

Hazardous Conditions Of Women In Gari Processing Industry In Ibadan, South West, Nigeria

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Abstract

This article examines women's involvement in gari processing industry with specific emphasis on the various hazards they encounter during work. The study adopted a cross-sectional qualitative research design and participants were purposively selected from a large gari processing site in Odogbo cantonment, Ojoo Ibadan. Primary data were collected from 41 interviewees and 5 key informants. African feminist theory and systems theory were adopted for explaining the phenomenon. The findings reveal that women are exposed to physical, psychosocial and chemical hazards during gari processing. Lower back pain and other musculoskeletal disorders were the most recurring health issues faced by women in gari processing. These conditions often result in fatigue for the women due to the enormous workload and the long period spent while working. The study concludes that careful attitude to work is the best known way for reducing these hazards that are inherent in the work design.

Keywords: hazards, musculoskeletal disorder, gari, lower back pain

1. Introduction

Work occupies a central place in the lives of men because it enables them to meet the basic necessities of life. The importance of work in human lives explains the wide interest of scholars and philosophers in the activities of man and how these activities impinge on the health of the workers (Thompson, 1989). While work is considered necessary for human existence, it however harbours certain risks and dangers which are detrimental to the workers and sometimes to the surrounding environment around the work place. Such risks faced by workers may include accident, injuries, work-related diseases, emotional and psychological disorders all of which affects the health and well being of the workers negatively.

The continuous problems faced by women in the workplace have continued to attract the interest of Industrial Sociologists and Industrial Relation Specialists. Across the world, female workers are faced with numerous health challenges occasioned by some hazardous conditions inherent in their work places. These challenges however vary across individuals, work environments, nations and regions (Yussuf, 2011). In developing world of which Nigeria is inclusive, these categories of workers have to contend with numerous problems ranging from socio-cultural constraints, sexual discrimination and exploitation at the work place among others (Yusuf, 2011)

The fact that women sustain one form of accident or the other in the course of processing cassava into gari (a staple food in Nigeria), it is therefore imperative for proactive measures to be taken for the purpose of understanding the hazardous conditions in their workplaces which will be geared towards reducing the accidents, injuries and other health issues that they may encounter in cassava processing industry. The concerns of scholars are borne out of the implications of such hazards to workers' lives, industrial organizations and the society at large. More specifically, women's health at work is considered a very important issue by virtue of the role they play in the overall national development (Amali, 2006). Amali also argued that while people are the backbone of the economy, women make up more than half of the human resources in Nigeria. She argued further that women constitute a high percentage of the workforce and hence of the output of the economy. Against this background, this article examines the various hazardous conditions faced by women in gari processing industry with specific emphasis on their working conditions, the types of

hazards they encounter and their implications and the effectiveness of the various measures adopted for reducing these hazards to the barest minimum. These occupational hazards were investigated at the peeling, washing/grating and frying stages of *gari* processing.

2. Literature Review

Over the years, the focus of gender issues in Occupational Safety and Health (OSH) has shifted from the protection of women based on assumed physical differences between women and men, to the promotion of equality of rights, opportunities and treatment for all workers. Making the workplaces safe for each individual worker is the goal, regardless of sex. Legislation oriented towards the protection of women as care-givers - which assumed that this was women's primary function - could potentially have discriminatory effects on women's job opportunities. Presently the focus is on removing risks from workplaces rather than excluding women from hazardous occupations. This new orientation has led to the revision or replacement of a number of OSH-related standards, for example those related to night work (International Labour Organization, 2007).

While the promotion of OSH has improved over the past decades, the level of workplace fatalities, injuries and illnesses still remains unacceptably high and takes an enormous toll on men, women and their families. Economies lose out as well; the cost of accidents and ill health amounts to an estimated 4 per cent of the world's GDP (International Labour Organization, 2008). In the current global financial and economic crisis, this situation may even worsen. There are growing concerns that the global economic meltdown will have negative effects on specific sectors, possibly endangering the safety and health of millions of workers. The potential for compromises in safety and health due to economic factors may lead to an increase in the number of workplace accidents and diseases (ILO, 2008).

