УДК 616.98:578.834.1-06+614:316+33+159.9+172(569.1) DOI: 10.20969/VSKM.2024.17(3).73-80

COVID-19 В СИРИИ: СОЦИАЛЬНО-ЭКОНОМИЧЕСКИЕ, МЕДИЦИНСКИЕ, ПСИХОЛОГИЧЕСКИЕ И ГУМАНИТАРНЫЕ АСПЕКТЫ

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Реферат. Введение. Проблемы, с которыми сталкивалось население в Сирийской Арабской Республики, изменялись в течение последних 12 лет. Продолжающаяся война и ее последствия для страны и населения сделали практически невозможным решение каких-либо новых задач. В таких сложных условиях пришедшая в страну пандемия COVID-19 усугубила ситуацию. **Цель.** Проанализировать информацию, объясняющую вспышку пандемии COVID-19 в Сирии, ее последствия, меры, принятые для сдерживания пандемии, и трудности, с которыми пришлось столкнуться. **Материалы и методы.** Статья посвящена обзору литературы по вопросу пандемии COVID-19 в Сирии. **Результаты и обсуждение.** В период с марта 2020 года по апрель 2022 года различные регионы Сирии сообщили о 197244 подтвержденных случаях по всей стране. Кроме того, сообщалось о 7182 случаях смерти от COVID-19. В контролируемых правительством районах Сирии число умерших было больше по сравнению с другими регионами страны (северо-запад и северо-восток Сирии). Заболеваемость COVID-19 в районах, контролируемых правительством, и на северо-востоке Сирии уменьшалась с февраля и с апреля 2022 года, соответственно. Ограниченные возможности тестирования и отсутствие прозрачности в предоставляемой информации затрудняют точную оценку ситуации с COVID-19. В густонаселенных районах и лагерях для временного содержания отмечается отсутствие профилактических и гигиенических мер. Исходя из наличия коек интенсивной терапии с аппаратами искусственной вентиляции легких, Сирия может адекватно пролечить около 6500 пациентов с COVID-19, что составляет менее четверти от общего числа нуждающихся. **Выводы.** Пандемия COVID-19 значительно усложнила ситуацию в системе здравоохранения Сирии за счет большого количества заболевших. Разрушение медицинских учреждений и массовый исход медицинских работников привели к перегрузке оставшегося медицинского персонала и психологическому стрессу. Ограниченный доступ к достоверной информации препятствовал точному отслеживанию и документированию распространения вируса. Плохие условия жизни в густонаселенных районах и лагерях для временного проживания привели к распространению пандемии. Несмотря на усилия гуманитарных организаций и международных партнеров, поддержка и поставки остаются недостаточными. Пандемия также оказала значительное психологическое воздействие на медицинских работников и усугубила экономический кризис и социальную несправедливость в регионе. Решение этих проблем требует действий, направленных на поддержание психического здоровья медицинских работников, сотрудничество и помощь со стороны международных партнеров, а также усилия по расширению вакцинации. Цели в области устойчивого развития могут способствовать мероприятиям по восстановлению Сирии и повышению ее устойчивости к будущим пандемиям.

Ключевые слова: COVID-19, Сирия, пандемия, кризис в области здравоохранения, вакцинация, гуманитарное воздействие, инфраструктура здравоохранения, цели в области устойчивого развития.

Для ссылки: Низами С.А., Протасов А.Д., Жестков А.В., Фалалеева Е.А. Covid-19 в Сирии: социально-экономические, медицинские, психологические и гуманитарные аспекты // Вестник современной клинической медицины. – 2024. – Т. 17, вып. 3. – С.73–80. **DOI:** 10.20969/VSKM.2024.17(3).73-80.

