

Analysis of Factors Affecting Coronaphobia by Analytical Network Process

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Received: 16 March 2021

Accepted: 6 December 2021

DOI: 10.18466/cbayarfbe.898038

Abstract

Coronavirus, which has spread worldwide and become a pandemic, threatens human health both physically and mentally. Physical threats consist of permanent damage, which is not yet clear, and symptoms such as high fever, shortness of breath experienced by individuals infected with coronavirus. Mental threats, on the other hand, cause fear of coronavirus, that is, coronaphobia and various psychological problems. The purpose of the study is to determine the factors affecting coronaphobia and to reduce or eliminate their effect on people. For this purpose, high priority factors obtained as a result of the ANP method should be examined and studies should be carried out to reduce or eliminate the effects of these factors. In this study, the factors affecting coronaphobia were determined and analyzed in order to reduce and eliminate coronaphobia. This analysis was carried out by the analytical network process (ANP), one of the Multi-Criteria Decision Making (MCDM) methods. According to the priority values obtained as a result of comparing relationships and relationships established by the ANP method; the most important criterion affecting coronavirus fear is the criterion of psychological factors. The most important sub-criteria are weak immune system, hygiene concern and stress disorder, respectively. In this study, the factors affecting coronavirus fear were discussed in general. Among the factors discussed, weighted scores were obtained by establishing bilateral relations using the ANP method. The factors covered in the study consist of 3 main criteria and 14 main criteria covered by these criteria.

Keywords: Coronavirus, Fear of Coronavirus, Coronaphobia, Community Psychology

1. Introduction

Epidemics are phenomena whose effects and consequences are unpredictable. Epidemics, which are deadly factors for humans and animals, have deeply affected individual and social life and have caused significant changes [1]. The history of epidemics dates back to when humanity began to cultivate the land. A close relationship between man and nature has led to many diseases carried by animals also starting to appear in humans and causing deaths [2].

When the history of epidemics experienced by people is examined, it is seen that many diseases such as cholera, smallpox, tuberculosis, plague, malaria, SARS, MERS, ebola are fought. The cholera epidemic has led people to increase hygiene measures, the smallpox epidemic to find a vaccine, the tuberculosis epidemic to develop live vaccines and the plague quarantine measures [3]. A new

type of coronavirus (Covid-19) is an epidemic that creates this effect today and becomes a pandemic.

Coronavirus is a single-stranded RNA virus in the family coronaviridae [4]. Coronavirus of zoonatic origin has taken over the entire world as it begins to transmit from person to person.

With increasingly spreading coronavirus that are passed from person to person; high fever, fatigue, dry cough, muscle pain, shortness of breath, palpitations, diarrhea, headache, conjunctivitis, lost in the senses of smell and taste and is determined with symptoms such as respiratory problems [5].

In addition to symptoms and disease, it was understood that some patients who tested positive for coronavirus had open and closed disease symptoms such as burning and dry cough in their lungs even after a short time.

During the scans, light gray spots are often displayed in the lungs of patients, this scar tissue in the lung does not allow physiological breathing, such tissue changes cause permanent damage [6]. That the virus can stick to cells in almost all tissues; it is observed that it can cause permanent damage to the heart, blood vessels, kidneys and brain and with its psychological effects, this condition becomes more complicated [1].

Outbreaks are known to have traumatic effects, raising the level of anxiety and stress [7]. For this reason, it is considered natural for Epidemic conditions to affect mood [8].

Factors such as loss of function due to disease in patients, pain caused by the disease usually negatively affect psychology. In healthy individuals at risk of an epidemic, conditions such as the danger of contracting the disease, the possibility of losing their job, freedoms and some opportunities, the inability to maintain their routine life negatively affect psychology and turn into behavioral disorders [9].

Psychological problems and behavioral disorders caused by the pandemic also raise the concept of coronaphobia, which was raised after the coronavirus pandemic. Coronaphobia is the fear felt by the virus and the effects that come with the virus. In this study, the factors affecting coronaphobia were determined and analyzed in order to reduce and eliminate coronaphobia. This analysis was carried out by the Analytical Network Process (ANP), one of the Multi-Criteria Decision Making (MCDM) methods.

MCDM is the evaluation of a finite number of options using a large number of criteria, mostly weighted for the purpose of selection, ranking, classification, prioritization or elimination [10].

ANP is a method that expresses problems in the form of a network by defining relationships and aspects between criteria and also takes into account indirect interactions and feedback that may be between criteria that are not directly related [11]. The fact that the method considers the effects of the criteria on each other shows us the robustness of the solution process in the problem. Without the commitment to a single direction, each criterion can affect both the criteria in its own group and all other criteria. In other words, the ANP method was preferred because it takes into account internal and external dependencies.

