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The Socio-environmental Perspective of COVID-19 through key informants in Las Vigas Community

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Abstract: *The objective of this study was to understand the socio-environmental perception of Covid-19 among key informants in Las Vigas Guerrero, Mexico. This was a qualitative study with a convenience sample, involving interviews using dimensions of sustainable development with 40 key informants. The SWOT technique was employed for data analysis and organization. The results revealed strengths, weaknesses, opportunities, and threats within the social, economic, and environmental dimensions. Strengths included confinement and preventive measures taken by authorities. Weaknesses encompassed risks of contagion, deaths, emotional issues, lack of preventive measures, income loss for families, unemployment, environmental pollution, air pollution, and solid waste. In opportunities, it was identified that as a society, we must be prepared to face future pandemics because they become a threat to humanity.*

Keywords: *Pandemic, Covid-19, sustainable development, environment, Las Vigas*

1. INTRODUCTION

COVID-19 has its origins in Hubei, China, in late December 2019. The effects it brought with it were of various kinds, such as physical, social, and environmental. The different changes had an impact on human activity and the quality of the environment (Vanegas & Bustos, 2022). The Covid-19 pandemic has caused health problems and has an impact on the global economic crisis (Anderson et al., 2020 cited in Prameswari et al., 2022a). To reduce the spread of Covid-19, governments around the world have implemented lockdown policies and prohibited their citizens from visiting countries affected by the Covid-19 (Fotiadis et al., 2021 cited in Prameswari et al., 2022b). According to Massieu (2020), the socio-environmental aspect of the current moment, also known as an era change, is fundamental, as the health crisis itself demonstrates the unsustainability of our cities and ways of living, as well as the challenges in resuming global capitalist accumulation. Air pollution is associated with higher Covid-19 mortality, and it has been argued that prolonged exposure to air pollution has made the population more susceptible to the disease (Wu, Nethery, Sabath, Braun y Dominici, 2020 as mentioned in Lopez, et. al, 2020).

The socio-environmental aspect allows us to account for, as indicated by Alberto Conde (mentioned in Jimenez, 2015) that nature is one and that humans are immersed in it. It is important to note that, as Enrique Leff indicates, the emergence of the environmental has allowed us to reframe our conception of the world, development, and society's relationship with nature. However, the author warns that environmental knowledge does not, in itself, constitute a change in the paradigm of the social and natural sciences aimed at overcoming the epistemological obstacle of fragmentation; rather, it represents a leap outside the sciences with the intention of seeking possible connections in a field of interdisciplinary relations (Left, 2005 as mentioned in Jimenez, 2015). The objective of this study was to

understand the socio-environmental perception of Covid-19 by key informants in Las Vigas, Guerrero. Las Vigas is a community within the municipality of the same name in the state of Guerrero. It was a qualitative study with a convenience sample, in which interviews with dimensions of sustainable development were conducted with 40 key informants. The SWOT technique was employed for the analysis and organization of information. Regarding the term SWOT (Ponce, 2007) states that these initials come from the acronym in English SWOT (strenghts, weaknesses, opportunities, threats); In Spanish, they refer to strengths, opportunities, weaknesses, and threats. The results revealed strengths, weaknesses, opportunities, and threats and were framed within the social, economic, and environmental dimension. Among the strengths, the study identified confinement and prevention activities carried out by the authorities. Among the weaknesses, there were risks of contagion, fatalities, emotional issues, lack of preventive measures, impact on family incomes, unemployment, environmental pollution, air pollution, and Municipal Solid Waste (MSW). In terms of opportunities, it was recognized that as a society, we must be prepared to face future pandemics, as otherwise, it could become a threat to humanity. During the current pandemic, the world faced a set of unprecedented restrictions; First and foremost, people were asked to stay home based on the recommendations of the World Health Organization (WHO cited in Al-Nuaimi & Mohammed, 2022a). Social distancing in public places became the norm. Those infected were asked to self-isolate as an essential strategy to reduce the spread of the disease (Lunn, 2020 cited in Al-Nuaimi & Mohammed, 2022b); (Organization, 2020 cited in Al-Nuaimi & Mohammed, 2022c). The community of Las Vigas[1], which used to be part of the municipality of San Marcos Guerrero, has experienced a significant change in recent months. According to information provided by the President of the Municipal Management Committee of Las Vigas, this locality is now an independent municipality that includes 18 communities, making a total of 19 with Las Vigas as the municipal seat. This change comes in a context of the ongoing COVID-19 pandemic, which began in 2019 and continues to affect the region. Given this situation, it is imperative that Las Vigas, its communities, and its authorities take effective measures to improve the environmental situation and strengthen strategies aimed at preventing the spread of the COVID-19 virus. This is a crucial challenge that must be addressed with determination and cooperation to protect and care for the environment, and consequently, the health and well-being of all the inhabitants of this place.

