

**AWARENESS, ACCESS AND UTILISATION OF INFORMATION ON LEAD POISONING  
AMONG RURAL DWELLER'S IN ZAMFARA STATE**

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**Abstract**

*This paper investigated the level of awareness, access and utilisation of information on lead poisoning among rural dwellers in Zamfara State. A case study approach is considering in this study as it aims to understand human beings in a social context by interpreting their actions as individual with Forty (40) study participants were conveniently selected for the study. A validated semi-structured questionnaire was to collect information on demographic factors, awareness, access and utilisation of information on lead poisoning, the statistical methods used by the researchers for the analysis of data comprise of simple percentage, frequencies, and mean. The results clearly shown that, there is lack of awareness, advocacy, access as well as utilisation of information in the context of lead poisoning among the rural dwellers in Zamfara State which could propel the state out of the crisis. Similarly, the study reveals that, low educational level, lack of government interventions and security concern in the State as factors or challenges bedevilling information accessibility in the State. The study concluded that, stakeholders should thrive to address these challenges as essential in the fight against lead poisoning and the protection of the health and future of Zamfara's citizens.*

**Keywords:** lead poisoning, information, information accessibility, rural dweller's, Zamfara State

**INTRODUCTION**

Lead poisoning has emerged as a significant public health concern in Zamfara State, Nigeria, particularly in rural areas where artisanal gold mining activities are prevalent. The state experienced a devastating lead poisoning outbreak in 2010, resulting from the informal extraction of gold ore, which released toxic lead dust into the environment. This environmental contamination led to widespread lead exposure among residents, with devastating consequences, especially among children, who are particularly vulnerable to the harmful effects of lead. Despite efforts to mitigate the crisis and raise awareness about lead poisoning, including remediation efforts and health education campaigns, the problem persists, highlighting the need for a deeper understanding of the awareness, access, and utilization of information on lead poisoning among rural dwellers in Zamfara State.

Rural communities in Zamfara State face numerous challenges in accessing and utilizing information on lead poisoning. These challenges include limited access to formal education and health services, low literacy rates, linguistic and cultural barriers, and inadequate dissemination of information through traditional channels. Furthermore, there may be misconceptions and misinformation about lead poisoning within these communities, leading to gaps in understanding and awareness. Additionally, the remote and dispersed nature of rural settlements in Zamfara State presents logistical challenges for health authorities and non-governmental organizations (NGOs) in delivering targeted interventions and health education programs to at-risk populations.

Understanding the level of awareness, access, and utilization of information on lead poisoning among rural dwellers in Zamfara State is crucial for designing effective public health interventions and policies to prevent and mitigate the impact of lead exposure. By identifying gaps in knowledge and barriers to accessing information, policymakers, health practitioners, and community leaders can tailor education and outreach efforts to address the specific needs of rural populations. Moreover, improving awareness and access to accurate information on lead poisoning can empower communities to take proactive measures to protect themselves and their families from lead exposure, such as adopting safer mining practices, seeking medical assistance, and implementing environmental remediation measures.

Lead is a toxic metal that is used in a wide range of products on a daily basis. (Haman, Mathee, and Swart, 2015) lead is a heavy poisonous metal that is distributed in the environment as a result of human activities or natural cause. Lead exposure can affect nearly every system in human bodies resulting in impaired growth and learning/behaviour problems including diminished IQ, hearing and speech problems, and criminal behaviour.

Zamfara State, located north-western Nigeria, is known for its rich cultural heritage and historical significance. However, in recent years the state has garnered attention for a far grimmer reason; lead poisoning. The issue has garnered international attention due its devastating impact on the health and wellbeing of the local population particularly children. In the year 2010, high number of children fatalities was noticed in some areas of the state. Laboratory testing later on the bodies of survived children later confirm the high level of the metal in their bodies. The toxic heavy metal lead is released into the environment during the extraction and processing of gold ore, contaminating soil and water sources.

In Zamfara State, the primary source of lead exposure is artisanal gold mining, which has been a traditional means of livelihood for many residents. Tragically, these gold mining operations often involve the unsafe extraction of gold ore from lead-rich rocks. The lead-containing rocks are crushed and processed in close proximity to homes and villages, releasing toxic dust and fumes into the environment. Consequently, lead exposure is widespread among the population, with children being the most vulnerable due to their developing bodies and higher rates of hand-to-mouth behaviour.

According to Ahmed, Waziri and Sanusi (2019) significant contributions have been made in the past by different scholars to address the issue of lead poisoning exposures. However, while significant efforts have been made to address this crisis, one crucial aspect that often goes overlooked is the accessibility of information regarding lead poisoning in the state. This paper will investigate the level of awareness and access to information and it's utilization in addressing lead poisoning in Zamfara State and the challenges that still persists.

