

Analysis of Child Labor in Artisanal Gold Mines in the Rural Commune of Fourou, Cercle De Kadiolo, Sikasso Region, Mali

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ABSTRACT

Mining is one of the most dangerous work sectors in the world, or child labor is frequent in the artisanal mines. This study attempts to analyze child labor in the artisanal gold mines in the rural commune of Fourou, cercle de Kadiolo, Mali. Data were collected from a random sampling of 120 children working on the commune's different artisanal gold mining sites. The study revealed that 74.2% of children are between 15 to 17 year old and 95% are favorable to this job. 45.8% think that the work is unsuitable for children. 83.6% consider health and safety conditions on site to be deplorable. 85.1% said that it's due to the family poverty that they work in the mines, with the risk of health problems, injury and collapsing galleries (pits). For them, this job enables them to earn an income, but they faced to verbal, physical and economic violence.

KEYWORDS: analysis, consequences, children, Fourou, perception, risks, work.

INTRODUCTION

Since the gold price increase in 2000, artisanal and small-scale gold mining has been a growing economic activity in developing countries. It represents a source of income for several million people in West Africa. Mining techniques have evolved from traditional gold mining to mechanization and the use of chemicals that are harmful to the environment, (Ngom Ndeye Marame *et al*, 2022).

In 2002, there were 250 million children workers recorded in the world, of whom 0.4% were employed in mines and galleries (pits) (International Labour Organization, (ILO), 2002). From the Empire of Ghana to the current Republic of Mali, gold has always been mined by the people of this region using technologies that are now described as artisanal. However, from that period until the 1970 mining code compilation, gold production remained artisanal, (Nathan Christopher L. Shaw and Kanté Ousmane Papa, No date).

The Mining Code of the Republic of Mali of August 2023, in Title 1, Chapter 1 and Article 29, defines artisanal mining as any small-scale operation that consists of extracting and concentrating mineral substances from outcropping or sub-outcropping primary and secondary deposits, and recovering marketable products from them, using manual or traditional methods and processes, including artisanal gold mining.

It is estimated that between 20,000 and 40,000 children work in the artisanal gold mining sector (gold panning) in Mali, in the regions of Kayes, Kidal, Koulikoro, Bougouni and Sikasso. Most of them start working at the age of six, (Human Rights Watch, 2011). Why are these children engaged in such dangerous work in the rural commune of Fourou, Kadiolo cercle, Sikasso region?

The purpose of this article is to analyze child labor in the artisanal gold mines of this locality. It comprises the following sections:

- working methodology;
- analysis of the results;
- discussion of the results.

Scope of the Study

The rural commune of Fourou, located in the cercle of Kadiolo, in the Sikasso region of southern Mali, comprises 23 villages and 6 hamlets (Figure 1).