A Review of Literature

One of the key concepts used in this study was, first and foremost, to understand the term 'perception.' One of the main disciplines that has been responsible for the study of perception has been psychology, and in general terms, traditionally, this field has defined perception as the cognitive process of consciousness that involves the recognition, interpretation, and meaning for the formation of judgments regarding the sensations obtained from the physical and social environment, in which other psychological processes are involved, including learning, memory, and symbolization (Vargas, 1994). With regard to the environment, perception would be of an environmental nature. Environmental perception involves the process of understanding the immediate physical environment through the senses, unlike environmental knowledge, which encompasses the storage, organization, and reconstruction of images of environmental features that are not visible at the moment.

At the same time, attitudes come into play, which are the favorable or unfavorable feelings that individuals have toward the characteristics of the physical environment (Calixto & Herrera, 2010). Socio-environmental perception in this sense would then be to understand and perceive how environmental, social, political, and economic implications have an adverse impact on the environment. COVID-19 is perceived from a socio-environmental perspective. What is mostly causing an adverse impact on the environment are human activities, which contribute to issues that degrade the environment. An environmental problem is a negative alteration or modification to the natural systems

[1] Community in La Costa Chica region of the State of Guerrero, Mexico

of the planet. Therefore, an environmental problem, which can be local or become global, always begins with some form of negative impact on nature. As mentioned before, environmental problems arise as a result of the impact of the industrial revolution on the environment. Hence, it could be said that the causes of global environmental problems are due to the environmental impact of anthropogenic activities such as factory production, burning of fossil fuels for energy, waste disposal, mismanagement of waste from consumer products, mining, and deforestation (Ropero, 2020). Within the framework of the international, national, and local context, the relationship between COVID-19 and the environment has become a topic of interest. This is because it is an emerging issue that can be analyzed from various perspectives, such as its transition from being a public health concern to becoming a matter of environmental, social, economic, or political interest. Regarding environmental matters, it can be asserted that the COVID-19 pandemic is related to environmental issues and that it had adverse effects on the environment, although some argue that it had environmental benefits. In this sense, reference is made to (Lopez-Feldman et al. 2020 mentioned in Guerrero, 2021a) that establishes that an interesting relationship has been found between prolonged exposure to air pollution and higher COVID-19 mortality, highlighting that elevated levels of pollution make the population more vulnerable to the disease. Additionally, contact with polluted air can contribute to the virus's spread, as there is evidence that SARS-CoV-2 is present in particulate matter, and if this is the case, it is capable of being transported on the surface of these particles to the lungs. Furthermore, the authors report that they have found evidence of a positive relationship between the presence of air pollutants and COVID-19. Also Gonzales et al. (2021 mentioned in Guerrero, 2021b), found a close relationship between air pollution due to a lack of environmental education and its impact on the increased number of COVID-19 deaths. The authors state that this lack of environmental education and, consequently, environmental awareness and commitment, leads people to produce pollutants such as nitrogen dioxide (NO2), hydrogen sulfide (H2S), ozone (O3), and carbon monoxide (CO). In this regard, it was demonstrated that poor air quality increased the mortality rate by 8%. They also add that the presence of pathogens (viruses, bacteria) and contaminants (toxins) in the air significantly increases in polluted air. On the other hand, solid waste and its management are another serious environmental problem that affects the planet, even before the pandemic. Plastics, made from petroleum, have been and continue to be used in various everyday items, from disposable products (food containers and bags) to various devices (electronic and computer products), disposable medical items (face shields, gloves, personal protective equipment - PPE), and many more (Flores, 2020 mentioned in Guerrero, 2021c). With these statements, it is understood that the COVID-19 pandemic has an adverse impact on the environment. However, some research indicates certain environmental benefits resulting from the COVID-19 pandemic, as mentioned by Maguiña (2020 mentioned in Guerrero, 2021) and it delineates that the appearance of the pandemic highlighted the role of society and industry, as well as, their practices that pollute rivers, lakes, and seas. On the other hand, it points out situations in which a decrease in environmental pollution was evident: it was observed that animals expanded their range of distribution to habitats populated by humans, a reduction in river pollution levels, a lower amount of carbon dioxide in the air, among other factors (Guerrero, 2021). Environmental issues are linked to the emergence of epidemics. The crisis facing the world today has its origin in the ongoing environmental disruptions, which have been reflected in the concerns expressed by the United Nations on each World Environment Day celebration (Gomez, 2020).

