, Dijital Teknoloji, Medya, Televizyon, Ekran Süresi

INTRODUCTION

The concept of health literacy is an important issue of public health in terms of taking responsibility for their own health.[1, 2] Health literacy, is defined as an ability of people to make the right decisions about their own health in their daily lives such as at home, at the workplace, in a health care center is closely related to individual factors such as financial status, age, social status, education, and age.[3] Additionally, the rapid development in technology, information, and communication technologies (ICT) in recent centuries has created an important link between the health literacy level of society and the content of health information spread through technological devices e.g., television, radio, personal computers (PS), tablets or mobile phones with internet access.[2, 4]

Some studies show that the preference for reading from electronic sources is gradually increasing versus printed versions.[5] Although university students generally prefer to use printed textbooks, they tend to use electronic devices for their personal searching.[6] Nowadays adolescents, they generally are defined as 'a digital generation' [7] often prefer to read almost all information from the internet or use it as an entertainment tool and so they spend so much time on their electronic

devices.[8, 9] According to current literature, there are weak evidence for health literacy and screen time among young adults aged between 18 and 25.[10, 11]

Along with the increasing tendency to online reading sources, screen time[9] the utilization of using digital technologies,[12, 13] and literature preference of individuals have begun to be considered among the factors affecting health literacy.[14] Additionally, mass media e.g., television and radio have a considerable role in providing health-related information and affecting the health behavior of the public.[15] Therefore, media literacy, which is defined as 'the ability to access, analyze, evaluate and communicate all written or non-written messages[4, 16] also seems as an important factor affecting the health literacy[17] and eHealth literacy.[15]

The term health literacy seems associated with electronic health (eHealth) literacy, but there is not a defined relationship between them.[18] Health literacy is mainly related to individuals' abilities such as accessing, understanding, and using information to maintain and improve their health.[19] On the other hand, eHealth literacy is the ability to search, find, understand, and assessing of information regarding health from e-sources to be used to point out and find solutions for individuals' health problems.[20] eHealth literacy has an interplay role between computer literacy, media literacy, information literacy, traditional literacy, scientific literacy, and health literacy.[21] A small number of studies searched the association of eHealth literacy with health literacy.[19]

eHealth literacy has an increasing role for people to protect and promote their health

and for chronically ill people to involve in their treatment decision through easy access to a vast number of health information from e-sources.[22] Having a high level of eHealth literacy helps individuals to improve their skills to meet their health needs. It is necessary for people to know which factors affect their health and how to manage these factors to take responsibility for their own health.[1] eHealth provides people easy access to health information through computer-mediated platforms e.g., forums, and telemedicine applications regardless of their geographic location. These platforms bring together people who have similar health problems or curiosity about maintaining and promoting health while searching for health information and reading scientific reports. Thus, people also have an opportunity to learn from each other through these platforms.[23]

Most of the studies aimed at defining the eHealth literacy level and its associations were conducted with or predominantly included students in health sciences such as nursing, pharmacy, or medical school.[24-27] However, the relationship of eHealth literacy with health literacy, digital literacy, and media literacy in undergraduate students from the fields other than health sciences is not well documented. Therefore, the aim of this study was to explore the eHealth literacy level of university students from the fields except for health sciences and its correlation with health literacy, digital literacy, and media literacy. The research questions are as follows:

What is the level of eHealth literacy, health literacy, digital literacy, and media literacy in the undergraduate students from the fields except for health sciences?

Is there any relationship of e-Health literacy levels of university students studying other than health sciences with health literacy, digital literacy, media and television literacy?

METHODS

Design, Data Collection and Sample

This cross-sectional study was carried out between 15 September and 31 October 2019 at Bartin University in Turkey. The universe was comprised of 1.318 students from Faculty of Sciences, Faculty of Engineering, Architecture and Design, Faculty of Economics and Administrative Sciences, and Faculty of Education. The sample size was calculated as 442 taking a 5% margin of error with a 99% confidence level. The sample size was determined as 508 (442 + 15% of 442 = 508) taking into account missing data. A stratified sampling method was performed based on the number of students in each faculty. Students were randomly invited to the study until reached the targeted sample size. Finally, 32 participants were excluded because of attending a course related to health, and 476 samples were included in the analysis. The exclusion criteria were the following: (i) attending any course regarding health, (ii) not volunteering to participate.

Measurements

In this study, multiple tools including a questionnaire, Health Literacy Scale, E-health Literacy Scale (e-HEALS) in Adolescent, Digital Literacy Scale, and Scale of Media and Television Literacy Levels were used. *The questionnaire* comprised questions on sociodemographic data that included information about the participants' age, gender, year of undergraduate education,

name of faculty, and screen time on weekdays and weekends. Screen time includes the following activities: watching TV/ movies, internet searching with computer, tablets, or mobile phones without the purpose of doing homework, and electronic games.[28]

E-health Literacy Scale (eHEALS) in Adolescents: eHEALS was used to assess students' health literacy levels by using information technology. The scale was developed by Norman and Skinner[20] and validated by Coşkun and Bebiş in the Turkish context in the 14-21 age range with a Cronbach's alpha score of .78.[29] This 5-point Likert type scale consists of 8 items and has choices ranging from 'strongly agree' to 'strongly disagree'. The total score ranges from 8 to 40, with a high score indicating a high level of e-health literacy. Cronbach's alpha coefficient was .83 in the internal consistency analysis in the present study.

Health Literacy Instrument: The health literacy level of the participants was assessed by Turkish Form of Health Literacy Scale which was developed by Sørensen et al. in the framework of Health Literacy Survey in Europe (HLS-E.U)[1] and validated by Aras and Bayik Temel in the Turkish context with a Cronbach's alpha score of .92[30]. This 5-point Likert-type scale consists of 25 items weighted on a scale of 1 (unable) -5 (without any difficulty and contains four subscales of access, understanding, appraisal, and application of health information. An overall score ranges from 25 to 125, with the indicating *least health literacy score* and *maximal health literacy score* respectively. Cronbach's alpha coefficient was .90 in the internal consistency analysis in the present study.

Digital Literacy Scale: Digital Literacy Scale (DLS) was developed by Ng[31] and validated by Üstündağ et al.[32] in the Turkish context aged 21.7 years or older with a Cronbach's alpha score of 0.86. This 5-point Likert type scale has 10 items and respond options ranging from 'strongly disagree' to 'strongly agree'. The increase in the score obtained from the scale, ranging between 5 and 50 points in total, means a high-level digital literacy level. Cronbach's alpha coefficient was 0.88 in the internal consistency analysis in the present study.

Scale of Media and Television Literacy Levels: This scale was developed by Korkmaz and Yeşil with a sample group of university students. The scale, consisting of 18 questions in total, is a 5-point Likert type with response options ranging from 'never' to 'always'. The first 13 questions measure *literacy* with a Cronbach's alpha score of 0.91 and the last 5 questions measure *addiction* with a Cronbach's alpha score of 0.85. Total score of each subscale is converted into standard scores ranging from 20 to 100. The total score is range from 5 to 65 for literacy, and from 5 to 25 for addiction. The high score indicates high-level literacy for the *literacy subscale*, but low-level addiction for the addiction subscale. These score ranges are evaluated as the opposite of the addiction subscale. Cronbach's alpha coefficient was 0.74 for literacy subscale, and 0.93 for addiction subscale in the internal consistency analysis in the present study.

Statistical Analysis

Frequency, percentage, mean, and standard deviation (SD) were used for reporting demographic data of the participants, independent samples t-test, ANOVA, and Pearson correlation were used for normally distributed data, Mann-Whitney-U, Kruskal-Wallis, and Spearman's Rank-Order Correlation were used for non-normality. the normality of distribution of the student data was evaluated using Skewness and Kurtosis values. The multiple linear regression analyses were performed to define variables that were associated with eHEALS. Variables found to have a significant correlation with eHEALS were then included in a multiple linear regression model with stepwise selection (entry criterion of probability $p \leq 0.05$, exit criterion of probability $p > 0.1$). Collinearity statistics were assessed by the maximum level of Variance inflation factors (VIF) was 4 for the collinearity statistics.[33] All analyses were conducted using SPSS the 25.0 version. The significance level was accepted as $p < 0.05$. The study results were reported according to STROBE Statement (STROBE checklist: cross-sectional studies).

Ethical Considerations

Ethical approval (decree code: 2019/057) was obtained for this research from ethics committee of Bartın University. All participants were informed about aim of the study and invited them to attend the study obtaining their verbal informed consent. To ensure the confidentiality of participant information, paper-based questionnaires were de-identified by allocating a code number.

RESULTS

As is shown in Table 1, of the 476 participants, 52.5% were female, 34.7% studied at Faculty of Education, 42.9% were in their first years, and 70.6% were aged 19-21 years. Additionally, it is not in Table 1, the mean age

of the students was 20.13 (SD= 2.09, range 17 to 37). The eHEALS score did not significantly differ according to the sociodemographic characteristics of students, whereas MTLL (Literacy) significantly differ according to all variables studied. On the other hand, a significant difference in screen time (weekdays and weekends) and DLS score were observed according to gender and Faculty registered, HLS score significantly differ according to gender and term. MTLL (Addiction) only significantly differ according to the age group. Detailed information about other variables is also illustrated in Table 1.

Table 1: The mean scores of eHEALS, DLS, MTLL, HLI, and screen time according to sociodemographic characteristics of students.

Characteristics		n	% Mean (±SD)	Screen time in weekdays (hour) Mean (±SD)	Screen time at the weekend (hour) Mean (±SD)	eHEALS Mean (±SD)	DLS Mean (±SD)	MTLL (Addiction) Mean (±SD)	MTLL (Literacy) Mean (±SD)	HLI
Gender	Male	226	47.5	3.4 (2.0)	3.6 (2.1)	28.5 (6.2)	37.4 (7.4)	10.3 (5.8)	4.1 (0.8)	4.2 (0.7)
	Female	250	52.5	2.7 (1.9)	3.1 (2.1)	29.2 (5.7)	34.8 (5.9)	9.7 (5.0)	4.1 (0.7)	4.5 (0.6)
t-test/ p				2.761/ 0.01	3.775/ <0.001	1.293/ 0.20	4.146/ <0.001	1.175/ 0.24	24451.000*/ 0.06	34387.000*/ <0.001
Faculty	Faculty of Sciences	51	10.7	3.1 (1.8)	3.7 (2.1)	29.4 (6.2)	36.8 (5.8)	10.4 (5.8)	4.1 (0.6)	4.1 (0.6)
	Faculty of Engineering, Architecture and Design	126	26.5	3.4 (2.1	3.7 (2.1)	28.7 (6.1)	36.9 (6.4)	9.1 (4.7)	4.2 (0.7)	4.4 (0.6)
	Faculty of Education	165	34.7	2.6 (1.9)	2.9 (2.1)	28.8 (5.4)	34.3 (6.8)	10.6 (5.6)	4.0 (0.8)	4.3 (0.7)
	Faculty of Economics and Administrative Sciences	134	28.2	3.1 (2.0)	3.3 (2.0)	29.1 (6.9)	36.8 (7.0)	9.6 (5.4)	4.0 (0.7)	4.3 (0.6)
F/ p				3.453/ 0.02	4.614/ <0.001	.203/ 0.89	4.977/ <0.001	2.306/ 0.08	11.941**/ 0.01	4.299**/ 0.23
Term	First year	204	42.9	2.9 (1.8)	3.4 (2.0)	28.7 (6.3)	35.4 (7.0)	10.9 (5.8)	4.0 (0.7)	4.3 (0.7)
	Second year	174	36.9	3.1 (2.1)	3.2 (2.2)	29.2 (6.0)	36.3 (6.6)	9.2 (5.1)	4.2 (0.7)	4.4 (0.6)
	Third year	39	8.2	3.2 (1.2)	3.1 (1.9)	29.6 (5.3)	35.1 (6.0)	9.7 (4.2)	4.0 (0.8)	4.3 (0.5)
	Fourth year	59	12.4	3.3 (2.2)	3.6 (2.2)	28.2 (4.9)	37.4 (6.7)	8.7 (4.7)	4.0 (0.6)	4.3 (0.6)
F/ p				0.770/ 0.51	0.685/ 0.56	0.722/ 0.54	1.714/ 0.16	4.749/ <0.001	10.657**/ 0.01	15.802**/ <0.001
Age groups	≤18	64	13.4	2.8 (1.8)	3.5 (2.1)	28.4 (6.4)	34.9 (6.2)	12.2 (6.1)	3.9 (0.7)	4.3 (0.6)
	19-21	336	70.6	3.1 (2.0)	3.3 (2.1)	28.9 (5.9)	36.0 (6.7)	9.5 (5.1)	4.1 (0.7)	4.3 (0.6)
	≥22	76	16.0	2.9 (2.3)	3.0 (2.3)	29.2 (5.8)	36.7 (7.4)	9.9 (5.4)	3.9 (0.9)	4.2 (0.7)
F/ p				0.381/ 0.68	1.086/ 0.34	0.380/.068	1.244/0.29	7.053/<0.001	6.621**/0.04	4.347**/0.11

*Mann Whitney U; **Kruskal-Vallis; Abbreviations: eHEALS: E-health Literacy Scale. DLS: Digital Literacy Scale. MTLL: Scale of Media and Television Literacy Levels. HLS: Health Literacy Scale.

Correlations for all the variables are described in Table 2. The mean eHEALS score was 28.9 (SD= ±6.0, range 8 to 40), DLS was 35 (SD= ±6.8, range 10 to 50), MTLL (Literacy) was 50.9 (SD= ±7.7, range 13 to 65), MTLL (Addiction) was 9.9 (SD= ±5.4, range 5 to 25), HLI was 107.8 (SD= ±14.6, range 25 to 125), screen time (hour) in weekdays was 3.0 (SD= ±1.2, range 0 to 7), and screen time at the weekend (hour) was 3.3 (SD= ±2.1, range 0 to 7). DLS, MTLL (Literacy), and HLS were moderately correlated with eHEALS with .464 (95% CI raging .34 to .48), .266 (95% CI ranging from .13 to .25), and .348 (95% CI ranging from .06 to .13) respectively. Additionally, MTLL (Literacy) has moderate correlation with DLS (r = 0.347, 95% CI ranging from .22 to .35) and HLS (r = 0.353, 95% CI raging .13 to .53). Furthermore, there was a strong correlation between screen time in the weekdays and at the weekend (r = 0.704, 95% CI ranging from .60 to .72). In addition, significant but weak correlation existed in HLS with screen time in weekdays (r = 0.107, 95% CI ranging from .02 to .00), MTLL (Addiction) (r = 0.291, 95% CI raging .06 to .14), and MTLL (Literacy) (r = 0.230, 95% CI ranging from .11 to .04). Finally, it was observed a weak correlation between MTLL (Literacy) and MTLL (Addiction) (r = 0.182, 95% CI ranging from .10 to .01).

Multiple analyses found that DLS, MTLL (Addiction), MTLL (Literacy), and HLI scores significantly affect eHEALS scores. After multiple linear regression analyses, DLS remained the strongest predictor of high eHEALS score, followed by MTLL (Addiction), MTLL (Literacy), and HLS. A multivariate model including these three indicators yielded an adjusted R^2 = 0.25% (p=0.00) for explained variance in e-health literacy (Table 3).

Table 2: Means, standard deviations and Pearson correlations with confidence interval among eHEALS, DLS, MTLL, HLI scores, and screen time

Variables	M	SD	1	2	3	4	5	6
1. Screen time in weekdays	3.0	1.2						
2. Screen time at the weekend	3.3	2.1	0.704** [0.60-0.72]					
3. eHEALS	28.9	5.9	0.049 [-0.01-0.05]	0.040 [-0.02-0.05]				
4. DLS	36.0	6.7	0.024 [-0.02-.03]	0.061 [-0.01-0.05]	0.464** [0.34-0.48]			
5. MTLL (Addiction)	51.1	8.7	0.059 [-0.01-0.06]	0.056 [-0.01-0.06]	0.081 [-0.01-0.19]	-0.014 [-0.13-0.10]		
6. MTLL (Literacy)a	50.9	7.7	0.042 [-0.01-0.03]	0.045 [-0.01-.03]	0.266** [0.13-0.25]	0.374** [0.22-0.35]	-0.182** [-0.10-0.01]	
7. HLSa	10.8	14.6	-0.107* [-0.02-0.00]	0.070 [-0.02-0.01]	0.348** [0.06-0.13]	0.291** [0.06-0.14]	-0.230** [-0.11--0.04]	0.353** [0.13-0.23]

a=Spearman's rho; **Correlation is significant at the 0.01 level (2-tailed); *Correlation is significant at the 0.05 level (2-tailed); Abbreviations: eHEALS: E-health Literacy Scale. DLS: Digital Literacy Scale. MTLL: Scale of Media and Television Literacy Levels. HLS: Health Literacy Scale.

Table 3: Multiple linear regression analysis for the association between eHEALS, DLS, MTLL, and HLI scores

Variable	β (%95 Cl)	p value	Adjusted R
Crude	5.839 (1.56- 10.12)	0.01	0.247
DLS	0.351 (0.28-0.43)	<0.001	
HLS	0.053 (0.02-0.09)	<0.001	
MTLL (Addiction)	0.135 (0.05-0.22)	<0.001	
MTLL (Literacy)	0.065 (0.01-0.12)	0.03	

Abbreviations: eHEALS: E-health Literacy Scale. DLS: Digital Literacy Scale. MTLL: Scale of Media and Television Literacy Levels. HLS: Health Literacy Scale.

DISCUSSION

Using a random sample of 476 university students studying other than health field, the level of eHealth literacy and its association with health literacy, digital literacy, media and television literacy, and screen time were calculated. It was found that the level of eHealth literacy did not differ according to the sociodemographic characteristics of students and screen time. This study sample consisted of students an average of 20 years old. Recent studies show that age did not a predictor of eHealth literacy.[19, 34] To support these findings, the total score of eHealth literacy in current study was consistent with studies conducting adult population (18 years of age and older) in Italy[21] and Kuwait.[34] However, a result of an online survey of the pharmacy students was slightly higher than the total score of eHealth literacy of the study sample.[26]

In this study, eHealth literacy did not differ according to gender. A study conducted in Israel with a 2.201 adult population[35] was consistent with the study findings. Similarly, three other studies did not find any difference

between female and male for the level of eHealth literacy in Italy[21], in Lanai Island[36], and in East Carolina[37]. However, there are inconsistent results regarding variation in the level of eHealth literacy between females and males. On the one hand, there is evidence that males had a lower eHealth literacy levels than females[34], on the other hand, another study found that males were more literate regarding eHealth than females[27]. Furthermore, it was not found any differences between the level of eHealth literacy and the enrolment year of the students. But some other studies conducting with pharmacy and nursing students reported that a year increase in student enrollment year scaled up the level of eHealth literacy of students.[26, 27]

According to this study findings, screen time spent on internet searching for entertainment or personal inquiry, watching TV/ movies, and electronic games did not associate with eHealth literacy. Alhuwail and Abdulsalam found that individuals spending time on the internet at least 5 hours a day had a higher level of eHealth literacy compared with those spending less than 3 hours.[34] People frequently spend their time on internet searching for various content for any reason e.g., personal inquiry, health information, or different type of health information have a high level of eHealth literacy.[38] Similarly, people searching for information on various types of content besides health information on the internet had high-level eHealth literacy.[35]

In this study, the total score of eHEALS was moderately correlated with digital literacy, media and television literacy, and health literacy. Additionally, the strongest predictor of eHealth literacy was digital literacy, followed by media and television addiction,

media and television literacy, and health literacy. According to Sharma et al.'s study, nursing students perceived themselves as having good internet skills and a high level of eHealth literacy.[39] Similarly, another study shows that pharmacy students who were mobile health app users had higher eHEALS scores compared with non-users.[26] Frequent using the internet is closely related to a high-level of digital literacy and associatively high level of digital literacy is closely related to eHealth literacy.[35] In today's world, ordinary people, not solely university students or academics, easily have access to high-quality health information thanks to open access policies. Therefore, the digital literacy level of people is emphasized as a processor to increase individuals' health literacy level.[40]

It was expected that media literacy and health literacy had a significant association with eHealth literacy because Norman and Skinner's lily model includes both literacies.[20] Majority of health-related messages and information are transferred to people every day through the channels of television and radio. Also, it was proven that increasing media literacy was an effective intervention to improve the healthy behaviors of young adults.[15] However, Neter and Brainin reported that the level of eHealth literacy did not differ according to obtaining health information from television or radio.[35] Additionally, Del Guidice et al. found a weak correlation between eHealth literacy and health literacy similar to this study findings.[21]

Strengths and Limitations

The strength of this research is revealed the association between eHealth literacy and several variables reflecting participants'

actual performance. The findings of this study should be discussed considering some limitations of this study. Firstly, a stratified sampling procedure was used based solely on the number of students in each faculty without considering the students' class levels. Secondly, the e-health Literacy Scale was developed and validated in the age category of 14 to 21 years old. However, this study sample included students aged 22 years old and over (16%). Finally, present study was conducted in one University and does not represent the characteristic of the whole university students studying other than health fields in Turkey. Thus, the results of this study can be generalized to a limited extent.

CONCLUSION

This study reports the association between the level of eHealth literacy of university students not studying in the health field and several related factors including health literacy, digital literacy, media and television literacy, screen time, and sociodemographic characteristics of students. The findings show that the eHealth literacy was moderately correlated with digital literacy, media and television literacy and health literacy, but not differ according to sociodemographic characteristics of students. Also, the strongest predictor of eHealth literacy was digital literacy, followed by media and television addiction, media and television literacy, health literacy. This study results suggest that to increase students' digital and media literacy might provide a significant contribution to improve their eHealth literacy skills to be healthier adults and older adults in their future life. Additionally, it is recommended that curriculum should include courses that develop students' digital literacy levels.

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TURKISH JOURNAL OF PUBLIC HEALTH

ORIGINAL ARTICLE/ORİJİNAL MAKALE

Characteristics of COVID-19 patients and risk factors of mortality in the early times of pandemic, Herat-Afghanistan

Herat-Afganistan'da pandeminin erken dönemlerinde COVID-19 hastalarının özellikleri ve mortalite risk faktörleri

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Abstract

Objective: Coronaviruses are a large family of viruses that cause different types of diseases. This study aims to evaluate the risk factors for mortality based on comorbidity and socio-demographic characteristics among COVID-19 patients.

Methods: This cross-sectional study conducted in Herat, Afghanistan, from February 24 to July 5, 2020, used data provided by the public health department, including socio-demographics, symptoms, comorbidities, hospitalization, contact history, and COVID-19 test type. The Chi-square test was used to observe differences between categorical variables. In bivariate analysis, all independent variables with a significant p-value were put into the model. Odds ratios and 95% confidence intervals were calculated, and a p-value less than 0.05 was considered statistically significant.

Results: The study analyzed 11,183 COVID-19 cases, with a 53.5% positivity rate. Recovery rates in the city and Herat province districts were 96.2% and 94.7%, respectively. Case-fatality rates varied with age, with 0.4% for those aged 1-29 and 33% for those aged 80-105. Mortality rates were highest for those with COPD and cancer, at 12.5% and 18.2%, respectively. In the logistic regression results, age, gender, and COPD were significant variables for COVID-19 mortality.

Conclusion: By providing more health service facilities to people in risk groups, especially in rural areas, the mortality rate of COVID-19 and other diseases can be decreased.

Keywords: COVID-19, Herat, Afghanistan, Mortality, Risk factor

Öz

Amaç: Coronavirüsler, farklı hastalık türlerine neden olan geniş bir virüs ailesidir. Bu çalışma, COVID-19 hastalarında komorbidite ve hastaların sosyo-demografik özelliklerine göre mortalite risk faktörlerini değerlendirmeyi amaçlamaktadır.

Yöntem: Bu kesitsel çalışma, 24 Şubat-5 Temmuz tarihleri arasında Afganistan'ın Herat ilinde yürütülmüştür. Çalışmanın verileri Herat İl Halk Sağlığı Müdürlüğü tarafından sağlanmış olup hastaların sosyo-demografik verileri, hastalığın belirti ve bulguları, eşlik eden hastalıklar, hastaların hastaneye yatış özellikleri, enfekte bir kişiyle temas öyküsü ve COVID-19'u teşhis etmek için kullanılan test türü incelenmiştir. Çalışmada, kategorik değişkenler arasındaki farklılıkları gözlemlemek için ki-kare testi kullanılmıştır. İki değişkenli analizde, anlamlı bir p değerine sahip tüm bağımsız değişkenler modele alınmıştır. Olasılık oranları ve %95 güven aralıkları hesaplanmış ve 0,05'ten küçük bir p değeri istatistiksel olarak anlamlı kabul edilmiştir.

Bulgular: Çalışmada, %53.5 pozitiflik oranıyla 11.183 COVID-19 vakası analiz edilmiştir. Herat il merkezi ve ilçelerinde iyileşme oranları sırasıyla %96.2 ve %94.7 bulunmuştur. Bu çalışma, Herat ili ilçelerinde %94.7 olan iyileşme oranının kent merkezinde yaşayan hastalarda %96.2 olduğunu göstermektedir. Yaşa göre değişkenlik gösteren vaka-ölüm oranları, 1-29 yaşları için %0.4 ve 80-105 yaşları için %33 bulunmuştur. Ölüm oranları sırasıyla %12.5 ve %18.2 ile KOAH ve kanser hastalarında en yüksekti. Lojistik regresyon analizi sonucunda yaş, cinsiyet ve KOAH COVID-19 ölüm oranı ile ilişkili bulunan değişkenler olarak bulunmuştur.

Sonuç: Bu çalışma, özellikle kırsal alanlarda daha fazla sağlık hizmeti sağlayarak COVID-19 ve diğer hastalıkların ölüm oranının azaltılabileceğini göstermektedir.

Anahtar Kelimeler: COVID-19, Herat, Afganistan, Mortalite, Risk faktörü

INTRODUCTION

Coronavirus is a large family of viruses that cause different scopes of disease, from a simple common cold to severe illnesses such as severe acute respiratory syndrome and Middle East Respiratory Syndrome.[1] The novel coronavirus which causes Coronavirus disease 2019 was named severe acute respiratory syndrome coronavirus-2 or SARS-CoV-2.[2]

The COVID-19 pandemic was first seen in Wuhan city of China and spirited worldwide.[3] More than 97 million COVID-19 confirmed cases and almost 2 million deaths from across 200 countries worldwide had been reported worldwide at the study time.[4]

The data suggest that, among all patients with COVID-19, 5–20% develop a critical illness characterized by acute respiratory distress syndrome.[5] In another study, among COVID-19 patients who were developing the risk factor for death, 8% were treated in the Intensive Care Unit (ICU). Up to 80% of COVID-19 patients admitted to ICU received a mechanical ventilator. [6]

There are three most common symptoms in patients with COVID-19, which appear differently for different people. Fever, dry cough, and tiredness are the most common symptoms of COVID-19. [7] Symptoms may appear 2-14 days after exposure to the virus.

Extrapulmonary symptoms are also common in some patients; for example, loss of sense of smell, cardiac involvement, acute kidney injury, coagulation disorders, and thrombotic complications could be associated with a poor prognosis. In most cases, it takes 2 to 14 days for signs and symptoms of the disease to appear.[8]

When the COVID-19 pandemic started, the focus was on SARS-CoV-2. Still, the relationship between non-communicable diseases and COVID-19 start getting attention as it was believed that this might change the burden of illness. Almost 70% of all deaths are caused by non-communicable diseases (NCDs), and 80% of these deaths occur in low- and middle-income countries. Evidence shows a connection between COVID-19 disease, NCDs, and high death rates.

The first positive COVID-19 case was confirmed on February 24, 2020, in Afghanistan where people had entered Afghanistan from Iran. On September 12, 2020, according to the Ministry of Public Health of Afghanistan, there were 38,641 cases at the time of the study, of which 31,234 recovered and 1,420 died.[9]

There is no study of this sample size on COVID-19 in Afghanistan. This study aims to evaluate the risk factors for mortality based on comorbidity and socio-demographic characteristics among COVID-19 patients.

METHODS

Definitions

Confirmed Case: A confirmed case of COVID-19 is a person with laboratory confirmation of COVID-19 infection, irrespective of clinical signs and symptoms.[10]

Suspected Case: A person who meets clinical (acute onset of fever and cough) and epidemiological (residing or working in an area where the risk of transmission is high) criteria.[10]

Study Design, Place, and Duration

This cross-sectional study was conducted from Feb 24 to July 5, 2000, in Herat province of Afghanistan (Herat city and its villages) and covered every citizen of this province suspected of COVID-19 and went to the health department's centers in the province for the test. Herat province, with an estimated population of 1,890,000 people and an area of 54,778 km^2, is located in eastern Afghanistan and shares a border with Iran and Turkmenistan countries. This study covers 11,183 COVID-19 cases aged between 1-year-old up to 105 years old.

Data Collection

The data provided by the surveillance center of the health department of Herat province is complete and inclusive and consist of the following sections:

1. The sociodemographic data, such as ID number, name, father's name, phone number, gender, age, patient's residence (province, district, village), and occupation.

2. The disease's signs and symptoms, including the starting date of these signs and symptoms, such as fever, cough, shortness of breath, sore throat, diarrhea, headache, weakness and lethargy, and other signs and symptoms.

3. Comorbidities, such as cardiovascular

disease and including hypertension, diabetes, liver diseases, chronic neurological diseases (Alzheimer's disease, Parkinson's disease, dystonia, Amyotrophic lateral sclerosis disease, Huntington's disease, neuromuscular disease, multiple sclerosis, and epilepsy), renal diseases, chronic lung diseases, cancer, immunodeficiency diseases, and other diseases.

4. Characteristics of hospitalization of the patients such as Hospitalization, date of hospitalization, hospitalization in ICU, need for the use of a ventilator, name of the hospitalization center, and facilities of the hospitalization center.

5. History of contact with an infected person, refereeing or not refereeing reports of the person in the last 14 days to the health center before the appearance of signs and symptoms of COVID-19, contact or disconnect report of the person with COVID-19 infected person in the last 14 days, travel reports to other countries and the name of the nations.

6. Type of the test to diagnose COVID-19, performing the PCR test, first test date, results of the test, dates of the later tests, and the patients' consequences (Healed, Died, Active case).

Ethical Approval

In this study, the data was used after legal permission and ethical approval from the surveillance center of the health department of Herat province on 10/07/2020. The study was conducted in accordance with the Declaration of Helsinki.

Statistical Analysis

Statistical analysis was performed using IBM SPSS Statistics Version 23.0. Categorical variables were presented with numbers (n) and percentages (%), and a Chi-square test was used to observe differences between categorical variables. In bivariate analysis, all independent variables with a significant p-value were put in the logistic regression model (age, sex, residency, and comorbidities such as diabetes, COPD, cardiovascular diseases, and cancer). The forward LR method was used for the strength of the association between dependent and independent variables. The female sex and the age group of 1–18 are used as reference groups. Odds ratios (OR) and 95% confidence intervals (95% CI) were calculated, and a p-value less than 0.05 was considered statistically significant.

RESULTS

Of the 11,183 participants tested with SARS-CoV-2 for COVID-19 in this study, 57.1% were male, 30.9% were aged 19-29 years, and 75.7% lived in Herat city. Herat's median age for COVID-19 RT- PCR positive cases was 37.00 (IQR 28.00-50.00) years old (38 for males, 35 for females). Overall test positivity was 53.6%. (Table 1)

Of 11,183 suspected cases in this study, 98.6% of them had at least one kind of symptom. Based on the results, 85% of the suspected cases had a cough, 81.9% experienced fever, 64.9% had a sore throat, and 64.2% had shortness of breath. Furthermore, 99.5% of the 5,990 COVID-19 RT-PCR-positive cases showed symptoms. 88.0% had a cough, 87.4% of them had a fever, 81.4% had a headache, 73.2% experienced weakness, 70.7% had a sore throat, 68.2% had experienced shortness

of breath, and 23.2% experienced diarrhea. (Table 2)

Table 1. Socio-demographic profile of COVID-19 patients – Herat- Afghanistan (n=11183)

		Tested for COVID-19		COVID-19 RT-PCR-positive	
		n	%	n	%
Gender	Male	6389	57.1	3496	58.4
	Female	4794	42.9	2494	41.6
Age Groups	1-18	740	6.6	235	3.9
	19-29	3459	30.9	1556	26.0
	30-39	2634	23.6	1398	23.3
	40-49	1837	16.4	1105	18.4
	50-59	1206	10.8	768	12.8
	60-69	801	7.2	540	9.0
	70-79	366	3.3	280	4.7
	80-105	140	1.3	108	1.8
Residence	Herat city	8463	75.7	4818	80.4
	Herat city district	2720	24.3	1172	19.6
Total		11183	100.0	5990	100.0

Table 2. Comparison of different signs and symptoms between the suspect cases and RT-PCR-positive cases in Herat- Afghanistan (n=11183)

	Tested for COVID-19		COVID-19 RT-PCR-positive	
	n	%	n	%
Any signs and symptoms	11026	98.6	5961	99.5
Cough	9502	85.0	5269	88.0
Fever	9164	81.9	5235	87.4
Headache	8214	73.5	4873	81.4
Weakness	7060	63.1	4386	73.2
Sore throat	7258	64.9	4234	70.7
Shortness of breath	7176	64.2	4084	68.2
Diarrhea	2174	19.2	1389	23.2

Of all the suspected cases of COVID-19 in this study, 16.7% of them had at least one or more comorbidities. 7.7% of them

had cardiovascular disease, including hypertension, 4% had a chronic neurological disease, 3.2% had diabetes, 3% had chronic lung disease, 3% had immunodeficiency, and 2.3% had renal disease. Of 5,990 COVID-19 patients, 1,175 among them had underlying conditions. Of all the patients, 9.1% of them had cardiovascular diseases, including hypertension, 4.3% of them had diabetes, 1.3% had liver diseases, 4.3% of patients had a chronic neurological disease, 2.7% had renal diseases, 3.2% had chronic lung diseases, 0.2% of patients had malignancy (cancer), 3.2% of patients had immunodeficiency, and 1.1% of the patients had other diseases. (Table 3)

Table 3. Comparison of different comorbidity between the suspect cases and RT-PCR-positive cases in Herat- Afghanistan (n=11183)

	Tested for COVID-19		COVID-19 RT-PCR-positive	
	n	%	n	%
Any underlying conditions	1856	16.7	1175	19.6
Cardiovascular disease, including hypertension	856	7.7	574	9.1
Diabetes	362	3.2	259	4.3
Liver disease	138	1.2	77	1.3
Chronic neurological	451	4.0	258	4.3
Renal disease	260	2.3	160	2.7
Chronic lung disease	330	3.0	189	3.2
Malignancy	20	0.2	11	0.2
Immunodeficiency	331	3.0	189	3.2
Other diseases*	86	0.8	66	1.1
Total	11183	100.0	5990	100.0

*Asthma, Cystic Fibrosis, etc.

Of the 5,990 COVID-19 cases in this study, 91.5% were recovered, 3.9% died, and 4.6% were still sick. 22.6% of patients were hospitalized, where 1.7% of cases were in ICU, and this 1.7% of cases needed ventilation. 1.5% of patients traveled to Iran before

symptoms onset. (Table 4)

Table 4. Comparison of different healthcare situations between the suspect cases and RT-PCR-positive cases in Herat- Afghanistan (n=11,183)

		COVID-19 RT-PCR-positive	
		n	%
Health outcome	Recovered	5481	91.5
	The active case at the study endpoint	278	4.6
	Death	231	3.9
Hospitalized	Yes	1355	22.6
	No	4635	77.4
ICU	Yes	103	1.7
	No	5,888	98.3
Has the case had contact with a confirmed case in the 14 days before symptom onset?			
	Yes	1137	19.0
	No	4853	81.0
Has the case traveled in the 14 days before symptom onset?			
	Yes	89	1.5
	No	5901	98.5
Other countries	No	5901	98.5
	Iran	89	1.5
Type of specimen	Nasopharyngeal +Oropharyngeal swab	385	6.4
	Nasopharyngeal swab	1278	21.3
	Oropharyngeal swab	4327	72.2
Total		5990	100.0

(Figure 1a) The proportion of patients who recovered and were living in the city is higher than those living in districts of Herat province. (Figure 1b) The case-fatality rate among male patients was found higher than among female patients in this study. (Figure 1c) COVID-19 patients' mortality based on age groups shows that it increases with patients' age increase. (Figure 1)

Figure 1. Percentage of COVID-19 patient mortality based on age groups, gender, and residence in Herat province – Afghanistan.
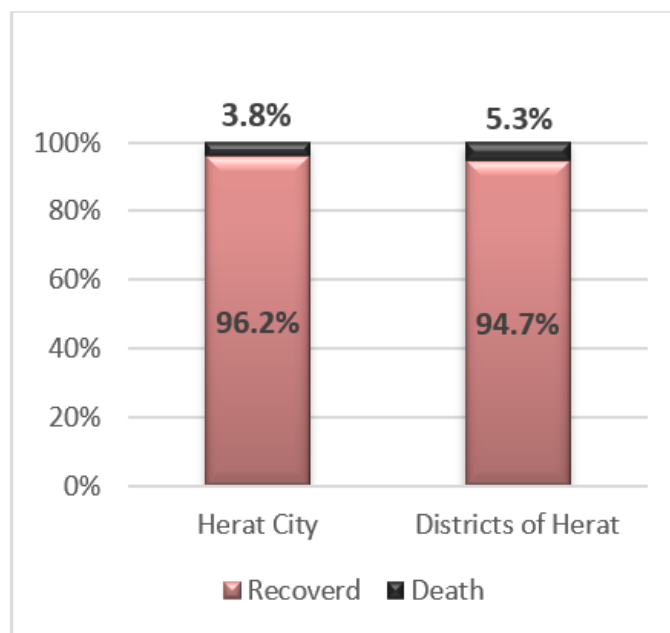
Figure 1a. The proportion of patients who recovered and were living in the city is higher than those living in districts of Herat province.
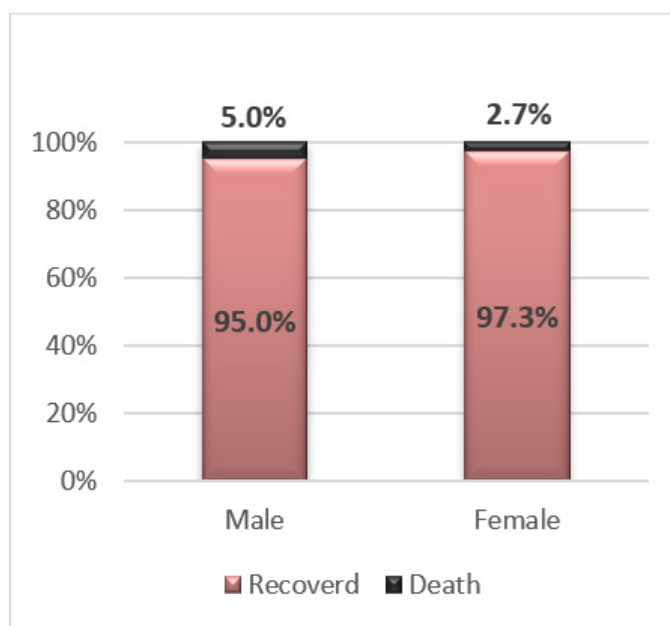
Figure 1b. The case-fatality rate among male patients was found higher than among female patients in this study.
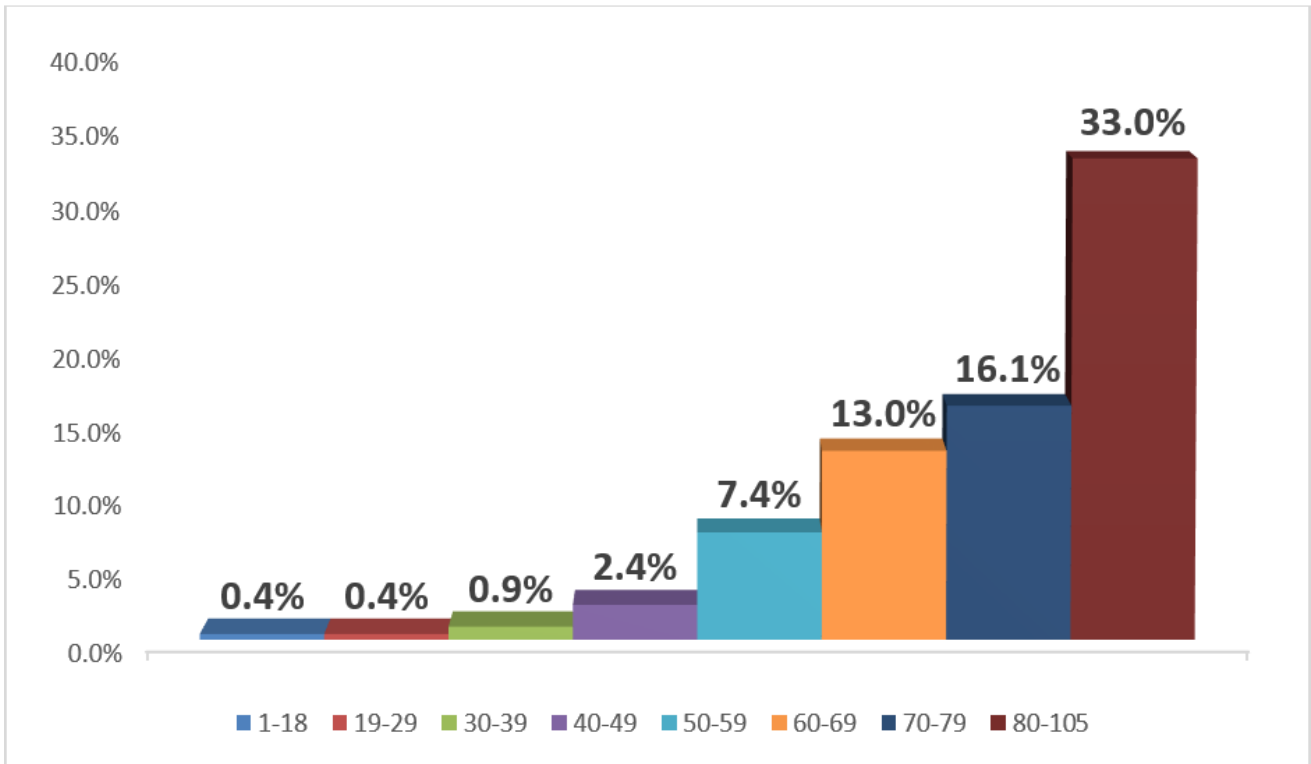
Figure 1c. Shows the death percentage based on age groups. X2= 18.802, p= <0.001

According to data used in this study, of 5,990 COVID-19 patients, 5% of men and 2.7% of women died due to COVID-19. 99.6% of patients in the age group of 1-29 years old recovered. 33.0% of patients in the age group of 80-100 years old died due to COVID-19.

