Illegal Small-Scale Gold Mining in Ghana: A Public Health Perspective

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Abstract

Introduction: Illegal small-scale mining, known as "galamsey" in Ghana, is a prevalent practice involving the illicit extraction of gold using unregulated methods, often employing hazardous chemicals. Despite providing livelihoods for many rural families, galamsey is linked to severe consequences such as water and environmental pollution, ecological disturbances, and general environmental degradation. This study aims to investigate the impacts of small-scale mining on the environment, human health, and livelihoods, as a public health concern.

Methods: A systematic literature search was conducted across online databases such as ScienceDirect, Scopus, PubMed, and Google Scholar using specific keywords related to mining, health, environment, and Ghana. Articles retrieved were screened for eligibility based on their titles, abstracts, and study design.

Results: The menace of illegal gold mining in Ghana is influenced by various factors, including ineffective laws, youth unemployment, and collusion among influential figures like politicians, law enforcement agents, etc. Illegal mining activities have detrimental effects on water bodies, farmlands, and ecosystems, leading to adverse health outcomes for residents in affected areas.

Conclusion: Addressing the challenges posed by illegal small-scale mining requires a collaborative effort from the government, non-governmental organizations, traditional leaders, and the Ghanaian populace at large. Effective policies, enforcement mechanisms, and sustainable alternatives must be implemented to curb the negative impacts of galamsey on the environment, human health, and livelihoods.

Introduction/Background

Illegal small-scale gold mining, commonly known as "galamsey," which historically served as a source of livelihood for people living in and around mining areas and a major source of income to Ghana's economy, has become a worrying issue over the past years, as it poses significant threats to public health, the environment, and the nation's socioeconomic fabric[1]. Despite efforts by the government to regulate and formalize the small-scale mining sector, a substantial portion of mining activities remains unregulated and informal, driven by a complex interplay of socioeconomic factors and governance challenges [3] [4]. Estimates suggest that an alarming 60% and 80% of illegal small-scale miners currently operate without proper licenses and oversight in Ghana[3] [5] [6]. These informal operations usually make use of rudimentary techniques and equipment, including the widespread use of mercury for gold extraction and other harmful chemicals[2] [7]. The uncontrolled nature of these activities has led to severe environmental degradation, including deforestation, water pollution, and soil contamination, with profound implications for public health [2] [8]. Currently, the effectiveness of the existing regulatory framework and policy interventions towards addressing illegal small-scale gold mining has been questionable[3] [9] [10]. The implementation and enforcement of established laws and regulations governing Ghana's mining sector have been hampered by bureaucratic bottlenecks, weak governance institutions, and limited resources[2] [9]. Consequently, illegal mining activities persist, fueled by a combination of poverty, lack of alternative livelihood opportunities, and the high demand for gold in both domestic and international markets[2] [3] [7] [10] [11]. Exposure to mercury, a highly toxic substance used in the gold extraction process, is one of the most pressing public health concerns associated with illegal small-scale mining. The release of such toxic substances as mercury and cyanide into water bodies and the atmosphere pose serious implications for human health and the ecosystem integrity[2] [7] [11]. Prolonged exposure to mercury can lead to severe neurological disorders, respiratory problems, and other adverse health effects, not only among miners but also in the surrounding communities [2] [7]. The contamination of water bodies and soil with mercury poses long-term risks to human health and the environment[8]. Illegal small-scale gold mining also has serious community health and socioeconomic impacts[2] [7] [12]. The consequences of destruction of farmlands, deforestation, and pollution of water sources include disruption of traditional livelihoods, compromised food security, and limited access to clean water and sanitation facilities Environmental pollution resulting from illegal small-scale gold mining is a significant public health concern [2] [7]. These factors, coupled with the hazardous working conditions and lack of access to healthcare services, contribute to a range of health issues, including respiratory diseases, injuries, and malnutrition[2] [7] [12]. Land degradation, air pollution, and the destruction of natural habitats further exacerbate the environmental and public health impacts of these mining activities[2]. This study aimed to examine the public health implications of illegal small-scale gold mining in Ghana. The review focused on assessing the current state of illegal gold mining, evaluating the effectiveness of regulatory frameworks and policy interventions, investigating the health effects of mercury exposure in small-scale mining, analyzing community health and socioeconomic impacts, and exploring environmental pollution and its outcomes on public health.