Socio-environmental perspective of Covid-19: The Theoretical Basis

To address the socio-environmental perspective of COVID-19 in this research, the theory of social vulnerability, the risk society, sustainable development, and education were considered, among which Environmental Education for Sustainability or Education for Sustainable Development. Regarding the theory of social vulnerability, it focuses on analyzing how social groups, either collectively or individually, are sensitive to the adverse impacts of phenomena that may harm them, such as meteorological events or a pandemic. In this context, this theory provides the basis for understanding how the social groups in Las Vigas have experienced COVID-19 unequally, as well as how this is related

to social and environmental factors. Since the 1980s, a social approach to vulnerability has been developed, emphasizing the importance of dynamic socio-spatial structures and processes that determine the vulnerability of individuals and disadvantaged groups. It emphasizes understanding the everyday living conditions of individuals and communities to generate strategies aimed at confronting and reducing vulnerability. In this context, studies like (Blaikie 1996, cited in Sánchez-Gonzalez & Egea-Jimenez 2011) are enlightening, where social vulnerability is defined as the set of characteristics that an individual, group, or community possesses, determining their ability to anticipate, survive, withstand, and recover from the impact of unforeseen events (Sanchez-Gonzalez & Egea-Jimenez 2011). It is possible to conclude that the vulnerability approach allows us to understand the dynamic heterogeneity of social inequalities. Through the relationship between Assets, Vulnerability, and Opportunity Structure, it stimulates an analysis of the role of social policies while also questioning the emancipatory management by individuals, households, and communities in the process of social mobility. In this sense, its levels of macro and micro social analysis are relevant for the design of targeted social interventions (Ramos, 2019). Another theory that underpinned this study was Ulrich Beck's theory of the risk society. This assumption is related to the socio-environmental perception of COVID-19 because it addresses key aspects of the interaction between society and the environment. There are risks that can affect social stability for which people are not prepared, such as environmental and health risks, like the pandemic. The 'risk society' that Beck examines is a society exposed to imminent danger. In it, all 'risk calculation' has been lost, and everything becomes unintelligible. It is a society in which humans find themselves in a completely contaminated environment that threatens the security of their existence. Water contamination by atrazine, an agricultural herbicide that also affects fish reproduction, illustrates the danger. Beck explicitly states that 'the risk society is the era of industrialism in which men must confront the challenge posed by the industry's ability to destroy all kinds of life on Earth' (Ballesteros, 2014). In this study, it was essential to draw upon the principles of sustainable development because it focuses on understanding the relationship between society, the environment, and economic matters in the pursuit of sustainable balance. The COVID-19 pandemic affected stability in all three dimensions of development. The concept of sustainable development is the result of the growing awareness of the global connections between environmental issues, socio-economic concerns related to poverty and inequality, and the concern for a healthy future for humanity. It strongly links the environment and socio-economic issues (Hopwood, 2005). Environmental Education for Sustainability (EES) and Education for Sustainable Development (ESD), in this study, another essential element that was taken into account was education. There is social vulnerability in the population, and many people lack a culture of risk perception and environmental education to responsibly confront certain threats that can affect social stability. In this context, education seeks to promote awareness, knowledge, skills, and values related to the social and environmental aspects of the pandemic. Environmental Education for Sustainability (EES) plays a very important role.

Since its inception, Environmental Education has aimed to foster attitudes of curiosity, respect, and appreciation for all components of the natural heritage. It soon expanded its scope to encompass a wide range of environmental issues (pollution, urban congestion, consumption, waste, climate change, etc.), including socio-economic aspects (in the 1980s). However, it remains closely tied to the mechanisms that govern natural ecosystems and continues to emphasize the emotional and formative value and interest of contact with nature (Alcantara, 2006). The United Nations Educational, Scientific and Cultural Organization (UNESCO, 2022) states that Education for Sustainable Development (ESD) provides learners of all ages with the knowledge, skills, values, and empowerment necessary to address interconnected global challenges that we must confront, such as climate change, biodiversity loss, unsustainable resource use, and inequalities

The Community of Las Vigas, Guerrero

In the study presented here, reference is made to the Community of Las Vigas as the location where the