The purpose of the study is to determine the factors affecting coronaphobia and to reduce or eliminate their effect on people. For this purpose, high priority factors obtained as a result of the ANP method should be examined and studies should be carried out to reduce or eliminate the effects of these factors. The criteria determined in the study were obtained by examining the studies found in the literature and investigating the effects of coronavirus fear on humans.

2. Materials and Methods

A decision is a general expression of a person's choices within the alternatives that he or she faces at any moment [12]. Multi-criteria decision making can be defined as the selection process that the decision maker makes using at least two criterias in a set of countable finite or uncountable numbers of options [13].

The ANP method eliminates the need to model the problem by adhering to a single direction, taking into account the relationships between factors in the decision-making process. In the ANP method developed by Thomas L. Saaty, the decision-making problem is modeled by a network structure and the dependencies between factors at the modeling stage and the internal dependencies within the factor are taken into account. The ANP method provides a more effective and realistic solution of decision-making problems with this structure [11]. Researchers have found the opportunity to apply the ANP method on different subjects in the literature. It is used in many areas, such as choosing a service provider in logistics, choosing a location, choosing a green supplier, selecting R&D projects, choosing maintenance strategies, and selecting personnel [14-19].

2.1. Analytical Network Process Method Steps

1. Decision-making problem, main and sub-criteria are determined.
2. The relationship of the criteria with each other is determined. Relationships are established between internal and external dependencies and feedback found between criteria, if any.
3. Binary comparisons between criteria are made. By the decision maker or decision group, values are given on a scale of 1-10 for comparisons.
4. Check whether the comparison matrices are consistent. To determine whether comparisons are consistent, the consistency ratio is calculated for each matrix after the comparison matrices are configured.
5. Super-matrices are formed sequentially. A super matrix is a segmented Matrix and each matrix division shows the relationship between two criteria contained in a system [20].
6. The best alternative is determined and the choice is made [21].

3. Results

This study was conducted to determine the priority values of factors and factors affecting coronaphobia. Helping studies to reduce/eliminate the effects of coronaphobia on humans is one of the goals of the study. Factors affecting coronaphobia were analyzed by ANP method from MCDM methods. The purpose of this analysis is to determine the priority values of factors affecting coronaphobia and to support studies to defeat coronaphobia.

Table 1. Criteria and Descriptions.

| Criteria | Sub-Criteria | Descriptions |
|-----------------------|---|--|
| Psychological Factors | Fear of losing | People worry about losing loved ones because of the virus. |
| | Isolation concern | The obligation to stay in quarantine and the fear of being away from public life. |
| | Stress disorder | A state of inability to control your feelings that causes people to feel helpless |
| | Worry about getting out of comfort zone | The anxiety people feel when they have to go outside of the actions they are used to. |
| Outer Factors | Negative media news | Negative, unreal and exaggerated news announced by the media. |
| | Case numbers | Increased rate of coronavirus spread and expansion of risky areas. |
| | Deaths | Increased mortality and fear of death in the immediate vicinity of people. |
| | Ambiguity | The obscurity brought by the pandemic process. |
| | Distrust of the health sector | The lack of a reduction in the number of deaths and cases is a lack of confidence due to the occupancy of health institutions. |
| | Inadequate measures | People don't follow the rules of social distance, use the wrong mask, and can't adapt to the pandemic. |
| | Hygiene concern | Sensitivity to hygiene. |
| Personal Factors | Unconscious society | Society acting uninformed and unconscious, the desire to socialize. |
| | Weak immune system | Having chronic ailments and a weak immunity. |
| | Lack of information | Lack of knowledge about coronavirus and its propagation pathways. |

