Exploring Gendered Perspectives on Working Conditions of Solo Self-Employed Quarry Workers in Ghana

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Abstract: This paper explored the gendered perspectives on working conditions of solo self-employed quarry workers in Ghana. Institutional support by the state represents the extrinsic factor. Healthcare and health insurance, social security, income, working hours, safe working environment, organising, and social networking also represent the intrinsic factors within the Herzberg two-factor theory used to support the study. This paper adopted the exploratory study design, and 27 solo self-employed were interviewed as well as trade unions, medical officers, and regulators. Data were analysed through thematic content analysis. The study identified poor working conditions for the internal or controllable factors in terms of social security, income, working environment, hours of work, organising and institutional supports, and healthcare for quarry workers. Poor job quality repressed their ability to develop their enterprises and agency to employ others, affecting their health, well-being, family formation, and social life. Lack of institutional support by the state (external/uncontrollable factors) was found to have largely contributed to

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PUBLIC INTEREST STATEMENT

This paper explored the gendered perspectives on working conditions of self-employed quarry workers in Ghana. The paper adopted the exploratory study design, and 27 solo self-employed were interviewed as well as trade unions, medical officers, and regulators. The study identified poor working conditions in terms of social security, income, working environment, hours of work, organising and institutional supports, and healthcare for quarry workers. Poor job quality repressed their ability to develop their enterprises and agency to employ others, affecting their health, well-being, family formation, and social life. Lack of institutional support by the state was found to have largely contributed to the worsening working conditions of solo self-employed. It was recommended that the state’s social security coverage and basic universal insurance could provide them with dignity, enhance their quality of life, and finally, safeguard these workers from any work-related risk.
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**Subjects:** Gender Studies - Soc Sci; Sociology & Social Policy; Work & Organizational Psychology

**Keywords:** element of working conditions; informal workers; quarry workers; solo self-employed; well-being

1. **Introduction**
Organisational restructuring such as downsizing and outsourcing, and technological changes, among others, have changed the nature of employment/work in recent times (Kalleberg & Hewison, 2013). The transformation in nature of work is responsible for the rise in self-employment, and non-standard forms of employment (such as contract, atypical, part-time, migrants, older, low skills, and disabled workers) characterised by a high level of insecurity, uncertainty, and instability (Vosko, 2010). Though some self-employed (with employees) acquire benefits and have control over the working environment and working conditions, there are possibilities that some categories of self-employed workers (those without employees), herein termed as solo self-employed, could be experiencing adverse working conditions (Murgia & Polignano, 2019b).

Conducive or decent working conditions, as captured under the sustainable development goal eight, target eight, guiding the world development till 2030, are essential for this self-employed category for a sustainable source of livelihood. This is because conducive working conditions are relevant for solo self-employed workers to expand their enterprises to contribute to the socio-economic contribution to the economy in terms of employment creation and payment of taxes to the state for development. Working conditions cover a wide scope, including working hours, safe working environment, remuneration, physical and mental demands existing in the workplace (Abebrese, 2014; ILO, 2016, Segbenya, 2019).

According to Bigirimana et al. (2016), Dvoulety (2018) working conditions are working environment that advances effective job performance. Components of working conditions include—working space and logistics, support services for customers, a safe working environment, promotion, and career advancement. Other elements of working conditions are—psychological and physical security of workers and not restricted to financial compensation. Studies have found that the work environment has an impact on workers and their organisational performance, productivity, job satisfaction and turnover (Böckerman & Ilmakunnas 2020; Bigirimana et al., 2016).

In terms of studies on working conditions, ILO (2016) examined the working conditions of non-standard forms of employment (NSFE) in Uganda and Ghana at the continental level. The study used panel data from 2009–2012 and observation guides to examine the incidence of NSFE in Ghana and Uganda and their consequences on wages, job quality and other job characteristics. The study found that informal employment was distributed across the young, low-educated or low-skilled workforce. Women had more chances to have NSFE jobs in Ghana, but not in Uganda. The study found that there was a clear gap in both countries regarding the social benefits associated with employment, with NSFE workers worse off than standard workers.

Yeoobah (2017) examined the working conditions of migrant youth in Ghana. The study was qualitative, based on interviews of 30 migrants from Accra, the capital of Ghana. The study found the uncertainty of employment, manipulation by owners and customers and low and uneven income as key characteristics of migrant workers in Ghana. The precarious working conditions
found resulted in socio-economic difficulties including unable to meet fundamental needs. The study concluded that informal migrant workers used the social network to obtain financial resources to navigate hardships. Studies on self-employed at the national level include Akormedi et al. (2013), Nana-Otoo (2016), and Segbenya et al. (2021), Akorsu (2010) and Segbenya (2019) on working conditions; Bashiru and Mahama (2014) and Salau et al. (2020) on the benefits of being self-employed; Mbilla et al. (2018) on drivers of tax compliance among the self-employed; and Oyenubi (2019) on benefits of being independent.

