

# Gender Dynamics in Informal Small-Scale Mining: A Phenomenological Study of Women's Experiences

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## ABSTRACT

Women's participation in small scale mining remains understudied, particularly within informal and regulated restricted contexts where labor is precarious and institutional protection is limited. This study explored the gender dynamics of informal small-scale mining by examining the lived experiences of women engaged in mining work. Guided by a qualitative phenomenological research design, the study focused on how women understand and navigate their roles, workplace conditions, access to resources, economic contribution, and coping practices within an informal mining setting.

Data were collected from ten women miners through semi structured interviews, and observation. Using phenomenological thematic analysis, shared meanings were identified across participants' narratives. The findings revealed that women play essential yet undervalued roles in mining operations, often under hazardous working conditions and with limited access to basic resources. Despite income instability, women's participation in mining was found to be critical to household survival. Coping and meaning making emerged as central to women's endurance, shaped by family responsibility, faith, and perseverance.

The study highlights how gender dynamics in informal small-scale mining are experienced as intertwined processes of labor, vulnerability, and resilience. By centering women's voices, the research contributes context grounded insights to gender and development literature and underscores the need for gender responsive interventions that address safety, resource access, and recognition of women's economic contributions in informal mining communities.

**Keywords:** gender dynamics, informal small-scale mining, women's lived experiences, phenomenological study, coping and meaning making

## INTRODUCTION

### Background of the Study

Small scale mining remains a significant source of livelihood in many parts of the Philippines, particularly in rural and mineral rich communities where access to formal employment is limited. Within these settings, mining is not only an economic activity but also a social practice embedded in family survival, community relations, and daily labor arrangements. While both men and women participate in small scale mining, women's roles have historically received less scholarly and policy attention, often rendering their contributions invisible within both economic reporting and development planning.

In the Cordillera Administrative Region, including Benguet, small scale mining has long been part of community life. Women's participation in mining is shaped by a combination of labor division, power relations, and lived experience. They are involved in physically demanding tasks such as ore processing, mineral sorting, and material handling, while simultaneously carrying family and caregiving responsibilities. Despite their active engagement, women often encounter unequal access to resources, limited participation in decision making, and exposure to unsafe working conditions. These conditions are reinforced by gendered assumptions that frame

mining as predominantly male labor, positioning women’s work as secondary or informal even when it is central to production.

In Mankayan, Benguet, women’s experiences in small scale mining are further influenced by informal work arrangements and resource scarcity. Patriarchal norms within the mining community shape how labor is valued, how authority is exercised, and how risks are distributed. Women frequently perform essential tasks without formal recognition, protection, or access to adequate equipment. Health and safety risks are common, particularly in environments affected by unstable terrain, strong water currents, and exposure to hazardous materials, often without sufficient protective gear or training.

Beyond physical labor, women’s participation in mining is deeply connected to family survival. Income from mining, though unstable, supports daily household needs, children’s education, and extended family obligations. Women’s continued engagement in mining reflects not only economic necessity but also coping, meaning making, and endurance shaped by family responsibility and personal faith. These lived realities align with the principles of the Magna Carta of Women (RA 9710), which affirms women’s rights to safe working conditions, equal access to resources, and recognition of their economic contributions.

Understanding the gender dynamics of small-scale mining therefore requires attention not only to labor roles and workplace conditions, but also to how women interpret, endure, and give meaning to their participation in mining within the context of family and community life. This study situates women miners’ experiences at the center of inquiry to illuminate their roles, challenges, and agency within small scale mining in Benguet.

### Conceptual Framework

This study is guided by a conceptual framework that situates women’s participation in small scale mining within the broader context of gender dynamics, informal labor conditions, and family survival. The framework is descriptive and analytic in nature, designed to organize and clarify how key elements of women’s mining experiences are related, without implying causal or predictive relationships.

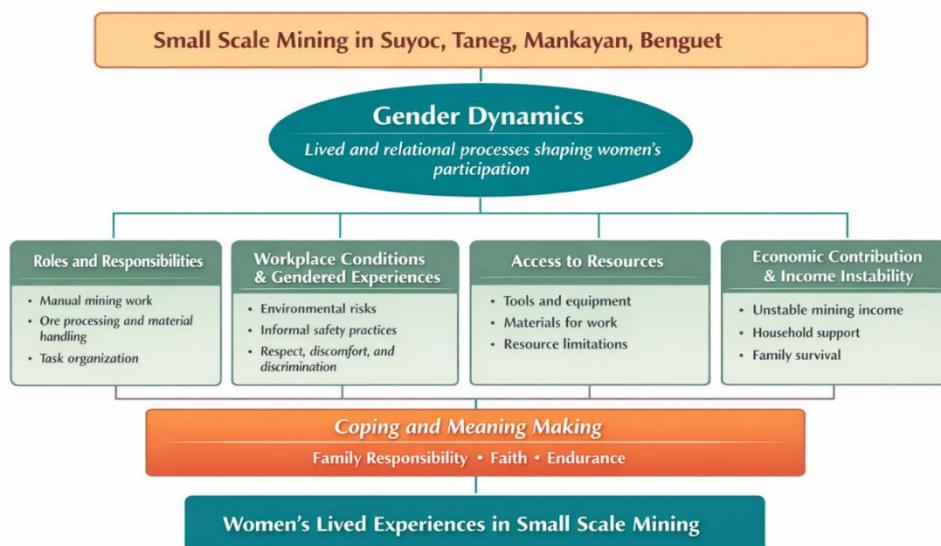


Figure 1 Conceptual framework on the roles, and Economic Contributions of Women in Small-scale Mining