COVID-19 IN SYRIA: EXPLORING THE SOCIOECONOMIC, HEALTH, PSYCHOLOGICAL AND HUMANITARIAN IMPACTS AND MANIFESTATIONS

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Abstract. Introduction. The challenges that have been facing the Syrian population inside the Syrian Arab Republic varied during the last 12 years. The ongoing war and its general impacts on the country and population made it nearly impossible to face any new challenges. In such difficult environment, the COVID-19 pandemic arrived to the country adding salt to injury. **Aim.** This article aims to gather the reliable information that explains the breakout of COVID-19 pandemic in Syria, its consequences on the war-torn country, the measures taken to restrain the pandemic, and the difficulties that have been faced while constraining the pandemic. **Materials and Methods.** This study review focuses on the published articles and surveys that examine the COVID-19 pandemic in Syria. **Results and Discussion.** Between March 2020 and April 2022, different regions in Syria reported 197,244 confirmed cases all around the country. Also, 7,182 deaths from COVID-19 have been reported. The government-controlled areas have shown practically larger death numbers than other areas, followed by north-west and north-east Syria. COVID-19 cases in government-controlled areas and north-east Syria have been declining since April and February 2022, respectively. Limited testing and lack of transparency make it difficult to accurately track the virus's spread. High-density residential areas and internally displaced persons camps (IPD) are front on to burdensome threat due to the lack of basic prevention equipment and hygiene measures. While only 58 out of 111 public hospitals are fully functioning and many healthcare workers have fled, the pandemic spreads among people and cases show a high increase. Based on available ICU beds with ventilators, Syria can adequately treat around 6,500 COVID-19 cases which is not close to the quarter of the total number of actual affected cases. **Conclusions.** Making it much more tough for the Syrian fragile health care system, the COVID-19 pandemic has burdened the general situation with more pressure and affected cases. The destruction of health facilities and the exodus of healthcare providers have left the remaining medical staff overburdened and psychologically stressed. The limited access to reliable information has hindered accurate tracking and documentation of the virus's spread. The poor living situation in high-density residential areas and IDP camps have mainly led to the spread of the pandemic. Despite efforts by humanitarian organizations and international partners, support and supplies remain insufficient. The pandemic has also had a significant psychological impact on healthcare providers and exacerbated the economic crisis and social injustices in the region. Addressing these challenges requires targeted interventions to support healthcare providers' mental well-being, collaboration and aid from international partners, and efforts to improve vaccine acceptance rates. Sustainable development goals can provide potential solutions for Syria's recovery and resilience against future pandemics.

Keywords: COVID-19, Syria, pandemic, health crisis, vaccination, humanitarian impact, healthcare infrastructure, sustainable development goals.
For reference: Nezami SA, Protasov AD, Zhestkov AV, Falaleeva EA. Covid-19 in Syria: exploring the socioeconomic, health, psychological and humanitarian impacts and manifestations. The Bulletin of Contemporary Clinical Medicine. 2024; 17 (3): 73-80. **DOI:** 10.20969/VSKM.2024.17(3).73-80.

Introduction. After its rapid breakout in Chania in December 2019, the COVID-19 pandemic continuous its transmission in different parts of the world. Although the disease has gained significant traction in several regions around Syria, most notably Lebanon, Jordan, and Iran, its transmission in Syria was comparatively delayed. The first case of COVID-19 in Syria was in March 22, 2020, comparably later than other regions [1, 2], followed by the first recorded fatality approximately one week thereafter [3, 4].

Over the course of a 12-year duration, the protracted Syrian conflict has manifested profound and debilitating consequences upon Syrian society. The general health care infrastructure is destroyed, the war also resulted 6.6 million displaced individuals, living in camps and lack basic living needs. Furthermore, a massive economic crisis has faced the country. Undoubtedly, the healthcare sector has experienced a significant blow as a result of this protracted conflict. Approximately 50% of health facilities have been decimated, exacerbating the scarcity of accessible medical establishments. The ramifications extend beyond mere physical destruction, as up to 70% of healthcare providers have fled the nation in search of safety, substantially augmenting both the workload and psychological stress placed upon the remaining, overburdened medical staff. However, the already unfortunate circumstances were compounded by the arrival of the COVID-19 pandemic. The virus found its way into the country through various channels, causing widespread impact on Syrians residing within its borders, including the 6.6 million internally displaced individuals.

Despite the challenging circumstances and limited access to reliable information, the situation initially appeared relatively stable based on available data. This paradoxical scenario raised doubts among certain sources, questioning the accuracy of the information provided. However, the virus soon began to rapidly spread across different areas of the country, further exacerbating the already fragile healthcare system. Astonishingly, the mortality rates remained relatively low, despite the inadequacies in healthcare infrastructure. Moreover, there was a noticeable reluctance among civilians to accept vaccination against the virus.