METHODOLOGY

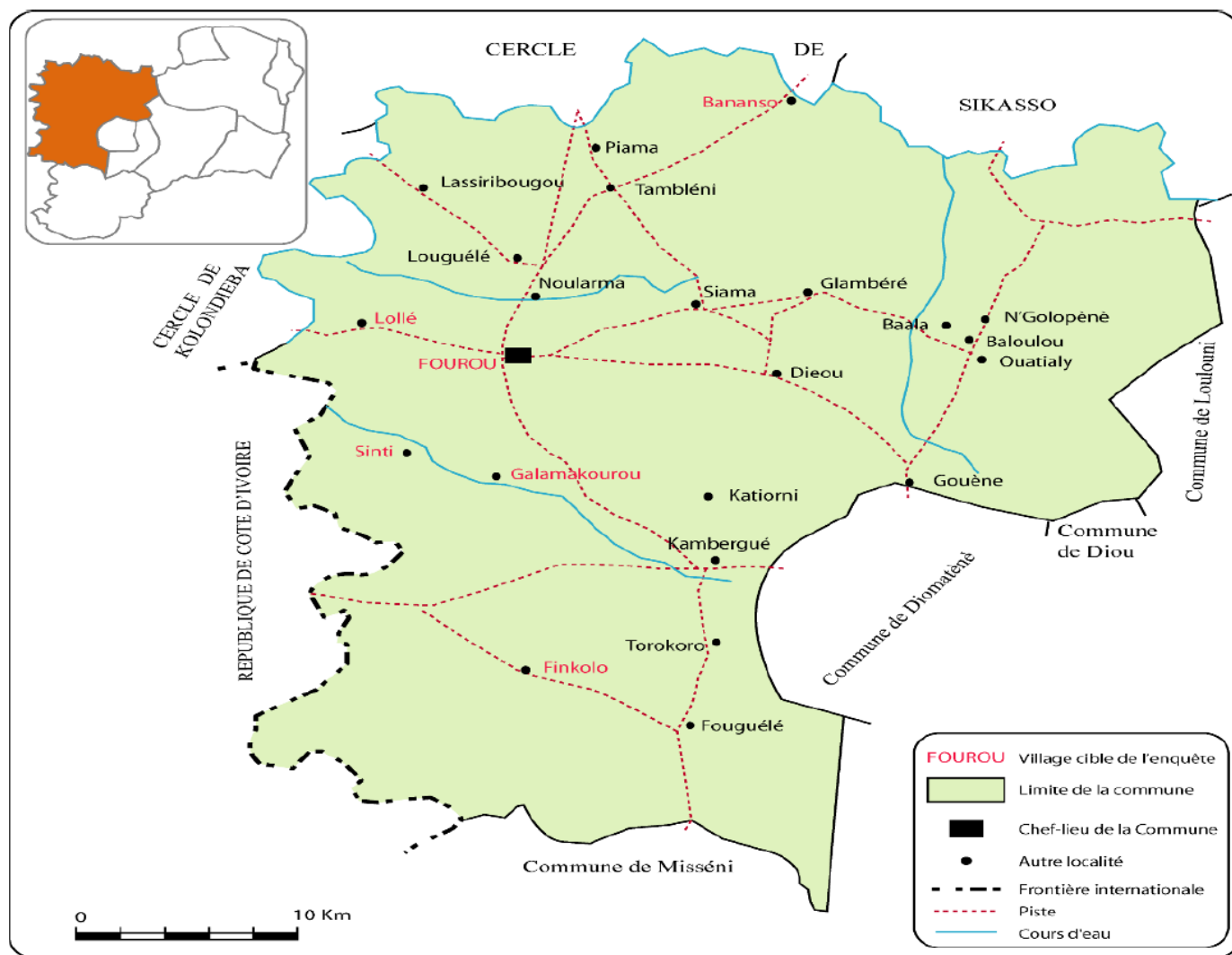


Figure 1. Map of the rural district of Fourou

Its coordinates are: 10° 44' 23" North, 6° 08' 38" West. With a surface area of 1,400 km², its relief is accidented with hills and a Sudanese climate, characterized by an alternance of cold/hot seasons and a rainy season lasting 5 to 6 months. Average annual rainfall varies from 700 mm to 1,500 mm, and the average annual temperature is 27°C. The commune is irrigated by some rivers, the most important of which are the Bagoué and Banifing.

The municipality is experiencing strong demographic growth, with its population rising from 21,289 in 2001, (Ministry of Planning, 2001), to 63,745 in 2023, including 33,661 men and 30,084 women, (Ministry of Economy and Finance, 2023). The sex ratio in 2023 was 111.9%, reflecting the high level of male immigration to the municipality.

Agriculture is the commune's main economic activity. It is based on cotton and food crops. In the rural commune of Fourou, the rise and stability of the gold price since the 2000s has led to an influx of people to the artisanal mining sites, and to the reconversion of many residents who were previously reluctant to mine gold because it would contrast with their traditional agricultural economy. This expansion of gold mining has brought new economic and social dynamics to the local area, (Traoré N'gna, 2022). However, at the same time, to the negative environmental externalities of artisanal gold production is associated another mining issue: child labor. This article analyses child labor in artisanal gold mines in the rural commune of Fourou.

Questionnaire Survey

We combined empirical and random methods. In the empirical part, at the first stage, we've chosen 6 villages out of the 23 in the rural commune of Fourou because of the importance of gold mining. These are Bananso, Finkolo, Fourou, Galamakourou, Lolle and Sinty. In the second stage, for each village selected in the first stage, the artisanal gold mining sites with the highest number of children gold miners were chosen.

