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EVALUATION OF HEALTH INTELLIGENCE STUDIES IN TURKEY SUMMARY

The last major epidemic, the COVID-19 pandemic, has revealed that there are many deficiencies in the health field. During the COVID-19 pandemic, as far as the media followed, many countries had difficulties accessing medical supplies, vaccines, and drugs and did not allow some medical products to leave the country. It has been observed that the necessary materials have disappeared with the work of the intelligence agencies of some countries. Politicians and scientists from many countries have put forth conspiracy theories about the source of the pandemic and the country of origin, and accusations have included claims about the use of biological weapons. This study aims to reveal what health intelligence is and what kinds of studies are done in Turkey and around the world. For this, the in-depth literature study of the case pattern study, one of the qualitative research methods, was used. In the analysis of the study, a descriptive analysis was made and the results were discussed.

Keywords: Intelligence, medical intelligence, cyber attack, biological weapon

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1. Introduction

From the past to the present, intelligence/espionage constantly renews and develops itself in parallel with the technological developments of those periods. It determines the direction of many situations such as diplomacy, propaganda, psychological warfare, asymmetric threats, military power, economy, covert operations, and technological developments. In this context, intelligence helps to predict the intentions of rival countries/persons/institutions/unions/organizations, their existing power to realize these intentions, and possible measures they can take against counter-attack plans (Tiryaki, Özdal, 2020: 267). Strategic intelligence, which plays an important role in determining the policies and strategies of states in line with national interests, includes all elements of national power (Acar, Urhal: 2007: 209).

2. Situation in Turkey and the world

The introduction of the Internet into human life and the subsequent emergence of social media tools made it easier to gather open-source information in areas where intelligence and counterintelligence studies will be conducted. While users share much data, such as news, videos, pictures, and plain text, not only ordinary people do so due to the free nature of social media and its rapid spread capacity. In other words, it also offers an environment where propaganda can be made in social media environments, where terrorist organizations can easily gather sympathizers, and where open source intelligence (OSINT) can be provided to intelligence services. Open source-based data mining, artificial intelligence, and advanced algorithms that can solve complex networks (deep machine learning) are applied to big data, making it possible to reach many intelligence information (Özdağ, 2011: 24).

With the developments in information technologies, countries that try to collect the data obtained from many fields and turn them into intelligence, have tried to use them in favor of their countries against the country they perceive as a threat, not only in the military, economic, and political but also in all areas of life. The use of data and information obtained in the field of health as intelligence has become one of the most important hybrid threat areas in recent years.

It is only possible to see the future, have information about possible problems in advance, and reach the facts behind the scenes, only with a healthy intelligence production. In order to produce intelligence, it is not sufficient to collect news, information, and documents alone. The obtained news, information, and

documents should be processed in a certain, systematic way. If important news is not evaluated correctly, misleading results can be reached (MIT, 2021). The intelligence cycle; It is likened to a continuous wheel in the order of determining intelligence needs and directing collection efforts, collecting news, processing news, publishing, and using intelligence (Figure 1) (MIT, 2021).

Figure 1. The Intelligence Cycle
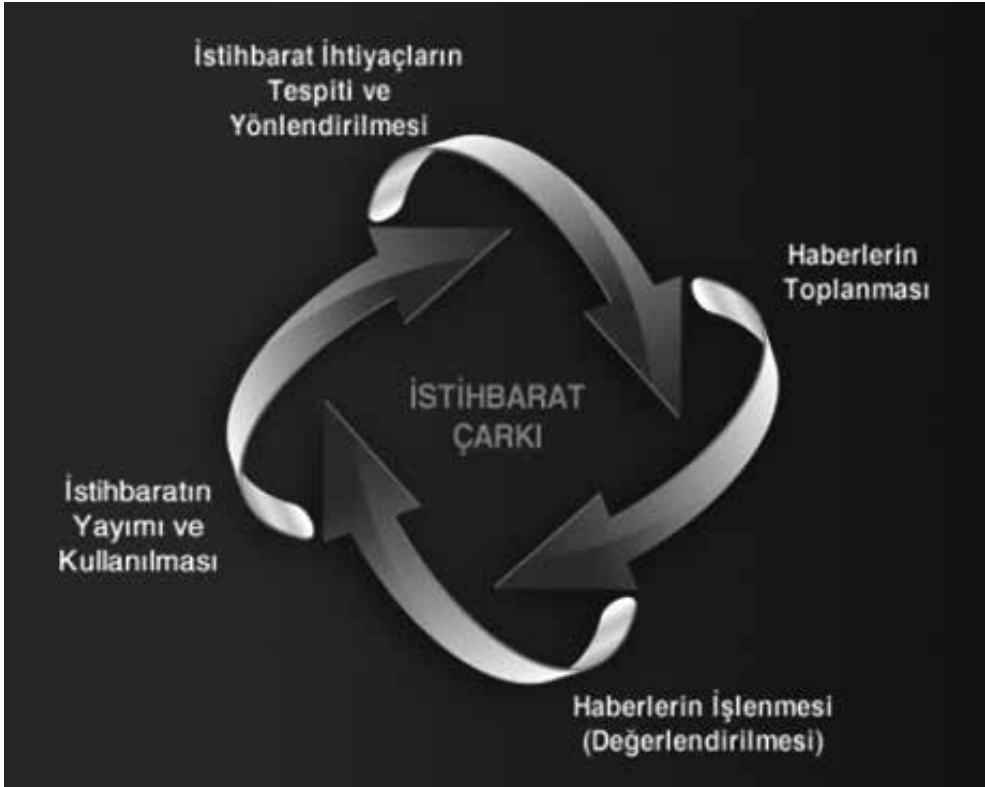
Source: https://www.mit.gov.tr 2021

