

Suicide Cases by Cyanide in Turkey: A Research based on Newspaper Reports*

Türkiye’de Siyanüre Bağlı İntihar Vakaları: Gazete Haberleri Üzerinden Bir Araştırma

Haşim Çaparⁱ, Cuma Çakmakⁱⁱ, Yasin Çilhorozⁱⁱⁱ

ⁱLec., Istanbul Sabahattin Zaim University, Department of Health Management, Faculty of Health Sciences,
<https://orcid.org/0000-0001-7056-7879>

ⁱⁱRes. Assist., Hacettepe University, Department of Health Management, Faculty of Economics and Administrative Sciences,
<https://orcid.org/0000-0002-4409-9669>

ⁱⁱⁱRes. Assist., Hacettepe University, Department of Health Management, Faculty of Economics and Administrative Sciences,
<https://orcid.org/0000-0002-5171-7779>

ABSTRACT

Introduction: Cyanide exposure occurs in two ways; intentional and unintentional. Intentional exposure occurs in wars, genocides, and suicides; unintentional exposure occurs through inhalation of smoke from fires, work and home accidents, and industrial activities. This study aims to examine the issue of suicide by cyanide in Turkey by using newspaper reports as a source of data.

Methods: The content analysis method was used in this study. Four newspapers reports the highest circulation were examined between January 2018 and December 2019 in Turkey. Only 4 out of the 1075 daily newspapers have been chosen as data sources. The two keywords, "suicide" and "cyanide", were used in examining the newspapers' online search engines.

Results: 11 newspaper reports were analyzed. It was determined that five cases occurred in Istanbul, two cases occurred in Antalya, one case in Ankara, one case in Izmir, one case in Mersin, and one case in Denizli. It has been determined that in three of the five cases which the cause is investigated, the reasons for their suicides were financial problems, and two of them were psychological conditions.

Conclusion: To prevent suicides cases by cyanide which seriously harm human and public health, national authorities should develop strategies to report these cases carefully, follow the cyanide supply channels strictly, and prevent people from reaching this poisonous substance.

KeyWords: Suicide, Cyanide, Mental Disorders, Psychological Problems, Public Health, Economic Problems

ÖZ

Giriş: Siyanüre maruz kalma iki şekilde gerçekleşmektedir: Kasıtlı ve istemsiz maruziyet. Kasıtlı maruziyet savaşlarda, soykırımlarda ve intiharlarda meydana gelir; istemsiz maruz kalma, yangın, iş ve ev kazaları ve endüstriyel faaliyetlerden kaynaklanan dumanın solunması yoluyla gerçekleşir. Bu çalışma, Türkiye’deki siyanüre bağlı intihar vakalarının gazete haberlerini incelemeyi amaçlamaktadır.

Yöntem: Bu çalışmada içerik analizi yöntemi kullanılmıştır. Türkiye’de Ocak 2018-Aralık 2019 arasında en çok tiraj yapan dört gazetede haberler incelenmiştir. Bu çalışmada 1075 günlük gazeteden yalnızca dört gazete veri kaynağı olarak seçilmiştir. Gazetelerin çevrimiçi haber arama motorlarında "intihar" ve "siyanür" olmak üzere iki anahtar kelime kullanılmıştır.

Bulgular: 11 gazete haberi analiz edilmiştir. İstanbul’da 5, Antalya’da 2, Ankara’da 1, İzmir’de 1, Mersin’de 1, Denizli’de 1 vakanın meydana geldiği belirlenmiştir. Sebepi işleme konulan beş vakadan üçünün işleme sebeplerinin maddi sorun olduğu, ikisinin ise işleme nedeninin psikolojik koşulları olduğu tespit edilmiştir.

Sonuç: İnsan ve toplum sağlığına ciddi zarar veren siyanür kaynaklı intiharların önüne geçmek için ulusal otoriteler bu vakaları dikkatli bir şekilde rapor etmek, siyanür tedarik kanallarını sıkı bir şekilde takip etmek ve insanların siyanüre ulaşmasını önlemek için stratejiler geliştirmelidir.