Aim. This article aims to analyze and assess the published articles and studies pertaining to the manifestation of the COVID-19 pandemic in Syria. By examining information from various online sources, we will present the findings and consequences of the pandemic. Furthermore, we will propose practical measures and solutions that could help prevent future threats in Syria and other war-torn nations. Also, we suggest some achievable solutions to solve the currents fragile health situation and farther threatens of future pandemics.

Material and methods. Study review of the published articles and surveys of Covid-19 pandemic and its manifestations in Syria. Its impacts on different aspects of the region and the measures that led to spread of the virus. General review of the studies, surveys, numerical statistics and articles that covers the topic between the years 2020–2024. Different searching browsers as google scholar, main pages of local and international health organizations (World Health Organization, Syrian American Medical Society, Doctors Without Borders etc.) and published articles are used to obtain necessary information for this article. By systematically curating specialized articles and conducting extensive research, valuable information related to the topic is collected. Additionally, the article incorporates resources that align with international sustainable goals. Collecting the data and give a final conclusion that conveys different aspects of the topic.

Results and discussion. According to dependable sources, between 22 March 2020 and 23 April 2022, a total of 197,244 confirmed cases of COVID-19 were reported in Syria [5]. Over the same period, there were 7,182 reported deaths related to the disease. Among these deaths, 3,150 (43.86%) occurred in areas controlled by the government (GOS), 2,459 (34.24%) occurred in north-west Syria (NWS), and 1,573 (21.90%) occurred in north-east Syria (NES) [5]. Specifically, COVID-19 cases in areas controlled by the government (GOS) showed a decrease during April 2022. The 7-day moving average of new cases dropped to 4, compared with an average of 16 cases in March 2022 [5]. In north-east Syria (NES), there has been a decline in COVID-19 cases since February 2022. The peak occurred on 12 February, with a 7-day moving average of 63 cases, which decreased to 1 case by the end of April 2022 *(see fig.1)* [5-9].

Available data shows that the transmission of the virus in Syria is a result of different factors. One significant issue is the lack of transparency and information sharing by Syrian ministries, resulting in unconfirmed reported COVID-19 data. For illustration, we found difference