In the random sampling, we identified 600 children aged between 12 and 17 working on the 6 artisanal gold mining sites selected empirically. The list of these children, drawn up for each gold mining site, formed the sampling frame. In the third stage, due to the availability of funds, we randomly drew 20 child miners per site by calculating the sampling step, determining a random starting point and systematically applying the step to the starting point to generate the sample.

The sample size is $6 \times 1 \times 20 = 120$ child gold miners, aged 12 to 17, of whom 1/5, or 24, are girls. The overall sampling fraction was $120/600$, or $1/5$. The data was collected using a pre-established questionnaire. Interviews were individual and based on consent. The information collected focused on the following aspects: the sociological profile, the children's perception of the mine, the causes and characteristics of the work and its consequences for the children.

ANALYSIS OF RESULTS

Socio-Demographic Characteristics of the Children

The various socio-demographic characteristics of the children surveyed are shown in **Table 1**.

Table 1. Socio-Demographic Characteristics of the Children

Characteristics	Number	Percentage
a) Age		
12-14	31	25,8
15 - 17	89	74,2
Total	120	100,00
b) Type		
Male	96	80,0
Female	24	20,0
Total	120	100,0
c) Level of education		
Can't read	36	30,0
Can read	84	70,0
Total	120	100,00
d) Residence		
Living with parents	84	70,0
Living with relatives	36	30,0
Total	120	100,00

Source: Traoré S., 2023

The study revealed that 74.2% of children between 15to 17-year-old. They are 88% boys and 70% of them abandoned schools. Many of them are living with their families.

Perception of the Mine

To the question: are you favorable to child labor in artisanal gold mines? The answers obtained are recorded in **Table 2**.

Table 2. Children's views on working in artisanal mines.

Perception	Workforce	Percentage
Positive	114	95,0
Negative	06	05, 0
Total	120	100,0

Source : Traoré S., 2023

We note that 95% of children have a positive perception of the mine, and two main reasons are given,

- Source of monetary income for the family (81%);
- Satisfaction of personal needs (19%).

- The arduous nature of the work (80%);
- Health problems (20%).

To the question: is artisanal gold mining suitable for children? The answers are set out in **Table 3**.

The 5% of children who were against working in artisanal gold mines also gave two main reasons:

Table 3. Adaptability of children to work in artisanal gold mining.

Adaptability	Workforce	Percentage
Yes	65	54,2
No	55	45,8
Total	120	100,0

Source: Traoré S., 2023

The first group of children (54.2%) felt that artisanal gold mining was adapted to children, while the second group (45.8%) has opposite opinion. The first group of children emphasized the apparent ease with which children could move around in the narrow galleries, while the second group felt that working in the mine was dangerous and hard work, with the risk of accidents and health problems.

We found that 97% of the children surveyed thought that working in the mine was profitable. There were two main reasons for this:

- The income from the mine helps to solve the economic problems of generally poor families;
- The opportunity for some children to learn new skills as gold miners. However, because of its dangerous nature, this work is not considered to be a form of training.

Many children (83.6%) consider that hygiene and safety conditions on the sites are deplorable due to:

- The absence of sources of drinking water, sanitary facilities, and health posts;
- Difficult working conditions: exposure to dust in tunnels and galleries, high temperatures and dangerous chemicals such as mercury and cyanide;
- Lack of safety equipment such as gloves, boots, helmets, and safety glasses;

- Poor waste management, which can contaminate the environment and the local population.

Mine workers are very often exposed to work-related accidents such as collapsing galleries, falling rocks, landslides and injuries caused by handling rudimentary equipment.

Causes, Characteristic and Consequences of Work in Mines

The study revealed that the main cause of child labor is parental poverty (Figure 2, next page).

Indeed, for most households, child labor is a survival strategy, as children do not have access to school due to lack of resources. They are therefore forced to enter the workforce at a very early age to contribute to the income of the social group.

