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Exploring community perspective on mining activities and respiratory health in Claver Surigao Del Norte, Philippines

Sunshine Rose N. Dave*, Jessel A. Basadre, Edly Nouvee M. Lastra, Ian S. Umpil, Mauricio S. Adlaon

Surigao Del Norte State University, Graduate School, Narciso St., Surigao City, Surigao Del Norte, Philippines

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Abstract

The municipality of Claver is essentially a mining reservation due to it's richness in mineral resources. The process of removing valuable earthly minerals and other materials is known as mining. This is viewed as one of the primary economic endeavors that propel economies across the globe and it is being considered by economic planners as a key industry for economic advancement in the Philippines nowadays. However, in any case, mining has been associated with health problems caused by environmental exposure to mine squander, particularly in countries where minerals extraction is made. The study used the qualitative approach to examine community perspectives, experiences towards the positive and negative effects of mining activities to the host and neighboring communities. The participants consisting of 34 were instructed to use an open-ended, semi-structured interview guide to respond to the questions. The results of the interview were transcribed, translated from Sinurigaonon dialect into English language. Moreover, data gathered was carefully examined using thematic coding analysis. It is apparent that the contribution of mining industry to economic development cannot be denied, but its source of environmental pollution and health impact were also recognized wherein there is significant evidence that mining has an adverse short-term effect on the respiratory health of the inhabitant living proximity to the mining site. And as to the significant role of SDMP implemented by mining companies were significantly addressed to the affected community to minimize the negative externalities impacted by the mining activities. By reason of, mining can play a major part in ethical and economic improvement in such ways they can coordinate their objectives with societal values in order to cultivate the financial extension and improvement of the affected areas.

***Corresponding Author:** Sunshine Rose N. Dave ✉ sunshinerose.najial@deped.gov

Introduction

The process of removing valuable earthly minerals and other materials is known as mining. This is viewed as one of the primary economic endeavors that propel economies across the globe (Abraham, 2015). It is being considered by economic planners as a key industry for economic advancement in the Philippines today (De Alban *et al.*, 2004). Suggesting the foreseeable progression in innovation and innovative items, the requests for minerals resources are expanding and thus the require for mining exercises to meet these requests (Abraham, 2015). Historically, in any case, mining has been linked to health issues due to environmental exposure to waste from mines, especially in developing nations (De Cássia Canedo Oliveira Borges *et al.*, 2016). In mining locales, inquire almost on the determinants of respiratory prosperity overwhelmingly centers on exposures to open discuss examine toxins deriving from mining operations (Dietler *et al.*, 2021). Introduction to tidy can be short-term or long-term and can cause respiratory wellbeing issues extending from intense to persistent (Mamuya *et al.*, 2007; Nelson, 2013; Nkrumah and Yaw, 2005).

From the point of view by Litvinenko (2020), the mining sector contributes significantly to the nation's economy and is crucial to its growth economically (Firozjaei *et al.*, 2021). Meanwhile, due to its riches in minerals, the town of Claver is essentially a mining reservation (Claver, Surigao Del Norte Philippines, n.d.). These have played a substantial role in the development of the community of Clavernons, specifically the people in the host mining community. On the other hand, like all businesses, mining has both benefits and dangers for the individuals occupying in communities where minerals are found. The residential proximity to the mining sites may brought public health challenges, much especially to those people who are vulnerable to any outdoor air pollutants of mining operations may produce.

Despite extensive research using quantitative approach related to mining impact and human health, there is significantly the absence of qualitative research exploring the opinions of locals, or communities about the health effects of mining, more specifically, among the mining communities closest to the vicinity of the mining site. Therefore, this study was conducted to examines community perspectives on the relationship between mining activities and respiratory well -being, and the role of Social Development and Management Program (SDMP) towards sustainable mining practices, thus requires into account the health concerns of the surrounding communities, focusing special regard to vulnerable populations like children, elderly, expectant mothers, and rural inhabitants living therein, Claver Surigao Del Norte, Philippines.

The study aimed to conduct a qualitative survey to examine community perspectives on the relationship between mining and respiratory well-being of the mining communities in Claver, Surigao Del Norte, Philippines.

Methodology

Research locale

Fig. 1. Map of Barangay Taganito and Barangay Hayanggabon in Claver, Surigao Del Norte (Source: Google map)

Research design

The design selected for this research study was qualitative data in nature. This study employs a semi-structured interview to gather detailed experiences or opinions from the community. The recording of the interviews were transcribed and translated from “Bisaya” dialect into “English” for thematic coding.

Semi-structured questioning was validated with the assistance of the thesis adviser and specialists in the fields of science and curriculum from Surigao del Norte's school division.

Participants were ethically invited to take part in the interview confidentially. Thus, the identified primary data collection was confidentially collected with ethics approval of the Barangay Captain and Barangay Officials.

Finally, data analyses were undertaken which involve thematic coding to identify key themes, patterns, and narratives transcribed from the community perspective were identified to address the relationship between mining and respiratory-related diseases, especially to the communities who were really expose to mining activities.

