

Environmental Health and Well-Being for Communities in Nigeria

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Abstract

Communities in Nigeria, from the coastal region of the southern part of Nigeria to the Northern Sahel, contend with various environmental health challenges, ranging from crude and refined oil spillage, large-scale bush burning, unregulated mining and industrial waste disposal, open defecation just to mention but a few. Although, these challenges mainly anthropogenic in nature, exist in various communities with abundant mineral resources supply, their implications on the socio-economic and environmental well-being of communities calls for concern. Hence, the crux of this paper. From a qualitative methodological approach, mainly reliance on secondary source, revealed the existence of environmental health challenges like crude oil spillage in oil producing communities within the south-south region of Nigeria, with serious consequences on the socio-economic and environmental well-being of communities. More so, the environmental health quality of communities in south-west region was found to be affected with Lead exposure discharged from industrial waste, with adverse impact on the socio-economic and environmental well-being of host communities. While south-south and south-west contend with crude oil spill and lead exposure; communities within the south-east region face serious environmental health threats mainly attributed to heavy metals deposit such as lead, copper and cadmium resulting from illegal mining operation. Furthermore, the environmental health quality of communities in the north-west and north-central region of Nigeria was found to be affected with illegal (mainly, gold) mining operations and open defecation, with devastating implications on the well-being of communities. From these findings, the study advocates strengthening and improving environmental adult education programmes in complementing existing efforts, for ensuring desired socio-economic and environmental well-being of communities in Nigeria.

Keywords: Community, environment, health, environmental health, well-being.

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INTRODUCTION

Humans' sense of how their lives are going, and the strength of relationships that sustained community life, are strongly shaped by the psychological and social wellbeing. Although, most individuals often consider personal health when matters of well-being are being considered but beyond man's psychological and social well-being, lies community's well-being, which acknowledged that individual states are inextricably connected to the health of the collective. Fundamentally, community well-being focus on the overall quality of life of people within a given community. How well humans are, and their life's satisfaction in relation to their socio-economic, political, cultural and environmental realm of existence, are of utmost importance in how they flourish and fulfill their potentials both as individuals and as community. Throughout history, people have always had the belief that interacting with the natural environment provides well-being benefits. While Individuals cannot live as well as achieved their goals in isolation, however,

collaborative efforts, shared problems solving and strong social networks become crucial in promoting life expectancy among humans. Substantiating, Cambieri (2024) revealed that social and psychological factors including being connected to others, optimistic worldview as well as possessing positive and resilient mindset play vital role in promoting well-being and longevity.

However, with an estimated population of over eight billion people, the world contends with complex uncertainties, shocks and series of simultaneous, interrelated crises ranging from climate change and environmental degradation, epidemics and pandemics, to prolonged instability, humanitarian disasters, conflicts and economic disruption. While these crisis and issues spanned across the globe, communities in Africa which accommodate large number of people and make significant contribution to national development continue to contend with environmental degradation as well as humanitarian disaster. Buttressing, United

Nation's report on the state of the environment in Africa, revealed that Africa is fast becoming warmer than the global average, with resultant impact observed in several factors including land degradation due to over grazing, water scarcity, air pollution, and other aspects of human health impairments (Odozor, 2025). Sub-Sahara African region is seen to be more affected in relation to environmental challenges.

Accordingly, countries in sub-Sahara Africa are vulnerable to threat of water scarcity, food insecurity, population increase and challenges associated with natural disaster than any other region of the world (Gavin, 2022). As noted, among twenty-seven hotspot countries identified in Ecological Threat Report in 2022 that contend with ecological threat and societal resilience, two third are found in sub-Sahara Africa (Gavin, 2022). While environmental problems including land degradation, deforestation, declining of marine resources and water scarcity or deterioration of water and air quality have continued to occupy top priority among challenges confronting Africa, increase in population continue to worsen various environmental challenges confronting the continent. Environmental health and quality in Africa continue to be overwhelmed as a result of unchecked and unrestricted use of the physical environment including overgrazing, over-cultivation, excessive or inappropriate use of water resources, deforestation, and elimination of natural ecosystem, as a direct result of overpopulation for existing forms of production and land-occupation systems. Eze and Nwaiwu (2012) note that the overall average for population increase in Africa is 2.98%, a figure higher than any other continent.