On the artisanal mining sites, children may be responsible for digging holes, removing topsoil, washing, and sometimes even filtering the ore. 63.9% of them work 8 hours or more a day, and the risks they face are declared to be:

- Injury (48.2%);
- Illness (29.9%);
- Tunnel collapse (21.9%)

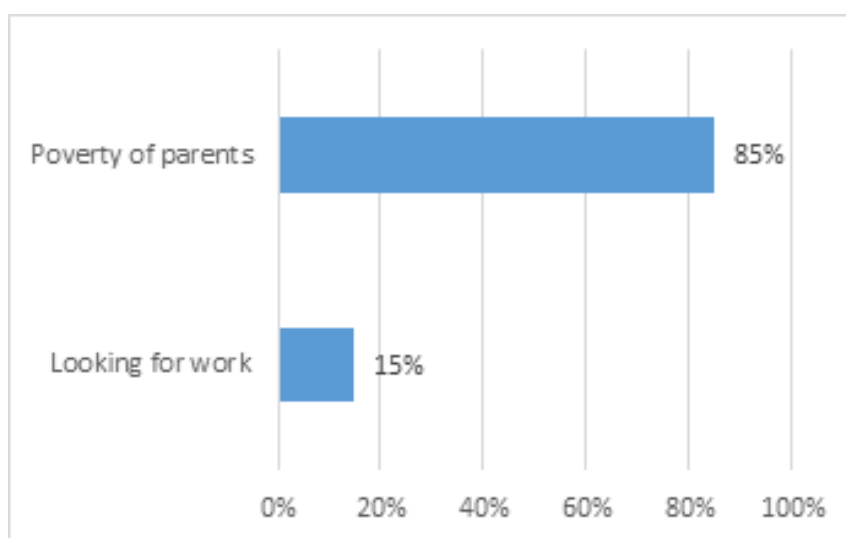


Figure 2. Causes of child labor in artisanal mines

Source: Traoré S., 2023

The personal safety measures reported by children in the workplace were:

- Wearing a helmet (27.9%);
- Wearing gloves and goggles (24.6%);
- Wearing boots (4.9%).

Many children (85.2%) claim to receive remuneration informally (75%) and work-related (25%). Informal

payments are financial or non-financial transactions that are not regulated by the authorities. They may be cash payments or exchanges of services. Informal payment methods vary from one mine to another, depending on local practices and specific arrangements between employers and workers.

The acquisition of new skills reported by children through work in artisanal gold mines is shown in **Figure 3**.

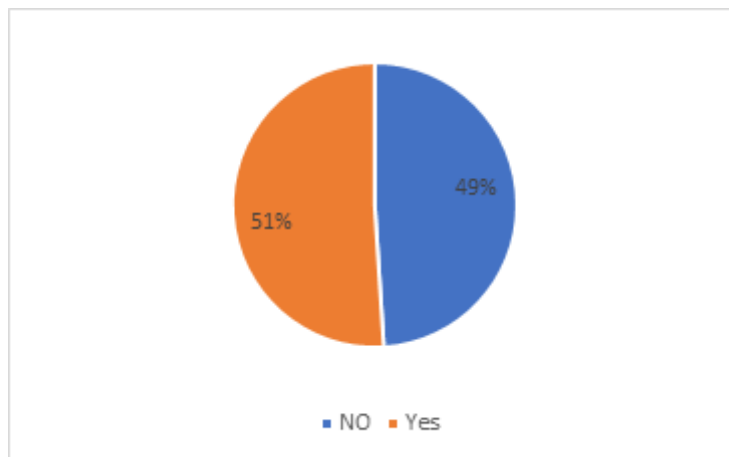


Figure 3. Acquisition of new skills

Source: Traoré S., 2023

Example, 50.8% of children focused on acquiring new skills, such as:

- practical experience (54.5%);
- safety qualifications (36.4%);
- entrepreneurial skills (9.1%).

These results should be treated with caution, as for children aged between 12 and 17, this work is not part of the learning process, as it is detrimental to the child's physical development, health, and well-being.

The study showed that children's income from the mine contributes to family income in the following proportions:

- less than 25% for 14.7% of families;
- 25 to 49% for 23.0% of families;
- 50% or more for 62.3% of families.

In terms of negative consequences, this study focused on violence and illness. In the workplace, children reported being subject to violence, including verbal (32.5%), physical (23%) and economic (13.1%).

A large proportion of children (63.9%) said they had been sick in the last month. These were cases of:

- malaria (34.2%);
- fatigue (23.2%);
- diarrhea (20.7%);

- respiratory illness (14.6%);
- lack of sleep (7.3%).

We note that 74.4% of the sick children had access to traditional healthcare for 51.7% of them, compared with 48.3% who received modern care.