research was conducted. Until a couple of years ago, this community was part of the municipality of San Marcos. However, at present, it is no longer part of that municipality and has been incorporated as part of a new municipality named Las Vigas. It is worth noting that this community has been designated as the municipal seat, although this research is confined to this area. Decree number 864, through which the municipality of Las Vigas, Guerrero was created, was published in the Official Gazette of the State Government No. 78, Second Section, on Tuesday, September 28, 2021. This decree establishes that the founding group proposed the locality of Las Vigas as the municipal seat and that it has a population of 4,762 inhabitants according to the 2020 Population and Housing Census by INEGI. Nineteen communities were annexed to this municipality. According to a socio-economic study, this place offers various services, including some health institutions, piped water, sewage, sewage system, landfill, oxidation lagoon, etc. Additionally, the Secretariat of Agriculture and Rural Development and the National Water Commission are located here, along with the municipal commissioner and communal property, among others. This region is rich in natural resources due to its agricultural, livestock, fishing, and commercial areas. Its flat lands are irrigated by the water from the Revolucion Mexicana Dam and the Nexpa River, as well as, several streams that feed the Las Ramaditas Lagoon, which flows into the Pacific Ocean. This lagoon is the main source of supply for the region, where countless lacustrine species inhabit. Various field products are also harvested in its irrigation plots. It has a significant livestock activity, including poultry, cattle, pigs, and goats, which makes the area economically viable (Official Gazette of the State of Guerrero, 2021). In the Political Constitution of the Free and Sovereign State of Guerrero, Article 27 already considers Las Vigas as a municipality within the state, number 46. Additionally, Article 6, in its Section VII, establishes a healthy environment as a right for its development and well-being. The State must guarantee the protection, conservation, and restoration of environmental assets. **(Fig. 1,2 and Fig. 3)**.

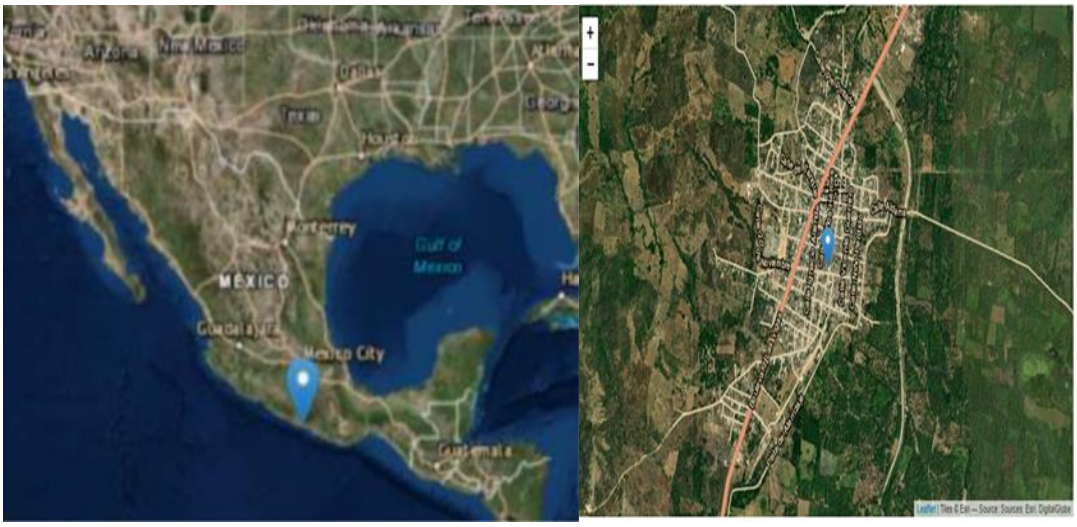

Fig. 1: Las Vigas, Guerrero, Mexico, in the national and local context

Source: Pueblos America.com (s. f.)

Fig. 2: Las Vigas, Guerrero (Community Center)

Source: Photo taken by the researcher on October 8, 2023.

Fig. 3: Las Vigas, Guerrero (Community Photo)

Source: Photo taken by the researcher on October 8, 2023.

In the community in question, many people unconsciously impact the environment with their harmful practices, improper waste handling, and disposal that can lead to soil and air pollution, for example. In some cases, local farmers irrationally use pesticides and agrochemicals to eliminate pests, or as a method of weed control in their fields and even in their homes. Examples like these make it possible to understand the impact on the environment. Undoubtedly, it is important for the people in the area to promote knowledge, skills, and values through environmental education for sustainability (Bedolla, Miranda, Bedolla & Sánchez, 2021). During the course of this research, most of the interviewees confirmed the above because they stated that the community contributes to environmental pollution, for example, with the use of chemicals in agriculture or in homes, the generation of solid urban waste, open-air garbage burning, or firewood burning in households, etc. Burning garbage or firewood contributes to making the population more vulnerable to the spread of COVID-19. In general, anthropogenic environmental pollution is caused by various factors: cars, industries, household heating systems, etc.

However, undoubtedly, the most delicate issue is the burning of household garbage and other waste, which uniquely contributes to the problem. Burning garbage emits gases and particles that affect human health and climate change (Wiedinmyer et al., 2014 as mentioned at Brites, 2022). Behind the burns, there are emissions and various forms of pollution, so the problem is relevant to climate change mitigation actions. Therefore, environmental policies must address the issue of garbage burning and its potential effects (Brites, 2022b). Situations like these that affect the environment with factors that can contribute to the spread of COVID-19 in vulnerable populations must be urgently addressed by community authorities and healthcare professionals, and the population must have knowledge in this regard.