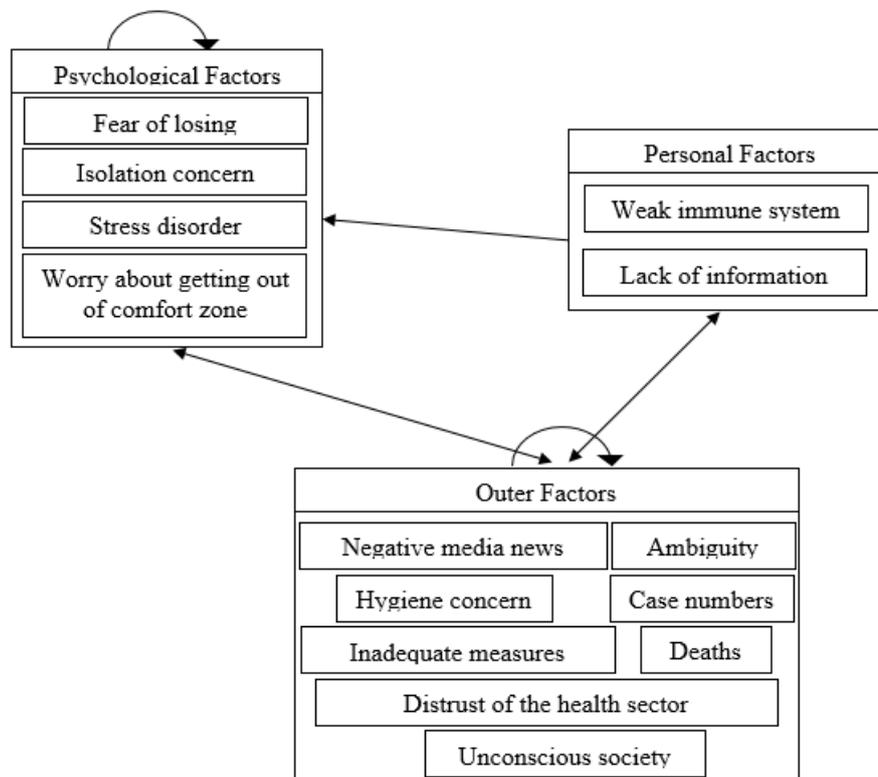


Figure 1. Network structure established according to ANP method.

Table 2. Comparisons for Main Criteria.

| | | | | | | | | | | | | | | | | | | | | |
|------------------|-------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|-------|-----------------------|
| Outer Factors | >=9.5 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | >=9.5 | Personal Factors |
| Outer Factors | >=9.5 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | >=9.5 | Psychological Factors |
| Personal Factors | >=9.5 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | >=9.5 | Psychological Factors |

Table 3. Calculated Priority Values for Criteria.

| Criteria | Criteria Weights | Sub-Criteria | Sub-Criteria Weights |
|-----------------------|------------------|---|----------------------|
| Psychological Factors | 0.79755 | Fear of losing | 0.01263 |
| | | Isolation concern | 0.16810 |
| | | Stress disorder | 0.44336 |
| | | Worry about getting out of comfort zone | 0.37591 |
| | | Negative media news | 0.01094 |
| | | Case numbers | 0.07445 |
| Outer Factors | 0.18313 | Deaths | 0.08281 |
| | | Ambiguity | 0.00793 |
| | | Distrust of the health sector | 0.02097 |
| | | Inadequate measures | 0.28432 |
| | | Hygiene concern | 0.51526 |
| Personal Factors | 0.01932 | Unconscious society | 0.00331 |
| | | Weak immune system | 0.88975 |
| | | Lack of information | 0.11025 |

Criteria used in the study were determined by reviewing the literature and following the agenda. Criteria determined are divided into 3 groups: psychological factors, external factors and personal factors. Criteria and descriptions are shown in Table 1. While determining the criteria, the posts on the agenda and social media were examined with two experts examining human behavior, and also studies on corona in the literature were examined. As a result, criteria were determined, and evaluations were made with the same experts.

ANP expresses problems in the form of a network, defining relationships between criteria and aspects of relationships. Thanks to this network, it takes into account indirect interactions and feedback that may occur between elements that are not directly related [11]. Figure 1 shows the network structure established in the study.

An example of binary comparisons is the comparison table for the main criteria in Table 2. Bilateral comparisons and evaluations were carried out by a team of 3-4 people working in the field of Health. In Table 3, there are priority values calculated for the criteria. According to the priority values obtained as a result of comparing relationships and relationships established by the ANP method; the most important criteria affecting coronavirus fear is the criteria of psychological factors. The most important sub-criteria are; it is a weak immune system, hygiene anxiety and stress disorder.

Each of these sub-criteria are included in different main criteria. Looking at the main criteria with the highest priority, it seems that stress disorder, one of the most important sub-criteria, is also found in this title. In this context, it can be said that the sub-criteria of lack of knowledge in personal factors, which is the main criteria of lowest priority, is also one of the sub-criteria of low priority.

4. Conclusion and Discussion

The coronavirus pandemic, which has become a universal problem, has made the risk factor more important for all societies. Although there were many risks in social life before the pandemic, the struggle and measures were also insufficient, as the risks concerned a certain segment of society. Along with other social problems, the epidemic experienced today has also been a tool for many social problems and psychological problems that have a return [22].

As part of the Coronavirus outbreak, differences in user's digital content consumption habits are observed along with social changes. There have been increases in digital content consumption with the need for education, health data monitoring, cultural and entertainment content. Studies aimed at evaluating the functionality of entertainment content and humor as a treatment tool against the devastating effects of social trauma on the collective, individual, consciousness and post-traumatic stress disorder have been conducted. In order to achieve

this goal, analyses were conducted in terms of confronting, accepting and strengthening individual and social resistance to the reality of trauma, fun content related to coronavirus pandemic, which can be considered individual and social trauma [23]. The change in consumption not only increased the production of content but also raised the concept of click feed and caused News and content that did not reflect the truth. This also affects people's access to accurate information and their anxiety status [18]. Changes in social life; it also affected people's use of social media and an increase in social media usage times was observed [24].