Access to information is a fundamental human right recognized globally. In the context of lead poisoning crisis in Zamfara State, this right holds immense significance for several reasons:

**Awareness:** Access to information empowers affected communities to become aware of the risks associated with lead poisoning. It enables them to recognize the symptoms of lead poisoning and seek medical help promptly. low level of awareness of lead poisoning presents an obstacle to effort aiming to prevent lead exposure in African communities while on the other hand high level of the awareness have proven to be instrumental in reducing the menace. Thus, lead poisoning programmes aimed at creating awareness in the communities are the vital foundation for effective lead exposure reduction.

**Prevention:** Informed communities are more likely to take preventive measures to reduce lead exposure. This could include sensitizing the communities on safer mining practices, using protective equipment, and avoiding contaminated water sources. Safer mining practices is a set of practices for reducing occupational exposures and minimize environmental contamination. The informed Miners in communities are trained through safer mining method to prevent or reduce the like hood lead exposures in their communities by implementing safer work practices that involves reduction of air borne exposure and off-site contamination.

**Advocacy:** Access to information allows affected communities and advocacy groups to mobilize resources and pressure government authorities to take decisive action to mitigate the crisis. The lead poisoning crisis in Zamfara was unaware to the world until when the international media and organizations made public through information dissemination. This has put a lot of pressures to the government at all level to mobilize resources aimed at providing succour to the affected communities and mitigating the situation.

**Transparency:** Information availability fosters transparency in government actions and spending related to lead poisoning interventions. This transparency is essential in ensuring that resources are allocated effectively and reach those who need them most. Soon the information of the lead poisoning exposure was in circulation, many international organizations like medicine san frontiers (MSF) trooped the state and provided the much needed aid to the affected communities in the state.

While the importance of access to information is clear, several challenges persist in Zamfara State: provided the much-needed aid to the affected communities in the state.

**Lack of Infrastructure:** Many rural areas in Zamfara lack the necessary infrastructure for disseminating information effectively. Limited access to the internet, electricity, and even basic communication tools hinders information flow. Internet serves as useful infrastructure in support of information accessibility and utilization (Suleiman & Joshua, 2009). However, limited access to the facility in the State hinder effective access and utilization of the information. In September 2021, the Zamfara State government announces shutting down of telecommunication networks in the state as part of its effort to mitigate banditry activities in the state. This development resulted in the total internet blockade in the state and according to Tukur, Ibrahim and Muhammad (2022) have negatively impacted the ability of the residents of the state to effectively access and utilize information for various educational activities.

**Education Level:** Low literacy rates in some areas in the state make it difficult for residents to access and comprehend written information. According to literary index published by the National Bureau of statistics (NBS) 2017, Zamfara State occupied the second position of states with lowest literacy level (19.6%) in the country. The situation remained unchanged as recent data released by United Nation educational and scientific cultural organization (UNESCO) shows the state percentage of out of school children rose from 41.1% in 2018 to 61.4 % in 2022. According to Ifedi and Agu (2020) Zamfara is one of the states with the highest number of out-of-school children in Nigeria. They further lamented that, in Zamfara State more than 30 per cent of school-age children are not in school. So, on top of those who do not attend school at all, millions of children are in the poorly resourced and ill-supervised Quranic school system, or almajiranci, which produces cohorts of unskilled youth. Visual and oral communication methods become crucial in such cases.

**Government Transparency:** Ensuring that government authorities provide accurate and timely information about lead poisoning and intervention efforts is an ongoing challenge. Transparency in data reporting and resource allocation is vital.

**Security Concerns:** Zamfara state is affected by banditry, kidnapping and cattle rustling since 2009 and the situation is becoming more precarious on almost daily basis. The crisis started as farmers/ herders and has since metamorphose into full scale of war between farmer and herders or between majority Hausa and minority Fulani in the state. According to Olayoku (2014) as cited by Ifedi and Agu (2020) the genesis of security threat in Zamfara State started since around 2009, but it became out of control in 2011 after the general elections. During that period, there were frequent thefts of domestic animals by local bandits across many local government areas of the state. The bandits used to carry Dane guns, cutlasses and sticks for their operations and most of their activities were targeted on cattle owners/readers found in isolated villages and forests. This unpleasant act triggered the affected communities that are predominantly in disperse rural

settlements to organise a local vigilante group known as “YANSAKAI” in order to counter or checkmate the activities of the bandits. Today, it could be argued successfully that, there is no village in the state that has not witnessed the impact of the army banditry either in form of kidnapping, cattle rustling or even rampage killing. In this situation security concerns can limit access to certain areas, making it challenging for humanitarian organizations and journalists to gather and disseminate information.