Intelligence activities are multidisciplinary and multisectoral in health intelligence, as in many successful studies. All over the world, health threats are added to hybrid threats. The collected data and information are brought together and used in health technologies to spy on the health industry, and by using them in medical engineering, the required products are produced with reverse engineering applications. Similar studies confirm the above-mentioned statements about the products used by ISIS/DAESH militants during the occupation and defense of some cities in Iraq and Syria, with the joint efforts and means of their engi-

neers, health personnel, and other terrorists (Gambetta, Hertog, 2016:135). Again, as an example of terrorists' intelligence gathering, it is known that the Japanese Aum Shrinkyo sect obtained anthrax to use in the attacks, went to Africa to obtain the ebola virus, and voluntarily participated in the studies there to try to obtain the ebola virus. One of the best answers to the question "why is health intelligence important" is that millions of people have died due to epidemics throughout history, and these deaths can be prevented with healthcare products in the modern world. In the COVİD-19 pandemic (as of April 22), 6.2 million people died from the disease. Of the 10 major epidemics that caused serious deaths in history, the biggest loss was 75-200 million, with the plague epidemic called the black death (Tharoor, 2021:1). Some of the epidemics in history spread as terrorist activities, and some of them spread unintentionally as a result of commercial activities. Health intelligence studies are carried out to prevent these epidemics from entering the country quickly by being informed in advance, and to take effective measures if they cannot be prevented. The epidemics, with their size, lethality, and contagiousness, have caused the prices of goods and services in the health system to increase in terms of national and reserve currencies.

For the term health intelligence to be established, strategic intelligence must be understood. Although tactical and/or operational intelligence is used more effectively and frequently in the field, it cannot solve all kinds of problems, and tactical/operational intelligence solutions to strategic problems are insufficient. Since the facts are often multi-parameter, multi-faceted, and complex, it is not possible to understand and solve national or international problems with tactical intelligence information and plans. Elements such as biographical, telecommunicational, geographical, political, scientific, and technical intelligence, which are necessary for the formation of policies and military plans at national and international levels, are among the elements within this definition. To develop good strategies, strategic intelligence must also be done well and properly. Liebowitz (2006) defines strategic intelligence as intelligence that feeds and assists the strategic decisions of organizations, consisting of artificial intelligence, information management, business intelligence, and competitive intelligence (Smith, 1996:1).

The key points of medical intelligence are that it is an intelligence function, albeit one focused on medical matters and not a medical function, and that it applies to strategic and operational consumers. Today, countries' medical intelligence has been put to use in providing national security at the strategic, operational, and tactical levels (Kaufman, 2001: iii).

Strategic Intelligence: It is a type of intelligence that is used to investigate, detect, and predict future opportunities and threats for a state, to put options be-

fore decision-makers, and to ensure that their policy-making process is built on a more accurate basis. The purpose of strategic intelligence; is to reveal and determine the possibilities and capabilities, sensitive and weak sides, and possible reactions of the target country or countries in advance (Yılmaz, 2007:34). Özdağ's (2002:112) medical intelligence assessment; he evaluated medical intelligence as a type of intelligence that can be used mostly by military planners, with the definition that "information collected from foreign medicine, biology, and environmental science sources about rival armies and the battlefield and which will be useful to military planners falls within the scope of medical intelligence". Medical intelligence includes the following subjects in terms of the operations to be carried out by the armed forces of the states (Bolin, 1989: 12/50):

- Common and communicable diseases, quality and availability of health services,
- Number of medical supplies, medical services, health service facilities, and trained health personnel,
- Regional special diseases, bacteria, insects, snakes, fungi, harmful vegetation, and other harmful organisms,
- Foreign animal and plant diseases, and especially diseases transmitted from them to humans,
- Health problems related to the use of local food sources,
- Medical effects and protection against chemical, biological agents and radiation,
- Newly developed foreign weapon systems and their effects on health,
- Special medicines and vaccines used by enemy forces,
- It includes geographic information such as altitude, heat, cold, sandstorms, and swamps of the operation area that may affect the health of personnel.

Some of the medical intelligence includes a country's cell culture collection, a list of selected agents, a phage database, and its contents. It also includes information about the microbiological agents that affect human health and are specific to the region, what are diagnostic tests, prevention methods, vaccines, antiserum, and treatment methods.

It is to produce intelligence information that includes foreign countries' military and civilian medical capabilities, treatment institutions, medical personnel, emergency and disaster response capabilities, logistics, and medical industry stages. To create an integrated database of all therapeutic, educational, pharmaceutical, and research facilities (NATO, 1999:32-33).