The Herat city's mortality percentage was 3.8%, and in the villages, it was 5.3% (The rest of the 278 patients are still active cases). There was a significant difference in symptoms of shortness of breath, sore throat, and diarrhea between died and recovered patients. (Table 5)

Table 5. Comparison of different signs and symptoms between recovered and death cases– Herat-Afghanistan (n=5,481)

	Recovered		Death		Statistics	
	n	%	n	%	X^2	p*
Fever	4,772	96.0	197	4.0	0.623	0.430
Cough	4,814	96.0	201	4.0	0.138	0.710
Shortness of breath	3,656	94.7	204	5.3	47.192	**<0.001**
Sore throat	3,891	96.7	132	3.3	20.410	**<0.001**
Diarrhea	1,285	97.2	37	2.8	6.874	**0.009**
Headache	4,446	96.1	179	3.9	1.893	0.169
Weakness	3,993	96.1	164	3.9	0.370	0.543
Total	5,481	96.0	231	4.0		

According to this study, 8.9% of patients who died due to COVID-19 had cardiovascular diseases with hypertension. 3.9 % of the patients who did not have CVD died due to COVID-19. 9.6% of patients who died due to COVID-19 had diabetes. Of the COVID-19 patients who had liver diseases, 6.7% of them died, COVID-19 patients, who had chronic neurological diseases, and 2.4% died, COVID-19 patients, who had malignancy (cancer), 18.2% of them died.

There was a significant difference in underlying diseases such as cardiovascular disease with hypertension, diabetes, COPD, and malignancy when comparing recovered and death cases. (Table 6)

Table 6. Comparison of different comorbidity between recovered and death cases– Herat- Afghanistan (n=5,481)

	Recovered		Death		statistics	
	n	%	n	%	X^2	p*
Cardiovascular disease with hypertension	460	91.1	45	8.9	33.813	**<0.001**
Diabetes	226	90.4	24	9.6	20.796	**<0.001**
Liver disease	70	93.3	5	6.7	1.347	0.246
Chronic neurological	241	97.6	6	2.4	1.735	0.188
Immunodeficiency	176	97.2	5	2.8	0.791	0.374
Renal disease	144	96.0	6	4.0	0.001	0.978
COPD*	154	87.5	22	12.5	33.460	**<0.001**
Malignancy	9	81.8	2	18.2	5.677	**0.017**
Total	5481	96.0	231	4.0		

* Chronic Obstructive Pulmonary Disease

This study included statistically significant variables such as age, sex, residency, and comorbidities such as diabetes, COPD, cardiovascular diseases, and cancer in the logistic regression model. The dependent variable in the model was the state of healing and death due to COVID-19. Finally, gender, age, and COPD remain in the model.

Females are considered as a reference group and men are 1.814 times more exposed to mortality due to COVID-19 than female patients. The absence of COPD is considered as a reference group in the model, patients with COPD as comorbidity, the mortality rate is 1.803 times higher than patients without COPD.

The age group of 1-18 years is considered a reference group in the model and the age groups of 19-29, 30-39 and 40-49 years did not show a statistically significant difference, but the age group of 50-59 years 15.510 times, age groups of 60-69 years 28.829 times, age groups of 70-79 years 35.714 times and age groups of 80-105 years 90.857 times according to the reference group shows a higher mortality rate and in terms of Statistics are also significant. (Table 7)

Table 7. Logistic regression models of mortality among COVID-19 patients in Herat-Afghanistan

	B	S.E.	Wald	df	p-value	Exp(B)	95% C.I. for Exp(B)	
							Lower	Upper
COVID-19 patients								
Constant	-5.696	1.006	32.073	1	<0.001	0.003		
Sex (Female)	0.596	0.157	14.377	1	<0.001	1.814	1.333	2.469
COPD (no)	0.589	0.256	5.304	1	0.021	1.803	1.092	2.978
Age (1-18)			250.846	7	<0.001			
Age (19-29)	- 0.197	1.083	0.033	1	0.856	0.821	0.098	6.859
Age (30-39)	0.541	1.044	0.269	1	0.604	1.718	0.222	13.301
Age (40-49)	1.541	1.023	2.268	1	0.132	4.669	0.628	34.700
Age (50-59)	2.741	1.013	7.322	1	0.007	15.510	2.129	112.979
Age (60-69)	3.361	1.012	11.038	1	0.001	28.829	3.968	209.429
Age (70-79)	3.576	1.019	12.322	1	<0.001	35.714	4.851	262.950
Age (80-105)	4.509	1.029	19.200	1	<0.001	90.857	12.089	682.849

References: Age (1-18 years), Sex (Female), COPD (No), p<0.05 Significance level

DISCUSSION

In Herat province, 11,183 people were tested for COVID-19 till Jul 5, 2000, of which 5,990 test results were positive. The high positivity rate is an indication that Herat could not test widely for that period. One of the main reasons for the lower number of cases of COVID-19 is the lack of equipment and tools needed to test.[11]

The data shows that the total number of people tested for COVID-19 and confirmed cases in men was higher than in women in Afghanistan. Compared to a study by Mohamad Nikpouraghdam et al., Iran found a positive COVID-19 cases ratio between males and females 1.93:1.[12] Another study in Denmark shows the ratio of death among confirmed cases of COVID-19 2.1:1.[13] This shows the prevalence of COVID-19 men higher than women; one of the reasons could be the conditions and limitations on surf out of the house for women in Afghanistan. Another reason for this can be the lack of accessibility to health services for women in Afghanistan, compared to men, it is much more difficult for

women to access health services. This study shows that males' case-fatality rate is higher than females, as the study in Georgia shows the percentage mortality of male gender 23% vs. 13.8% for female mortality rate.[14]

This study highlights that the case-fatality rate is age-dependent and rises with aging. It is consistent with findings by Priyank Shah et al., who reported a mortality rate of 8.9% in COVID-19 patients under 50 and 20% in those over 50.[14] In most of the cases aged between 19-29 years, the results of research conducted in Pakistan are similar to this study.[15] But the results of research conducted in other countries on age groups differ according to this study because the median age in other countries such as Iran was found 56[16].which was higher than the median age of COVID-19 patients in Afghanistan. The main reason for this is the vast young population in Afghanistan.[17] The main explanation for the low frequency of positive cases in rural participants is that they have less access to health care. (Table 1)

Of all patients with COVID-19, 88.0% of patients had a cough, 87.4% had a fever, 81.4% of patients had a headache, 73.2% of patients suffered weakness, 70.7% of patients experienced a sore throat, 68.2% of patients had dyspnea, 23.2% of the patients had diarrhea, Another study result shows fever (88.8%) as the most common symptom, followed by dry cough (68%) and fatigue (33%).[18] compared to a study by Parag Goyal, M.D. et al. [17] that shows 79.4% of COVID-19 patients experienced cough, 77.1% had a fever, and 23.7% experienced diarrhea. In both cases, gastrointestinal problems were almost the same, which means 1 in each 4 – 5 patients had suffered this kind of problem during dealing with COVID-19. In another study by Lei Pan in Hubei, China, they found that 34% of COVID-19 patients experienced diarrhea. This shows 1 in 3 COVID-19 patients suffered diarrhea. The reason for this difference could be patients' answers about their symptoms in different stages; in this study, the data are collected from patients at the first stages of their disease when they experienced the primary symptoms, but Lei Pan et al. [19] collected their data from patients who were in their middle or severity stage of the disease. This shows that as severity increases, gastrointestinal symptoms get worse. (Table 2)

In this study prevalence of cardiovascular diseases, including hypertension, was 9.1%, the prevalence of diabetes comorbidity was 4.3%, and the prevalence of liver diseases was found to be 1.3% among COVID-19 cases, however in a study by Jing Yang et al.[20], in China, the prevalence of cardiovascular diseases including hypertension was found 21.1%, the prevalence of diabetes was reported 9.7%. In

a study by Wei-Jie Guan et al.[21], the prevalence of hypertension in China was 16.9%, and the prevalence of diabetes was reported at 1.59%. In another study by Shazia Zeb et al.[22], in Pakistan, hypertension, and diabetes make up 45.4% of the comorbidities of COVID-19. The main reasons for this could be the lack of health service access and the bad economic situation in Afghanistan which causes the chronic disease mortality rate to higher. Another reason for this could be the younger median age of the Afghanistan population which was found 34 in this study.

The test result of 53.6% of tested people was positive. Despite Afghanistan's low preparation for COVID-19, the health outcomes of COVID-19 patients were acceptable, 46.4% of tested people's test result was negative. According to data, 44.6% of COVID-19 patients recovered. 22.6% of COVID-19 patients were hospitalized. 1.7% of positive cases needed ICU at least once. Another study in New York shows that 14.2% of COVID-19 patients were treated in the intensive care unit.[23]

This study found that COVID-19-positive cases with cardiovascular disease and hypertension had a mortality rate of 8.9%, while COVID-19-negative cases with the same conditions had a mortality rate of 3.6%, as opposed to a study by Clerkin et al.[24], that reported a 31% mortality rate in COVID-19 patients with cardiovascular diseases, including hypertension. This study found that 12.5% of COVID-19 patients who had COPD died. COPD is one of the chronic lung diseases that can elevate the chance of mortality.[25] The association of comorbidities increases with increases in age (higher than 60 years old). [26]

Incidents of association of comorbidities in COVID-19 patients bedded in hospitals are high and have a bad impact on the prognosis of the disease.[27] However, other studies show a bolder role of comorbidities than in Afghanistan; the reason for this can be the lower median age of Afghanistan COVID-19 patients compared to other countries.[28]

This study found the mortality rate of COVID-19 cases who had cancer was 18.2%. According to these findings, malignancy is the deadliest comorbidity for COVID-19 patients, as another study in New York state by Robilotti et al. [29] shows the mortality rate at 12%. One of the reasons for this could be the difference between accessibility to health care facilities as Afghanistan has very little equipment needed to treat cancer patients.[30-31]

The results of logistic regression in this study indicate that age, gender, and COPD are among the influential factors of mortality in patients with COVID-19. The results of this study also show that the male COVID-19 patients mortality rate to female patients is 1.814. Other studies, on this, support the results of this study and found similar results. The meta-analysis study by Noor et al.32, found a mortality ratio of 1.63 for men to women, while the meta-analysis study by Chidambaram et al.33, reported a ratio of 1.45. Alberta et al. stated a ratio of 1.60734, and Harrison et al. found a ratio of 1.7535.

The results of this study also identify age as a risk factor for mortality in patients with COVID-19. However, all age groups show a higher level of mortality rate compared to the reference group (1-18 years), the age group of 50-59 years and higher are

statistically significant too.

In this study, the mortality rate in COVID-19 patients increases by 1.079 per year with age increase. Other studies also have similar results in this case. A study by Harrison et al.35, which addressed the age group 50 years old and younger as the reference group, shows that the mortality rate increases by 1.06 per year with age. A meta-analysis by Chidambaram et al.33, found that the mortality rate increases with the increase of age. According to a study by Alberta et34, the mortality rate rises by 1,079 per year with increasing age. Another study by Mehraeen et al.36, indicates a mortality rate of 1.18 per year of age increase. Also, another study by Noor et al.32, which divided the age groups into younger than 65 years old and older than 65 years old, shows that with age increases, the mortality rate of COVID-19 increases. The mortality rate in age groups above 65 years is 3.59, which is very higher than in the age group 65 years old and below.

The results of this study show that the existence of COPD increases the mortality rate by 1.803, this rate was found 3.93 in a study by Mehraeen et al.36, 2.23 in a study by Noor et al.32, and 1.24 in the study of Harrison et al.35

The most important limitation of this study is that it is limited to the nature and adequacy of the data collected in the format defined by the health authority of the region. However, even in this state, it is also important that contain a large data set from a region that can produce very little data in a very special period both a pandemic and additional regional difficulty.

a risk factor for mortality in patients with COVID-19. However, all age groups show a higher level of mortality rate compared to the reference group (1-18 years), the age group of 50-59 years and higher are statistically significant too.

CONCLUSION

The first case of COVID-19 in Afghanistan was diagnosed in the Herat province of Afghanistan and spread fast across the country. The low capacity of diagnostic equipment for COVID-19 is the main reason behind the fact that most of the suspected people for COVID-19 test results are reported positive. In these findings, men are more infected than women, and people who live in the city are infected more than those living in rural areas. COPD mortality rates rise in older men and those living in rural areas. CVDs, hypertension, diabetes, COPD, and cancer all contribute to an increase in mortality. COPD in younger patients is aligned with low mortality rates. The higher mortality rate in rural areas is due to health service accessibility.

Abbreviations

COVID-19 Coronavirus Disease 2019

COPD Chronic Obstructive Pulmonary Disease

CVDs Cerebrovascular diseases

Characteristics of COVID-19 patients and Risk Factors of Mortality in the early Times of the Pandemic, Herat-Afghanistan.

Ethical Declaration: In this study, the data was used after a legal permission from the surveillance center of the health department of Herat province on 10/07/2020.

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TURKISH JOURNAL OF PUBLIC HEALTH

ORIGINAL ARTICLE /ORİJİNAL MAKALE

5-12 yaş çocuklar için COVID-19 aşısı ebeveyn tereddüdünün sıklığı ve ebeveynlerin çocuklarının COVID-19'dan korunmasına yönelik tutum, davranışları

Frequency of parental COVID-19 vaccine hesitation and attitudes and behaviors towards protection of for their children aged 5-12 from COVID-19

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Öz

Amaç: Türkiye'de bir üniversite hastanesine başvuran ebeveynlerin çocukları için; COVID-19 aşısı tereddüdü yaşama sıklığını ve COVID-19 halk sağlığı önlemlerini(HSÖ) almaya yönelik davranışlarını belirlemektir.

Yöntem: Bu çalışma Türkiye'deki bir üniversite hastanesine Ocak-Şubat 2022'de başvuran 5-12 yaş çocuğu olan ebeveynlerdeki, ebeveyn COVID-19 aşı tereddüdü ve HSÖ tanımlayıcı çalışmasıdır. Katılımcıların sosyodemografik, COVID-19 enfeksiyonu ve aşılarıyla ilgili ve anne-babanın HSÖ alma durumlarına ait özellikleri ile COVID-19 Korkusu Ölçeği çalışmanın bağımsız değişkenleridir. Tek değişkenli analizlerde Student's t testi, varyans analizi, ki-kare testi; çok değişkenli analizlerde lojistik, doğrusal regresyon modelleri kullanılmış tip-1 hata değeri 0.05 kabul edilmiştir. Analizler SPSS23.0 programı kullanılarak yapılmıştır.

Bulgular: Çalışmaya katılan ebeveynlerin yaş ortalamaları 37.17±6.49 ve %68.7'si kadın, çocuklarının yaş ortalamaları 8.57±2.32 ve %53.8'i erkektir. Ebeveynlerin %17.9'u COVID-19'dan korunma ve aşılar hakkındaki bilgilerini az yeterli/yetersiz görmekte ve %28.7'si COVID-19'a karşı çocukları için HSÖ alma tutumu açısından olumsuz tutum içindedir. Ebeveynlerin %48.8'i ebeveyn aşı tereddüdüne sahiptir. Çoklu analiz sonucunda; babaların hiç COVID-19 aşısı yaptırmaması ebeveyn aşı tereddüdü riskini 6.21kat (OR:6.21;%95GA=2.16-17.82) artırmakta; ebeveynin HSÖ bakımından olumsuz tutuma sahip olması ebeveyn aşı tereddüdü riskini 2.69kat (OR:2.69;%95GA=1.35-5.35) artırmakta; annenin HSÖ davranış puanındaki her bir birimlik artış ebeveyn aşı tereddüdünü 0.89kat (OR:0.89;%95GA=0.84-0.95)etkilemektedir. Ebeveyn HSÖ davranışları puanı üzerinde, baba HSÖ davranışları puanı en çok etkiye sahip olduğu bulunmuşken en az etkiye COVID-19 Korkusu Ölçeği puanının sahip olduğu belirlenmiştir.

Sonuç: Yaklaşık her iki ebeveynden birisi çocuklarına COVID-19 aşısı yaptırmada tereddüt yaşamaktadır. Toplumumuzda çocukların sağlık hizmetlerini kullanmasındaki genel belirleyici aktör olan babanın COVID-19 önlemleri konusunda da birincil önemde olduğu anlaşılmaktadır. Çocuk sağlığında annenin yanında babanın da eğitimi üzerinde önemle durulması gereken bir konudur.

Anahtar Kelimeler: COVID-19 Aşısı, Ebeveyn, Çocuk

Sorumlu Yazar: Araş. Gör. Gülsüm ŞANLI ERKEKOĞLU, Manisa Celal Bayar Üniversitesi Tıp Fakültesi Halk Sağlığı Anabilim Dalı, Manisa, Türkiye. **E-posta**: glsmsnl510@gmail.com.

Abstract

Objective: Aim of study's determine frequency of hesitations of parents to COVID-19 vaccinate their children and parents the behaviors of take COVID-19 public health measures(PHM) for their children who applied to a university hospital in Turkey.

Methods: This descriptive study is study of parental COVID-19 vaccine hesitancy and PHM in parents with children aged 5-12years admitted to university hospital in Turkey, January-February 2022.Participants' sociodemographic, COVID-19 infection and vaccinations characteristics, status of parents taking PHM, COVID-19 Fear Scale are independent variables. Student's t test, ANOVA, chi-square test in univariate analyses, logistic-linear regression models in multivariate analyzes're used. Type-1 error value is 0.05.Analyzes're made using SPSS23.0.

Results: Parents' mean age's 37.1±6.4, 68.7% of them female. Children's mean age's 8.5±2.3, 53.8% of them male. 17.9% of parents consider their knowledge of protection from COVID-19 and vaccines minimally sufficient/insufficient, 28.7% of them have negative attitude towards PHM for their children. 48.8% of parents've hesitations their children vaccination. As multiple analysis's result; fathers who've never been vaccinated, increase risk of hesitations 6.21times (OR:6.21;95%CI=2.16-17.82); parent's negative attitude towards PHM increases risk of hesitations 2.69 times (OR:2.69;95%CI=1.35-5.35); each unit increase in mother's PHM behavior score affects hesitations 0.89times (OR:0.89;95%CI=0.84-0.95). While it's found that father's PHM behavior score had the most effect on parent's PHM behavior score, COVID-19 Fear Scale score had the least effect.

Conclusion: Nearly one every two parents have COVID-19 vaccine hesitancy for their childen. Fathers're main actors for taking PHM for COVID-19, so fathers as well as mothers should be considered target persons for children COVID-19 vaccine.

Keywords: COVID-19 Vaccines, Parents, Child

GİRİŞ

2019 Aralık'ta ortaya çıkan SARS-CoV-2RNA virüsünün neden olduğu Yeni Koronavirus Hastalığı 19(COVID-19) Dünya Sağlık Örgütü (DSÖ) tarafından 11 Mart 2020'den itibaren pandemi olarak nitelendirilmiştir.[1] COVID-19 pandemisi tüm dünyada çok fazla hastalık ve ölüme yol açmıştır. Ocak 2022 itibarıyla Dünya çapındaki 340 milyondan fazla vakanın 10.7 milyonu Türkiye'de saptanmıştır.[2] COVID-19 pandemisiyle savaşta aşı ve halk sağlığı önlemleri olmak üzere iki temel strateji ön plana çıkmaktadır. Öncelikle COVID-19`un etkisini azaltmada kilit stratejilerden ilki olan aşıları ele aldığımızda, DSÖ'nün "2019 yılında küresel sağlığa yönelik ilk on

tehdit" açıklamasında aşı tereddüdünün yer aldığı dikkat çekmektedir.[3] Ayrıca COVID-19 pandemisinde toplum bağışıklığı için hedeflenen %67.0 aşılama oranına ulaşmada aşı tereddüdünün önümüzdeki en büyük engellerden biri olacağı düşünülmektedir.[4]

Stratejik Danışma Uzmanları Grubu'na (SAGE) göre aşı tereddüdü, "aşılama hizmetlerinin bulunmasına rağmen aşıların kabul edilmesinde veya reddedilmesinde gecikme" olarak tanımlanmış olup "uygunluk-gönül rahatlığı-güven" olmak üzere üç faktörü içermektedir.[5] Uluslararası yapılan bir çalışmada en yüksek COVID-19 aşı tereddüdü Türkiye'de (%44.0) saptandığından yetişkinlerin yanında,

ebeveynlerin çocukları için olan aşı tereddütleri de önem taşımaktadır.[6] Çünkü dikkatimizden kaçsa da SARS-KoV-2 virusu bütün yaş gruplarını etkilemektedir ve çocuklar SARS-CoV-2'nin çoğalıp çevreye iletiminde potansiyel bir taşıyıcı görevi üstlenmektedirler.[7]

Türkiye'deki ebeveynlerin COVID-19 aşı tereddütleri sıklıklarına bakıldığında; 2020'de yapılan bir çalışmada ebeveynlerin %38.4'ünün ve 2021'de yapılan bir çalışmada %36.3'ünün çocuklarına COVID-19 aşısı yaptırmak istediği ve ebeveynlerin %56.8'i ulusal, %28.9'u yurt dışı kaynaklı bir aşı olursa çocuklarına aşı yaptıracağını bildirmiştir. [8, 9, 10] Ülkeler bazında ebeveynlerin COVID-19 aşı tereddütleri sıklıklarına bakıldığında ise, aşı tereddüdü prevalansları, 2021'de Çin'de %53.5, Katar'da %17.9, İtalya'da %17.9, Japonya'da %35.3, Amerika'da %33.0 ve Almanya'da %49.0 olarak saptanmıştır.[11,12,13,14,15,16]

COVID-19 pandemisinin etkisini azaltmak istiyorsak aşı stratejileri ve halk sağlığı önlemlerini bir arada kullanmamız kritik önem taşımaktadır.[7] Türkiye'de yetişkin bireylere yönelik hem maske, sosyal mesafe, havalandırma hem de aşı gibi halk sağlığı önlemleri alınmasına rağmen 5-12 yaş çocuklara yönelik aşı stratejileri henüz oluşturulmamıştır. 5-12 yaş çocuklara yönelik aşı stratejileri oluşturmanın yanında hem çocukların hem de toplumun SARS-CoV-2 enfeksiyonundan korunması için ebeveynlerdeki aşı tereddütlerini en aza indirmemiz gerekmektedir.

COVID-19'undan korunma yöntemlerinden ikincisi ise "halk sağlığı önlemlerini" uygulamaktır. DSÖ'ne göre halk sağlığı önlemleri "COVID-19 gibi bulaşıcı bir hastalığın yayılmasını yavaşlatmak veya durdurmak için bireyler, kurumlar, topluluklar, yerel ve ulusal hükümetler ve uluslararası kuruluşlar tarafından alınan önlemler veya eylemler bütünü" olarak

ele alınmıştır.[17] Bu önlemler, "maske, mesafe, hijyen" ve 2022 yılı başında daha hızlı bulaşan "Omicron" gibi varyantların baskın hale gelişi ile önemi artan "havalandırma" olarak ele alınabilir.

Türkiye'deki halk sağlığı önlemlerinin uygulanma sıklıklarına bakıldığında; 2020'de kişilerin %83,3'ünün evden çıkarken maske taktığı, %76,9'unun sosyal mesafeye uyduğu, %91,3'ünün evini havalandırdığı; %96.6'sının pandemi sürecinde maske kullanım, %85.6'sının mesafe kurallarına uyduğu ve çocukların %89.0'unun maske kullanım, %73.4'ünün mesafe kurallarına uyduğu saptanmıştır.[18,19] Halk sağlığı önlemlerini uygulanmanın yetişkinlerde olduğu kadar çocuklarda yaygın olmadığı dikkat çekmektedir. 2020'de Amerika'da COVID-19'dan korunmak için kişilerin %90.8'inin toplu ortamlardan uzak durduğu, %79.1'inin maske taktığı saptanmıştır.[20] Şubat 2020'de Çin-Wuhan'da ilkokul öğrencilerinin %51.6ʼsının iyi bir maske takma davranışı gösterdiği ve %42.05ʼinin tatmin edici bir el yıkama bilişi ve davranışı sergilediği saptanmıştır.[21] El yıkama, maske takma ve fiziksel mesafeyi de içeren çeşitli kişisel koruyucu ve sosyal önlemlerin, COVID-19 insidansını azalttığı saptanan bir gerçektir.[22] Fiziksel mesafeyi koruma COVID-19'un anlık üreme sayısını (R_t) %12.0 oranında azalttığından; COVID-19 bulaşını kontrol altına alabilmek için fiziksel mesafe müdahalelerine devam edilmesi gerekmektedir.[23] Ayrıca 200 ülkenin yaşadığı pandemi deneyimleri göstermiştir ki, ülkelerde maske takmanın erken zamanda zorunlu hale getirilmesiyle, geç kalanlara göre COVID-19'a atfedilen ölümler daha alt seviyelerde kalabilmiştir.[24]

Araştırmanın amacı, Türkiye'deki bir üniversite hastanesine ayaktan başvuran 5-12 yaş çocuğu olan ebeveynlerin, çocuklarına ileride

tanımlanabilecek COVID-19 aşısı için tereddüt yaşama sıklığını ve çocukları için COVID-19 halk sağlığı önlemlerini almaya yönelik davranışlarını belirlemektir.

YÖNTEM

Kesitsel tipte olan araştırma, Türkiye'deki üçüncü basamak bir hastanede Ocak-Şubat 2022'de yürütülmüştür. Araştırmanın evrenini; Türkiye'deki üçüncü basamak bir hastaneye ayaktan başvuran 5-12 yaş çocuğu olan ebeveynler oluşmaktadır.

Araştırmanın örneklem büyüklüğü %17.9 prevalans ve Epi info-statcalc programında evreni bilinmeyen örneklem formülü kullanılarak %95 güven, %5 hata payında 226 kişi olarak hesaplanmıştır.[13] Araştırma Türkiye'de Omicron varyantı kaynaklı vaka artışlarının olduğu dönemde yürütüldüğünden olasılıksız kota örneklem yöntemi kullanılarak; 5-8 yaşında çocuğu olan 120 ve 9-12 yaş çocuğu olan 120 ebeveyn olmak üzere toplam 240 kişiye ulaşılması hedeflenmiştir. 5-12 yaş aralığında birden fazla çocuğa sahip olan ebeveynlerde anket, doğum günü anket uygulanan tarihe en yakın tarihli olan çocuk üzerinden yürütülmüştür. Kişilerin çalışmaya katılımı reddetmesi halinde belirlenen kotaya ulaşana kadar çalışma sürdürülmüştür.

Araştırmanın kabul kriterleri; ebeveynin 5-12 yaş arası çocuğu olması ve Ocak-Şubat 2022 tarihleri arasında Türkiye'deki üçüncü basamak bir hastaneye ayaktan başvuran hasta veya hasta yakını olmasıdır. Araştırma, kabul kriterlerini karşılayan kişilere, yarı yapılandırılmış 64 sorudan oluşan anket yüz yüze görüşme tekniğiyle uygulanmıştır. 29 kişi araştırmaya katılmayı reddetmiş olup toplamda 240 kişiye anket uygulanmıştır. Araştırmanın katılım oranı (211/240) %87.9'dur.

Araştırmanın bağımlı değişkenleri:

1- Aşı tereddüdü:5-12 yaşları arasında çocuğu olan ebeveynlerin çocukları için COVID-19 aşı tereddüdünde olma durumları (Ebeveyn Aşı Tereddüdü). "5-12 yaş çocuklara COVID-19 aşı hakkı tanımladığında çocuğunuza aşı yaptıracak mısınız?" sorusuyla değerlendirilmiştir.

2- Halk Sağlığı Önlemleri: Ebeveynlerin çocukları için COVID-19'a yönelik halk sağlığı önlemleri alma davranış indeksi (Ebeveyn HSÖ Davranış İndeksi), "çocuğumun, maskenin takılması gereken kapalı, toplu alanlarda maske takmasına özen gösteriyorum; toplu alanlarda çocuğum ve diğer insanlar arasında 2-3 metre mesafe olmasına dikkat ediyorum; korunmak için evi sık sık havalandırırız" ifadelerinin yer aldığı 5'li likert tipinde üç soruyla değerlendirilmiştir.

Araştırmanın bağımsız değişkenleri:

5-12 yaş çocuklara ve ebeveynlerine ait sosyodemografik özellikler, ebeveynlerin ve çocukların COVID-19 enfeksiyonu ve aşılarıyla ilgili özellikleri, anne ve babanın maske-mesafe-havalandırma önlemlerini alma durumlarına ait özellikler ve COVID-19 Korkusu Ölçeği'nden oluşmaktadır.[25] Ebeveynlerin sosyodemografik özelliklerini sorgulamak adına 14 soru sorulmuş olup bunlar; kişinin yaşı, cinsiyeti, annenin-babanın eğitim durumu, haneye en yüksek gelir getiren kişinin işi, annenin çalışma durumu, gelir algısı, aile tipi, çocuk sayısı, sağlık güvencesi, göç durumu, göç ettiyse nereden göç ettiği ve kaç yıldır burada yaşadığı, kronik hastalık durumu, ailede aşırı kilolu/şişman birey varlığıdır.[26] Ebeveynlerin COVID-19 enfeksiyonu ve aşılarıyla ilgili özelliklerini sorgulamak adına 12 soru sorulmuş olup bunlar; daha önce COVID-19 enfeksiyonu geçirme durumu ve nasıl geçirdiği,

yakınlarında şu anda COVID-19 geçirmekte olan veya daha önce geçiren birey varlığı ve nasıl geçirdiği, anne ve babanın COVID-19 aşısı yaptırma durumu ve hangi aşıları yaptırdığı, aşı sonrası yan etki yaşama durumu ve yaşadığı yan etki türü, COVID-19'dan korunma ve aşılar hakkındaki algılanan bilgi düzeyi ve korunma yöntemleri konusundaki bilgi kaynaklarının neler olduğu, 5-12 yaş çocuklar için COVID-19 aşı hakkı tanımlandığında eğer istiyorsa hangi aşıyı istediğidir.

Çocuğa ait sosyodemografik, COVID-19 enfeksiyonu açısından risk ve çocukluk dönemi aşılarıyla ilgili özellikleri sorgulamak adına 12 soru sorulmuş olup bunlar; çocuğun yaşı, cinsiyeti, algılanan kilo durumu, teknolojiye ulaşılabilirliği, evde kendine ait odasının olma durumu, okul öncesi eğitim alma durumu, kronik hastalık varlığı ve türü, çocukluk dönemi aşılarını olma durumu, çocuğun COVID-19 enfeksiyonu geçirme durumu ve nasıl geçirdiği, okulun COVID-19 bulaşı açısından algılanan risk durumu, ebeveynlerin çocuklarını COVID-19 kaygılarından kaynaklı okula gönderip göndermeme durumudur. Ebeveynlerin çocukları için halk sağlığı önlemleri alma tutumları (Ebeveyn HSÖ Tutumları) "çocuğunuz COVID-19 açısından risk altında mıdır ve çocuklara maske takılması gerekir mi?" sorularıyla değerlendirilmiş olup her iki soruya da evet cevabı verilmesi olumlu, kararsız/hayır cevapları ise kararsız/olumsuz tutum olarak değerlendirilmiştir. Anne ve babanın, maske-mesafe-havalandırma önlemlerini alma davranışları (Anne HSÖ Davranışları-Baba HSÖ Davranışları) toplam13 soruyla sorgulanmış olup bunlar; evi sıklıkla havalandırma, diğer insanlarla arasında 2-3 metre mesafe olmasına dikkat etme, maskenin takılması gereken durumlarda maske takma, toplu taşıma kullanmama, düğünlere, toplu

davet ve yemeklere, sinema, tiyatro vb. sosyal aktivitelere gitmeme durumlarıdır. Ölçekteki her madde 5'li likert tipinde olup alınan puanların artışı katılımcının halk sağlığı önlemleri davranışlarını uygulama düzeylerindeki artışla ilişkilendirilmektedir. Ayrıca hepsi tek bir boyutta toplanan yedi maddeden oluşan COVID-19 Korkusu Ölçeği kullanılmıştır.[25,27] Ölçekteki her madde 5'li likert tipteki sorulardan oluşmakta ve "1-Kesinlikle Katılmıyorum" ile "5-Kesinlikle Katılıyorum" arasında işaretleme yapılması istenmektedir. Ölçekte alınan puanların artışı katılımcının COVID-19 ile ilgili korku düzeyindeki artışla ilişkilendirilmektedir. Ailenin sosyal sınıfı tanımlanırken haneye en yüksek gelir getiren kişinin işi Boratav'ın kentsel sosyal sınıf şemasına göre belirlenmiş ve analizlerde alt ve üst sosyal sınıf olmak üzere iki kategoride değerlendirilmiştir.[26]

Amaçlarımız ve literatür taramasından hareketle, araştırmanın hipotezleri aşağıdaki gibidir:

H1: Çocuğu küçük yaşta olan ebeveynlerin, ileride çocukları için tanımlanacak COVID-19 aşıları için tereddütleri daha fazladır.

H2: Sosyoekonomik düzeyi düşük olan bireylerin, ileride çocukları için tanımlanacak COVID-19 aşıları için tereddütleri daha fazladır.

H3: Kendilerine COVID-19 aşısı yaptırmayan ebeveynlerin, ileride çocukları için tanımlanacak COVID-19 aşıları için tereddütleri daha fazladır.

H4: Kendileri için COVID-19 halk sağlığı önlemi davranışlarını göstermeyen ebeveynlerin, ileride çocukları için tanımlanacak COVID-19 aşıları için tereddütleri daha fazladır.

H5: Kendileri için COVID-19 halk sağlığı önlemi davranışlarını gösteren ebeveynler, çocukları için de COVID-19 halk sağlığı önlemi davranışlarını gösterirler.

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İstatistiksel analizler SPSS 23.0 sürümü kullanılarak yapılmıştır. Tek değişkenli analizlerde normal dağılım gösteren sayısal verilerin karşılaştırılmasında, Student's t ve ikiden çok sayıda grup analizi için ANOVA, kategorik verilerin analizi için ise Ki-kare testi uygulanmıştır. Tek değişkenli analizlerde tip-1 hata değeri 0.05'ten küçük bulunan değişkenler ile çok değişkenli modeller (Lojistik ve Doğrusal Regresyon modelleri) kurgulanmıştır. Tip-1 hata değeri 0.05'ten küçük ve eşit olanlar anlamlı kabul edilmiştir.

BULGULAR

Araştırmaya katılan ebeveynlerin yaş ortalaması 37.1± 6.4'tür. %68.7'si kadın, %80.4'ü çekirdek aileye sahip ve %47.1'inin iki çocuğu vardır. Babaların %32.5'i, annelerin 43.3'ü ortaokul ve altında eğitime sahip, ebeveynlerin %30.0'unun kronik hastalığı vardır. Çocukların; %53.8'i erkek, yaş ortalaması 8.5±2.3'tür. Ebeveynlerin %15.4'ü çocuğunu tombul/kilolu/şişman olarak değerlendirmekte ve çocukların; %30.0'u hiçbir teknolojik cihaza ulaşamamakta, %24.6'sının kendi odası bulunmamakta, %34.6'sı okul öncesi eğitim almamıştır ve %20.8'inin herhangi bir kronik bir hastalığı bulunmaktadır. Katılımcıların %41.3'ü alt sosyal sınıfta ve %30.0'u gelirini giderinden az/çok az olarak ifade etmektedir. Annelerin %65.0'i herhangi bir işte çalışmamaktadır. Ebeveynlerin %7.1'inin sağlık güvencesi yokken, %6.7'sinin yeşil kartı vardır, %30.8'i göçle gelmiştir ve göç yılı ortalaması 12.8 ± 8.5'tir, %27.1'inin ailesinde aşırı kilolu/şişman birey vardır.

Ebeveynlerin %93.8'i çocuklarının çocukluk dönemi rutin aşılarını yaptırmış, %17.9'u COVID-19'dan korunma ve aşılar hakkındaki bilgilerini az yeterli/yetersiz görmekte ve en çok kullandıkları bilgi kaynağı %76.7 ile radyo/televizyondur. Ebeveynlerin %86.3'ü

çocuklarını okulda COVID-19 bulaşı açısından riskte görmekte ve bu nedenle %35.4'ü çocuğunu okula hiç göndermemiştir, %48.8'i (n=117) ise ebeveyn aşı tereddüdüne sahiptir.

COVID-19'a karşı ebeveynlerin çocukları için HSÖ alma açısından, %28.7'si olumsuz tutumdadır ve %42.1'i her zaman tüm önlemleri alma davranışını sergilemektedir. Ebeveynlerin %63.7'si maske takılmasına, %54.2'si mesafeye her zaman dikkat etmektedir. Ebeveyn HSÖ Davranış Ölçeği puanları ortalaması 13.1±2.2 olarak saptanmıştır. Anne HSÖ Davranışları Ölçeği puanı 27.4±5.2, Baba HSÖ Davranışları Ölçeği puanı 27.3±5.0 ve Ebeveyn COVID-19 Korku Ölçeği puanları ortalaması 16.1±7.0'dir. Ebeveynlerin %41.7'si daha önce COVID-19 enfeksiyonu geçirmiş olup bu esnada %44.0'ü ilaç kullanmış, %6'sı hastaneye yatmış veya yoğun bakıma yatacak kadar şiddetli geçirmiştir. %52.5'inin ailesinde COVID-19 enfeksiyonu geçiren başka bir birey olup, bunların % 33.3'ü ilaç kullanmış, %20.6'sı hastaneye yatmış veya yoğun bakıma yatacak kadar şiddetli geçirmiş veya COVID-19 sebebiyle vefat etmiştir.

Araştırmamıza göre çocuğu için COVID-19 aşı tereddüdü olan ebeveynlerin olmayanlara göre; daha genç olduğu, annenin ve babanın HSÖ davranışları puanının daha düşük olduğu ve ebeveynin COVID-19 Korkusu Ölçeği puanının daha düşük olduğu saptanmış olup bu fark istatistiksel olarak anlamlı bulunmuştur (Tablo1).

Tablo 1. Ebeveyn Aşı Tereddüdünü Etkileyen Faktörler-1	Ebeveyn Aşı Tereddüdü		P*
	Yok (Ort±SS)	Var (Ort±SS)	
	(n=123)	(n=117)	
Ebeveyn Yaşı	38.1±6.7	36.1±6.0	0.01
Anne HSÖ** Davranışları Puanı	29.0±4.2	25.8±5.7	<0.001
Baba HSÖ Davranışları Puanı	28.7±4.0	25.8±5.4	<0.001
COVID-19 Korkusu Ölçeği Puanı	17.7±7.1	14.6±6.4	0.001

*Studnet's t Testi ** HSÖ: Halk Sağlığı önlemleri*

Araştırmamıza katılanlarda; geliri giderinden az/çok az olanlarda, kendi odası olmayan ve teknolojiye ulaşamayan çocuğu olanlarda ve çocuğuna rutin çocukluk çağı aşılarının bazılarını yaptıranlarda, hiç COVID-19 aşısı olmamış anne ve babalarda, kendini COVID-19'dan korunma ve aşılar hakkında az yeterli/yetersiz bilgi düzeyine sahip olarak görenlerde, COVID-19 hakkındaki bilgi kaynağı sağlık çalışanı olmayanlarda, çocuğu için halk sağlığı önlemlerini alma tutumu olumsuz/kararsız tutumda olanlarda, çocuğunun okulda CO-VID-19 bulaşı açısından risk altında olduğunu düşünmeyenlerde, COVID-19 kaygılarından dolayı çocuğunu okula hiç göndermeyen ebeveynlerde, ebeveyn aşı tereddüdü olma durumu anlamlı olarak daha yüksek saptanmıştır (Tablo2). Ebeveyn yaşı, eğitimi, mesleği ve çocuğun kronik hastalığı olması, daha önce COVID-19 geçirmesi ile ebeveyn aşı tereddüdü arasında anlamlı ilişki saptanamamıştır.

SGK güvencesi olan, çocuklarının rutin çocukluk dönemi aşılarının hepsini yaptıran, COVID-19'dan korunma ve aşılar hakkındaki bilgileri çok yeterli/yeterli olan, tam doz aşılı anne ve babalarda; ebeveyn HSÖ davranış puanları istatistiksel anlamlı olarak daha yüksek bulunmuştur. Çocuğunun kendi odası olan, çocuğu okul öncesi eğitim alan, çocuğunda kronik hastalık olan, çocuğu teknolojiye ulaşabilen, çocuğunun okulda COVID-19 bulaşı açısından riskli olduğunu düşünen anne ve babaların; ebeveyn HSÖ davranış puanları daha yüksek saptanmış olup aradaki fark istatistiksel olarak anlamlı bulunmuştur (Tablo3). Sosyal sınıf ve gelir düzeyi ile ebeveyn HSÖ davranışları arasında anlamlı bir ilişki saptanamamıştır.

Araştırmamızda yapılan çok değişkenli analizlere göre; babaların hiç COVID-19 aşısı yaptırmaması ebeveyn aşı tereddüdü riskini 6.21 kat (OR:6.21; %95GA=2.16-17.82) artırmakta; ebeveynin HSÖ bakımından olumsuz tutuma sahip olması ebeveyn aşı tereddüdü riskini 2.69 kat (OR:2.69; %95GA=1.35-5.35) artırmakta; annenin HSÖ davranış puanındaki her bir birimlik artış ebeveyn aşı tereddüdünü 0.89 kat (OR:0.89; %95GA=0.84-0.95) etkilemektedir. Yani annelerin HSÖ davranış puanı arttıkça çocuklarına aşı yaptırma isteği artmaktadır (Tablo4).