At the core of the framework is **small scale mining in Mankayan, Benguet**, which serves as the social and economic context in which women’s experiences unfold. Within this setting, **gender dynamics** function as the central lens through which women’s participation in mining is understood. Gender dynamics are viewed as lived and relational processes that shape how women engage in labor, access resources, experience workplace conditions, and interpret their roles within both the mining site and the family.

The framework identifies four interrelated domains of women's experiences in small scale mining. First, **roles and responsibilities** refer to women's direct participation in mining activities, including manual labor, ore processing, material handling, and task organization. These roles are understood as integral to mining operations rather than supplementary, reflecting women's active contribution to production.

Second, **workplace conditions and gendered experiences** encompass the physical and social environments in which women work. This includes exposure to environmental risks, informal safety practices, experiences of respect and discrimination, and the absence of adequate protective equipment and institutional safeguards. These conditions shape both women's physical safety and their sense of dignity within the workplace.

Third, **access to resources** refers to women's ability to obtain tools, materials, and support necessary for safer and more efficient mining work. Limited access to basic equipment such as gloves, sacks, and basins affects how women perform their tasks and increases physical strain and vulnerability. Resource access is therefore closely linked to both workplace conditions and labor demands.

Fourth, **economic contribution and income instability** capture women's experiences of earning through small scale mining. Mining income is understood as unstable and unpredictable, yet indispensable for meeting daily household needs, supporting children's education, and assisting extended family members. Women's economic participation is framed as a critical component of family survival rather than financial advancement.

Interwoven across these domains is **coping and meaning making through family responsibility, faith, and endurance**. This element reflects how women interpret and sustain their participation in mining despite hardship, risk, and uncertainty. Coping strategies are shaped by women's responsibilities as mothers, daughters, and family members, as well as by personal beliefs and perseverance. Meaning making allows women to endure physically demanding and unstable work while maintaining a sense of purpose and obligation.

The conceptual framework illustrates how women lived experiences in small scale mining emerge from the interaction of labor roles, workplace conditions, resource limitations, economic necessity, and coping practices within a gendered social context. This framework directly informs the four research questions of the study and provides coherence between the problem statement, the qualitative approach discussed in the Methodology, and the phenomenological thematic findings presented in the Results and Discussion.

### Statement of the Problem

This study examines the gender dynamics of small-scale mining in Mankayan, Benguet, focusing on the perspectives and lived experiences of women miners. Specifically, it seeks to answer the following research questions:

1. What roles and responsibilities do women perform in small scale mining operations in Mankayan, Benguet?
2. What workplace conditions, forms of gender discrimination, and access to resources are experienced by women in the mining industry?
3. How does participation in small scale mining affect women's economic stability and contribution to their families' income?
4. How do women miners cope with and make meaning of their experiences through family responsibility, faith, and endurance?

### Scope and Delimitation

This study focused on ten female small-scale miners from Mankayan, Benguet. Participants were 18 years old and above and had at least five years of experience in small scale mining. The study examined the lived experiences of both married and single women who were directly engaged in mining activities and whose work was affected by mining operations.

The scope of the study was limited to women involved in small scale mining within the past five years, allowing the research to capture recent and relevant experiences. Data collection and analysis were confined to the Mankayan mining community.

The study did not include male miners, individuals indirectly involved in mining, or women engaged solely in administrative or non-mining related roles. Perspectives from other mining communities outside Mankayan, Benguet were also excluded. As such, findings are context specific and may not be generalized to other mining areas.

## REVIEW OF RELATED LITERATURE

### Gender, Mining, and Feminist Perspectives

Mining has long been framed as a male dominated industry, both in formal and informal sectors. Feminist and gender scholars have challenged this narrative by documenting women's sustained participation in mining labor and by examining how gender shapes access to work, power, and recognition (Lahiri-Dutt, 2015; Yakovleva, 2007). These studies argue that women's labor is often rendered invisible due to gendered assumptions that associate mining with masculinity and physical strength.

African feminist standpoint perspectives further emphasize that women's experiences in artisanal and small-scale mining are shaped by intersecting historical, cultural, and economic conditions (Abrefa Busia, 2021). In Ghana and other mineral rich regions, women miners experience exclusion from leadership roles and decision making despite their active contribution to production (Arthur-Holmes & Busia, 2022a). Feminist labor theorists argue that such inequalities are not natural but socially constructed, reinforced by patriarchal norms that undervalue women's work (Bittman, 2001; Ahikire, 2006).