Respondents of the study

The selection of participants was done through purposive sampling. The demographics, socio-economic background, and proximity to mining sites were utilized to ensure the research welfare of the participants in the study. A semi-structured interview guide with an open-ended questioning was done to examine community perspectives. The involved participants of the study were the two identified host communities (Barangay Taganito with 24 respondents whereas Barangay Hayanggabon with 10) of Claver Surigao Del Norte, with active mining operations.

Instrument

This research study used a semi-structured interview questioning guide as source of information were utilized. These sets of questions were utilized to identify the key themes used for thematic coding.

Validity: To ensure validity, the questionnaires were sent to the panel of experts for revision, improvement, and suggestion in order to guarantee validity. The experts' corrections and recommendations were taken into consideration when revising the questionnaires.

Reliability: To test the questionnaires' reliability, dry runs are conducted.

Procedures

The respondents of the study were the two identified mining communities in Claver, Surigao Del Norte, namely the Barangay Taganito, and Barangay Hayanggabon. The respondents were ethically interviewed using the semi-structured interviews approach to explore individual experiences, perceptions, and concerns related to mining and respiratory health among the affected areas. Once the instrument's reliability was ascertained, the researcher wrote to the barangay captains of the two mining barangays to obtain permission to conduct the study. Prior to gathering data from participants in the study, written informed consent was sought, guaranteeing the confidentiality of all collected data.

Data analysis

Thematic analysis

These were used to systematically coding qualitative data to identify key themes, uncover patterns, narratives related to mining and respiratory health.

Results and discussion

Study population

A total of 34 study participants were interviewed at the two identified barangays with active mining sites. Preliminary findings suggest that community members perceive mining as a significant contributor to economic wealth of Surigao Del Norte, preferably the municipality of Claver, Surigao Del Norte. Aside to its beneficial impact, it was also perceived that mining plays a significant contributor to any identified respiratory health problems experienced by the communities.

Community perceptions and experiences on respiratory health concerns

In addition to significantly improving national income and foreign exchange profits, mining plays a critical role in helping to eradicate poverty in the developing countries (Hilson, 2002). Respondents from one barangay agreed on the positive influence of

mining on every sustainable development experienced in the community. They appreciated the general assistance and support rendered by mining companies in every government sectors specifically the mining community. However, relating from the point of view of Leuenberger *et al.* (2021) there is an existing interlinkage between mining operations and effects on public health. One respondent explained that…

"I have experienced frequent sneezing and coughing especially amid windy seasons wherein dust particles or mining related dust are clearly seen here in Barangay Taganito".

Another respondent commented on the adverse effect of mining on public health, saying……

"When we are just new resident here, because my husband got assigned to work in Taganito, my asthma got triggered for a couple of days. But for some years of living, we now adapt the condition of the air".

Communities' perspective on the level of awareness about mining activities and its potential relation towards respiratory health

With regards to the perspectives of the participants about respiratory health associated with mining activities, reveals that the respondents in Claver Surigao Del Norte positively "aware" on the mining operations in their barangay since majority of the participants inhabit the area for about 5 years above. However as to the level of awareness in terms of the adverse impact of mining to their respiratory health, majority of them do have a "less" understanding about the impact of mining on their respiratory health, even one respondent stated that….

"I cannot determine if it really the mining operations cause the increase in respiratory ailments occurring in our barangay since there is some factors that we have to consider that possibly contributes to respiratory illness… but it is really true that if there we are not able to adapt the quality of air here in Brgy. Taganito, we can experience cough and cold, or even asthma."

Another respondent stated that.

"I also have no idea if anything has changed in the quality of wind, because the same thing can be noticed when it is windy, especially in the month of April. We can experience our houses are dusty even if you are done cleaning your house, there are still laterite dust." But, when it's dusty season, the mining operations will also clean the roads using water trucks especially on the highway to reduce the dust experienced by the residents, especially those living on the side of the road".

The adverse effect of mining activities as to public health are not perceivable as to the participants may be because community in this two host mining barangays benefited the implemented Social and Development Program by the mining companies, fulfilling their legally mandated social responsibilities to the affected community.

Socio-economic factors: equal access to healthcare services

The community as well actively participates in advocacies for better health measures related to mining activities, and the mining companies as well actively supports to its host and neighboring communities in providing medical or healthcare needs in every barangay and even conducted annual medical-surgical mission services in Claver Surigao del Norte and its neighboring communities in Surigao Del Norte. There is no socio-economic disparities happens if the community will collaborate to the LGU of Claver, or in mining companies, if there is an unexpected health emergency happens to the individual. This is their way in helping the community especially to every household with lower socio-economic backgrounds, with lack of insurance, and no ability to seek timely medical care especially respiratory health issues.

Financial contributions to support health services among vulnerable individuals…

"*I am one of the beneficiaries of what is called the Social Development and Management Program (SDMP) of the mining companies here in the town of Claver. We as senior citizens, can receive a monthly medicine allowance which is worth 600 pesos, in which it will help us to pay for our monthly medicine maintenance.*"

(Senior Citizen)

Mining workers and the whole family availed the Health care programs rendered by mining companies to their employees….