2. METHOD

The study presented is a qualitative research. It was conducted in the Community of Las Vigas Guerrero (municipal seat of the municipality of the same name), located in the Costa Chica region of the State of Guerrero. The sample was taken by convenience. Qualitative studies often use a convenience sample, especially at the beginning, which is called a volunteer sample and is used if the researcher needs potential participants to come forward voluntarily (Salamanca and Crespo, 2007). In the context of this research, this approach was used, and forty key informants from the Las Vigas community participated voluntarily. An open interview was conducted, designed according to the research objective, which was to understand the socio-environmental perception of COVID-19 by key informants from Las Vigas Guerrero. The socio-environmental aspect was based on the sustainable development approach in the sense that the perception was framed within its three dimensions to analyze its impact. Sustainable development is a multidimensional concept that involves at least economic, social, and environmental dimensions (Ramirez, Sanchez y Garcia, 2004). The interview considered these three dimensions mentioned earlier and consisted of approximately 10 questions in total, organized within each of the dimensions. The SWOT analysis technique was applied for the analysis and organization of the information. SWOT analysis involves evaluating the strengths and weaknesses that, together, diagnose the internal situation of an organization, as well as its external assessment, i.e., opportunities and threats. It is also a tool that can be considered simple and provides a general perspective on the strategic situation of a specific organization (Ponce, 2007). This technique allowed for the identification of the strengths, weaknesses, opportunities, and threats regarding the socio-environmental perception of COVID-19 in Las Vigas.

3. FINDINGS AND DISCUSSIONS

The results of this study are presented in **Table 1.** After using the SWOT technique to organize and analyze information from key social actors in Las Vigas regarding their socio-environmental perception of COVID-19, it was confirmed that there are strengths, such as the community having private clinics and public healthcare institutions, making fewer efforts to implement prevention measures for COVID-19, closing schools and opting for online classes, parents supporting their children's education, undertaking fewer economic activities, and having sustainable natural resources and biodiversity in the community. However, there are weaknesses that affect the described strengths, such as the lack of doctors and medicines in the community, lack of medical attention during the pandemic, lack of measures to prevent COVID-19 transmission by some community members, lack of awareness among some individuals who didn't use protective measures and visited vulnerable people at risk of COVID, deaths, emotional problems, some parents not supporting their children's education, internet connectivity issues affecting classes, the pandemic causing educational setbacks, labor and income disruptions for families, etc., and environmental issues, including air pollution, the generation, handling, and control of urban solid waste, surface pollution, and more. According to information from key social actors, areas of opportunity were also identified that could contribute to mitigating the socio-environmental issues caused by COVID-19 and the threats it may pose in the future. This research shares some similarities with Agustina's study (2021), which focused on examining the vulnerability of the Magersari Heritage Settlement Keraton Kasepuhan in Indonesia to pandemics like COVID-19. One of the conclusions was that COVID-19 had led to various policy actions, including social distancing

measures, and the study identified highly vulnerable areas to pandemics like COVID-19. The recommendations from Agustina's study could help the government of Cirebon City and Keraton Kasepuhan in safeguarding the Magersari heritage settlement. Another study similar to this one was conducted by Peña, Peña, and Tello (2021), who analyzed the status of COVID-19 and dengue in municipalities in Guerrero. Their study aimed to understand the vulnerability of the population to emerging epidemics like COVID-19 and recurrent epidemics like dengue. The study provided a deeper insight into the potential effects of these epidemics on the population. Vanegas & Bustos (2022) conducted research to explore people's perception of environmental quality during the lockdown and their perceived level of involvement in environmental issues. The study involved students from the psychology program at the Facultad de Estudios Superiores Zaragoza of UNAM[2] and their family members. The study concluded that despite the observed changes in the environment during the lockdown, perceptions had not significantly changed. The authors suggested that individual behaviors, when aggregated globally, could help address various environmental problems and climate change. Luna (2020) conducted research that reflected on the socio-environmental determinants of COVID-19, as well as the economic, spatial, and health-institutional vulnerabilities associated with COVID-19. The study emphasized the need to regulate or even prohibit the oversupply of sugary, high-sodium, transgenic, and chemically processed foods. It also highlighted the importance of stopping productive activities that lead to ecosystem destruction, overexploitation, and pollution. Additionally, the study recommended the reconstitution of public healthcare services, emphasizing the improvement of healthcare workers' salaries, the provision of quality medical services, and the promotion of traditional community and local health knowledge. By adopting these and other strategies, humanity could continue its historical process of reproduction, even beyond the historical limits of capitalism.