These gendered patterns are also evident in postcolonial mining contexts, where colonial labor systems historically privileged male workers while relegating women to unpaid or informal roles (Viega, 1997; Moyo, 2012). Although these systems have formally ended, gender inequalities in mining persist, particularly in informal and family-based operations (Yakovleva, 2007).

### Women's Roles and Responsibilities in Small Scale Mining

International studies consistently show that women are actively involved in multiple stages of small-scale mining, including ore processing, mineral sorting, water carrying, and material handling (Yakovleva, 2007; Lahiri-Dutt, 2015). These tasks are physically demanding and require technical familiarity, yet they are often categorized as secondary or supportive, contributing to the marginalization of women's labor.

Research in African mining communities indicates that women's participation is closely linked to household survival and livelihood diversification (Labonne, 1996; Arthur-Holmes & Busia, 2022b). Women engage in mining not as occasional helpers but as regular workers whose labor sustains daily production. Similar findings have been reported in Southeast Asia, where women's mining roles are embedded in family-based work arrangements (Danielsen & Hinton, 2020).

In the Philippine context, limited but relevant studies suggest that women in small scale mining communities perform essential tasks while balancing domestic responsibilities (Yakovleva, 2007). In Benguet and other Cordillera mining areas, women's labor often extends beyond extraction to include processing and trading activities, reinforcing their central contribution to both mining operations and household economies.

### Workplace Conditions, Safety, and Gendered Experiences

Small scale mining environments are widely documented as hazardous due to unstable terrain, exposure to environmental risks, and lack of formal safety measures (Arthur-Holmes & Busia, 2022a; ACET, 2017). Women face distinct risks within these settings, particularly when protective equipment and safety training are limited or absent.

Beyond physical danger, studies highlight women's experiences of gendered discomfort and discrimination in mining workplaces. Verbal remarks, scrutiny of women's bodies, and exclusion from certain tasks contribute to feelings of vulnerability and marginalization (Werthmann, 2009; Arthur-Holmes & Busia, 2022a). These experiences are often normalized, with women choosing silence or avoidance as coping strategies to prevent conflict in already dangerous environments.

Research also shows that respect and safety in informal mining sites are negotiated through everyday interactions rather than formal regulations. Mutual assistance, restraint, and cooperation function as informal mechanisms to maintain harmony and reduce risk (Yakovleva, 2007; Bashwira & van der Haar, 2020). These findings align with observations that workplace conditions in small scale mining are shaped as much by social relations as by physical environment.

### **Access to Resources and Gendered Inequality**

Limited access to work resources is a persistent issue in artisanal and small-scale mining. Studies indicate that women often have reduced access to tools, equipment, training, and financial capital compared to men (Amutabi & Lutta-Mukhebi, 2001; Danielsen & Hinton, 2020). This disparity increases physical strain and exposure to injury, particularly in the absence of basic protective equipment.

Arthur-Holmes and Busia (2022b) note that women in informal mining operations are less likely to benefit from occupational health and safety measures than those in formalized settings. Rather than requesting financial aid, women frequently identify material support such as gloves, sacks, and basins as critical needs, reflecting an understanding of how equipment directly affects daily labor conditions.

In remote mining areas, including those in the Cordillera region, resource scarcity is compounded by geographic isolation and limited institutional support. These conditions reinforce gendered vulnerability and reliance on improvisation, as documented in studies of informal mining economies (Yakovleva, 2007).

### **Economic Contribution and Income Instability**

Economic analyses of small-scale mining describe income as highly unstable and dependent on environmental conditions, mineral yield, and market fluctuations (Labonne, 1996; Arthur-Holmes & Busia, 2020). Earnings are unpredictable regardless of labor input, making income security difficult to achieve.

Despite this instability, mining income remains indispensable for household survival. Research shows that women's earnings are primarily allocated to food, daily expenses, education, and support for extended family members (Abrefa Busia, 2021; Arthur-Holmes & Busia, 2022b). Even irregular income provides critical support in contexts where alternative livelihood options are limited.

Studies on informal livelihoods emphasize that income instability restricts saving capacity and long-term planning, reinforcing economic vulnerability while sustaining short term survival (Moyo, 2012; Bashwira & van der Haar, 2020).

### **Coping, Meaning Making, and Endurance in Informal Labor**

Recent studies grounded in phenomenological and qualitative approaches highlight the importance of coping and meaning making in understanding women's participation in informal labor (Lahiri-Dutt, 2015; Werthmann, 2009). Women interpret hardship through family responsibility, faith, and perseverance, framing work as sacrifice and duty rather than merely economic activity.

Arthur-Holmes and Busia (2022a) note that women's endurance in mining is often motivated by caregiving responsibilities and moral obligation to family. Faith and spiritual beliefs provide emotional support and resilience in the face of uncertainty and loss, particularly when environmental conditions erase labor outcomes.

Phenomenological research emphasizes that meaning making allows women to sustain participation in physically demanding and precarious work without disengagement (Yakovleva, 2007). These interpretations align with findings that coping strategies are socially and culturally embedded rather than individual traits.

