International Journal of Social Science and Human Research

ISSN (print): 2644-0679, ISSN (online): 2644-0695

Volume 08 Issue 11 November 2025

DOI: 10.47191/ijsshr/v8-i11-99, Impact factor- 8.007

Page No: 9133-9138

Bashar Al Assad's Silence Weapon: An Analysis of Biological Warfare Strategy in the Syrian Civil War

Nanda Diyanusi Zafira Pado
University of Indonesia

ABSTRACT: The success of the Arab Spring in Tunisia and Egypt has fueled anti-government movements within Syrian civilian groups and encouraged the formation of rebel groups aimed at ending the Al-Assad regime. The escalating war has shaped perceptions regarding the war strategy used by the Al-Assad regime in dealing with the rebellion. In 2018, Annie Sparrow, Associate Professor at the Icahn School of Medicine, Mount Sinai, wrote an article regarding allegations of Al-Assad's use of biological weapons during the Syrian civil war. Despite these allegations of the use of biological weapons, there has been no official statement or policy issued by international organizations in response to Al-Assad's war strategy during the Syrian civil war. Therefore, this study will address the question of "why can Bashar Al Assad's biological strategy be categorized as biological warfare?" To determine whether Al-Assad's strategy can be categorized as biological warfare, this study will use the concept of biological warfare by Mark Wheelis, Lajos Rózsa, and Malcolm Dando. This study found that the use of biological weapons in the Al-Assad regime's war strategy has fulfilled the three main factors shaping the perception of allegations of the use of biological weapons in the Syrian civil war.

KEYWORDS: Syria, Civil war, Biological Warfare, Weapon

I. INTRODUCTION

After the end of Hafez al-Assad's rule, Bashar al-Assad began his government by continuing policies that manipulated religious hatred and sought to maintain the loyalty of the Alawite group. Using religious manipulation, Bashar al-Assad cultivated loyalists by forming extremist religious groups that upheld his beliefs. In the early days of his leadership, Bashar al-Assad became a young dictator who manipulated not only religious groups but also other heads of state, accusing the warring parties in Syria of being Islamic fundamentalists (Szmagier, 2016, p. 63). With a one-party system that monopolized politics and was supported by the Emergency Law that suppressed opposition forces, Bashar al-Assad was able to assume the position of Syrian leader. However, in 2011, Bashar al-Assad faced challenges caused by the Syrian people's dissatisfaction with the Syrian government (Szmagier, 2016, p. 64). Demonstrations that would become the Syrian anti-government movement began in March 2011. This movement was heavily influenced by the success of the Arab Spring in Tunisia and Egypt (Ford, 2019, p. 3).

The first demonstrations that marked the beginning of the armed conflict between the government and civilian groups involved two opposition groups, namely the Syrian National Council (SNC), which is a political opposition group, and the Free Syrian Army (FSA), which is an armed militant opposition group (Congressional Research Service, 2023). The escalation of the conflict from the growing anti-government movement has brought Syria to the scale of a complex and deadly civil war; this conflict has even spread to slum areas outside Damascus. So that in the first year of this war, rebel groups have succeeded in occupying several urban areas in Syria. The Syrian government, under the leadership of Bashar al-Assad, responded to the rebel group's success with attacks involving the use of tanks, artillery, and aircraft. By the end of the first year of the Syrian Civil War, the war had escalated to a sectarian level involving more Sunni extremists fighting alongside more moderate opposition groups (Ford, 2019, p. 3).

The Syrian civil war intensified in 2012 as government forces increased military action targeting opposition groups. Artillery and aircraft attacks escalated, and extremist group assaults resulted in high-profile casualties among Bashar al-Assad's officials (Congressional Research Service, 2023). According to the Congressional Research Service (2023), the conflict since 2012 has drawn intervention from a variety of external actors, such as the United States, Iran, Russia, Turkey, UN organizations, and extremist groups like ISIS and Al-Qaeda. The report highlights the Assad regime's continued reliance on overwhelming military force to reclaim territory seized by rebels (Congressional Research Service, 2023).