Anahtar kelimeler: İntihar, Siyanür, Mental Bozukluklar, Psikolojik Sorunlar, Halk Sağlığı, Ekonomik Sorunlar

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İletişim - Correspondence Author: Yasin Çilhoroz <yasin.cilhoroz@hacettepe.edu.tr>

Introduction

The detection and recognition of environmentally and biologically basic anions have received significant attention due to their essential role.¹⁻³ Cyanide (CN⁻) is one of these anions that have attracted researchers' attention in recent years. It is a chemical reagent produced in large quantities in many fields such as metal, coloring, pharmaceutical, leather, fabric, and mining industries.⁴ Cyanide has many types such as gaseous hydrogen cyanide, water-soluble potassium cyanide, sodium cyanide salts, water-insoluble mercury cyanide, in addition to copper, gold, and silver cyanide salts which trigger chemical accumulation in the bloodstream by forming compounds in the cell structure and interfering with the cell's energy-producing capacity. As a result of cyanide exposure, death occurs due to oxygen deficiency.⁵⁻⁷ In this respect, it is stated that even a shallow dose is hazardous for humans.^{8,9}

Cyanide exposure occurs in two ways: intentional and unintentional exposure. While intentional exposure occurs in wars, genocides, and suicides, unintentional exposure occurs through inhalation of smoke from fires, work, home accidents, and industrial activities.¹⁰

Cyanide, which is commonly used among healthcare workers, jewelers, miners, and photographers due to its ease of accessibility, is a chemical that can be used for these industrial processes. At the same time, it can also be used for deliberate poisoning such as suicide.^{11,12} It has been mostly preferred in suicide cases because it causes death quickly and effectively. It is also known to be used in terrorist attacks and illegal euthanasia cases.^{11,13-18}

The concept of suicide refers to a person performing an activity of self harming and consciously knowing that it will directly or indirectly result in death. It results mainly from recent adverse events and mental disorders.¹⁹ In cyanide-induced suicide cases, people often die in less than 10 minutes by inducing brain damage that is caused by the destruction of cytochrome oxidase which leads to difficulty in using oxygen.²⁰ Early signs of cyanide exposure include anxiety, headache, dizziness, inability of the eye pupil to focus. As oxygen deficiency progresses, lower consciousness, seizures, and coma occur. As poisoning progresses, blood flow may also become irregular. The most effective treatment methods are the early application of cyanide antidote and hydroxocobalamin supplementary food.²¹

This study aims to shed light on the frequency and the reasons behind this type of cyanide-induced suicide cases in Turkey.

Methods

This study is a cross-sectional descriptive study that is designed to examine this particular type of suicide in Turkey. For this purpose, the content analysis method was used. The suicide news published on four major newspapers between January 2018 and December 2019 in Turkey were collected and analyzed.²² According to the data of Turkey Press Advertisement Association in July 2019, the number of local and general daily newspapers in Turkey is 1075.²³ Only four out of the 1075 daily newspapers were selected as samples. The reason behind selecting only four newspapers in the study is that they are the best-selling newspaper in country. These four daily newspapers are published in Turkish language.

Before analyzing the news, the researchers determined the variables that should be analyzed from the content of the news. The variables selected by the researchers were divided into two categories. The first of these categories concerns the variables related to the person who committed suicide and the other victims affected by the act. The second category is related to the variables of the causes behind the suicidal act. The two types of variables are given in **Table 1**.

Table 1. Variables Determined by Researchers

Variables	
Category I (Demographic Information Variables)	Category II (Causal Analysis Variables)
Individual or collective?	Leave a note to the rest? What?
The number of people who lost their lives?	Is Conscious of Influencing Others? Why?
Age?	Cause of suicide? If any?
Gender?	
Profession?	
Working status?	
What is the role of the person who committed suicide at home?	
Who reported the case to the authorities?	
Cyanide Supply Channel?	
The city of the case?	

Determining variables for content analysis increases consistency among researchers. In this way, the researchers who carry out them analyzes independently for the determined variables know which information to include and which information to exclude. After determining the variables, it becomes easier to determine the keywords used in the research. For this purpose, "suicide" and "cyanide" were selected as the two keywords used in searching within the newspapers' online search engines. Working with specific keywords is just like working with individual variables. It will allow researchers to gather consistent information. As a result of the news search made with selected keywords and variables, 1793 news results were obtained from the four different newspapers. The news distribution among the four various newspapers was as follows: (according to the number of occurrence, respectively) 642, 426, 312, and 413. The 1793 news items were subjected to content analysis by the researchers for approximately three months. As a result of the analysis, the news that did not concern the objective of this study were excluded. The total number of the relevant news articles compiled by the three researchers independently was determined to be 27. However, when the news gathered by three researchers were combined in a single file, some repeated news was noticed. To manage this situation, the researchers did another filtering to exclude the repeated news. As a result of the last analysis, 11 news items with 11 different cases were included in the study.