The reviewed literature establishes that women play essential yet undervalued roles in small scale mining, shaped by gendered labor divisions, hazardous workplace conditions, limited access to resources, and income instability. While international and national studies provide important insights, localized phenomenological accounts from Philippine mining communities, particularly in the Cordillera region, remain limited.

Existing research seldom centers women's own interpretations of their experiences, especially regarding coping, faith, and family responsibility. This study addresses this gap by examining the lived experiences of women miners in Mankayan, Benguet, using a qualitative, phenomenological–thematic approach that foregrounds women's voices.

## METHODOLOGY

### Research Design

This study employed a **qualitative phenomenological research design** to explore the lived experiences of women engaged in small scale mining in Mankayan, Benguet. Phenomenology was deemed appropriate as the study sought to understand how women miners experience, interpret, and give meaning to their participation in mining, particularly in relation to labor roles, workplace conditions, economic contribution, and coping through family responsibility, faith, and endurance.

A phenomenological approach prioritizes participants' subjective accounts as primary sources of knowledge. Rather than measuring variables or testing relationships, the design focuses on describing shared meanings that emerge from participants' narratives. This aligns with the purpose of the study, which centers on women's perspectives and emphasizes meaning making within an informal and high-risk labor context. The design allows for deep engagement with participants' experiences while maintaining sensitivity to social, cultural, and gendered realities.

### Research Locale

The study was conducted in **Mankayan, Benguet**, a small-scale mining community located in the Cordillera Administrative Region of the Philippines. Mankayan has a long history of mining activity, where extraction and mineral processing are embedded in daily community life. Mining in the area is largely informal, with labor organized through shared arrangements rather than formal employment structures.

Women in Benguet actively participate in mining related tasks while simultaneously fulfilling household and caregiving responsibilities. The community context is characterized by close social relationships, collective labor practices, and exposure to environmental risks such as unstable terrain and strong water currents. These conditions make Mankayan an appropriate setting for examining gender dynamics, workplace experiences, and livelihood strategies within small scale mining.

### Informants of the Study

The informants of the study consisted of **ten (10) female small scale miners** from Mankayan, Benguet. Informants were selected based on the following criteria: they were at least 18 years old, had a minimum of five years of experience in small scale mining, and were directly involved in or affected by mining activities.

The informants included both married and single women whose daily lives were shaped by mining work. Their experiences were considered relevant to the study as they provided rich descriptions of labor participation, workplace conditions, economic contribution, and coping strategies. Using informants rather than a larger sample allowed the study to prioritize depth of experience and detailed narrative accounts.

## Sampling Procedure

**Purposive sampling** was used to select informants who could provide meaningful and information rich accounts relevant to the research questions. This sampling technique ensured that participants possessed direct experience with small scale mining and were able to articulate their lived realities.

The sample size of ten informants was justified based on both **eligibility and depth of data**. All informants met the established criteria, and data saturation was achieved as recurring patterns and shared meanings emerged across interviews and discussions. The focus of the study was not representativeness but the richness and relevance of lived experiences within the specific context of Mankayan.

## Data Collection Methods

Data were collected using **semi structured interviews**, consistent with the finalized manuscript.

Semi structured interviews were conducted with individual informants to elicit detailed accounts of their roles, experiences, challenges, and coping strategies in small scale mining. The flexible interview format allowed informants to narrate experiences in their own words while ensuring coverage of key topics aligned with the research questions.

## Data Analysis

Data were analyzed using **phenomenological thematic analysis**, following a systematic and inductive process. The analysis aimed to identify shared meanings and essential themes across informants' narratives.

First, all interviews were transcribed verbatim. Transcripts were read multiple times to achieve immersion and familiarity with the data. Significant statements related to women's experiences in small scale mining were identified and coded.

Second, codes were grouped into meaning units based on similarity and relevance. These meaning units were examined to identify patterns that reflected common experiences across informants.

Third, clustered meaning units were synthesized into subthemes and superordinate themes that captured the essence of women's lived experiences. These themes were continuously checked against the original data to ensure accuracy and fidelity to informants' voices.

Finally, themes were interpreted in relation to the conceptual framework and research questions, resulting in the phenomenological thematic findings presented in the Results and Discussion chapter.

## Trustworthiness and Rigor

To ensure rigor and trustworthiness, the study adhered to the criteria of **credibility, dependability, confirmability, and transferability**.

Credibility was established through prolonged engagement with the community and through **member checking**, where informants were given the opportunity to review and confirm the accuracy of interpretations.

Dependability was addressed by maintaining consistency in data collection procedures and documenting analytic decisions throughout the research process.

Confirmability was ensured by grounding interpretations in direct quotations and maintaining an audit trail of codes and themes.

Transferability was supported through rich, contextual descriptions of the research locale and informants, allowing readers to assess the applicability of findings to similar contexts.

Triangulation across interviews, focus group discussions, observation, and document analysis further strengthened the study's rigor.

### **Ethical Considerations**

Ethical considerations were central to the conduct of this study. Informed consent was obtained from all informants prior to data collection. Informants were fully informed of the study's purpose, procedures, potential risks, and their right to withdraw at any time without consequence.