Although, Africa continue to witness population increase which contribute to unrestrained used of the physical environment, however, rural communities which housed vast majority of the population become negatively impacted, as they bear the brunt of environmental challenges affecting the continent. With the capacity to housed vast majority of nations' inhabitants, environmental health of communities becomes a major concern to both local, state and national government around the world and particularly, Africa; as the World Health Organization (2021) cited in Johnson (2021) estimated that 35 percent of the total burden of disease in sub-Saharan Africa is attributed to environmental factors. Nigeria as the most populous nation in Africa and the sub-Sahara Africa sub-region, often contends with plethora of challenges threatening its physical environmental health particularly within the rural communities. Accordingly, pollution, poor sanitation, ozone layer depletion, desertification, flooding, erosion, bushfires, deforestation, and soil contamination are among environmental issues confronting Nigeria (Evelyn & Tyav, 2012).

Observably, from the coastal region of the southern part of Nigeria to the Northern Sahel, communities in Nigeria often contend with crude and refined oil spillage, large-scale bush burning, indiscriminate refuse dump, open defecation, indiscriminate use of pesticides and herbicides. For instance, within the coastal region of Niger Delta in Nigeria, communities frequently contend with crude oil spillages as a result of oil exploratory activities and illegal bunkering, with a devastating effect on the aquatic lives. Ugwu, Ogba and Ugwu (2021) note that, almost on daily basis, in the Niger Delta region, particularly in those communities wherein oil exploration and exploitation are being carried out, witness oil spillage. Reportedly, between the period of 2006 and 2019, the region witnessed a total of 7,943 oil spillages (Akinwumiju, Adelodun & Ogundeji, 2020), out of these, 62% were attributed to inland corrosion and sabotage of the oil pipelines. The impact of the oil spillage threatens the natural environment and those who rely on the products of the environment for survival and maintenance. While Akinwumiju *et al.* (2020) maintained that malfunctioning of equipment accounts for 7 percent of oil spillage within the region, contrarily, Ugwu *et al.* (2021) revealed artisanal and illegal refining, as significant contributor to the alarming quantity of crude oil spillage in the Niger Delta region. In a report, Elisha (2023) revealed that communities including Bille, Andoni, Okrika, Emohua and Ibaa in Rivers state encounter environmental challenges such as oil spills, gas flaring, water pollution just to mention but few.

While, crude and refined oil spillages are common environmental challenges affecting communities in the Niger Delta region of Nigeria, on the other hand, communities in Zamfara, Niger, Kaduna, Plateau and Bauchi states within the Northern region of Nigeria, continue to battle with unregulated mining activities, with devastating consequences on farmlands, river pollution as well as massive displacement of families. Yakubu (2025) revealed that within the aforementioned states, forests are being cleared for the purpose of mining, while rendering the land bare and vulnerable to desertification. Drought and desertification are by far the most pressing environmental problems afflicting northern parts of the country. Accordingly, it has been estimated that between 50% and 75% of Bauchi, Borno, Gombe, Adamawa, Jigawa, Kano, Katsina, Kebbi, Sokoto, Yobe, and Zamfara States in Nigeria are being affected by desertification (Jaiyeoba, 2002 cited in Mohammed, Mudi, Tijjani & Timothy, 2020). Also, communities in Kwara state have their share of environmental health issues, most notable among these issues, is the practice of deliberate open defecation. A survey by Water, Sanitation and Hygiene National Outcome Routine Mapping 2021 revealed that about 50 percent of the population of Kwara state indigenes still practice open defecation (Asishana, 2022). Open defecation becomes a source of environmental health

challenges and affect the well-being of communities in Kwara, as it often results in repeated cases cholera outbreak. In 2017, there was 1513 reported cases of cholera outbreaks in five local government areas including Asa, Ilorin East, Ilorin South, Moro and Ilorin West local governments (Asishana, 2022). The menace of open defecation is attributed to inadequate sanitation system like toilet.