Annie Sparrow, a physician with extensive war zone experience, described in 2018 the alleged development of biological warfare tactics by the Syrian government. In her article, "Bashar al-Assad Is Waging Biological War—By Neglect," Sparrow reported the

creation of conditions that hinder medical work and promote disease spread across Syrian conflict zones (Sparrow, 2018). She characterized these tactics as covert and long-acting, with possible deliberate use of biological pathogens targeting medical workers to create suffering in opposition-controlled areas (Sparrow, 2018).

Although through this article Sparrow attempts to convey accusations related to his suspicions regarding the use of biological strategies by Bashar al-Assad during the civil war in Syria, there has been no international discourse or international regime decision that legitimizes the use of biological strategies (biological warfare) by Assad. This research was written to understand how Bashar al-Assad's strategy can be associated with biological warfare. Based on this explanation, the research question that arises is: why can Bashar al-Assad's biological strategy be categorized as biological warfare?

II. ANALYTICAL FRAMEWORK

In international security studies, biological weapons are categorized as instruments of warfare with unique characteristics. These characteristics have important implications for their use in warfare and for international security. The uniqueness of biological weapons stems from their means of attack, which uses disease-causing microorganisms —known as pathogens— such as bacteria, viruses, and fungi. Biological weapons exploit the characteristics of pathogens that require a host for their reproduction. In the context of biological weapons, weapon users use humans or animals as pathogen hosts to facilitate the spread of disease. Because the weapon's working system exploits the pathogen's reproductive process and infection during the incubation period, the use of biological weapons requires a much longer time to cause destruction and produces slower effects than the use of chemical weapons (Koblentz, G.D., 2009).

Mark Wheelis, Lajos Rózsa, and Malcolm Dando in their book entitled Deadly Cultures: Biological Weapons Since 1945, define biological warfare as the use of biological agents such as bacteria, viruses, fungi or toxins in a military context, terrorism or sabotage with the aim of injuring, incapacitating or killing humans, animals or plants (Wheelis, Lajos, & Dando, 2006, pp. 3-4). Although perspectives on biological weapons are always changing, for more than 60 years, biological agents have been used to cause mass casualties and large economic losses (Wheelis, Lajos, & Dando, 2006, pp. 1-2). In its development, understanding of biological warfare began in the 19th century after the discovery of the use of anthrax and glanders bacteria to attack enemy transport animals during World War I. This phenomenon then created fear among countries worldwide—especially Canada, Hungary, Japan, France, Germany, Italy, the Soviet Union, the United Kingdom, and the United States—who began developing the use of biological agents as weapons in a military context as a means of deterrence or retaliation (Wheelis, Lajos, & Dando, 2006, p. 3). During this era, biological weapons were developed as unconventional weapons applied through simple methods such as releasing rats or fleas infected with plague bacteria or mixing animal feed and water sources with anthrax bacteria (Wheelis, Lajos, & Dando, 2006).

After World War II, the use of biological weapons in the military developed strategically, with biological weapons being used in both offensive and defensive military strategies—as a defense strategy or as an offensive weapon—(Wheelis, Lajos, & Dando, 2006, p. 5). In this era, the spectrum of biological weapons agents has become broader. Previously, the spectrum of biological weapons only included infectious agents—viruses, bacteria, and fungi—and protein toxins. However, after World War II, the spectrum expanded to include natural toxins, bioregulators, hormones, and synthetic chemical analogs that can paralyze or control human behavior (Wheelis, Lajos, & Dando, 2006, p. 6).

There are three main factors that can contribute to the formation of perceptions regarding allegations of biological weapons development or use by a country. These three categories are: 1.) History of a Biological Weapons Program or Covert Action. In addition to a history of development, the accused country is also perceived as possessing the technical capability and resources to develop biological weapons and methods. Furthermore, a secret track record, such as protection against perpetrators of biological crimes in the past, can also influence perceptions and accusations against the country. This context is often linked to the historical track record of the United States or the Soviet Union; 2.) Geopolitical Tensions. Conflicts cause political tension in the country. Perceptions of security are usually supported by sabotage campaigns or economic embargoes; 3.) Epidemiological Evidence. Evidence can be direct or ambiguous, which in this context can be categorized as unusual epidemiological features, such as the occurrence of suspicious disease outbreaks or the spread at unusual times. Evidence can also include unverified individual reports or scientific reports originating from independent investigations (Wheelis & Furmanski, Allegations of Biological Weapons Use, 2006).