That is, the self-employed have been studied from employment creation, funding sources, managerial competence and keeping proper books of account. Meanwhile, the conditions under which the solo self-employed worked could possibly influence their socio-economic contribution to the economy. For this reason, this study explores the working conditions under which solo self-employed quarry workers operate. It is important to note that, apart from understanding respondents from their “own world” as will be seen from the quotes, self-employed quarry workers’ description of their working conditions also helps them to share their frustrations. Description of working conditions among this category of informal workers also serves as a better input for policy consideration to address working conditions as compared to contributions from researchers’ point of view. This is because solo self-employed quarry workers are in a better position to describe difficulties associated with their work than any other person could have done for them. This article contributes to the literature on employment creation, working conditions and the informal economy workers. Specific elements of working conditions considered in this study were social security, income, working hours, safe working environment, organising and social networking and institutional support. Thus, this study presents a holistic measure of the self-employed working condition as compared to income and social security presented by Conen and Buschoff (2019) and Campbell and Price (2016).

2. Theoretical and conceptual perspectives
The Herzberg two-factor theory supports this study with the justification that the entire working conditions of informal workers could be divided into two—job content and job context which is supported by the theory. This means that elements of the work of solo self-employed (elements of working conditions) can spur them on for expansion and well-being. The theory suggests that internal and external (intrinsic and extrinsic) factors motivate or influence one’s satisfaction and efforts for what they do. These reasons serve as the justification for using this theory to explain what factors within and outside the domain of the self-employed worker influence their operations. Within the theory, hygiene factors and motivators were used to explain both the job content and context of the informal workers’ working conditions. The theory argues that the presence of hygiene or maintenance factors in the job context serves to prevent dissatisfaction among workers, but if absent, it could lead to dissatisfaction. These factors were pay & security, policy, supervision, interpersonal relationship; Enu-Kwesi, Koomson, Segbenya, & Annan-Prah, (2014). On the other hand, the growth and motivators (other factors) related to the job content, influencing the mood of satisfaction or otherwise (Mullins, 2010), are growth, responsibility, recognition, achievement, advancement opportunities and interesting work.

In this study, the external factors (hygiene or context) are state policies and supervision by regulatory agencies termed institutional support. The individual solo self-employed has no control over this element in the study. Other elements over which the solo self-employed had control (termed motivators in this study) are social security, income, working hours, safe working environment, organising and social networking, and institutional support.

3. Protocols seeking to improve conditions in the artisanal quarrying sector
Protocols seeking to improve conditions in the artisanal quarrying sector are national/local and continental/international. From the international level, Africa Mining Vision (AMV), established in 2009 as a continental framework, sought to achieve a “transparent, equitable and optimal exploitation of mineral resources to underpin broad-based sustainable growth and socio-
economic development” (Busia & Akong, 2017, p. 8). Thus, adopting this continental framework has implications for integrating AMV for the extractive industry into the local, national, regional and global regulations on the value chains.

At the global level, adopting the “Mosi-oo-Tunya Declaration’ is a significant milestone regulatory framework safeguarding the conditions in the artisanal quarrying sector. Mosi-oo-Tunya Declaration was signed in September 2018 by representatives of 72 countries in Zambia at an International Conference on Artisanal and Small-scale Mining and Quarrying (ASM18) to chart a vision for sustainable development. “Mosi-oo-Tunya Declaration” is the first declaration of its kind in over a decade. The “Mosi” Declaration uses the traditional name of Victoria Falls, located adjacent to the conference venue and builds on earlier ASM conference declarations from Harare (1993), Washington (1996), and Yaoundé (2002; Segbenya, 2019).

Another international or global protocol seeking to improve working conditions of workers in all sectors, including informal workers in the artisanal quarrying sector, is the sustainable development goal (SDG) eight, target eight, on decent work agenda (United Nations Development Programme (UNDP), 2015). The decent work concept highlights the importance of labour standards in ensuring improvement in the lives of humans. All types of workers and employers in the formal and informal labour markets are expected to benefit from the ILO’s goal of promoting opportunities for women and men to obtain decent and productive work (ILO, 2010). The decent work concept has four pillars—employment, rights at work, social protection and social dialogue, that should be accorded the necessary attention by employers to attain progress in human development (ILO, 2002). At the national level, the Labour Act, 2003 (Act 651) of Ghana supported by Minerals and Mining (General) Regulations, 2012 (L.I. 2173), among others, are very keen on ensuring the improvement of conditions in the quarrying sector (Segbenya, 2019). These serve as the general legal framework since the study is on workers but not of ecological concern. However, specific national protocols are also discussed, along with the particular indicator of working conditions discussed in the subsequent sections.