Medical intelligence epidemiologically, in terms of military forces, is to collect, compile, and present information about all infectious diseases that may threaten the health of the troops to be sent to the duty area. It is to rate the effects of long-term health problems and infectious disease risks on the soldiers performing duty and to prepare reports about these ratings and evaluations. To profile endemic diseases and recommend measures to be taken for the support and protection of military units (Tümer, 2022: April 13th).

Medical intelligence helps assess the impact of trends and currents that may affect environmental health, environmental safety, and national policies. In the medical intelligence unit; There should be specialist personnel from departments such as public health, epidemiology, military health services, infectious diseases and clinical microbiology, microbiology, nuclear medicine, medical CBRN, medical biochemistry, environmental health, toxicology, psychiatry, and biomedical engineering. Entomology and zoology, health sciences such as veterinarians and pharmacists, sciences such as genetics, environment, forestry, agriculture, geology, meteorology, electronics, computer engineering, and Weapons of Mass Destruction (WMD) should be strengthened by working in coordination with the armed forces and civil defense institutions. Medical intelligence, like other types of intelligence, uses the process known as the "Intelligence Wheel", which shows the stages of transforming raw information into intelligence. This process ncludes determining and planning the intelligence needs, collecting the necessary information and news, classifying and analyzing the collected information and news, briefly processing, distributing the intelligence to the necessary institutions and people, and using it. Identifying and Directing Intelligence Needs: This is the first stage in which the medical intelligence agencies determine the news-gathering environments and direct the news-gathering activities in line with these requests and needs, against the intellectual demands of the state decision-makers on medical issues. News Gathering: The news gathering function, which is one of the most important stages in the medical intelligence formation process, is carried out by using "open" and "closed" sources. Books, radio, television, newspapers, scientific articles, and internet sites can be shown as open sources. Closed sources, on the other hand, consist of people who can gather news on a specific intelligence need, using technology as well as various news-gathering methods. The collected medical intelligence should be delivered to the requesting unit as soon as possible.

Processing (Evaluation) of News: At this stage, the collected medical information is classified, evaluated, interpreted, and analyzed. Dissemination and Use of Intelligence: Reports that have been analyzed and turned into intelligence

are delivered to the relevant persons and institutions in a timely and rapid manner. In addition to using this intelligence, relevant persons and institutions determine their new intelligence needs within the framework of new variables and priorities. As seen in the SARS in 2003 and the flu epidemics in 2009, infectious diseases cross international borders without difficulty (Bolin, 1989: 6-38/50). The Crimean-Congo Hemorrhagic Fever is the same in Turkey.

Strategically medical intelligence contributes to the formation of national and international policies of states based on the medical or biological scientific capabilities of foreign military and civil societies (Bolin, 1989: 20/50).

Medical intelligence conducts studies on medical, hygienic, and environmental conditions in some strategically important areas. These studies include an assessment of significant potential diseases, industrial accidents, and local medical personnel, medical facilities, training programs, and research institutes. Mobilizing military doctors in a country, purchasing more medical supplies than ever before, storing too many vaccines, serums, and antibiotics, increasing the capacity of blood banks and relocating them, drug stocks, and any intelligence in health policies are important in determining the intention of the target country. The fact that any state begins to vaccinate its citizens or soldiers against a special infectious agent is a sign that it has the biological capability or is trying to develop its biological warfare capability by planning an attack against another state (NATO, 1999: 32-33).

Their targets are human hearts! The devil's unthinkable infiltration attempt, however, the vulnerability displayed in an insulin pump last year (the year 2021) revealed that attacks can threaten the lives of patients. When it was revealed that attackers could give double doses of drugs to patients due to security vulnerabilities, the frightening extent of these neglects in the field of security caused controversy. It is a matter of curiosity whether pacemakers or medical devices produced with newer technologies are at risk. Experts argue that security measures should be increased regarding these devices where human life is at stake. A study conducted last year revealed that more than 80 percent of health institutions have encountered security incidents in information technologies, that is, devices connected to the Internet, in the last 18 months (Kocabaş, 2022: June 6th). Widespread healthcare monitoring provides rich contextual information to address the peculiarities of chronically ill patients. Continuous monitoring and early medical intervention not only improve the quality of life of the elderly and people with chronic diseases but also assist families and parents by providing high-quality healthcare to their young infants and paralyzed children. While the importance of

Wireless Body Area Networks (WBANs) is indisputable, the amount of data produced by these sensors is huge and includes computing, memory, communication power, massive storage infrastructure, energy-efficient performance for processing, real-time monitoring, and data analysis. This is a system that has not been fully secured and has some security vulnerabilities (Masood et al., 2018: 23).