Confidentiality was strictly maintained using pseudonyms and secure handling of data. Given the gendered and potentially sensitive nature of mining work, interviews and discussions were conducted with cultural sensitivity and respect.

The study recognized power dynamics between the researcher and informants and ensured that participation was voluntary and non-coercive. Attention was given to minimizing emotional and physical risk, particularly during discussions of hardship and discrimination.

Approval and permission were obtained from the **school authorities and barangay or community leaders** prior to data collection, ensuring community awareness and support.

### **Conflict of Interest**

The authors declare that there are no financial, professional, institutional, or personal conflicts of interest that could have influenced the conduct, analysis, interpretation, or reporting of this study. The research was conducted independently, and no external funding, sponsorship, or organizational affiliation had any role in the design of the study, data collection, analysis, interpretation of findings, or preparation of the manuscript. All authors affirm that the study was carried out with full academic integrity and transparency, and that the findings presented reflect the authentic lived experiences of the participants without bias or undue influence.

## **RESULTS AND DISCUSSION**

### **Theme 1. Women as Essential Participants in Small Scale Mining Labor**

Women in the study described their involvement in small scale mining as direct, regular, and physically demanding. Their accounts challenge assumptions that mining work is primarily male dominated or that women's participation is limited to supportive roles. Participants consistently narrated engagement in core production activities including soil cleaning, mineral separation, sack filling, and grinding of processed material. These activities form part of the fundamental processes of mineral recovery and require sustained physical effort and practical familiarity with mining routines.

One participant described her role in preparing mineral material, stating, "*man kamsil, linlinisan me ngay din babato asi mi alan din pino na*" (we clean the soil and remove stones so we can obtain the finer material). Another participant similarly explained, "*man kamsil, man kaan si bato, man isako dwan man kulog*" (we do kamsil, remove stones, put them in sacks, and then process them). These accounts illustrate that women perform tasks that are directly connected to mineral extraction rather than peripheral support work.

The findings correspond with international studies on artisanal and small scale mining that document women's participation in ore processing, mineral sorting, and material handling as integral components of production (Hilson & McQuilken, 2014; Lahiri-Dutt, 2015). Although these tasks are sometimes categorized as secondary in formal mining discourse, they are essential stages in mineral preparation and recovery.

Participants also described moving across several tasks within a single work cycle. For example, one participant explained, "*man kamsil, man kulug, ya man pili si naba mo malpas abe di et igiling mo*" (we clean, process, select the material, and then grind it). Such task mobility indicates the development of practical knowledge acquired through long term engagement in mining work. Research in artisanal mining communities has similarly

shown that prolonged participation allows women to accumulate experiential skills even within informal labor systems (Hinton et al., 2015; Yakovleva, 2017).

Beyond manual labor, women described participating in the organization of work within mining sites. Task coordination, output division, and decision making about workflow were carried out through informal systems based on experience and mutual understanding rather than formal management structures. A participant explained that decisions regarding output sharing are usually coordinated by a site owner or senior worker, stating, “*wada din pinaka boss, karu ngay no waday ibela da ay sagaok*” (there is someone like a boss when decisions about sharing need to be made). However, these arrangements were described as situational rather than hierarchical.

Many participants emphasized cooperation rather than authority as the guiding principle of work organization. One miner stated, “*maga di leadership ngem wada di pagka-isa mi*” (there is no leadership, but we have unity). Another added that workers assist each other during physically demanding tasks, noting that “*if someone struggles carrying the usal, we help each other.*” These descriptions illustrate collective labor practices where responsibilities are shared according to need.

Similar cooperative arrangements have been documented in informal mining systems where collective coordination replaces formal hierarchy (Banchirigah, 2017; Hilson et al., 2020). Such practices help sustain productivity and reduce conflict in environments where safety risks and resource constraints are present.

Recent research also highlights that women’s contributions to artisanal mining remain structurally underrecognized despite their direct involvement in mineral processing and recovery activities, particularly in informal mining economies across Asia and Africa (World Bank, 2020; Sovacool et al., 2021).

The findings demonstrate that women’s participation in small scale mining extends beyond supportive involvement and is embedded within the core processes of mineral production. Through sustained engagement in ore preparation, material handling, and task coordination, women contribute directly to both the physical output and the organization of mining labor. These roles reveal a form of labor participation in which gendered divisions do not necessarily exclude women from technically demanding tasks but instead position them as active contributors within informal production systems. Such patterns reinforce observations from artisanal mining research that women’s labor, although frequently undervalued in formal discourse, remains central to the functioning of small scale mining economies (Hilson & McQuilken, 2014; Lahiri-Dutt, 2015).

## **Theme 2. Negotiated Workplace Conditions Shaped by Risk, Respect, and Resource Limitations**

Women’s narratives depict the mining site as a workplace characterized by both physical danger and complex social interactions. Rather than describing the environment as entirely hostile or supportive, participants explained that safety, dignity, and cooperation are constantly negotiated within the workplace. Environmental hazards, limited resources, and gendered interactions collectively shape their daily experiences.