Table 1: Socio-environmental Perception of COVID-19 by Key Informants in Las Vigas Guerrero

Socio-environmental dimensions	***Strengths***	***Weaknesses***	***Opportunities***	***Threats***
Social	Private clinics, health institutions (health center, and ISSSTE[3]). In terms of health, there are private clinics, health centers, and ISSSTE. Little confinement or isolation of people during the pandemic. Minimal preventive activities were carried out in the community by the	Lack of doctors and medicine in healthcare institutions. Lack of medical attention during the Covid-19 pandemic. Lack of preventive measures during the Covid-19 pandemic. In many cases, face masks and handwashing techniques were not used. Limited information from the authorities to prevent the risk of Covid-19 contagion.	Institutional management, doctors, and medication provided by the incumbent president. Community authorities and doctors must establish agreements to provide care during times of a pandemic. To promote Environmental Education Programs among the residents of Las Vigas that	Presence and complication of health problems in the residents of Las Vigas. Complications in people's health due to not being attended to or referred in a timely manner during a pandemic. The lack of attention to Covid-19 prevention measures becomes a latent risk. Absence of governance

[2] National Autonomous University of Mexico.
[3] It is a government organization in Mexico that manages a portion of healthcare and social security.

	authorities.	Risks of coronavirus contagion to oneself, to others, or to someone from a vulnerable group. Attending crowded places (parties). In many cases, social distancing was not observed. Covid-19 deaths. Perception of emotional situations and problems in the community members.	encourage confinement during a pandemic and preventive measures. Coordination between local authorities, medical professionals, and the community in a health emergency. Community authorities and doctors should promote Education Programs on the risks of Covid-19 transmission within the community. To design strategies for controlling and managing complex situations during a pandemic. To seek mechanisms for providing psychological support to affected individuals.	implies a weak relationship between residents and authorities. Increase in the percentage of Covid-19 infections among the residents of Las Vigas. The effects of a pandemic threaten the existence of life and family life. Emotional issues during a pandemic influence making unwise decisions.
Social	The schools closed their doors and opted for online classes. Some parents supported their children during the pandemic, and there was solidarity from some individuals in providing	Many students did not have a computer. Parents did not support their children during Covid-19 due to their work. It was perceived that some teachers were not in their workspaces. Educational backlog among students was observed due to the	Parents must support their children's education. Teachers must be aware of attending to students during a pandemic. Teachers and parents must support students who were affected in their learning during the	Contribution to the educational lag of students in Las Vigas due to the pandemic. Poor academic performance due to lack of parental support in their child's education. The lack of electrical power poses a problem for the school,

	internet connectivity.	pandemic. Also, there were parents who didn't support their children during the pandemic due to their work or other activities. The internet signal and electrical supply were irregular during the pandemic.	pandemic. Schools should promote parent schools in the community. The residents of Las Vigas and authorities should arrange meetings with the companies that provide electricity and telephone services to seek improvements in these services.	and the lack of internet connectivity as a technological tool in education is perceived in the same way.
Economic	Economic activities in the community decreased during the pandemic.	Financial impact on families, lack of employment for some individuals, and a decrease in hiring of laborers for agricultural work.	Residents and local authorities should design early warning strategies for a pandemic (savings, supplies, etc.).	There were issues related to food and economics during the Covid-19 pandemic.
Environmental	There are natural resources in the community of Las Vigas. A respite in nature was perceived, and it was appreciated to see some animals.	Environmental air pollution and its relation to infections. Surface contamination from objects can cause infections if you touch your nose, mouth, or eyes afterward. Generation and inadequate control of Solid Urban Waste (SUW) during the Covid-19 pandemic. Some people were unaware and did not use proper hand washing techniques.	Promote Environmental Education Programs to prevent Covid-19 contagion with topics related to air pollution, surface contamination transmission, generation of solid urban waste (SUW) or toxic substances, and their control and management, etc.	The lack of an environmental culture during a pandemic contributes to being prone and vulnerable to the risk of Covid-19.