Legislation; When the legislation is scanned, the law enacted for intelligence in Turkey is seen as the only one, and it was enacted as the National Intelligence (MIT) Law. According to the State Intelligence Services and National Intelligence Organization Law (Devlet İstihbarat Hizmetleri ve Millî İstihbarat Teşkilâtı Kanunu, Resmî Gazete, 1983); Article 4. subparagraph i; To search for information, documents, news, and data by using all kinds of technical intelligence and human intelligence procedures, tools, and systems on foreign intelligence, national defense, counter-terrorism, international crimes, and cyber security, to collect what is researched, to record, analyze, and evaluate what is collected and to transmit the generated intelligence to the necessary organizations. Article 4. Subparagraph J is to be ensured that the appropriate data and information are provided by following the technological developments, by researching modern intelligence procedures and methods to increase the quality and capacity, quality and effectiveness of the Intelligence. All ministries are given the task of collecting intelligence, reporting to MIT, and countering Intelligence. It imposes obligations on ministries in these matters. In addition, only four regulations on intelligence have been issued. The purpose of the "Regulation on the Public Disclosure of the Reports Prepared as a result of the Inspection of State Property of Public Administrations Regarding Defense, Security and Intelligence" published in the Official Gazette No: 28385 is aimed at the Ministry of National Defense, the Undersecretariat of the National Intelligence Organization, the Undersecretariat of Defense Industries, the Undersecretariat of Public Order and Security, the General Secretariat of the National Security Council, the Gendarmerie General Command, the Coast Guard Command and the General Directorate of Security (Savunma, Güvenlik ve İstihbaratla İlgili Kamu İdarelerinin Devlet Mallarının Denetimi Sonucu Düzenlenen Raporların Kamuya Açıklanmasına Dair Yönetmelik, Resmi Gazete, 2012).

The purpose of the "Turkish Armed Forces, National Intelligence Organization, General Directorate of Security, Gendarmerie General Command, and Coast Guard Command Movable Property Regulation," published in the Official Gazette No. 27652, regardless of the source and acquisition method, is the registration of movable properties in the hands of the relevant institutions, their removal from the records, their management and internal audit procedures and princi-

ples, and the determination of duties, powers, and responsibilities (Turkish Armed Forces, National Intelligence Organization, General Directorate of Security, Gendarmerie General Command and Coast Guard Command Movable Property Regulation, 2003). The aim of the "Revenue General Directorate of the Ministry of Finance, Tax Intelligence Specialist Duty, Authority, Work and Appointment Regulation," published in the Official Gazette No. 22873, is to ensure that the members of the profession are recruited, trained, and promoted in the profession, their duties and powers; The relations with the General Directorate of Revenues, regional directorates of revenues, tax intelligence directorates, and other relevant units, as well as working procedures and principles are regulated (Maliye Bakanlığı Gelirler Genel Müdürlüğü Vergi İstihbarat Uzmanı Görev, Yetki, İş ve Atama Yönetmeliği, Resmi Gazete, 1997). The purpose of the "Regulation on the Meeting, Working Principles and Procedures of the Smuggling Intelligence Coordination Board," published in the Official Gazette No. 19624 is to evaluate and combat all kinds of smuggling activities in Turkey and abroad and to assist in the determination of target tactics and procedures. It regulates the meeting, working, principles, and procedures of the Smuggling Intelligence Coordination Board in the Central Establishment of the Ministry of Interior to ensure coordination between institutions and organizations and to carry out services. Apart from these, other legislation related to intelligence could not be reached from open sources (Kaçakçılık İstihbarat Koordinasyon Kurulunun Toplantı, Çalışma Esas ve Usulleri Hakkında Yönetmelik, Resmî Gazete, 1987).

Legislation on espionage in various fields has been enacted in the USA. It has legislation in a wide range of areas, from espionage in the economic field to espionage and intelligence in the field of health. The European Union (EU) issued a new regulation, Regulation (EU) 2022/123 of the European Parliament and the Council, in January 2022 for medical products and medical devices (The European Parliament And Of The Council, 2022). It was also requested that these products be protected from copyright and espionage. In the USA, legal regulations on intelligence and espionage have been developed with the presidential order issued after 2001 and additional articles to the public health law. Since the regulations in some areas are confidential both in Turkey and the USA, they can not be accessed from open sources.

3. Material method

For this study, the "in-depth literature review" study of the "Situation Pattern" study, which is one of the qualitative research methods, will be used. Ethics

committee approval was not obtained as there was no study to obtain ethical committee approval. Qualitative academic studies are one of the best research methods used to conduct scientific studies on subjects that are necessary for the field of health but cannot be quantified with numerical data. According to Davey, this study, out of 6 studies, they are descriptive, called Illustrative Case Studies, and uses one or two case studies to give information about a situation (Davey, 1991: 2). According to Bogdan and Biklen (Bogdan and Biklen, 1998: 135), 8 types of case study documents are the main data source; As part of a case study with participant observation or interview, the term document is used as supplementary information to refer to materials such as photographs, videos, films, notes, letters, diaries, clinical case records, and memories of all kinds. Documents are the primary data source of document review work. When discussing this form of work under the heading of qualitative research, the degree to which a particular study fits the description depends on the information presented in the first chapters, how the research is conducted, and how flexible the definition of qualitative research is. The documentation meets the criteria for using definition-rich data. However, to what extent the researcher uses them, this naturalistic, inductive, and descriptive case study from the case design is the only case, in health intelligence that has been examined. In the first stage of the study, the problem was identified and the aim was determined. In the second stage, the research method was determined, and the data collection method and in which databases to search were decided.