Participants described informal practices that help maintain respect and protect personal dignity while working in mixed gender environments. One participant explained that workers remind each other if clothing becomes displaced during physically demanding tasks, stating, “*if we notice someone’s back is exposed, we tell them so they will not be disrespected.*” Another participant similarly noted that coworkers intervene when situations may cause embarrassment, reflecting a shared awareness of personal boundaries within the workplace.

These practices indicate that dignity protection occurs through relational behavior rather than formal regulation. In environments lacking institutional safeguards, workers rely on informal norms and collective awareness to manage interactions. Studies on gendered labor spaces show that such relational practices often function as substitute forms of protection in informal work environments (Elgstrand & Vingård, 2018; Lahiri-Dutt, 2015).

Despite these forms of respect, women also described experiences of gendered discomfort and discrimination. Several participants recounted instances of inappropriate remarks or body related comments. One participant explained that coworkers sometimes make hurtful statements such as calling someone dark skinned or

overweight. Although these remarks were described as painful, participants often chose not to confront the behavior directly.

Another participant explained the reason for remaining silent: *“we just keep quiet because it is dangerous to fight in the mining site.”* In hazardous environments where conflict can escalate quickly, avoiding confrontation becomes a strategy for maintaining both safety and continued employment.

These experiences align with research on informal labor sectors where women frequently manage discriminatory behavior through silence or adaptation rather than formal reporting mechanisms (Connell, 2019; De Haan & Zoomers, 2021). Gendered discomfort therefore becomes embedded in everyday work interactions rather than addressed through institutional protections.

Environmental risk further intensifies workplace vulnerability. Participants consistently described weather conditions, water flow, and unstable terrain as major hazards. One participant explained that heavy rainfall makes mining sites particularly dangerous, noting that *“when it rains, the place becomes dangerous.”* Another participant described how strong river currents can wash away collected materials, resulting in both safety risks and financial loss.

Environmental hazards therefore affect both physical safety and livelihood outcomes. Research on small scale mining environments highlights that weather related disruptions frequently interrupt mining activities and expose workers to heightened risk (Hilson et al., 2020; Spiegel et al., 2022).

Limited access to basic equipment compounds these challenges. Participants repeatedly identified the absence of protective materials such as gloves, sacks, and basins. One participant stated directly, *“what we need are sacks, basins, and gloves.”* Without protective equipment, workers experience physical pain and increased exposure to injury. As one participant explained, *“if there are no gloves, your hands hurt but you still continue working.”*

The lack of equipment reflects broader resource constraints typical of informal mining operations. Previous studies have shown that absence of protective materials significantly increases occupational risk among artisanal miners, particularly women who already face gender based vulnerabilities (Fisher et al., 2018; Hilson & Maconachie, 2019).

Recent studies on artisanal mining workplaces emphasize that safety in informal mining settings often depends on community-based norms and collective practices rather than formal regulatory systems, particularly where institutional oversight remains limited (Intergovernmental Forum on Mining, Minerals, Metals and Sustainable Development [IGF], 2020).

Women’s workplace experiences illustrate how safety, dignity, and cooperation emerge through everyday interaction rather than institutional regulation. Informal practices of mutual respect allow workers to manage social boundaries within a physically demanding environment, yet these practices coexist with instances of gendered discomfort, environmental hazards, and resource scarcity. The mining site therefore operates as a space where risk is continuously mediated through relational behavior and adaptive strategies. Such dynamics align with studies of informal labor environments where workers rely on social norms and cooperative practices to sustain safety and stability in the absence of formal workplace protections (Spiegel et al., 2022; De Haan & Zoomers, 2021).

### **Theme 3. Unstable but Indispensable Mining Income for Family Survival**

Women in the study consistently described income from small scale mining as unpredictable yet indispensable for sustaining household life. Earnings depend heavily on environmental conditions and the quality of mineral samples recovered, making financial outcomes uncertain despite sustained physical effort. Participants therefore framed mining income not as a reliable pathway toward economic advancement but as a fragile source of livelihood that supports immediate family needs.

Income uncertainty emerged as a recurring experience across participants' narratives. One miner explained that payment depends largely on the mineral yield discovered during processing, stating, "*depende sin sample, no ngumatuy balitok uray nakapsut sample na yan way bayad na ladta*" (it depends on the sample; if there is gold, even a small sample can still bring payment). The statement reflects a system where earnings are determined only after labor has been completed. Workers must therefore invest effort without assurance that the outcome will generate income.

This pattern reflects the output based payment structures typical of artisanal and small scale mining economies. Previous studies have documented how miners' earnings fluctuate according to mineral yield, environmental conditions, and market prices rather than hours worked (Hilson et al., 2020; Fisher et al., 2018). Such arrangements transfer financial risk directly to workers, particularly those operating within informal labor systems.