Methods

A systematic literature search was conducted using online databases (ScienceDirect, Scopus, PubMed, and Google Scholar). Keywords such as: "Ghana," "mining," "community," "health," "environment," "impact," "illegal," "small-scale," "gold," and "galamsey" were used to retrieve the articles.

Peer-reviewed publications and relevant reports written in English Language from reputable organizations were the focus of this study. Articles retrieved were screened for eligibility based on their titles, abstracts, and study design.

Suitable full-text articles on mining-related health and environmental effects in communities living in mining areas of Ghana were retrieved and reviewed.

A review of both peer-reviewed and non-peer-reviewed publications was conducted.

Figure 1. Illegal small-scale mining activity in a typical mining community in Ghana. Various techniques are employed in the mining activities including the use of mercury in the extraction of the gold. This type does not involve the use of technology as the miners are not able to employ such heavy-duty equipment for their mining activities. Source: https://static.euronews.com/articles/361915/1024x538_361915.jpg?1490806772

Figure 2. Children of varying age groups involved on illegal small-scale mining activity in a typical mining community in Ghana. People who engage in the mining activities often involve their children too. No protective equipment are provided, and the children work just like anyone else. Source: https://ocdn.eu/pulscmstransforms/1/LEDktkqTURBXy9lNjljOGVkNWJjNjZiNjZhZTdlMDAxODVhNGEyYmE4MC5qcGVnkpUDABzNAuDNAZ6TBc0EsM0Cdg