Tablo 2. Ebeveyn Aşı Tereddüdünü Etkileyen Faktörler-2

	Ebeveyn Aşı Tereddüdü				P*
	Yok (n=123)		Var (n=117)		
	n	**%**	**n**	**%**	
Gelir Düzeyi					
Geliri giderinden fazla/çok fazla(a)	42	65.6	22	34.4	0.017
Geliri giderine eşit(b)	51	49.0	53	51.0	(b=c)>a
Geliri giderinden az/çok az(c)	30	41.7	42	58.3	
Çocuğun Kendi Odası Olma Durumu					
Evet	101	55.8	80	44.2	0.013
Hayır	22	37.3	37	62.7	
Çocuğun Teknolojiye Ulaşabilirliği					
Evet	97	57.7	71	42.3	0.002
Hayır	26	36.1	46	63.9	
Çocuğun Okul Öncesi Eğitim Alma Durumu					
Evet	88	56.1	69	43.9	0.041
Hayır	35	42.2	48	57.8	
Çocuğun Çocukluk Dönemi Rutin Aşılarını Olma Durumu					
Evet, hepsini oldu(a)	121	53.8	104	46.2	0.007
Bazılarını(b)	1	8.3	11	91.7	(b=c)>a
Hiçbir aşısını olmadı(c)	1	33.3	2	66.7	
Annenin COVID-19 Aşı Durumu					
Hiç aşı olmamış(a)	8	21.1	30	78.9	<0.001
Eksik doz aşılı(b)	51	49.5	52	50.5	a>b>c
Tam doz aşılı(c)	64	64.6	35	35.4	
Babanın COVID-19 Aşı Durumu					
Hiç aşı olmamış(a)	6	18.2	27	81.8	<0.001
Eksik doz aşılı(b)	48	47.1	54	52.9	a>b>c
Tam doz aşılı(c)	69	65.7	36	34.3	
Ebeveynlerin COVID-19'dan Korunma Ve Aşılar Hakkındaki Bilgi Yeterlilikleri					
Çok yeterli/Yeterli(a)	73	59.8	49	40.2	0.002
Orta düzeyde yeterli(b)	38	50.7	37	49.3	c>(a=b)
Az yeterli /Yetersiz(c)	12	27.9	31	72.1	
COVID-19 Bilgi Kaynağı-Sağlık Çalışanları					
Evet	58	63.7	33	36.3	0.002
Hayır	65	43.6	84	56.4	
Ebeveyn HSÖ* Tutumları					
Olumlu tutum	105	61.4	66	38.6	<0.001
Kararsız/ Olumsuz tutum	18	26.1	51	73.9	
Çocuğun Okulda COVID-19 Bulaş Riski Altında Olma Düşüncesi					
Evet	116	56.0	91	44.0	<0.001
Hayır	7	21.2	26	78.8	
COVID-19 Kaygılarından Dolayı Çocuğu Okula Gönderme Durumu					
Hiç okula göndermedim	35	41.2	50	58.8	0.021
Bazen göndermedim/Hep gönderdim	88	56.8	67	43.2	

Ki-kare ve Post Hoc

Tablo 3. Ebeveyn HSÖ Davranışlarını Etkileyen Faktörler		
	Ebeveyn HSÖ Davranış İndeksi Puanları (Ort±SS) (n=240)	P
Sağlık Güvencesi		
Sağlık güvencesi yok/Yeşilkart(a)	12.2±2.9	<0.001*
SGK(b)	13.4±2.0	a=c
Diğer/özel(c)	12.4±2.2	b=c
		b>a
Çocuğun Çocukluk Dönemi Rutin Aşılarını Olma Durumu		
Evet, hepsini oldu(a)	13.2±2.1	<0.001*
Bazılarını(b)	10.2±1.9	a>b=c
Hiçbir aşısını olmadı(c)	10.0±4.5	
COVID-19'dan Korunma Ve Aşılar Hakkındaki Bilgi Yeterlilikleri		
Çok yeterli/Yeterli (a)	13.5±2.0	<0.001*
Orta düzeyde yeterli (b)	13.0±2.1	c<a=b
Az yeterli /Yetersiz (c)	11.9±2.4	
Annenin COVID-19 Aşı Durumu		
Hiç aşı olmamış (a)	11.9±2.6	<0.001*
Eksik doz aşılı (b)	13.1±2.3	a<b=c
Tam doz aşılı (c)	13.5±1.8	
Babanın COVID-19 Aşı Durumu		
Hiç aşı olmamış (a)	12.0±2.7	0.01*
Eksik doz aşılı (b)	13.2±2.2	a<b=c
Tam doz aşılı (c)	13.2±1.9	
Çocuğun Kendi Odası Olan Durumu		
Evet	13.4±1.9	<0.001**
Hayır	12.1±2.8	
Çocuğun Okul Öncesi Eğitim Alma Durumu		
Evet	13.4±1.8	<0.001**
Hayır	12.4±2.7	
Kronik Hastalığı Olan Çocuklar		
Evet	13.6±1.7	0.02**
Hayır	12.9±2.3	
Çocuğun Teknolojiye Ulaşabilirliği		
Evet	13.3±2.1	0.01**
Hayır	12.5±2.4	
Çocuğun Okulda COVID-19 Bulaşı Açısından Riskte Olduğunu Düşünme		
Evet	13.3±2.0	<0.001**
Hayır	11.6±2.8	

*ANOVA ve Post Hoc Tukey ; **T testi*

Tablo 4. Ebeveyn Aşı Tereddüdü Lojistik Regresyon Değerlendirmesi			
ÖZELLİK	BETA PUANI	P*	OR(%95GA)
Babanın COVID-19 Aşı Olma Durumu			
Tam Doz Aşılı			1(Ref.)
Eksik Doz Aşılı	0.503	0.103	1.65(0.90-3.02)
Hiç Aşı Olmamış	1.827	0.001	6.21(2.16-17.82)
Ebeveyn HSÖ Tutumları			
Olumlu Tutum			1(Ref.)
Olumsuz Tutum	0.991	0.005	2.69(1.35-5.35)
Anne HSÖ Davranışları Puanı	-0.106	0.001	0.89(0.84-0.95)

Binary lojistik Regresyon R²:0.31

Modele dahil edilen değişkenler: Ebeveynin yaşı, Ailenin gelir düzeyi, Çocuğun kendi odasının olma durumu, Çocuğun okul öncesi eğitim alma durumu, Çocuğun teknolojiye ulaşabilirliği, Çocuğun çocukluk dönemi rutin aşılarını olma durumu, Annenin COVID-19 aşı olma durumu, Babanın COVID-19 aşı olma durumu, Ebeveynlerin COVID-19'dan korunma ve aşılar hakkındaki bilgi yeterlilikleri, COVID-19 hakkındaki bilgi kaynağı-Sağlık çalışanı olanlar, Ebeveyn HSÖ tutumları, Çocuğun okulda COVID-19 bulaşı açısından risk altında olduğunu düşünme durumu, COVID-19 kaygılarından dolayı çocuğu okula gönderip göndermeme durumu, Anne HSÖ davranışları puanı, Baba HSÖ davranışları puanı, COVID-19 korkusu ölçeği puanı

Standartlaştırılmış beta katsayıları incelendiğinde ebeveyn HSÖ davranışları puanı üzerinde, baba HSÖ davranışları puanı değişkeninin en çok etkiye sahip olduğu bulunmuşken en az etkiye ise COVID-19 korkusu ölçeği puanının sahip olduğu belirlenmiştir (Tablo5).

Tablo 5. Ebeveyn HSÖ Davranışı Lineer Regresyon Değerlendirmesi		
ÖZELLİK	BETA PUANI	P*
COVID-19 Korkusu Ölçeği Puanı	0.148	0.005
Baba HSÖ Davranışları Puanı	0.577	<0.001

Lineer Regresyon R²:0.4

Modele dahil edilen değişkenler: Ebeveyn yaşı, Baba HSÖ davranışları puanı, COVID-19 Korkusu Ölçeği puanı

TARTIŞMA

Literatürle benzer olarak araştırmamıza katılanların %48.8'i ebeveyn aşı tereddüdüne sahiptir.[11,14,15,16] Araştırmamızdan farklı olarak İtalya'da Eylül 2021'de 12-18 yaş çocuğu

olan ebeveynlerde %17.9'u, Katar'da Mayıs 2021'de 12-15 yaşlarında çocuğu olan ebeveynlerde ise %17.9 bulunmuştur.[12,13] Bu farklılık hipotezlerimizden birinde de yer alan yaş değişkeninden kaynaklanıyor olabilir. Araştırmamızı 5-12 yaş grubu çocuğu olan ebeveynlerde yürütmüş olmamız hem daha geniş hem de daha küçük bir yaş grubunu hedef aldığından İtalya ve Katar çalışmalarından daha yüksek bir ebeveyn aşı tereddüdü saptanması olağandır.[12,13] Türkiye'de Haziran 2020'de yapılan araştırmada katılımcıların %38.4'ü, Aralık 2020'de yapılan bir çalışmada da %56.8'i yerli ve %28.9'u yabancı bir COVID-19 aşısını çocuğuna yaptıracağını belirtmiştir.[8,10] Bizim çalışmamız ve Türkiye'deki çalışmalara baktığımızda, salgının ilerleyen zamanlarında ailelerin çocuklarına aşı yaptırma eğiliminin yükseldiğini söyleyebiliriz.

Çalışmamızın ebeveyn HSÖ davranışları ölçeğinde ebeveynlerin %63.7'sinin çocuğunun, maske takılması gereken kapalı, toplu alanlarda her zaman maske takmasına dikkat ettiği saptanmıştır. Chen ve ark. 2020'de Wuhan'da 1-6. sınıf ilkokul öğrencilerinde yaptığı çalışmada, çocukların %51.6'sının iyi bir maske takma davranışı gösterdiği Sheeta ve ark.'larının 2021'de Mısır'da 6-18 yaş okul çocuklarında yaptığı çalışmada ise çocukların %67.8'inin dışarıda her zaman maske taktığı tespit edilmiştir.[21,28] Assathiany ve ark.'larının Aralık 2020'de yaptığı çalışmada ebeveynlerin %84.6'sının maske takma konusunda çocuklarını bilgilendirdiği ve çocukların %59.7'sinin düzenli olarak maske taktığı tespit edilmiştir.[29] Çalışmamızdaki bulgulara göre çocuğun maske takma davranışı diğer ülkelerdeki bulgulardan farklı değildir. Çalışmamızda, ebeveynlerin %54.2'si çocuğu ve insanlar arasında 2-3 metre mesafe olmasına her zaman dikkat etmekteyken Sheeta ve ark.'larının yaptığı

çalışmada, çocukların %78.4'ünün çoğunlukla sosyal mesafeye uyduğu, Paiva ve ark.'larının 2020'de Brezilya'da 6-12 yaş arası çocuklarda yaptığı çalışmada ise çocukların %72.3'ünün sosyal mesafe kuralına devamlı bir şekilde uyduğu tespit edilmiştir.[28,30] Diğer ülkelerle karşılaştırdığımızda çalışmamızın örneğindeki ebeveynlerin sosyal mesafe önlemlerine daha az dikkat ettiği görülmektedir.

Çalışmamızın hipotezleri arasında yer alan çocuk yaşı ile ebeveyn aşı tereddüdü arasında anlamlı ilişki saptanamamıştır. Çalışmamızın aksine Çin'de 18 yaşından küçük çocuğu olan ebeveynlerde, Katar'da 12-15 yaş ergenlerin ebeveynlerinde ve Japonya'da 3-14 yaş çocuğu olan ebeveynlerde yürütülen çalışmalarda ise; çocuğu daha küçük yaşta olan ebeveynlerin daha çok aşı tereddüdü yaşadığı saptanmıştır.[11,12,14] Bu farklılık çalışmamızın sadece çocukları kapsaması, ergenleri kapsamaması nedeniyle ergenlerin sosyolojik davranışlarına atfedilebilir.

Araştırmamızda çok değişkenli analizlere göre ebeveyn yaşı, eğitimi ve gelir düzeyi, mesleği, COVID-19 korkusu ile ebeveyn aşı tereddüdü arasında anlamlı ilişki saptanamamıştır. Çalışmamızla benzer şekilde Çin'de; Wan ve ark.'larının 3-6 yaş çocuğu olan ebeveynlerde yaptığı çalışmada gelir düzeyi, Zhang ve ark.'larının çalışmasında ise ebeveyn yaşı, ikametgahı, eğitim düzeyi, mesleği ve COVID-19 risk algısı ve Türkiye'de Yılmaz ve ark.'larının çalışmasında ebeveynlerin yaşı, eğitim ve gelir düzeyi, mesleği ile ebeveyn aşı tereddüdü arasında anlamlı ilişki saptanmamıştır.[9,11,31] Çalışmamızdan farklı olarak Alfieri ve ark.'larının Chicago'da yaptığı çalışmada düşük gelirin ebeveyn aşı tereddüdünü artırdığı saptanmıştır.[15] Çalışmamızda sosyal sınıf ve gelir düzeyi ile ebeveyn HSÖ davranışları arasında anlamlı bir ilişki saptanmamış olsa

da teknolojiye ulaşabilirliği olan, kendine ait odası olan, okul öncesi eğitim alan çocukların ebeveynlerinde, ebeveyn HSÖ davranışlarını puanı daha yüksek saptanmıştır. Bu durum anlamlı çıkan değişkenlerin sosyoekonomik durum için vekil değişken olmasından kaynaklanıyor olabilir. Pandeminin çok yaygın bir sorun olmasıyla sosyoekonomik sorunları yok eden bir homojeniteye neden olması hem ebeveyn aşı tereddüdü hem de ebeveyn HSÖ davranışları ile sosyoekonomik düzey arasında anlamlı bir ilişki bulunamamasına yol açmış olabilir.

Çalışmamızda çocuğun kronik hastalığı olmasıyla veya daha önce COVID-19 geçirmesi ile ebeveyn aşı tereddüdü arasında anlamlı ilişki saptanamamıştır. Çalışmamızdan farklı olarak Musa ve ark.'larının Katar'da yaptığı çalışmada; kronik hastalığı olan veya daha önce COVID-19 geçirmiş çocuğu olan ebeveynlerin daha yüksek ebeveyn aşı tereddüdüne sahip olduğu saptanmıştır.[12] Ülkemizde salgın boyunca çocukların korunması öne çıkarılmamıştır. Bu da sosyal ve görsel medyadaki bilgi kirliliğini daha da dramatik hale getirmiştir. Çocukların COVID-19'u hafif geçirdiği, yoğun bakıma yatma oranlarının daha düşük olduğu yönündeki söylemlerden dolayı aradaki ilişkiyi saptayamamış olabiliriz.

Çalışmamızda ebeveynlerin COVID-19'dan korunma ve aşılar hakkındaki bilgi yeterliliklerindeki artışın ebeveyn aşı tereddüdünü azalttığı saptanmıştır ($p < 0.05$). Çalışmamızla benzer olarak Çin çalışmasında, COVID-19'a karşı aşılanma hakkında düşük bilgi düzeyine sahip olan ebeveynlerin daha yüksek ebeveyn aşı tereddüdüne sahip olduğu, Chicago'da 18 yaşından küçük çocukları olan ebeveynlerde yürütülen çalışmada da COVID-19 pandemisi hakkında herhangi bir

bilgi kaynağı (dini kaynaklar hariç) kullanmanın ebeveyn aşı tereddüdünü azalttığı saptanmıştır.[11,15] Çalışmamızda yapılan tek değişkenli analizlerde, ebeveynlerin COVID-19'dan korunma hakkındaki bilgi düzeyleri ve ebeveyn HSÖ davranışları arasında anlamlı ilişki bulunmuş olup yapılan çoklu analizlerde fark anlamını yitirmiştir. Çalışmamızda olduğu gibi Sheeta ve ark. çalışmasında da çocukların maske takma ve sosyal mesafe hakkında bilgi düzeyleri ile önlem uygulamaları arasında anlamlı ilişki bulunamamıştır.[28] Japonya'da 3-14 yaş çocuğu olan ebeveynlerde yürütülen çalışmada; resmi bilgilere güvenenlerin sosyal medyaya güvenenlere göre daha az aşı tereddüdü yaşadığı saptanmıştır.[14] Araştırmamızda ebeveynlerin COVID-19 aşı ve HSÖ hakkında yüksek bilgi düzeyine (%81.9) sahip olduğunu gördük. Bu bulgu, bilgi homojenitesine yol açtığından aradaki farkı saptayamamış olabiliriz. Ayrıca salgın boyunca çocukların risksiz olduğunun algısı da ilişkiyi saptayamamamıza neden olmuş olabilir.

Araştırmamızda ebeveynin HSÖ tutumları bakımından olumsuz tutuma sahip olması ebeveyn aşı tereddüdü riskini üç kat artırdığı tespit edilmiştir. Halk Sağlığı ekolünde davranış tutumdan etkilenir; tutum da bilgiden etkilenir; bilgiyle tutum, tutumla davranış arasında ön koşul vardır, burada bu ön koşulun geçerli olduğu görülmektedir. Nitekim araştırma sonuçlarımızda da tutumun davranışı etkilediği saptanmıştır.

Araştırmamızda daha önce hiç COVID-19 aşısı yaptırmayan babaların daha yüksek ebeveyn aşı tereddüdü yaşadığı saptanmış olup çalışmamızla paralel olarak Zhang ve ark.'larının Çin'de yürüttüğü çalışmada; kendi aşı tereddüdü olan annelerin çocuklarını aşılatma tereddüdü riskinin arttığı, Horiuchi ve ark.'larının Japonya'da

yürüttüğü çalışmada da yine kendine aşı yaptırma niyeti olan ebeveynlerin çocuğuna da aşı yaptırma niyetinde olduğu tespit edilmiştir.[11,14] Bireylerin kendileri ve çocukları için olan aşı davranışları benzer patern göstermektedir.

Araştırmamıza göre annelerin HSÖ davranışlarını göstermemesi ebeveyn aşı tereddüdü riskini artırmaktadır. Çin'de 18 yaşından küçük çocuğu olan ebeveynlerde yapılan çalışma da çalışmamızla benzerlik göstermektedir.[32] Bu da demek oluyor ki eğer kişiler kendileri için HSÖ alıyorsa çocukları için de COVID-19'a karşı en önemli iki silahımızdan diğeri olan aşı için tereddüt etmemekte ve kendileri için aldıkları HSÖ davranışlarını çocukları için de aşı davranışına dönüştürmek istemektedirler.

Tek değişkenli analizlerde COVID-19 korkusu yaşayan ebeveynlerin daha az aşı tereddüdü yaşadığı saptanmış ($p < 0.05$) olup bu fark çok değişkenli analizlerde anlamını yitirmiştir. Çalışmamızdan farklı olarak Ankara'da yapılan çalışmada aradaki fark anlamlı saptanmıştır.[10] COVID-19 korkusu yaşayan ebeveynlerin, ebeveyn HSÖ davranışlarını daha fazla gerçekleştirdikleri saptanmıştır ($p < 0.05$). Ancak Türkiye'de 6 -18 yaş çocuğu olan ebeveynlerde yapılan bir başka çalışmada anlamlı bir ilişki saptanamamıştır.[33] Korku yaşayan bireylerin kendilerini ve çocuklarını korumak adına aşı tereddüdü yaşamamaları ve HSÖ davranışlarını uygulamaları beklenen bir durumdur.

Araştırmamızda yapılan çok değişkenli analizlerde COVID-19'a karşı çocuklara yönelik HSÖ'ni alma durumu üzerinde en belirleyici değişken, babanın kendisi için HSÖ davranışını sergilemesidir. Babanın HSÖ davranışı arttıkça çocuğu için de HSÖ davranışı artmaktadır. Davranışa dönüşmüş bir olgunun her yönden uygulanması şaşırtan bir durum olmamakla beraber kendisi için HSÖ davranışlarını gösteren

bir babanın bunu çocuğu için de göstermesi zaten beklenen bir durumdur. Ebeveynlerin herhangi birinin kendi için HSÖ davranışının yetersiz olması; ebeveyn aşı tereddüdü yaşamasını ve çocuğu için daha az HSÖ davranışı sergilemesini etkilemektedir.

Araştırmamızda yapılan çok değişkenli analizlerde ebeveynlerin çocukları için HSÖ davranışları almasında üzerinde en çok etkiye sahip olan durumun, babanın HSÖ davranışları olduğu tespit edilmiştir. Babanın HSÖ davranışı arttıkça çocuğu için de HSÖ davranışı artmaktadır. Davranışa dönüşmüş bir olgunun her yönden uygulanması şaşırtan bir durum olmamakla beraber kendisi için HSÖ davranışlarını gösteren bir babanın bunu çocuğu için de göstermesi zaten beklenen bir durumdur. Ebeveynlerin herhangi birinin kendi için HSÖ davranışının yetersiz olması; ebeveyn aşı tereddüdü yaşamasını ve çocuğu için daha az HSÖ davranışı sergilemesini etkilemektedir.

Kısıtlılıklar ve Güçlü Yönler

Bu araştırmamızın bazı kısıtlılıkları vardır. Çalışmanın yapıldığı zaman diliminde Omicron bulaşının yüksek olması, toplumu temsil eden hane düzeyindeki araştırmaların yapılmasını güçleştirmiştir. Bu durum, gerek araştırma izni alma konusundaki güçlükler, gerekse toplumdaki bireylerin kendi hanelerinde ziyaretçi kabul etmedeki isteksizliklerinden kaynaklanmaktadır. Bu nedenle çalışmamız sadece hastaneye ayaktan başvuran hastalarla sınırlı kalmıştır. Toplumu temsil eden gerçek bir kesitsel çalışma olmaktan uzak olan bu çalışmanın, özellikle çocuklara Covid-19 aşısı yaptırma(ma) ve halk sağlığı önlemleri alıp almama üzerine ebeveyn tutum ve davranışları hakkında sonuçların güvenilirliğinin ve genellenebilirliğinin sorgulanmasını gerektirir. Üniversite hastanesine başvuran ebeveynlerin genel topluma göre daha eğitimli

ve daha üst sosyal sınıflardaki bireyler olması yüksek olasılıktır. Eğitim ve sosyal sınıf aşı tereddüdü ve HSÖ alma davranışını olumlu yönde etkilemiş olabilir. Bu nedenle bu araştırmanın sıklık bulguları topluma genellenemez olsa da nedensellik ile ilgili sonuçların göreceli daha güvenilir olduğu düşünülebilir. Çalışmanın bir diğer kısıtlılığı ise veriler yüz yüze toplandığından tutum ve davranış sorularında görüşmecinin ve yanıtlayıcının yan tutmasına sebebiyet oluşturmuş olabilir.

Bildiğimiz kadarıyla çalışmamız Türkiye'de bu alanda yapılan ilk çalışmalardan birisi olması araştırmanın güçlü yanıdır. Bu konuda az sayıda çalışma olması nedeniyle çalışmamız ulusal ve evrensel literatüre katkıda bulunacaktır.

SONUÇ

Araştırmamıza göre sosyal değişkenlerin farkına bakılmaksızın annelerin %15.8'i babaların %13.8'i daha önce hiç COVID-19 aşısı yaptırmamış ve yaklaşık olarak her iki ebeveynden birisi (%48.8) *çocuklarına COVID-19 aşısı yaptırmada tereddüt yaşamaktadır*. Bu önemli bir sorundur ancak diğer ülkelerden farksızdır. Ebeveynlerin yaklaşık yarısı (%42.1) COVID-19'a karşı çocukları için HSÖ'ni almaktadır. Ebeveyn HSÖ davranışı üzerinde en belirleyici değişken ise, aşı uygulamasında olduğu gibi, babanın kendisi için HSÖ davranışını sergilemesidir. Toplumumuzda çocukların sağlık hizmetlerini kullanmasındaki genel belirleyici aktör olan babanın COVID-19 önlemleri konusunda da birincil önemde olduğu anlaşılmaktadır. Çocuk sağlığında annenin yanında babanın da eğitimi üzerinde önemle durulması gereken bir konudur.

Özetle ebeveynin HSÖ bilgi düzeyi, ebeveyn aşı tereddüdünü etkilemezken, tutumu ve annenin kendi için HSÖ davranışları etkilemektedir.

COVID-19'la mücadelemizde 5-12 yaş çocuklarımızı da aşılayarak aşı oranlarımızı yükseltmek istiyorsak, halka; halk sağlığı önlemleri ve aşı hakkında bilgilendirici programlar düzenlemenin yanında halkın tutumunu ve ebeveynlerin halk sağlığı önlemleri davranışlarının uygulamalarını sağlamaya yönelik programlar düzenlemeliyiz. Ayrıca birinci basamak sağlık kurumlarının da yapılacak müdahalelerde aktif rol almasıyla toplum katılımında artış sağlanacaktır. Yine aynı şekilde ebeveynlerin çocukları için halk sağlığı önlemleri davranışlarını artırmak istiyorsak da bilgilendirici programlardan ziyade babanın kendi için COVID-19'a yönelik halk sağlığı önlemleri davranışlarını değiştirmeliyiz. Türkiye'de 5-12 yaş çocuklara yakın gelecekte aşı tanımlanırsa aşılama öncesinde aşı tereddüdünü en aza indirmek için gereken önlemleri almalıyız.

BİLDİRİMLER

Yazar Katkıları: Fikir: EE, GŞE, Tasarım: GŞE, EE, Araç gereç: GŞE, Veri toplama ve işleme: GŞE, Gözetim: EE, Analiz ve yorumlama: GŞE Literatür tarama: GŞE, Yazma: GŞE, Eleştirel inceleme: EE.

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ORIGINAL ARTICLE /ORİJİNAL MAKALE

Assessment of adjustment disorder in people with COVID-19 infection

COVID-19 enfeksiyonu geçiren bireylerde uyum bozukluğu değerlendirilmesi

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Abstract

Objective: This study aimed to evaluate the development of adjustment disorder according to the ADNM-20 (Adjustment Disorder New Module-20) scale in participants who were followed up for Covid-19 infection.

Methods: A cross-sectional survey was conducted from September to November 2020. After sample size calculation, we aimed to reach minimum 170 people out of 1290 people who applied to the hospital for Covid-19 disease treatment. Participants were selected from the patients admitted to the hospital using a simple stratified random sampling method. We reached 182 people after treating the patients who were followed up with Covid-19 infection in a University Hospital in Istanbul, Turkey. A questionnaire and the Adjustment Disorder New Module-20 scale were applied via phone / mail at the end of the 6th month after Covid-19 related hospital admission by researchers.

Results: Adjustment disorder was found in 28.8 % (n=42) of the participants disorder according to the ADNM-20 scale. While the rate of development of adjustment disorder due to Covid-19-related stress was 26.7 % (n=39); the rate of development of adjustment disorder due to non-Covid-19 stress was found to be 2.1 % (n=3). With the increase in stress load, the development of adjustment disorder increased significantly. The frequency of developing Covid-19-related stress-related adjustment disorder was statistically significantly increased with the duration of exposure to stress.

Conclusion: We have found out that one out of every four people who apply to the hospital for healthcare services due to Covid-19 infection may develop an adjustment disorder. Assessment of the adjustment disorder more frequently and making early interventions may contribute to the prevention of progressive mental disorders.

Keywords: Covid-19, Adjustment Disorder, Mental Health

Öz

Amaç: Bu araştırmada, uyum bozukluğu değerlendirme ölçeğine göre (ADNM-20); Covid-19 enfeksiyonu nedeniyle takip edilmiş hastalarda uyum bozukluğu gelişimini değerlendirmek amaçlandı.

Yöntem: Kesitsel tipteki araştırma Eylül- Kasım 2020 tarihleri arasında gerçekleştirildi. Hastaneye başvuran 1290 kişiden 170 kişiye ulaşılması hedeflendi. Bu süreçte hastaneye başvuran hastalardan tabakalı basit rasgele örnekleme yöntemi ile katılımcılar seçildi. Covid-19 enfeksiyonu nedeniyle İstanbul'da bir üniversite hastanesinde takip edilmiş tedavi edilen 182 kişiye ulaşıldı. Covid-19 ile nedeniyle takip edilen hastalara; hastaneye yatıştan sonraki 6. ayın sonunda telefon/posta yoluyla sosyodemografik sorular ve Uyum Bozukluğu Yeni Modül-20 ölçeğinden oluşan bir anket uygulandı.

Bulgular: Katılımcıların % 28.8'inde (n=42) uyum bozukluğu saptandı. Covid-19 ilişkili strese bağlı uyum bozukluğu gelişen katılımcılar %26.7 (n=39) iken; Covid-19 dışı stres nedenli uyum bozukluğu gelişme oranı %2.1 (n=3) bulundu. Stres yükü artışıyla uyum bozukluğu gelişimi istatistiksel olarak anlamlı şekilde artıyordu. Artan strese maruz kalma süresi ile Covid-19 ilişkili strese bağlı uyum bozukluğu gelişme sıklığı istatistiksel olarak anlamlı olarak artmaktaydı.

Sonuç: Covid-19 nedeniyle sağlık hizmeti almak için hastaneye başvuran her dört kişiden birinde uyum bozukluğu gelişebilmektedir. Uyum bozukluğunun daha fazla sorgulanarak erken müdahalelerde bulunulması ilerleyici ruhsal bozuklukların önlenmesine katkıda bulunabilir.

Anahtar Kelimeler: Covid-19, Uyum Bozukluğu, Ruh Sağlığı

INTRODUCTION

The new Coronavirus infection (Covid-19), which emerged in Wuhan, China in December 2019, spread all over the world in a short time, causing a global pandemic[1]. In this context, curfews have been implemented, schools and some workplaces have been closed or a flexible working system has been implemented, and strict isolation measures, such as travel restrictions, have been implemented. This situation has led to lifestyle changes (working from home, online education, sedentary life, etc.) in people's daily routines[2, 3]. Again, the high number of cases announced every day during this period and the constant effort of people to get new information through communication tools, such as social media, internet and television, brought about fear and anxiety[4-6].

Epidemics that are transmitted human-to-human are associated with anxiety, panic, depression, trauma-related disorders, and many more comorbidities[6]. For all these reasons, the mental health of the community may be adversely affected[7-9].

Adjustment disorder refers to a maladaptive emotional and/or behavioral response to an identifiable psychosocial stressor. The disorder occurs after an identifiable stressor; excessive anxiety is defined as

distressing, repetitive thinking about the stressor and its possible effects. Symptoms are characterized by responses to stress that cause marked distress and impairment in daily functioning above the socially and culturally expected levels[10]. Symptoms may appear within three months of the stressor, with emotional and behavioral manifestations[10].

According to International Classification of Diseases 11 (ICD-11), adjustment disorder symptoms that begin within the first month of exposure to stress are classified into two categories: stress-related excessive mental exertion and adaptation disorder in important activities (family, occupational, social) in the maintenance of life[11]. Also, adjustment disorder is known to be associated with an increased risk of suicide[12].

In studies conducted in pre-pandemic periods, the prevalence of adjustment disorder was reported as 2-29 %[13].

In this study, we aimed to evaluate the frequency of adjustment disorder according to the ADNM-20 scale in participants, following their visits to the hospital due to possible Covid-19 symptoms.

METHODS

The data of patients over the age of 18, who were followed up due to Covid-19 infection between 12.03.2020 and 31.05.2020 in a university hospital on the Anatolian side of Istanbul, was collected via telephone after six months, after obtaining the consent to participate in the study. The sample of the study consisted of 1290 patients in the Covid-19 research cohort, who were either outpatient or inpatient due to Covid-19 infection between the above dates.

The expected frequency in 1290 patients in the sample selection was 15%[13], with a margin of error of 5 %, and a design effect of 1.0. Therefore sample size was determined as 170 participants at the 95 percent confidence interval. Participants were stratified according to outpatients with positive PCR test results, Outpatients with negative PCR test results and inpatients and participants were included in the sampling using a simple random selection method was used in each strata. A total of 264 participants were submitted to the study but 82 participants rejected to participate the study. As a result, 182 participants were reached.

Participants with missing or wrong phone numbers, patients who did not speak Turkish, who were too disabled to answer the questionnaire, and those who died weren't included in the study.

As a descriptor in our study, the first part of the questionnaire was demographic data and clinical background (age, gender, occupation, marital status, educational status, history of psychiatric illness, drug use, history of receiving mental support during the Covid-19 period) were questioned.

In the second part of the questionnaire, the participants were asked ADNM-20 scale questions. The development of Adjustment Disorder was evaluated according to the answers given to the scale questions.

Adjustment Disorder New Module 20 (ADNM-20) Scale

The two-part scale, created by Einsle et al. in 2010, questions the stressors and symptoms that have affected the participant in the last two years. The first part consists of 18

questions; In this section, acute psychosocial stressors (divorce, death of a loved one, etc.) and permanent stressors (serious illness, conflict at work, etc.) are questioned. In this section, the current Covid-19 pandemic has been questioned as an additional stressor.

The second part consists of 20 questions; The severity of the individual's response to the stressful event(s) is questioned. On a 4-point Likert scale ranging from 1 (never) to 4 (frequently), it is determined how often and for how long the participants experience different symptoms of Adjustment Disorder. High scores are considered to be associated with Adjustment Disorder.

Two main symptoms, which are very important for the diagnosis of Adjustment Disorder, are questioned in ICD-11 in the ADNM scale; mental preoccupations (4 questions) and adaptation disorder (4 questions). In addition, avoidance (4 questions), depressive mood (3), anxiety (2), and impulse disorders (3), which are helpful symptoms in the diagnosis of adjustment disorder, are also asked[14, 15] in the ADNM-20 scale, available via UZH - Psychopathology and Clinical Intervention - Self-report Assessments website. In data analysis, the cut-off point value for the diagnosis of Adjustment Disorder was taken as 47.5 points[16]. The test sensitivity at this cut-off was 87% and the specificity was 74%[16]. The internal consistency of ADNM-20 sum score was high (Cronbach's α=0.94) [16].

The interviewers reached the participants by phone and completed the scale in the form of an electronic questionnaire. Some participants preferred to fill in the scales electronically after the interview. As a result, 182 participants were reached. Data collection

was carried out between 15 September 2020 and 21 October 2020. It took between 20-45 minutes to complete the questionnaire.

In data analysis, the Chi-square test was used to compare numbers and percentages. Cronbach Alpha statistics were used to calculate internal consistency. For external validity, how the characteristics of the adjustment disorder group differed in comparisons between groups in terms of various variables were examined. To study external validity, patients who were under stress and who scored 4 points on at least one of the eight questions of the ADNM-20 scale about mental exertion and the inability to adapt were evaluated as definite adjustment disorder. The success of the scale in predicting these cases was analyzed by ROC analysis and a cut-off score was calculated for the study group. The statistical significance limit was accepted as p <0.05. The cut-off point (47.5) [16] determined in the literature was used to determine adjustment disorder, and comparison analyzes were calculated for cases with adjustment disorder determined according to this cut-off point.

In our sample, Cronbach's alpha was found to be 0.94 for the scale's internal consistency. When the cut-off point is taken as 47.5[14] and when the validity is examined in terms of predicting adjustment disorder cases consisting of those who get full points from at least one of the mental preoccupation and/or inability to adapt questions; sensitivity was >95.2% and specifity was 100.0 %. Optimum sensitivity and specifity levels for the same output were obtained when the score limit was 47.0. At this cut-off point, the sensitivity was 100.0 % and the specifity was 100.0 %.

Adjustment disorder is an exclusion diagnosis[10]. Therefore, we excluded 27 participants with a previous diagnosis of psychiatric illness or a history of psychiatric drug use in the analysis of adjustment disorder.

Adjustment disorder could not be evaluated because 15 participants did not complete the questionnaire for various reasons. Since 27 people have psychiatric history, they are excluded, too.

RESULTS

Six months after the Covid-19 patients attend to the hospital 182 eligible participants were included in the study. 47.8% (n=87) of the participants were female, and the median age of the participants were 36.0 (min:19.0; max:85.0). Almost one fourth, 24.7% (n=45) of the participants were healthcare workers ; proportions of physicians, nurses, and other healthcare professionals 26.7 % (n=12), 35.6 % (n=16), and 37.8 % (n=17), respectively. The rate of participants with positive Covid-19 PCR test results was 36.8% (n=67). The proportion of participants whose Covid-19 PCR test was negative at the beginning and later became positive was found to be 5.5% (n=10) (Table 1). While 7.7% (n=14) of the participants were hospitalized patients due to Covid-19, 92.3% (n=168) of the participants were outpatients with positive or negative Covid-19 PCR test results. Approximately 14.8 % of the participants (n=27) had a previous diagnosis of psychiatric illness or a history of psychiatric drug use. Two of the participants had a psychiatric support because of covid-19.

Table 1. Demographic Characteristics of Participants

		n	%
Gender	Female	87	47.8
	Male	95	52.2
Covid-19 PCR Results	Positive	67	36.8
	Negative	115	63.2
Job groups	Health worker	45	24.7
	Others	137	75.3
Marital Status	Single	38	20.9
	Married	137	75.3
	Divorced/ Widow	7	3.8
Educational Status	Illiterate to secondary school graduate	72	39.6
	High school graduate	37	20.3
	Graduated from a University	73	40.1
Patient Follow-up	Inpatient	14	7.7
	Outpatient	168	92.3
Total Number of Participants		182	100.0

Almost two thirds, 65.4% of the participants (n=119) stated that they had experienced stress due to Covid-19 in the last six months. No adjustment disorder was found according to the ADNM-20 scale in 71.2 % (n=104) of the patients (Table 2).

While the rate of development of adjustment disorder due to Covid-19-related stress was 26.7 % (n=39); the rate of development of adjustment disorder due to non-Covid-19 stress was found to be 2.1 % (n=3) (Table 2).

Additionally, 9.8% (n=18) of the participants declared significant life stress over two years. The mean time to experience a significant stress event was 7.1 months. When the

Table 2. Evaluation of Adjustment Disorder Development in Participants Experiencing Covid-19-Related Stress by Stress Duration

		Adjustment Disorder							
		Adjustment Disorder No		Linked to Covid-19-Related stress *		Depends on Other Stress **		Total	
		n	%	n	%	n	%	n	%
Stressor Time	No stress	29	100.0	0	0.0	0	0.0	29	100.0
	Stress in six Months	53	63.1	30	35.7	1	1.2	84	100.0
	Stress For More Than six Months	22	66.7	9	27.3	2	6.1	33	100.0
	Total	104	71.2	39	26.7	3	2.1	146	100.0

* According to the stressor duration; when the development of Covid-19-related stress-related adjustment disorder was analyzed in the 3x2 Chi-Square table with individuals who did not experience stress, the Chi-Square p value was < 0.001.

** According to the stressor duration; Fisher's Exact probability test p value was found to be <0.001 when the development of other stress-related adjustment disorders was analyzed in the 3*2 Chi-Square table with individuals who did not experience stress.

development of adjustment disorder is evaluated according to the duration of exposure to Covid-19-related stress; no adjustment disorder was observed in the participants who did not declare Covid-19 stress, on the other hand, Covid-19-related adjustment disorder was observed according to the ADNM-20 scale in 35.7 % (n=30) of the participants who declared stress in the last six months. Covid-19-related stress-related adjustment disorder developed in 27.3 % (n=9) of the participants whose duration of exposure to the stressor exceeded six months (p<0.001) (Table 2).

One percent of (n=1) individuals who declared stress in the first six months developed adjustment disorder due to non-Covid-19 stressors, while 6.1 % (n=2) of individuals whose duration of exposure to stress exceeded six months developed adjustment disorder due to non-Covid-19 stressors. (p<0.001) (Table 2).

The development of Covid-19-related stress-related adjustment disorder was associated with the duration of Covid-19-related stress which was statistically significant (p<0.001) (Table 2).

While the rate of development of adjustment disorder was 27.8 % (n=37) in outpatients, the rate of development of adjustment disorder in inpatients was 38.5 % (n=5). This rate was not statistically significant (p>0.05). There was no statistically significant difference between socio-demographic variables (gender, education, marital status, occupation) (Table 3).

There was no difference between health care workers and other occupational groups in terms of developing adjustment disorder. Similarly, there was no statistically significant difference in the development of adjustment disorders among healthcare professionals (doctors, nurses, and others). (p=0.9; Fisher Exact test). There was no statistically

significant difference in terms of developing adjustment disorder according to the Covid-19 test result. There was no statistically significant difference in the development of adjustment disorder in patients whose Covid-19 test was initially negative but later became positive when compared with other participants (Table 3).

Table 3- Evaluation of Adjustment Disorder According to the Demographic Characteristics of the Participants

		Adjustment Disorder	
		No		Linked to Covid-19-Related Stress		Other Stress-Related Adjustment Disorder		Total		p Value
		n	%	n	%	n	%	n	%	
Gender	Female	41	67.2	18	29.5	2	3.3	61	100	0.70
	Male	63	73.3	21	24.4	2	2.3	86	100	
Covid-19 PCR Results	Positive	33	64.7	17	33.3	1	2.0	51	100	0.41
	Negative	71	74.0	22	22.9	3	3.1	96	100	
Job groups	Health worker	24	63.2	12	31.6	2	5.3	38	100	0.25
	Others	80	73.4	27	4.8	2	1.8	109	100	
Marital Status	Single	21	70.0	6	20.0	3	10.0	30	100	0.11
	Married	78	70.3	32	28.8	1	0.9	111	100	
	Divorced/ Widow	5	83.3	1	16.7	0	0	6	100	
Educational Status	Illiterate to secondary school graduate	34	61.8	19	34.5	2	3.6	55	100	0.32
	High school graduate	24	80.0	5	16.7	1	3.3	30	100	
	Graduated from a Universty	46	74.2	15	24.2	1	1.6	62	100	
Total Number of Participants								147	100	

* Fisher Exact Test

When the development of adjustment disorder due to non-Covid-19 stressors is evaluated; Adjustment disorder developed 50.0 % (n=9) of the participants who experienced the stress caused by the illness of a loved one developed adjustment disorder (p=0.03); In case of loss of a loved one, the rate of development of adjustment disorder was 61.9% (n=13) (p<0.001). In individuals experiencing stress due to workload, which is another stress factor; adjustment disorder developed in 50.0 % (n=13) of the participants with workload stress (p=0.008).