Based on this explanation, biological warfare is defined as, it is understood that a conflict or war can be categorized as biological warfare if the strategy used involves the use of natural biological agents—such as bacteria, viruses, fungi or toxins—or synthetic biological agents—bioregulators, hormones and synthetic chemical analogs—as weapons that can be used for offensive or defensive purposes. In this context, biological weapons are not only interpreted in the category of conventional weapons, but can also be non-conventional weapons. In the traditional perspective, biological weapons are associated with simpler methods that utilize biological agents, while in modern developments, biological weapons are more associated with weapons of mass destruction or more sophisticated conventional weapons systems. In some circumstances, even the development of biological agents in large quantities in laboratories can foster perceptions of biological weapons.

Thus, the main element of biological warfare is a war strategy that utilizes biological agents that are destructive and can cause unnecessary suffering. Therefore, biological warfare is not limited to advanced technology; it also includes simple methods that fulfill the basic principles of biological warfare. Meanwhile, to form a perception related to the accusation of the use of biological weapons in strategy can be supported by four factors: 1.) The accused country has a history of biological weapons programs or covert actions related to the development and use of biological weapons; 2.) There is geopolitical/political tension within the country, and 3.) There is epidemiological supporting evidence.

III. RESEARCH METHOD

This study employed qualitative methods with non-numerical data collection techniques (Lamont, 2015). The purpose of this method was to analyze how the strategies employed by the Bashar al-Assad regime shaped perceptions regarding the use of biological weapons during the Syrian civil war. Therefore, this study is a qualitative, causal process tracing (CPT) study. The CPT approach aims to obtain in-depth research answers regarding the formation of perceptions regarding the use of biological weapons by the Bashar al-Assad regime. This research is descriptive, fulfilling important functions such as providing a more detailed and accurate picture and mechanism (Neuman, 2014).

The causal process tracing approach is based on configurational logic, which applies three assumptions: 1.) Social phenomena originate from specific causal factors; 2.) Multiple scenarios can produce certain social phenomena; and 3.) The impact of specific causal factors can vary across contexts and combinations. Thus, causal assumptions can be constructed by analyzing cause-and-effect relationships within a specific spatial and temporal context (Blatter & Haverland, 2014). This approach helps the author construct a comprehensive narrative and reflect on the overall process of phenomenon formation, which, in this context, is the identification of perceptions regarding the biological warfare strategy of the Bashar al-Assad regime. In the analysis, secondary data are used. The secondary data used come from literature relevant to the war strategy used by Bashar al-Assad in the Syrian civil war, as well as to microorganisms and health problems that emerged in several regions of Syria during the conflict.

The data were processed by classifying indicators that drive the formation of biological warfare perceptions in accordance with the biological warfare concept of Mark Wheelis, Lajos Rózsa, and Malcolm Dando. The classification was carried out to analyze whether Annie Sparrow's accusations regarding the use of biological weapons by the Bashar al-Assad regime are perceptions that are based and can be proven theoretically. Identification related to the perception of the use of biological weapons by the Bashar al-Assad regime can be seen by classifying the data into three factors that drive the formation of perceptions of the use of biological warfare that have been previously explained by Mark Wheelis, Lajos Rózsa, and Malcolm Dando. By classifying the data into these three factors that form perceptions, the study can find the reasons why the strategy used by the Bashar al-Assad regime during the Syrian civil war can be categorized as biological warfare.

IV. DISCUSSION SECTION

A. *History of Syria's Biological Weapons Program*

International suspicions regarding Syria's potential acquisition and use of weapons of mass destruction emerged in 1973, initially focusing on chemical rather than biological weapons. Despite persistent allegations and reports—such as the receipt of chemical artillery shells from Egypt in 1973 and subsequent analyses by international sources—the Syrian government never acknowledged possessing chemical weapon agents for offensive military purposes (Diab, 1997). Later reports, including those by the US Assistant Secretary of State for Intelligence and Research and the Jaffee Center for Strategic Studies in Israel, further described Syria's chemical weapons capabilities as defensive tools (Diab, 1997).