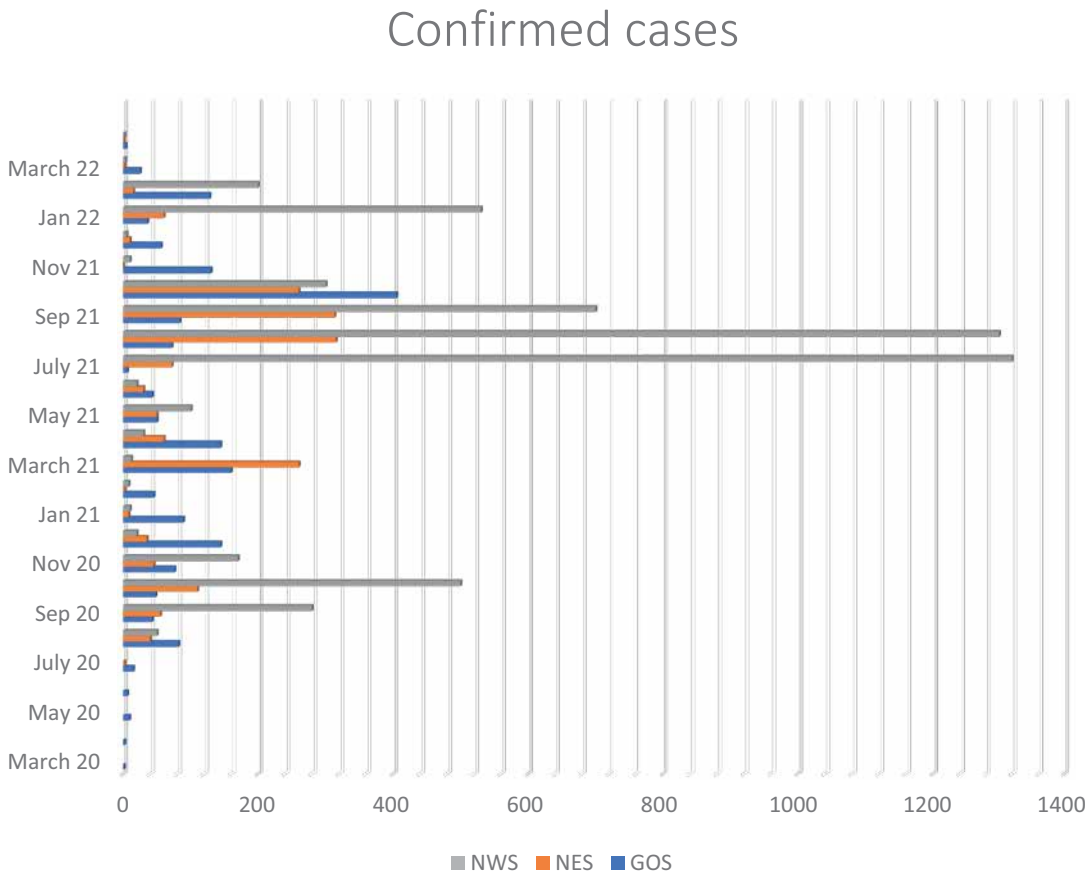

Fig 1. The monthly reported Covid-19 cases in Government controlled Syria (GOS), north-east Syria (NES) and north-west Syria (NWS) between the period March 22, 2020 up to March 22, 2022
Рис. 1. Ежемесячные отчёты о случаях заболевания COVID-19 на территориях Сирии, контролируемых правительством (GOS), в северо-восточной Сирии (NES) и северо-западной Сирии (NWS) в период с 22 марта 2020 г. по 22 марта 2022 г

between cases and death statistics reported by governmental ministries and the Syrian Observatory for Human Rights (SOHR), a UK-based human rights monitor, where the later reported higher numbers [10]. Also, different regions in Syria are controlled by different entities such as Idlib, which makes it a difficult task to track the spread of the virus throughout the country [11]. Additionally, only approximately one hundred tests conducted daily in Damascus are possible, that is due to the lack of testing equipment and health care institute capacities. This mainly led to spread of the virus. Moreover, asymptomatic cases were ignored since the low capacity is low, and only severely symptomatic people are tested. Furthermore, elderlies (above 60 years old) diagnosed pulmonary infections and pneumonia were detected as most of death cases [12]. Disturbingly, doctors receive instructions from multiple Syrian intelligence officers to conceal these deaths and avoid alarming the public through the media. The above-mentioned factors make it very suspectable to obtain correct numerical statistics and circumstance higher risk of infection in High-density residential areas and rudimentary camps and even in government-controlled areas [11].

The set of measures that must be taken to prevent the spread of the COVID-19 pandemic that have been sat by national organizations as WHO; including social distance, wearing protective equipment, avoiding crowded places, applying quarantine in highly effected areas etc., are not possible for Syrians in various places. For example, the globally largest group of internally displaced people (IDPs) in north-west Syria (NWS) are already living in a small area with a massive crowed and unable to apply any of the suggested measures. Studies show that the lack of clean water, electricity, and basic humanitarian needs in such areas are increasing the risk of spread of infectious diseases and big provokers of spread of future diseases [13]. The lack of advanced or mid-advanced medical facilities and centers also facilitating the increase of infected and death cases; where testing of the virous in different forms is not being performed in the area. In response to the potential threat of a COVID-19 outbreak within Internally Displaced Persons (IDP) camps, humanitarian organizations have advocated for the establishment of mobile testing facilities. However, the execution of such initiatives necessitates approval from the Damascus regime, thus hindering immediate implementation and potentially exposing camp residents to heightened risks. Consequently, inhabitants have resorted to independently conducting partially organized training sessions on essential preventive measures such as handwashing [5].

Furthermore, it is imperative to acknowledge the profound impact of the protracted decade-long conflict on the healthcare infrastructure in Syria. The health system in the region has faced severe challenges and setbacks, exacerbating the vulnerabilities of populations residing in conflict-affected areas like IDP camps.

