

Investigation of The Effect of Corona Precautions On Transmission Prevention of Upper Respiratory Tract Infections and Statistical Comparison

Muhammed Baydemir

Malatya Turgut Ozal University, Turkey.

ABSTRACT

Introduction: In addition to medical studies against the corona epidemic, many predictions are made such as the course of the epidemic, mathematical calculations and statistical models. Medical studies outside as social distancing, hand washing, wearing face mask precaution such as are included. However, due to the new emergence of CORONA and the lack of knowledge about it, data to compare the usefulness of the precautions taken are limited. Therefore, in the study, upper respiratory tract infections whose transmission path is similar to CORONA the prevalence one's (URTI) in the community was compared in terms of before and after CORONA. With the results obtained here, the effects of the precautions taken can be examined, if deemed necessary after CORONA, it can also conceivable for URTI. Even if it is stated that URIs are not fatal unless there is a complication that develops, and it is unnecessary to isolate patients, the quality of life of the person may decrease due to the disease. It can even cause significant losses according to personal efforts.

Methods: For the study, the numbers of those who applied to the health center with any complaints from 3 different regions before and after CORONA and who were diagnosed with URIs were taken and compared. Calculations were made by dividing them into intervals both on a yearly basis and in 6-month periods.

Results: According to the results obtained; in the spring/summer period before and after CORONA in the URTI a reduction of 10,9% autumn/winter period is for 63,0% to be said. Similarly; In the second region, the spring/ summer period for before and after CORONA in the URTI a reduction of 30,5% autumn/winter period is 42,5% to be said.

Conclusion: According to the results obtained, it can be said that the CORONA precautions cause a decrease in URTI, so it can be beneficial for CORONA too, whose transmission route is similar. In addition, the precautions taken for CORONA can be generalized for the URTI too, independent of CORONA. In other words, similar precautions can be recommended after the CORONA pandemic, especially in the winter and spring months, when URTIs are common. In case health centers warn of URTI prevalence, mask and distance recommendations can be made for places such as public transportation vehicles, schools, barracks in the region. In such environments, the number of people can be diluted, frequently ventilated, and disinfected. Even physicians by giving their first masks to patients diagnosed with URI can form awareness.

Keywords: CORONA Precaution, Upper Respiratory Tract Infection, Transmitted Diseases.

Address for Correspondence Author

Dr. Muhammed BAYDEMİR; Malatya Turgut Ozal University, Turkey.

E-mail: muhammed.baydemir@ozal.edu.tr

Crossref Doi: <https://doi.org/10.36437/irmhs.2021.4.3.D>

Introduction

Preparations for Epidemics and Corona: Epidemics emerged from time to time and affected humanity. Historical sources

indicate that epidemics before Christ to occur. In the 20th century, globally 1918-1919 H1N1 influenza, SARS in 2002, and

2005, the H5N1 has experienced outbreaks like. Finally, in 2019 in December emerging in China later contagious all across the world have begun CORONA virus (Özlü and Öztaş 2020, Uçkun and Tosun). One of the ways to reduce the impact of natural disasters such as earthquakes and fires is to be prepared for such events. This is also true for outbreaks. WHO must have been learned a lesson from previous epidemic experiences. Has recommended countries to prepare for outbreaks and prepared advisory guides. Countries that have completed their preparations for legislative arrangements and a possible epidemic with the recommendations of WHO, faced the epidemic without any panic while the search for medical solutions in the CORONA epidemic was continuing (Özlü and Öztaş 2020).

Corona Precautions

In addition to medical studies against the corona epidemic, many predictions are made regarding the course of the epidemic, mathematical calculations and statistical modeling are made. Non-medical methods such as social distancing against epidemics have also been suggested during the 2009 H1N1 epidemic to delay the spread of the disease (Özlü and Öztaş 2020, Eikenberry et al 2020). It is known that the number of global coronavirus cases, which are still effective, is gradually increasing, and some of them result in death. For the CORONA virus, researchers all over the world follow medical developments and try to find permanent solutions. Although it is stated that not much is known about the effectiveness of personal protective equipment for healthcare personnel who are in physical contact with patients infected with the CORONA virus, most researchers point out that precautionary precautions reduce the spread of the disease (Wang et al 2020, Pongpirul et

al 2020, Chen et al 2020). The World Health Organization continues its precautionary recommendation especially for the healthcare personnel caring for CORONA patients (www.who.int, April 2020). These precautionary precautions include social distancing, hand washing, and wearing face masks (Howard 2020). It is thought that hand hygiene and face masks can reduce respiratory transmitted diseases and reduce the effect of pandemics, especially in common living areas (Aiello v.d. 2010, Lepelletier 2020). While face masks partially protect the user, they are also effective in preventing the user from spreading their own germs. It has been reported that the masks used by healthy people to protect against respiratory tract infections are effective in reducing the transmission of viruses (Howard 2020, Jefferson 2008).