Several studies have been conducted on the effects of coronavirus on social life and the psychological problems it causes. According to research, many factors such as people's shopping cultures, traditional behaviors, working conditions and communication have changed due to the pandemic process [25]. Many studies have been conducted on people's emotional states, levels of fear and intolerance. The studies were evaluated using survey and interview methods on different samples or groups.

In a study that examined burnout, coronavirus fear, depression, occupational satisfaction levels and related factors of health workers, the results showed variability according to the demographic characteristics of the participants. It is believed that physical fatigue and stress and negative mental state experienced due to the intense pace in the pandemic process can reduce nurses job satisfaction and this can lead to burnout [26]. It is important to understand their specific sources of anxiety and fear before effective approaches are developed to support healthcare professionals. Another important point is that health professionals are assured that their concerns are being noticed and studies are being conducted to develop approaches that mitigate their concerns to the extent possible [27]. Doctors and other health workers play an important preliminary role in the management of the pandemic. Their emotional load and anxiety levels are on the rise as physicians struggle on the front lines of the coronavirus crisis. A study conducted in Israel investigated anxiety, pandemic-related stress and endurance among physicians and evaluated the potential impact of psychological endurance on anxiety among physicians [28].

The pandemic process causes changes in mood, such as anxiety, stress and fear, which negatively affect life in individuals. According to the results of a survey aimed at measuring coronavirus fear and anxiety levels applied in a sample of dental students; compared to the fear levels of men and women, it was found that women experience more fear during the pandemic process [29]. In another study conducted with a group of university students; it was concluded that students were moderately afraid of coronavirus and moderately

intolerant of uncertainty [30]. In addition to university students, studies measuring the level of fear and anxiety were also conducted with a group of Primary School students. In the study, interviews were conducted with the parents of students; it was concluded that both students and their parents felt fearful and anxious in the process [31]. A study conducted in China also examined the psychological responses of people in the first stage of the outbreak. Researchers concluded that negative emotions such as anxiety, depression and anger increased during the epidemic period, while positive emotions and life satisfaction decreased [32]. Some of the studies have also been conducted on psychological reflections of the epidemic and coping with the epidemic. Situations such as restlessness, longing, family disputes, weakening of social relationships and increasing addictions caused by routine changes are some of the effects of the epidemic on people. These effects vary depending on people and their circumstances, allowing people to resort to cognitive, relational and behavioral strategies to combat the fear of an epidemic [33].

Psychopathology research was also conducted in a study with individuals who survived coronavirus. Psychiatric consequences of infection, immune responses against both viruses as well as compulsory social isolation, and new severe psychological impact of a potentially fatal disease, is due to psychological factors such as stress, stigma concerns to infect others by others. Given the alarming effect of coronavirus infection on mental health, in order to reduce the expected burden of disease, emerging psychiatric conditions should be diagnosed and the psychopathology of coronavirus survivors should be evaluated for treatment [34-35].

In this study, factors affecting coronaphobia that change people's psychological states and behaviors during coronavirus outbreak were identified. In contrast to the studies found in the literature, the ANP method was used in this study, which allows the establishment of bidirectional relationships between factors. Analysis was carried out between factors using the ANP method. The factors covered in the study consist of 3 main criteria and 14 sub-criteria covered by these criteria. Main criteria are psychological factors, external factors and personal factors.

According to the results obtained, it is seen that the main criteria of psychological factors has the highest priority value. Therefore, the sub-criteria of the main criteria of psychological factors also take precedence. The highest priority among these sub-criteria are stress disorder, anxiety about leaving the comfort zone, anxiety about isolation and fear of losing, respectively. For other main criteria, the highest priority sub-criteria are hygiene concern for the main criteria of external factors and weak immune system for personal factors.

According to the results of the solution; individuals with coronaphobia should first treat existing psychological problems. For this purpose; stress disorders, concerns about leaving the comfort zone, isolation concerns and fears of lose should be addressed. According to the results obtained, first of all, by using the power of the media, reassuring shares that reduce this stress level can be increased. In the literature, researchers can examine whether people living with these anxiety disorders have been diagnosed with corona before and, if they have corona, how this psychology affects the course of the disease.

Author's Contributions

Edanur SONEL: Drafted and wrote the manuscript, performed the experiment and result analysis.

Şeyda GÜR: Assisted in analytical analysis on the structure, result interpretation and helped in manuscript preparation.

Tamer EREN: Made all the checks of the work, helped in manuscript preparation.

Ethics

There are no ethical issues after the publication of this manuscript.

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