More so, communities in south west region of Nigeria often contend with challenges of environmental degradation attributed to industrial and urban development. Environmental degradation is being worsen by mining-related activities, particularly in areas like Osun State, which have witnessed a surge in gold mining operations (Benson, Akagha, Coker, Uzougbo & Bakere, 2023). Notably, the release of heavy metals into surface water from these operations poses severe health risks to the local population and has detrimental effects on aquatic life (Awogbami, Solomon, Sawyerr & Raim, 2023). Lead discharge to the environment through industrial operations like the improper used lead acid battery recycling practices affects environmental health of several communities in Ogun state. Also, mining activities continue to threaten cocoa, banana and plantain farms as well as water scarcity in several communities such as Imosan, Itaganmodi and Araromi in Osun state. As reported, rivers and streams which once became primary sources of water supply in Imosan community, are now being polluted due to large scale gold mining operations, making indigenes to mainly rely on alternative costly sources of water supply (Uthman, 2024). Similarly, in Ebonyi state, industrial and mining operations have been reported to released heavy metals (iron, lead, copper and cadmium) into rivers (Ndibe Beach) and ponds (Afolabi, 2025). This poses a serious environmental health concern to aquatic lives particularly both wide and farmed catfish across the state. As revealed, trained catfishes raised in ponds contained higher levels of iron, nickel, copper, and cadmium, as a result of contaminated feed or stagnant and unchecked water (Odimgbe cited in Afolabi, 2025). Environmental mismanagement continues to create devastating health issues for communities in various regions and states of the Nigerian federation.

While health and well-being have been a significant concern to international organizations and world governing institutions like the United Nation and World Health Organization, and has been a significant target of Sustainable Development Goal 3, however, its realization in Nigeria within the targeted period (2030), is being questionable. This because in spite of the existence of various environmental health legislation and policies (National Environmental Standard and Regulatory Agency (Establishment) Act, 2007; Harmful Waste (Special Criminal Provision etc.) Act, 2006; National Oil Spill Detection and Response Agency Act, 2006; Federal Environmental Agency Protection Act.

1988; Greenhouse Gas Emission Register), most communities in the country still contend with one form of environmental health issues or the other, affecting the socio-economic, political, cultural and environmental conditions that enable individuals and communities flourish.

Several studies (Clark & Ackril, 2006; Woodall, White & South, 2013; Furusawa, Pitakaka, Gabriel, Sai, Tsukahara & Ishida, 2021; Rela, Awang, Ramli, Sum & Meisanti, 2020; Kelly *et al.*, 2011; Adjei & Agyei, 2014; Turin *et al.*, 2020; Uzoagu & Eheazu, 2022) have been conducted on environmental health and wellbeing, however, very limited studies exist on environmental health and well-being in Nigeria but none of these studies have critically and holistically examined environmental health conditions and well-being of communities in various geopolitical regions of Nigeria. More so, from the review of extant literatures, it was observed that in spite of the plethora of studies existing on environmental health, however, the extent to which humans' well-being depends on various aspect of the environmental, specifically, biodiversity, has not gotten much interest on scholarly research.

From the foregoing, the study is being structured into various sections and sub-sections, beginning with section one which set the context for the study; section two, briefly review various concepts and constructs including community, environment, environmental health, and well-being. While, section three critically examined environmental health conditions of communities in various geopolitical region and their impact on the overall well-being of communities; in section four, the conclusion of the study was presented.

Concept of community

Over the years, scholars from different fields of studies have defined and explained the concept of community. In other words, the concept of communities varies from domain to domains including sociology, psychology and anthropology to economics, biology and complex systems. While some of these definitions are related, others completely differ in their definitions on the concept of community. This lack of consensus on a definition has been the impetus for numerous debates as to what a community really is and how it should be operationalized. Sociologists approach a community as a cultural construct or social context. Psychologists emphasize individual members of a community. Anthropologists concentrate on interaction among the members of a community and the development of shared value and symbol systems. Economists are interested in how the organizational structure of a community contributes to its production, distribution and consumption of goods.