Data from the World Health Organization (WHO) and Syria's Ministry of Health indicate that out of the total 111 public hospitals in Syria, only 58 are fully functioning, and approximately 70 percent of healthcare workers have fled. Private hospitals in the areas controlled by the Assad regime encounter similar challenges and shortages as public hospitals [14]. According to scholarly investigations, the capacity to effectively manage COVID-19 cases within Syria is projected to cap at 6,500 cases. This estimation is grounded on the existing count of intensive care unit (ICU) beds equipped with ventilators dispersed throughout the nation, approximated at 325 units. The calculation takes into consideration insights gleaned from global COVID-19 studies, suggesting that approximately 5 percent of cases necessitate critical care interventions.

Moreover, the research highlights a notable deficiency in essential resources such as masks and personal protective equipment (PPE), underscoring the broader challenges faced by the Syrian healthcare system in adequately addressing the demands posed by the ongoing pandemic [15].

In a dedicated humanitarian effort, the United Nations Office for the Coordination of Humanitarian Affairs has dispatched an extra allocation comprising 5,000 N95 masks to bolster the existing inventory of personal protective equipment (PPE) within the northwest region of Syria. Further underscored by collaborative support, both Russia and China have contributed essential mask provisions to territories under the governance of the Assad regime. Concurrently, these nations have advocated for the alleviation of sanctions imposed on Syria as a strategic measure to combat and mitigate the challenges presented by the COVID-19 pandemic [16].

In Syria, a confluence of economic collapse, enduringly high inflation rates, and pervasive corruption has pervaded the societal fabric. Notably, the adoption of COVID-19 preventive measures hinges significantly on individual financial means, resulting in a scenario where only the affluent segment of the population can comfortably afford essential self-isolation practices.

This socioeconomic divide is accentuated by the stark reality that a substantial 83% of Syrians endure impoverished living conditions. The onset of the COVID-19 pandemic in mid-March 2020 has catalyzed a surge in both prices and scarcities of vital commodities and disinfectants throughout the nation. Moreover, the economic landscape has been further strained by a notable escalation in fuel costs, with diesel experiencing a staggering surge exceeding 160% and petrol prices soaring by 248%, thereby compounding the prevailing economic hardships experienced by the populace [16]. Among the populace, individuals grappling with poverty and vulnerability, especially those dependent on unskilled daily wage labor, have borne the brunt of adverse impacts stemming from business shutdowns and escalating living expenses. This demographic segment, predominantly affected by these economic shifts, has encountered significant challenges in adequately meeting nutritional needs. Resultantly, these affected individuals have found themselves constrained to restrict both the quantity and diversity of their meals due to financial constraints imposed by the prevailing circumstances [17].

Addressing the psychological impact of the ongoing pandemic, a study found that among the participants, 83.4% reported experiencing depressive symptoms,

while 69.6% reported experiencing anxiety symptoms [18]. This further adds to the psychological pressure faced by healthcare providers within the Syrian health system, with higher levels of anxiety being accompanied by a greater likelihood of developing psychological disorders. A research study examining the psychological effects experienced by healthcare workers in Syria during the COVID-19 pandemic was conducted [19].

The data collection process comprised two stages: the first stage involved gathering information from medical staff prior to the announcement of any COVID-19 cases in Syria, while the second stage captured data after a two-month interval from the first stage, thus providing insights into the status of medical staff during the ongoing pandemic. In total, the study included 660 participants who were categorized as healthcare workers, namely nurses, medical doctors, medical residents, dentists, pharmacists, or laboratory doctors. The results of this study indicated that a substantial proportion of participants in both phases experienced poor sleep quality. Specifically, within the first sample, 72.4% reported inadequate sleep quality, whereas for the second sample, this figure reached 80%. Additionally, more than 40% of the first sample exhibited favorable scores on the Kessler scale, while 17% indicated severe stress disorder. In contrast, the second sample demonstrated lower scores, with 29.8% and 27.9% respectively on the same index. Moreover, the study found that over 70% of the participants from both samples reported experiencing mild generalized stress disorder. It is important to note that these findings highlight the prevalence of psychological distress among healthcare workers in Syria during the COVID-19 pandemic, emphasizing the necessity for targeted interventions to support and protect the mental well-being of these individuals [18]. Furthermore, the current pandemic has exacerbated the existing economic crisis and social injustices in the region [19].