When comparing those with only Covid-19 stress (21.4%) and those who have any external stress with Covid-19 (35.7%) in terms of the risk of developing adjustment disorder; the risk of developing adjustment disorder was found to be statistically significantly higher for those who carry non-Covid-19 stress burden with Covid-19 (p<0.001) (Table 4). The incidence of adjustment disorder with increased stress load is statistically significant (p<0.001) (Table 4).

Table 4- Adjustment Disorder Development Status According to the Presence of Covid-19 and Non-Covid-19 Stressors

		Adjustment Disorder						p value
	Yes			No		Total		
		n	%	n	%	n	%	
Covid-19 and Non-Covid-19 Stress Load	No Stress	0	0	28	100	28	100	p<0.001 Linear-by-Linear Association; p<0.001
	One Non-Covid-19 Stress	2	25.0	6	75.0	8	100	
	Two non-Covid-19 Stress	1	9.1	10	90.9	11	100	
	Only Covid-19 Stress	6	21.4	22	78.6	28	100	
	Covid-19 Stress and Another Stress	10	35.7	18	64.3	28	100	
	Covid-19 Stress and More than Two Other Stress	23	53.5	20	46.5	43	100	
Total		42	28.8	104	71.2	146	100	

DISCUSSION

In our research, we studied the effect of Covid-19 stress on adjustment disorder. The first Covid-19 case in Turkey was diagnosed on March 11, 2020[17]. According to the best of our knowledge, this study is the first to investigate the relationship between the Covid-19 pandemic and the formation of adjustment disorder in our country. We also investigated the development of adjustment disorders in healthcare workers compared to other occupational groups. There was no difference between health care workers and other occupational groups in terms of developing adjustment disorder. Healthcare workers are among the risky occupational groups in terms of mental health, because of the higher virus load and intense working conditions in mass epidemics[18]. In our study, we have found out a relationship between Covid-19 related stress

and adjustment disorder. In addition, we have found out that the frequency of adjustment disorder increased with additional stressors. The likelihood of adjustment disorder showed positive association with the duration of exposure to stress.

It stated that 65.4% of the participants they had experienced stress due to Covid-19 in the last six months. In addition, since the population of our study consisted of individuals who attented to the hospital with the suspicion of Covid-19 in the first months of the pandemic; The first months of the pandemic in Turkey were evaluated, and the participants verbally stated that they felt uneasy due to the lack of information about the disease, the television-internet news exposure during this period, and the mandatory quarantine application. Brooks et al. also stated that stresses during quarantine include fear of infection, frustration, boredom, insufficient support, insufficient information, financial loss, stigmatization, and increased quarantine time[19].

In a web-based study conducted in Italy during the quarantine period, 37 % of people adjustment disorders were observed[6]. In the data in our research; adjustment disorder was found according to the ADNM-20 scale in 28.8 % of the participants. While 26.7 % of patients developed adjustment disorder due to Covid-19-related stress; The rate of development of adjustment disorder due to non-Covid-19 stress was found to be 2.1 %. In a study conducted in China in the early stages of the pandemic, 44 % of patients followed up due to Covid-19 were found to have adjustment disorder; In the same study, adjustment disorder was observed at a rate of 1% in patients followed for non-Covid-19

reasons[9]. In our study, the entire participant population consisted of individuals who visited to the hospital with the suspicion of Covid-19, and the incidence of adjustment disorder was 28.8 %.

All participants were included in a study conducted in Lithuania; they identified major life stressors for more than two years; The mean stressors of the participants were 2.44 (SD = 1.69) and ranged from 1 to 14[13]. In our study, the rate of participants who declared stress for more than two years was 9.8%. The mean time to experience a significant stress event was 7.1 months. The association between the increase in the duration of stress and the development of adjustment disorder were found to be statistically significant.

According to a study by Asmundson, people with anxiety or mood disorders were more negatively affected by the Covid-19 pandemic compared to people without a diagnosis of any mental illness[20]. In our study, Covid-19-related stress-related adjustment disorder was observed with a rate of 26.7% in the group diagnosed with mental illness in the past; this rate was statistically significantly higher compared to 15 %[13].

According to the Zurich Adjustment Disorder Study, the prevalence of adjustment disorder consistent with ICD-11 in individuals with job loss it was increased with exposure to multiple stressor factors[21]. Similar to this result, we also observed that the rate of development of adjustment disorder increased significantly, as the stress load increased. The stress caused by Covid-19 showed an exponential increase in adjustment disorder rate in those who have been exposed to other stress factors.

These results also support the external validity of the ADNM-20 scale in terms of the rate of adjustment disorder, the relationship between adjustment disorder and stress, and the increase in adjustment disorder with increasing stress load. In our study, when the internal consistency was analyzed by excluding the participants with a psychiatric history, results compatible with the literature were obtained. Our study population consisted of a stressed and mentally challenged group, our sample was not representative of the healthy population. The frequencies we found are already high, and it can be thought that this frequency may be higher. Further studies are needed for determination of cutoff points in our healthy population.

Limitations

Conducting the survey via telephone/mail was one of our biggest limitations. During the survey, it was observed that the young age group was less attentive to the research compared to the middle age group. Of our participants, 15 did not complete the ADNM-20 Scale. Non-response may have been observed due to Covid-19 adjustment disorder and Covid-19 stress. Since adjustment disorder was an exclusion diagnosis, participants who had a previous psychiatric illness or declared that they had used psychiatric drugs before were also excluded from the analysis. However, individuals who are found to have adjustment disorder according to the ADNM-20 scale may also include depressed or anxious individuals.

Since the questionnaire evaluates an illness experienced 5-6 months ago and a period after, recall bias may exist. Due to limited number of observation, comparisons among sociodemographic characteristics might show nonsignificant results. Our research may not reflect the society, as our research population consists of a group that is under stress and being ill. However, it represents those who applied to the hospital.

Since our study population consisted of individuals who applied to the health institution with the suspicion of Covid-19 in the first months of the pandemic, Covid-19 concerns in this population may have created a bias. Despite having limitations, according to our literature review, there are limited number of studies on adjustment disorder related to the Covid-19 pandemic, and no research on this subject has been found in Turkey. Thus, our research may be remarkable in this respect. In future studies, large sample groups can be recruited to achieve more accurate results and clear conclusions.

CONCLUSION

Covid-19 infection is widely observed as a stressor. The most common response to stress in this kind of pandemic is adjustment disorder. One out of every four people who apply to the hospital for health care due to Covid-19 may develop adjustment disorder. The combination of Covid 19 stress and other stress factors increases the frequency of adjustment disorder. The prolongation of the stress of Covid-19 increases the cases of adjustment disorder. Early intervention by further questioning the presence of Covid-19 stress and adjustment disorder may contribute to the prevention of progressive mental disorders.

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ORIGINAL ARTICLE/ORİJİNAL MAKALE

İyi sağlık algısına etki eden faktörlerin yaşam seyri yaklaşımı ile incelenmesi

Using the life-course approach to analyse factors affecting good self-rated health

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Öz

Amaç: Çocukluktaki iyi sağlık algısının erişkinlik dönemi dahil sürdürülmesine etki eden dolaylı ve dolaysız risk faktörlerini incelemektir. Yaşam seyri epidemiyolojisi teorik arka plan sağlamıştır. Buna göre sağlık, doğumla başlayıp çocukluk ve yetişkinliğin tümü boyunca tecrübe edilen sosyal ve biyolojik süreçlerden bir bütün olarak etkilenmektedir.

Yöntem: Nicel veri kaynağı olarak Avrupa Sağlık, Yaşlanma ve Emeklilik Araştırması (Survey of Health, Ageing and Retirement in Europe, SHARE) kullanılmıştır (n=15128). Retrospektif veri sayesinde: 1) 0-15 yaş dönemi için iyi olarak algılanan sağlığın 50+ erişkinlik döneminde algılanan sağlığa kadar nasıl dönüştüğünün (iyi kalma ya da kötüye dönme) incelenmesi, 2) Sağlığa etki etmesi beklenen risk faktörlerinin güncel durumla sınırlı olmadan yaşam seyrinin tümü boyunca (yaşamın herhangi bir döneminde sigara kullanmış olma gibi) değerlendirilmesi mümkün olmuştur. Tanımlayıcı analizlerin ardından hiyerarşik ikili lojistik regresyon analizi yürütülmüştür. Çoklu ortak doğrusallık varsayımı ihlal edilmemiştir. Hosmer ve Lemeshow uyum iyiliği testi, modeli desteklemektedir.

Bulgular: Post-sosyalist refah modeline kıyasla diğer üç refah modelinde (sosyal-demokrat, muhafazakâr-korporatist ve Akdeniz) yaşayan kişilerin 0-15 yaş iyi sağlık algısını 50+ dönem dahil sürdürmesi 2 kat fazladır. Düşük eğitim seviyesinin, hayatının herhangi bir döneminde ekonomik zorluk yaşamış olmanın, olumsuz çalışma koşullarının, fiziksel hareketsizlik ile preobez/obez olmanın ve göçmen olmanın iyi sağlık algısının sürdürülmesini olumsuz etkilediği görülmüştür. Sigara kullanma ve cinsiyet ise istatistiksel olarak anlamsız etkenler olmuştur.

Sonuç: Çocukluktaki iyi sağlık algısının yaşam seyri boyunca sürdürülmesi bireysel tercihler ve yaşam tarzı ile ilgili olduğu gibi, sosyal faktörlerden de etkilenmektedir. Nüfusun tümü eşit şartlarda yaşamadığı için iyi sağlığın sürdürülmesi, dezavantajlı gruplar için daha zordur.

Anahtar Kelimeler: Yaşam Seyri Yaklaşımı, Sosyal Epidemiyoloji, Retrospektif Veri, Nicel Araştırma, Survey Of Health, Ageing And Retirement In Europe

Abstract

Objective: The purpose of this study is to examine the direct and indirect factors affecting good self-rated health over the life-course in thirteen European countries. According to life-course epidemiology, health is affected by social and biological processes from birth to later years.

Methods: Survey of Health, Ageing and Retirement in Europe (SHARE) is used (n=15128). Retrospective data provided two basis for this study: 1) examine how good self-rated health of 0-15 early life changed until 50+ late life (maintenance good health or not), 2) determine the risk factors expected to affect health by using not only current but also earlier phases of life (such as smoking at any given point of life). For this end, Hierarchical binary logistic regression models were used. Multicollinearity was checked using VIFs and goodness of fit by Hosmer and Lemeshow test.

Results: It was found that living in social-democrat, conservative-corporatist and Mediterranean welfare regimes positively affects the maintenance good self-rated health from 0-15 (early life) to 50+ (late life) as compared to post-socialist welfare regime. Additionally it was observed lower levels of education, experience of financial hardship at any given point of life, negative work conditions (high physical and psycho-social demand, low reward and control), physical inactivity, pre-obesity/obesity, and migrant background negatively affect remaining in good health. Gender and smoking at any given point of life were statistically insignificant.

Conclusion: Maintaining good self-rated health over the life-course is harder for disadvantaged groups and is affected by both individual lifestyle and social factors.

Keywords: Life course perspective, social epidemiology, retrospective study, Survey of Health, Ageing and Retirement in Europe

GİRİŞ

Sosyal epidemiyoloji; insan topluluklarında sağlık problemlerinin dağılımını, görülme sıklıklarını ve nedenlerini, sosyal koşulların sağlığa etkisini değerlendirmektedir.[1,2] Ekonomik ve sosyal faktörlerin sağlığa etkisini konu alan araştırmalarda sosyal epidemiyoloji kavramının kullanımı 1980'lerin başından itibaren hız kazanmıştır.[15] Sağlıktaki eşitsizlikleri, birey değil topluluk seviyesinde açıklamaya çalışmaktadır.[3]

Çalışmada kullanılan yaşam seyri yaklaşımı, yaşamın tüm evrelerini gözetmektedir. Erişkinlik dönemi risk faktörlerinin yanı sıra, erken dönem risk faktörleri de incelenmektedir.[4]

Sağlığın bu yaklaşımla ele alınması önemlidir çünkü sağlık durumu doğumla başlayıp çocukluk ve yetişkinliğin tümü boyunca tecrübe edilen sosyal ve biyolojik süreçlerden bütünsel olarak etkilenmektedir.[15] Sağlık için risk oluşturan etmenler; sağlığın bozulmasına neden olan biyo-medikal şartlar (dolaysız riskler) ve biyo-medikal şartlara temel sağlayan genel yaşam koşulları (dolaylı riskler) olarak ikiye ayrılarak incelenmektedir.[5] Dolaylı risklere örnek olarak düşük gelir, kötü beslenme ve elverişsiz konut koşulları verilebilir. Bu faktörler, hastalıkların ortaya çıkması için tek başına yeterli olmasalar da iyi sağlığı tehdit eden risklerdir çünkü hastalıkların gelişimine zemin

hazırlayabilmektedirler.[36] Hem biyolojik hem de sosyal faktörleri üstelik yaşamın tümü boyunca ölçümlemek zor bir görev olduğu gibi; bunların nasıl bir yaklaşımla analiz edileceği sorusu da kolaylıkla yanıtlanamamaktadır. Bazı çalışmalar bu faktörleri ilişkisel olarak ele almaktayken diğerleri ayrı ayrı incelemektedir.[4]

Bu faktörleri değerlendirmeye almanın belli başlı üç yolu olduğu söylenebilir. Birinci yaklaşımda, erken yaşam dönemlerinde maruz kalınan risklerin yaşam boyu sağlığa etkisi kümülatif olarak değerlendirilebilir. İkinci olarak, erken yaşam dönemlerindeki risklerin ilerleyen dönemlerdeki sağlık üzerindeki doğrudan etkileri incelenebileceği gibi; dolaylı etkileri de üçüncü bir yol olarak incelenebilir. Son yaklaşımda, riskler sosyal koşulları olumsuz etkileyerek (çocukluktaki sağlık risklerinin hayatın ilerleyen dönemlerinde daha kötü çalışma ve mesken koşullarına neden olması gibi) sağlık üzerinde dolaylı yollardan tehdit oluşturmaktadır.[2] Bu durumda, sağlık için risk teşkil eden koşullara zemin hazırlamaktadırlar. Her ne kadar bu üçü arasından yaygın kabul gören tek bir yaklaşım olmasa da, yaşam seyri araştırmalarının ortak noktası, riskleri yaşamın erken dönemlerinden itibaren tümü boyunca değerlendirmeye almalarıdır.

Araştırmanın amacı, yaşam seyri epidemiyolojisine dayanılarak, yirminci yüzyılın başı ile ortası arasında doğmuş olan bireylerin çocukluktaki iyi sağlık algısını yaşam boyu sürdürmelerine etki eden dolaylı ve dolaysız risk faktörlerini, 50+ yetişkinlik döneminde algıladıkları sağlık verisini kullanarak incelemektir. Veri olarak *Survey of Health, Ageing, and Retirement in Europe* (SHARE) kaynağını

kullanan araştırmanın bağımlı değişkeni "iyi sağlığın sürdürülmesi"dir. Bağımlı değişkenin belirleyicileri arasında refah devleti modelleri, çalışma koşulları, ekonomik zorluk tecrübesi, eğitim seviyesi, göçmenlik, cinsiyet ve riskli sağlık davranışları yer almaktadır.

İyi sağlık, "algılanan sağlık durumu" üzerinden değerlendirilmiştir.[46] Kişinin genel sağlığını "iyi, çok iyi, mükemmel" olarak tanımladığı, "zayıf ve kötü" olmadığını beyan ettiği bir sağlık durumuna işaret etmektedir.[17, 19] Çalışmada ele alınan refah devleti modellerinin ortaya çıkış sürecine bakıldığında, sağlıktaki eşitsizliklerin azaltılmasının temel bir amaç olduğu görülmektedir.[43] Refah devleti modelleri hem emeklilik şemaları hem de sağlık sigortaları üzerinden sosyal grupların sağlıklarına doğrudan ve dolaylı etkide bulunmaktadır.

Sosyo-ekonomik faktörler, sağlığı hem dolaylı hem de dolaysız olarak etkileyebilirler. Sağlıklı beslenme ve spor gibi sağlık için olumlu alışkanlıkların geliştirilmesi salt bireysel yaşam tercihleri ile ilgili değildir. Sosyal ve ekonomik dezavantajların birikimselliği, bireylerin riskli sağlık davranışlarını gerçekleştirme ihtimalini artırırken, olumlu sağlık davranışlarının edinmesini ise azaltmaktadır.[33] Çalışmada sağlık için risk oluşturan davranışlar arasında yaşamın herhangi bir döneminde düzenli sigara kullanmış olma ile obezite ve fiziksel hareketsizlik incelenmiştir. Son olarak cinsiyet değerlendirmeye dahil edilmiştir. Cinsiyet ilk bakışta bireysel bir faktör gibi görünse de cinsiyetler arası eşitsizlikler toplumsal tabakalaşma bağlamında sosyal bir eşitsizlik oluşturmaktadır.[5] Göç, önemli bir yaşam değişimi olarak görüldüğü için sosyal epidemiyoloji çalışmaları arasında uzun

yıllardır yer almaktadır.[2] Son olarak, çalışma çevresinin sağlıkla ilişkisi, sağlığı doğrudan etkileyen riskler olan fiziksel koşullarla sınırlı değildir. 1960'larda başlayan çalışma epidemiyolojisi araştırmaları dolaylı riskler olan psiko-sosyal stresi de ele almıştır. Sadece üst kademelerde çalışan kişiler için değil, düşük maaşlı ve düşük statülü işlerde çalışan kişiler için de sağlığı bozucu etkileri olduğu görülmüştür.[2]

YÖNTEM

Araştırmada nicel veri kaynağı olarak SHARE'in birinci (2004) ve ikinci (2006) dalgasına ek olarak SHARELIFE adlı üçüncü (2008-2009) dalgası kullanılmıştır. Panel bir araştırma olan SHARE, 2004 yılından 2021'e kadar geçen sürede 28 Avrupa ülkesi ve İsrail'de 50 yaş ve üzeri 140000 kişiden nicel veri toplamıştır. Araştırmanın önemli bir özelliği uluslararası mukayeseye imkan sağlayan, toplum sağlığı ve sosyo-ekonomik yaşam şartları hakkında boylamsal mikro veri sunmasıdır.[6] SHARE'in amacı 50 yaş ve üzeri nüfus hakkında olasılık-tabanlı örneklem kullanarak çıkarım yapmaktır. SHARE'in hedef evreni, örneklemin oluşturulduğu yılda 50 yaş ve üzerinde olan, araştırmanın yapıldığı ülkede düzenli ikameti bulunan kişilerdir. Anketin uygulandığı dönemin tamamı boyunca hapishanede olan, hastaneye kaldırılmış olan ya da ülke dışında olan kişiler, araştırma yapılan ülkenin dil(ler)ini konuşamayan kişiler, araştırma çerçevesindeki yanlış adres bilgisi gibi hatalar nedeni ile yeri tespit edilemeyen ya da başka bir haneye taşınan kişiler araştırmanın dışında bırakılmıştır. Bu kişilerin kendileriyle aynı hanede yaşayan eşleri, yaşlarından bağımsız olarak araştırmaya dahil edilmektedir. Bu nedenle 50 yaşın altında katılımcılar da vardır.[7]

SHARELIFE, retrospektif veri toplanan tematik bir dalgadır. Örneğin katılımcının çocukluk dönemindeki sağlık durumu, hayatının herhangi bir döneminde ekonomik zorluk yaşayıp yaşamadığı ya da katılımcı emekli ise çalıştığı son işin şartlarına dair veri sağlamıştır. Birinci ve ikinci araştırma dalgaları da katılımcıların riskli sağlık davranışları hakkında veri sunmaktadır. Araştırma sorusu "On üç Avrupa ülkesinde çocukluktaki iyi sağlık algısının yaşam boyunca sürdürülmesine etki eden faktörler nelerdir?" şeklindedir. Yaşam seyri epidemiyolojisi temel alınarak araştırmanın bağımlı ve bağımsız değişkenleri seçilmiştir.

Öncelikle tanımlayıcı istatistiklerle sosyodemografik gruplarda iyi sağlığın sürdürülmesi özetlenmiştir. Ardından, iyi sağlığın sürdürülmesinin anlamlı belirleyicileri olduğu düşünülen faktörlerin bağımlı değişkenle ilişkisi tek değişkenli modellerle gösterilmiştir (Tablo 2, Sütun 1). Kategorik değişkenlerden ikili olanlar "0=hayır/ölçülen özelliğin olmaması" ve "1=evet/ölçülen özelliğin var olması" şeklinde yeniden kodlanmıştır.

İyi sağlık algısının sürdürülmesine hangi faktörlerin nasıl etki ettiğinin açıklanması için hiyerarşik ikili lojistik regresyon kullanılmıştır. Hiyerarşik modelin seçilme nedeni, riskleri kendi içinde gruplandırılarak modele girmelerini sağlamasıdır. Böylelikle faktörlerin modele katkısı aşama aşama görülmüştür. Bu amaçla birinci aşamada modele sadece riskli sağlık davranışları (hayatın herhangi bir döneminde düzenli sigara kullanmış olma, orta ve yoğun fiziksel aktiflik ve preobez/obez olma) girmiştir. İkinci adımda cinsiyet, göçmenlik, eğitim seviyesi, ekonomik zorluk yaşamış olma ve

iş koşulları (yüksek fiziksel talepli iş, yüksek psiko-sosyal talepli iş, düşük iş kontrolü, düşük ödüllü iş, düşük sosyal destekli iş) modele eklenmiştir. Üçüncü aşamada refah devleti rejimleri modele eklenmiştir. Bağımsız değişkenlerin her birinin tahmin yetisi, diğer bağımsız değişkenlerin etkileri kontrol altında tutularak test edilmiştir.[8] Fiziksel risk faktörleri kontrol edildikten sonra sosyal risk faktörlerinin etkisi görülmektedir.

Her üç modelde de her bir bağımsız değişken için varyans şişirme faktörü 10'dan küçük bulunduğundan çoklu doğrusallık varsayımı ihmal edilmemiştir. Hosmer ve Lemeshow uyum iyiliği testi her üç modeli de desteklemektedir ($p > 0.05$). İstatistiksel anlamlılığı göstermek için $p < 0.05$ değeri kullanılmıştır. Araştırmacı, SHARE'in kayıtlı kullanıcısı olarak mikro veriyi bilgisayarına yüklemiş ve SPSS 21 programında analiz etmiştir. Bulgular ve tartışmada, tüm bağımsız değişkenleri içeren son model sunulmuştur.

Örneklem

Bu araştırmada SHARE'in birinci, ikinci ve üçüncü dalgaları kullanılmıştır. Üçüncü dalgaya (SHARELIFE) katılan on üç ülkenin tamamı örneklemde yer almaktadır. Örneklem, araştırma sorusuna uygun olarak birkaç adımda oluşturulmuştur:

Riskli sağlık davranışlarına ait veri, SHARELIFE'ta yer almadığı için,[9] SHARE'in birinci ve ikinci dalgaları da araştırmaya dahil edilmiştir. Bu nedenle örneklemde yer alan tüm katılımcıların, SHARELIFE'a ek olarak bu iki dalgadan da en az birine de katılması şartı aranmıştır. Bir katılımcı hem birinci hem ikinci dalgaya katılmışsa ikinci dalgadaki verisi dikkate alınmıştır. SHARE panel bir araştırma olduğu için birden çok dalganın bu

şekilde birleştirilerek kullanımı yaygın bir yöntemdir.[10,11,12]

Çalışmanın konusu iyi sağlık algısının sürdürülmesine etki eden faktörleri incelemekle sınırlıdır. Bu nedenle çocukluk (0-15 yaş) döneminde algılanan genel sağlık durumu kötü olan katılımcılar örneklemden çıkarılmıştır. Çocukluktaki kötü sağlığın yaşam seyri boyunca iyileşmesi ya da kötü kalması, bu araştırmanın konusu değildir. Ek olarak, çocukluktaki sağlığı "değişken" olan katılımcılar da örneklemden çıkarılmıştır.

Örneklem hayatının bir döneminde ücretli iş gücünün parçası olmuş olan fakat halihazırda çalışmayan katılımcılarla sınırlandırılmıştır.

SHARE'in hedef popülasyonu 50 yaş ve üzeri nüfus olsa da, katılımcıların eşleri yaşlarından bağımsız olarak örnekleme dahil edilmektedir. 50 yaşın altındaki katılımcılar örneklemden çıkarılmıştır.

Örneklemin (*n=15128*) temel sosyo-demografik özellikleri Tablo 1'de özetlenmiştir.

Veri Toplama Araçları

SHARE'de CAPI (*Computer Assisted Personal Interviewing*/ Bilgisayar Destekli Yüz Yüze Görüşme) yöntemi ile veri toplanmaktadır. Anket, her ülkenin kendi dil(ler)inde yapılmaktadır.[13] Panel araştırma olduğu için araştırmaya ilk defa katılacak olan kişiler temel soru kağıdını, daha önce en az bir dalgaya katılmış olan yanıtlayıcılarsa boylamsal soru kağıdını yanıtlamaktadır.[14] Medeni hal, eğitim durumu ve göçmenlik verisi sadece temel soru formunda toplanmaktadır. Bu nedenle demografik özelliklere dair kayıp veri, veri kaynağının gerekli dalgalarından çekilerek tamamlanmıştır.

Tablo 1. Örneklemde çocukluktaki iyi sağlık algısının yaşam seyri boyunca sürdürülmesine ait frekans tablosu (*n=15128*)

			İyi Sağlık Algısının Sürdürülmediği Katılımcılar (*n=6692, %44.2*)		İyi Sağlık Algısının Sürdürüldüğü Katılımcılar (*n=8436, %55.8*)	
			f	%	*f*	%
Cinsiyet (*n=15128*)		Kadın	3585	53.6	4396	52.1
		Erkek	3107	46.4	4040	47.9
Eğitim Seviyesi (*n=15018*)		Düşük	3946	59.4	3850	46.0
		Orta	1952	29.2	2840	33.9
		Yüksek	747	11.2	1683	20.0
Ekonomik Zorluk Yaşamış Olma (*n=15082*)		Hayır	4186	62.9	6124	72.7
		Evet	2470	36.9	2302	27.3
Göçmenlik (*n=15127*)		Göçmen Olmama	6238	93.2	7949	94.2
		Göçmen Olma	453	6.8	487	5.8
Medeni Durum (*n=15124*)		Eşi Yok	2550	38.1	2548	30.2
		Eşi Var	4139	61.8	5887	69.8
Refah Devleti Modelleri (*n=15128*)		Sosyal-demokrat	803	12.0	1335	15.8
		Akdeniz	1743	26.0	2084	24.7
		Muhafazakar-korporatist	2681	40.1	4118	48.8
		Post-sosyalist	1465	21.9	899	10.7
Sağlık İçin Riskli Davranışlar	Sigara Kullanımı (*n=15106*)	Hayır	3489	52.3	4352	51.6
		Evet	3188	47.7	4077	48.4
	Orta Fiziksel Aktivite (*n=15101*)	Yok	1276	19.1	471	5.6
		Var	5399	80.9	7955	94.4
	Yoğun Fiziksel Aktivite (*n=15100*)	Yok	3945	59.1	2856	33.9
		Var	2729	40.9	5570	66.1
	Preobez/Obez Olma (*n=15128*)	Hayır	2144	32.0	3357	39.8
		Evet	4548	68.0	5079	60.2
İş Koşulları	Yüksek Fiziksel Talepli İş (*n=12928*)	Hayır	2989	53.1	5108	69.9
		Evet	2636	46.9	2195	30.1
	Yüksek Psiko-sosyal Talepli İş (*n=12908*)	Hayır	3189	56.8	4605	63.1
		Evet	2426	36.3	2688	36.9
	Düşük İş Kontrolü (*n=12910*)	Hayır	2607	46.4	4237	58.1
		Evet	3009	53.6	3057	41.9
	Düşük Ödüllü İş (*n=12803*)	Hayır	2859	51.4	4600	63.5
		Evet	2703	48.6	2641	36.5
	Düşük Sosyal Destekli İş (*n=12910*)	Hayır	1521	27.5	2455	34.1
		Evet	4006	72.5	4740	65.9

Bağımlı Değişken

Araştırmanın bağımlı değişkeni, *iyi sağlık algısının* sürdürülmesidir. Bağımlı değişken, yaşam seyri yaklaşımı temel alınarak oluşturulmuştur. Bu yaklaşıma göre erişkinlik dönemi sağlığı, doğumdan itibaren tecrübe edilen sosyal ve biyolojik süreçlerden bütünsel olarak etkilenmektedir.[15] Çocukluk (0-15 yaş) ve erişkinlik (50 yaş üzeri) dönemi algılanan sağlık durumu verisi kullanılarak çalışmanın bağımlı değişkeni meydana getirilmiştir.

Sağlık durumunun zaman içinde değişimini konu alan çalışmalarda sağlıktaki değişim, temel (baseline) veri toplama aşamasındaki iyi ya da kötü sağlık durumu ve izlem sürecinde iyi ya da kötü sağlık durumu kullanılarak ölçülmektedir. Newbold (2005),[16] Adena ve Myck (2014),[17] Keenan ve Grundy (2017),[18] Pakpahan ve ark. (2017)[11] ve Reus-Pons ve ark.nın (2018)[19] yöntemleri incelendiğinde sağlıktaki değişimi Allison'ın (2010, s. 3)[21] çalışmasına dayanan ve "olayların meydana geliş zamanına odaklanan" bir yöntemle ölçtükleri görülmektedir. Prospektif veriye özgü olan bu yöntem sağlıktaki değişimin zamanı ile ilgilenmektedir.[21]

Bu çalışmada ise retrospektif veri kullanılmaktadır ve algılanan sağlıktaki değişimin incelenmesinde Hirdes ve Forbes'in (1993)[46] araştırması ile benzer bir yöntem izlenmiştir. Bunun için veri kaynağında katılımcıların 0-15 yaş algılanan sağlık bilgisine ek olarak, 50 yaş ve üzeri dönemdeki sağlığın iyi ya da kötü algılandığı bilgisi yer almaktadır. Böylelikle "Çocukluktaki iyi sağlık algısı, yetişkinlik döneminde sürdürülmekte mi?" sorusuna yanıt alınabilmektedir. Bununla birlikte katılımcıların çocukluktaki iyi sağlık algısı şayet sürdürülmediyse yani erişkinlikteki sağlık algısı kötü ise, kötü

sağlığın tam olarak ne zaman meydana geldiği bilgisi bulunmamaktadır. Bu durum çalışmanın bir sınırlılığıdır. Çalışmanın amacı sağlık algısındaki değişimi (*1.* iyiden kötüye, *2.* iyiden iyiye, *3.* kötüden iyiye ve *4.* kötüden kötüye) değil, iyi sağlık algısının sürdürülmesini (*1.* iyiden iyiye olup sağlığın sürdürülmesi ve *2.* iyiden kötüye olup sağlığın sürdürülmemesi) ele almak olduğu için çocukluk sağlığı kötü olan katılımcılar araştırmanın dışında bırakılmıştır.

Bağımlı değişken (iyi sağlık algısının sürdürülmesi) üç adımda oluşturulmuştur. İlk adımda, katılımcının 0-15 yaş algılanan sağlık durumunu 5'li Likert ölçekle gösteren "çocukluk sağlığı" değişkeni, iyi sağlık (mükemmel, çok iyi, iyi) ve kötü sağlık (zayıf, kötü) kategorileriyle yeniden kodlanmıştır. İkinci adımda, erişkinlik dönemi (50+) algılanan sağlık durumu 5'li Likert ölçekten iyi sağlık (mükemmel, çok iyi, iyi) ve kötü sağlık (zayıf, kötü) olmak üzere ikili kategorik değişken haline getirilmiştir.[22]

Üçüncü adımda, bu araştırmanın bağımlı değişkeni olan *iyi sağlık algısının* sürdürülmesi oluşturulmuştur. Bu değişken "1" iyi sağlık algısının sürdürülmesi yani hem çocukluk hem erişkinlikte algılanan sağlığın iyi olması ve "0" iyi sağlığın sürdürülmemesi yani çocuklukta algılanan sağlık iyi olup erişkinlikte kinin kötü olması olmak üzere iki kategoriye sahiptir. Buna göre çocukluktaki iyi sağlık erişkinlikte devam ediyorsa iyi sağlık algısı sürdürülmüş, çocukluktaki iyi sağlık durumu erişkinlikte devam etmiyorsa iyi sağlık algısı sürdürülmemiştir.

Bağımsız Değişkenler

Bağımsız değişkenler, çocukluktaki iyi sağlık algısının erişkinlik dönemine kadar

sürdürülebilmesinin önünde dolaylı ya da dolaysız risk faktörleri oluşturmaktadır. Risk faktörü, "hastalık oluşumu riski ile pozitif bir ilişki içinde olan; ancak, hastalığa yol açmak için yeterli olmayan faktörler" olarak tanımlanmaktadır.[36]

Ülkeler refah devleti modellerine göre sosyal-demokrat (İsveç ve Danimarka), Akdeniz (İtalya, İspanya ve Yunanistan), muhafazakar-korporatist (Almanya, Belçika, Hollanda, Fransa, İsviçre ve Avusturya) ve post-sosyalist (Polonya ve Çek Cumhuriyeti) olarak dört kategoriye ayrılmıştır.[23]

SHARELIFE'ta, katılımcılardan geçmişte çalışmış oldukları tüm ücretli işler arasındaki "son ana işin" koşulları hakkında retrospektif veri toplanmaktadır. İş koşullarının ölçümü literatürde[2, 12, 26] sıklıkla Karasek ve arkadaşlarının (1998)[24] talep-kontrol modeli ve Siegrist ve ark.nın (2004)[25] çaba-ödül dengesizliği modeli ile yapılmaktadır. Makalede bu iki modelden yola çıkılarak iş koşulları şu beş boyutla ölçülmüştür: işin fiziksel talep (2 madde), psiko-sosyal talep (3 madde), işte sosyal destek (2 madde), iş üzerinde kontrol (2 madde) ve ödül (2 madde). Bu maddeler 4'lü Likert ölçekle ölçülmektedir. Öncelikle gerekli maddelere tersten kodlama yapılmıştır. Ardından her boyut için toplam puan hesaplanmıştır. Puanlar toplanırken bir boyuttaki tüm sorulara yanıt verilmiş olması, kayıp veri olmaması şartı aranmıştır. Her boyutta yüksek puanlar daha olumsuz iş koşullarına işaret etmektedir. Son olarak her boyut için toplam puan ikili kategorik değişken haline getirilmiştir. Üst tertildeki puanlar "olumsuz iş koşulları"nı göstermektedir.[12] İş koşullarının ölçümü için geçerlik güvenirlik çalışması Karasek ve arkadaşları (1998) ile Siegrist ve arkadaşları (2004) tarafından

yapılmıştır ve bu makaledeki ölçüm doğrudan Wahrendorf ve arkadaşlarının (2013) çalışmasına dayanmaktadır.

Ekonomik zorluk tecrübesi, SHARELIFE'ın retrospektif tasarımına özgü bir soru olan "hayatın bir döneminde ekonomik zorluk yaşamış olma" ile ölçülmüştür. Eğitimin ölçümünde, UNESCO'nun 1997 yılında yayınlanan Uluslararası Standart Eğitim Sınıflaması (ISCED) raporu esas alınarak 0'dan 6'ya kadar derecelendirilmiş olan eğitim değişkeni düşük (0, 1 ve 2 seviyeleri), orta (3 ve 4 seviyeleri) ve yüksek (5 ve 6 seviyeleri) olarak yeniden kodlanmıştır.[27] Araştırmanın yapıldığı ülkeden başka bir ülkede doğmuş olan kişiler "göçmen", araştırma ülkesinde doğmuş kişiler "göçmen değil" olarak kodlanmıştır.[28] Cinsiyet iki kategoriye ayrılmaktadır [Medeni durum, örneklemin demografik özelliklerinin tanıtılması amacı ile kullanılmıştır, regresyon modeline girmemiştir. 1= Eşi olan (evli/ birlikte yaşama) ve 0= Eşi olmama (ayrı/ boşanmış; dul; hiç evlenmemiş) olarak ikili kategorik değişken haline getirilerek incelenmiştir.[20]]

Riskli sağlık davranışları arasında *1)* sigara kullanımı, *2)* orta veya yoğun fiziksel aktiflik ve *3)* vücut kitle indeksi kullanılmıştır.[19] En az bir yıl süreyle her gün sigara, puro veya tütün kullanan kişiler "sigara kullanıyor" olarak; vücut kitle indeksi 25'ten yüksek olanlar preobez/obez olarak kodlanmıştır.[29,30] Katılımcı yoğun fiziksel aktiviteleri (spor, ağır ev işi veya fiziksel güç kullanımı gerektiren işler) "ayda en az 1 kez" yapıyorsa yoğun fiziksel aktivite "gerçekleştiriyor", "ayda bir kereden az" yapıyorsa "gerçekleştirmiyor" olarak kodlanmıştır. Bahçe işi yapma, araba yıkama ve yürüyüş yapma gibi orta fiziksel aktiviteler de aynı yöntem izlenerek

kodlanmıştır.[29]

BULGULAR

Çocukluktaki iyi sağlık algısının erişkinlikte de devam etmesi üzerinde hangi faktörlerin etkili olduğunu anlamak amacıyla hiyerarşik ikili lojistik regresyon yürütülmüştür. Riskli sağlık davranışları (sigara kullanımı, orta ve yoğun fiziksel aktiflik ve preobez/obez olma) ilk blokta modele girilmiştir. Bu değişkenler iyi sağlık algısının sürdürülmesindeki varyansın %7.8 (Cox ve Snell R^2) ile %10.5 (Nagelkerke R^2) arasında bir kısmını açıklayabilmektedir ve katılımcıların %63.3'ünü doğru bir biçimde sınıflandırabilmiştir. İkinci adımda cinsiyet, göçmenlik, eğitim seviyesi, ekonomik zorluk yaşamış olma ve iş koşulları (yüksek fiziksel talepli iş, yüksek psiko-sosyal talepli iş, düşük iş kontrolü, düşük ödüllü iş, düşük sosyal destekli iş) modele eklenmiştir. İkinci model iyi sağlık algısının sürdürülmesindeki varyansın %12.1 (Cox ve Snell R^2 ile %16.2 (Nagelkerke R^2) arasında bir kısmını açıklayabilmektedir ve katılımcıların %66'sını doğru bir biçimde sınıflandırabilmiştir. Son olarak refah devleti rejimleri modele eklenmiştir. Tüm bağımsız değişkenleri içeren tam modelde on dört bağımsız değişken vardır ve istatistiksel olarak anlamlı bulunmuştur X^2 (17, *n=15128*) = 1723.48; *p<0.001*, bu değerler modelin iyi sağlık algısının sürdürülmesi ile sürdürülmemesini ayırt edebildiğini göstermektedir. Bir bütün olarak model iyi sağlığın sürdürülmesi ile ilgili varyansın %12.9 (Cox ve Snell R^2) ile %17.3 (Nagelkerke R^2) arasında bir kısmını açıklayabilmektedir ve katılımcıların %66,4'ünü doğru bir biçimde sınıflandırabilmiştir.

İyi sağlık algısının sürdürülmesinin en güçlü yordayıcıları yoğun fiziksel aktiflik (OR=2.22, %95 GA=2.08-2.44, *p<0.001*)

ve orta fiziksel aktifliktir (OR=2.12, %95 GA=1.85-2.44, *p<0.001*). Bu değerler şunu göstermektedir ki; modeldeki diğer tüm unsurlar kontrol altında tutulduğunda, yoğun ve orta fiziksel aktiflik gösteren katılımcılarda iyi sağlık algısının sürdürülmesi olasılığı aktif olmayan katılımcılardan en az 2 kat daha fazladır. Değişkenlerin önem sırasına göre, refah devleti modelleri de iyi sağlığın sürdürülmesinin güçlü bir yordayıcısıdır. Post-sosyalist refah devleti modeline (Polonya ve Çek Cumhuriyeti) kıyasla sosyal-demokrat refah modelinde (İsveç ve Danimarka) iyi sağlığın sürdürülmesi 1.84 kat (OR=1.84, %95 GA=1.59-2.12, *p<0.001*); Akdeniz refah modelinde (İtalya, İspanya ve Yunanistan) 1.82 kat (OR=1.82, %95 GA=1.61-2.05, *p<0.001*); ve muhafazakar-korporatist refah modelinde (Almanya, Belçika, Hollanda, Fransa, İsviçre ve Avusturya) 1.79 kat (OR=1.79, %95 GA=1.59-2.01, *p<0.001*) daha yüksektir (bkz. Tablo 2, sütun 4). Modeldeki diğer tüm unsurlar kontrol altında tutulduğunda bu üç refah modelinde iyi sağlık algısının sürdürülmesinin post-sosyalist refah rejimine sahip ülkelere göre ihtimal oranları katınca daha fazladır.