International attention to Syria's suspected development of biological weapons increased in 1990, when a report from United States Secretary of Defense Dick Cheney identified Syria as among several countries with possible biological warfare programs (Carus, 1991). However, according to a report by the Jaffee Center, no evidence could confirm the use of biological agents in Syria as of mid-1994; available reports addressed only limited research on anthrax bacteria (Gazit & Eyton, 1995). During this period, international efforts to substantiate such allegations faced substantial challenges, though some believed Syria's motivation was deterrence against Israeli attacks (Diab, 1997).

The difficulty of verifying the international ecosystem regarding the Syrian government's use of biological weapons is driven by the silent and almost impossible-to-detect nature of its strategy (Sparrow, 2018). In 2014, when the Syrian government was in the spotlight for its possession of large quantities of chemical weapons, which supported the Syrian civil war, another death occurred regarding the development of biological weapons disguised through activities at the Damascus-based Scientific Studies and Research Centre (SSRC) laboratory. Several analysts from Jane's Intelligence Service identified the SSRC as a laboratory affiliated with the Syrian military and suspected of having links to advanced research and development of nuclear, biological, chemical, and missile technology (Bellamy, 2014, p. 2). The SSRC is assumed to be a dual-purpose laboratory with facilities capable of developing biological weapons. Suspicions about Syria's ability to develop biological weapons are further strengthened by the fact that this laboratory enjoys tight protection from elite Syrian forces. Furthermore, allegations regarding Syria's ability to develop biological weapons are reinforced by Syria's possession of a bunker with refrigerated storage facilities (Bellamy, 2014, p. 3).

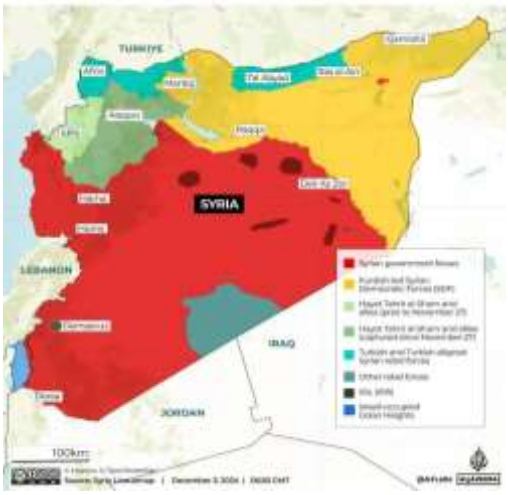
The difficulty of proving the use of biological agents in Assad's war strategy is also due to the tactics used being obscured by the chaotic conditions in Syria due to the ongoing civil war. The Assad government deliberately creates a dirty environment that can accelerate the spread of disease, especially in areas controlled by rebel groups (Sparrow, 2018). Rather than using conventional biological weapons, the Assad government tends to utilize traditional methods that are slow but complex and have a wide impact. The Syrian government military deliberately bombs hospitals, primary health clinics, laboratories, and blood banks. The Syrian government also deliberately destroys clean water sources that can be used for sanitation, power plants that provide energy for health centers, and stops the disposal and treatment of waste that then becomes a vector for infectious diseases through animals such as rats or sand flies. The biological strategy used by the Syrian government also includes hunting, torturing, executing, and criminalizing doctors, nurses, health volunteers, and all health workers who oppose the Bashar al-Assad regime (Sparrow, 2018).