The COVID-19 pandemic has had a discernible impact on the Syrian food supply, exacerbating the already precarious economic conditions prevailing in the country. One significant effect experienced by the World Food Program (WFP) in Syria was observed in the price dynamics of white rice, reaching its highest point in the month of April. To maintain its food supply chain, WFP Syria was compelled to acquire rice from Thailand, leading to a noteworthy 12 percent escalation in price compared to the prevailing import prices witnessed prior to the onset of the crisis [20].

While the COVID-19 pandemic has prompted various measures to restrict movement, these actions have resulted in significant consequences such as business closures and disruptions to traditional Ramadan festivities. These circumstances have led to a state of panic-buying among consumers, which in turn has led to a notable increase in commodity prices. This surge in prices is not exclusive to a specific timeframe but has persisted beyond the removal of the primary COVID-19-related restrictions. This indicates that there are underlying structural economic issues in Syria that are fueling the continuous inflation of goods prices. However, it is important to note that the containment measures implemented to control the spread of COVID-19 are also exerting additional pressure on prices in Syria. Therefore, if movement restrictions are reintroduced in the forthcoming months, it is reasonable to anticipate a similar trend of price increases [20].

In the context of vaccination efforts within Syria, a cross-sectional study spanning from January 3 to March 17, 2021, was conducted to assess public perception and attitudes towards immunization. The study deployed a structured self-administered questionnaire, distributed in two distinct phases. Initially, the questionnaire was disseminated through a Google form on social media platforms, followed by the physical distribution of a paper version to patients, their companions, and individuals at public healthcare facilities.

Among the 7531 respondents, the gender distribution indicated that 46.5% were male and 53.5% were female, demonstrating a balanced representation. The demographic age group of 18-24 years comprised 41.5% of the respondents. Noteworthy sources of information for participants included healthcare workers (50.9%) and social media users (46.3%).

Analysis revealed that 37% of participants expressed willingness to receive the COVID-19 vaccine, while 31% remained uncertain about vaccination. The primary factors driving vaccine hesitancy included concerns regarding potential side effects (62.4%) and mistrust towards the vaccine formula (58.8%). A notable 29.5% of participants perceived COVID-19 as a significant personal risk.

Furthermore, vaccination intentions displayed significant correlations with various demographic factors such as gender, residential status, financial standing, educational attainment, and geographic origin. As of December 31, 2022, Syria has received a vaccine allocation covering 38.7% of the population. Notably, 20% of the total vaccines acquired stemmed from bilateral agreements, with the remaining 80% procured through the COVAX initiative (*see Fig. 2*) [7, 9]. Conversely, the inoculation coverage within Syria indicates that merely 12% of the overall populace has received a minimum of one vaccine dose, while a mere 7.4% of individuals have completed the full vaccination regimen. The cumulative count of dispensed vaccine doses stands at 3,677,141, with a corresponding figure of 2,463,358 individuals having undergone vaccination procedures [5].

The limited numbers of the current vaccinated individuals are attributed to a variety of factors outlined in the aforementioned study, as well as additional considerations *(see Fig. 3)* [21].

Suggesting some solutions that can be obtained in the Syrian land starts with the sustainable development goals

Zero Hunger (SDG2): A well-nourished and resilient population is better equipped to fight diseases. By promoting sustainable agriculture, improving food security, and supporting nutrition interventions, this goal can enhance the overall health and resistance of the people in Syria.

Good Health and Well-being (Sustainable Development Goal (SDG) 3): This goal directly focuses on combating epidemics and addressing public health emergencies. It can help to ensure access to quality