Zuleyka (2016) view the concept of community as a social group within a society that share similar culture, norms, values as well as status, and may participate in organizing social life within a given location, or may be bound by a sense of belonging sustained over time and space. This conceptualization leans toward sociological strands, as the shared culture, norms, values and status depicts social life within groups. Sahney and Benton (2008) cited in Uzoagu (2022) view community as the coming together of populations that are probably different in nature but interact with each other and such interaction can either results in competition or mutualism or predation. It is viewed as an organic, natural type of social grouping whose members are bound together by sense of belonging created out of everyday contact which span across the totality of human activities. Theodore (2005) categorized community using two labels in the form of "territory-based" and "territory-free". Sarapin (2011) associates community with physical locale -- with those "places in which their residents can enjoy a 'sense of community'". It is this "sense of community" that Delanty (2010) identifies with "the foundation for a sense of belonging based on shared experiences, a common language and kinship ties and, above all, a sense of inhabiting a common spatial lifeworld". The territory-free community is simply referred to as social groupings or networks, for instance, the internet community, academic community as well as business community just to mention but few.

Concept of environment

The term 'Environment' is formulated on the word 'Environ' derived from the French work 'Environner', which means "to surround" or "to encircle". Although, there is no single definition on the concept of environment, as it is being used in different field of knowledge including environmentology, nature sciences, ecology atmosphere sciences, oceanology, life and living and many more, however, most of perspectives on the concept, is often related to surroundings. Accordingly, environment' in its etymological sense gives the meaning " surroundings, especially the material and spiritual influences which affect the growth, development and existence of a living being (Kumar, 2018). Furthermore, Kumar (2018) opines that the environment refers to the circumstances or conditions that surround an organism or group organism,' or the complex of social or cultural condition that affect an individual or community. From ecological perspective, environment refers to the external surroundings in which a plant or animals lives which influence its development and behavior.

Dearden and Mitchekk (2009) conceptualized the environment as the mix of the atmosphere, hydrosphere, cryosphere, lithosphere and biosphere wherein humans and other living species as well as inanimate phenomena exist. Getis (2000) in Uzoagu and

Eheazu (2022) viewed the environment as the surroundings, and the totality of things that may likely affect an organism, including both physical and cultural conditions; a region characterized by a certain set of physical conditions. Herkovits cited in Kumar (2018) view the environment as to sum total of external conditions which surround man in a given inter-relationship which exists among them and human beings, other living creatures, plants, micro-organisms and property. Gandhi in Kumar (2018) view the environment as nature which includes plants and all physical elements of all the earth in which the organisms live. United Kingdom Environmental Protection Act (1990) notes that the environment involves all or any of the following means including; air, water and land; and the medium or air includes the air, within the building and the air within other natural or man-made structures above or below ground. Simply, the environment seen as the natural surroundings which covers the physical surroundings that are common to all living beings and include air-space, water, land, plant, wildlife and flora-fauna just to mention but a few.

The environment encompasses several components including plants, animal as well as human being and is often categorized into two dimensions (Abiotic components and the biotic components). Accordingly, sun, energy, temperature, air, light, humidity, rain, which constitutes the climatic condition forms part of the Abiotic components; also, earth, shores, deserts, mountainous region, forest-land and so on; sea, lakes, ponds, rivers, underground water; mine, rocks and underground minerals; and huge mountains, slopes; all constitute the abiotic components of the environment (2018). On the other hand, the biotic component of the environment consists of living beings, tree, plants, micro-organisms, birds, flora-fauna just to mention but a few. While several definitions, explanations and components exist on the concept of the environment, Kumar (2018) conclude that one can have good understanding of the concept in relation to eco-system, ecology and the biosphere. Ecology is the science of the relations of all organisms to all their environments. In other words, it is the relationships existing between organisms and their environment; while ecosystem comprised organisms (living factors), their environment (abiotic/ 'non-living' factors), and all the interactions which take place between them. The 'Biosphere' is that of the earth and atmosphere, which is inhabited by living beings.