3.1. Social security
Social security in this study means setting aside part of resources available to the solo self-employed as exigency funds during ones working life towards a happy livelihood after retirement or loss of income due to unforeseen circumstances. Thus, from the international labour organisation’s perspective, social security is necessary for the solo self-employed worker’s income security in the event of income loss due to unemployment, old age, sickness, and maternity (Akor, 2019; International Labour Organization, 1989). There are about 85% (out of the total working population) of informal workers in sub-Saharan Africa (ILO, 2010). However, most of these informal workers do not benefit from any form of social security except in the case of Algeria, Egypt, Tunisia, and Mauritius (Akor, 2019). In Ghana, the New National Pension Law, 2008 (Act 766) replaced the parallel Social Security and National Insurance Trust (PNDC Law 247) and Cap 30 Pension Scheme with three tiers to provide retirement income for both formal and informal workers. The first and second tiers of the new National Pension Act, 2008 (Act 766) received mandatory contributions totalling 18% of salaries of employees in the formal economy. The third tier, a voluntary pension scheme, is meant for all workers but specifically geared towards the informal sector employees to contribute to the formal social security system managed by SSNIT. It has been found that the SSNIT pension scheme does not cover most of the economically active population in the informal economy (Akor, 2019). Thus, pension or social security in Ghana is the largely contributory type, and there is no free state insurance that covers informal workers as at now.

3.2. Income
The income of informal workers in this study is basically the daily earnings minus the daily expenses. Some informal workers are also in the sector for higher income (Stephan et al., 2015), since it has been proven that some informal workers get incomes higher than the international poverty line (Zogli
et al., 2019). It is difficult to invoke the Labour Act, 2003 (Act 651) provisions on national minimum wage for this category of workers since they are solo self-employed workers. Zogli et al. (2019) concluded that factors that influenced informal workers’ income included gender, educational level, social network, age of business and sector of informal activity, among others. Chingono (2012) studied informal workers in Ghana, India, South Africa, Costa Rica, Egypt and El Salvador and concluded that even though women outnumbered men in the informal economy, men earned higher than women. Thus, solo self-employed workers in Ghana could earn an income below or above the national minimum wage, which serves as the standard for income in the country.

3.3. Working hours
Working hours of solo self-employed in Ghana are generally not fixed. This is because they largely determine when to report to work and when to close without compulsion. Sometimes, solo self-employed workers work during “odd hours” if there are customers to serve. The “odd hours” in this instance are only in comparison with formal workers. Due to the flexibility of working hours among this category of workers, they can report to work very early (around 6am) or earlier and close very late, around 6pm or after. Thus, solo-informal workers could be working more than the recommended eight hours per day and 40 hours per week in the Labour Act (Act 651) of Ghana. Factors responsible for the long work hours among solo-employed workers include the desire for more income and the power to determine their own working hours (Tsikata, 2009).

3.4. Safe working environment
Article 24(1) of Ghana’s Fourth Republic Constitution of 1992 gives every person the right to work under satisfactory, safe, and healthy conditions. These provisions are further captured in the labour regulations of Ghana (Segbenya, 2019). However, since solo self-employed largely made the sole decision on the choice of the sector and informal activity, the onus lies on them to ensure that they operate in a safe working environment. This is because solo self-employed are their own employers, and the responsibility placed on the employer by the labour regulation of Ghana for the provision of a safe working environment should be the responsibility of the solo self-employed. The interesting aspect of this provision for the solo self-employed worker in Ghana is that they stand to gain personally if the provision is ensured. The quarry sub-sector is associated with fatal and non-fatal industrial accidents and diseases, making safety in the work environment very important as compared to other subsectors (Segbenya, 2019). Meanwhile, it has been argued that the state also has the responsibility to provide a safe working environment for solo self-employed workers through regulation, supervision and improvement in general working conditions and employment opportunities in the country.

3.5. Organising and social networking
Article 24(1), sub-section (3) of Ghana’s Fourth Republic Constitution of 1992 guarantees the right to form or join a trade union for the promotion and protection of economic and social interests (Segbenya, 2019). The Labour Act, 2003 (Act 651) further emphasised this as the social right of both employers and workers either in the formal or informal economy. Meanwhile, workers’ organising or collective identity has largely been concentrated in the formal economy and little has been achieved in the informal economy with organising (Akosu & Oddoi, 2017). Solo self-employed workers can also take advantage of this provision and ensure a collective identity in the form of association. Association for solo self-employed workers could give them the capacity to negotiate with their suppliers for concession and price cuts. Another way of benefiting from the solidarity of organising among the solo self-employed could be buying stock together and transporting them same for the purposes of discount and lower transportation costs (Segbenya, 2019). Apart from work-related benefits from organising, there are non-work-related benefits in the form of support during bereavement, outdooring, and weddings. Contributory Welfare Packages could also serve as a source of loans for business expansion (Segbenya, 2019).
3.6. Institutional supports
The solo self-employed is operating in an informal economy characterised by a myriad of challenges, and the state’s support is highly required for the success and expansion of businesses in this category. Support from the state can be granted to state agencies that directly work with the solo self-employed. Thus, policy direction and support from the state are the foremost essentials institutional support that can be extended to the solo self-employed for the growth of their enterprises. State support for solo self-employed depends on the ability of the state to identify this category of workers in terms of business type and location of business through registration for monitoring and provision of institutional supports. However, most informal workers, including solo self-employed, do not want to be identified by regulatory agencies to avoid being taxed. Thus, the solo self-employed could not benefit from the state’s support of soft loans and education on bookkeeping, among others.