If there are findings obtained from any study and these findings will be used in theory and practice, the quality of the relevant studies should be evaluated. For the quality of these studies, the truth, consistency and neutrality (or confirmability) values of the studies should be known. In this way, the reliability and validity criteria of the studies will also be taken into consideration.²⁴

There can be more than one truth value for each research. The important thing is that the research data can reflect the actual value free from systematic and non-systematic error sources and researchers' prejudices. In this study, the process of truth value collection was carried out by three different researchers. In this way, it was ensured to collect truth data without systematic and random errors arising from the researchers' prejudices and arbitrary behaviors. Also, the newspapers' margins of errors on which the content was analyzed was also taken into account. For this purpose, the news was scanned with the same keywords, not only through one newspaper, but also through the four newspapers. In this way, when any news was found incompatible with the other newspapers, it is considered as fake and consequently excluded from the scope in an attempt to obtain real values.

Consistency refers to the transparency of any research methodology and the researchers' compliance with the researching appropriate methods.²⁴ For the sake of consistency, the news was collected from

newspapers by three different researchers with predefined keywords. To determine the consistency of these news with each other, the data collected by three different researchers were combined in a single Excel file to look for differences.

For any research to be based on strong arguments, researchers should be free from bias at every research stage. Within this study's scope, the data collected by the three different researchers were compared with each other to prevent researcher bias, and the study was based on reliable data. Confirmability states that the same results can be obtained with the methodology used for a study, and the confirmability criterion of this research was achieved by determining the keywords and variables by the researchers at the beginning of the study.

The researcher's role is crucial since a researcher can collect, analyze, and report data in the research process.²⁵ In this study, the news of the cases of suicide with cyanide have been published in four different newspapers in Turkey. Data was collected with the content analyzing method by three different researchers. The data were collected simultaneously by different researchers with the same keywords and were recorded under pre-created variables by the researchers. Each researcher played an equal role in the data collection process. After the collection of the data was completed, a division of work was made among the researchers. Accordingly, the first researcher was responsible for the classification, the analysis, and the interpretation of the collected data. The second and the third researchers were responsible for the process of collecting, sorting, and making the data ready for analysis.

The demographic information variables, defined as the first category, consist of 10 questions in total. These questions are: was the suicide case individual or collective?, the number of people who lost their lives?, age?, gender?, profession?, working status?, the role of the person who committed suicide at home?, who reported the case to the authorities?, cyanide supply channel?, and the city of the case?. These questions are prepared to determine the demographic information of individuals who have committed individual or collective suicide or have been victims of these suicide cases.

To deepen this study, causal information questions were prepared in addition to the demographic questions. These questions are: did the suicider leave a note to the rest?, what is the note? was the suicider conscious of influencing others? why? and what was the cause of suicide, if any? With these questions, it becomes possible to determine whether suicidal behaviors would affect someone else or not. Also, with these questions, the suicide cause or causes can be specified accurately.

This study was conducted according to the rules of the Declaration of Helsinki. No patient or living creature was harmed within the scope of this study. Since secondary data were used in this study, the ethics committee was not applied. Nothing against the ethical rules has been done at all.

Results

All the findings were obtained through 11 reports from four different newspapers. Although the newspapers are various, it has been observed that the news is the same. This is since the relevant news is received from the same news agencies.

As a result of news search made with determined keywords and variables, 1793 news pieces were obtained from 4 different newspapers. The news distribution among four various newspapers was as follows: (according to the number of circulation, respectively) 642, 426, 312, and 413. The 1793 news items were subjected to content analysis by the researchers for three months approximately.

A total of 1793 news pieces were examined within the four newspapers. The number of news included in the study was 11. This news was in newspaper four, three, two, and two, respectively, according to the

degree of newspaper circulation. The number of questions for which answers were sought in all newspaper articles was 16. However, some questions were not answered. For this reason, the number of answers received varied according to the newspapers (**Table 2**).

Table 2. Distribution of Newspapers According to the Number of Questions and News

Newspapers	Number of News Found	Number of News Included	Asked Questions	Answered Questions
The first highest circulation newspaper	642	4	10 demographic, 6 causal questions	10 demographic, 6 causal questions
The second highest circulation newspaper	426	3	10 demographic, 6 causal questions	7 demographic, 5 causal questions
The third highest circulation newspaper	312	2	10 demographic, 6 causal questions	10 demographic, 2 causal questions
The fourth highest circulation newspaper	413	2	10 demographic, 6 causal questions	8 demographic, 6 causal questions
Total	1793	11	16	

Findings from this research are divided into two categories. There are findings related to the demographic information in the first category, while in the second category, there are findings associated with the causes and reasons. Results pertaining to both types are given below.