Ekonomik zorluk yaşamış olanlara kıyasla yaşamamış olanlarda iyi sağlık algısının sürdürülmesi 1.50 kat (OR=1.50, %95 GA=1.38-1.63, *p<0.001*) daha yüksektir. Eğitim seviyesi yüksek olanlara kıyasla düşük olanlarda iyi sağlık algısının sürdürülmesi 1.64 kat (OR=1.64, %95 GA=1.54-1.85, *p<0.001*) ve orta olanlarda 1.37 kat (OR=1.37, %95 GA=1.21-1.47, *p<0.001*) daha düşüktür. İşi yüksek fiziksel talep gerektirmemiş olanlarda iyi sağlık algısının sürdürülmesi 1.50 kat (OR=1.50, %95 GA=1.38-1.64, *p<0.001*) ve düşük ödüllü işte çalışmamış olanlarda 1.29 kat (OR=1.29, %95 GA=1.19-1.40, *p<0.001*) daha yüksektir. Göçmen olanlara kıyasla yerli

Tablo 2. İyi Sağlık Algısının Sürdürülmesini Modelleyen Lojistik Regresyon Sonuçları

	Tek Değişkenli Modeller			Çok Değişkenli Model 1[1]			Çok Değişkenli Model 2[2]			Çok Değişkenli Model 3[3]		
	OR	%95 GA		OR	%95 GA		OR	%95 GA		OR	%95 GA	
		Alt	Üst		Alt	Üst		Alt	Üst		Alt	Üst
Sigara Kullanımı (ref=Evet) Hayır	0.98	0.92	1.04	0.99	0.91	1.06	1.02	0.94	1.10	1.02	0.94	1.11
Preobez/Obez Olma (ref=Evet) Hayır	1.40	1.31	1.50	1.34*	1.24	1.45	1.25*	1.15	1.35	1.21*	1.12	1.31
Yoğun Fiziksel Aktivite (ref=Var) Yok	0.35	0.33	0.37	0.44*	0.40	0.47	0.44*	0.40	0.47	0.45*	0.41	0.48
Orta Fiziksel Aktivite (ref=Var) Yok	0.25	0.22	0.28	0.41*	0.36	0.47	0.45*	0.40	0.52	0.47*	0.41	0.54
Cinsiyet (ref=Kadın) Erkek	1.06	0.99	1.13				1.02	0.94	1.10	0.98	0.90	1.07
Göçmenlik (ref=Göçmen Olma) Göçmen Olmama	1.19	1.04	1.35				1.24**	1.06	1.46	1.29*	1.10	1.52
Ekonomik Zorluk Yaşamış Olma (ref=Evet) Hayır	1.57	1.47	1.68				1.47*	1.35	1.59	1.50*	1.38	1.63
Eğitim Seviyesi (ref=Yüksek) Düşük Orta	0.43 / 0.65	0.39 / 0.58	0.48 / 0.65				0.60* / 0.69*	0.54 / 0.61	0.68 / 0.78	0.61* / 0.73*	0.54 / 0.65	0.68 / 0.82
Yüksek Fiziksel Talepli İş (ref=Evet) Hayır	2.05	1.91	2.21				1.58*	1.45	1.71	1.50*	1.38	1.64
Yüksek Psiko-sosyal Talepli İş (ref=Evet) Hayır	1.30	1.21	1.40				1.14**	1.05	1.24	1.12**	1.03	1.21
Düşük İş Kontrolü (ref=Evet) Hayır	1.60	1.49	1.72				1.17*	1.03	1.27	1.14**	1.05	1.24
Düşük Ödüllü İş (ref=Evet) Hayır	1.65	1.53	1.77				1.31*	1.21	1.42	1.29*	1.19	1.40
Düşük Sosyal Destekli İş (ref=Evet) Hayır	1.36	1.26	1.47				1.08	0.99	1.18	1.06	0.97	1.16
Refah Devleti Modeli (ref=Post-sosyalist) Sosyal-Demokrat Akdeniz Muhafazakar-Korporatist	2.71 / 1.95 / 2.50	2.40 / 1.76 / 2.27	3.06 / 2.16 / 2.76							1.84* / 1.82* / 1.79*	1.59 / 1.61 / 1.59	2.12 / 2.05 / 2.01
Sabit				1.92			0.94			0.58		

[1]Hiyerarşik lojistik regresyonda Blok 1'in sonuçlarıdır. Hosmer ve Lemeshow *p*>0.05 Doğru Sınıflama Oranı=%63.3
[2]Hiyerarşik lojistik regresyonda Blok 2'nin sonuçlarıdır. Hosmer ve Lemeshow *p*>0.05 Doğru Sınıflama Oranı=%66.0
[3]Hiyerarşik lojistik regresyonda Blok 3'ün sonuçlarıdır sonuçlarıdır. Hosmer ve Lemeshow *p*>0.05 Doğru Sınıflama Oranı=%66.4
* *p*<0.001
** *p*<0.05
OR: Odds oranı, GA: Güven aralığı, ref: referans kategori
Not: Bulgular başlığı ile Tablo 2 sütun 4'ten farklı olan değerlerin nedeni, Odds oranının 1'den düşük olması durumunda yorumlamayı kolaylaştırmak için "odds oranı tarafından bölünen 1" işleminden elde edilen sonuçların metinde kullanılmış olmasıdır.[8]

olanların iyi sağlık algısını sürdürmesi 1.29 kat daha yüksektir (OR=1.29, %95 GA=1.10-1.52, *p<0.001*). Preobez/obez olanlara kıyasla olmayanlarda iyi sağlık algısının sürdürülmesi 1.21 kat (OR=1.21, %95 GA=1.12-1.31, *p<0.001*) daha yüksektir. Önem sırasına göre son olarak işi yüksek psiko-sosyal talep gerektirmemiş olanlarda iyi sağlık algısının sürdürülmesi 1.12 kat (OR=1.12, %95 GA=1.03-1.21, *p<0.001*) ve düşük kontrol kurabildikleri işte çalışmış olanlara kıyasla olmayanlarda 1.14 kat (OR=1.14, %95 GA=1.05-1.24, *p<0.001*) daha yüksektir. Hayatın herhangi bir döneminde sigara kullanmış olmanın, düşük destek ortamı olan işte çalışmış olmanın ve cinsiyetin etkisi ise istatistiksel olarak anlamsız bulunmuştur.

TARTIŞMA

Bu araştırmanın amacı, yaşam seyri epidemiyolojisine dayanılarak, yirminci yüzyılın başı ile ortası arasında doğmuş olan bireylerin çocukluktaki iyi sağlık algısını yaşam boyu sürdürmelerine etki eden dolaylı ve dolaysız risk faktörlerini, 50+ yetişkinlik döneminde algıladıkları sağlık verisini kullanarak incelemektir. Hiyerarşik ikili lojistik regresyon modeli uygulanmıştır. Böylelikle sağlık risklerinin kendi içinde gruplandırılarak modele girmeleri sağlanmıştır.

Sonuçlara göre yoğun ve orta fiziksel aktiflik, tüm değişkenler içinde en güçlü tahmin ediciler olmuştur. Fiziksel aktivitenin sağlanması, iyi sağlık algısının sürdürülmesi için önemlidir. Fiziksel hareketsizlik gibi riskli sağlık davranışları, bireyin yaşam tercihleri ile sınırlı bir çerçevede yorumlanmamalıdır. Zira sosyo-ekonomik statü (SES) gibi sosyal faktörlerle de ilişkilidir. SES, sağlıklı yaşam alışkanlıklarının edinilmesinde fırsat eşitliği[31]

belirlemektedir. Yine, sosyal sermaye "hastalıklardan korunma ve sağlıklı yaşam hakkında bilgi akışı sağlama"[32] üzerinden etkili olan bir diğer sosyal faktördür.

Her ne kadar öne çıkan bir faktör olmasa da preobez/obez olmayanlarda iyi sağlık algısında devamlılığın, preobez/obez olanlardan daha yüksek olduğu görülmüştür. Sağlıklı davranışların geliştirilmesi sayesinde en yaygın hastalıklar önlenebilmektedir.[33] Bu nedenle sağlık için riskli davranışların nüfusta dağılımının anlaşılması epidemiyoloji çalışmalarında önemli yere sahiptir. Bu çalışmalara dayanılarak sağlığı olumlu etkileyen alışkanlıkların (sağlıklı beslenme ve egzersiz gibi) bireylere kazandırılmasını hedefleyen politikalar uygulanmaktadır.[44] Fakat sağlığın korunması amacıyla toplumsal olan yerine bireysel seviyedeki müdahalelerin, bireysel risk faktörlerini odağa alarak "halk sağlığı" yaklaşımını yitirdiği eleştirisi yapılmaktadır.[3]

Bireysel davranışlara zemin hazırlayan toplumsal yapının nasıl iyileştirilebileceği üzerinde duran müdahaleler planlanmalıdır. Sosyal epidemiyoloji, basitçe hangi risk faktörlerinin sağlıkla ilişkili olduğunu ortaya çıkarmakla kalmaz. Odaklandığı temel mesele hangi nüfus gruplarında riskli davranışların daha yaygın olduğudur. Çünkü sağlık davranışları toplumda rastgele dağılmayıp sosyal bir örüntüye sahiptir ve riskli davranışların düşük sosyal sınıflar arasında daha yaygın olduğu çok sayıda çalışma ile gösterilmiştir.[33] Sosyal politikalarla, yetersiz yapısal-sosyal unsurların desteklenerek iyileştirilmesi sağlıktaki eşitsizliklerin giderilmesi için önemli bir adım olacaktır.

Sonuçlara göre, eğitim seviyesinin düşük olması ve yaşamın herhangi bir dönemde

ekonomik zorluk yaşamış olma iyi sağlık algısının sürdürülmesini olumsuz etkilemektedir. Bu bulgu literatürü desteklediği gibi[22], düşük SES'in diğer göstergeleri ile birlikte yorumlandığında daha anlaşılır bir tablo ortaya koymaktadır. Çünkü bulgulara göre fiziksel ve psikolojik anlamda zorlayıcı iş koşulları ve düşük maaşlı/kontrollü işte çalışmış olma da iyi sağlığın sürdürülmesini olumsuz etkilemektedir ve bu koşullar da düşük SES ile ilişkilendirilebilir. Sosyal ve ekonomik dezavantajların birikimselliği, bireylerin riskli sağlık davranışlarını artırırken, olumlu sağlık davranışlarının kazanılmasını ise azaltmaktadır.[33] Araştırma bulguları SES'in sağlık üzerindeki etkisinin yeterli beslenme, elverişli meskenlerde yaşama ve sağlık hizmetlerine kolay erişim gibi doğrudan etkilerle sınırlı kalmadığı; dolaylı etkilerinin de olduğu yönündeki literatürü[34] desteklemiştir. Söz gelimi eğitim düzeyi düşük olduğu için düşük maaşlı işlerde çalışan, yaptığı iş fiziksel olarak zorlayıcı olan ve uzun dönemli işsiz kalan bir kişinin yaşam seyri boyunca sağlığını korumada bir takım sosyal eşitsizliklerle karşı karşıya gelme ihtimalinde yaşadığı ülkenin ekonomik sisteminin de belirleyici olduğu söylenebilir. Zira Bismarkiyan sistemde toplu emeklilik şemasına yapılan katkı üzerinden emeklilik planlanırken, Beverijyan sistemde vatandaşlık statüsü ve muhtaçlık seviyesi belirleyici olmaktadır.[45]

Bulgulara göre refah modelleri, iyi sağlık algısının sürdürülmesinde öne çıkan bir faktör olmuştur. Post-sosyalist refah modeline kıyasla diğer üç refah modelinde (sosyal-demokrat, muhafazakar-korporatist ve Akdeniz) 2 kat daha fazla olduğu görülmüştür. Refah modelleri arasındaki farklar, sosyal güvenlik sistemleri ve sağladıkları sosyal faydalar üzerinden yorumlanabilir. Post-sosyalist refah modelinde, diğerlerinden farklı olarak sosyal güvenlik sistemi toplumun çoğunu kapsıyor olmasına rağmen sosyal faydalar sınırlı kalmaktadır.[23] İyi sağlık algısının korunmasının daha kolay olduğu üç refah modelindeki ülkelerin ortak bir özelliği, gayri safi yurtiçi hasılanın (GSYH) yüksek seviyede olmasıdır. GSYH sağlıktaki eşitsizliklerin anlaşılmasında önemli bir faktördür. Sağlık için önemli olan bazı biyo-belirteçler GSYH'sı düşük olan ülkelerde kırdaki nüfusun sağlığı için risk teşkil ederken GSYH'sı yüksek ülkelerde kır-kent arasındaki bu fark ortadan kalkmaktadır.[30] Bu durum yüksek GSYH'nın, sağlığı olumsuz etkileyen faktörlerin etkisini hafiflettiğini göstermektedir.

Son olarak, göç tecrübesinin iyi sağlığın sürdürülmesini olumsuz etkilediği görülmüştür. Göçmenlerin genel sağlık durumunun yerlilere kıyasla daha kötü olduğu bilinmektedir.[19] Epidemiyolojinin amacı, özellikle de dezavantajlı grupların sağlığını iyileştirmektir.[36] Göçmenler dezavantajlı bir grup olarak düşünülebilir. Göç, önemli bir yaşam değişimi olarak kabul edilmekte ve uzun yıllardır sosyal epidemiyoloji kapsamında çalışılmaktadır.[2]

Sağlıkta cinsiyet temelli eşitsizlikler, özellikle de 1960'dan itibaren, kadınların sosyal ve ekonomik koşullarının sağlıkta cinsiyetler arası eşitsizlik oluşturması bağlamında çalışılmaya başlanmıştır.[4] Fakat bu araştırmada cinsiyetin istatistiksel olarak anlamlı bir etkisi olmamıştır. Yine hayatın herhangi bir döneminde düzenli sigara kullanmış olmanın istatistiksel olarak anlamlı bir etkisi olmadığını göstermiştir. Sigara kullanım süresi ve sıklığı gibi daha ayrıntılı verilerle yeni çalışmaların yapılması gereklidir. Araştırmada emekli olmadan önce

kişinin çalıştığı son ana işin koşulları beş boyutla incelenmiştir. Bunlardan iş yerinde düşük sosyal desteğe sahip olmanın, iyi sağlık algısının yaşam seyri boyunca sürdürülmesi üzerinde istatistiksel olarak anlamlı etkisi olmadığı görülmüştür. Yapılacak yeni araştırmalarda erken çalışma koşulları ile psikolojik sağlık arasındaki ilişki incelenmelidir.

Yaşam seyri epidemiyolojisi 1960'lardan itibaren teorik olarak gelişmiş olsa da, varsayımlarının ampirik ispatı oldukça zordur.[2] Çünkü yaşam seyrinin tüm basamaklarını kapsayacak şekilde sağlıkla ilgili ölçümlerin gerçekleştirilmesi hem verinin toplanması hem de analizi açısından kolay değildir. Bu çalışma da konusu itibari ile önemli sınırlılıklara sahiptir. Öncelikle, retrospektif verinin doğası gereği katılımcıların geçmişe dair sorulara yanlış cevap verme ihtimali vardır.[22] Ayrıca, sağlığın algılanan sağlık yerine daha somut ve nesnel ölçümlerle analiz edilmesi ve multilevel modellerin kullanılması literatüre daha açıklayıcı katkı verme potansiyeline sahiptir. Çalışmanın sonuçları, çocukluk dönemi sağlığı iyi olan ve hayatının bir döneminde ücretli bir işte çalışmış olan kişilerle sınırlandırılmış olsa da, örneğin farklı meslek gruplarına odaklanan çalışmaların yapılması anlamlı olacaktır.

SONUÇ

Sağlık risklerinin sosyal yorumunda birey değil, bireysel durumun arkasında yatan sosyal kaynağın anlaşılmaya çalışılması temellerini, Rose'un (1992) "Neden *bu* nüfus grubu için *bu* risk özellikle söz konusudur?" sorusundan almaktadır.[2] Bu araştırmada refah devleti rejimleri ve düşük SES ile ilişkili pek çok göstergenin sağlık üzerinde etkili olduğu gösterilmiştir. Sonuç olarak, çocukluktaki

iyi sağlık durumunun yaşam seyri boyunca devam ettirilmesinde bireyin özgür iradesi ve bireysel sorumluluklar önemli olsa da, sosyal şartların sağlığa etkisi ihmal edilmemelidir.[35] Sağlığın sosyal belirleyicileri genel olarak "insanın yaşadığı ve çalıştığı koşullar" olup bunların ele alınması tüm insanlar için sağlığın iyileştirilmesinin en adil yolu olarak görülmektedir.[36]

Bu makalenin konu aldığı iyi sağlık algısının yaşam boyu sürdürülmesi ve toplumun sağlığa yönelik risklerden korunması, Türkiye Sağlıklı Yaşlanma Eylem Planı'nın öncelikli müdahale alanları arasında yer almaktadır.[37] Türkiye'de, ulusal düzeyde temsil ediciliği olan bir örneklemle, SHARE gibi boylamsal bir araştırma yapılarak veri toplanmasına ihtiyaç vardır. Böyle bir veri, hem emeklilik hem de sağlık politikalarının belirlenmesi için önemli bir bilimsel temel sağlayacaktır. SHARELIFE gibi retrospektif veri toplanması da sağlığın yaşam boyu değişiminin gözlenmesi ve farklı kuşakların tecrübelerinin anlaşılması bağlamında önemlidir.

BİLDİRİMLER

CIT4-CT-2006-028812), FP7 (SHARE-PREP: GA N°211909, SHARE-LEAP: GA N°227822, SHARE M4: GA N°261982); Horizon 2020 (SHARE-DEV3: GA N°676536, SERISS: GA N°654221) ve DG Employment, Social Affairs & Inclusion çerçevesinde fonlanmıştır. German Ministry of Education and Research, the Max Planck Society for the Advancement of Science, the U.S. National Institute on Aging (U01_AG09740-13S2, P01_AG005842, P01_AG08291, P30_AG12815, R21_AG025169, Y1-AG-4553-01, IAG_BSR06-11, OGHA_04-064, HHSN271201300071C) ve diğer çeşitli fon kaynakları da vardır (bkz. *www.share-project.org*).

Yazar Katkısı: Fikir: FSP, Tasarım: FSP, Gözetim: FSP, Araç gereç: FSP, Veri toplama ve işleme: SHARE, Analiz ve yorumlama: FSP, Literatür tarama: FSP, Yazma: FSP, Eleştirel inceleme: FSP.

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TURKISH JOURNAL OF PUBLIC HEALTH

ORIGINAL ARTICLE/ORİJİNAL MAKALE

Vaccine criticism on Turkish websites between 2017-2018: A descriptive analysis

2017-2018 arasında Türkçe internet sitelerinde aşı eleştirisi: Tanımlayıcı bir analiz

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Abstract

Objective: This study aimed to quantify the content and design attributes of Turkish vaccine critical websites and list the arguments used between 2017 and 2018 when reportedly 23000 families refused childhood vaccines.

Methods: Websites were screened by two researchers using Google, between October 30-November 23, 2017. Every researcher screened 30 results for every word query. Exclusion criteria were implemented based on Wolfe's (2002) and Kata's (2010) research. A third researcher acted as a referee and produced a final list on February 04, 2018. The websites were analyzed between April 2-August 28, 2018 according to the criteria developed in Kata's study. The criteria contained 50 items under content and design headings.

Results: Most of the resultant 16 websites were not vaccine specific and transmitted already available information. The criteria searched were generally less frequent in Turkish websites than in English and French websites. Criticism of biomedicine, superiority of alternative medicine, sharing of personal stories and use of imagery had low presence. Commercialization was observed less and religious reasons were observed higher in Turkish websites. Websites that supported religious tenets were usually about halal food and used American anti-vaccine websites as resources.

Conclusion: Turkish vaccine critical websites referring to foreign resources were usually less developed than their foreign counterparts. Network analysis of vaccine critical websites would yield more in-depth knowledge of the relationship between them. Ministry of Health should invest more in the Web, specifically targeting its response according to the criteria available in vaccine critical websites.

Keywords: Vaccination Refusal, Vaccine Hesitancy, Internet, Content Analysis

Öz

Amaç: Bu çalışma 2017 ve 2018 yılları arasında, Türkçe aşı eleştirel internet sitelerinin içerik ve tasarım özelliklerini nicel olarak belirlemek ve kullanılan argümanları listelemek amacıyla yapılmıştır. 2017'de 23000 aile çocukluk aşılarını reddetmiştir.

Yöntem: İki araştırmacı Google'ı kullanarak 30 Ekim ve 23 Kasım 2017 arasında internet sitelerini taramıştır. Her araştırmacı her araştırılan kelime için 30 internet sayfasını taramıştır. Dışlama kriterleri Wolfe'un 2002'deki ve Kata'nın 2010'daki araştırmasından uyarlanmıştır. Üçüncü bir araştırmacı hakem olarak rol almış olup, son listeyi 04 Şubat 2018 tarihinde hazırlamıştır. İnternet siteleri Kata'nın çalışmasında geliştirilmiş kriterlere göre 02 Nisan ve 28 Ağustos 2018 tarihleri arasında analiz edilmiştir. Kriterler içerik ve tasarım başlıkları altında 50 madde içermektedir.

Bulgular: Elde edilen 16 internet sitesinin çoğu aşılara spesifik olmayan ve zaten var olan bilgileri ileten sitelerdi. Araştırılan kriterler genelde Türkçe internet sitelerinde, İngilizce ve Fransızca internet sitelerine göre daha azdı. Biyotıbbın eleştirisi, alternatif tıbbın üstünlüğü, kişisel hikayelerin paylaşımı ve görselliğin kullanımı az gözlemlenmiştir. Ticarileşme ile ilgili kriter daha az gözlenirken, dini sebepler Türkçe internet sitelerde daha sık gözlemlenmiştir. Dini sebepleri destekleyen internet siteleri genellikle helal gıda üzerine olup, Amerikan aşı karşıtı internet sitelerini kaynak almışlardır.

Sonuç: Türkçe aşı eleştirel internet siteleri dış kaynakları referans almaktadır ve yabancı muadillerinden daha az gelişmiştir. Aşı eleştirel internet sitelerinin ağ analizi, birbirleri arasındaki ilişkiler hakkında daha derin bilgi sağlayacaktır. Sağlık Bakanlığı internete daha fazla yatırım yapmalı, yanıtını aşı eleştirisinde bulunan internet sitelerindeki mevcut kriterlere göre düzenlemelidir.

Anahtar Kelimeler: Aşı Reddi, Aşı Kararsızlığı, İnternet, İçerik Analizi

INTRODUCTION

Although declared one of the most successful health interventions known by the WHO, during the time span the research conducted the Health Ministry of Turkey stated that 23000 families refused childhood vaccines in 2017 .[1,2,3] As of November 2022, there hasn't been an update to this figure by the official authorities on the Internet.

Nearly 70% of the Internet users obtained information about health on the Internet in 2016.[4] A 2018 study conducted on a cohort of approximately 1700 mothers found out that "mothers seek information about vaccination from friends or online".[5] The search for information increased with the level of doubt.[5] It's often argued that online misinformation contributes to vaccine hesitancy.[6,7]

Content analysis of vaccine critical internet sites has been improving since the beginning of 2000s. Essentially two trends could be observed in the methods of studies done regarding data extraction from the Internet. One branch of studies followed the development of an exclusion list to select vaccine critical websites that fulfilled a series of conditions with a detailed check list to quantify content and design criteria.[8-11] The exclusion list was implemented starting in Wolfe's study, followed and expanded by similar studies.[8-10,12] English and

French websites were studied, but to our knowledge no studies were conducted on Turkish websites with similar methods. The milestone studies were done by Anna Kata in 2010, and Bean in 2011 on English websites.[9,10] Ward et al also used an exclusion criteria based on Kata's study to screen and evaluate French websites a few years later.[11]

Another branch of studies used limited exclusion criteria to identify websites but tried to cover almost all vaccine critical available content leading to the use of fewer and more general criteria to quantify.[13,14] For instance a quantitative analysis of Italian websites and a research on French websites were conducted with those methods.[13,14] Also, a recent similar study that compared Turkish websites before and after the COVID-19 pandemic used 28 criteria to assess a general pool of available internet content such as news websites, forums and etc.[15] The study lacked the checking of presence of specific content criteria such as; (1) vaccines were causing idiopathic illnesses, (2) contain poisons, (3) criteria regarding conspiracy theories and religion. Therefore the main aim of the study of Kaya et al was to compare the effect of COVID-19 rather than to reflect the content of vaccine critical websites.[15]

It was presumed that this study would yield different results concerning the vaccine criticism culture on the Internet of a developing and a predominantly Muslim country, Turkey. The aim of this study was to determine the frequency of content and design criteria in Turkish vaccine critical websites using generally accepted exclusion criteria and to document qualitatively the arguments used therein.

METHODS

Making the List of Vaccine Critical Internet Websites

The study was designed as a descriptive analysis of the content of Turkish vaccine critical websites by using quantitative methods and qualitative data were added to illustrate the arguments used. Two researchers (Researcher 1 and 2) used two different computers between October 30, 2017- November 23, 2017 to query the selected keywords on the Internet and prepared two separate Internet page lists of vaccine critical websites. A third researcher (Researcher 3) acted as a referee to produce a final list on February 04, 2018.

The internet sites were screened using Google, since it had 96.4% of the search engine market share in Turkey in 2018.[9] While doing research on Google, any Google account logged in on the computers are logged out. The words that had been searched for are "aşı", "aşılama", "bağışıklama", "aşı karşıtı", "aşı reddi", "aşı caiz", "aşı otizm" which mean respectively "vaccine", "vaccination", "immunization", "anti vaccinationist", "vaccine refusal", "vaccine permissible in Islamic law", "vaccine autism" in English. The words "aşı caiz" was chosen to reflect the discussion in the public about whether the vaccines were permissible by Islamic law.

Eysenbach and Köhler relied on the results of a former research which found that 97.2% of the links clicked in a research about online health information on the web, appeared in the first 10 pages.[17] Therefore, to be more exhaustive first 30 results were screened for every word that has been searched. The list was prepared according to the exclusion

criteria derived from Kata's study who based it on the study of Wolfe et al.[8,9] The criteria had also been used and expanded in similar studies.[10,11] Kata's exclusion list was adopted and changed the "non-English sites" criterion to "non-Turkish sites" to adapt it to Turkish and hence the exclusion criteria: (1) Listserv or newsgroup pages; (2) pages solely containing brief notices about other website content; (3) news results, medical journals or library sites; (4) video results; (5) book previews; (6) non-Turkish sites; (7) sites exclusively about adult immunization; (8) sites exclusively about veterinary vaccination and (9) inactive links.[9]

A website was defined as a "group of World Wide Web pages".[18] The criteria to classify a website as anti-vaccination was also taken from Kata's study stated as "if they opposed childhood vaccination for any reason".[9] The criteria were coded present or absent for each site.

The vaccine critical website lists that two separate researchers (Researcher 1 and 2) made were acquired between October 30, 2017 and November 23, 2017. While the researcher 1 and 2 agreed on 16, they disagreed on two web pages. These two lists were re-evaluated by Researcher 3 who decided whether a web site listed by the first two researchers was relevant.

Researcher 3 kept the identical results of queries by both of the researchers (1 and 2) even though some of them never appeared on her own result list.

The query about "vaccine" by Researcher 1 and 2 yielded two different web pages for the website "Gıda Hareketi". When the third researcher queried the key word "vaccine" neither of the web pages listed by the first two

researchers was found. Therefore the website "Gıda Hareketi" was dropped from the list of the query "vaccine" but still stayed in the resultant list because the query "vaccine autism" yielded the mentioned website.

The query by the first two researchers about "vaccine autism" yielded two different web pages for the website "Lilliputian". Researcher 3's query about "vaccine autism" did not result in either of the web pages and led to the dropping of the website "Lilliputian" from the final list.

The list including 16 websites was finalized on February 4, 2018.

The Evaluation of Criteria

The web page of the website that was accessed through the resultant links of the queries, which vary in length were chosen for analyses because of convenience. The websites were evaluated between April 2, 2018 and August 28, 2018 by using the list of criteria under "Contents" and "Design" headings used in Kata's study.[9] Criteria include 50 items which were coded as present or absent, under two main headings.[9] The subheadings include safety and effectiveness, alternative medicine, civil liberties, conspiracy theories / search for truth, morality, religion, and ideology, misinformation and falsehoods, emotive appeals and content aspects.

At first, two researchers independently evaluated the selected websites based on these criteria. Later, a third researcher made the final decision on the presence of a certain criteria. The results were compared with the previous studies and qualitative data were added to illustrate the criteria present.

Ethical approval was unnecessary for using

publicly open information.

RESULTS

The words "vaccine", "vaccination", and "immunization" did not yield any websites. The search for terms "anti-vaccine", "vaccine refusal", "vaccine permissible in Islamic Law", "vaccine autism" yielded, four, one, six and seven anti-vaccination websites respectively. Two websites were common results of the terms "anti-vaccine" and "vaccine autism". All websites examined are listed and categorized in Table 1 and Table 2. In Table 1, the general information to categorize a website were noted: Opposition to which vaccines were observed, whether it was a website against all or a selected vaccine, the subject of the website if it was a general subject website, whether the website produced its own content or copied it, and whether it defended some vaccines. The main subjects of the vaccine critical websites were quantified in Table 2.

Categorization of Websites

Of the resultant 16 websites, only one of those internet sites was vaccine specific while the rest were mostly on other topics (Table 1). Close to half of 16 websites (n=7) were on religion, halal food and food safety subjects combined (Table 2). These subjects accompanied each other variably but halal food was the predominant subject in six of those internet sites. The second most frequent subject was rehabilitation of autistic children (n=3), followed by personal websites (n=2). It was notable that, one of the personal websites belonged to a medical professor doctor who also appeared on the mainstream media.[19] The other personal website included an internet page on a philosophical discussion of vaccine objection.[20]

Table 2. Number of Websites According to Subject

Number of Internet Sites	Subject
7	Religion in general, halal food and food safety*
3	Rehabilitation of autistic children
2	Personal websites**
1	Parenting
1	Personal development
1	Issues of çivil servants
1	Anti-vaccine

* Subjects accompany each other variably

** One of the internet sites belongs to a medical doctor (professor)

As most websites (n=10, 63%) were against all vaccines, the other six (n=6, 38%) were against only some vaccines, such as the two personal websites. For instance, two websites were against DPT and meningitis vaccine, and one was against swine flu vaccine only.

While most websites (n=13, 81%) relayed information from other websites, two personal internet sites and the website of Autism Foundation produced their own material. In the previous studies relay sites were described as websites that did not contribute original content but rather copied the vaccine critical content found on the Internet (Table 1).[11]

Almost all websites which had references to religion focused on halal food. While four of those websites were particularly about food safety, the other three websites were about religion in general in which two of them also contained information about halal food. İhvanlar (Brothers), Gıda Raporu (Food Report) and GİMDES were against all vaccines whereas Gıda Hareketi (Food Movement) were against only some of the vaccines such as DPT, hepatitis B, meningitis, and influenza.

Table 1. List and Categorization of Websites

Name of Website	Opposition to Which Vaccines	Vaccine Specific	Subject	Own Material	Defense of Some Vaccines
On Vaccine	All	Mostly vaccine	Anti-Vaccine	Relay	0
Out of the Box	All	Mostly other	Personal Development	Relay	0
Brand Mother	All	Mostly other	Parenting	Relay	0
Ahmet Rasim Küçükusta	Some	Mostly other	Personal Website (Doctor)	Source	1
Can Başkent	Some	Mostly other	Personal Website on Politics, Academics and Human Rights	Source	1
Association for the Inspection and Certification of Food and Supplies	All	Mostly other	Halal Food, Food Safety	Relay	0
Wisdom	All	Mostly other	Religion in General, Halal Food	Relay	0
Ask A Question, Find An Answer	Some (Swine Flu Vaccine)	Mostly other	Religion in General	Relay	0
Food Report	All	Mostly other	Halal Food, Food Safety	Relay	0
Brothers	All	Mostly other	Religion in General, Halal Food	Relay	0
Exemplary	All (Foreign)	Mostly other	Halal Food, Food Safety	Relay	0
Civil Servants	Some (MMR particularly)	Mostly other	Issues of Civil Servants	Relay	0
Food Movement	Some (DPT, Hepatitis, Meningitis, Influenza)	Mostly other	Halal Food, Food Safety	Relay	1
Rehabilitation	Some	Mostly other	Rehabilitation of autistic children	Relay	1
Autism Foundation	All (Particularly DPT and Meningitis)	Mostly other	Rehabilitation of autistic children	Source	0
Idealist Special Rehabilitators	All	Mostly other	Rehabilitation of autistic children (Nationalist tendencies)	Relay	0

Four websites defended some of the vaccines: The two personal websites, one website on halal food and an autistic child rehabilitation website. For instance Gıda Hareketi (Food Movement) supported the use of Hib (meningitis) and tetanus vaccine that do not have thimerosal, and measles vaccine alone not in combination form MMR.

Content Attributes

The number and percentage ratio of the content and design criteria analysis of the included websites were presented in Table 3 and Table 4 respectively. The quantities of the criteria were listed side by side with the data from the studies of Kata, Bean, and Ward et al for comparison.[9,10,11]

Table 3. Comparison of Content Attributes

	Abbasoglu, (n=16)	Ward, (n=17)	Bean, (n=25)	Kata, (n=8)
CONTENT ATTRIBUTES				
Safety and Effectiveness	%	%	%	%
Vaccines contain poisons / are poisonous	88	94	80	100
Vaccines cause idiopathic illness, damage, or death	81		76	100
Vaccine immunity is temporary and/or erodes the immune system	50	47	32	88
Multiple simultaneous injections increase risk	19	29	12	38
Hot lots have more side effects	0	24		38
Adverse vaccine reactions underreported	13	41	36	63
Infectious diseases declined for other reasons	19	65	32	88
Diseases targeted by vaccines are trivial	25	41		50
Alternative Treatments				
Alternative health superior	19	29	20	88
Critiquing biomedicine/ Germ-Theory	25	35	4	75
Implied debate	31	71	16	38
Natural lifestyle gives immunity ("Back to nature")	38	35	24	88
Commercialism: alternative medicine	13	0		
Civil Liberties				
Parental rights	56		16	75
Monitoring	13			25
Totalitarianism: Excessive government control	50		20	63
Conspiracy Theories / Search for Truth				
Recommendation is motivated by profit	69	65	52	75
Collusion	6		20	63
Protection	0	59	20	
Cover up or lies	44	82	20	75
Support of rebel doctors	25	41	4	50
Foolish doctors	31			
Fear mongering	6		8	50

Table 3. Comparison of Content Attributes

	Abbasoglu	Ward	Bean	Kata
Unusual theories	6	18	16	38
Priviliged knowledge	0		8	50
Anti-science	13			38
Informed choices	25		24	38
Morality, Religion, and Ideology				
Religious tenets	44	0		25
Immoral acts	6	6	8	38
Anti-utilitarianism	0	0		13
Misinformation and Falsehoods				
Outdated sources	38		8	75
Misrepresentations	50		16	88
Self-reference	50		20	88
No references	75		8	38
Falsehoods	81			88

Table 4. Comparison of Design Attributes

	Abbasoglu (n=16)	Ward (n=17)	Bean (n=25)	Kata (n=8)
Emotive Appeals	%	%	%	%
Personal testimonies	44	65	32	88
Pictures of victims of side effects	6	18	24	50
Images of needles (scary)	13	29	36	13
Us and them	44			50
Responsible parenting	56		76	50
Content Aspects				
Claim to present both sides (Non-partisan claims)	25	12	32	25
Actually present both sides (Unbiased)	19	6	4	13
Links to vaccine-critical websites	25	47	56	100
Links to vaccine-recommending websites	13	18	24	50
Authority / official status	56		12	25
How to legally avoid vaccines	31	12	32	50
How to declare adverse reactions	19	24	20	25
Links to lawyers	6	0		25
Commercialism (CD, DVD, Books)	0	41	44	75
Solicitations for contribution	0	41	24	63

Majority of the websites claimed vaccines contained poisons/toxins (n=14, 88%) and caused idiopathic diseases (n=13, 81%) such as autism. In one website it was stated that "*No satisfactory scientific evidence had been found to demonstrate that these diseases didn't arise from vaccines*" (Kuraldışı, Out of the Box).[21] Half of the websites (n=8, 50%) argued that the vaccines eroded immunity or created only temporary or ineffective immunity. Four (25%) websites argued that the infectious diseases which the vaccines prevented were

uncommon and not contagious, and some of the vaccines in the vaccine program were questioned.

Misinformation and falsehood followed the safety theme in prevalence. While in 81% (n=13) of the websites, unsupported statements were observed, in 75% (n=12) of them a lack of reference was noticed. In all the internet sites that lack to show reference, falsehoods were present.

"Vaccine policies were based on profit" was the most utilized criteria under "conspiracy theories/search for truth" theme (n=11, 69%). This argument was supported by four more other websites as well as all the websites that argued about the violation of parental rights and totalitarianism. In one website, the vaccines were called "*commercial vaccines*" and another website stated that they were in the monopoly of only a few pharmaceutical companies and "*we serve capitalism with a social hysteria*".

The second most utilized criteria under the conspiracy theories theme is "covers up" with 44% (n=7). In one of the websites it was claimed that the pharmaceutical companies try to hide the negative effects of vaccines at every stage by "*infiltrating the whole health system*". It was perceived that pharmaceutical companies supported scientific evidence that was only in favor of vaccines, rendering the scientific information unreliable. It was also stated that the mainstream media overlooked the negative effects of vaccines "*There isn't one line on this subject, (MMR vaccine increasing autism) in the noble Turkish press ...*"[22]

Parental rights were the most stressed criteria among civil liberties by 56% (n=9). Criticism of totalitarianism came second with 50%

(n=8). All the internet sites that had accused the government of totalitarianism also claimed the damaging of parental rights. It was notable that three of them were religious websites.

Particularly mandatory vaccination of infants seemed to affect parents' liberty and autonomy of taking decisions about their children. Although harassment of parents (monitoring) that refused to vaccinate was not a common argument, used only by two websites (13%), one of them quoted a mother that said "*Who are you to take my baby by force to vaccinate? If I don't find it appropriate to vaccinate, will they change my mind by coercion by police?*" mentioning the Ministry of Health.[23]

Religious tenets were observed in 44% (n=7) of the websites. Usually, the claims rested on the arguments that the contents of vaccines such as swine gelatin and primate DNA (perceived by the Muslims to be forbidden by religion) were not regarded as "halal".

"...*"it contains swine" is written in the package insert of the alternative of the same drug in a foreign country, it's omitted in ours*" (Gıda Raporu, Food Report 2015).[24] After this statement the health ministry was called to duty by the website. To quote another website, western capitalism was criticized by "*Unable to save our Muslim children from the arms of the octopus Western international pharmaceutical mafia...*" (İhvanlar, Brothers n.d.).[25]

About a third (n=6, 38%) of the websites suggested a "back to nature" philosophy. "Natural" immune system was compared to immunity inducted by vaccines and perceived to be more protective and harmless. In one of the websites, it was stated that "*Vaccines don't*

provide mucosal immunity. Microbial diseases that were naturally passed lends mucosal immunity. ...protects you from allergic and chronic inflammatory diseases" (Küçükusta 2015).[19]

The implied debate criteria (n=5, 31%) were observed to be at a similar ratio. An example may be suggested by a website run by a professor of medicine: "*I favor every kind of health and illness related problem, not to be spoken behind closed doors but discussed before the society*".[19]

By using discourse such as "*If there isn't a certain risk until age two, no vaccine should be administered...*" the fallacy of established medical knowledge was claimed by four websites (n=4, 25%).[19]

Alternative treatment argument was observed in three internet sites (19%). These sites also contained the criterion of "Back to nature". Alternative product sales such as vitamin D and fish oil were observed rarely in two websites (n=2, 13%).

Design Attributes

More than half of the websites (56%, n=19) studied included content that implied authority/official status and an equal number of websites defended voluntary vaccination by the choice of informed parents (56% n=9).

"*The people that were enlightened by complete and correct information will absolutely take the right decision*" (Küçükusta 2015).[19]

In five of the websites (n=5, 31%) information for legally avoiding immunizations were observed. Information regarding the parents that sued against compulsory vaccination and won, legal articles pointing the illegality of compulsory vaccination, and international

agreements were observed to be shared.

Few of the websites (n=3, 19%) allowed views of both pro and anti-vaccinationists. Anti-vaccination website links were given more frequently than the pro-vaccination website links (25% vs. 13%; n=4 vs. n=2). Imagery was used rarely (6%,13%; n=1,2) and parents mentioned about their experiences concerning their children (44%, n=7). Sale of products that contain antivaccination content or solicitations for support was not present in any of the websites.

DISCUSSION

The internet pages that our query yielded were last modified between years 2011 and 2015, preceding the major coverage of the vaccine hesitancy by the mainstream media by one or two years.

While comparing the results of similar studies, the methods applied should be taken into consideration. All the studies used Google according to their respective languages, but Bean also made use of other search engines.[9,10,11] While Kata and Bean used three and ten general keywords respectively, Ward et al. also used keywords that reflected public debate such as "aluminum" and "papillomavirus".[9,10,11] While Kata and Ward et al. used a similar expanded exclusion list which also was used in this study, Bean used a former exclusion list by Wolfe et al.[8-11] While Ward et al screened 30 results, Kata screened 10 results at first but expanded it with 50 results concerning the Google.ca research and Bean beginning with screening 10 results per keyword, added websites that she found when she explored one of the resultant websites.[9,10,11] Kata considered a website vaccine critical if it was opposed to

any childhood vaccine, Ward expanded this definition to any vaccine and in Bean's study no mention of such a definition were to be found.[9,10,11] The number of websites evaluated by the methods of Kata, Bean and Ward were 8, 25, 17 respectively.[9,10,11] It can be argued that these factors compromise the following comparisons that were done under this heading.

Although the presence of design and content criteria in Turkish speaking internet sites were less than English and French speaking websites, the comparison of frequencies between criteria in a single study showed similarity. For example, the presence of safety and effectiveness criteria usually were both high in all Turkish, English and French websites with respect to other criteria but the absolute frequency (%) of that criteria is less in Turkish websites.[9,10,11]

Content Attributes

When evaluated according to content, the presence of "vaccines are poisonous" argument (88%) was found to be similar to English (Kata, 100%; Bean, 80%) and French (Ward, 94%) internet sites.[6,7,8] The argument of "infectious diseases decreased because of reasons except vaccines" (19%) were used less than English (Kata 2010; Bean 2011) (88%, 32%) and French (Ward) (65%) internet sites.[9,10,11]

The ingredients, especially thimerosal was perceived to be harmful and it was believed that a correlation between vaccine use and idiopathic illness had existed. It was stated in some websites that infectious diseases were replaced by several chronic diseases by interventions which vaccines were

also part of. A possible reason might be that correlation was taken for causality in some of the websites, as exemplified by "*In 14 years that thimerosal was present in the vaccines, it was detected that the number of children who became autistic increased 15 times*" (İbretlik, Exemplary n.d.).[26] The studies that had been done to this day showed no results favoring causality between vaccines and idiopathic chronic diseases.[27]

The influenza vaccines were the target of criticisms in some websites. This may be due to both because of its partial protectiveness and of its being promoted often in Turkish media.