Environmental health

National Institute of Environmental Health Science (2024) conceptualized environmental health as the science of identifying and understanding the effects of environmental exposure to dangerous physical, chemical, and biological agents in air, water, soil, food and social stressor that may adversely impact man's health with the aim of preventing human injuries and

illnesses as well as improve quality of life. Accordingly, environmental health comprises aspects of human health, including the quality of life, which are determined by the physical, chemical, biological, social, psychosocial and aesthetic factors of the environment (World Health Organization, 1994). Also, it is all about the policies and practices established to assess, correct, control and prevent those factors in the environment that may likely have adverse impact on the health of present generations and generations yet unborn. It is a part of public health protection that dwells on all aspect of the natural and built environment that may affects human health.

Milstein and Stark (2025) view environmental health as a multidisciplinary field which assesses how factors in the environment affect human health and quality of life and spanned several elements such as air quality, water safety, food hygiene, and the physical environment in which humans exist. Issues such as water pollution, waste management, and occupation health danger, often create the need for collaborative efforts from wide range environmental health practitioners, aimed at proffering solutions to addressing environmental related challenges. While in the past, environmental health dwell so much on disease-related issues, Milstein and Stark (2025) observed that the field of environmental health does not only dwells on disease control but equally lay emphasis on improving the entire quality of life, by focusing on sustainable living and efficient resource management. Humans' exploitative tendencies on the natural resources, most often cause changes to the environment and these changes have continued to pose diverse sets of challenges for the environment. Environmental health, over the past decades, has continued to occupy international and national frontlines, due to the adverse effects of pollution as well as resources depletion, confronting communities, societies and countries leading to various programmes and policies aimed at preserving wildlife, fighting communicable diseases, maintaining clean and potable ground water supplies, increase agricultural productivity, as well as ensuring healthy living conditions for humans.

Environmental adult education

While several policies and programmes have been championed by world health organizations and United Nation in protecting and preserving the environment, however, the need for proper orientation and awareness at the individual and group level of humans' actions and its consequences on the environment, results in the emergence of environmental adult education. Environmental adult education (EE) is concerned with teaching conceptual knowledge and skills, a process in which individuals gain awareness that will enable them to act and also the development of the values and attitudes which will motivate and empower individuals and groups to work and promote the

sustainability to solve present and future environmental problems (Omoogun *et al.*, 2016 cited in Umar & Haruna, 2025). Destruction of forests, pollution, greenhouse effect, ozone depletion, erosion and extinction of species are global problems due to the lack of application and awareness of environmental adult education. Accordingly, the programme of environmental awareness and health education has a significant impact on the area of community services; as a result, its objective need to extends one's own satisfaction and rather cut across a country as whole (Amarnath, 2017).

Well-being

The concept of well-being has long existed, although with different explanations and definitions, originating from the perspectives of various philosopher in ancient period to the views of modern day scholars. While Philosopher like Hobbes conceptualized well-being as the pursuit of man's appetite; De Sade views it as the pursuit of sensations and pleasure; nevertheless, Bentham opined that better can be developed through maximizing pleasure as well as self-interest (Husain 2008 cited in Carter & Andersen, 2020). The views of these philosophers all lean toward the hedonic school of thoughts. On the other hand, scholars from the eudemonic school of thoughts believed that humans have happiness in the expression of their virtue, engaged in what they deemed valuable (Carter, 2016). As observed, well-being is seen to be present in an individual when one's psychological well-being is high, and the positive effect predominate over the negative effect (Bradburn, 1969 cited in Carter & Andersen, 2020).