Environmental conditions further intensify income instability. Participants described rainfall and strong water currents as factors that interrupt mining activities and wash away collected materials. One participant explained, "*waday panbaliwana karkaro ngay no pinag-uudan siduy di delekado*" (conditions change, especially when it rains, and it becomes dangerous). Another participant noted that when river currents become strong, materials collected from the mining site can disappear entirely, leaving workers with no return from their labor.

These accounts illustrate how environmental hazards simultaneously threaten both safety and livelihood. Research on small scale mining environments has shown that weather related disruptions frequently result in sudden income loss due to the absence of protective infrastructure and formal employment guarantees (Spiegel et al., 2022; Elgstrand & Vingård, 2018). Workers therefore face a dual vulnerability in which environmental change affects both their physical safety and economic stability.

Participants also emphasized that unstable income makes saving difficult. One miner explained, "*narigat ay man urnong si pilak*" (it is hard to save money). Earnings from mining are often immediately allocated to daily household expenses, leaving little opportunity for financial accumulation. This situation reinforces a cycle where continued labor becomes necessary to meet everyday needs.

Studies on informal economies highlight that income volatility significantly limits saving capacity among workers who rely on daily earnings (Razavi et al., 2021; Lahiri-Dutt & Macintyre, 2019). Without stable income streams or financial safety nets, households must prioritize immediate consumption rather than long term financial planning.

Despite these challenges, mining income remains indispensable for family survival. Women frequently described using their earnings to purchase food, support children's education, and cover daily household expenses. One participant explained that mining allows her to provide for basic family needs, noting that the purpose of working in the mining site is "*to earn money for daily expenses and for the needs of my children.*"

This pattern reflects broader findings on women's economic participation in informal sectors. Studies consistently show that women's earnings are often directed toward essential household consumption rather than discretionary spending (Kabeer, 2016; Razavi et al., 2021). Even irregular income therefore plays a crucial role in sustaining family welfare.

In some households, mining functions as a primary source of income, while in others it serves as supplementary support to a spouse's earnings. One participant explained that she engages in mining to provide "*extra money so we do not rely only on my husband's income.*" The distinction between primary and supplementary income often shifts depending on family circumstances, including illness, job loss, or increased household expenses.

Recent livelihood studies confirm that artisanal mining households frequently operate within conditions of economic volatility where income variability limits opportunities for financial accumulation and long-term economic planning (Hilson et al., 2021).

These findings illustrate that women's economic participation in small scale mining is driven largely by household necessity rather than individual career choice. Mining income offers a limited yet vital financial resource in contexts where alternative employment opportunities remain scarce.

Income derived from small scale mining is characterized by volatility shaped by mineral yield, environmental conditions, and the absence of stable payment systems. Despite this instability, women continue to participate in mining because earnings provide essential support for household survival. Mining income is therefore experienced as both uncertain and necessary, reinforcing women's role in sustaining family welfare within economically constrained settings. Similar livelihood patterns have been documented in artisanal mining communities where income irregularity coexists with strong household dependence on mining labor (Hilson & Maconachie, 2019; Razavi et al., 2021).

#### **Theme 4. Coping, Meaning Making, and Endurance in Informal Mining Work**

Beyond economic necessity and physical labor, women's narratives reveal how participation in small scale mining is sustained through coping strategies rooted in family responsibility, faith, and personal endurance. Participants frequently framed their continued engagement in mining as an expression of obligation toward their families rather than merely an economic activity.

Family responsibility emerged as a primary motivation for enduring physically demanding and uncertain work conditions. Women described mining as a means of fulfilling their roles as mothers, daughters, and caregivers within their households. One participant explained that she continues working in mining primarily to support her children's needs, emphasizing that providing for the family remains the main reason for enduring difficult work.

This perspective reflects how women's labor participation is embedded within broader social expectations surrounding caregiving and household support. Research on gender and informal economies shows that women frequently assume responsibility for maintaining family welfare, particularly in contexts where formal employment opportunities are limited (Kabeer, 2016; Razavi et al., 2021). Economic participation therefore becomes closely linked to caregiving roles and family obligations.

Faith and spirituality also emerged as important sources of emotional resilience. Several participants described relying on prayer and religious belief to cope with uncertainty and physical hardship. Faith provided reassurance during moments of financial loss or environmental danger, helping participants interpret difficulties as part of a larger spiritual narrative.

Scholars examining women's livelihoods in precarious labor environments note that spiritual belief and cultural narratives frequently function as psychological resources that support resilience in contexts characterized by economic uncertainty and occupational risk (Mahy & Lahiri-Dutt, 2022).

Previous studies on women's livelihoods in high risk occupations have similarly identified faith as a coping mechanism that supports emotional endurance and psychological resilience (Lahiri-Dutt, 2015; Werthmann, 2009). In environments where material conditions remain uncertain, spiritual belief often provides a framework through which hardship can be understood and endured.

Participants also emphasized perseverance as a necessary response to the instability of mining work. Rather than withdrawing from mining when faced with loss or danger, women described continuing their labor as part of everyday life. One participant explained that working in mining has become normal for them, reflecting long term adaptation to the demands of the occupation.