In agriculture the share of women is globally 35.4 per cent of the workforce; in Sub-Saharan Africa and South Asia the agricultural sector makes up more than 60 per cent of all female employment (ILO, 2009). Women in agriculture, whether in subsistence farming, self-employed, working as unpaid family members or as wage earners have a high incidence of injuries and diseases. The situation is particularly evident for women in developing countries where education and training on safety systems (including the use of personal protective equipment) and risk assessment are inadequate to prevent injury and illness. Some women are concentrated as unskilled workers in greenhouses where they risk greater exposure to pesticides and other hazardous chemicals. For pregnant women, such exposure can carry long-term health implications on themselves and their unborn babies (This situation is compounded with an insufficient access to health services in rural areas, so accidents may lead to permanent conditions).

Over the years, it is believed that some crops are designated as "women crops" for planting and processing. These include vegetables, groundnuts and cassava while yam and tree crops such as cocoa and palm produce are said to be men's (Ajayi, 1995). Adeguye, Omonoma and Awoyemi (1999) also asserted that women are active in the cassava industry and that they are more predominant in the processing and marketing than men folk who dominate in the production of cassava roots. They further stated that women activities in root production have increased due to men's off farm employment or part-time work off the farm which has given rise to women's involvement in weeding, harvesting, transportation, storage, processing and marketing. The process of agricultural production and the output it generates can contribute to both good and poor health among the producers as well as the entire society. Being an agricultural producer is a determinant of health relative to income and labour (Corinna and Ruel, 2006). Labour equally predisposes producers to a range of occupational hazards including accidents, strains, diseases and poisoning (Corinna and Ruel, 2006).

The condition under which *gari* is produced can bear significant determinants on occupational hazards. These conditions could manifest in the forms of unsafe environment and unsafe acts/behaviour on the part of the workers. Studies have demonstrated that the traditional methods of cassava processing are still in use for the production of *gari*. These methods have been associated with various forms of occupational hazards that bear significant impact on the health of the workers. It was also reported that safety of the operator was not borne in mind in the design and construction of the machines and this sometimes result in accident and create some forms of difficulty in the adoption process (Davies, Olatunji and Burubai, 2008).

Despite some impressive technological achievements through development of new machinery and equipment, cassava processing still continue to present daunting challenges because the production level of these processors are either cottage or small-scale. This level is characterized by low level of technology use and poor management leading to low productivity (Sereme and Nzamugo, 2010). Notwithstanding the various improvements so far recorded in terms of technology, processing cassava into *gari* is still carried out using traditional methods in the study site used for this study.

Cassava is the third most important food crop in the tropical world, following rice and maize (Ferrari, 1992).

Although it is low in protein, production is increasing because it grows well in poor soils and tolerates drought. But it has a major disadvantage in that its preparation as a food liberates hydrogen cyanide, a deadly poison. Careful preparation is therefore needed to initiate the various chemical interactions needed to eliminate this poison. Cassava is largely grown and processed by women. As the major food crop throughout tropical Africa, cassava is also widely grown in many Pacific countries. It is produced commercially in many countries, since it is easy to grow and reliable. In Nigeria, cassava is a major food staple and the production of processed cassava known as *gari* is carried out on a large scale. Like all traditional cassava processing, *gari* production is labour-intensive. It is usually undertaken by a small group of people on behalf of a larger community, either at village level, or in large *gari* kitchens in towns, with many people working together in one unit. This tedious and potentially dangerous work is carried out mainly by women (Ferrari, 1992).