The high ratio of the presence of "conspiracy theories" criteria was notable. The "motivation by profit" criterion (69%) was emphasized by a majority of the websites similar to English (52%, 75%) and French websites (65%).[9,10,11]

The presence of civil liberties criteria (parental rights 56%, totalitarianism 50%) were between the ratios stated by Bean and Kata: The presence of "parental rights" (16% Bean, 75% Kata) and "totalitarianism" (20% Bean, 63% Kata).[9,10]

Criticism of biomedicine (n=4, 25%) and superiority of alternative medicine (n=3, 19%) were found to be low similar to studies done by Bean and Ward: "Criticism of biomedicine" (4% Bean, 35% Ward) and "Alternative health superior" (20% Bean, 29% Ward).[10,11] The limited presence of alternative health products showed that anti vaccine sentiment still had not been commercialized as in the developed world. Modern medicine's involvements

in collusion of interests were implied such as by the use of words "discussed behind closed doors".[19]

Content Attributes: Morality, Religion and Ideology

The query that yielded the second most number of websites (n=7, 44%) was "vaccine permissible in Islamic Law". Religious reasons were observed higher (44%) than Kata's study (25%) and French websites (0%) in which it was not observed at all.[9]

The common denominator among sites that had religious arguments was halal food, and food safety was also a common subject. Being parallel to food safety, the main arguments on the internet pages that had religious tones was "vaccine safety" and conspiracy theories regarding its compromise which were also commonly found on other websites. One of the internet sites gave theoretical support to vaccines which "*in the past was also used*", but "*had anxieties*" about the "*content of imported vaccines*" which made them practically against all the vaccines available in the Turkish market (Gıda Raporu).[24]

Some conspiracy theories were about Muslims becoming the victims in a conspiracy run by the Western pharmaceutical companies. One website accused these companies of implementing local doctors to be complicit in giving Muslim people substances derived from swine without indicating it (Gıda Raporu).[24] Another website called the pharmaceutical companies "*octopus western pharmaceutical mafia*" (İhvanlar).[25] The absence of anti-semitism which was

found in a qualitative research on the vaccine hesitant parents conducted in 2018 was also notable.[28]

Most of the religious sites took American vaccine critical websites as references and examples of anti-vaccine struggle were drawn mainly from the USA. One such example given by GİMDES was a secret CDC meeting where Tom Verstraeten revealed data about the side effects of vaccines (GİMDES 2013).[29] The internet site İhvanlar, openly directs the reader for further reading to American websites such as www.vaccinationcouncil.org, www.vaclib.org; and to books such as "Natural Alternatives to Vaccination" by Zoltan Rosa MD. Examples of alleged incidences from Denmark and UK (Leicester) where the content of vaccines inappropriate in Islam were reported.[25]

Unmet expectations, such as The Organisation of Islamic Cooperation's alleged "halal vaccine" promise was mentioned in one website (Gıda Raporu).[24] Some of the internet sites asked for "scientific documents" to declare the vaccines halal and safe. Domestic vaccine production was offered as a solution by one of the websites (İhvanlar).[25]

The evidences proved a close relation between the three internet sites that referred to religion. The website Gıda Raporu declared itself to be GİMDES in their mission statement.[24] Also, İhvanlar indicated Gıda Raporu as the source of their vaccine critical article.[25]

Design Attributes

Personal testimonies were found in 44% (n=7) of the websites which was below 65%

found for French websites (Ward, 65%) and Kata's study that found 88% (Kata 2010; Ward et al. 2014).[9,11] Bean's study that took more websites in English yielded 32% on these criteria which resembled the figure founded in our study.[10] Needle (13%) and harmed children (%6) imagery were also used less than other studies. It could be said that Turkish websites were found to be less visual. Representation of both sides equally was more prevalent in Turkish (19%) internet sites than in English (4% Bean, 13% Kata) and French (6%) websites.[9,10,11] Less websites showed commercialism compared to English and French websites that showed ratios around 50% (Bean and Ward).[10,11] None of the websites asked for financial contribution which also signifies the Turkish websites were behind in capitalization than English and French websites on anti-vaccination. Links to pro-vaccine (13%) and anti-vaccine sites (25%) were less than the ones found on the other studies: Links to pro-vaccine websites 18% anti-vaccine websites 47% in Ward's study, 24% and 56% respectively in Bean's study.[10,11]

In some websites the arguments suggested were occasionally referenced from a "Professor Doctor" who were claimed a hero. Other references were foreign language books, American Pediatric Association, WHO, court rulings and laws. These two factors might have increased the perceived reliability of information and interpretations supported by institutions of authority.

Limitations

One of the limits of our study was omitting the page ranking search for the results

of every query. Also, as noted in Ward's study, the users' research results would be customized by Google by mechanics that we don't have sufficient knowledge of.[11] But the results the researchers found with logged off Google accounts could be reflecting the average results. Another limitation was that two years had passed since the completion of the research phase of the study. During that time the ranking of some of the websites may have changed so that, they might not appear on our final list or new websites might enter the list. As of 04 November 2020, five websites were closed (one of them by court ruling), three of the closed websites continues on Facebook platform.

CONCLUSION

Because the Internet is widely used nowadays to access health information, it is of importance to evaluate the content and design criteria of the vaccine critical internet sites. They arguably represent the ideas of a part of society that has suspicions about vaccines. Part of the arguments used by and added to the repertoire of the individuals who are vaccine hesitant could be obtained from these sites.

The results of our study can be summarized as:

Most Turkish vaccine critical websites were general subject, relay websites. Criteria searched for vaccine criticism were generally less frequent in Turkish websites than in English and French websites. Despite these findings, religious reasons were observed higher in Turkish websites. The websites that supported religious tenets were usually about halal

food and borrowed heavily from American anti-vaccine websites.

Further studies can be conducted to evaluate the effect of COVID-19 pandemic to the spread and content of vaccine criticism on the internet. More importantly, an extended network analysis of the vaccine criticism on the web would give the scientific community more insight into how and which arguments diffuse in the society.

The Ministry of Health must also take into consideration that the emotive appeals and conspiracy theories available in vaccine critical sites are creating a compelling story telling environment. Ministry of Health should invest more in the Web, specifically targeting its response according to the criteria available in vaccine critical websites.

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TURKISH JOURNAL OF PUBLIC HEALTH

ORIJINAL ARTICLE / ORİJİNAL MAKALE

Mersin'de ilköğretim birinci sınıfa giden erkek öğrencilerde inmemiş testis sıklığının araştırılması

Researching of the frequency of cryptorchidism in male students attending to the first grade of primary school in Mersin

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Öz

Amaç: Mersin İl merkez ilçelerinde ilkokul birinci sınıf öğrencilerde inmemiş testis sıklığını saptamak.

Yöntem: Kesitsel tipte planlanan çalışma Mersin ili merkezinde bulunan ve basit rastgele yöntemle seçilen 22 ilkokulda yürütülmüştür. Ailesi yazılı onay veren 776 1. Sınıf erkek öğrencinin verisi analiz edildi. Muayeneler okullarında hazırlanan bir muayene odasında, araştırmacı hekim tarafından yapıldı. İnmemiş ya da retraktil testis ön tanı konulan 52 öğrenci Çocuk Cerrahisi kliniğine gönderilerek tanısı kesinleştirildi. Endikasyonu olan 24 öğrenciye orşidopeksi ameliyatı yapıldı. Verilerin özetlenmesinde tanımlayıcı istatistikler, değişkenlerin karşılaştırılmasında ki-kare testi kullanılmış, anlamlılık düzeyi p≤0.05 olarak alınmıştır.

Bulgular: Araştırmaya alınan 776 öğrencinin %84.1'i Türk, %15.9'u yabancı uyrukluydu. 776 öğrencinin doğrulama muayenelerinden sonra %96.3'ü normal, %2.3'üne inmemiş %1.4'üne retraktil testis tanısı konuldu. Bu öğrencilerin %65.5'i son bir yıl içinde herhangi bir sebeple bir hekime başvurmuşlardı. Yabancı uyruklu öğrencilerde inmemiş ya da retraktil testis sıklığı (%7.3), Türk uyruklu öğrencilere göre (%3.1) daha yüksekti (p<0.05).

Sonuç: Bu çalışmada inmemiş/retraktil testis tanısı alan öğrencilerin çoğunluğu son bir yılda herhangi bir nedenle doktor tarafından muayene edilmiştir. Hangi nedenle olursa olsun birinci basamak sağlık kuruluşlarına başvuran bebek ve çocukların hekim tarafından genital muayenesinin de yapılması kural haline getirilmelidir.

Anahtar Kelimeler: İnmemiş Testis, Kriptoorşitizm, İlkokul

Abstract

Objective: It was aimed to determine the frequency of cryptorchidism first grade primary school students in Mersin city center districts.

Methods: The study, which was planned as a cross-sectional type, was carried out in 22 primary schools located in the city center of Mersin and selected by simple random method. The data of 776 1st year male students whose families gave written consent were analyzed. The examinations were carried out by the researcher in an examination room prepared in schools. 52 students with a preliminary diagnosis of cryptorchidism or retractile testis were sent to the Pediatric Surgery clinic and the diagnosis was confirmed. Orchidopexy surgery was performed on 24 students with indications. Descriptive statistics were used to summarize the data, and the chi-square test was used to compare the variables, and the significance level was taken as p≤0.05.

Results: Of the 776 students included in the study, 84.1% were Turkish and 15.9% were foreign nationals. 84.1% of the students were Turkish and 15.9% were foreign nationals. After confirmatory examinations of 776 students, 96.3% were diagnosed with normal, 2.3% had cryptorchidism 1.4% were diagnosed with retractile testis. 65.5% of these students had consulted a physician for any reason in the last year. The frequency of undescended or retractile testis (7.3%) was higher in foreign students than in Turkish students (3.1%) (p<0.05).

Conclusion: Most of the students diagnosed with cryptorchidism and retractile testis in our study were examined by a doctor for any reason in the last year. For any reason, it should be made a rule that babies and children who apply to primary health care institutions should be examined by a physician.

Keywords: Undescended Testis, Cryptorchidism, Primary School

GİRİŞ

Testisler hamileliğin yedinci ayında kanalis inguinalisten geçerek skrotuma doğru inmeye başlar, bu süreç doğumdan kısa süre önce veya doğum sonrası ilk üç ayda tamamlanır[1]. İnmemiş testis, testislerden birinin veya her ikisinin karın içinden inguinal kanal yoluyla skrotuma inmemesi durumudur. Çocuklarda erkek genital sisteminin sık görülen konjenital bozukluklarındandır[2,3]. Erkek bebeklerin %1-9'u inmemiş testisle doğar ve bu bebeklerin yarısında yaşamın ilk üç ayında testisler skrotuma iner. Yaşamın birinci yılında erkek çocuklarda ve yetişkinlerde sıklığı %0.3-1.0 arasındadır[1,2,4]. Prematür bebeklerde, miyadında düşük doğum ağırlıklı veya gestasyonel yaşa göre doğum ağırlığı düşük bebeklerde daha sıktır[2].

İnmemiş testis etiyolojisi net olarak açıklanamamıştır. Genetik, hormonal, çevresel ve biyolojik faktörlerin etkili olabileceği veya hormon bozucuların rol oynayabileceği düşünülmektedir[1,3,5,6]. Annenin hamilelikte sigara içmesi, bebeğin doğum ağırlığı, doğum haftası, aile öyküsü ve bazı genetik değişkenlerin ilişkili olduğu bildirilmiştir[7]. Ayrıca anne sağlığı, yaşı, hamilelikte pasif ya da aktif sigara dumanına maruz kalımı veya alkol/uyuşturucu kullanımı, anne ve babanın hormon bozucu kimyasallara maruz

kalımı ve etnik kökenin sınırlı olarak ilişkili olduğu rapor edilmektedir[7]. Ayrıca annenin diyabetik olması, çocukta konjenital ürolojik problemlerin varlığı, inmemiş testis riskini artıran nedenler olarak kabul edilmektedir[1].

İnmemiş testis tanısı hekim tarafından yapılan fizik muayene ile konulur. Sağlık Bakanlığı birinci basamakta bebek ve çocuk izleminde başlangıçta daha sık periyotlarda olmak üzere her bebeğin ilk 1 yaşına kadar en az 9 kez, 5 yaşına kadar toplam 16 kez, 6-9 yaş arasında ise yılda 1 kez izlenmesini ve sistemik olarak sağlam bebek-çocuk muayenesi yapılmasını aile hekimlerinin görevleri arasında saymaktadır[8-9]. İnmemiş testis tedavisinde orşidopeksi ameliyatının en geç 12-18 ay arasında yapılması önerildiğinden[1,4,7] aile hekimlerine önemli görevler düşmektedir.

İnmemiş testisin, testis torsiyonu, sperm üretiminin bozulması, infertilite ve testis kanseri ile ilişkili olduğu rapor edilmiştir[2,7,10]. İnmemiş testisli vakalarda; testis kanseri riski yüzbinde 12-33 arasındadır[1]. Normal popülasyona göre testis kanseri riski 3-4 kat artmakta, testis kanseri olan vakaların da %5-9'unda inmemiş testis öyküsü bildirilmektedir[7]. Orşidopeksi ergenlikten önce yapıldığında, daha geç yapılan ameliyatlara göre 2-6 kat testis kanseri riski azalmaktadır[4,7,11]. Tek taraflı inmemiş testiste infertilite riski artmaktadır bilateral olanlarda bu sıklık %33-65 arasıdır[1,11].

Retraktil testiste; testisler sktorumdadır ancak kişilerin kremasterik refleksi çok aktif olduğu için uyaranlarla testisler inguinal kanala veya karın içine doğru hareket eder[2,4]. Testis boyutu normalse takip önerilir, testis boyutu etkilenmiş ve bir asimetri varsa ameliyat önerilir[4].

İsveç'te 2001-2014 arasında doğan çocukların kayıtlarının incelendiği çalışmada İnmemiş testis kümülatif prevalansı %1.8[12], Fransa Nice'de 2002-2005 arasında 34 haftadan büyük doğan bebeklerin değerlendirildiği bir çalışmada %1.63[13], Estonya'da bir üniversite hastanesinde 2012-2015 arasında doğan çocuklarda doğumda %2.1, altıncı ayda ise %0.8'i olarak bildirilmiştir[14]. Mısır'da yeni doğanlarda yapılan bir çalışmada sıklığın %2.9[15], Danimarka'da yapılan çalışmada doğumda sıklığın %2.4, dört yaşında ise %1.6 olduğu belirlenmiştir[16]. Eskişehir'de ilköğretim 1,2,7 ve 8. sınıf öğrencilerinde %1.2[17], Diyarbakır'da ilköğretim birinci sınıflarda inmemiş testis sıklığı %1.85[18], Muğla'da ilköğretim bir ve ikinci sınıfa giden öğrencilerde %2.1[19], Bursa'da Halk Sağlığı Anabilim Dalı Eğitim Araştırma Bölgesinde yer alan dört ilköğretim okuluna giden öğrencilerde %2.3 olarak bildirilmiştir[20]. Bolu'da birinci sınıfa giden öğrencilerde yürütülen çalışmada erkek öğrencilerin %0.9'unda retraktil ve inmemiş testis[21], Kastamonu'da ilkokul öğrencilerinde yapılan çalışmada ise öğrencilerin %4.6'sında retraktil testis, %3.2'sinde inmemiş testis olduğu belirlenmiştir[22]. Yapılan çalışma sonuçlarına göre inmemiş testis hekim tarafından yapılan fizik muayene ile tanı konulup uygun aralık olan 6-12 aylık arasında tedavisi sağlanabilen bir hastalık olmasına rağmen ilkokul çağındaki çocuklarda hala tespit edilebilmektedir.

Bu çalışmada Mersin İli merkezindeki ilkokulların birinci sınıfında okuyan erkek çocuklarda, inmemiş testis sıklığının tespit edilmesi, oluşabilecek komplikasyonlar açısından ailelerin farkındalıklarının artırılması ve tanının gecikmesine neden olan faktörlerin saptanması amaçlanmıştır.

YÖNTEM

Kesitsel tipte planlanan çalışmanın evreni; 2018-2019 eğitim öğretim yılında Mersin İli Merkez ilçelerindeki 165 ilkokulda öğrenim gören 9187 birinci sınıf erkek öğrencidir. İlçelere göre birinci sınıf erkek öğrenci sayıları; Akdeniz: 3099, Yenişehir: 1916, Toroslar: 2779, Mezitli: 1342'dir. Örneklem seçilirken okullar ilçelere göre tabakalandırılarak ağırlıklandırma yapıldı ve basit rastgele yöntemle okullar seçildi. Akdeniz ilçesinden 6, Mezitli ilçesinden 4, Toroslar ilçesinden 6 ve Yenişehir ilçesinden 6 olmak üzere toplam 22 ilkokul belirlendi. Epi Info Version6 programı ile %95 güven aralığı, ±5 hata payı ve 1.5 desen etkisi ile 9187 kişilik öğrenci popülasyonu için minimum örneklem büyüklüğü 553 kişi olarak hesaplandı.

Mersin Üniversitesi Sağlık Bilimleri etik kurul onayı (680083/2018/117 sayılı karar) alındıktan sonra Milli Eğitim Müdürlüğü'nden resmi izin alınarak okul idaresi, öğretmenler, veliler ve öğrenciler çalışma hakkında bilgilendirildi. Velilerden yazılı onay alındı, yazılı onay vermeyen velilerin çocukları çalışmaya dâhil edilmedi. Ayrıca öğrencilerden sözlü onay alındı, onay vermeyen öğrenciler çalışmaya dâhil edilmedi.

Sahada muayene yapacak araştırmacılar, standardizasyon için Mersin Üniversitesi Çocuk Cerrahisi Anabilim Dalında bir günlük inmemiş testis muayenesi konusunda uygulamalı eğitimi aldı. Literatür taranarak standart bir muayene formu ve aile bilgi formları hazırlandı. Aile bilgi formları ile çocuğun demografik bilgileri, önceki hekim muayeneleri, inmemiş testis aile öyküsü özelliklerine ilişkin bilgiler toplandı. Yabancı uyruklu aileler için çeviri yardımı alındı.

Milli Eğitim Müdürlüğü tarafından okullara bilgi formu ve onam formları resmi yazı yoluyla iletildi ve çalışma hakkında bilgilendirme sağlandı. Araştırmacılar tarafından muayene için belirlenen tarihten bir hafta önce okullara gidilerek yöneticilerle görüşüldü, çalışma hakkında yeniden bilgi verildi. Araştırma esnasında kullanılmak üzere uygun bir muayene odası oluşturulması, bilgi ve onam formlarının ailelere gönderilmesi ve doldurularak getirilmesi istendi. İsteyen ailelerin muayene günü okula gelerek çocuklarına eşlik edebilecekleri söylendi.

Araştırmacılar rehber öğretmen ya da sınıf öğretmeni eşliğinde çocuklara kendilerini tanıtıp, muayene hakkında bilgi vererek sözlü onay aldılar. Çocuklar okullarında hazırlanan muayene odasında, paravanla ayrılmış mahremiyeti sağlanan bir alana teker teker alındı. Muayene sırasında isteyen ebeveynler çocuklarına eşlik etti. Çocuklar araştırmacı hekimler tarafından oda sıcaklığında, ayakta dik pozisyondayken önce inspeksiyonla sonra palpasyonla inmemiş testis veya retraktil testis açısından muayene edildi. İnmemiş testis saptanan ya da şüphesi olan tüm öğrencilerin, öğretmeni ve ailesine bilgi notu verilerek, istenilen günde Mersin Üniversitesi Tıp Fakültesi Çocuk Cerrahisi Kliniğine gelmesi istendi. Çocuk Cerrahisi Kliniğinde tanılar kesinleştirilerek gerekenlere cerrahi tedavi uygulandı.

Araştırmamıza katılan 781 öğrencinin ilk muayenesinde 52'si inmemiş testis ön tanısı ile çocuk cerrahisi polikliniğine sevk edildi. Kesin tanı alan 24 öğrenciye orşidopeksi ameliyatı yapıldı. Hastaneye başvurmayan ve tanısı kesinleşmeyen 5 öğrenci çalışma dışı bırakıldı. Analiz 776 öğrencinin verileri ile yapıldı.

Verilerin özetlenmesinde tanımlayıcı istatistikler değişkenlerin karşılaştırılmasında ki-kare testi kullanılmış, anlamlılık düzeyi p≤0.05 olarak alınmıştır.

BULGULAR

Araştırmada 6-9 yaş arasında 653'ü (%84.1) Türk, 123'ü (%15.9) yabancı uyruklu toplam 776 erkek öğrencinin verileri analiz edildi. Katılımcıların 355'inin (%53.1) annesi ilk-ortaokul mezunuyken 334'ünün (%50.2) babası ilk-ortaokul mezunuydu. Öğrencilerin 654'ünün (%96.7) doğumu hastanede gerçekleşmişti (Tablo 1).

Tablo 1. Katılımcıların bazı sosyodemografik özellikleri

	n	%
Anne eğitim seviyesi (n=668)		
Okur yazar değil	100	15.0
İlk-orta okul	355	53.1
Lise ve üzeri	213	31.9
Baba eğitim seviyesi (n=665)		
Okur yazar değil	46	6.9
İlk-orta okul	334	50.2
Lise ve üzeri	285	42.9
Çocuğun doğum yeri (n=676)		
Hastane	654	96.7
Ev	22	3.3

Öğrencilerin 552'si (%80.2) sünnet olmuştu ve bu kişilerin 360'ının (%65.2) sünneti bir hekim tarafından gerçekleştirilmişti (Tablo 2).

Tablo 2. Katılımcıların sünnet olma özellikleri

	n	%
Sünnet durumu (n=688)		
Evet	552	80.2
Hayır	136	19.8
Sünneti yapan (n=552)		
Hekim	360	65.2
Sağlık memuru	109	19.7
Ara sünnetçisi	83	15.1

Araştırmamıza katılan 781 öğrencinin ilk muayenesinde 52'si inmemiş testis ön tanısı ile çocuk cerrahisi polikliniğine sevk edildi. Hastaneye başvurmayan ve tanısı kesinleşmeyen 5 öğrenci çalışma dışı bırakıldı. Çocuk cerrahisi kliniğinde doğrulama muayeneleri yapıldıktan sonra analize alınan 776 öğrencinin 747'sinin (%96.3) testis muayenesi normal 18'i (%2.3) inmemiş testis, 11'i (%1.4) retraktil testis tanısı aldı (Tablo 3). İnmemiş/retraktil testis tanısı alan 29 öğrenciden 24'üne orşidopeksi ameliyatı uygulanmış, 1 kişiye takip önerilmiş, 1 kişi de önceden takipli olduğunu bildirmiştir. Tanı alan 3 öğrenci de kliniğe gelmediği için takip edilememiştir.

Tablo 3. Ön tanı alan öğrencilerin çocuk cerrahisi kliniğinde doğrulama/kesin tanıları

(n=776)	n	%
Normal	747	96.3
İnmemiş testis	18	2.3
Retraktil testis	11	1.4

İnmemiş/Retraktil testis tanısı alan öğrencilerin 19'u (%65.5) son bir yıl içinde herhangi bir sebeple bir sağlık kuruluşuna (aile hekimi, hastane, poliklinik, tıp merkez) başvurmuştur.

Yabancı uyruklu olanlarda inmemiş/retraktil testis sıklığı (%7.3; n=9) Türk öğrencilere göre (%3.1; n=20) anlamlı olarak yüksek bulundu (p=0.002). Annesi hamileyken sigara içen çocuklarda sıklık (%7.6; n=7), içmeyen çocuklara göre (%2.6; n=15) daha yüksekti (p=0.02).

İnmemiş/retraktil testis tanısı almak ile doğum ağırlığı, doğum zamanı, anne ve baba eğitim durumu arasında ilişki saptanmadı (p>0.05, Tablo 4).

Tablo 4. İnmemiş/retraktil testis tanısı alma ile ilişkili faktörlerin değerlendirilmesi

	İnmemiş/Retraktil Testis[a]						X^2 değeri
	Yok		Var		Toplam		
	n	%*	n	%*	n	%**	P değeri
Uyruk							
Türk	633	96.9	20	3.1	653	84.1	X^2=5.207
Yabancı	114	92.7	9	7.3	123	15.9	**p=0.02*****
Toplam	747	96.3	29	3.7	776	100.0	
Doğum ağırlığı							
2500 gr altı	68	94.4	4	5.6	72	11.1	X^2=0.959
2.500 gram ve üzeri	558	96.7	19	3.3	577	88.9	p=0.31***
Toplam	626	96.5	23	3.5	649	100.0	
Doğum zamanı							
Term/Postterm	587	96.7	20	3.3	607	89.8	X^2=0.209
Preterm	66	95.7	3	4.3	69	10.2	p=0.72***
Toplam	653	96.6	23	3.4	676	100.0	
Anne Hamilelikte sigara kullanımı							
Var	85	92.4	7	7.6	92	13.7	X^2=6.347
Yok	566	97.4	15	2.6	581	86.3	**p=0.02*****
Toplam	651	96.7	22	3.3	673	100.0	
Anne eğitim durumu							
Ortaokul ve altı	440	96.7	15	3.3	455	68.1	X^2=<0.001
Lise ve üzeri	206	96.7	7	3.3	213	31.9	p=0.99
Toplam	646	96.7	22	3.3	668	100.0	
Baba eğitim durumu							
Ortaokul ve altı	370	97.4	10	2.6	380	57.1	X^2=1.269
Lise ve üzeri	273	95.8	12	4.2	285	42.9	p=0.28
Toplam	643	96.7	22	3.3	665	100.0	

*Satır yüzdesi ** Sütun yüzdesi *** Fisher's exact test
[a]Etkileyen faktörlerin araştırılmasında inmemiş testis ve retraktil testis birleştirilerek analize alındı.

Çocukların doğum yerinin (p=0.54), sünnet olma durumunun (p=0.28) ve sünnet yapan kişinin (p=0.16) inmemiş/retraktil testis sıklığını etkilemediği belirlendi. İnmemiş testis tanısı alan Türk uyruklu çocukların %94.4'ü (n=17) ilk beş yaşta düzenli takiplerine gitmişken %5.6'sı (n=1) ise gitmemişti. Çocukların düzenli takip edilmesi ile inmemiş/retraktil testis sıklığı arasında bir ilişki yoktu (p=0.22).

TARTIŞMA

İnmemiş testis erkeklerde genital sistemin sık görülen bir sağlık sorunudur. Fizik muayene ile tanısı konulup tedavisi sağlansa da zamanında tanı alamayıp ileri yaşlarda tanı alanlarda infertiliteye hatta kansere yol açabilmektedir.

Bir hastaneye başvuran 1-180 ay arasındaki çocukların değerlendirildiği bir çalışmada %10.5'inde inmemiş testis raporlanmıştır[23]. Şanlıurfa'da 4-6 yaş arasında kreşe giden çocuklarda yapılan bir çalışmada inmemiş testis sıklığı %0.9 olarak rapor edilmiştir[24]. Sünnet için Hopa'da bir hastaneye başvuran 0-15 yaş arası çocukların %2.2'sinde[25], Siirt'te bir hastaneye başvuran 2 ay-12 yaş arası çocukların %2.3'ünde inmemiş testis bildirilmiştir[26]. Konya'da bir sağlık ocağına bağlı ilköğretim okullarında yapılan çalışmada sıklık %2.6 olarak belirlenmiştir[27]. Sakarya'da 6-15 yaş arasındaki ilköğretim öğrencilerinde yapılan çalışmada %2.6[28], Tokat'ta 6-18 yaş arası öğrencilerle yürütülen çalışmada %1.3[29], Düzce'de 7-15 yaş arası ilköğretim erkek öğrencilerde yapılan çalışmada inmemiş testis sıklığı %1.1 olarak bildirilmiştir[30]. Adayener ve ark[31] tarafından ülkemizin yedi bölgesinden 13-15 yaş arasındaki 6400 erkek öğrencinin askeri lise başvurularında yapılan sağlık taramalarındaki muayene bulgularının değerlendirildiği çalışmada inmemiş testis sıklığı %0.83 olarak belirlenmiştir. Elazığ'da iki ilkokulun birinci sınıf öğrencilerinde yapılan çalışmada inmemiş testis sıklığı olarak değerlendirilen retraktil ve tek taraflı inmemiş testis %8.9 olarak bulunmuştur[32]. Kahramanmaraş'ta 6-17 yaş arasındaki öğrencilerle yapılan çalışmada çocukların %1.37'sinde inmemiş testis, %3.14'ünde retraktil testis olduğu belirlenmiştir[33]. Cizre'de bir ilköğretim okulunda 7-14 yaş

erkek öğrencilerde yapılan çalışmada retraktil testis sıklığı %1.8, inmemiş testis sıklığı %2.0 raporlanmıştır[34]. Bu çalışmada inmemiş testis sıklığı %2.3, retraktil testis sıklığı ise %1.4 olarak belirlendi. Bu sonuçlar literatür ile uyumlu olmakla birlikte diğer çalışmalardan farklı olarak Türk çocuklarda sıklığın %1.5, yabancı çocuklarda %6.5 olduğunu saptandı.

İsveç'te yapılan bir çalışmada inmemiş testisin, prematüre ve düşük doğum ağırlıklı bebeklerde[12], Mısır'da doğum kilosu 2.750 gramdan az olan bebeklerde 10.3 kat daha fazla[15], Danimarka'da yapılan bir çalışmada doğum kilosu 2.500 gramdan az olan bebeklerde sıklığın daha fazla olduğu belirlenmiştir[16]. Ancak bu çalışmada doğum zamanının ve kilosunun inmemiş testis sıklığı etkilemediğini saptandı. Sonuçlar, veri formunun kişilerin beyanına göre doldurulması ve hafıza faktörü göz önüne alınarak değerlendirilmelidir.

Tokat'ta yapılan çalışmada annesi sigara içen çocukların %2.7'sinde, sigara içmeyenlerin %1.1'inde inmemiş testis olduğu sigara içmenin istatiksel olarak anlamlı olmadığı bildirilmiştir[29]. Bu çalışmada ise annenin sigara içmesinin inmemiş/retraktil testis riskini artırdığı belirlendi. İstanbul'da bir hastanede yapılan çalışmada[23] ve bu çalışmada ise anne eğitim seviyesiyle inmemiş testis sıklığı arasında ilişkili olmadığı belirlenmiştir.

Bir hastanede yapılan çalışmada inmemiş testisi olan çocukların %26.7'sinin sünnetli olduğu ve sünnetle inmemiş/retraktil testis arasında bir ilişki olmadığı bildirilmiştir. Hastaların %24.7'sini doktor, %2.5'ini sağlık memuru, %3.2'sini ise doktor ve sağlık memuru olmayan kişiler sünnet etmiştir[23]. Bu çalışmada da benzer şekilde sünnetli olma durumu ve sünneti yapan kişinin inmemiş

testis sıklığını etkilemediği belirlendi.

SONUÇ

Bu çalışmada inmemiş testis tanısı alan öğrencilerin %65.5'inin son bir yılda bir sağlık kuruluşuna başvurmuş olmasına; tanı alan Türk çocukların %94.4'ünün ilk beş yaşta düzenli izlemlerinin yapılmasına karşın inmemiş testis tanısı konulmamıştır. Bu da hekime başvuran ya da birinci basamakta düzenli takipleri yapılan çocuklarda genital muayenelerin yapılmadığını düşündürmektedir. Bu sorunun çözümü için en önemli müdahale alanı birinci basamak sağlık hizmetleridir. Hemen hemen her bebek ve çocuk izlem, aşılama ve hastalık nedenleriyle birinci basamak sağlık kuruluşlarına başvurmaktadır. Bu kapsamda bebek ve çocukların geliş nedeni ne olursa olsun, hekim tarafından genital muayeneyi de içeren detaylı fizik muayenenin yapılması, inmemiş testis gibi erken tanıyla tamamen iyileşebilen hastalıkların önlenmesi açısından önemli katkı sağlayacaktır. "Kaçırılmış fırsatların yakalanması" olarak da ifade edilen bu sistematik yaklaşım bebek ve çocuğun eksik bırakılan diğer sağlık hizmetlerinin tamamlanmasını da sağlayacaktır. Aile hekimleri, erkek çocukların inmemiş testis açısından değerlendirilmesi konusunda sorumluluk hissetmeli ve bu konunun savunucusu olmalıdırlar.

Kısıtlılıklar

Sınıf öğretmeninin katılımcı olduğu sınıflarda izin oranları daha yüksekti. Ayrıca muayene günü okula gelmeyen öğrenciler araştırmaya katılamadı. Ayrıca yabancı uyruklu öğrenciler için çeviri yardımı alınmasına karşın iletişimin zor olması, aile bilgi formlarında az da olsa eksik bilgilerin olması, bilgi formunun doldurulması sırasında olumsuz hafıza faktörü de diğer kısıtlılıklar olarak değerlendirildi.

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ORIGINAL ARTICLE /ORİJİNAL MAKALE

Clinical and epidemiological characteristics of cancer cases reported between 2013-2017 in Amasya

Amasya ilinde 2013-2017 yılları arasında bildirimi yapılan kanser olgularının klinik ve epidemiyolojik özellikleri

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Abstract

Objective: In order to determine the region-specific risk factors of cancers, it is necessary to examine the distribution according to the characteristics of person, place and time. In the current study, it was aimed to determine the distribution of cancer diagnoses reported between 2013 and 2017 in Amasya province and these diagnoses in terms of clinical features and various sociodemographic variables.

Methods: The population of this descriptive study was composed of the cases who were diagnosed with cancer, which the Middle East Cancer Consortium deems necessary to be reported, in various health institutions between 2013 and 2017 and were registered in the Cancer Registry Center. The codes in ICD-O-3 were used in the classification of cancer diagnoses. In order to eliminate the confounding effect of the age variable in the presentation of cancer rates, age-standardized rates were calculated using the World Standard Population.

Results: The three most common cancers between 2013 and 2017 were trachea/bronchus/lung, colorectal and stomach cancers. The three most common cancers in men were trachea/bronchus/lung, prostate and stomach cancers. This was ranked as breast, colorectal and thyroid cancers in women. It was found that between 2013 and 2017, age-standardized rates of all cancers were found to increase from 151.3 to 184.1 per 100,000 population.

Conclusion: The incidence rate of all cancers for both genders between 2013 and 2017 is below Turkey's average. Gastrointestinal system malignancies, especially gastric cancer, have an incidence rate higher compared to Turkey for both genders. Intervention studies should be planned using the results of the current study.

Keywords: Cancer, Incidence, Epidemiological studies

Öz

Amaç: Kanserlerin bölgeye özgü risk faktörlerini belirlemek için dağılımını kişi, yer ve zaman özelliklerine göre incelemek gerekmektedir. Bu çalışmada Amasya ilinde 2013-2017 yılları arasında bildirimi yapılan kanser tanılarının dağılımının ve bu tanıların klinik özellikler ve çeşitli sosyodemografik değişkenler yönünden incelenmesi amaçlanmıştır.

Yöntem: Tanımlayıcı tipte planlanan bu çalışmanın evrenini 2013-2017 yılları arasında çeşitli sağlık kurumlarında kanser tanısı konularak Kanser Kayıt Merkezi'nde kayıt altına alınmış Orta Doğu Kanser Konsorsiyumu'nun rapor edilmesini gerekli gördüğü olgular oluşturdu. Kanser tanılarının sınıflandırılmasında ICD-O-3'te yer alan kodlar kullanıldı. Kanser hızlarının sunumunda yaş değişkeninin karıştırıcı etkisini ortadan kaldırmak için Dünya Standart Nüfusu kullanılarak yaşa standardize hızlar hesaplandı.

Bulgular: 2013-2017 yılları arasında en fazla görülen ilk üç kanser trakea/bronş/akciğer, kolorektal ve mide kanseri olarak belirlendi. Erkeklerde en sık görülen ilk üç kanser trakea/bronş/akciğer, prostat ve mide kanseri; kadınlarda ise meme, kolorektal ve tiroid kanseri sıralamasına sahipti. 2013-2017 yılları arasında, tüm kanserlerin yaşa göre standardize edilmiş hızlarının yüz bin nüfusta 151.3'ten 184.1'e yükseldiği bulundu.

Sonuç: Her iki cinsiyet için tüm kanserlerin insidans hızı Türkiye genelinin altındadır. Gastrointestinal sistem maligniteleri özellikle de mide kanseri her iki cinsiyette Türkiye verilerinin üstünde bir insidans hızına sahiptir. Mevcut çalışmanın bulgularından faydalanarak müdahale çalışmaları planlanmalıdır.

Anahtar Kelimeler: Kanser, İnsidans, Epidemiyolojik çalışmalar

INTRODUCTION

Cancer causes a significant disease burden in societies, which is seen with increasing frequency due to changing living conditions. It is estimated that 19.3 million new cancer cases and 10 million deaths from cancer occurred in 2020[1]. While the most frequently diagnosed cancers are breast, lung and colorectal cancers, respectively; the most common causes of cancer deaths are lung, colorectal and liver cancer worldwide[2]. Cancer is in the first and second leading causes of premature deaths, occurring in the population aged 30-69, in 134 of 183 countries[3]. Due to demographic changes such as population aging and growth, cancer cases are expected to continue to rise worldwide over the next 50 years. Assuming that the latest incidence trends for major cancer types continue, by 2070 the incidence of all cancers is predicted to double compared to 2020[4]. Many factors such as smoking, oncogenic viruses, hereditary transmission, environmental exposure with various chemical and physical factors, dietary habits, obesity and lack of physical activity play a role in the etiology of cancer[3].

The first step of cancer control is to have accurate, complete and reliable data. The International Agency for Research on Cancer (IARC) recommends a population-based approach to

obtaining cancer data. The whole process of collecting information from all relevant institutions for all cancer cases that occur in a particular society and fully recording these data together with the clinical and pathological indicators of cancer is called population-based cancer registry[5]. Cancer Registry Center is the unit where all patients diagnosed with cancer are registered. A population-based cancer registry collects data from many hospitals and non-hospital sources in a defined geographic area and serves to show incidence trends of cancers of different localities over time or among subsections of the population. It is important to record cancer data accurately and completely in order to know the epidemiology of the disease, to determine the policies to be applied, to evaluate the effectiveness of the interventions and to carry out the necessary improvement studies in a timely manner[5].

Like other chronic diseases, cancer is more common with increasing age. Considering that the elderly dependency ratio of Amasya is 23.6% for 2021, which is above Turkey's average (14.3%), cancer control is one of the priority health problems for Amasya province[6]. In order to determine the region specific risk factors with analytical studies, it is first necessary to examine the distribution of cancer cases according to person, place and time characteristics. In the current study, it was aimed to examine the distribution of cancer diagnoses reported by Cancer Registry Center between 2013 and 2017 in Amasya province and these diagnoses in terms of clinical features and various sociodemographic characteristics.

METHODS

The population of this descriptive study consisted of the cases in all age groups who were diagnosed with cancer in various health institutions between 2013 and 2017 and were registered in the Cancer Registry Center. These cases, which the Middle East Cancer Consortium deems necessary to register, included all diagnoses with a behavior code of "2" or "3" in ICD-O-3 as well as papillary, basal and squamous cell carcinomas of the skin; carcinoma in situ and CIN III of the cervix. The entire population was included in the study. In order to make a proper comparison, since non-melanoma skin cancers are not included in the reports published by organizations such as IARC, a total of 613 cases of non melanoma skin cancer were excluded from a total of 4.838 cancer cases over a five-year period, and 4.225 cases were analyzed. The data were obtained through export from the program called CanReg-4 used in the Cancer Registry Center after obtaining the necessary permissions from Ethics Committee (No: 2022/25) and Provincial Health Directorate. This study was conducted following the principles of the Declaration of Helsinki revised in 2013.

For the study, besides sociodemographic data such as age, gender, and district of residence, information about the last follow-up status, the health institution that diagnosed cancer, the areas of specialization that made the diagnosis, the method of diagnosis, the types of treatment applied, the dates of diagnosis and treatment were collected. The codes in ICD-O-3 were used in the classification of cancer diagnoses. ICD-O is the coding system used by cancer registrants with data obtained from pathology reports. In this system, there

are two main sections: topography (location of the tumor) and morphology (histology). The topography code refers to a 4-digit code located between C00.0-C80.9, as in ICD-10. On the other hand, morphology code includes 4-digit numbers between 8000 and 9989 codes. Ultimately, 10 digits are required to fully define a tumor, including 4 digits in the topographic region, 4 digits in the morphological type, 1 digit in the biological behavior, and 1 digit in the grade or differentiation of the neoplasm[7].

Personal information was not shared with any person or organization other than the Cancer Registry staff and researchers in order to ensure the confidentiality of personal data.

Age-standardized rates were calculated using the World Standard Population to eliminate the confounding effect of the age variable in the presentation of cancer rates. The data were analyzed with the SPSS (Version 22 for Windows, SPSS Inc, Chicago, IL, USA) package program. Since continuous variables did not show normal distribution, they were expressed as median (interquartile range) and categorical data were expressed as frequency and percentage. The conformity of the continuous variables to the normal distribution was evaluated with the Kolmogorov-Smirnov test. Mann-Whitney U and Chi-square tests were used for comparisons between groups. Statistical significance level was accepted as $p<0.05$ for all tests.