Upper Respiratory Tract Infections

URTI is one of the most common reasons for referral to primary care physicians. Although it is mostly caused by viruses, it can be a cause of disease in different bacteria. Although it is stated that URI is not fatal unless it is a complication that develops and it is unnecessary to isolate the patients, the quality of life of the person may decrease due to the disease. It may even cause significant losses according to personal efforts (Tünger 2015, Yalçın 2004). It is especially common in children and is the most common cause of antibiotic use in childhood. It is stated that the causes of death in children aged 0-14 are due to 1.2% of URIs and it is in the ninth place in this age group. It poses a risk for early birth during pregnancy (Set and Avşar 2013). It is usually seen in the cold months of the year. Gender is not important in getting the disease. Although there is no exact rate, it is stated that the rate of catching the disease is lower in rural areas compared to urban areas (Tünger 2015, Kocabaş 2010). The

effect of closed and crowded environments are quite high in the spread of upper respiratory tract infections. Inhaled air is very important in the contamination of disease agents, and sick people are an important factor in the spread of the disease. While the region around 1 meter of the disease source is at risk of contamination by droplets, a much larger area, a 20-meter area, is at risk for respiratory disease transmission. This plays a very important role in the spread of the disease (Kayabaş 2015). The frequent airing of living spaces may be beneficial to prevent the spread of the disease. Because the disease is transmitted by droplets is washing hands, like not using same objects simple hygiene care should be taken to rule. It is unnecessary to isolate the patients. However, it would be beneficial to raise awareness of not only the patients but also the society about contagiousness (Tünger 2015).

The Effects of Corona Precautions on URTI

Similar recommendations to the CORONA precautions were also recommended in studies related to URIs before this epidemic. It was stated that the effect of closed and crowded environments was quite high in the spread of the diseases, the air inhaled was very important in the transmission of disease agents and the sick people were an important factor in the spread of the disease. In addition, in order to prevent the spread of the disease, simple hygiene rules such as frequent ventilation of living areas, hand washing, and not using common items were emphasized. It was emphasized that not only patients but also the whole society should be made aware of contagiousness. However, since there was not an impressive situation like CORONA, these precautions and recommendations could not cause sufficient awareness in society.

Material Method

In order to examine the effects of the CORONA precautions on URTI, the number of patients admitted to the health center with any complaint was examined. The incidence rates of those diagnosed with URIs among these were receipt. Data taken from two different regions was divided into 6-month periods. The results were explained as percentages and the data belonging to the regions was considered together and a comparison was made using the Mann-Whitney test. In addition, for a third region, the frequency of URTIs among the population registered to the health center in the region was examined on a yearly basis. With the results to be obtained here, it can be possible to make inferences for CORONA, whose transmission route is the same. Already one of the aims of statistic methods to predict and generalize. In fact, there is almost no field where statistical methods are not used. The significance of the results of a study conducted in the field of medicine is tested with statistical methods and even statistical methods have an important place in disease diagnosis. For example, a biopsy is used to diagnose many diseases. However, a biopsy is an invasive method and requires surgical intervention. Whereas with the statistics of some values in body fluids or the size of organs, the cost of disease diagnosis is lower and does not require advanced expertise. Diagnosis in this way is one of the most popular topics in medicine (Baydemir 2021).

Results

One year was divided into two according to the prevalence of URI. These periods were called autumn/winter and spring/summer.

| Table1: URTI Rate by Number of Patients in the First Region | | | |
|-------------------------------------------------------------|--------------------------|---------------------|-------------|
| Periods | Total number of patients | Diagnosed with URTI | Percent (%) |
| 01/09/2017 - 28/02/2018 (Fall/Winter) | 2764 | 903 | 32.7 |
| 01/03/2018 - 31/08/2018 (Spring/Summer) | 3124 | 491 | 15.7 |
| 01/09/2018 - 28/02/2019 (Fall/Winter) | 3051 | 949 | 31.1 |
| 01/03/2019 - 31/08/2019 (Spring/Summer) | 3323 | 692 | 20.8 |
| 01/09/2019 - 29/02/2020 (Fall/Winter) | 3353 | 1018 | 30.4 |
| 01/03/2020 - 31/08/2020 (Spring/Summer) | 3190 | 524 | 16.4 |
| 01/09/2020 - 28/02/2021 (Fall/Winter) | 2880 | 335 | 11.6 |

According to **Table 1**, URTIs are less seen than spring/summer periods pre CORONA 15,7% and 20,8% which URI rate average is 18,4%. In the same period (spring/summer), the rate of URTI occurrence after CORONA is 16,4%. Autumn / winter period pre CORONA 30,4% - 32,7% ve 31,1% which URI rate average is 31,3%. In the same period (autumn/winter), the rate of URTI occurrence after CORONA is 11,6%.