Despite the importance of addressing lead poisoning in Zamfara State, there is a lack of comprehensive studies examining the awareness, access, and utilization of information on this issue among rural dwellers. Existing research tends to focus on epidemiological aspects and medical interventions, overlooking the socio-cultural and behavioral dimensions of lead poisoning prevention and management. Therefore, this study aims to fill this gap by investigating the awareness, access, and utilization of information on lead poisoning among rural dwellers in Zamfara State. The findings of this research will provide valuable insights for policymakers, health practitioners, and community organizations working to address lead poisoning and improve public health outcomes in rural areas of Zamfara State.

### **Statement of the Problem**

Lead poisoning remains a persistent threat to public health in Zamfara State, Nigeria, particularly among rural communities engaged in artisanal gold mining activities. Despite extensive efforts to address this issue, including remediation efforts and health education campaigns, the prevalence of lead exposure underscores the need for a comprehensive understanding of the awareness, access, and utilization of information on lead poisoning among rural dwellers. Limited awareness among community members regarding the causes, symptoms, and preventive measures of lead poisoning poses a significant challenge. This lack of awareness may stem from factors such as low levels of formal education, linguistic barriers, and the spread of misinformation within rural communities.

Access to information on lead poisoning is hindered by various barriers in rural areas of Zamfara State. These barriers include inadequate dissemination of information through formal channels, limited access to healthcare facilities and trained health personnel, and geographical challenges in reaching remote settlements. Consequently, rural dwellers may face difficulties in obtaining accurate information about lead poisoning, which in turn impairs their ability to make informed decisions regarding their health and well-being. Furthermore, the underutilization of available information exacerbates the public health risk posed by lead exposure, as communities may fail to implement preventive measures or seek appropriate medical care in response to potential lead poisoning incidents.

The persistence of lead poisoning in Zamfara State underscores the urgent need to address gaps in awareness, access, and utilization of information among rural dwellers. Without targeted interventions aimed at improving knowledge dissemination, overcoming access barriers, and promoting the effective utilization of information, efforts to mitigate the impact of lead poisoning on public health are likely to fall short. Therefore, conducting a comprehensive study to examine the specific challenges faced by rural communities in accessing and utilizing information on lead poisoning is essential for informing the development of tailored interventions and policies to address this ongoing public health crisis effectively.

### **Research Questions**

1. What is the extent of rural dwellers awareness and availability of information on lead poisoning in Zamfara state?
2. What are the challenges militating against the access and use of information on lead poisoning in Zamfara state?

### **METHODOLOGY**

A case study approach is considering in this study as it aims to understand human beings in a social context by interpreting their actions as individual. Furthermore, the study was initially designed to cover the whole state, but due to security challenges it's restricted to only two local government areas (Maru and Anka). Forty (40) study participants were conveniently selected for the study. A validated semi-structured questionnaire was administered uniformly to the participants by the interviewers. Information was collected on demographic factors, as well as awareness, availability, access and utilisation of information on lead

poisoning. Interviews were carried out in a quiet location to ensure privacy. The questionnaire was translated to the local language (Hausa 100%) of the participant so as to obtain as much information as possible. A verbal informed consent was obtained from each participant before the starts of the study. The data collected was statistically analysed using SPSS version 21 and the results were presented as simple percentages, frequency, and mean.

**RESULTS**

This section presents the findings and outcomes of the study. It sets the stage for the analysis and discussion of the data collected during the research process. Within this section, readers can expect to encounter the empirical evidence, statistical analyses, and any other relevant information that emerged from the study's investigation into the awareness, access, and utilization of information on lead poisoning among rural dwellers in Zamfara State.

**Table 1:** What is the extent of rural dwellers awareness and availability of information on lead poisoning in Zamfara state?

		<b>Frequency</b>	<b>Percentage (%)</b>
<b>Awareness and availability of information on lead poisoning</b>	Yes	17	42.5
	No	23	57.5
<b>Access to information on lead poisoning</b>	Yes	16	42.5
	No	24	57.5
<b>The source of information</b>	Radio	8	47.1
	Community members	9	52.9

The level of awareness availability and access to information on lead poisoning among the study participants was presented on Table 2. The result indicates that many (57.5%) of the respondents have little or no awareness of information on lead poisoning. In the same vein the result indicates that 57.5% of the respondents had no access to information on lead poisoning. The result also showed that the main source of information for the majority (52.9%) of the respondents is through community members, while 47.1% of the respondents had their source of information as radio.

**Table 2:** What are the challenges militating against the access and use of information on lead poisoning in Zamfara state?

		<b>Frequency</b>	<b>Percentage (%)</b>
<b>Extent of information utilization on lead poisoning</b>	High	9	22.5
	Moderate	14	35.0
	None	17	42.5
<b>Challenges of using information on lead poisoning</b>	Yes	22	55.0
	No	18	45.0

The challenges faced by the respondents in accessing and utilization of information on lead poisoning was presented on Table 3. The result indicates that majority (42.5%) of the respondents does not the utilized the information on lead poisoning, while 35.0% of the respondents utilize it moderately. Fifty five percent of the respondents were shown to face challenges in using the information on lead poisoning, while 45.5% were indicated to have any challenges in using the information on lead poisoning.