At this stage, exclusion and inclusion criteria were also determined. Scans were made in the databases determined in the third stage, and sources are listed according to inclusion/exclusion criteria. In the fourth stage, it was decided which of the sources obtained in the systematic review would be used. Resources are classified in terms of content. In the fifth and last stage, the data were subjected to in-depth content analysis, and the study was reported. In the study, purpose-oriented data were collected to facilitate the analysis in the data collection process, and basic research words were used in order not to get lost among the data during the analysis process. The gap analysis was evaluated by reviewing the data, criticisms, and deficiencies. In this respect, the data has been tried to be enriched as much as possible. "How many documents should be looked at?" Although it is a legitimate question, the concern should not be about 'how many'; rather, given the purpose and design of the study, it should relate to the quality of the documents and the evidence they contain. Document analysis is more than simply arranging a series of extracts from printed material to convey whatever idea comes to the researcher's mind. Rather, it is the process of evaluating documents in an environment where empirical knowledge is produced and understanding is developed (Bowen, 2009: 27-29).

The data were separated according to their types and collected according to this structure. In the data collection process, how the data was collected is explained. When the data analysis process was started, a literature review/resource review was made again for the data whose deficiencies were felt while performing the data analysis. In the data analysis process, the need for data was determined according to the design for the development of the data model, and the analysis was continued by collecting data accordingly. Searches were made from places such as Google Scholar, YÖK thesis, Pubmed, NCBI, ProQuest, web of science, Dergipark, Turkish legislation site, Yandex, and Hacettepe library. These were chosen as the research universe. Research limitations, health intelligence is not well known, it is confused with public health intelligence in this field, and there are very limited resources in Turkish. In English, the words "intelligence" and espionage are confused. While searching, the word "intelligence" in English also meant intelligence and intelligence, and as a result, causing some confusion, many studies were excluded from the study.

Legislative review was conducted for Turkey. In Turkish, the words istihbarat, stratejik istihbarat, açık kaynak istihbaratı, espiyonaj, istihbarata karşı koyma, sağlıkta siber saldırılar, sağlık istihbaratı, sağlık espiyonajı, stratejik istihbarat, sağlık istihbarat mevzuatı, istihbarat kanunu, istihbarat yönetmeliği, sağlık istihbaratı yönetmeliği were searched. Searches were made with the words Intelligence, espionage, countering intelligence, Medical Intelligence, Health, Intelligence, Intelligence legislation, Health Intelligence legislation, cyber attack, open source intelligence, strategic intelligence in English.

Table 1. *Included and Excluded Total Resources Scanned by Languages*

Language	Included	Excluded	Total
Turkish	16	69	137
English	24	178	281
Total	40	247	418

In the literature review, a total of 418 resources required for the study were found. According to the literature review in Table 1, 137 documents were found. In the English literature search, 281 documents were found. It has been obtained from Turkish sources such as articles, books, reports, websites, and theses. The breakdown of these documents is as follows. From English sources, the weight is in the articles, the website, thesis, books, and reports have been examined. In Table 2, 229 references were included in the study according to the criteria of exclusion and inclusion of Turkish and English sources.

Table 2. *Data included in the research from the data obtained through the literature review*

Language	Included in the Research	Excluded from Research	Total
Turkish	13	21	57
English	11	140	172
Total	24	161	229

The exclusion criteria excluded from the study were those that appeared in another search of the same publication, other than human health, those about public health information sources, only surveillance systems, and only early warning systems. Inclusion criteria; First of all, general intelligence information, information describing health intelligence, public health information related to intelligence, surveillance and early warning systems related to intelligence, strategic intelligence, and all information related to humanity.

Table 3. *Distribution of sources included in the studies*

	Books	**Article**	**Report**	**Web sites**	**Thesis**	**Total**
Language						
Turkish	13	21	4	6	13	57
English	11	140	12	6	3	172
Total	24	161	16	12	16	229

As a result of the in-depth examination of the sources obtained in the studies in Table 3 and the evaluation made with data analysis, the sources used in the distribution of resources are presented in Table 4. Data analysis was performed according to Table 4.

Table 4. *Distribution of resources included in the studies*

	Books	**Article**	**Report**	**Web sites**	**Thesis**	**Total**
Language						
Turkish	5	12	2	4	6	29
English	3	42	8	2	2	57
Total	8	54	10	6	8	86

4. Findings

The legislation issued for intelligence in Turkey has been scanned. As far as can be determined from open sources, it has been observed that only one law, and four regulations other than the law, have been issued. It is estimated that there is enough covert legislation with the State Intelligence units themselves, and enough secret legislation that cannot be known with clear legal regulations obtained from open sources. There is a directive regarding health, and it is stated that health-related intelligence should be made in the duties and responsibilities section of this directive. This situation is similar around the world. Only in the USA, especially after the September 11, 2001 attacks, are legal data available from open sources on the need to conduct intelligence studies in the field of health and contribute to the security of the country, with the Public Health Law, the Patriot Act, and the Presidential Order. All data obtained in this study were obtained from open sources. Health intelligence studies in Turkey and some other countries in the world have been extensively researched, and the data obtained has been examined in depth. The analyzed data were filed one by one. Descriptive analysis was carried out under certain systematics.

There are different perspectives on the definition of validity in qualitative research and the terms used in making this definition. Among these perspectives, in qualitative research, examining validity in terms of its quantitative equivalents, using terms suitable for the qualitative paradigm unlike the quantitative approach, downplaying validity, combining or synthesizing different perspectives, or visualizing it metaphorically can be counted (Creswell, 2007: 128). In this study, construct validity was created in the literature review, and the chain of evidence was created during the data collection phase. Internal validity was done during data analysis with construct definition. External validity was obtained by the design of the research in a single case study. Thanks to the development of databases, reliability has been ensured in the data collection phase.