A typical *gari* preparation area consists of a large, open-sided shed, often poorly ventilated. Many women work in these sheds, often with children around them. Hydrogen cyanide is generated at various stages of preparation, particularly when the fermented *gari* is fried in open pans. Given the ubiquity of cassava as a staple food, and women's responsibility for its processing on a domestic and commercial basis, the implications for women's health are important. Aside from the effects of eating toxic cassava, women are exposed to the air pollution connected with its processing (Ferrari, 1992). In the report presented by Ferrari, women and children constitute the most vulnerable groups who actively take part in the production of *gari*.

Involvement of women were noticeable in the following cassava processing operations such as peeling, sifting, frying and drying while men predominantly undertake grating, pressing and milling operations which had been mechanized (Davies, Olatunji and Burubai, 2008). While some operations can be relatively safer and the probability of hazards being highly depended on careless attitude on the part of the workers, other activities can be relatively more hazardous therefore increasing the probability of health risk resulting from their use. It is also possible for a less hazardous task to become hazardous due to the careless attitude of the workers towards work, and also, a much more hazardous work can become less hazardous if careful safety tips are followed to the letter. The traditional methods that are still largely in use in *gari* processing site expose woman to more activities in the *gari* processing sites, as a result increasing the tendencies of their exposure to occupational hazards. These hazards in the work place according to Occupational Safety and Health (2005) can be physical, biological, chemical, ergonomic or psychosocial.

3. Theoretical Framework

Systems theory of accident causation and African Feminist Theory were adopted as theoretical bases for explaining occupational hazards and women's involvement in this risky industry respectively. A system consists of a group of regularly interacting and interrelated components that together form a unified whole. This definition serves as the basis for the systems theory of accident causation. Women (host), machine and the environment form interacting and interrelated components during cassava processing. These interacting components: person/machine/environment have significant bearing that an accident will occur during the processing of cassava.

The processing of cassava involves series of interaction of man and various tools in a particular environment which may contain some hazardous conditions. Also, in the process of interacting with the machines and other factors involved in producing *gari*, workers are inevitably caught up in a web of activities that can predispose them to certain hazards in the industry which are capable of affecting their health and conditions negatively.

African Feminism involves a critical examination of women in Africa based on the social and historical realities of their lives. Steady (1981) formulated a feminist theory for African women. She examines the socio-economic and class factors which contribute to African women's oppression (economic exploitation and marginalization) and her response to this oppression (self reliance). Feminism examines the position of women in society and tries to further their interests. In general terms, feminism asserts that sex is a fundamental and irreducible axis of social organization that has subordinated women to men. This structural subordination of women has been described by feminists as patriarchy with its derivative meanings of the male-headed family, mastery and superiority (Barker, 2004).

Igenozah (2004) has also observed that the concern with the gender question is primarily on the secondary standing of women in society. Feminists see the secondary standing of women in the scheme of things as a form of victimization, especially the subordinate role women are made to play in relation to men. According to Heldke and O'Connor (2004), the emphasis of the feminist theory is on oppression, discrimination, injustice and exploitation. They stated that if oppression systematically and unfairly marginalizes some members of a society, then it must also grant other members of that society an unfair advantage. Culture is the place where inequality is reproduced, but it is within culture that gender is formed (Baldwin, Longhurst, McCracken, Ogborn and Smith, 2004).

The increasing involvement of women in agro-processing industries cannot be divorced entirely from the patriarchal structures that have deprived women of certain valuable resources such as land. This lack of access to land combined with limited education for women has resulted in limited opportunity structures for women to assert themselves in the formal sector that has been dominated by male since time immemorial. Also, this situation reflects the position of women to stay and work close to their homes because the culture has placed them in an almost exclusive private realm with their major function of looking after the home and children.

Having being disadvantaged culturally due to patriarchal norms and also lacking the requisite education and skills for asserting themselves in the formal sector, women have channel their energies to other areas for the purpose of making ends meet and elevating themselves above the threshold of poverty. The search for this new purpose explains their dominance in *gari* processing industry where the traditional method of processing *gari* is still in use.