Source: Self-prepared

4. CONCLUSION

The new SARS-CoV-2 virus has caused a severe global pandemic, unleashing panic and universal alarm. It has led to the collapse of healthcare systems in many regions of the planet due to its high contagion rate, causing thousands of deaths, especially in older adults with comorbidities such as diabetes mellitus

or hypertension. The best way to prevent it is through quarantine, frequent handwashing, and the practice of social distancing (Maguiña, Gastelo, and Tequen, 2020). Regarding the strengths identified through the socio-environmental perception of Covid-19 by key informants, the community demonstrated its capacity for adaptation and resilience. Despite limited confinement and minimal preventive measures, the solidarity of some parents and individuals who facilitated connectivity during online education highlighted a sense of solidarity in the community. The pause in economic activities allowed for a greater appreciation of natural resources, revealing the potential to reconnect with nature. From a socio-environmental perspective, this strength emphasizes the importance of valuing and protecting our environment, promoting a more conscious and sustainable approach for the future. The weaknesses exposed by the Covid-19 pandemic include numerous deficiencies within the community, from the lack of medical attention to insufficient preventive measures and technological resources for education. Irregularities in basic services and economic hardship for families were also emphasized. The importance of addressing environmental pollution and solid waste management was highlighted, as well as promoting public awareness of personal hygiene. This crisis underscores the need to improve healthcare, education, and basic services infrastructure, in addition to promoting public awareness of health and environmental issues to better prepare for future emergencies with more readiness and resilience. In terms of opportunities, Las Vigas faces various challenges and opportunities. These include the potential to improve the management of healthcare institutions, promote environmental education, and enhance coordination between authorities, healthcare professionals, and residents. Strategies can be developed to address complex situations, provide psychological support, and strengthen collaboration between parents, teachers, and schools. Seeking improvements in basic services such as electricity and telephone connectivity is a significant opportunity. Additionally, the promotion of environmental education programs can help prevent contagion and raise environmental awareness. In summary, these opportunities offer a path toward a more resilient and prepared community to face future emergencies. In the event of untimely action, the community in question may face a series of threats, including severe health complications due to the lack of timely care during a pandemic, increased Covid-19 contagions due to the absence of preventive measures, and ineffective governance that weakens the relationship between the population and authorities. Moreover, the threats encompass devastating effects on life and family dynamics, emotionally driven poor decision-making, educational setbacks, low academic performance, food and economic issues, and an inadequate environmental culture that increases vulnerability to Covid-19 risk. These threats represent serious challenges and must be effectively addressed to ensure the safety and well-being of the community. The Covid-19 pandemic has highlighted the importance of a socio-environmental perspective. The lack of confinement and inadequate preventive measures underscore the need for a more comprehensive public health response and environmental awareness. The adaptation of schools to online education demonstrates how solidarity and connectivity are fundamental in times of crisis. The reduction of economic activities emphasizes the interaction between society and natural resources, providing nature with a breather. This experience underscores the need for a holistic approach that considers both human health and environmental balance in managing future crises. In today's society, it can be said that Covid-19 is here to stay and continues to make its presence felt. In many places, it had adverse impacts, and in this study, these impacts are related to the three dimensions of sustainable development (social, economic, environmental) as it influenced the stagnation of this development almost worldwide. In this research, where the socio-environmental perception of Covid-19 by key informants in Las Vigas community was identified, it was observed that its effects indeed occurred in the three main spheres of sustainability. In the social context, it affected health, the emotional well-being of individuals, and education. In the economic aspect, it impacted employment and family incomes. In the environmental realm, the main concerns were air pollution, improper solid waste management during the pandemic, and more. This research successfully achieved its intended objective and is expected to serve as a reference for future investigations in this field. Infinite gratitude is extended to the individuals in Las Vigas community and other communities who served as key social actors and provided essential information for the research.

REFERENCES

Agustina, I. H. (2021). Vulnerability of the Magersari Heritage Settlement Keraton Kasepuhan in Indonesia for Pandemics: The case of Covid-19. *ISVS e-journal*, 8(1).

Alcántara-De la Fuente, M. et al. (2006). "Environmental Education, Biodiversity, Natural Spaces, and Nature." Henri Bourrut Lacouture. Colectivo de Educación Ambiental S.L. CEAM. Environmental Education in Aragón at the Dawn of the 21st Century. Technical Secretary III Sessions and EÁREA Process.

Al-Nuaimi, S. F., & Mohammed, W. M. (2022). Creating Preventive Spaces: A strategy for designing environmental urban spaces to deter the pandemics. *ISVS e-journal*, 9(3), 201-220.

Ballesteros, T. B. Z. (2014). Reflection on the Theory of Risk Society. *Social Themes*, (35), 203-215.

Bedolla-Solano, R., Miranda-Esteban, A., Bedolla-Solano, J. J., & Sánchez-Adame, O. (2021). Prospective-Educational Analysis of the Impact of Hurricane Max on a Guerrero Community. *RIDE Revista Iberoamericana Para La Investigación Y El Desarrollo Educativo*, 11(22). Available at: https://doi.org/10.23913/ride.v11i22.877

Brites, W. (2022). Incidence of Garbage Burning in Posadas, Argentina: A Challenge for Climate Change Policies. Journal of Environmental Sciences, 56(2), 17-37. Available at: https://doi.org/10.15359/rca.56/2.2

Calixto, F. R. & Herrera, R. L. (2010). Study on Perception and Environmental Education. *Time to Educate*, 11(22), 227-249.