DISCUSSION OF THE RESULTS

Varied Socio-Demographic Characteristics

The study showed that 74.2% of the children were in the 15-17 age group. Of these, 80% were boys. These results are largely confirmed by the International Labor Organization (ILO)/United Nations Children's Fund (UNICEF) report, (2021), which indicates that the majority of working children are aged between 5 and 17. There were almost 97 million boys out of a total of 160 million working children at the beginning of 2020. Sub-Saharan Africa is the region with the highest percentage of working children: 23.9%, compared with 2.3% in America and Europe.

For her part, Dorte Thorsen, (2012), pointed out that in 2009, in the galleries (pits) and mines of Katanga, in the Democratic Republic of Congo, the children working were mainly boys; almost half were aged between 14 and 17, around one third was aged between 10 and 13, and 20% were under 10.

The study revealed that 70% of the children can read and write. In this regard, according to Fatime Christiane,

N'Diaye, (2013), data collected in Burkina Faso show that around 50% of children workers on artisanal gold mining sites have attended school, including 61.29% of girls compared with 53.33% of boys.

A Positive Perception of the Mine

The study showed that 95% of children have a positive perception of the artisanal gold mine, as it is a source of monetary income for the family (81%) and of satisfaction of personal needs (19%). In fact, the children's contribution to the family income can reach 50% or more for 62.3% of families. This situation reflects these children's ability to think and act. In this respect, André Géraldine and Marie Godin, (2012), have shown that the logic of the working child is underpinned by the moral obligation to integrate the money earned into the family circuit at the same time as they acquire a degree of decision-making power in their household. However, not all children went to the mines with similar arrangements. Nevertheless, many grievances have been levelled at mining: landslides, a dusty environment, damage to the health of workers and neighboring populations, but above all enormous environmental damage. In addition, there have been deadly conflicts with indigenous populations, (PanAfGeo, 2019).

The study found that 45.8% of child workers felt that work in artisanal gold mines was not adapted to children. In the same vein, the NGO Plan International, (2021), points out that child workers perform work that is harmful to their health because they may:

- Carry heavy loads that are harmful to their physical development;
- Injure themselves with tools that are unsuitable for their age;
- Become intoxicated when handling toxic substances, etc.

The study revealed that 26.2% of the children surveyed felt that their relations with their employers were poor because of irregularities in the execution of the terms of informal contracts and physical and verbal violence. Regarding physical violence in the Issia gold mines in Côte d'Ivoire, Célestine Magloire N'Guessan N., (2005), reports that children's bodies show scratches caused by physical abuse: 7.33% of children claim that they were beaten because they were distracted or refused to work because they were tired or had inadvertently damaged a work tool.

Family Poverty: The Main Cause of Child Labor

The study showed that 85.1% of children said that family poverty is the main reason why they work in the artisanal gold mine. The poverty rate is 59.6% for the Sikasso region, to which the rural commune of Fourou belongs, compared with 15.9% for the Bamako district (Ministry

of the Economy and Finance, 2022). Laurent Makal and Dieudonné Kantenga, (2018), show that poverty is one of the factors explaining child labor in mines and galleries (pits). Meanwhile, Dorte Thorsen, (2012, *op. cit.*), adds that:

"In the province of Katanga, in the Democratic Republic of Congo (DRC), Three quarters of the children who work in the mines come from low-income families where the parents are unemployed, or farmers".

According to Prince Kihangi Kyamwami, (2013), in the artisanal mining site of Bisie in Walikale territory, in the Democratic Republic of Congo (DRC), family poverty is identified as the main cause of child labor. This poverty comes from parents' unemployment and underemployment. With the widespread lack of employment, poverty takes hold, and the cost of life rises. As each member of the family is a mouth to feed, everyone is called upon to contribute to the family income. Girls and boys work so that they can contribute to the family's survival, even though this is detrimental to their mental, physical, and emotional development. Children's wages, however meagre, represent a significant proportion of the income of poor families.

Difficult and Risky Working Conditions for Children

On the artisanal gold mining sites, 83.6% of the children surveyed consider that health and safety conditions on the sites are deplorable, where they may be responsible for digging holes, removing topsoil, washing, and sometimes even filtering the ore. 63.9% of them work 8 hours or more a day, with inadequate personal safety measures. In this regard, Laurent Makal and Dieudonné Kantenga, (2018, *op. cit.*), have indicated that in the town of Kolwezi in the Democratic Republic of Congo (DRC), adult artisanal miners use child labor because, according to them, only children can help with washing the ore, transporting the ore and doing the important tasks that remain after the digging work.