Furthermore, solo self-employed (without workers) could hardly experience several benefits of employment enjoyed by their counterparts in the formal economy due to the socio-political environment they operate that lacks extension of social benefits and statutory protection to such a category of workers. Additionally, the solo self-employed operate their businesses based on their own social capital and inadequate financial assets. Unacceptable working conditions among solo self-employed have grievous consequences for career opportunities and work situations. It also questions the broad macrosocial issues involving the role of the welfare state and its economic policy. Poor working conditions among solo self-employed also limit their capacity to grow their enterprises to employ others to complement the government’s employment efforts, especially in an economy characterised by a high unemployment rate.

Poor working conditions among the solo self-employed tend to result in poor quality work with high risk and uncertainty (Vosko, 2010). The resultant effect is limited to their work and the workplaces, but also the non-work spheres, including individual well-being, health, social life and family formation (Conen & Buschoff, 2019). The causal factors that could be responsible for the effect on the non-work domain include poor physical health, uncertainty about the future, mental stress and deteriorating societal cohesion. It is also possible that the alienation and anxiety produced by uncertainty and insecurity associated with precarious work could have spurred self-employers to develop or adopt coping strategies to defend themselves (Standing, 2011; Kalleberg, 2011).

4. Methodology
The research context for this study was four main quarry districts—Gomoa East, Gomoa West, Komenda Edna Equafo Abrim (KEEA) and Cape Coast Metropolis in Ghana. The qualitative research design was adopted from an interpretivist perspective for this study due to the need to understand informal quarry workers “from their own world”. Creswell (2009) opined that interpretivism and its approach have subjective epistemology that usually follows inductive logic and uses qualitative methods to investigate theories. The sample drawn for the study was thirty-three (33) respondents comprising two administrators of health facilities, a trade union representative, 27 self-employed quarry workers, two children and a labour inspector. The justification for arriving at this sample for the study was based on saturation. That is, there was a stage in the course of interviewing (or observation), where it was noticed that the same themes were being repeated. The construction and administration of the research protocols were guided by the various dimensions of working conditions—remunerative employment, social protection, safe working environment and social dialogue. The purposive sampling technique was used to select all respondents and for administering research instruments. The justification for the choice of the purposive sampling technique is that these respondents were experts in their respective fields who served as informants and gave accurate information about the subject under study. Data collection was done in two phases. Reconnaissance visits characterised the first phase, while the main data collection was done in the second phase. All relevant ethical measures were adhered to by serving respondents with an Institutional Review Board’s (IRB) ethical clearance of the University of Cape Coast, Ghana serving respondents with an introductory letter, explaining the purpose of the data gathering and format of the interview. Permission for conducting and recording interviews was also sought from interviewees or participants. Before administering the interview, participants’ consent was sought by the researchers.
Several steps were taken to ensure reliability and validity as suggested by Gibbs (2007). Firstly, data were compared with codes and checked for “inter-coder agreement” between the first two authors based on 32% of interview data and a consensus was reached for coding for the rest of the interview data. Cohen’s Kappa was used to determine the inter-coder reliability and a value of 0.872 was obtained (Cheung & Tai, 2021). Qualitative validity was ensured by collecting data from varied sources and with varied instruments. Varied data collection instruments—focus group discussion, interviews and observations were used for triangulation purposes and to enhance the validity and the outcome of the study. Spending prolonged time on the field, member checking, and the use of external auditors were all meant for validity purposes.

The interview data collected were transcribed and coded. The inductive approach of coding, which combines both deductive and inductive coding, was used (Linneberg & Korsgaard, 2019). This study specifically used qualitative interpretative analysis because it used data gathered for deductions (Morrison et al., 2012). There should be a great reliance on the knowledge of the context by researchers in interpretative analysis to be able to comprehend information gathered from respondents in a study. Knowledge of the context in the study is represented with labour laws, theories, and conceptual perspectives that are considered in the literature. Thus, the findings of the study based on empirical data gathered will be compared with what already exists in the literature. Additionally, the thematic analysis component of the qualitative interpretative analysis was used for the data analysis.

5. Analysis and results
The analysis section presents empirical findings from the field on the various elements of working conditions of self-employed quarry workers. These elements are working hours, income, social security, organising and networking, safe working environment, healthcare and institutional support. The analysis is triangulated with data obtained from labour inspectors, representatives from healthcare facilities and six hours of non-participant observation. The presentation starts with demographic characteristics before the main analysis of the elements. The presentation of the results used quotes from respondents to highlight the issues.