5. Discussion

According to Özdağ, armies covered longer distances faster with the use of telegraphs, telephones, railways, armored vehicles, and weapons with great destructive power as of the 19th century. As a result of the rapid development of science, technology, social structure, and the understanding of threats in different dimensions, every moment of life has been the subject of intelligence. To resist such developments, intelligence began to be collected not only during the war but also before the war (Özdağ, 2011: 55).

Is health intelligence just the process of getting the news of biological attacks in advance? Does it mean the seizure of existing personal data? Personal data is meant only for data on how large a population is or for data on very important persons. Health intelligence is a key hurdle and main driver for initiatives like precision medicine. Personalized healthcare is a disease management approach that takes into account individual variability in the environment, lifestyle, and genes of each person. The National Institutes of Health (NIH) aims to pioneer a new model of patient-supported research to develop healthcare solutions, people who make the best decisions to prevent or treat a disease, predict outbreaks, and improve quality of life. Clinicians and public health practitioners can use technology to deliver the best evidence-based tailored treatments or interventions to sustain high-quality patient care and build healthier communities (Shaban et al., 2018: 53). When using artificial intelligence, we can determine the health of society and critical personnel or get information about the management by going from general to specific. Preventive medicine tries to define the issues that constitute medical threats, evaluates the risks that will occur when exposed to these threats, and works on measures to prevent aggravation. Medical intelligence, it identifies medical threats, and also helps states determine their policies and interests, and directly ensures national security, by assessing medical trends, organizations, and related events that directly or indirectly affect foreign societies that may come to our attention and influence our policies (Kaufman, 2001: iii).

65% of the US soldiers who operated on Togatabu Island in 1942 contracted a disease called "filariasis" carried by mosquitoes and were weakened by the disease, not by enemy attacks (U.S. Army, 2000: 1-3). At this time of increasing concern about deadly and costly infectious disease threats posed by natural disasters or bioterrorism attacks, preparedness, early detection, and timely response to emerging infectious diseases and epidemics are an important public health priority and an emerging field of multidisciplinary research. Public health surveillance has been practiced for decades and remains an indispensable approach for detecting emerging disease outbreaks and pandemics. Early knowledge of a disease outbreak plays an important role in improving response effectiveness. Computer-based surveillance systems enable rapid public health response by real-time or near-real-time detection of serious diseases and potential bioterrorism agent exposures. The rationale behind syndromic surveillance lies in the fact that certain diseases of interest, such as nurse calls, medication intakes, and absenteeism from school or work, can be monitored with timely syndromic presentations. The important thing is to establish a strong system. In this case, if the usage deficiencies are reinforced with other systems and supported by surveillance, leaks will be

prevented. Thus, part of a strong public health intelligence system will be established. Data privacy, security, and access control are among the core research and development topics. An access control mechanism based on data privacy and user access privilege is implemented. While syndromic surveillance has been widely accepted as a response to disease outbreaks and bioterrorism attacks, many research challenges remain. The potential benefit of syndromic surveillance regarding timely detection is that timely detection cannot be achieved if hundreds or thousands of people are infected at the same time. In extreme cases, modern biological weapons can easily lead to mass infections through the air or water-borne agents. In particular, how to deal with incomplete data records, how to perform privacy-conscious data mining, and how to exploit multiple data streams are all interesting research questions. In addition, a comprehensive evaluation of epidemic detection algorithms using synthetic or real data is critically required. Outbreak detection algorithms need to be improved in terms of sensitivity, specificity, and timeliness. In addition, a comprehensive evaluation of epidemic detection algorithms using artificial or real data is critically necessary (Yan, Chen, Zeng, 2008: 33-37).

Mossad attempts to analyze Hafez Assad's urine, to determine which drugs he took, to make inferences from the drugs he used, to try to predict how much life he has left and what he will do about the Golan Heights in the rest of his life (Özdağ, 2011: 123; Hurriyet, 2000: January 10th). It is known that the treatment of Iranian Shah Mohammad Reza Pahlavi, who had cancer since 1973, by French doctors, hiding his illness and not being able to learn that he had cancer by the USA, caused one of the most important foreign policy crises of the USA (Mcdermott, 2007: 501).

Leaving antibiotic-resistant bacteria in intensive care units is a hybrid attack. It can cause the death of critically ill patients with microorganisms with high antibiotic/antiviral resistance. Physicians will find it difficult to save patients, and as a result, social fear will increase. Some of the most important sources to refer to in open-source intelligence in health are scientific publications. Intelligence services in many countries have always used the information obtained by working with academics, making them intelligence officers, questioning business travelers and tourists, and examining domestic and foreign press and publications. Publicly available books, periodicals, advertisements, catalogs, and brochures are analyzed for open-source intelligence. In addition to these, radio, television broadcasts, and the internet are also shown as data sources (Friedman, 2002: 18).