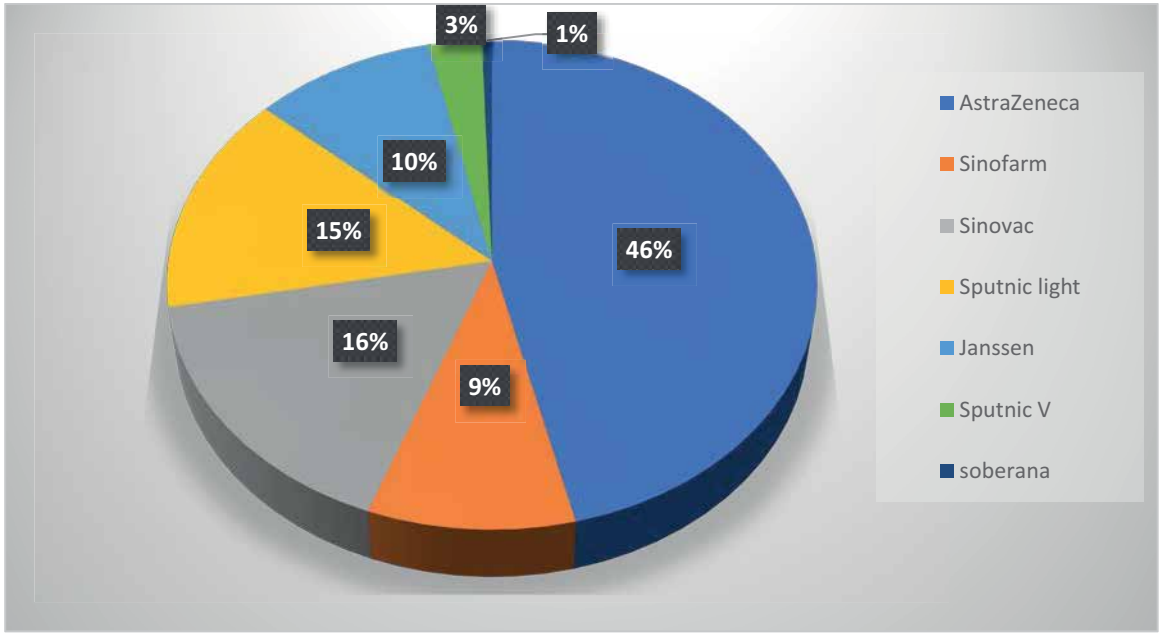

Fig 2. The percentages of fully vaccinated populations depending on vaccine type [7]
Рис. 2. Доля полностью вакцинированного населения по типам вакцины [7]

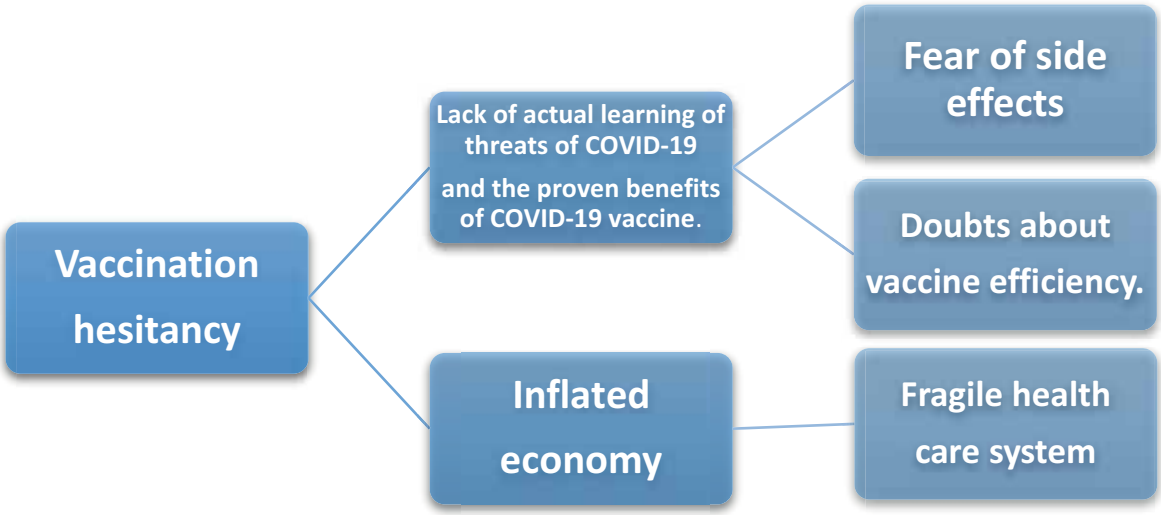

Fig 3. The most common factors that led to low vaccinated population
Рис. 3. Наиболее распространённые факторы, которые привели к низкому уровню вакцинации населения

healthcare services, necessary infrastructure, vaccines, and medicines for the Syrian population.