5.1. Demographic characteristics of respondents
Out of 33 respondents interviewed, 27 were female solo self-employed workers between 24 and 70 years old, one 17-year-old male quarry worker assisting a family member and two children (eight and twelve years) assisting their parents. These children and the male worker were non-paid workers supporting the self-employed workers who were their family relatives. Some of these women workers were married while others were not. Other respondents included a female trade union representative, two male labour inspectors from the labour department, a medical officer and a female nurse providing healthcare for quarry workers. The demographic characteristics of respondents can be found in Figure 1.
5.2. Exploring quarry workers’ working conditions

5.2.1. Income
The first element to consider was the income of the solo self-employed quarry workers. Only a few respondents indicated they made a daily income of GH5 ($0.99) and a monthly income of Gh 150 ($29.7). Most of the respondents were not able to provide data on their daily income. This could be because proper books of accounts were not kept by these respondents; hence, they could not or deliberately refused to divulge such pieces of information so that city authorities do not capitalise on that to tax them. A respondent shared her difficulty in indicating her income during an interview that:

It is not easy to ascertain our monthly revenue or income. I could not make any sales in the past three days. Thus, the cost of transportation and feeding for the previous days will be offset by income that is yet to be accrued in the coming days. Most times, our capitals are devalued by the time we finish selling our wares. We, therefore, go back to borrow with interest to top up our capitals to be in business (Focused group discussion No. 1, February, 2018).

This means that irregular sales of wares were blamed for the inability to ascertain incomes. The results also suggest that a portion of solo quarry workers’ capital was used to pay the cost of transportation and for feeding, especially in the absence of sales, which has eventually eroded their capital. It was for this purpose that the researchers found out the duration for which their consignment/stock lasted. It came out in an interview that stock/consignment lasts about a month for a stock valued at around $99.01 (GH₵500 minimum). A statement from a respondent in a focus group interview confirms that it was a widely held view of participants. She said: ‘Initially, our stock or consignment lasted for only three days but now it takes about a month or more (Focused group discussion No. 4, 2018). The sales of these workers were observed by the researchers for some days and it was confirmed that sales were irregular. The irregular sales observed could be the reason why these respondents went into an additional source of livelihood by cultivating food crops such as plantain, vegetables, and cassava for personal consumption (See, Plate 1 Plate 1 Plate 1 Plate 1).
Plate 3. The technology used by self-employed quarry workers.

Plate 4. Start-up logistics for self-employed quarry worker.

Source: Field data (2019)
5.2.2. Working hours

Time spent on the job was also examined and the respondents revealed that they worked for 12 hours a day usually from 6am to 6pm throughout the week except for Sundays. Working hours for the married women were, however, ended at 4pm to enable them to attend to domestic chores. Domestic chores as a reproductive role thus affected the productive role of these married quarry workers. The lengthy periods for work could be the reason for which some workers were washing clothing at the quarry sites (See, Plate 2) suggesting a lack of work and life balance. Some respondents indicated that their husbands worked in the informal economy but in different sectors, while others had their husbands working in the formal economy.

5.2.3. Health and safe working environment

The third element examined was the safety of the working environment and the specific kind of injuries these workers experienced. It was discovered that the technology employed by the workers exposed them to a very dusty working environment, and their set-ups were located very close to the roadside, making it very risky (see, Plate 3 Plate 3 Plate 3 Plate 3). In terms of injuries, no fatal injury was recorded prior to the data collection period. However, respondents complained of a non-fatal eye injury such as flying smaller particles from the breaking of bigger rocks as the leading cause of injury to the eye due to the type of technology employed (see, Plate 3 and Plate 4).

A participant confirmed a popular position in focus group discussion that: *We work in a dusty environment, and sometimes the smaller particles enter our eyes. Inhaling the dust make us sick of catarrh and headache sometimes … we do not make enough revenue to buy hand gloves and nose cover* (A quarry worker No. 1). This means that these workers were very much aware of the effect of the dusty working environment and lack of protection on their health. Meanwhile, with the emergence of COVID-19 and its associated protocols, these workers were compelled to wear nose masks. Thus, apart from using the nose masks to prevent COVID-19, it would have indirectly led to a reduction in the effect of inhaling dust by these workers. The medical records from the health facilities in the quarry districts suggest that non-fatal occupational injuries declined from 43 in 2017 to 35 cases in 2018 (See, Figure 2)

Furthermore, medical information from medical facilities providing healthcare needs for workers in the jurisdiction shows that quarry workers commonly reported respiratory tract infections and dust-related infections—running nose, cough, fever and pneumonia and the results are captured in Figure 3. A medical officer further disclosed that these workers could attract other illnesses such as malfunctioning of the lungs, tuberculosis, and cancers from prolonged exposure and inhaling dust. The medical doctor had therefore corroborated the impact of the working environment on the health of quarry workers. Thus, the assertion on the impact of the physical environment for work on the well-being of workers was corroborated by the health officers. Furthermore, it was disclosed by a nurse that these workers reported other health conditions in the form of vomiting

![Figure 2: Occupational injury records in the quarry districts.](source: Field data (2019))

| Year | 20-34 | 35-49 | 50-59 | 60-69 | Total |
|------|-------|-------|-------|-------|-------|
| 2017 | 29    | 9     | 3     | 2     | 43    |
| 2018 | 21    | 12    | 0     | 2     | 35    |

![2018 2017]
and abdominal pains linked to poor quality of water and food available to these workers at the quarry sites. The nurse also said that inability of these workers to wash their hands properly could also be blamed for such infections.