Beyond disseminating the ideas and discourse of emergency preparedness, this reflects an emergent effort to cultivate electronic communication about health

events. As such, it illustrates a key and novel dimension of contemporary public health intelligence (PHI). A central aim of contemporary PHI is the detection of health events as (or even before) they unfold. In the early 20th century, 'epidemiological intelligence' was gathered by health organizations – e.g. regional bodies operating under the auspices of the League of Nations – through a variety of media, including 'wireless broadcast; telegraph; and weekly tabled publications' (Bashford 2006: 73). Today, digitized media have inspired technoscientific imaginaries that render these older media arcane; whereas the intelligence systems of the early 20th century aimed at being 'current' (Lothian, 1924), those of the early 21st century are directed ahead of the current. Aspiring towards this pre-emptive ideal means extending PHI beyond traditional activities, such as epidemiological surveillance and the systematic tabulation of case reports, into non-traditional activities such as blogging and data-mining in electronically mediated social networks. To the extent they get people communicating about the health events they perceive, these non-traditional activities constitute a potential treasure trove of health-relevant information. Accordingly, Kahn (2011) is engaged not just in cultivating public communication about the zombie apocalypse and other health events, but also in exhorting public health organizations to prepare to mine this treasure trove for PHI. Capitalizing on the 'wisdom of crowds'– leveraging the public's communication about its embodied interactions with health-altering exposures – is thought to require significant transformations in public health (cited in French, Myhalovskiy, 2013: 175).

The decentring of traditional epidemiological concerns is matched by a parallel shift in the forms of knowledge now being privileged in PHI. At the global level, this shift can be conceptualized in terms of the relationship between official and unofficial sources of knowledge. Whilst sociologists have long been concerned to understand the contested place of knowledge – especially lay knowledge – in the production of medical truths, little attention has been paid to the incorporation of unofficial forms of knowledge into PHI apparatuses. Could the use of disinformation, misinformation, and multiple data in health intelligence and counter-intelligence processes be perceived as an attack on the public's free choice or information, to combat them? The first area in the fight against disinformation is primarily concerned with where and how data will be collected. Related topics include data entry approaches, data sharing protocols, and transmission techniques (Weir, Mykhalovskiy, 2010: 153).

One consequence of this incorporation and formalization of unofficial knowledge has been the ballooning of initiatives experimenting with different kinds of 'infodemiological' techniques and technologies (Eysenbach, 2009: 6).

The second area introduces modeling, analysis, and data mining approaches to track data anomalies and discover whether the abnormal data state is due to a real change in disease occurrence. A critical step between data collection and abnormality detection, the syndrome classification process focuses on classifying raw, observational data into syndrome groups to provide evidence for detecting deviations in any monitored disease. The third area includes data visualization, user interface, and information dissemination functions. Public health officials, epidemiologists, emergency response and homeland security personnel, if necessary, gather information needed to access detailed information for further investigation, gain situational awareness, alert generation, response planning, and incident management; interacts with syndromic surveillance systems through these components to make decisions about dissemination.

Are there issues to be considered in health intelligence now that digitalized medical devices are under attack? Should drug, vaccine, antisera production, employees, and laboratory processes be added to intelligence data collection activities and counter-intelligence processes? The World Health Organization (WHO) may not be the first organization that comes to mind when the topic of cyber espionage comes up, but criminals and even nation-states have some compelling reasons to target it. Non-public insider information about therapeutic drugs or vaccines in development, and unfiltered information about the progress of the pandemic in various countries where WHO staff may be private can be valuable. Phishers and scammers often pretend to be WHO to solicit donations or try to redirect targets to malware sites; so much so that the organization has issued a public warning about attempts to compromise (Ikeda, 2020). The first English-language report on an atypical outbreak in China was published by a pharmaceutical company in the finance section of a newspaper reporting increased sales of antiviral drugs (Dion, AbdelMalik, Mawudeku, 2015: 210).

To carry out intelligence studies on national security in the field of health, it is necessary to be aware of it and work on it. No study has been conducted on health intelligence from the health community in Turkey. Awareness has not arisen apart from some newspaper reports and a few studies by some people outside the health sector (Tümer, 2022: April 13th; Ünlü, 2020: May 23rd; Seren, 2021: May 13th; Özcan, 2020: Apr 14th; Babacan, 2021: Jan 10th). In the field of public health, although some publications have been made only within the scope of medical precautions and protection measures regarding the source of the epidemic, scientific and academic studies have not been conducted in the field of Health Intelligence, which is the subject of this study.

According to the BBC investigation, Russia launched a massive media campaign in Georgia to slander the US-funded Public Health Research Center Richard Lugar (Lugar Center, Public Health laboratories research center, Tbilisi, Georgia) (Lentzos, 2018: Nov 19th). As a result of a public opinion poll, the authors and colleagues concluded in a recent study paper that a large proportion of respondents in Georgia believed that the Lugar Center was used or unstable for US-led research on biological weapons (Buckley, Clem, Herron, 2020: Apr 16th). Even though the Lugar Center is the country's primary testing facility for COVID-19 and is notable for being presented as the source of the virus by the Russian government's disinformation effort presented by Georgian media, the COVID-19 pandemic is an information epidemic when large amounts of accurate and misleading information spread rapidly over the internet (Cockerel, 2020: Mar 18th; Glasdam, Stjernswärd, 2020: 4).