**DISCUSSION OF FINDINGS**

Globally, lead poisoning is a burden that leads to lifelong health problems, such as kidney disease, nephropathy, permanent brain damage, seizure, coma and even death in some circumstances (Mousa, 2015). Lead exposure is estimated to cause 1 million deaths and loss of 21.7 million disability-adjusted life each year (WHO, 2022). The highest burden was observed in low and middle-income countries. WHO estimated that 30% of idiopathic intellectual disability, 4.6% of cardiovascular disease and 3% of chronic kidney

diseases can be attributed to lead exposure (WHO, 2022). Exposure to lead contaminated soil and dust as a result of, mining has caused significant lead poisoning and multiple deaths of people in Nigeria, Senegal and other countries (WHO, 2017). The problem is more prevalent in Zamfara state especially in Maru local government and Anka local Government Area, with Bagega being the most prevalent community where hundreds of lives are lost on annual basis. Bagega and its environs are part of the region where active artisanal gold mining is being carried out in Zamfara State, Nigeria.

The present study revealed that male gender to be the majority among the respondents, this might due to the fact that men are mostly engaged in artisanal gold mining, so they will be the first to be exposed to lead poisoning compared to women. Female are generally exposed to lead poisoning through contact with contact with the clothes worn by the men during mining exercise, this agrees with the study conducted by Ahmed et al., (2019). The study also revealed that majority of the respondents to be single and within the age group of 16 – 30 years with mean age of 27.5 years, the results also showed majority of the respondents to have only primary education as their highest education level attained which might be attributed to their unawareness and inability to access and utilize information on lead poisoning, this agrees with result of the study conducted by Eugenious et al., (2006). The study also revealed lack of awareness and availability of information on lead poisoning among the participants as revealed by some of the respondents that “they don’t know what lead is or lead dust talk less of the health consequences associated with its exposure”. It is also revealed that there is lack of access to information on lead poisoning among the respondents, as revealed by some of the respondents that they were told that gold mining is associated with the risk of being exposed to something poisonous but lack access to information on what the poisonous thing is. The study also revealed community members and radio as their main source of information as reported by Ahmed et al., (2019).

The study revealed that there is lack of utilization of information on lead poisoning even among the respondents with the knowledge of lead and lead poisoning there reason being that it is just a hearsay or a way to stop them from going to their mining site for their daily bread, this might be attributed to their lack of deep knowledge of how the poison can affect their lives and that of their children, as reported by several studies that children exposed to lead poisoning are at high risk of cardiovascular diseases, kidney disease and death (Mathee et al., 2015; Haman et al., 2015). Some respondents revealed to face some challenges in using the information on lead poisoning, they are tag as westerners by the community members as they are trying to bring something new in the community that is not there before, this can attributed to the lack of information and proper sensitization on what lead and lead poisoning is all about.

## **CONCLUSION**

Access to information is a critical component in addressing the lead poisoning crisis in Zamfara State. Although some effort were made to improve public awareness on lead hazards in the state, which have been neither widespread nor sustained, It is revealed that rural dwellers find it difficult in accessing information on lead poisoning. The information is believed to empower communities, promotes transparency, and facilitates prevention efforts. However, various challenges, including security, infrastructure limitations and linguistic diversity, must be overcome to ensure that information reaches those who need it most. Efforts to address these challenges are essential in the fight against lead poisoning and the protection of the health and future of rural dwellers in Zamfara.

### **Based on the findings the following recommendations was made:**

1. Increase Awareness Campaigns: Given that a significant proportion (57.5%) of the respondents reported little or no awareness of information on lead poisoning, there is a critical need to enhance awareness campaigns targeting rural communities in Zamfara State. These campaigns should focus on educating community members about the causes, symptoms, and preventive measures of lead poisoning, emphasizing the risks associated with artisanal gold mining activities and other sources of lead exposure. Collaborative efforts involving local health authorities, NGOs, and community leaders can help disseminate accurate

information through various channels, including community meetings, health workshops, and informational materials in local languages.

2. Tailor Information to Local Contexts: Recognizing the cultural and linguistic diversity within rural communities in Zamfara State, efforts to raise awareness about lead poisoning should be culturally sensitive and linguistically appropriate. Informational materials and educational sessions should be tailored to resonate with the local customs, beliefs, and communication preferences of the target audience. Engaging community members in the design and delivery of awareness initiatives can ensure that messages are relevant, relatable, and effectively conveyed to maximize impact and promote sustainable behavior change.

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**Some Pictures from the field work of the study**