B. *Syrian Geopolitical Tensions*

In this aspect, the geopolitical tensions that occurred in Syria were caused by the outbreak of civil war between the Bashar al-Assad regime and the regime's opposition groups in 2011. The government's repressive response in facing the opposition not only escalated the conflict but also encouraged the formation of two political opposition groups, namely the Syrian National Council (SNC) and the military opposition group, namely the Free Syrian Army (FSA), both of which aimed to end the Assad regime in the Syrian government (Blanchard, 2023). Political tensions were further exacerbated by the emergence of extremist rebel groups that attempted to stage a coup and also occupied several areas in Syria. The increasing number of rebel groups not only caused the deaths of a number of Assad government officials but also aggression in rural areas and several important Syrian cities such as Raqqah, Aleppo, and Damascus (Blanchard, 2023).

Political tensions in Syria are exacerbated by the increasing complexity of the war resulting from the presence of external actors who are allies of the Syrian government (Lebanese Hezbollah, Iran, and Russia) and rebel groups (the United States, Turkey, European Gulf states, and several Arab states) (Blanchard, 2023). The Syrian government faces not only a domestic legitimacy crisis but also an international one. Throughout the Syrian civil war, at least four main groups have competed for control of Syrian territory:

1. Syrian Government Military Forces: The primary military force of the Syrian government, fighting alongside the National Defense Forces, a pro-government paramilitary group.
2. Syrian Democratic Forces: An anti-government militant group dominated by Kurdish groups and supported by the United States.
3. Hayat Tahrir al-Sham and its allies: The newest form of the al-Nusra Front, previously allied with Al Qaeda.
4. Syrian National Army: A rebel force allied with Turkish rebel forces (AJLabs, 2024)



Picture 4.1. Control of areas in Syria during the Syrian Civil War (AJLabs, 2024)

The map above shows the areas of aggression and the actors controlling them in Syria. The areas in red represent areas still under the control of the Bashar al-Assad regime (Syrian Government Forces). The Kurdish-led Syrian Democratic Forces (SDF) dominate the Syrian territory, surpassing other rebel groups, including taking control of Raqqah, one of Syria's most important cities. Another rebel group that has successfully occupied key Syrian cities is Hayat Tahrir al-Sham, which controls Aleppo, Syria's second-largest city, and Idlib.

The Syrian Civil War, which has become an anti-government movement, has created a political crisis that has weakened the legitimacy of Bashar al-Assad's power as head of State. The Syrian political crisis is exacerbated by the presence of militant rebel groups who have consistently carried out rebellions and attempts to impeach the Bashar al-Assad regime. The weakening legitimacy of the Bashar al-Assad regime's power is not only influenced by the complexity of the conflict due to the emergence of external

parties supporting Syrian rebel groups. The government's response, which tends to be repressive and aggressive, has also contributed to increased criticism and pressure from national and international groups.

C. *Epidemiological Evidence*

Based on a report from The Syrian International Coalition for Health (SICH), the basic health status in Syria over the past three decades according to the Syrian Ministry of Health has a life expectancy rate of 56 years to 73.1 years; infant mortality rate decreased from 132 per 1000 births to 17.9 per 1000 births; under-five mortality rate decreased from 164 to 21.4 per 1000 live births; and maternal mortality rate decreased from 482 per 100,000 live births to 52 (Republic, 2009). In the three decades before the conflict, Syria successfully underwent an epidemiological transition from infectious to non-infectious diseases, as evidenced by data showing that 77% of deaths in Syria were not caused by infectious diseases (Republic, 2009).

Following the civil war that challenged Syria's humanitarian and national security situation, increased attacks targeting medical infrastructure have led to a 20-year decline in the average life expectancy of Syrians (Cluster, 2021). According to Annie Sparrow, in implementing his biological strategy, rather than using easily detected anthrax or sarin pathogens, Bashar al-Assad chose to exploit the spread of common diseases and wound infections that are more difficult to detect by hindering medical work, namely by destroying public health programs and facilities (Sparrow, 2018). In addition, Assad also deliberately stopped the maintenance of water and sanitation treatment plants, arrested engineers and maintenance staff, and hunted down approximately 15,000 doctors and 800 other medical workers. This strategy was implemented in areas under rebel control, aimed at weakening and punishing the population (Sparrow, 2018).