COVID-19 has exposed serious problems and gaps in government defense systems, government capabilities, and information policy. More importantly, it revealed that the perception of national security should be revised. It has been revealed that a pandemic that is difficult to combat with conventional weapons can pose a greater threat to humanity. Analyses have shown that the development of an effective national response to COVID-19 must begin with the implementation of a coordinated pandemic information management plan. The phenomenon of disinformation plays an important role in managing the pandemic crisis.

Global exercises simulating the emergence of a pathogen with pandemic potential, to address the challenges faced by many countries in coordinating a multisectoral response to public health threats, between human, veterinary, agricultural, local, national, and international authorities. It will be necessary to update policies and ways for efficient information exchange. This approach will lead to higher resilience in countries during a pandemic and better logistical readiness for the distribution of food, drugs, protective equipment, diagnostic kits, vaccines, and therapeutics while preserving social structure and peace (Valdivia, Richt, 2020: 481). The challenges of using Electronic Data (ED) data for biosurveillance include relying on free text data (often the main complaint). Issues with textual data are handled in a variety of ways, including pre-processing the data to clean up text entries and handle negation. Using ED data for public health surveillance can significantly increase the speed of detecting, monitoring, and researching public health events (Waller et al., 2011: 53). The news that the measles disease started to spread among the Syrian refugees who fled the events in Syria and took shelter in Turkey was reported in the media (Milliyet, 2013: Sept.24th).

6. Conclusion

As a result, this study revealed that health intelligence studies in Turkey are insufficient, and the academic world of the country needs to do more work. Especially, Big-Data studies on health espionage/intelligence will make a serious contribution both in scientific terms and in the protection of the health of the people of the country. Health intelligence is not only the duty of intelligence agencies but also falls within the duty of all health professionals, health academics, and health bureaucrats. In the field of health intelligence, studies should be carried out primarily by university public health departments and the Ministry of Health. It will be developed systematically with academic studies to be done, and it will help with the issues of what is allowed in the field of health intelligence and what is not, and who should be more careful.

All over the world, academics, journalists, bureaucrats, and health facility managers collect health intelligence information. These intelligence studies are carried out not only for spying but also for system development. Regardless of the purpose, health intelligence studies should be carried out systematically, studied, and methods should be developed. This field will also open a new academic field for the academic community in the world, especially in Turkey. Criminal investigations of bioterrorism attacks, tracking of disease outbreaks, and medical intelligence operations require mission-oriented and mission-specific bioinformatics applications. A strategy must be formulated that embraces the needs of the forensic and medical intelligence communities to use genomic information in data exchange, and analysis systems. The National Security Agency (NSA), the Central Intelligence Agency (CIA), and the Federal Bureau of Investigation (FBI) require ensuring the secure transmission of classified and unclassified data while coordinating, managing, and improving existing biological defense operations within the National Biological Surveillance (US Army, 2008: 6).

The COVİD-19 pandemic has seriously disabled the existing conspiracy theories in this field and has shown that evidence-based studies are emphasized. Masks stolen at the Kenya airport, test kits that are not allowed to be sold, test kits with low reliability, insufficient intensive care respirators, and controlled sales of PCR devices to certain countries have revealed the importance of intelligence in many areas. Public health requires greater transparency in intelligence systems. A culture of innovation and change is demanded, as is a highly coherent policy and process development, evaluation, implementation, and dissemination strategy in Turkey's public health system. Public health intelligence cannot be treated the same way as national/military intelligence – it must be treated on a highly

protected, highly secure, and need-to-know basis. What will be hidden, and what will not be hidden? The presence of the disease should be explained, and how it was detected can be explained. But for those who do, what kind of capacity and abilities can be hidden? Because the disease should not hit us. Or other countries should be prevented from hiding the disease. To do this, public health experts must make academic publications on health intelligence and public health intelligence. The study revealed that there are serious deficiencies in this area.

Health Intelligence, cyber security, medical intelligence, counterintelligence, strategic intelligence, open source intelligence, CBRN threats, early warning systems, and surveillance systems have been examined with descriptive data analysis. Although health intelligence is the broader definition, the term medical intelligence is used more. Public Health Intelligence primarily aims to obtain the information required for the protection of public health and to help ensure that protection and control measures are taken quickly for society. Early warning and response systems need to be strengthened and integrated with other institutions. To take countermeasures against intelligence in health intelligence, there is a need to increase awareness about the phenomenon of health intelligence. There is a need to strictly implement the principle of "must-know, need-to-know" in intelligence, and intensify studies on health intelligence and countering intelligence in health among health professionals, especially public health experts. There are health intelligence studies conducted by researchers outside the health sector in Turkey.

On the subject of Health Intelligence, those working in the public health sector and those working at the academic level should work with more publications and inform the health sector and the public. "Being aware" is the most important success process in health intelligence and intelligence opposition processes. These processes can be improved with further studies. The health intelligence work of a few people is an expression of the inadequacy in this area, similar to the way blind people describe it by touching an elephant. These studies have revealed that there is a need for serious studies in the field of health, especially in public health, and that coordination and coordination are essential in the intelligence institutions and health sector. Final note: Although this publication was sent to the journals publishing in the field of public health in Turkey, "no medical journal" was interested in the content of this article. This situation revealed that serious awareness studies should be carried out for the academic world in Turkey.

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