5.2.4. Social security and healthcare
It was discovered that whiles some of these workers had personally registered with the Social Security and National Insurance Trust (SSNIT), the national pension scheme, the rest of these workers were yet to do the same. Medical bills for injuries were fully paid for by all workers interviewed. All these workers were responsible for expenses relating to their health. However, workers who had registered with SSNIT were yet to make a monthly contribution to SSNIT towards their retirement since these workers claimed that their revenue was dwindling and were incurring high overheads for their operations. That notwithstanding, the study found that there was an informal social security arrangement by self-employed quarry workers. The informal social security identity was also a non-finance—investment in their children’s education. A respondent confirmed in an interview that “all our social security savings and investment are our children” (A quarry worker No. 2). Respondents revealed that investing in their children’s education would afford the children the opportunity to get better jobs to enable the children to also adequately take care of the parents in their old age. This clearly shows that the respondents were informed about the relevance of social security for their retirement. Meanwhile, the low revenue from sales of wares made it impossible for these workers to pursue the financial and formal type and were rather investing in the non-financial type of social security for their retirement. Thus, all things being equal, these respondents were optimistic that their children would live longer and cater for them in their retirement.

5.2.5. Organising and networking
In terms of organising among solo self-employed quarry workers, the study found a welfare association at the quarry sites. The purpose of the welfare association was to improve the welfare of the members by receiving regular financial contributions from contributors. Weddings of members and financial support for bereaved members were the main purpose of these financial contributions. Meanwhile, the association became defunct because of a lack of commitment and good leadership. A respondent among the self-employed quarry workers revealed in an in-depth interview that:

There was a welfare association with the aim of helping members in times of funeral and wedding of children and relatives. There were no written constitutions for the association which could be blamed for its defunctness for two years now. Also, some members were not committed to the group. Contributions were made as and when a qualified event happened and donated at the occasion. In the absence of executives, we could not determine regular monthly dues and were not able to engage in proper organising for any better support (A quarry worker, No. 6, February, 2018).
What led to the collapse of the association was the lack of commitment among some members. There was no proper coordination for organising and participation, which could explain why the workers’ association could not be sustained. There was a total absence of traditional trade union organising of these categories of workers. Trade union representatives interviewed indicated reasons for their inability to organise these workers that:

Our focus now is on the employees or those who work under employers. Though we have been seeing the self-employed quarry workers, mostly women, we have never contacted them due to financial and logistics challenges (Trade Union Rep1, February, 2018).

Despite the lack of trade union activities and active association among these workers, it was observed that there was a very strong unity and solidarity (social network) among them. These workers always share customers’ orders among themselves for supply. That is, any time a customer approaches any of them to buy a stock, several of them come together and provide the order. This was done to ensure that at least everyone was in business since all these workers were in a cluster and were in competition. A respondent confirmed that “Due to irregular orders, anytime customers place an order, at least four of us will share the order so that everyone can make some sales” “(A quarry worker, No. 1).

5.2.6. Institutional support
The labour department representing the state in terms of regulating and policing the activities of solo self-employed quarry workers seems not to be a challenge to these workers in terms of taxation. According to these workers, they preferred not to be seen by city authorities for fear of taxation. The labour inspector for the district where these workers were located also confirmed the workers’ assertion that:

My department is in charge of over 200 enterprises in the district, including quarry workers. However, due to lack of logistics and the necessary human resources, the department has been unable to visit all these enterprises and the quarry workers (Labour Inspector 1, February, 2018).

Thus, the labour department was under-resourced and could not effectively monitor or carry out its mandate which serves as a typical example of an institutional void. The summary of the results is therefore presented in Table 1.

| Indicator         | Status                          | Reasons                                           |
|-------------------|---------------------------------|---------------------------------------------------|
| Income            | Below $1 per day. Not decent    | Competition from suppliers in the same retailing role |
| Working hours     | 73 hours per week. Not decent   | Low income                                       |
| Working environment| Dusty with health challenges. Not decent | Inability to buy nose masks & gloves, among others |
| Health insurance  | Registered cardholders          | Easily fall sick due to the dusty environment     |
| Social security   | Unsustainable-Nonfinancial investment in children | Low income & lack of state support for social security |
| Organising        | Defunct welfare association.    | No formal trade union have contacted these workers.|
| Visit by regulatory agencies | Workers do not want to be seen, and the regulator is yet to visit them. | The regulator does not have the resources to be able to visit |

Source: Field data (2019)
6. Discussion of the results
The aim of this study was to evaluate the precarious conditions under which solo self-employed quarry workers operate in Ghana. The study found that solo self-employed quarry workers operated in a very dusty working environment and lacked personal protective equipment. Therefore, these workers were exposed to several health conditions such as fever, cough, pneumonia, running nose (respiratory tract infections) and the possibility of attracting incurable silicosis. Additionally, it was also revealed that these quarry workers worked for 12 hours maximum from Monday to Saturday for a monthly income of $29.7. Respondents spent their income on their medical bills, feeding, and buying stock. Investment in their children’s education was the informal social security adopted by solo self-employed quarry workers for their old age. The informal membership-based organisation formed to better their working conditions were also defunct.