Along the same lines, the international labor Organization (ILO) / United Nations Children's Fund (UNICEF), (2021, *op. cit.*), point out that artisanal and small-scale mining can force children to work in deep underground shafts, hauling heavy loads of rock and using toxic chemicals to separate minerals or precious metals from the ore. Between the ages of 5 and 10, children are involved in transporting blocks of stone, crushing and sieving. From the age of 14, they can dig holes or galleries (pits).

Prince Kihangi Kyamwami, (2013, *op. cit.*), adds that children work without any protection or safety measures, in shafts that are not supported or ventilated. There is a constant risk of a cave-in, and the environment in the mines lends itself to prostitution and drug trafficking. Fatal or incapacitating accidents are common during the artisanal mining: rockfalls, subsidence and asphyxiation.

In addition, the operating conditions under which the minerals are processed can have serious long-term consequences for children, who are exposed to rock dust, noise, vibrations, and dangerous chemicals without due care.

Is child labor in the artisanal gold mine a form of learning?

The study found that 50.8% of the children surveyed see working in the mine as a form of learning. In fact, some workers are able to acquire practical experience in the form of understanding the extraction and mineral processing techniques and knowledge of the local geology. They may also acquire skills in safety in a mining environment. Occasionally, some artisanal workers can develop entrepreneurial skills by running their own business.

And yet we do not share this view for working children, because the International Labor Organization (ILO) and other national and international organizations have emphasized the need to protect children's rights and to ensure that they have a proper education, a safe environment, and the opportunity for healthy development. Child labor, especially in artisanal mining, is generally considered to be an obstacle to these fundamental rights. Article 32 of the Convention on the Rights of the Child is clear on this point:

"The child shall be protected from economic exploitation and from performing any work that is likely to be hazardous or to interfere with the child's education, or to be harmful to the child's physical, mental, spiritual, moral or social development".

Article 3 of Convention 182 of the International Labor Organization (ILO) also refers to the work performed by these children in mines as "work which, by its nature or the circumstances in which it is carried out, is likely to harm the health, safety or morals of children".

Countless Health Problems

Most of the children (63.9%) said they had been sick in the last month. These included cases of malaria, diarrhea, fatigue, lack of sleep, but above all respiratory illnesses. The rural commune of Fourou, like the rest of the Sikasso region, is a malaria-endemic area. According to the conclusions of the report by the International Labor Organization (ILO), (2021, *op. cit*), on the harmful effects of child labor, the tools used are outdated, and the work requires a great deal of physical effort. As a result, children are exposed to a number of dangers: lung disease, parasitic diarrhea, and accidents caused by tools and stones.

According to Landrigan Philip *et al*, (2022), exposure to mercury occurs mainly in the artisanal gold mines, when crushed ore mixed with mercury forms an amalgam, which is then vaporized, producing highly toxic mercury vapors. They cause serious neurological, renal, digestive,

and immunological problems. Many miners suffer from these symptoms, which are also found in the affected communities. Exposure to cyanide is another very serious risk associated with gold mining and occurs when cyanide is used as an alternative to mercury to separate the gold from the ore. Cyanide has adverse effects on respiratory and cardiovascular health and the central nervous system.

CONCLUSION

This research looked at child labor in the artisanal gold mines in the rural commune of Fourou, in the Kadiolo cercle in Mali. The aim was to analyze the problem of child labor in this sector. The analysis revealed that children start work at a very early age in order to contribute to family income. They are involved in all stages of gold extraction, from digging the holes to filtering the ore, exposing themselves not only to a dusty environment but also to dangerous chemicals such as mercury and cyanide. Even if the work seems economically profitable, the risks are numerous: injuries, illnesses and collapsing galleries (pits). They also face verbal, physical, and economic violence on the sites. They report numerous health problems, including fatigue, diarrhea, respiratory illnesses, and lack of sleep.

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None.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

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ETHICAL CONSIDERATION AND INFORMED CONSENT

Not applicable.

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