Cámara de Diputados del Congreso de la Unión. Political Constitution of the United Mexican States. Last reform published in the Official Gazette of the Federation (DOF) on June 6, 2023.

Gomez, L. L. M. (2020). The Environmental Challenge: Lessons from COVID-19. *MEDISAN*, 24(4), 728-743.

Guerrero-Rojas, J. J. (2021). Environmental Impact of the COVID-19 Pandemic. *Scientific Journal of Biology and Conservation*, 1(1), 6-17.

Hopwood-Bill, Mellor-Mary & and O'Brien-G. (2005). Sustainable Development: Mapping Different Approaches. *Sustainable Development*, 13(1), 38-52.

Jiménez, M. R. (2015). The Environment as a Socio-environmental System: Reflections on the Human-Nature Relationship. *Sequence*, (92), 236-240. Retrieved on July 22, 2023.

López, F. A., Chávez, C., Vélez, M. A., Bejarano, H., B. Chimeli, A., Féres, J., Robalino, J., Salcedo, R., & Viteri, C. (2020). COVID-19: Impacts on the Environment and the Achievement of Sustainable Development Goals in Latin America. *Development and Society*, 86, 104-132.

Luna, N. J.M. (2020). Socio-environmental Determinants of COVID-19 and Economic, Spatial, and Health-Institutional Vulnerability. Journal of Social Sciences, 26(2), 2.

Maguiña, V. C., Gastelo, A.R., & Tequen, B.A. (2020). The New Coronavirus and the COVID-19 Pandemic. *Medical Journal of Heredia*, 31(2), 125-131.

Massieu, T. C. Y. (2020). Coronavirus, Civilizational and Socio-environmental Crisis: On the Edge of the Precipice. *Interdisciplinary Journal of INAH*, 4(9), 10-30.

Peña, G. N. I., Peña, G. R., Tello, A., P. V. (2021). Vulnerability of the Population of Guerrero, Mexico, to the Epidemics of COVID-19 and Dengue. *Journal of Central American Geography*, (67), 194-220.

Official Gazette of the State of Guerrero (2021). Decree number 864, creating the Municipality of Las Vigas, Guerrero. Edition No. 78 Supplement II. Available at: https://periodicooficial.guerrero.gob.mx/wp-content/uploads/2021/09/P.O-78-ALCANCE-II-28-SEP-2021.

Ponce Talancón, H. (2007). SWOT Analysis: Diagnostic and Intervention Strategy for Various Organizations. Teaching and Research in Psychology, 12(1), 113-130.

Prameswari, N. S., Cahyono, A., Subiyantoro, S., & Haryanto, E. (2022). The Sign System at the Borobudur Temple: Effectiveness during the Covid-19 Pandemic. *ISVS e-journal,* 9(3), 57-74.

PueblosAmerica.com (s/f). Las Vigas (San Marcos, Guerrero). Disponible en: https://mexico.pueblosamerica.com/i/las-vigas-4/#foto-satelital

Ramírez, T.A., Sánchez, N. J.M. & García, C.A. (2004). "Sustainable Development: Interpretation and Analysis," Journal of Research. Universidad La Salle. (6), 55-59.

Ramos, O. D. (2019). Understanding Social Vulnerability: An Examination from Its Key Theorists. Social Development Studies: Cuba and Latin America, 7(1), 139-153.

Ropero, P. S. (2020). What is an Environmental Issue and Examples, Green Ecology. Disponible en: https://www.ecologiaverde.com/que-es-un-problema-ambiental-y-ejemplos-3067.html

Salamanca, C. A. B. & Crespo, B. C.M. (2007). "Sampling in Qualitative Research," Nure Research, 27, 1-4. http://www.sc.ehu.es/plwlumuj/ebalECTS/praktikak/muestreo.pdf

Sánchez-Gonzalez, D., & Egea-Jimenez, C. (2011). Social Vulnerability Approach to Investigating Socio-Environmental Disadvantages. Its Application in the Study of Older Adults. Population Papers, 17(69), 151-185.

UNESCO (2022). What You Should Know About Education for Sustainable Development. What is Education for Sustainable Development? Disponible en: https://www.unesco.org/en/education-sustainable-development/need-know

Vanegas, R. M. C. & Bustos, A. J. M. (2022). Perception of the Environment and Environmental Behavior during the COVID-19 Pandemic. Psicumex, 12(1), 1–29.

Vargas, M., L. M. (1994). On the Concept of Perception. Alterities, 4(8), 47-53.