Technological improvement in *gari* processing industry still reflects the patriarchal culture where most of the machines designed to make work easier at the processing sites were designed without the women (who constitute the largest percentage of the work force) in mind. This lends credence to why most of the machines used in *gari* processing industries are operated by men and also goes to show the difficulty often experienced in trying to make people adopt a new technology that will enhance easy and effective *gari* processing. This position reflect a gender-blind policy that has failed to incorporate and integrate the end users into the design of most machines, hence the dominance of the traditional method of cassava processing in most parts of the country.

4. Methodology

The study adopted a cross-sectional qualitative research design because data were collected from participants at just one point in time using in-depth interviews (IDIs), key informant interviews (KIIs) and observation. The study focused on females' involvement in *gari* processing. This design was chosen because it required the respondents to describe the various stages involved in the course of processing cassava into *gari*. This provided a platform for assessing the safety of the various stages through observation of the workers at work. This method allows understanding of the phenomenon of occupational hazards from the participants' viewpoint.

Data were collected from forty six respondents. A total of 41 IDIs were conducted in the processing site. This comprises 15 interviewees from the peeling stage, 9 interviewees from the washing/grating stage and 17 interviewees from the frying stage. The data generated during the in-depth interviews were complemented with the data generated from 5 key informants. These key informants were women who had vast knowledge in the processing of *gari* and are currently supplying the market in large quantities. During the field exercise, sampling stopped at saturation point when additional sampling did not add any new insight to the data already gathered. Participation of the respondents in the study was voluntary and informed consent was given before the collection of data. Also, participant had the right to withdraw from the study at any point in time and the anonymity of the respondents was guaranteed throughout the research endeavour. The field notes and recorded information collected were analysed using content analysis.

5. Results

Table 1 below gives some selected demographic characteristics of the respondents. The age characteristics of the respondents from the processing site shows that 26.1% of the respondents were between ages (16-21), 19.6% of the participants were between the age range of (22-27). Also, 17.4% and 15.2% of the participants were between the age range of 28-33 and 34-39 respectively, while the remaining 21.7% of the participants were above 40 years of age. This shows that women from various age categories were involved in traditional *gari* processing.

Observation during the fieldwork was in support of women domination in *gari* processing. This also supports the view of Adebayo and Sangosina (2005) that women dominate *gari* production process. Marital status indicates that the majority of the participants (45.7%) were married and 34.8% and 19.6% of the people that took part in the study were single and widowed respectively. Also, low educational qualification was discovered to be a major characteristic of the women in *gari* processing industry with half of the participants (50.0%) without any formal education, while 39.1% and 10.9% of the participants had primary and secondary school certificate as their highest educational qualification. This can also be linked to the patriarchal nature of the society in which women are seen as care givers and who need little or no form of education. It is generally believed that little or no education is needed in the processing of *gari*. It is important to stress that getting quality education is out of reach of the women who are working for self subsistence. The low level of education can have significant implications for the adoption of advanced technology in *gari* processing as argued by

Bello, Ejembi, Allu and Anzaku (2013).

Also, 32.6% of the participants were involved in cassava peeling, 19.6% of the participants took part in washing/grating, while 37.0% of the participants took part in the frying section. Only 10.9% of the participants were *gari* businesswomen who produced *gari* in large quantity for the market. They were included as key informants because of the vast knowledge they possess.

Table 1: Demographic characteristics of respondents

Variable	Frequency	Percentage
Age		
16-21	12	26.1
22-27	9	19.6
28-33	8	17.4
34-39	7	15.2
40 and above	10	21.7
Total	46	100.0
Sex	46	100.0
Female		
Marital status		
Single	16	34.8
Married	21	45.7
Widowed	9	19.6
Total	46	100.0
Educational Qualification		
No formal school	23	50.0
Primary	18	39.1
Secondary	5	10.9
Total	46	100.0
Processing Stage		
Peeling	15	32.6
Washing/Grating	9	19.6
Frying	17	37.0
others	5	10.9
Total	46	100.0

The results also revealed that women work in hazard-prone environment where cassava is processed into *gari*. These hazards are largely ergonomic in nature because they are part of the work design process in the traditional method of *gari* production that is use in the study site. The study also found the working conditions to be hazardous in nature and also some of the accidents that occur during *gari* processing were caused by faulty attitude to work on the part of the worker. Musculoskeletal disorders were found to be the dominant health issues across all the processing stages. This was largely due to the nature of the work in the processing site that put enormous strain on the muscle and skeletal system of the worker.