6.1. Income
The daily income of $0.99 (monthly income of $29.7) recorded for self-employed quarry workers was far below the 2021 national daily minimum wage of 11.82 cedis (the U.S. $2.16) for workers. The national daily minimum wage suggests that a worker should not earn below the stated national minimum rate. Comparatively, it means the wage of a non-standard employee described by Erbach (2014) as precarious is even higher or better than the daily earnings of the self-employed. This confirms the findings of Kalleberg and Hewison (2013) that self-employed workers in Germany and the Netherlands earned less as compared to the other forms of workers. The results further mean that each of these quarry workers could not cater for at least two people in a day in terms of daily living costs (Erbach, 2014).

Meanwhile, the impact of the low income on self-employed quarry workers could have been mitigated by the additional sources of livelihood such as farming for consumption and those who were married to working spouses. This means that in-work poverty might have a different implication on household poverty among solo self-employed workers depending on whether one was married and had an additional source of livelihood. All these mean that the quarry workers had more susceptible to income insufficiency as compared to non-standard or wage workers in Ghana.

Also, difficulty with arriving at daily, weekly or monthly income could be adduced by inadequate skills in accounting for bookkeeping. Ofori (2009) found a lack of basic bookkeeping skills typical of informal solo employers. Several of the informal workers usually could not record expenses and revenue so that they could be taxed, which could have several consequences for the national developmental agenda.

6.2. Working hours
The maximum daily working hours of 12 hours observed exceeded the 48 maximum weekly working hours indicated in the labour regulations of Ghana. The 72 weekly hours of work was far higher than the 57 hours in Uganda, 50 hours in Ghana found among non-standard workers in Ghana and Uganda by ILO (2016). The excessive working hours had resulted in work-life conflict and could be affecting the workers’ ability to attend to other constituents of their lives, such as taking care of their kids and washing clothes, since they worked on Saturdays as well. Excessive working hours justify low daily income.

6.3. Social security and healthcare
Solo self-employed quarry workers’ inability to invest in their personal finances and social security was also linked to low income. In Ghana, the state does not provide any basic social security for this category of workers either. Social security in Ghana is a contributory type that exempts solo self-employed workers because they could not contribute. The situation is totally opposite when compared with the solo self-employed in Germany and the Netherlands, where basic insurance and compulsory social scheme catered to these workers’ social security needs.
Thus, the informal social security among the solo self-employed workers in Ghana was to invest in their children’s education against their future/old age security. Ironically, due to the high level of unemployment in Ghana, there are several employed graduates. Therefore, these respondents were of the view that literates have higher probability of better jobs than the illiterate. It is also uncertain how these children would live long, be healthy, and acquire better education to take care of their parents amid dust-related health challenges that confronted both parents and their children. Though ILO (2016) found a lack of social benefits associated with employment for non-standard workers in Ghana and Uganda, the situation of the solo self-employed quarry workers seems to be more challenging.

6.4. Safe working environment

The impact of an unsafe working environment due to dust on the health of the self-employed could have been less if these workers could afford nose masks and hand gloves, among others. Their inability to afford protective gear due to their low income could aggravate the health-related challenges. More so, the current medical effects of the dusty working environment of quarry workers, such as respiratory tract infections, could be worse in the long term. The long-term effect of inhaling dust at the quarry sites could be a contraction of incurable acute silicosis infection. This was not known to these workers and never do they go for such check-ups. The lack of institutional support for these workers in the form of free national health insurance seriously makes the workers’ case very serious.

6.5. Organising and networking

There was evidence of organisation among these workers in the form of welfare associations. The association became defunct due to a lack of commitment and proper structures. The results revealed that welfare associations for the workers were indifferent to the needs of members. Though the association had become defunct, powerful solidarity and unity among these self-employed quarry workers were found. The solidarity has sustained their businesses since it keeps everyone in business by ensuring that orders from customers are split among themselves for supply. However, this solidarity was lacking in terms of buying stock in groups for lower transportation costs. These workers were instead buying stock individually, which increased their cost of operation. The solidarity was also not extended as a common front to bargain for a concession from suppliers of their wares.

6.6. Institutional support

The failure of the labour department to visit these workers due to lack of logistics and human resource challenges was a clear indication of institutional failure. Though it favours these workers because of fear of being taxed, there could not be any regulation to favour their working conditions if authorities do not know of their location. For example, the state could be in a better position to provide an interest-free loan to these workers if the locations of these workers are known. Thus, the identity of these workers by state regulators is needed for the necessary support from the state for better working conditions so that self-employed quarry workers could hire other paid workers.