Demographic information results

Considering the individual and collective variables, seven of 11 suicide cases by cyanides were individual, whereas four of them resulted in collective deaths. It was determined that 20 people died due to suicide cases by cyanides, which were carried out individually and collectively. It was determined that the average age of the 20 people who died in the above suicide cases, which were carried out individually and collectively, was 32. The age of the youngest victim was three, and the age of the oldest victim was 56. When looking at the gender of the 20 people who died in these suicide cases, which were carried out individually and collectively, 12 of the victims were males, and eight were females. When looking at the profession of those who committed suicide by cyanide, it was seen that three of them were workers, two chemical engineers, two university students, one model, one jeweler, one civil engineer, and one social worker. It was determined that six out of the 11 people who committed suicide by cyanide did not have a job; two did not work because they were university students, yet three had jobs. The role of the person who committed suicide with cyanide at home is an essential variable in this study. Looking at this variable, all suicides, except two cases of students, were done by bread-earners. When looking at the people who reported the suicide cases to the authorities, it was seen that six of the reporters were friends, four of them were relatives, and one of them was a hotel staff. When we look at the cyanide supply channel used in the suicide cases, it was seen that the cyanide used in all 11 cases was purchased on the internet. The news were also analyzed according to the regions to reveal whether the obtained findings differ accordingly. When considering the cities where suicide cases occurred, it was determined that five cases occurred in Istanbul, two cases occurred in Antalya, one case in Ankara, one case in Izmir, one case in Mersin, and one case in Denizli.

Whether the people, who have committed suicide, left a message before the suicide or not, it was determined that in nine of 11 suicide cases, the person who committed suicide left a note. Only two did not leave a note. The notes left from the 9 cases are given in **Table 3**.

Table 3. The Notes Left from Cases

Cases	Notes
Case 1	"I will poison my wife and child first and then commit suicide myself."
Case 2	"If I die, they will be miserable, I will die, and I will drag them from behind. Attention is cyanide. Do not go inside. Call the police."
Case 3	"I apologize to everyone, but I have nothing to do anymore. We claim our's life."
Case 4	"I drank cyanide, do not enter."
Case 5	"My mental health, my consciousness is right. Whatever I do, I do it with my free will. Never forget me? Stay with goodness, always beautiful. We have come to the end of the time allotted to me. Goodbye, always be beautiful. "
Case 6	"I used cyanide."
Case 7	"I will commit suicide with cyanide."
Case 8	"I prepared a new sherbet (a sweet drink) try it."
Case 9	No notes
Case 10	No notes
Case 11	"I attempted suicide."

When **Table 3** is analyzed, it is seen that all of the 11 suicide cases left a note stating that they do not want others to be affected by the cyanide they used. Only one message can be excluded from the notes which stated that the people who carried out the suicide act was done with their free will and without any pressure.

The consciousness of the suicider about inflicting harm to others is an essential variable in this study. In the light of the data obtained, two results emerged: First, it was found that those who committed suicide killed their family behind to prevent their suffering. The second is the fact that the suicider did not want anyone else to die due to the effect of cyanide.

One of the essential variables considered in this study is the information about the causes of the suicide cases. **Table 4** shows the available information about the causes of each case.

Table 4. Causes of Suicide Cases

Cases	Causes
Case 1	"Excessive borrowing and depression."
Case 2	"Financial problems and psychological crisis. The use of antidepressant drugs."
Case 3	"Unemployment, debt and financial problems, psychological crisis."
Case 4	Unknown
Case 5	Unknown
Case 6	Unknown
Case 7	"The death of her mother. Psychological crisis"
Case 8	"Disruption of psychology due to schizophrenic states."
Case 9	Unknown
Case 10	Unknown
Case 11	Unknown

After analyzing **Table 4**, it has been determined that in three of the five cases where the causes are processed, the reasons behind their act are financial problems, and two of them are related to psychological conditions. The number of cases which were carried out by unknown reasons were six.

Discussion

Suicides occur as attempts of people in social life to end their lives for multiple reasons.²⁶ According to World Health Organization (WHO), people worldwide commit suicide by swallowing chemicals, hanging themselves, and using firearms. Cyanide which is used in a variety of industrial fields has become a tool used in suicides due to its rapid effect. In this study, suicide by cyanide in Turkey was explored. In suicide cases by cyanide, demographic characteristics of suicides and causes of suicide were examined and significant results were revealed.