Wickramarathne, Phuoc, Albattat, Rasmi and Phuoc (2020) view well-being using several description including someone who is happy exhibiting positive temperament, with optimistic view of life, not overthinking about bad events, living in an economically developed society, having social support and enough resources to pursue valuable goals. Seligman (2012) in a model equate well-being with various dimensions such as positive emotions, engagement, relationships, meaning, and achievement. The model notes that developing positive relationships with other people and the ability to share experiences with others, contributes to social and internal life, which then promotes well-being. Similarly, Swarbric (2010) in a model equate well-being with physical, work-related, intellectual, social, spiritual, emotional and financial and environmental dimensions. While the social dimension is related to one's ability to socialize, gain and benefit in mutual relationships in the family, with friends and interest groups; the environmental dimension lay emphasis on the protection and conservation of natural resources, as human are biological being, in need of clean air, water and food.

Observably, discourse on well-being most often focus on the individual well-being, which Alkinson *et al.* (2017) defined as a person's life satisfaction, however, the concept of well-being has shifted from the individual perspective to collective well-being often regarded as community well-being. Wiseman and Brasher (2008) cited in Lach *et al.* (2022) conceptualized community well-being as combination of factors (socio-economic, environmental, cultural and political) that are collectively identified and negotiated by communities, which are vital for their growth and fulfillment of their potential. Similarly, Cox *et al.* (2010) in Lee and Kim (2015) view community well-being as economic, social, environmental, cultural and governance goals and priorities identified as important by a community, population group or society. Although, these indicators (socio-economic, political, environmental and cultural) constituting community well-being, exist in separate distinct dimension, spanning across services, amenities, and social resources of the community, however, Michalski *et al.* (2023) revealed that these indicators being utilized in developing instruments required for ascertaining residents' satisfaction, evaluation, and assessment of the constitutive components of wellbeing. Sung & Philip (2016) cited in Michalski *et al.* (2023) observed that relational frameworks which acknowledges the interplay of community actors and their diverse priorities is added into the theory of community well-being. The essence of integrating relational dimension into the theory of community well-being is to have firm knowledge of how the sociodemographic and historical qualities of a community inform its goals, priorities, and norms. Holt-Lunstad (2022) cited in Michalski *et al.* (2023) notes that enhancing improving community wellbeing and belonging can go a long in tackling significant targets identified by health and social decision-makers, including social isolation.

Environmental health and wellbeing of communities in Nigeria

Nigeria is a country, consisting diverse ethnic and tribal groups with different languages, culture and other patterns of existence. These groups cut across various geographic regions, also referred to as geopolitical regions and include south-south, south-east, south-west and north-central, north-east as well as north-west regions. While these regions do not only inhabit citizens with different cultural traits, they also possess distinct resources in their natural environment as well as peculiar challenges (both anthropogenic and non-anthropogenic issues) from the environment, affecting the wellbeing of residents and communities.

Communities in the south-south region of Nigeria, possess abundant mineral resources including crude oil and natural gas, tin, coal, limestone, clay just to mention but few. While, several mineral resources existed in the south-south region of Nigeria, however,

the region is well known for its huge crude oil and natural gas deposits to which the country derives significant percentage of its revenue. Buttressing, Omoboye (2025) reported that states (such as Akwa Ibom, Delta, Rivers, Bayelsa and Edo) within the South-South region made up the top ten crude oil producing states in Nigeria with a daily output of 504,000 barrels for Akwa Ibom state, 346,000 bpd for Delta, Rivers state - 344,000 bpd, Bayelsa – 290,000 bpd and Edo state – 33,000 barrels per day. Although, the daily productivity within the region benefit the country, contrarily, there is enormous cost associated with crude oil exploitative and exploratory operations affecting the health of the natural environment and the overall well-being of communities within these operational sites.