This normalization of hardship illustrates how workers gradually integrate risk and uncertainty into their understanding of livelihood. Studies on informal labor adaptation suggest that repeated exposure to unstable conditions often leads individuals to develop coping strategies that enable continued participation despite structural constraints (Cleaver, 2017; De Haan & Zoomers, 2021).

Importantly, meaning making through family responsibility, faith, and perseverance allows women to maintain a sense of dignity and purpose within their work. Mining is not interpreted solely as physically demanding labor but also as a contribution to family survival and community life.

These interpretations align with phenomenological research emphasizing that individuals construct meaning from lived experience through social and cultural frameworks (Van Manen, 2016). Women's narratives therefore reveal how coping strategies are embedded within their identities as caregivers, workers, and community members.

Women's narratives reveal that endurance in mining work is sustained through social and cultural frameworks that give meaning to hardship. Family responsibility, faith, and perseverance shape how participants interpret and continue their participation in a physically demanding and uncertain livelihood. These interpretive practices transform mining labor from a purely economic activity into a socially meaningful form of contribution to family and community life. Phenomenological research emphasizes that such processes of meaning making enable individuals to maintain agency and purpose within structurally constrained environments (Van Manen, 2016; Lahiri-Dutt & Macintyre, 2019).

## CONCLUSION

This study examined the gender dynamics of informal small scale mining in Mankayan, Benguet through the lived experiences of women engaged in mining work. The findings show that women occupy positions within mining operations that extend beyond supportive participation and are embedded in the everyday processes of mineral extraction and preparation. Through sustained involvement in ore processing, material handling, and collective task coordination, women contribute directly to the productivity and continuity of mining activities within the community. Their participation demonstrates that artisanal mining labor systems are not exclusively structured around male work but instead rely on gendered forms of collaboration that remain largely unrecognized in formal economic narratives.

The study also reveals that workplace experiences in informal mining environments are shaped by a continuous negotiation between environmental hazards, social interaction, and resource scarcity. Women sustain participation within physically demanding and unpredictable conditions by relying on informal practices of cooperation and mutual awareness. These relational strategies help maintain dignity and safety in contexts where formal workplace protections are limited or absent.

Economic participation in mining is further characterized by volatility. Income depends on mineral yield, environmental conditions, and the absence of stable payment structures. Despite this instability, mining earnings remain central to household survival. Women's income is consistently directed toward food, children's education, and everyday family needs, reinforcing their role in sustaining household welfare within economically constrained settings.

Beyond labor and income, women's narratives highlight the interpretive frameworks that sustain their continued engagement in mining work. Family responsibility, spiritual belief, and personal perseverance shape how participants understand and endure physically demanding and uncertain livelihoods. These perspectives illustrate how economic activity becomes intertwined with social obligation and cultural meaning, allowing women to maintain agency and purpose within structurally precarious environments.

By foregrounding women's voices, the study contributes empirical insight to scholarship on gender and informal mining. It demonstrates that women's labor participation in artisanal mining is both economically consequential and socially embedded, revealing dimensions of mining work that remain insufficiently documented in formal research and policy discourse.

## Policy Implications

The findings of this study highlight several policy considerations relevant to gender responsive development in small scale mining communities.

First, policies addressing artisanal and small scale mining must recognize women as active participants in mining labor rather than peripheral actors. Current regulatory frameworks and development programs often focus primarily on male miners, overlooking the roles women perform in ore processing and material preparation. Gender inclusive policies should therefore acknowledge women's contribution to mining production and ensure that programs designed for mining communities include women as direct beneficiaries.

Second, occupational safety interventions should prioritize access to basic protective equipment and practical work resources. Participants consistently identified gloves, sacks, and processing tools as materials that would significantly reduce physical strain and workplace injury. Local government units, mining associations, and development organizations could implement community level safety initiatives that provide affordable protective equipment and training tailored to the realities of informal mining environments.

Third, livelihood programs should address the economic vulnerability associated with income volatility in small scale mining. Because mining earnings fluctuate according to environmental conditions and mineral yield, households remain exposed to sudden financial shocks. Diversification initiatives that introduce complementary livelihood opportunities, such as small scale agriculture, cooperative enterprises, or community based processing activities, could reduce dependence on unstable mining income while maintaining local economic resilience.

Fourth, gender responsive community programs should recognize the social responsibilities carried by women miners. Women's earnings frequently sustain household consumption and children's education, highlighting the need for development interventions that integrate economic support with family welfare initiatives. Programs that combine livelihood assistance with childcare support, financial literacy training, and women's cooperative development could strengthen both economic security and social wellbeing in mining communities.

Finally, future policy development should incorporate participatory approaches that engage women miners directly in decision making processes related to mining governance and community development. Women's lived experiences provide critical insight into workplace safety, resource needs, and household economic realities. Including these perspectives in local governance structures may lead to more responsive and sustainable policy outcomes.

Strengthening gender inclusive policies in small scale mining requires moving beyond the perception of women as marginal actors. Recognizing women's labor contributions, addressing workplace risks, and supporting their economic roles within households and communities represent necessary steps toward more equitable and sustainable mining development.

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