RESULTS

Between 2013-2017, 59.3% of 4,225 cases diagnosed with cancer across the Amasya province were male and 49.8% were aged 65 and over. It was determined that 37.7% of the patients were residing in the city center and 49.8% were alive at the last follow-up (Table 1). The median age at diagnosis was 64 (IQR 55-73) years in total. The median age at diagnosis of men (66 years, IQR 58-74) was higher than the age of diagnosis of women (61 years, IQR 51-72) ($p<0.001$). It was observed that the first diagnoses of cancer patients were mostly made outside the province (65.1%) in the five-year period. The department that made the most of the diagnoses was general surgery (30.2%), the most common diagnostic method was histological examination (91.6%), while the rate of cases that were first diagnosed after death was 1.8%. The degree of cell differentiation was most frequently found to be moderate (38.2%). It was found that at least one type of treatment was applied to 83.8% of all cancer cases. Surgical treatment was found to be the most common type of treatment modality both as the first treatment (69.6%) and among those who received at least one treatment (71.3%). The median time between the date of diagnosis and the onset of treatment was 8 (IQR 0-34) days. The median of this period was found to be longer in males (9 days, IQR 0-37) than in females (7 days, IQR 0-29) ($p=0.003$). Considering the timeliness of cancer registries, it was found that 83% of the cases in the database were recorded in the first 12 months, and 98.6% in the first 24 months. The rate of unknown data was 13.3% in the diagnostic method and 67.1% in the degree of differentiation feature.

Table 1. Distribution of sociodemographic characteristics of cancer cases, 2013-2017

| Sociodemographic characteristics	n	%
Gender		
Male	2.505	59.3
Female	1.720	40.7
Age groups (Years)		
0-14	31	0.7
15-24	32	0.8
25-49	578	13.7
50-64	1.479	35.0
65 and over	2.105	49.8
Settlement (District)		
Central	1.594	37.7
Merzifon	896	21.2
Suluova	621	14.7
Gümüşhacıköy	441	10.4
Taşova	457	10.8
Göynücek	157	3.7
Hamamözü	57	1.3
Unknown	2	0.1
Last follow-up		
Alive	2.104	49.8
Dead	2.121	50.2
Total	**4.225**	**100.0**

The most common cancers between 2013 and 2017 were trachea/bronchus/lung (15%), colorectal (12%) and stomach (10%) cancers, respectively. The most common cancers in men were trachea/bronchus/lung (23%), prostate (13%) and stomach (12%) cancers; and in women these were breast (23%), colorectal (12%) and thyroid (10%) cancers (Figure 1).
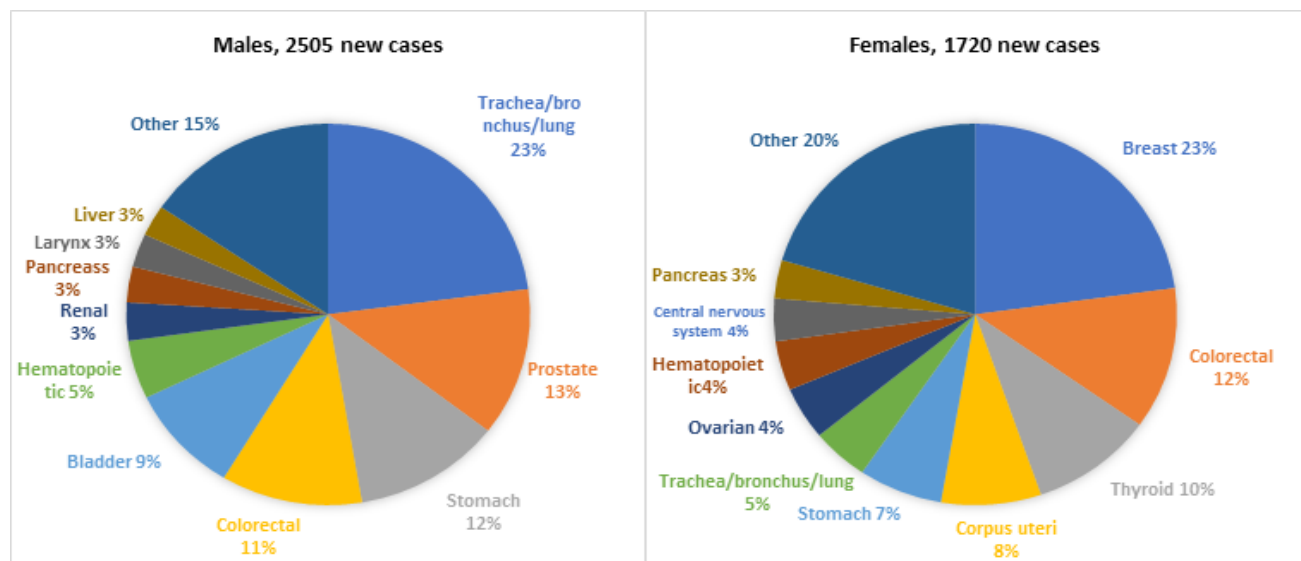
**Figure 1.** Distribution of cancers diagnosed between 2013 and 2017 by gender

In Amasya province, the age-standardized rates of all cancers increased from 151.3 to 184.1 per 100,000 population, and the cancer rate in men was higher than in women in all years between 2013 and 2017 (Figure 2).

For 2017, excluding gender-specific cancer types, the five cancer types with the highest incidence rate in a total of 100,000 people were

trachea/bronchus/lung (24.8), colorectal (19.8), stomach (14.0), bladder (14.0) and thyroid (12.4) cancers. Age-standardized rates of the most common cancers by gender are presented in Figure 3.
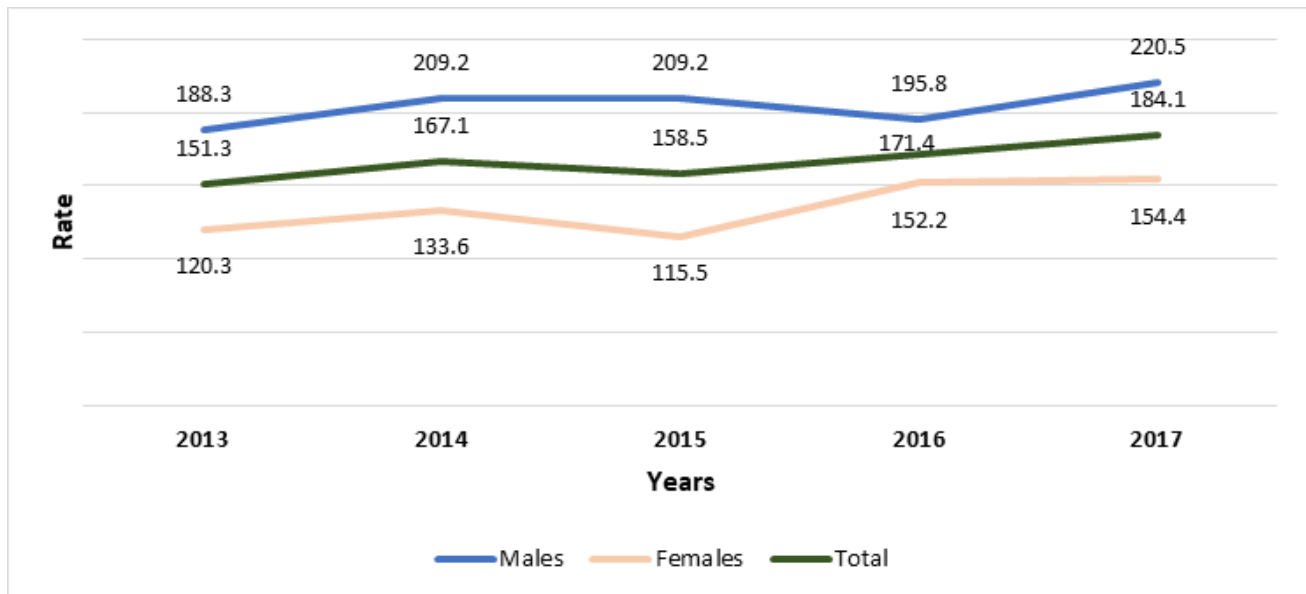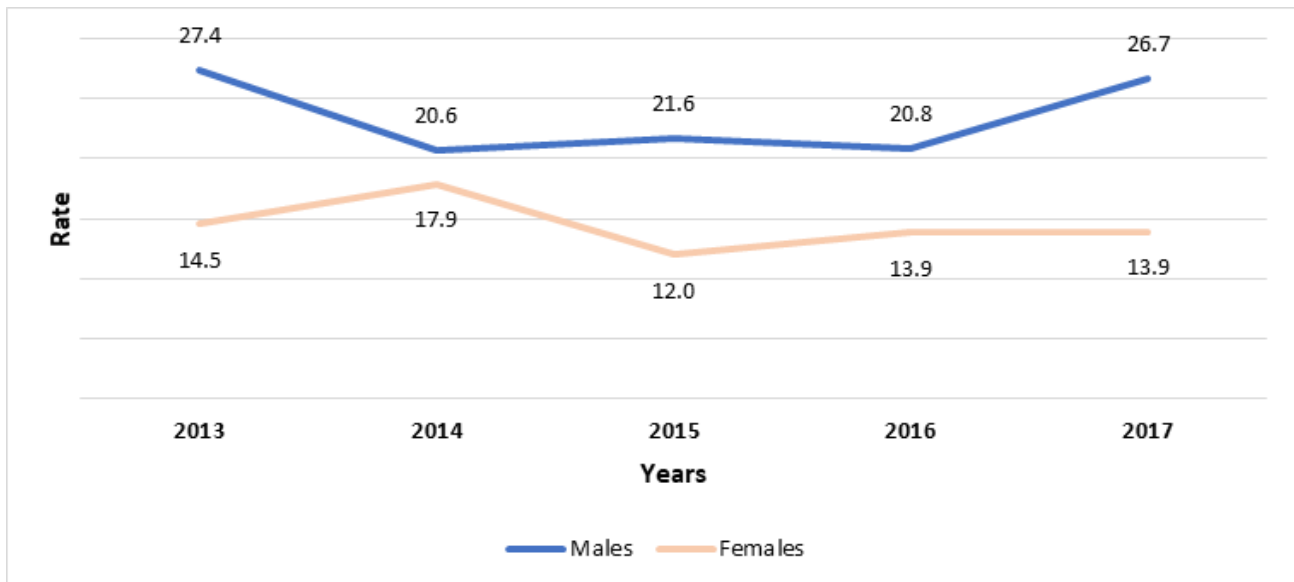
Figure 2. Age-standardized rates of all cancers for 2013-2017 (World Standard Population, per 100,000 people)
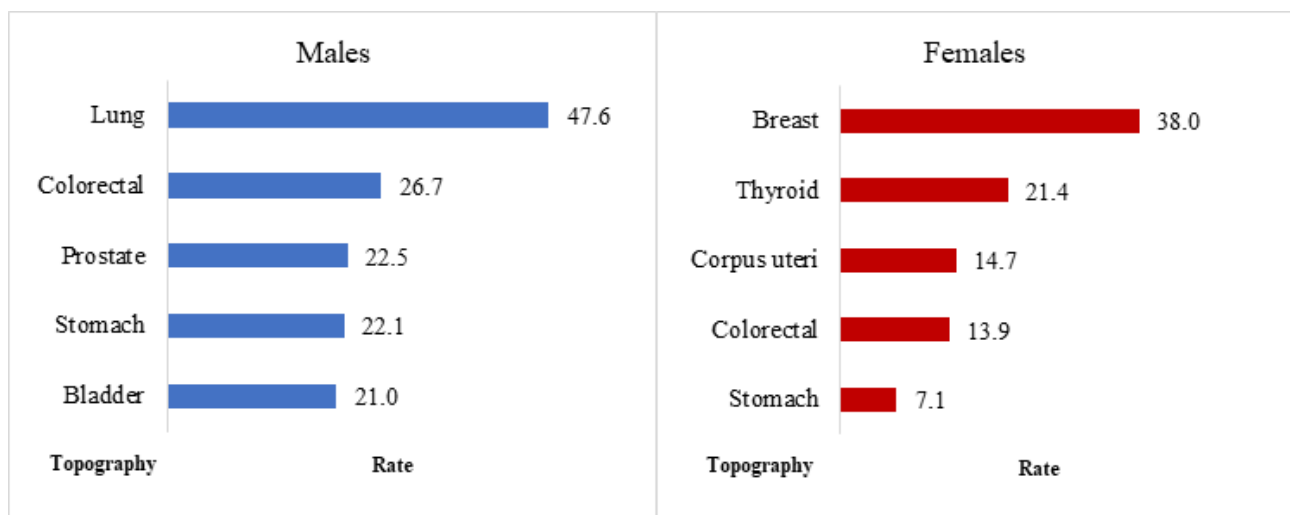

Figure 3. Age-standardized rates of the five most common cancer types by gender, 2017 (World Standard Population, per 100,000 people)

When the distribution of age-standardized rates for all cancers by districts was analyzed, the district with the highest cancer rate was Suluova for the first three years (176.4, 191.8 and 199.9 per 100,000 population, respectively), and Gümüşhacıköy for the last two years (216.2 and 199.3 per 100,000 population, respectively). Age-specific cancer rates increased with increasing age in all years. The cancer rate in the population aged 65 and over varied between 784.6 and 1011.5 per 100,000 people.

Regarding the three cancer types within the scope of the screening program by the Ministry of Health, colorectal cancer rates were higher in men in all years (Figure 4). It was found that the rate of breast cancer increased from 26.0 in 2013 to 41.7 in 2016 and decreased to 38.0 in 2017 per 100,000 women. The age-standardized rate of cervical cancer varied between 1.6 and 6.3 per 100,000 women over a five-year period (Figure 5).
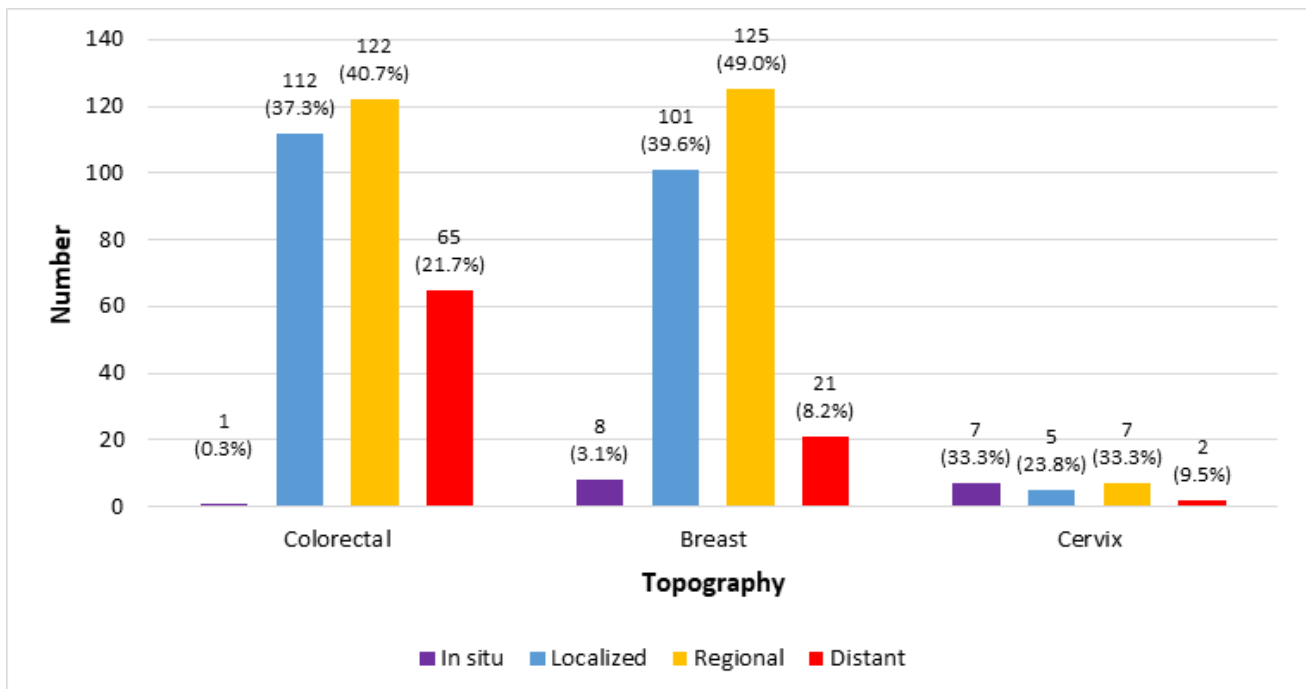
Figure 4. Age-standardized rates of colorectal cancer, 2013-2017 (World Standard Population, per 100,000 people)
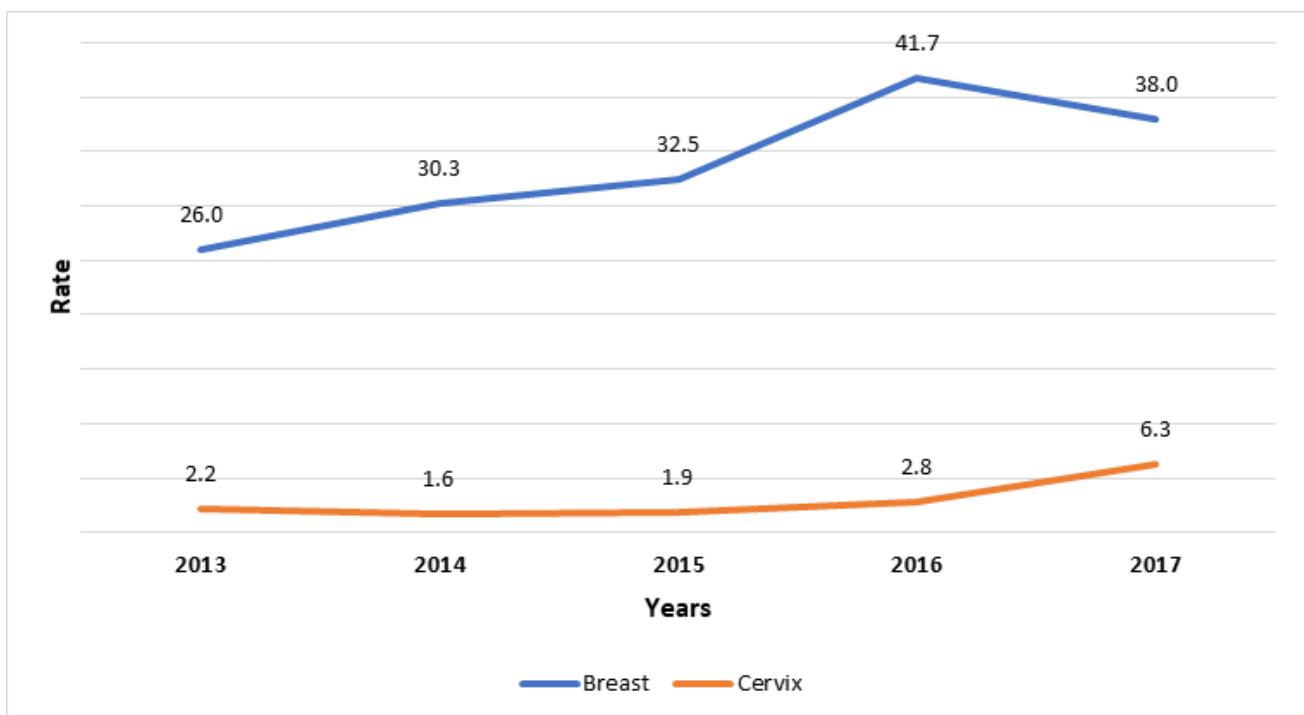
Figure 5. Age-standardized rates of breast and cervical cancers in women, 2013-2017 (World Standard Population, per 100,000 people)

Among the 2,337 cases whose summary stage information was recorded at the time of diagnosis, the age at diagnosis was higher in those with distant metastasis (p=0.004), and distant metastasis was higher in males (p<0.001). Among all cancer types, the first diagnosis was mostly made in the localized stage (41.1%) and 28.7% of them showed distant spread at the time of diagnosis. It was found that cervical cancer was diagnosed mostly in situ (33.3%) and regional (33.3%) stage, while colorectal and breast cancers were diagnosed mostly in the regional stage (40.7% and 49.0%, respectively) (Figure 6).

Figure 6. Summary stage distribution of cancer types in the screening program at the time of diagnosis, 2013-2017

Age-standardized rates of childhood cancers between 0-14 years were found to be 55.4, 95.1, 136.1, 55.8, and 149.3 per 1,000,000 children over the five-year period, respectively. The age-standardized rate of trachea/bronchus/lung cancer, one of the cancers directly related to tobacco, was higher in men in all years. For 2017, the rate of lung cancer was found to be 47.6 in men and 4.2 in women, per 100,000 people.

DISCUSSION

The current study is important in terms of descriptive and analytical cancer statistics in Amasya and comparing them with global and Turkey data. Thus, it provides a preliminary assessment of regional differences and epidemiological factors in cancer types. According to our results, it has been shown that the total incidence rate of all cancers for both sexes in Amasya between 2013-2017 was lower than Turkey's, and the cancer rates fluctuated over the years. On the other hand, the incidence of gastrointestinal system

malignancies, especially stomach cancer, was higher than the incidence in Turkey for both genders.

According to the data provided by the International Agency for Research on Cancer (IARC), the incidence for all cancers apart from skin cancers other than melanoma in the world is 206 in men and 178 in women per 100,000 population in 2020[8]. The current cancer report of the Ministry of Health belongs to 2017, the age-standardized cancer incidence rate, excluding skin cancers other than melanoma, was reported as 233 in men, 170 in women, and 202 in total per 100,000 population[9]. The age-standardized incidence rate of all cancers in Amasya province in 2017 was calculated as 220 in men, 154 in women and 184 in total per 100,000 population. When all cancers were evaluated, cancer rates in Amasya were lower than in Turkey. This difference may be due to the difference in cancer screening coverage rate. According to Turkish Cancer Control Program 2016,

the coverage rate of opportunistic and population-based breast cancer screenings in Turkey was 30-35% in 2016[10]. Nevertheless, the coverage rate of breast cancer screening was 8% in Amasya in 2016[11]. Between 2013-2017, 59.3% of all cancer cases diagnosed in Amasya were men. In the same period data for Turkey, cancer incidence rates are higher in men for all years. Similarly, in Amasya, cancer rates in men were higher than in women for all years. In the trend between 2013 and 2017, there was a noticable increase in the rate of cancer in women in 2016. We can attribute this increase to the results of cancer screening studies in this period. The number of breast cancer screenings in primary health care services in Amasya was 2,814 (4.8% of the target population) in 2015 and increased to 4,791 (8.0% of the target population) in 2016[11]. In 2016, the increase in the rate of breast cancer, which is the most common cancer in women, also supports that. These results once again show the importance of cancer screening studies in terms of early detection and intervention of cancers.

In the current study, it was shown that 49.8% of all cancer cases were 65 years and older. In the study conducted by Özdemir et al. in Yozgat, it was observed that cancers in both genders were most common in the age of 60-69 years[12]. In many previous studies, it has been reported that cancers are mostly diagnosed in this age range[13-15]. In Amasya, the median age at diagnosis in men was higher than the age at diagnosis in women. This difference may be related to the fact that breast cancer screening is applied from the age of 40 within the scope of Turkey's national screening program and early diagnosis opportunities. In a study conducted with cancer records

between 1992 and 2017 in İzmir, it was shown that the cancers were diagnosed in women in earlier age and in earlier stages.[16]. In the current study, it was observed that 41.1% of the cancer patients were firstly diagnosed in localized stage and 28.7% of them showed distant spread at the time of diagnosis. The age at diagnosis was higher in patients with distant spread at the time of diagnosis, and distant spread was higher in men at the time of diagnosis. In the study of Haydaroglu et al., the rate of metastasis was 24.0% in women and 38.7% in men similarly[16].

Lung cancer is the most common cancer in men, and its mortality and morbidity rate is approximately two times higher in men than in women[8]. Lung cancer is usually diagnosed at the late stages. According to the Turkey 2017 report, it has been shown that 56.5% of lung cancers have distant metastases[9]. It ranks first in cancer-related deaths in men (21.5%)[8]. Considering these data, the results of the current study regarding the higher age of diagnosis and higher rates of distant spread at the time of the diagnosis in men are consistent with the data of Turkey and the literature. When the spread of the three cancer types which are within the scope of screening at the time of diagnosis is evaluated, cervical cancer was diagnosed mostly at in situ (33%) and regional (33%) stage; colorectal and breast cancers were mostly diagnosed at the regional stage (41% and 49%, respectively). The highest rate of the diagnosis at metastatic stage was seen in colorectal cancer (22%) among these three cancer types similar with Turkey 2017 data (24%)[9]. In the study of Yücel et al. in Sivas, the rate of diagnosing the colorectal cancer at the metastatic stage was 33%[17]. For cervical cancer, the rate of

diagnosing at the local stage was 55% in Turkey, while it was 24% if in situ lesions were included and 35% if they were not in Amasya. In the study of Yücel et al., this rate was 73%[17]. Cancer screening should be done at regular intervals, especially in sexually active women, starting from the age of 30 to detect cervical cancer at an early stage.

The most common cancers in men all over the world and in Turkey in 2020 are lung, prostate and colorectal cancers, respectively[8, 9]. In Turkey Cancer Statistics 2017 Report, the incidence of trachea/bronchus/lung (56.7), prostate (35.7), colorectal (25.1), bladder (25.1) and stomach (14.3) cancers in men per 100,000 populations[9]. In Amasya, the incidence of trachea/bronchus/lung cancer in men is lower (47.6), but it ranks first in concordence with Turkey, but the rate of colorectal cancer (26.7) is higher compared to Turkey, and it ranked second. Another remarkable result is that the rate of stomach cancer (22.1) was much higher compared to Turkey and is higher ranked. Bladder (21.0) and prostate (22.5) cancer rates were much lower that of Turkey[9]. While the most common cancer types in women worldwide are breast, colorectal and lung cancers, respectively, in Turkey 2017 data, the highest cancer rates in women per 100,000 population are listed as breast (47.7), thyroid (22.6), colorectal (14.7), trachea/bronchus/ lung (11.1), and uterus (10.7) cancers[8]. In Amasya, breast cancer (38.0) had the highest rate in women even if it was lower than that of Turkey. Breast cancer was followed by thyroid (21.4), uterus (14.7), colorectal (13.9) and stomach (7.1) cancers for women. Stomach cancer and uterine cancer rates were higher compared to Turkey. It is an important finding that the incidence of

stomach cancer for both genders was higher compared to Turkey. It is known that upper gastrointestinal system cancers, including stomach cancer, show regional differences depending on environmental factors[8, 18]. However, stomach cancer is more common in men all over the world and in Turkey[8, 9]. In a study conducted in Zonguldak, a province in a similar geographic region, stomach cancer is among the most common cancers, ranking second in men and fourth in women[19]. Storage and cooking methods of foods such as salting, pickling and smoking, which are among the dietary habits in the Black Sea Region of Turkey, and high consumption of animal fat play important role in the etiology of stomach cancer[20]. In Amasya, it was shown that, stomach cancer (9.8%) was the third most common cancer after trachea/bronchus/ lung (15.4%) and colorectal (11.6%) cancers between 2013 and 2017. Stomach cancer rate was higher (11.9%) especially in men. The fact that the rate of stomach cancer in Amasya is higher compared to Turkey brings to mind the precarcinogenic H. pylori agent. Half of the world population is infected with H. pylori, and development of gastric cancer can be observed in 1% of individuals infected with H. pylori[21]. While H. pylori positivity was found to be 49.5% in a study conducted in Ankara[22], it was found to be 81.3% in a recent study in Yozgat[23]. In a population-based study conducted at the national level in Turkey, H. pylori positivity was found to be 82.5% and the frequency was higher in men[24]. In the current study, the increase in stomach cancer rate was more prominent in men, and this relationship needs to be evaluated.

There are approximately 2.2 million new cases of breast cancer in women worldwide[2]. In this

context, breast cancer is the most common cancer type with the highest mortality rate among women in all regions of the world and in Turkey[2]. The rate of breast cancer among all cancers diagnosed in women is 24.5%, and breast cancer-related deaths constitute 15.5% among all cancer-related deaths[8]. In Amasya, the rate of breast cancer in women was 22.8%. It was found that the rate of breast cancer increased from 26.0 per 100,000 women in 2013 to 41.7 in 2016, and decreased to 38.0 in 2017. The age-standardized rate of cervical cancer varied between 1.6 and 6.3 per 100,000 women over a five-year period. Changes over the years may be due to the inclusion of both cancers in the screening program of Turkey. In Amasya, the closest incidence rate to Turkey regarding to breast cancer, which has shown an increasing trend since 2014, was reached in 2016. The lower incidence rates in other years may be due to deficiencies in diagnosis associated with changes in the number and competency of physicians in departments diagnosing cancer.

Regarding to the distribution of age-standardized rates for all cancers by districts between 2013-2017, Suluova district had the highest cancer rate for the first three years and Gümüşhacıköy for the last two years. When the cancer screening data of Amasya province was examined, the screening rate of the target population of Gümüşhacıköy district in recent years was higher than other districts. The high incidence rate of cancer may be explained by this.

Limitations and Strengths

The current study is the first to evaluate cancer registry in Amasya province and it is thought that it will contribute to the literature

and guide the future analytic studies. Since the research data was obtained from population based cancer registry, the risk of bias that can be seen in studies conducted in hospitals was minimized. When the database of the province is evaluated in terms of active cancer registry data quality; it is quite strong according to the criteria of completeness, validity and timeliness. Almost all of the new cases in the target population were found in the database of the registry center. The frequency of cancer data obtained from the death notification only was 1.8%, which was the same as Turkey. Histological confirmation was found as 91.6% for all cancers and it was similar with Turkey (90.8%)[9]. The fact that the histological confirmation ratio in the database is not close to 100% indicates that the diagnoses were probably made also by clinical/laboratory and imaging methods and the cases that did not require surgical intervention were not missed. In terms of timeliness; it was determined that 83% of the cases in the Amasya database were recorded in the first 12 months, and 98.6% in the first 24 months. In the Turkey 2017 database, these ratios were 55.1% and 85.9%, respectively[9]. However, the fact that the unknown data rate in Amasya was higher compared to Turkey in terms of diagnosis method (13.3%) and differentiation (67.1%) is a limitation of the study.

CONCLUSION

Consequently, the total incidence rate of all cancers for both genders in the province of Amasya between 2013 and 2017 was lower compared to Turkey 2017 statistics. Although there was a general increase trend over the years, it showed fluctuations especially depending on cancer screening activities. In Amasya compared to Turkey 2017 statistics,

the rates of respiratory system cancers and prostate cancer were lower, colorectal cancer and stomach cancer were higher in men; the rates of breast cancer and colorectal cancer were lower and stomach cancer was higher in women. In Amasya, gastrointestinal system malignancies, especially stomach cancer, had higher incidence rates compared to Turkey data for both genders. In this context, there is a need for epidemiological studies to be conducted in the region regarding eating habits and *H pylori* positivity. Public education activities should be increased to transform and improve the eating habits in the region. Epidemiological and intervention studies should be planned using the results of the current study. In addition, the reapplicaiton of the study in the future years will provide an opportunity to compare with current results, and will enable us to see the developed and underdeveloped aspects in the struggle against cancer.

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Author Contribution

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Alcohol use among students in Turkey: A systematic review study

Türkiye'de öğrencilerde alkol kullanımı: Sistematik bir derleme çalışması

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Abstract

Objective: Alcohol consumption at an early age has many adverse effects on people's health and others around them. This paper aims to reveal the level of alcohol consumption habits of students in Turkey and the effects of alcohol use through the Systematic Review.

Methods: Studies on alcohol use among students, using the PRISMA systematic review method, will be combinations of the keywords Alcohol, Student, Turkey and/or Addiction in Web of Science, Scopus, PubMed, Science Direct and TR Index databases between 7 December 2020 and 10 January 2021 were searched in the abstract, keyword and study name.

Results: As a result of the search, 402 studies were found initially. As a result of the repetitive studies and the examination of the titles and abstracts, 224 articles, the full text of which was reached, were examined in detail. As a result of the full text review, 212 articles were examined according to the inclusion criteria. According to the determined criteria, 85 articles were reached. In Turkey, where cultural diversity is rich, alcohol consumption has also been affected by this diversity and has led to differences in the frequency of consumption (4.4%-91.4%). In addition to the difference in the frequency of alcohol consumption, the effects of alcohol consumption among students were also quite high.

Conclusion: Physical, mental, and social impacts significantly affected the living conditions of people and people around them. It would be wrong to give the general status of alcohol consumption frequency in Turkey with a value through this systematic review study. With the effects of various factors, alcohol consumption and its impacts on health varied considerably, revealing that it is necessary to evaluate in smaller groups.

Keywords: Alcohols, Students, Turkey, Adolescent, Dependency

Öz

Amaç: Erken yaşta alkol tüketiminin insan ve çevre sağlığı üzerinde birçok olumsuz etkisi vardır. Bu makale, Türkiye'deki öğrencilerin alkol tüketim alışkanlık düzeylerini ve alkol kullanımının etkilerini Sistematik İnceleme yoluyla ortaya koymayı amaçlamaktadır.

Yöntem: Öğrenciler arasında alkol kullanımına ilişkin çalışmalar, PRISMA sistematik inceleme yöntemi kullanılarak 7 Aralık 2020-10 Ocak 2021 tarihleri arasında Alcohol, Student, Turkey ve/veya Addiction anahtar kelimeleri Web of Science, Scopus, PubMed, Science Direct ve TR Index veri tabanlarında birbirlerinin kombinasyonları olacak şekilde özet, anahtar kelime ve çalışma adı içerisinde taranmıştır.

Bulgular: Tarama sonucunda başlangıçta 402 çalışmaya ulaşılmıştır. Tekrar eden çalışmalar ile başlık ve özetlerin incelemesi sonucunda tam metnine ulaşılan 224 makale detaylı olarak incelemeye alınmıştır. Tam metin incelemesi sonucunda 212 makale dâhil etme kriterlerine göre incelenmiştir. Belirlenen kriterlere göre 85 makaleye ulaşılmıştır. Kültürel çeşitliliğin zengin olduğu Türkiye'de alkol tüketimi de bu çeşitlilikten etkilenmiş ve tüketim sıklığında farklılıklara yol açmıştır (%4.4-91.4). Alkol kullanım sıklığındaki farklılığa ek olarak, öğrenciler arasında alkol kullanımının etkileri de oldukça yüksektir.

Sonuç: Fiziksel, zihinsel ve sosyal etkiler, insanların ve çevrelerindeki insanların yaşam koşullarını önemli ölçüde etkilemiştir. Bu sistematik derleme çalışması ile Türkiye'deki alkol tüketim sıklığının genel durumunu bir değerle vermek yanlış olur. Alkol tüketiminin ve sağlığa etkilerinin çeşitli faktörlerin etkisiyle oldukça değişken olması, daha küçük gruplar halinde değerlendirilmesi gerektiğini ortaya koymaktadır.

Anahtar Kelimeler: Alkol, Öğrenciler, Türkiye, Gençlik, Bağımlılık

INTRODUCTION

Excessive alcohol use causes an estimated 2.5 million deaths every year, with a significant proportion of young people. It can have devastating impacts on individuals and their families who have various alcohol-related problems and significantly affect community life.[1] Although alcohol use is a serious health problem, accounting for roughly 4% of all deaths worldwide and 5% of the global disease burden, required attention has not been paid to alcohol consumption and its problems for years.[2] In recent years, international awareness about the effects and harms of alcohol consumption has increased significantly, and it has started to take a more important place in public health policies.[3] Since 2010, under the leadership of the World Health Organization, the fight against alcohol has gained significant momentum, and policy options and interventions to be followed in 10 target areas have been presented to member states.[1]

The time when individuals are introduced to alcohol is generally the teenage years including adolescence in which they undergo a psychologically turbulent period. Mostly in these years, alcohol consumption and smoking appear because alcohol is thought a supporting role in this turmoil and a sign of being an adult.[4] In this respect, a more suitable environment for alcohol

consumption appears in the years of youth.

The report "Global Status Report on Alcohol and Health" published by WHO also stated that Turkey does not have any national alcohol policy, with a lifetime alcohol avoidance rate of 89.1% and 93.1% for the past 12 months.[5] This systematic review study aims to provide an overview of the alcohol consumption among students, who may change this rate in the future, and to examine the effects of alcohol consumption. As a guide for the search strategy, the stated PICO criteria are discussed:

P (Patient/Population): Students in TurkeyI (Intervention/Exposure): Alcohol consumption

C (Comparison/Control): Habits/behaviors

O (Outcome): Level of alcohol consumption and effects of alcohol use.

In this context, the study questions are formed as follows,

Q1: Can demographic factors be expressed as a determinant of alcohol consumption?

Q2: Does alcohol consumption have an impact on the health of students?

METHODS

An important source for presenting evidence-based data, systematic reviews systematically explain why the authors include the studies they have reviewed in the literature and why the out-of-scope studies are not included in the study.[6] This study investigates the frequency and consequences of alcohol consumption among students in Turkey with the systematic review method.

This systematic review study was conducted in accordance with the PRISMA statement, a

guide that sets standards for reporting results of systematic reviews, ensuring deemed transparency in the presentation of results and between reviews.[7]

Screening Strategy

Web of Science, Scopus, PubMed, Science Direct, and TR Index electronic databases were scanned through Ankara University's internet access network. Target keywords were scanned according to Medical Subject Headings (MESH). Alcohol, Student, Turkey, and/or Addiction keywords were scanned between December 7, 2020, and January 10, 2021. These words were scanned in the relevant databases in a way that they are the combinations of each other in the summary, keywords, and study name.

The inclusion criteria for the study are determined that it has to be related to students, to be a study paper, to include at least 384 samples (specified that 384 samples are required to generalize and compare the results of a study paper), to specify a frequency for alcohol consumption, to be conducted in Turkey, to be written in English/ Turkish, and to have a full-text, while the exclusion criteria is determined that it has to be a review, qualitative, or descriptive study.[8] After examining the titles and abstracts of the studies obtained from the electronic databases, the studies accessed by the inclusion criteria were included in the study (Figure 1). As a result of the screening, 85 studies that were determined to be suitable for the criteria were included in the study and were evaluated within the scope of the World Health Organization's definition of health.[9]
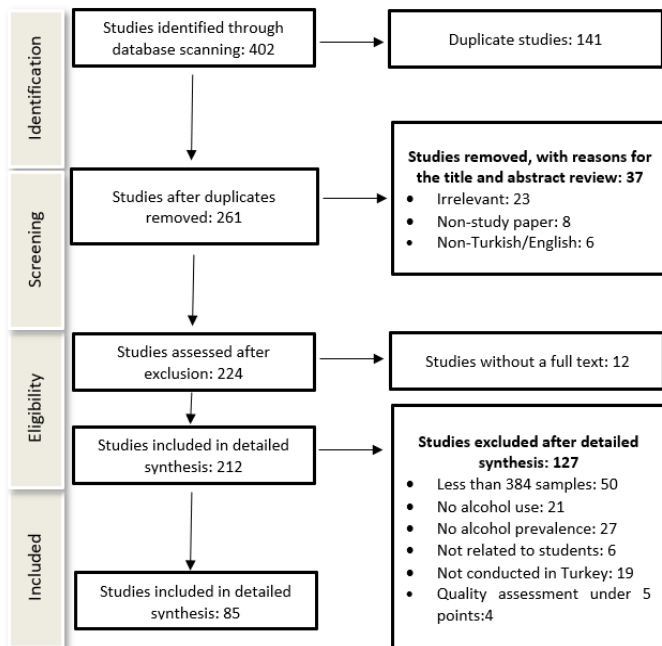
Figure 1. The Inclusion of Studies

In this study, evaluations were made by considering the values in Table 1 for the quality evaluation of the studies. Each article was evaluated separately by each author, and the joint decisions of the 3 authors were applied exactly. According to the evaluation criteria, 4 articles with a score of 5 or less were excluded from the study, while the remaining 65 articles were found to have a score of 8 and above. When there was a difference in the evaluation score by the authors, 2 authors convinced the other author about the results and added and subtracted. The results of the study were given in two sections as descriptive and quantitative results, and findings revealing the impacts of alcohol consumption.

Evaluation of Methodological Quality of Studies

In this study, "Guidelines for critiquing systematic reviews" maintained in Table 1 were used for the assessment of the quality of the studies.[10] These criteria provide a general evaluation of the aims, methods, characteristics of the sample, analysis of findings, results, and discussion of the study. The criteria consisting of 12 items, each item with 1 point, text reviews were carried out by the researchers. Each study was assessed separately by the researchers on all the criteria, and "1 point" was given if the criteria fully met each item, and "0 points" was given if not.

RESULTS

Scan Findings

In this part, descriptive information and general results of the studies included in the analysis are given. At first, 402 studies were

Table 1. Guidelines for critiquing systematic reviews

1. Did the study clearly state the aim and problem of the study?
2. Did the study appropriately answer the questions?
3. Were the concepts in the study clearly defined?
4. Were the characteristics of the sample adequately explained?
5. Was the number of samples enough?
6. Were the materials and methods used appropriate for the study?
7. Was the equipment used valid and reliable?
8. Were the findings clearly and appropriately organized?
9. Were all the significant results discussed?
10. Was the discussion consistent with the findings?
11. Were the results reported in summary?
12. Were the limitations reported?

Source: [10]

found. After examining the duplicates, titles, and abstracts, 224 articles whose full texts were found were examined in detail. As a result of the full-text review, 212 articles were examined according to the inclusion criteria. Finally, 85 articles given in Table 4 were included in the study.

Features of Studies

Studies evaluated within the scope of systematic review were carried out in 31 different provinces of Turkey. In addition to these provinces, it was found that there are studies conducted in Turkey in general. When evaluated by province, 17 (20%) of the studies were conducted in Istanbul. When the education level at which the studies were conducted was examined, it was found that 37 (43.6%) were at high school and below, while 48 (56.5%) were at the university level. When the included studies were evaluated yearly, it was seen that the first study was conducted in 1998; most studies were conducted in 2014 and 2019 with 10 (11.8%) studies, and the percent of studies intensified especially after 2013 (62.4%).

The sample size of 30 and above that the data will approach the normal distribution is an important assumption for evaluation and analysis.[11] It is not suitable for using a statistical test, both because it does not satisfy the assumption mentioned and because there is irregularity between groups or within each. In this direction, a statistical test could not be used to determine the differences in the mean frequency of alcohol use among groups in the systematic review study. Although a statistical test was not performed, alcohol use in the past month (33.21±19.28), lifetime alcohol use (46.27±20.69), study-specific alcohol use (32.69±19.86) at the university level was higher than high school and below level

(Table 2).