Communities such as B-dere, K- dere and kpor in Rivers state (Wizor & Eludonyi, 2020); Olugboboro, Keme-Ebiam, Elebele, Ibidi, Ayiba Ama, Sabatoru in Bayelsa state (Nwaneri, Uwakwe & Audu-Bako, 2016); Ukpiovwin, Oghior, Owhrode and Egini (Ugboma, 2014) within the south-south region, have had npleasant experiences of oil exploration and its hazardous consequences like oil spill and its numerous challenges on livelihood. The economic activities within these communities which mainly depends on fishing and farming, have continually been devastated by crude oil spills. Water bodies are being contaminated continually by spilled crude oil endangering the fishes and the countless families that depend on them for survival. Similarly, most farming communities suffer from crude oil spills. Accordingly, crude oil pollution causes damage to human health, farmlands, human safety, long-term ecological malfunctioning and poor environmental well-being (Uzoagu, 2015; Bayode, 2011 cited in Ugboma, 2014). While crude oil exploratory and exploitative operations by companies within the region cannot be halted, however, spills caused by human actions (especially, illegal bunkering) can be limited through extensive and deliberate development and implementation of environmental adult education programmes on continual basis within crude oil producing communities in the region. This is because environmental adult education can empower individuals to connect with their surroundings, reflect on their experiences, and act consciously in supporting sustainable living and the welfare of communities.

In the south-western region, communities experience issues of environmental degradation mainly associated with industrial and urban development. The environmental health quality of communities such as Afisuru, Jagunmolu and Ajose in Ogijo; Korogboji in Agbara; Itesiwaju and Ogo Irawo communities all in Ogun state, are devastated by lead poisoning and other categories of industrial waste (Olawoyin & Ogunrinde, 2025; Adewole, Agbaje, Oyewo, Ayeni & Naku, 2022). Lead exposure to the natural environment which is often caused by lead battery recycling is very harmful, as it

exposes workers to significant health risks, contaminates soil, dust and water, and as well, contribute to elevated blood lead levels in surrounding communities. Fabunmi and Ashoko (2019) revealed that the adverse effect of lead on the natural environment particularly in the host communities extends even beyond the closure or stoppage of companies' operations in the area. Generally, the well-being of individuals (physical, mental and social health) and communities, suffers from lead deposit on the natural environment.

While it affects the wellbeing of individuals and communities, however, Fabunmi and Ashoko (2019) report that children are more prone to lead poisoning in communities and such exposure, affects their developmental and behavioral patterns including delayed puberty, and decreases in hearing, cognitive ability, and postnatal growth. On the other hand, lead exposure on the environment negatively impact adults, as it results in disorders in the cardiovascular and nervous systems, dysfunctional kidney and reproductive systems resulting to delayed conception, lower sperm count and motility (Fabunmi & Ashoko, 2019). Although, government (both at the local, state and federal level), and international organizations have been making deliberate efforts through legislation and policy in regulating industrial waste disposal, however, strengthening awareness campaign through environmental adult education programmes, holds the potentials of minimizing individuals' (infants, adults and employees) and communities' exposure to negative effects of industrial operations; as well as enhance the quality of natural environments and overall well-being of communities.

The quality of the natural environment in communities within the south-east region of Nigeria, is not free from degradation, but being threatened by issues of unauthorized mining operations. Specifically, Afolabi (2025) revealed that industrial and mining operations deposit heavy metals (iron, lead, copper and cadmium) into rivers (Ndibe Beach) and ponds in Ebonyi state. Observably, there is widespread unregulated mining activities in various parts of Ebonyi including Ameka Community, Ohankwu community, Ihietutu community, Ikwo community, Ezillo community and so on. Report by The Nation Newspaper revealed that Ikwo and Ezillo communities experienced air and water pollution, infertile soils, declining crops yields, respiratory illnesses and disrupted livelihood due to mining operations (Omorogbe, 2025). Air and water pollution resulting from unregulated mining activities pose several health challenges to quality of lives of individuals and aquatic lives inhabiting mining communities. Mining activities emit wide range of pollutants such as sulfur dioxide, nitrogen oxides and particulate matters, capable of travelling long distance and can cause respiratory issues in humans. To discourage illegal and unregulated mining activities and its effects on environmental quality

and well-being of communities in south-east Nigeria, requires continuous environmental health awareness campaign through enhancing already existing environmental adult education programmes.