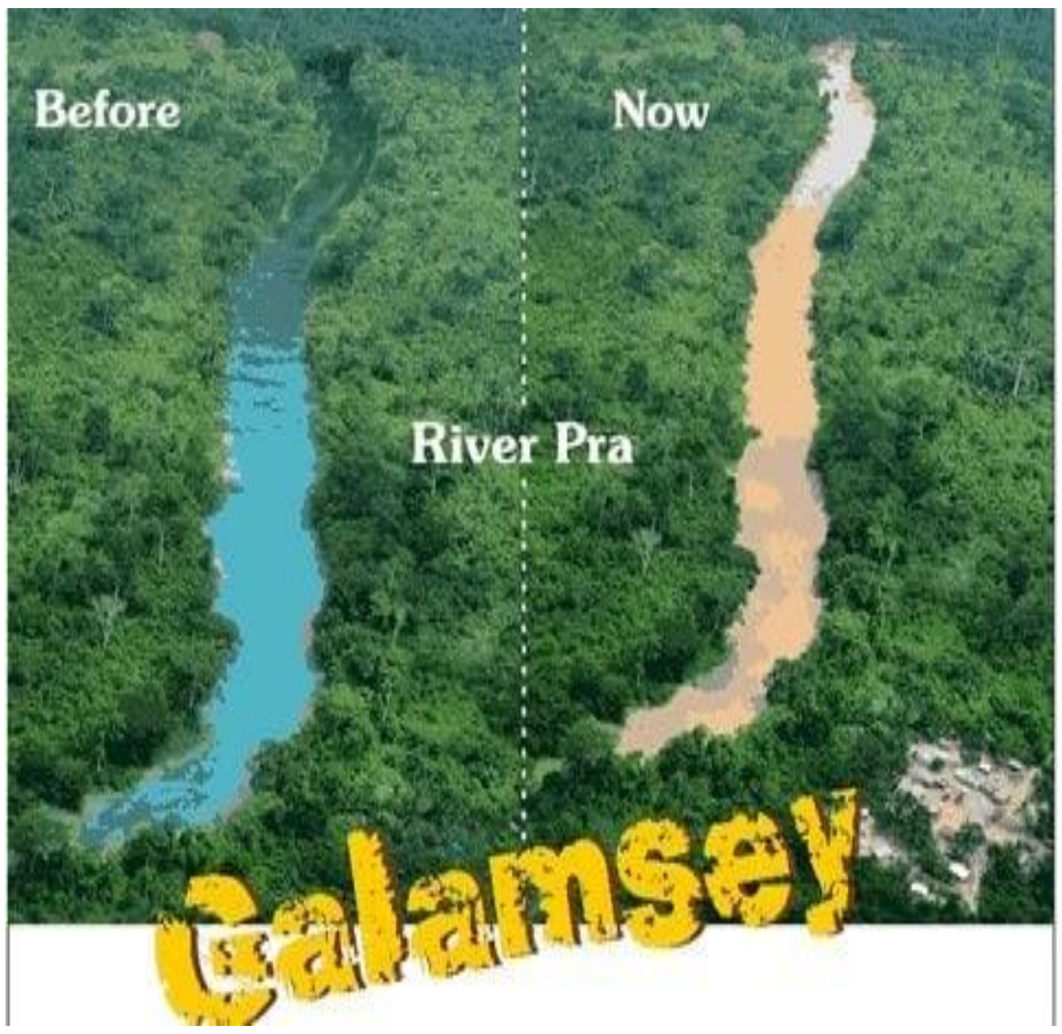

Figure 3. A typical effect of illegal small-scale mining on key water bodies in Ghana. The image depicts a once known clean water to a milky-brown water as a result of the illegal small scale mining activities. As a consequence, aquatic life is not only hampered, but people who otherwise depended heavily on these water bodies for survival such as through fishing activities tend to lose their livelihood. Source: https://cdn.modernghana.com/images/content/118201650621_riverpra.png

Figure 4. Police and military tax force deployed to stop miners from continuing with the mining activities. Attempts to stop the miners from continuing with the mining activities necessitated the deployment of police and military tax force into the mining areas. The tax force as depicted in the image confiscated logistics that were used in the mining activities. Some arrests of perpetrators of the act was also made during the operation of the tax force. Source: https://www.primenewsghana.com/images/2018/dec/6/2246099770689_5711521149509.jpg

Results, Discussion, and Conclusion

Results

The research articles retrieved from the various databases were carefully examined and the key information synthesized according to the following subtopics:

Current State of Illegal Gold Mining in Ghana: There is an alarming rate of illegal small-scale gold mining in Ghana, with an estimated 60% to 80% of small-scale miners operating without proper licenses and oversight[1] [2] [3]. These unregulated operations often employ dangerous materials, techniques, and equipment including the widespread use of mercury for gold extraction[2] [3].

Regulatory Framework and Policy Interventions: Ghana has established laws and regulations governing the mining sector, including the Minerals and Mining Act of 2006 and the Environmental Protection Agency Act of 1994[1]. However, implementation and enforcement of these regulations have been hampered by bureaucratic bottlenecks, corruption, lack of political will, weak institutions, and limited resources[1] [2].

Health Effects of Mercury Exposure: Prolonged mercury exposure can lead to severe neurological disorders, respiratory problems, and other adverse health effects, not only among miners but also in surrounding communities [2] [3].

Community Health and Socioeconomic Impacts: The destruction of farmlands, deforestation, and pollution of water sources have disrupted traditional livelihoods, compromised food security, and limited access to clean water and sanitation facilities [2] [3].

Environmental Pollution and Public Health Outcomes: The release of toxic substances, such as mercury and cyanide, into water bodies and the atmosphere has far-reaching consequences for human health and ecosystem integrity [2] [3].

Conclusions

This systematic review highlights the urgent need for concerted efforts to address the public health implications of illegal small-scale gold mining in Ghana.

By synthesizing the available evidence, this study provides an understanding of the current state, regulatory challenges, health effects, community impacts, and environmental pollution associated with these mining activities.

The findings underscore the importance of intentional evidence-based strategies and interventions that prioritize public health, environmental sustainability, and the well-being of communities in that mining area and the general Ghanaian population.

Limitations

1. Lack of detailed research that linked illegal small-scale mining to the health of both the miners and the residents in the mining areas.
2. Lack of clear public health policy documents on interventions for those miners and those who live in these mining areas.

Future Work

1. Further research to determine the cause and effect of illegal small-scale mining on the health and well-being of both the miners and the residents in the mining areas.
2. Determine the level of water and food contamination from illegal small-scale gold mining.
3. Determine the best approach to mitigating illegal small-scale mining and its devastating effect on the environment and public health.
4. Formulate public health policies and interventions that could be directed towards mitigating the menace and helping the exposed populations stay healthy.

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