However, it should be noted that these numbers are proportional decreases. That is, a decrease from 18,4% to 16,4% does not indicate that the decrease in URTI is 2%. There was a 2 decrease in 18,4. The percentage of this value is 10,9%. So spring/summer period for the after CORONA the URI causes a reduction of 10,9% can say that. Similarly, the fall/winter period after CORONA in URTI decrease 63% can say that.

| Table2: URTI Rate by Number of Patients in the Second Region | | | |
|--------------------------------------------------------------|--------------------------|---------------------|-------------|
| Periods | Total number of patients | Diagnosed with URTI | Percent (%) |
| 01/03/2018 - 31/08/2018 (Spring/Summer) | 5166 | 670 | 13.0 |
| 01/09/2018 - 28/02/2019 (Fall/Winter) | 7800 | 1413 | 18.1 |

| | | | |
|--------------------------------------------|------|------|------|
| 01/03/2019 - 31/08/2019 (Spring/Summer) | 6758 | 895 | 13.2 |
| 01/09/2019 - 29/02/2020 (Fall/Winter) | 7944 | 1397 | 17.6 |
| 01/03/2020 - 31/08/2020 (Spring/Summer) | 6643 | 606 | 9.1 |
| 01/09/2020 - 28/02/2021 (Fall/Winter) | 6849 | 705 | 10.3 |

According to **Table 2**, URTIs are less seen than spring/summer periods pre CORONA 13.0% and 13.2% which the URI rate average is 13.1%. In the same period (spring/summer), the rate of URTI occurrence after CORONA is 9.1%. Autumn/winter period pre CORONA 18.1% - 17.6% which URI rate average is 17.9%. In the same period (autumn/winter), the rate of URTI occurrence after CORONA is 10.3%. The In order to evaluate the above data, the rates made according to the population, not the number of those who come to the health

decrease in the total number of patients who came to the health center with any complaints during this period is also noteworthy. If arranged as described in **table 1** spring/summer period for the after CORONA the URI causes a reduction of 30.5% can say that. Similarly, the fall/winter period after CORONA in URTI decrease 42.5% can say that.

institution with any complaint from a different third region are presented in **Table 3**.

| Periods | Total population | Diagnosed with URTI | Percent (%) |
|-----------------------|------------------|---------------------|-------------|
| 2018 | 1800 | 135 | 7.5 |
| 2019 | 3400 | 277 | 8.1 |
| 2020 | 3400 | 264 | 7.8 |
| 2021 (first 3 months) | 850 | 33 | 3.9 |

In **Table 3**, an assessment is made according to the annual and total registered population. In Turkey, where the first case was seen on March 11, 2020, it may not be correct to evaluate for that year. However, it can be said that there is a 50.6% decrease for the first 3 months of 2021.

As a result; the results of the Mann- Whitney test, which was conducted by taking the data of the first and second regions together, were also found to be statistically significant. ($p = 0.021$) That is, it can be said that there is a statistically significant difference in the

frequency of URTI between before and after CORONA.

Discussion

According to the results, it can be said that there is a general decrease in the frequency of URTIs in society after CORONA. In both regions, it is observed that the decrease in URIs is less in the spring/summer period. This may be due to the fact that the precautions cannot be applied broadly and strictly due to the emergence of the virus, or it may be that the frequency of URTIs at this time of the year is already low due to seasonal effects. The difference between the two regions is also striking. The first region of spring/summer in URTI 10,9% in the second region experienced a decline of 30,5%, this ratio D I R. The first region is a rural area and people have to continue their activities due to the start of agricultural activities in the spring/summer period. Difficulties in the implementation of the ban in rural area it can cause.

Conclusion

According to the results, it can be said that CORONA precautions cause a decrease in URTI. Due to the new emergence of CORONA and the insufficient knowledge about it, the limited data to compare the usefulness of the precautions taken, it can be inferred for CORONA with these evaluations obtained from the URI, whose transmission route is similar.

In addition, the precautions taken for CORONA can be generalized within the URTI, independent of CORONA. In other words, similar precautions can be recommended after the CORONA pandemic, especially in the winter and spring months, when URTIs are common. In case health centers warn of URTI

prevalence, protective precautions such as masks and distance can be recommended for crowded places such as public transportation vehicles, schools, barracks in the region. In such environments, the number of people can be diluted, frequently ventilated, and disinfected. In fact, physicians can raise awareness by giving their first masks to patients diagnosed with URIs after the examination.

Acknowledgment: It was presented as a summary paper at the 2nd International Harran Health Sciences Congress under a different title by making use of a part of this study.

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How to cite this Article: Muhammed BAYDEMİR; [Investigation of The Effect of Corona Precautions On Transmission Prevention of Upper Respiratory Tract Infections and Statistical Comparison](#); Int. Res. Med. Health Sci., 2021; (4-3): 25-32; doi: <https://doi.org/10.36437/irmhs.2021.4.3.D>

Source of Support: Nil,

Conflict of Interest: None declared.

Received: 17-4-2021; **Revision:** 20-6-2021; **Accepted:** 22-6-2021