A disturbing practice affecting environmental health of communities within the north-central Nigeria, particularly in Kwara and Plateau state, is the practice of open defecation. Accordingly, Nigeria is the second largest number of country globally, with an estimated number of forty-seven million peoples, still practicing open defecation; and Kwara state and Plateau state were ranked top two states with the highest menace of open defecation (Asishana, 2022). Communities such as Melete, Okelele-Amule, Igangu, Omu-Aran, and Omi-Oko communities (Oladipo, 2022; Bello, Umeaku & Suleiman, 2025). Human feces contain large numbers of germs, capable of causing diarrhea and the practice of engaging in open defecation, creates avenue for flies to transmit the germs on food. Buttressing, World Health Organization (2015) revealed the depositing of human waste in public areas, water bodies, and green spaces, significantly threatens human health and dignity, particularly for women and children, and worsens diseases such as diarrhoea, which is the leading cause of death among children under five years of age in developing countries. In addition, open defecation introduces harmful bacteria into ecosystems, adversely affecting aquatic life and overall ecosystem health. While several efforts have been made by government and relevant environmental agencies, in limiting and totally eradicating the practice of open defecation in rural and urban communities, however, environmental adult education remains a veritable tool in supporting governments' efforts in combating the prevalence of open defecation. This hold true, as hygienic and sanitation education which is a vital component of environmental health adult education, can potentially promote sustained behavioral change.

The quality of the environment in communities within Zamfara state in the north-central geographical region of Nigeria remains in a deplorable condition, as a result of illegal gold mining activities. Communities in Zamfara state such as Kawaye, Duhuwa, Bagega, Sunke, Wuya, Kirsa, Malele just to mention but few are known for their endowment in gold. Onuah (2019) revealed that gold mining in Zamfara has fueled a parallel economy, involving artisanal mining and an informal gold trade, often controlled by criminal networks and armed groups. Unfortunately, the widespread illegal gold mining has had severe social, economic, and environmental consequences. Armed conflict by local groups for the control of mining operations emerged, causing instability within the region, poor agricultural productivity, massive displacement of residents from their ancestral communities as well as disruption in family cohesion. Illegal gold mining has far reaching implication on the natural environment as it causes

widespread contamination, destruction aquatic lives as well as loss of human lives. However, over a decade ago, Médecins sans Frontières (MSF) reported abnormal death rate, mainly among children under the age of 5 years in Bukkuyum and Anka Local Government Areas (LGAs) in Zamfara state attributed to acute Pb poisoning associated with massive environmental contamination from artisanal mining and processing of gold (Tirima *et al.* 2016 cited in Njinga & Tshivhase, 2017). Most times communities' sources of drinking water like wells, boreholes and rivers, were being contaminated heavy metals discharged from illegal mining activities. While government and other relevant environmental agencies have been on the forefront of against illegal mining in Zamfara state, extensive awareness campaign through environmental adult education can proffer solution to the issues of illegal mining which as far reaching negative implication on the environment health and overall well-being of communities in Zamfara state and entire north-west region of Nigeria.

CONCLUSION

With its large population size and abundant mineral resources, Nigeria, contends with various environmental health challenges affecting the well-being of individuals and communities within its different geopolitical region. Although, most of the challenges affecting the environmental health of communities are unique to the geographical location, however, other spanned across regions with severe socio-economic, as well as environmental consequences. From the review, it is inferred that crude oil and natural gas, mainly derived in the south-south region, ever since exploration and exploitation commenced, have become a source worries to environment health quality of host communities, with severe consequences on the well-being of individuals, aquatic lives and communities in general. While mining operations (particularly illegal mining) which is predominantly associated within the north-west and south-east, degrades the health of the natural environment communities with a devastating socio-economic and environmental consequences; open defecation continues to affect the environmental quality of communities in north-central region of Nigeria with severe health consequences like diarrhea and other diseases. Although, the environment in its natural state, remains inhabitable by humans and other creatures, however, the quest for economic gains and unregulated practice, have continued to rendered it difficult and unsafe for the existence of life in the natural environment. While governments, international organizations and other relevant environmental agencies have made several efforts in making the environment most especially within the communities livable, however, strengthening and enhancing environmental health adult education programmes, becomes a veritable instrument in complementing already existing efforts, for ensuring the desired socio-economic and

environmental well-being of individuals and communities in Nigeria.

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