In addition, Assad's military deliberately blocked polio vaccinations, measles, surgical supplies, hospital waste bags, sterile equipment, antibiotics, and other medicines from entering areas outside the Assad regime's control (Sparrow, 2018). Assad also withheld health supplies provided by the World Health Organization (WHO) and UNICEF, including pneumonia kits, emergency kits, orthopedic splints, diarrhea medication, sore throat medication, and medication for wound and kidney infections, which could be used for at least 25,000 people. In addition to bombing and blocking health facilities, Assad's military also shut down the waste processing sector, which is a vector for infectious diseases through animals carrying viruses and bacteria, such as rats and sand flies (Sparrow, 2018).

This strategy has created ideal conditions for the spread and outbreak of infectious diseases, not only introducing new diseases but also reintroducing those that had been eradicated in the past (Alhaffar & Janos, 2021, p. 8). These conditions favor the epidemic transmission of infections such as tuberculosis, acute diarrhea, cholera, and hepatitis (Alhaffar & Janos, 2021, p. 8), especially in anti-Assad areas such as East Aleppo, Deir Azzur, and Idlib (Sparrow, 2018). The proliferation of sand flies in rebel neighborhoods has led to the spread of new diseases such as leishmaniasis, a flesh-eating parasitic disease that causes severe scarring on the face and arms. This disease has spread uncontrollably since 2011 from the Aleppo border to southern Damascus, with a deadly visceral form (Sparrow, 2018). In addition, wounds left infected facilitate the adaptation of Acinetobacter baumannii (Iraqibacter) and the development of superbugs that cause antibiotic resistance (Sparrow, 2018).

The Assad military's vaccine blockade has also led to a surge in polio and measles cases. This situation has forced Syria to re-emerge from a polio outbreak that had been successfully resolved in 1995, particularly in Deir Ezzor, one of the anti-Assad areas. An attack on the only vaccine storage facility destroyed 35,000 doses of polio vaccine and more than 10,000 doses of measles vaccine. The spread of polio is not only caused by the disruption of vaccination but also by dirty environmental conditions and malnutrition among children. This constitutes a health emergency, with the WHO predicting that 7,600 civilians will be infected with polio (Alhaffar & Janos, 2021). Furthermore, brucellosis, transmitted from infected livestock to humans, has emerged in anti-Assad areas (Sparrow, 2018).

V. CONCLUSIONS

The difficulty of confirming international allegations regarding Bashar al-Assad's development of a biological warfare strategy during the Syrian Civil War is due to the strategy's silent nature and its obscurity, obscured by the chaotic environment of war. However, referring to the factors supporting the perception of the accusation as explained by Mark Wheelis, Bashar al-Assad's war strategy has met the three main factors that shape the perception of biological weapons allegations. First, Syria's history of developing biological pathogens, as reported by Dick Cheney, the Jaffee Center, and Jane's Intelligence Service, regarding the activities of the Damascus-based SSRC. The report covers the SSRC's dual function and involvement with the Syrian government's military activities, including its possession of bunkers and cold storage for biological pathogens. Second, political tensions fueled by the escalating civil war between Bashar al-Assad's government and rebel groups in parts of Syria have worsened Syria's situation and geographic conditions, particularly in areas occupied by rebel groups. Third, there is epistemological evidence for the emergence of infectious diseases caused by bacteria and viruses originating in dirty environments and transmitted by animal vectors such as rats and sandflies. Furthermore, unusual epistemological evidence is also demonstrated by the return of the polio emergency, which had previously been successfully resolved in 1995 but returned following the escalation of conflict in several rebel areas of Syria. Therefore, based on this analysis, the answer to the research question of why Bashar al-Assad's biological strategy can be categorized

as biological warfare is that it met the three main factors shaping the perception of biological warfare, according to Mark Wheelis's concept.

ACKNOWLEDGMENT

This article was developed as part of my coursework in the Master's program during the *International Security Dynamics* theory class at the Department of International Relations, Universitas Indonesia. I want to express my deepest gratitude to Ali Wibisono, Ph.D., and Emir Chairullah, Ph.D., whose guidance, critical perspectives, and thought-provoking discussions significantly shaped the conceptual foundations of this paper. Their dedication to fostering analytical rigor and intellectual curiosity has been invaluable throughout the writing process. Finally, I extend my appreciation to everyone who played a role directly or indirectly in helping complete this article. Your support has been truly appreciated.