"*My husband is a worker in a mining company here in Claver, and we benefited as a family from one of the benefits they gave to their workers called "IntelleCare". When there are emergency illnesses, especially if the children got sick specifically respiratory health ailments, we can be able to access free checked-up by their affiliated doctors under the program "Intellecare". It is no longer difficult to go to a doctor for a checked up when the family got sick*".

Regarding the availability of necessities at healthcare centres in the host communities, where mining corporations have added to some of these upgrades as a means of promoting ethical and sustainable mining practices. The community of Claver will now be able to access free checked up concerning common ailments such as respiratory disease that needs a doctors' advice, since the Barangay Hayanggabon Health Center has a community doctor assigned by mining companies. Moreover, neighboring communities also can access equal health services since the municpality of Claver has also a community doctor to access the needs of every individual. Moreover, they yearly supported and assisted the conduct of medical mission of the affected, as well as neighboring communities of of Claver. Nonetheless, some respondents expressed their gratitude and wishes for a consistency and sustainable quality of healthcare services supports by mining companies in the future years.

Community Coping strategies and adaptation

The community takes precautionary measures to minimize exposure to mining-related dust just like wearing a mask on going outside, daily cleaning on their respective homes. The mining workers itself wears personal protective equipment (PPEs') such as: hard hats, safety goggles, gloves, hand gloves, reflective clothing, steel-toed boots or shoes, more especially respirator mask, before entering mining sites especially to those who are much exposed to mining dust particles in order to create a healthy and safer workplace (Fig. 2&3).

Fig. 2. Taganito Mining Corporation (TMC) held a number of events and competitions for its staff and service providers in honor of the annual World Day for Safety and Health at Work, which is observed on April 28. Retrieved from: https://nickelasia.com/bulletin/tmc-joins-in-promoting-safer-workplace

Fig. 3. Taganito HPAL Nickel corporation wearing their proper PPE's. Photo credit: Taganito HPAL Nickel Corporation

Role of social development and management program toward sustainable mining practices

The participants confirmed to the initiatives' positive effects on social and cultural, educational, health, and economic indicators of *Social Development and Management Program* to the affected communities

(Raborar and Recio, 2020). Although some of these beneficial efforts are regarded positively by the affected communities (Himmelsbach *et al.*, 2023), they still ask for consistency among the plans of every mining companies to achieve a sustainable mining practices. One respondent stated that...

"The mining companies in Claver has made a difference a lot, it can moreover be seen that the town of Claver is dynamic, typically how mining companies fulfill their social responsibility to become a responsible and sustainable mining. Perhaps, we hope that they will not stop helping the people here in Claver, and they will enhance their future plans as consistent for the safety of the people, and as a mandate to their social responsibility to the community".

(Community Leader)

The results highlight the complex connection that occurs within the community between mining operations, environmental impact, and respiratory health effects. It is apparent that common respiratory issues (such as asthma, cough, and sneezing) were experienced by the host communities considering to their proximity towards mining operations, however it was only manageable since everyone in the community can access free medical checked-up on their respective Barangay Health Centers, and Rural Health Unit supported by the mining companies, and the local government unit of the town. In order to minimize adverse externalities, positive benefits must be given equally through management of those effects, which must be identified and measured. Therefore, according to the law, mining corporations have to support the development of its impacted host and surrounding communities by carrying out its Social Development and Program for Management (SDMP). That works to create resource-based, accountable, and self-sufficient communities that can design, carry out, and oversee their own development initiatives in a way that upholds the values of sustainable development and people empowerment (DENR: MGB). For the most part, the respondents concurred the SDMP were actualized in like manner.

Conclusion

This qualitative study provides a comprehensive understanding about community perspectives on the positive (advancement) and negative (heath-related) effects of mining to the host and neighboring communities. It is apparent that the that mining's involvement to economic development cannot be denied, but its source of environmental pollution and health impact were also recognized wherein there is significant evidence that mining activities has an adverse short-term effect on the respiratory health of the community living proximity to the site, which is cause of mining dust pollutants. The research examined that mining have both positive and negative environmental and public health impacts, however when mining companies align their objectives with societal values, they can contribute significantly to ethical and sustainable development by promoting the socio-economic growth and development of the impacted areas.

Implementing their legally-mandated social responsibilities to the advancement of the communities impacted by mining operations (PH-EITI, 2014). Mining is already there in our community, and the only ways that people can positively adapt the adverse impact of mining is to support them, in carrying out their responsibility to the community, into ethical and responsible mining practices that both people and the environment can contribute. Overall, this study provides a comprehensive understanding of the intricate interactions that exist between mining operations and health, recognizing the necessity of thorough evaluations, stakeholder participation, and sustainable practices to reduce adverse effects and advance community well-being.

Recommendation(s)

This study recommends that assessment of community perspectives should be done yearly to generate concrete data since community perception do change over time. Moreover, this study limits only on the viewpoint of the affected communities, it would have been intriguing to integrate the thoughts of the local governments as well for a plausible impact of this study. Furthermore, future

researches in the area should include and provide the annual medical data from the community health centers to quantitatively determine the prevalence of health-related aspects of the community living proximity to the mining site.

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