Table 2. Average Alcohol Use by Education Level

	Ed. Level	Number of Studies	Ratio Average	Std. Dev.
Alcohol Use in the Past Month	High School and Below	9	14.46	10.59
	University	8	33.21	19.28
Lifetime Alcohol Use	High School and Below	18	30.33	12.35
	University	6	46.27	20.69
Study-Specific Alcohol Use	High School and Below	17	14.89	13.99
	University	41	32.69	19.86

* There are some studies in which more than one result (study-specific alcohol use, lifetime alcohol use, etc.) is given in the study.

Similarly, it was observed that alcohol use in the past month (22.64±13.62), lifetime alcohol use (36.76±15.31), study-specific alcohol use (29.5±20.42) in provinces located in Ankara and its west is higher than the samples in the provinces located in the east of Ankara (Table 3).

Table 3. Average Alcohol Use by Location

	Level	Number of Studies	Ratio Average	Std. Dev.
Alcohol Use in the Past Month	Ankara and West	11	22.64	13.62
	East Ankara	4	8.92	3.56
Lifetime Alcohol Use	Ankara and West	17	36.76	15.31
	East Ankara	5	21.21	9.48
Study-Specific Alcohol Use	Ankara and West	33	29.5	20.42
	East Ankara	19	22.84	21.32

* There are some studies in which more than one result (study-specific alcohol use, lifetime alcohol use, etc.) is given in the study.

The Impacts of Alcohol Use

Regarding the alcohol level of students in Turkey; One study found that the alcohol use levels of students in Turkey were below the national average[12], another study revealed

that it was above the country average[14], while another study revealed that it increased each year among students[15].

According to one study[16], 4.8% of alcohol users had their first alcohol experience before the age of 11, 12.3% between the ages of 12-14; 58.6% between the ages of 15-18; another study[17] stated that 12.5% of the students who said that they tried alcohol for the first time were at the age of 11 and below; another study[18] stated the mean age of starting to use alcohol was 12.9 (±2.17); another study[14] stated that 12.4% of alcohol users were under the age of 10, 66.1% between the ages of 11-15, 21.5% 16 years and older. Another study[19] reported that the age of trying and using alcohol was 17.87 (±2.54).

Health was defined as "a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity" by the WHO in 1948.[9] The results in this study were examined under the themes of physical health, mental health, and social health stated in the definition of the World Health Organization.

Results Concerning Social Health

Within the scope of the study, 29 articles containing findings related to social health were reached in line with the inclusion criteria. The researchers[20] in a study found that the likelihood of alcohol consumption rose 2.38 times among students whose mothers had received primary education or higher and 2.4 times among those whose fathers had received secondary education or higher .It was found that the frequency of alcohol use was higher in children who lived in the city center, had a private room, had a good social status according to their father's occupation,

had a mother with a profession, and whose parents were older than 40 years. It was found that 40.6% of the students who were exposed to violence by their parents used alcohol and that the alcohol use of the students whose parents used alcohol was higher.[21] It has been revealed that alcohol use is higher in students who live with their families or whose parents are at least high school graduates.[22] In another study[23], it was found that students living with both parents had lower alcohol use, while another study found that family pressure did not affect students' alcohol consumption.[24] It has been stated that alcohol use is associated with a strong bond with parents and not related to financial/economic problems of the family.[25] Students whose parents smoke or drink alcohol, live alone or with friends, and do not have adequate parental support tend to use more cigarettes and alcohol.[26-27] Alcohol use decreases as parental attitudes change from authoritarian to democratic.[28] It has been shown that alcohol use is higher in those whose close friends use alcohol.[29] In a similar study, it was stated that alcohol use is higher in students who attach less importance to religion, have a positive peer attitude towards alcohol, and use peer alcohol.[30] It revealed that those who spend more time with their peers tend to use more alcohol.[27]

One study[31] stated that the causes of alcohol use were psychological problems, entertainment, imitation, and curiosity, while the other study[14] found that the causes of alcohol use were special occasions, enthusiasm-curiosity-experiment, friend-environment, sadness-distress-depression, and no or no specific reason.

While many studies[12-13,17,26-27,32-38] have revealed that alcohol use is higher in male students

than in females, the reason is that alcohol use is a part of student life and facilitates socialization. stated that the idea is common in men.[38] Another point of view stated that the reason why alcohol use is less common in women than in men is cultural factors.[30]

Studies have shown that alcohol use is associated with drug use.[39-42] In addition, alcohol use before or during sexual intercourse causes risky sexual behaviors15. According to many studies [16,29-30,32,36,43-44] tobacco use has been determined to be a risk factor that increases alcohol use. As alcohol use increases, energy drink consumption increases.[45-46]

While it has been stated in many studies that there is a relationship between economic status and alcohol use; some stated that students with good economic status consumed more alcohol[21,44,48], while others stated that students with poor economic status consumed more alcohol.[27,47] Similarly, it is stated that alcohol use in private schools is higher than in public schools.[47] It is also among the findings that those living in cities use 1.46 times more alcohol than those living in rural areas.[16]

Results Concerning Mental Health

Within the scope of the study, 17 articles containing mental health findings were reached in line with the inclusion criteria. Studies[49-52] have found that alcohol use significantly increases depression and its symptoms. In the study conducted research[27], it was stated that alcohol use was higher in students with older age, lower classes, low income, low belief, higher depression, irritability, antisocial characteristics, and lower self-esteem.

One study[53] found that alcohol users increased self-harm behavior that did not include suicidal ideation, and another study[54] found that it increased suicidal ideation. Similar to these studies, it was stated that the health perception of students who did not consume alcohol was higher.[55]

While one study[56] reported that 47% of alcohol users were prone to physical violence with high self-esteem and self-efficacy, another study[57] found that 28% of alcohol users were prone to physical violence, 73.2% to verbal violence, and 93% to emotional violence, stated that they were exposed. Findings of other studies on violence[58-60] indicated that alcohol users had higher levels of anger, passive aggression, overt aggression, and lower anger control than non-drinkers. It has been reported that alcohol users have lower self-efficacy scores.[14] Similarly, it has been revealed that students with high alcohol consumption have a friend who has low academic success, has received disciplinary punishment, is absent, got into trouble with the police, uses alcohol or any other substance.[37]

Studies have found that alcohol use, as another risk, significantly increases the risks of internet addiction.[61-64] Another study found that alcohol users had higher scores for self-actualization, exercise, interpersonal support, and health-promoting lifestyles than non-drinkers, although the negative consequences of alcohol use were quite dominant.[65]

Results Concerning Physical Health

Within the scope of the study, 11 articles containing findings related to physical health were reached in line with the inclusion criteria. Studies have found that alcohol use significantly increases the risks of premenstrual syndrome.[66-69] Other studies

have found that alcohol use significantly increases the risk of attention deficit.[70,63]

Alcohol use also has important effects on nutritional behavior.[71-72] Studies have shown that excessive salt consumption and night eating syndrome are higher in alcohol users than non-drinkers.[73-74]

Alcohol use also has an impact on lifestyle. While one study[75] reported a relationship between piercing and tattooing and alcohol use, another study[76] found higher rates of unintentional injuries and accidents in alcohol users than non-drinkers.

DISCUSSION

85 papers on alcohol use among students in Turkey were included in this systematic review. These publications indicate that university students consume alcohol above the typical alcohol frequency rates, and it has many adverse effects on the health of the students.

These studies carried out on students reveal quite striking results. In many countries located in the Americas, Europe, and the Western Pacific, it was stated that students start using alcohol before they turn 15, and the frequency of alcohol use among 15-year-old students is between 50-70%[5]. According to the one study[77] on 1686 university students from 4 countries, 86.5% of students in Slovakia, 79.4% of students in Ukraine, 58.8% of students in Romania, and 92.2% of students in Poland consumed alcohol at least once in their lifetime. Another study[78] carried out on 9632 university students in Norway found that 92.6% of the students stated they used alcohol.

Many cultures adhere to religious values to escape natural phenomena, diseases, and possible bad incidents. These values regulate people's daily life and constitute necessitates and prohibitions, and alcohol consumption is one of these prohibitions. It is stated between Ayat 90 and 91 of Surah Al-Ma'idah in the Qur'an that alcohol is a sinful and prohibited substance for Muslims.[79] The results of researchs reveal that religious values are an effective factor in alcohol use.[80-81] The study conducted with 1837 students in Lebanon found that a lesser portion of Muslim (43.8%) students used alcohol compared to Christian (87.5%) and Druze (67.4%) students in their lifetime.[82] In another study investigating the alcohol consumption frequency among students in the USA, it was found that 46.6% of the Muslim students consumed alcohol, while 80.7% of the non-Muslim students consumed alcohol.[83] In addition, according to another study conducted in the USA, it was determined that 49.2% of Muslim students consumed alcohol in the past year.[84]

Because a significant part of Turkey's population consists of Muslims, it is vital to compare with Muslim countries. The study indicates there are no standard rates for alcohol use, and there are significant differences by education level and region and have regional differences. According to the one study[33] carried out on high school students in Sivas province, while 4.4% of the students used alcohol, in another study[85] on university students in Eskişehir, 91.4% of the students stated that they used alcohol. For the included studies, it was found that the mean alcohol use prevalence of the university students (33.21% alcohol use in the past month, 46.26% lifetime alcohol use, 32.69% study-specific alcohol use) was higher than

the mean of high school and lower students' alcohol use (14.46% higher for alcohol use in the past month, 30.32% for lifetime alcohol use, and 14.89% for the study-specific alcohol use). It was also determined that it was much higher than the rates for Turkey (10.9% higher for lifetime, 6.9% for the past 12 months).[5] When examined in the context of regional differences, another demographic factor, it was found that there was regional alcohol use prevalence. For the capital city of Turkey, Ankara, and the provinces located in its west, the prevalence of alcohol use for each period surveyed (22.64% for alcohol use in the past month, 36.76% for lifetime alcohol use, 29.5% for study-specific alcohol use) was higher than the periods in the provinces located in the east of Ankara (8.92% for alcohol use in the past month, 21.21% for lifetime alcohol use, 22.84% for study-specific alcohol use). In the context of the study question 'Can demographic factors be expressed as a determinant of alcohol consumption?' gender, educational status, geographical location, parental involvement in child's education, parent and peer attitudes, exposure to violence, economic status, tobacco use, religion, culture, psychological problems can be a determinant of the prevalence of alcohol consumption. Considering the cultural impacts of alcohol use[5], regional planning of interventions is worthwhile.

Many studies[86-88] revealed that alcohol consumption could have various adverse consequences, and in particular, Centers for Disease Control and Prevention[89] stated that excessive alcohol consumption in the short and long term might cause the development of chronic diseases and other serious problems.

CONCLUSION

The studies examined within the scope of this systematic review, in accordance with the effects of alcohol use on health and physical, mental, and social health themes that constitute general health concept, revealed that alcohol use and its excessive use significantly and adversely affects the risk and symptoms of depression, self-harm, suicidal ideation, violence, anger, uncontrolled behaviors, internet addiction, risk of premenstrual syndrome, attention deficit, and diet.

When the results of the studys are examined, alcohol use in the past month (33.21±19.28), lifetime alcohol use (46.27±20.69), study-specific alcohol use (32.69±19.86) at the university level was higher than high school and below level.

When the results of the studys are examined, studies conducted in Ankara, the capital city of Turkey, and in cities located in the west of Ankara, alcohol use in the last 1 month (22.64±13.62), lifetime alcohol use (36.76±15.31), study-specific alcohol use use (29.5±20.42) is higher than the studies conducted in cities located east of Ankara.

It has been observed that alcohol use has important effects not only on the physical health of students, but also on their social and mental health.

Study Limitations and Suggestions for Further Studies

This study is limited to study papers carried out on students in Turkey, the full text of which could be scanned on the Ankara University internet access network between December 7, 2020, and January 10, 2021. Books, book

chapters, thesis, reports, and review articles on alcohol consumption among students in Turkey were excluded from the scope of the study. Statistical analysis could not be performed as the number of studies that would be the subject of this study could not be accessed in line with the assumptions.

The results of this systematic review revealed that the alcohol problem among students in Turkey is notable. While this study focuses on the prevalence and impacts of alcohol consumption, episodic drinking is not in the scope of the study. We believe that inclusive studies on episodic drinking are required in

further studies. Alcohol use prevalence rates obtained in systematic review studies differ significantly, so meta-analysis to be conducted in this subject may not yield correct results. The conditions in Turkey will become more comparable with comprehensive systematic review studies by including international studies. There is an increasing awareness about addictive substances in primary, secondary, and high school with the Addiction Prevention Training Program.[90] Conducting this study by including university students according to the region and education level where alcohol consumption is more common will be much more fruitful.

Table 4. Included Studies and Alcohol Frequencies

Author	1 month (%)	1 year (%)	Lifelong (%)	At Study (%)	Author	1 month (%)	1 year (%)	Life-long (%)	At Study (%)
Kara et al. (2003)				66.4	Göksan Yavuz et al. (2015)				16.4
Metintaş et al. (1998)			54.4		Uzun et al. (2016)				34.2
Açıkgöz et al. (2017)				37	Tekin and Öner (2020)				19.3
Açıkgöz et al. (2018)				37	Aktaş (2019)				25.4
Akvardar et al. (2003)	26.2	39.9	46.1		Tuğut and Bekar (2008)				12
Alikaşifoğlu et al. (2007)	5.68		18		Türkleş et al. (2008)				2.8
Altay et al. (2014)				10.6	Elkin and Karadağlı (2016)				25
G. Arslan et al. (2009)				36.7	Güngör et al. (2013)				21
H. N. Arslan et al. (2012)	13.8		26.1		Önler et al. (2019)		24.5		44.3
Arslantaş et al. (2018)				22.5	Keskinoğlu et al. (2006)				20.2
Atalay et al. (2018)				20.1	Doğan and Ulukol (2010)				10.5
Atlam et al. (2017)	46.2		62.4		Vançelik et al. (2006)				11.9
Ay et al. (2012)				33.1	Vançelik et al. (2007)				11.9
Aygun and Yıldırım (2019)				16.2	Gümüş et al. (2012)				19.6
Bakar et al. (2014)			66.2		N. Gündüz et al. (2019)				25.5
Balcı et al. (2015)				28	Karataş et al. (2015)				7.6

Table 4. Included Studies and Alcohol Frequencies

Canbaz and Terzi (2018)	9.4			Savcı et al. (2006)				27
Çavdar et al. (2016)	38	54		Evren et al. (2014e)				34.2
Çelik et al. (2019)	13			Görgülü et al. (2016)				30.1
Çorapçıoğlu and Ögel (2004)		1998: 30 2001: 45.1		S. Uzun and M. Kelleci (2018)			6.8	
Dayı et al. (2015)	41.8	55.5	60.8	Gürbüz et al. (2018)	13			
Deveci et al. (2010)			26.9	A. Gündüz et al. (2019)				62.6
Evren et al. (2014b)		35		Hıdıroğlu et al. (2013)	21			31.3
Evren et al. (2014a)		35		İlhan et al. (2008)				34.1
Evren and Evren (2015b)		35		Işık et al. (2016)				20.9
Evren et al. (2014c)		35		Karadoğan et al. (2018)				59.7
Evren et al. (2014d)		35		Karatay and Baş (2019)				60.2
Hızel et al. (2013)			6	Kulak et al. (2019)				44.6
Tanrıkulu et al. (2009)			24.7	Mergen et al. (2009)	2.4			2.4
Özyurt and Dinç (2006)			11	Metin et al. (2015)			12.7	
Korkmaz et al. (2013)			25.1	Nacar et al. (2014)				19.4
Yıldırım et al. (2012)			6.9	Öksüz and Malhan (2005)				76
Aslan et al. (2006)			3.3	Orak and Solakoğlu (2017)	13.3			
Filiz (2007)	44.2		91.4	Özcan and Özcan (2002)				13.6
Alaçam et al. (2015)			35.9	Özgür İlhan et al. (2008)	65	63.3		
Akkuş et al. (2017)			7.9	Öncel et al. (2011)				66.4
Güler et al. (2009)			4.4	Özbay (2008)				42
Erdamar (2014)	23		6.8	Öztaş et al. (2018)			18.9	
Demirbaş et al. (2016)			34.1	Öztekin et al. (2017)	24.5		38.6	
İnandı et al. (2009)	6.3	9.5	30.6	Palancı et al. (2009)			6	
Şaşmaz et al. (2006)	6.2	24.5	8.5	Pumariega et al. (2014)			32.5	
Seva et al. (2019)			56.2	Semerci et al. (2018)	8.3	11.4	21.1	
Sönmez et al. (2016)		24.6						

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NOTE/NOT

Descriptive epidemiological study of coronavirus disease distribution in specific geographic location: Unique public health practice in outbreak analysis

Spesifik coğrafi konumda coronavirüs hastalığı dağılımı için tanımlayıcı epidemiyolojik çalışma: Salgın analizinde benzersiz halk sağlığı uygulaması

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Abstract

Since the emergence of the Coronavirus disease outbreak, the world has witnessed great changes that have impacted humanity. A study of the pattern of the pandemic would be of great importance to understand the trending behavior for the spreading of the disease within any country. Visualization of the outbreak progression - through accumulated records in the datasets - using statistical tools showed that the initial fast increase rate of the affected cases in the original province in China was followed by a stability period till the end of the reporting date. Hong Kong - which was next to Hubei province in the cases – showed a different surge of slow growth curve with distinct major wave levels. The remaining territories showed a much smaller magnitude of morbidities. However, investigating the similarity levels for the daily kinetics of cases showed a clustering tendency between different political regions suggesting a significant correlation. The technique would be useful for public health authorities work.

Keywords: Coronavirus, Pandemic, Morbdities, Public Health

Öz

Coronavirüs hastalığı salgınının ortaya çıkmasından bu yana dünya, insanlığı etkileyen büyük değişimlere tanık oldu. Salgının paterni üzerine bir araştırma, hastalığın herhangi bir ülkede yayılmasına yönelik eğilimi anlamak için büyük önem taşıyacaktır. Salgın ilerlemesinin veri kümelerinde biriken kayıtlar aracılığıyla istatistiksel araçlar kullanılarak görselleştirilmesi, Çin'deki orijinal eyalette etkilenen vakaların ilk hızlı artış oranının, raporlama tarihinin sonuna kadar bir istikrar dönemi izlediğini gösterdi. Vakalarda Hubei eyaletinin yanında yer alan Hong Kong, farklı ana dalga seviyeleri ile farklı bir yavaş büyüme eğrisi dalgalanması gösterdi. Kalan bölgeler çok daha küçük bir hastalık boyutu gösterdi. Bununla birlikte, vakaların günlük kinetiği için benzerlik düzeylerinin araştırılması, farklı siyasi bölgeler arasında önemli bir korelasyona işaret eden bir kümelenme eğilimi gösterdi. Teknik, halk sağlığı yetkililerinin çalışmaları için faydalı olacaktır.

Anahtar Kelimeler: Coronavirüs, Pandemi, Morbiditeler, Halk Sağlığı

INTRODUCTION

Since the dawn of history, the human being has been smashed with many microbial outbreaks that reaped the souls and devastated communities with huge consequences.[1] The impact of the infectious microbial outbreak on public health is a challenging problem that should not be underestimated, even if it shows a low level of mortality such as the recent Coronavirus Disease (COVID-19 or SARS-CoV-2 for Severe Acute Respiratory Syndrome Coronavirus 2).[2] This contagious viral disease was first identified and reported in December 2019 in Wuhan which is the capital of Hubei Province in the People's Republic of China.[2]

Being a public health concern, cases of SARS-CoV-2 will be studied herein as the kinetics of the epidemic in the country based on the morbidities in the affected territories in China using statistical tools involving unique methods.

MATERIAL AND METHOD

Data base gathering and processing were performed through Microsoft Excel 365. The current investigation involved a database from the HUMANITARIAN DATA EXCHANGE version 1.61.3 site https://data.humdata.org/dataset/novel-coronavirus-2019-ncov-cases/resource/00fa0e37-961b-4767-a5ce-e7ab4e2c921c. The work herein demonstrated the implementation of Contour plot, Pareto chart, cluster graph, tree diagram, time-series visualization, distribution fitting analysis, three-dimensional and surface plot using Excel add-in XLSTAT version 2022.1.2 and Minitab version 17.1.0 programs. The electronic built-in Minitab statistical manual was used as a guide for the use and selection of the statistical tools.

RESULTS AND DISCUSSION

Study of the kinetics of the morbidity incident trend: A brief view of the morbidity distribution through the country based on the coordinates at three distinct time frames yielded Contour plots in Figure 1 (A, B and C). The growth of the cases was prominent in the first year but declined in the second year suggesting an apparent stabilization in the cumulative illness.[3] Nevertheless, there was evidence of an initial rapid excursion of the infected population that could be seen in a limited area before it seized to escalate. This could be viewed as a good indicator of the effectiveness of the controlling measures after the initial surge that started in Hubei province. On the same line, the Pareto diagram (Figure 1 (D)) showed the descending order of the major contributing territories and provinces for COVID-19 cases till January 2022. More than half of morbidities stemmed from Hubei province followed by Hong Kong with a cumulative contribution from the total country by about 0.7 fractions suggesting the main public health risk regions with intense efforts were required by the authorities in these zones. The two territories were a major public health concern.

Three-dimensional visualization of the geographical distribution pattern of the Coronavirus epidemic showed a low level of the total reported morbidity across most territories within the country as could be observed in Figures 2 (A and B). However, a spiking could be detected in the middle southeastern region (Hubei) followed by a significantly lower level of the magnitude of cases in the southeast coastal region that could be attributed to Hong Kong which suffered from a recent new surge of cases.[4]

Unfortunately, a new wave started to be evident in 2022 affecting Hong Kong as the major source of the emerging number of infected cases, indicating a major change in the redistribution of the cases in the emerging new wave of COVID-19 in the country which mandates reprioritization and reallocation of the control measure resources to the recently emerged devastated zones.[5] The time series plot in Figure 2 (C) showed that the province with the major surge (i.e. Hubei) was controlled swiftly and stabilized for the rest of the monitoring time. However, some of the low-impacted provinces demonstrated a minor level of cases growth over time and appeared as waves as could be seen in Hong Kong.

The distribution fitting showed empirically the mathematical description of the pattern of dispersion of the outbreak based on the provinces of China. The overall spreading pattern of the total cases data till the date of the study showed behavior that appeared to be close to following a negative binomial distribution (2) at a 95% confidence interval (CI) with a p-value of 0.05 using distribution fitting analysis. The two parameters k and p had estimated parameters of 0.251 and 39240.372 with standard error (SE) of 0.008 and 0.007, respectively. The census of the morbidity in the most affected territories tended to show a low number of accumulated cases. The statistics of (data, parameters) for the mean, variance, skewness and Kurtosis were (3471.471, 9847.354), (136225267.105, 386423678.867), (5.049, 3.992) and (25.044, 23.909), respectively. The aggregation of data on the left side had led to the right skewness behavior of the cases record database. In general, few provinces in the country showed

a tendency toward a high number of cases suggesting a public health issue of concern to address and act upon. But low dispersion level of the epidemic would be a suggestion that might lead to the conclusion of the effectiveness of the prevention measures, including the lockdown during this study period.
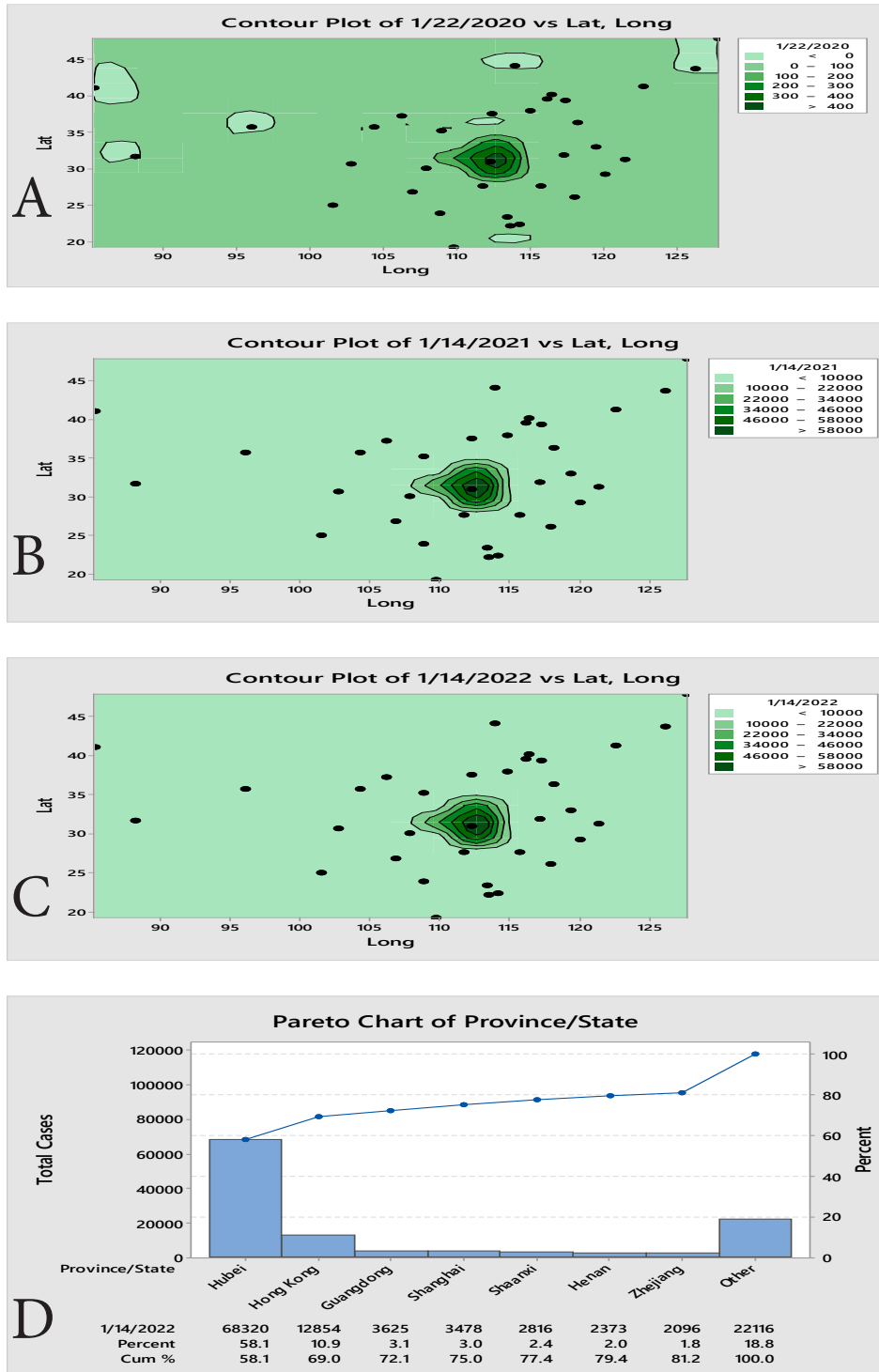
Figure 1: Time-bound contour plot series (A, B and C). Pareto diagram showing the descending order of the total reported cases of Coronavirus disease across Chinese territories (D)
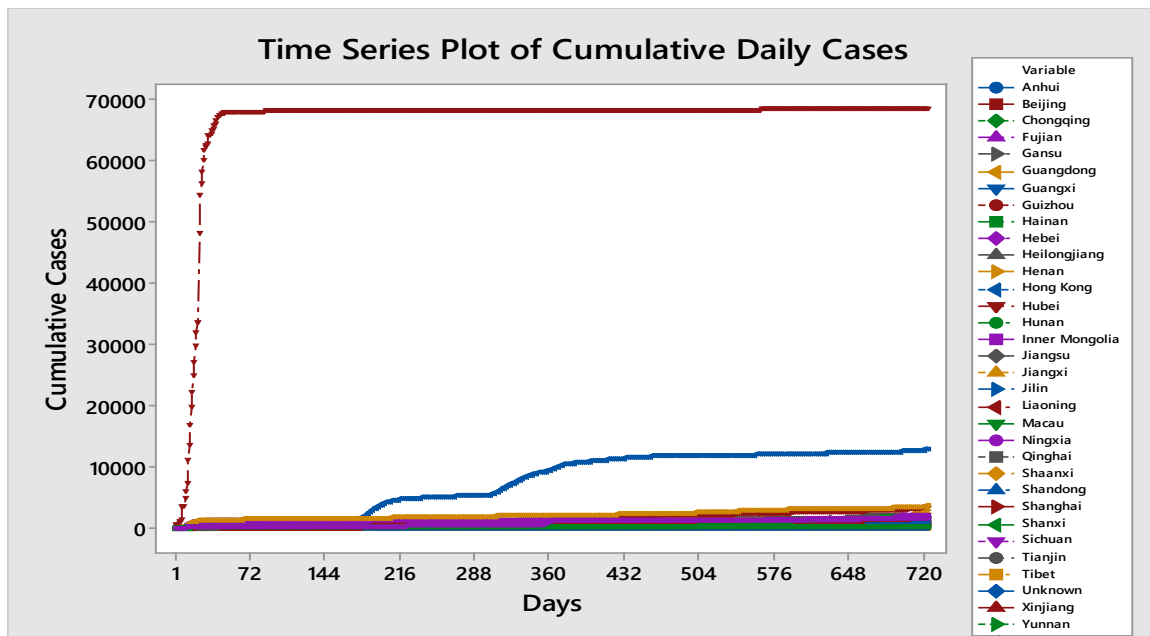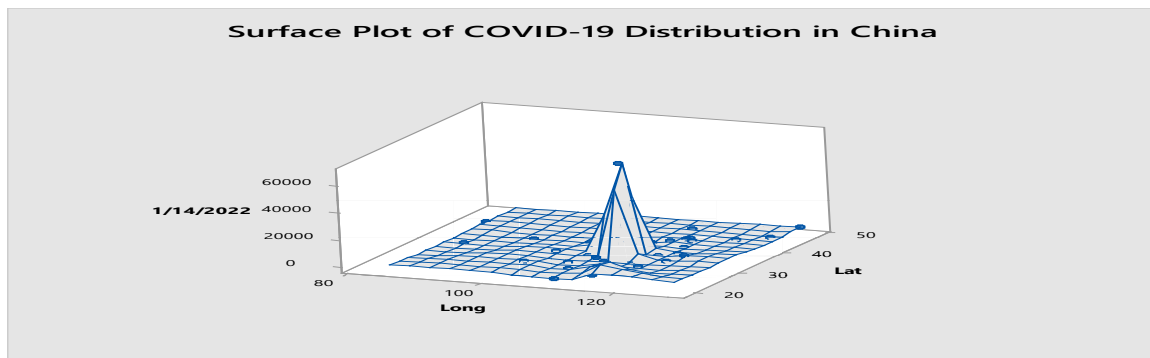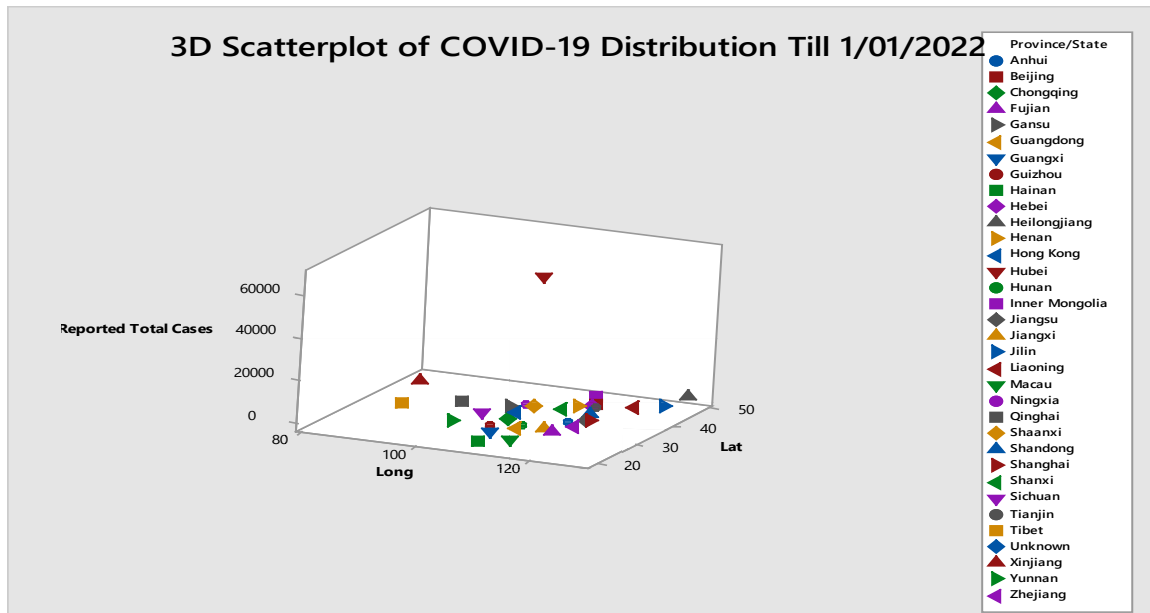
Figure 2: Three-dimensional plots (A and B) demonstrating the total reported cases of Coronavirus disease across Chinese territories until 14 January 2022. Time series diagram showing the daily dynamic pattern of COVID-19 waves in the country with Hubei and Hong Kong showing the predominance in the number of daily incidences

When viewing the cumulative cases based on the location, most reported morbidities tended to show homogenous grouping in the provinces, except for Hubei (an abnormally high number of cases) and Xinjiang (an exceptionally remote northwest territory with respect to the longitude only but with a relatively low number of cases within the normal range). Figure 3 (A and B) demonstrates this pattern of clustering. On the other hand, Figure 3C shows a tree diagram (dendrogram) that demonstrates the level of similarity between the provinces on the daily basis for cumulative dynamic morbidity. At the three major joints viz (Number of Cluster 2, Similarity 54.92), (Number of Cluster 3, Similarity 65.01) and (Number of Cluster 4, Similarity 76.16), three miniaturized political maps were illustrated showing the correlated territories at each selected similarity level. The recent surge that affected 90% of the provinces could be correlated with the significant degree of similarity between different provinces in the country. Notably, Jilin province which is in the same cluster as the Hong Kong similarity group was observed also as the second affected region – next to Hong Kong with the recent striking Coronavirus wave.

Limitations and Conclusions: The paper brings a unique statistical insight and quantitative perspective view into the COVID-19 outbreak from the morbidity kinetics standpoint. The present analysis was conducted using cost-effective, simple and fast commercially available statistical programs that are handy for those who work in the public health industry sector. Future research should assess the impacts of the scale of other parameters on the pandemic globally. The findings of this work are pertinent for the workers in public

health, societies and the providers of the health service, as well as decision-makers. Since time work is time-bound, further study would be needed to be extended to cover a new period with the recent wave of the Coronavirus disease to elucidate the new geographical pattern and the similarity level change in trend. Similarly, another investigation might be used complementary to cover the recovery rate and mortalities which could light the path over the whole situation that would support public health professionals and authorities in policy, decision making and possibly management of the control and protective measures to control the outbreak by resources prioritization and allocation. The current analysis provided an assessment of the quality of public health control measures for the epidemic, in addition to the classification of the country as remarkable groups based on the daily case kinetics. The change in the geographical distribution of the disease has exposed other contributing factors involving the new variants of the Coronavirus in the disease spreading.
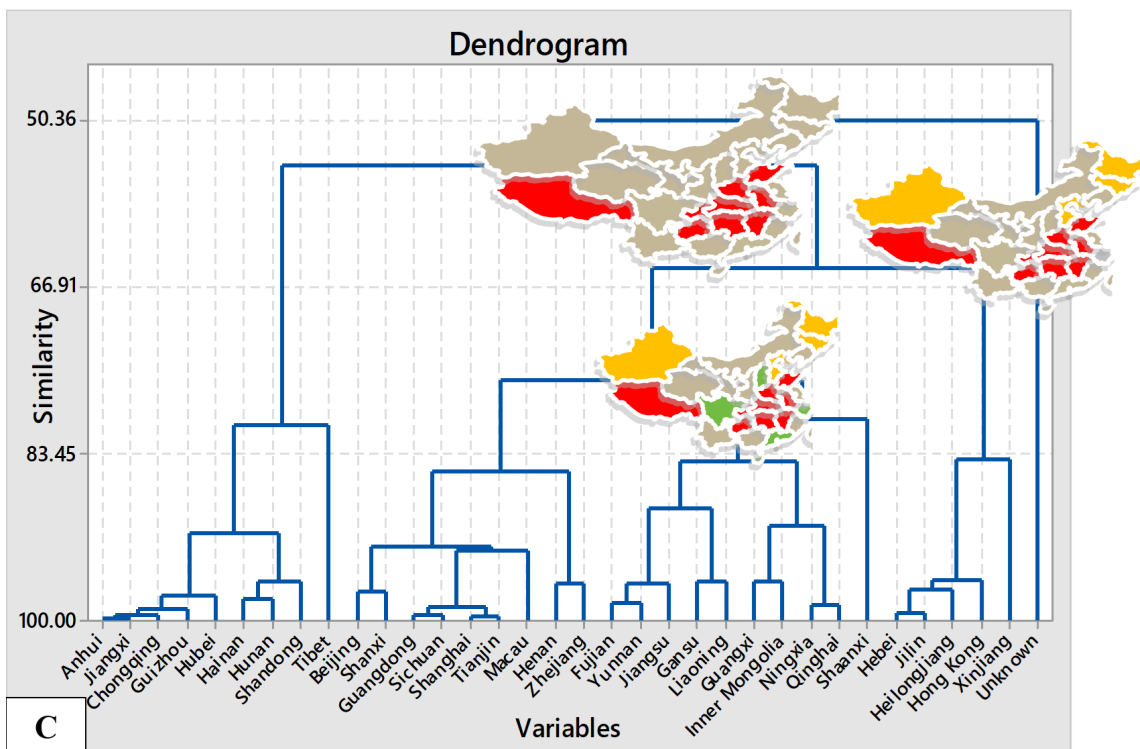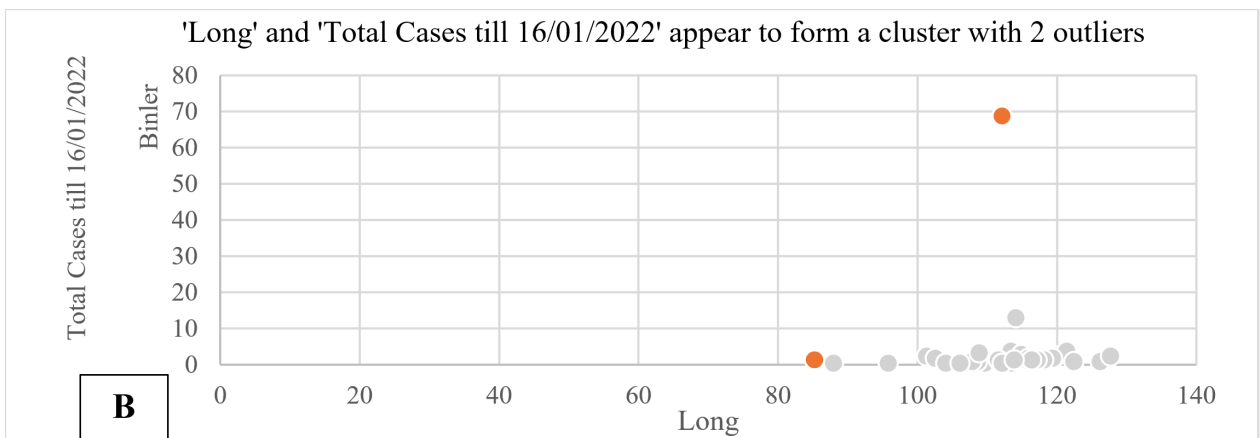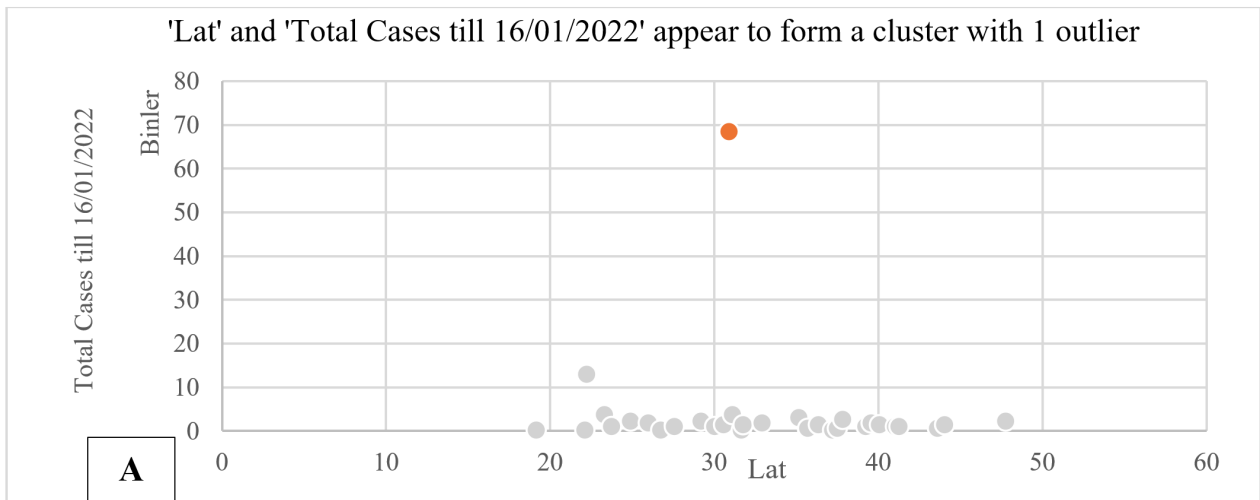
Figure 3: Aggregation pattern showing the reported cases of Coronavirus outbreak cases in relation to coordinates (A and B). Dendrogram plot showing similarity level of COVID-19 case kinetics between Chinese territories (C)

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