It also means that the state institution such as the labour department does not have an established system to capture, monitor and implement policies that could address the challenges associated with the working conditions of self-employed quarry workers. This is a mark of a weak institution that equally affects institutional performance. Thus, institutional failure could be blamed for the poor working conditions of self-employed quarry workers in Ghana.

6.7. Gender perspectives

Quarry activities among the solo self-employed quarry workers were highly gendered towards the female workers with and without marriage. This is typical of the self-employment landscape in Ghana, as found by the Ghana Statical Service (2016). The husbands of the married quarried workers were either engaged or gotten a “better job” and had left the quarry activities. Thus, the precariousness found by this study (in terms of income, working hours, safe working environment,
social security, and healthcare, organising and social network and institutional support) had direct and more debilitating effects on the women workers as compared to their husbands.

7. Theoretical implications
The findings of this study have several implications for the Herzberg two-factor theory that guided this study. This theory has largely been used for formal workers with formal relations with their employers. However, this study has proven that indicators of working conditions affect workers and employers in both formal and informal economies; hence the theory is relevant for solo self-employed. Thus, this study has used institutional support for solo self-employed by the state and its agencies to represent the external or extrinsic (hygiene) factor of Herzberg’s two-factor theory. The remaining elements of working conditions (used in this study as intrinsic because the self-employed had control over them) include social security, income, working hours, safe working environment, organising and social networking, and institutional support. The findings of this study have shown satisfaction with the internal factors (intrinsic) can only lead to sustenance of the enterprises of solo self-employed. However, external factors (extrinsic) are highly needed for the growth or expansion of enterprises of solo self-employed. The expansion of business was needed to be able to offer a socio-economic contribution to the economy. The expansion was also needed to enhance the well-being of solo self-employed workers.

8. Practical policy implication
The findings of this study equally bring to the fore some policy implications. For solo informal workers to be supported, they must be identifiable. Thus, the state will need policy direction on identifying and registering this category of workers for state support. These supports could come in the form of soft or interest-free loans, training on bookkeeping, etc. There could be tax exemption from the start until the enterprises grow to an acceptable level of taxation. Another practical policy implication of the findings of the study is that solo self-employed workers are disadvantaged in terms of the contributory social security system of the country. The state, therefore, will need a policy direction and support in terms of basic free national social security for this category of workers against income loss due to unemployment, old age, sickness, and maternity.

Furthermore, the findings of the study also have some practical implications for solo self-employed workers. The poor working conditions suggested the need for a strong association or collective identity to ensure decent working conditions. The association will help to get a concession from supplies, buy in bulk, and transport in bulk to cut down on overheads. The collective identity among these solo self-employed will also enable them to have one voice to approach the state for institutional support.

8.1. Conclusion and recommendation
The implications of the findings of this study have consequences for career opportunities and work situations for solo self-employed workers. The insecurity identified has affected the quality of work and increased their risk and uncertainty and the non-work domains such as individual well-being, health, social life, and family formation. The insecurity also further questions the state’s economic policy and its role as a welfare state. Worsened working conditions among solo self-employed also limits their capacity to grow their enterprises to employ others to complement the government’s employment efforts.

The government’s involvement in employment creation is needed to afford solo self-employed workers alternative job options with better working conditions. Solo self-employed quarry workers also need employment counselling in selecting livelihood activities. The findings of this study also require that institutions regulating the subsector are structured more flexibly to ensure that solo self-employed quarry workers will be able to register to prevent tax evasion formally. Solo self-employed quarry workers may better tackle challenges associated with their working conditions through collective identity.
On the practical level, the key findings require specific actions. Therefore, it is recommended that the labour department be resourced with both logistics and human resources to be able to visit and support solo self-employed quarry workers in the form of skill enhancement training, book-keeping, and interest-free loans for better working conditions. Secondly, the state needs basic insurance and social security cover for solo self-employed workers and its citizens against work and non-work-related insecurity. This is because the minimum daily wage only applies to wage employees and not solo self-employed workers.

Thirdly, the government should implement other maintenance programmes that empower parents to recruit the right labour for their activities rather than their underage children. Ultimately, parents would be able to free their wards to focus on their educational needs after school. Lastly, self-employed quarry workers should collectively purchase stock in bulk and transport their wares instead of the individualistic approach in vogue. This collective effort would reduce the cost of operation for higher returns. Lastly, self-employed quarry workers should form a strong association to contact city authorities and regulators for policy and financial support.

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No potential conflict of interest was reported by the author(s).

Ethical clearance
Institutional Review Board (IRB) of the University of Cape Coast granted the researchers approval with the ethical clearance identification number of UCCIRB/CHLS/2018/04 to carry out the study on the chosen topic.

Consent to participate
Informed consent was obtained from all individual participants included in the study and participation was voluntary, and participation was not by compulsion.

Ethical consideration and usage of research data
All information obtained from the interview for this study was used purely for academic purposes and non-commercial purposes only. This was captured in the introductory letter to participants involved in the study. Respondents were also fully assured of confidentiality and anonymity as well as free to participate and free to withdraw before and during the interview sessions.

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