REFERENCES

1) AJLabs. (2024, 12 12). *Mapping who controls what in Syria*. Retrieved 05 28, 2025, from ALJAZEERA: https://www.aljazeera.com/news/2024/12/1/who-controls-what-in-syria-in-maps
2) Alhaffar, M. A., & Janos, S. (2021). Public health consequences after ten years of the Syrian crisis: a literature review. *Globalization and Health*, 1-11.
3) Bellamy, J. (2014). *Syria' Silent Weapons.* Gloria Center.
4) Blanchard, C. M. (2023). Syria Conflict Overview: 2011-2021. *Congressional Research Service*.
5) Carus, W. S. (1991). The Poor Man's Atomic Bomb?" Biological Weapons in the Middle East. *Policy Papers No. 23*, 24.
6) Cluster, H. (2021). *Syria Whole of Syria*. Retrieved 05 28, 2025, from Health Cluster WHO: https://healthcluster.who.int/countries-and-regions/syria-whole-of-syria
7) Congressional Research Service. (2023). *Syria Conflict Overview: 2011-2021.* Congressional Research Service.
8) Blatter , J., & Haverland, M. (2014). *"Case Studies and (Causal-) Process Tracing," dalam Isabelle Engeli & Christine Rothmayr Allison (eds.), Comparative Policy Studies: Conceptual and Methodological Challenges.* London: Palgrave Macmillan.
9) Diab, M. Z. (1997). Syria's Chemical and Biological Weapons: Assessing Capabilities and Motivations. *The Nonproliferation Review*, 104-111.
10) Ford, R. (2019). *THE SYRIAN CIVIL WAR: A NEW STAGE, BUT IS IT THE FINAL ONE?* Washington DC: The Middle East Institute.
11) Gazit, S., & Eyton, Z. (1995). *The Middle East Military Balance 1993-1994.* Routledge.
12) IHL. (n.d.). *IHL - Treaties & Commentaries*. Retrieved 05 27, 2025, from IHL: from United Nations: https://www.un.org/en/genocideprevention/documents/atrocity-crimes/Doc.37_conv%20biological%20weapons.pdf
13) Koblentz, Gregory D. (2009). Living Weapons: Biological Warfare and International Security. Cornell University Press. Halaman 14-15
14) Lamont, C. (2015). *Research Methods in International Relations.* SAGE Publications.
15) Neuman, W. (2014). *Social Research Methods: Qualitative and Quantitative Approaches (Seventh Edition).* Essex: Pearson Education Limited.
16) Republic, S. A. (2009). *Ministry of Health Statistics*. Retrieved 05 28, 2025, from Syrian Arab Republic: http://www.moh.gov.sy/Default.aspx?tabid=337.
17) Sparrow, A. (2018, October 24). *Bashar al-Assad is Waging Biological War-By Neglect*. Retrieved November 18, 2024, from Foreign Policy: https://foreignpolicy.com/2018/10/24/bashar-al-assad-is-waging-biological-war-by-neglect/
18) Szmagier, M. (2016). THE SYRIAN CIVIL WAR IN THE YEARS 2011-2013: AN ANALYSIS OF THE CONFLICT AND ITS IMPACT ON THE GLOBAL SECURITY SYSTEM. *STOSUNKI MIĘDZYNARODOWE*, 59-78.
19) UNODA. (n.d.). *Biological Weapons*. Retrieved November 18, 2024, from United Nations Office for Disarmament Affairs: https://disarmament.unoda.org/biological-weapons/
20) Wheelis, M., & Furmanski, M. (2006). Allegations of Biological Weapons Use. In M. Wheelis, *Deadly Cultures : Biological Weapons Since 1945* (pp. 252-283). Harvard University Press.
21) Wheelis, M., Lajos, R., & Dando, M. (2006). Historical Context and Overview. In M. Wheelis, *Deadly Cultures : Biological Weapons Since 1945* (pp. 3-4). Harvard University Press.