Quality Education (SDG4): Education is critical for creating awareness and empowering communities to take preventive measures during epidemics. Education initiatives that focus on health and hygiene can help in disseminating crucial information leading to better prevention and control of the outbreak.

Clean Water and Sanitation (SDG6): The provision of access to clean water and adequate sanitation infrastructure plays a pivotal role in the containment of epidemics. By effectively implementing measures to achieve this objective, the incidence of waterborne illnesses can be curtailed, and hygiene standards can be enhanced, consequently diminishing the repercussions of epidemic outbreaks.

Peace, Justice, and Strong Institutions (SDG16): Ending the conflict and establishing stable governance structures are crucial to effectively address the epidemic situation in Syria. Stable institutions can ensure the efficient deployment of resources and the smooth functioning of healthcare systems.

In crisis situations like Syria, the implementation of sustainable development goals can be challenging due to the urgency and complexity of the context. However, utilizing the SDGs as a framework can provide a comprehensive and holistic approach to addressing the epidemic situation in Syria and pave the way for long-term recovery and resilience.

Conclusion.

To sum up everything that has been stated so far, the emergence of the COVID-19 pandemic in

Syria has exacerbated the already dire healthcare situation in the country due to the protracted conflict. The destruction of health facilities and the exodus of healthcare providers have left the remaining medical staff overburdened and under immense psychological stress. The arrival of the virus has further strained the fragile healthcare system, with widespread impact on Syrians, including the internally displaced individuals. Despite the challenges and limited access to reliable information, the initial stability quickly gave way to rapid spread, putting additional pressure on the healthcare infrastructure. Surprisingly, the mortality rates have remained relatively low, highlighting the need for further investigation into the reasons behind this phenomenon. There has also been a hesitancy among civilians to accept vaccination against the virus, necessitating efforts to improve vaccine acceptance rates. This article aims to analyze and assess the impact of the pandemic in Syria, presenting findings and proposing practical measures to prevent future threats in Syria and other war-torn nations. Additionally, achievable solutions are suggested to address the current fragile health situation and mitigate the risks of future pandemics. In addition to the detailed challenges outlined, it is crucial to recognize the multifaceted impact of these issues on the overall resilience of the healthcare system and the well-being of the population in Syria. The inadequate testing capacity not only skews data accuracy but also impedes timely identification and isolation of cases, hindering effective disease control measures.

The lack of transparency in reporting can lead to a deficit in public trust and adherence to recommended health guidelines, further complicating efforts to mitigate the spread of the virus. Moreover, the strain on healthcare facilities and personnel exacerbates the vulnerability of both COVID-19 patients and individuals requiring medical attention for other health concerns.

Efforts to address these challenges should involve not only boosting testing capabilities but also enhancing data transparency, strengthening healthcare infrastructure, and ensuring access to accurate information for both healthcare workers and the general population. Collaborative initiatives focusing on improving living conditions in high-density areas and IDP camps can significantly aid in reducing transmission risks and safeguarding public health in the face of the ongoing pandemic.

Efforts by humanitarian organizations and international partners to provide support and supplies have been implemented but remain insufficient. The situation calls for further collaboration and aid to effectively combat the pandemic in Syria.

The ongoing pandemic has had a significant psychological impact on healthcare providers in Syria, with a high prevalence of depressive and anxiety symptoms reported. Targeted interventions are necessary to support and protect their mental well-being. Additionally, the pandemic has exacerbated the economic crisis and social injustices in the region, particularly impacting the food supply and resulting in increased prices. The vaccination rate in Syria remains low, with vaccine hesitancy driven by fears of side effects and mistrust of the vaccine formula. To address these challenges, sustainable development goals can offer potential solutions for the Syrian land.

Transparency of the study. *The authors played a significant role in formulating, planning, and crafting the manuscript and approved the final draft. The research was carried out autonomously, devoid of any monetary or external pressures, and the authors did not receive any remuneration for their scholarly endeavors.*

Declaration of financial and other relationships. *The research was undertaken free from any external financial or other impacts, and the authors were actively involved in conceiving, structuring, and developing the manuscript, giving their approval for the ultimate version. The authors take complete accountability for submitting the final manuscript for publication.*

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