Suicide numbers are increasing around the world. There are also suicide cases in Turkey. In Turkey, according to the Turkish Statistical Institute (TSI), the suicide rate per thousand was 5.2 in 2018.²⁷ This study determined that 20 people committed suicide with cyanide, in both individual and collective form of suicide. Some cases of suicide have been committed suicide within the families. At this point, it is observed that suicide was decided as a collective act. The youngest of those who committed suicide was three years old; the oldest was 56 years old. Children were first killed by cyanide by the person who made the suicide decision. Then, the person himself commits suicide. Some studies have reported a high number of suicide attempts by females.^{28,29} In this study, it is seen that among suicides, males are more than females. In line with these studies there is also other studies point to a higher prevalence of suicide among males.^{28,30,31} In a study, it was reviewed 52 cyanide poisoning cases in Tehran, Iran. According to their study, the youngest decedent was a 2-month old girl and men constituted 76.9% (40) of the total 52 victims. Peak age prevalence of cases was seen in age groups 21–40 years (32 cases, i.e. 61.5%). A suicide attempt was the main cause of poisoning in 33 cases. Their results showed that cyanide-poisoning related deaths are among the most public health problems also in Iran and other countries. In this study, it is also observed that among suicide cases, males are more than females.³²

Our study showed that the cyanide used in all 11 cases was purchased on the internet. A study who stated that people who committed suicide with cyanide obtained cyanide from the internet and deep web sites. And this situation is original/unusual.³³ This result was compatible with our study.

It is challenging to explain the reason why people commit suicide, because often there is no one single cause. People might attempt suicide for many different reasons.²⁶ Risk factors that lead people to suicide are handled from two different perspectives. When evaluated socially, cultural conflicts, racist behaviors, natural disasters, and wars can lead people to suicide. On the other hand, on the individual level, people might have mental disorders, addictive alcohol use, financial losses, chronic pains, or family history, etc. These are also considered among the important risk factors.²⁶ In this study, it has been determined that in three out of the five cases whose cause is processed, the reasons for their action were financial problems, and two of them were done due to psychological conditions. And, the number of cases carried out by unknown reasons were determined to be six.

It was noticed that most of the suicide cases occurred in İstanbul, Turkey. An important reason for this is that the population of İstanbul is very high compared to other provinces. İstanbul is ranked as number one in Turkey in terms of population.

Public health professionals have frequently neglected this critical issue of suicide for a long time, though its discussion as a real public health problem dates back to the 1960s.³⁴ Suicides need to be addressed as a public health problem. Suicides should be evaluated with a holistic perspective, and solutions should be developed accordingly. Suicide instruments and means have also changed over time. One of these tools is cyanide. It seems that those who commit suicide can easily get the supply of cyanide over the internet. In a study it was stated that it is surprising for forensic science and medical professionals that an intensely deadly thing such as "deep web" (deep web) and cyanide appear. They state that it is challenging to prove the process of buying cyanide on the internet.³³ Since cyanide cases are now uncommon, the reporting of these cases to the legal authority varies depending on the country and laws.³⁵ Therefore, national authorities should develop strategies to carefully report these phenomena, strictly follow the cyanide supply channels, and prevent people from reaching cyanide. It is important that restricted the access to cyanide and stricter buying and selling controls may reduce intentional self-poisoning with this dangerous substance.³²

Conclusion

Suicides are among global health problems. With the increase of technology, communication, and knowledge, people can easily access suicide substances via the internet and dark (deep) websites. It is seen that suicidal cases tend to increase by cyanide, a quick and sudden form of suicide. In this context, regardless of the condition or reason of suicide, suicide should be considered a public health problem and should be regarded as a crucial issue that national and international authorities should consider carefully.

This study examines the facts of suicide with cyanide in Turkey, which shows a rapid increase in the last ten months. The study also investigates the causes behind the suicide cases. In the light of the data obtained, it can be said that most of the causes of suicide by cyanide in Turkey are either economic hardships or psychological problems. According to the data obtained from newspaper reports, all those who committed suicide by cyanide did it consciously, without any pressure. As a result, psycho-social support services should be provided for individuals experiencing financial crises and psychological issues. The use and sale of substances such as cyanide should be restricted or even entirely prohibited. The authorities should be provided with support in this regard. This can be done through providing courses of training for concerned individuals to increase their ability to cope with such difficulties during turbulent times.

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Author contributions

Hasim Çapar: Conceptualization, Methodology, Software, Validation, Investigation, Formal analysis, Data Curation, Writing-Original Draft, Supervision, Project administration, Writing-Review & Editing.

Cuma Çakmak: Conceptualization, Software, Data Curation, Validation, Formal analysis, Investigation, Writing - Original Draft, Writing-Review & Editing.

Yasin Çilhoroz: Conceptualization, Software, Data Curation, Validation, Formal analysis, Investigation, Writing - Original Draft, Writing-Review & Editing.

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