Physical hazards such as knife cuts and exposure to sunlight were reported at the stage of cassava peeling where the skill and experience of the worker presents the best way of avoiding knife cuts. The conditions in the washing/grating section present daunting situations that expose the workers to both physical and ergonomic hazards. Manual effort was needed to perform most of the tasks required at this stage of processing. This in turn puts the body under serious strain and pain around the waist, shoulder and thigh which were the most recurring health issues with fatigue often experienced after work.

6. Discussion

The principal aim of this study is to examine the occupational hazards faced by women at three stages of *gari* processing (peeling, washing/grating and frying) and the implications of these hazards on their health and well being. The study found plausible support for the dominance of women in the processing of *gari* which is in conformity with the findings of (Ferrar, 1991; Amali, 2006 and Adegeye, Omonoma and Awoyemi, 1999). The study found that *gari* processing industry is a systemic arrangement of different interacting and interrelated components of which women constitute a part. This

interaction causes human to work in hazardous conditions inherent in the work place and workers sometimes create these hazardous conditions through their actions. Women's dominance in agro-based processing industries such as *gari* processing reflects the patriarchal culture that has relegated them from the public. The analysis of the consequences of the public-private distinction underlying the institution of the family in modern societies revealed a factor that proved most startling for feminists: women's relegation to the private sphere of family, motherhood, marriage left the relations of knowledge to power and power to knowledge mostly in the hands of public men. And so did women's participation in the dual labour market of patriarchal capitalism that typically relegated women into secondary labour sectors of low wages, fewer fringe benefits, and fewer skill development programs such as traditional cassava processing industries.

The study also reveals an implementation of gender-blind policy towards the development of machines used in the processing of *gari*. This is regrettably sad because the people (women), who constitute the dominant labour force across different stages in the industry, have been neglected in the design process. This also lends credence to the domination of men at the realm of knowledge production, research methods and methodology.

6.1 Hazards in cassava peeling

The lack of uniformity in the sizes and shapes of the cassava has made the development of mechanized peelers difficult. As a result, peeling of cassava is done manually through the use of clean and sharp knives to remove the back to reveal the fine tuber. Women and children, mostly females were dominant in cassava peeling stage. Cassava peeling takes place in an open space and the majority of the workers are always at the mercy of the weather. Workers at this stage of processing also adopted different sitting positions and some were seen standing (especially children) while performing this task.

A particular interviewee said:

*Peeling cassava is difficult because you have to hold different sizes and shapes of cassava with one hand and peeling it with the knife held on the other hand. This is why I always experience pain in my hand after the peeling exercise. Also, some cassava are very strong and their back very thick. This necessitates the expending of more energy while trying to remove the outer layer covering the fine tuber.
(IDI/27 years/Female/ Peeling/Odogbo Cantonment/ July 2013)*

Supporting the first interviewee, another worker made the following statement:

*Peeling is very hard to do because you will sit in a particular position for a very long time and this can cause you to experience some pain in some parts of the body especially at the back and waist...
(IDI/21 years/Female/Peeling/Odogbo Cantonment/ July 2013)*

A particular informant from the study site made the following statement about cassava peeling:

*...The process of peeling cassava is safe and adverse health issues can only arise if the workers are not careful in the course of performing their work. You control the knife yourself and you can only injure yourself if you are less careful because the knife is always very sharp and must therefore be used with utmost care. I sharpen my knife every month in order to make the peeling easy with little effort. I only experience some body pain when the cassavas are very big and require a lot of energy to hold them with the other hand. But sometimes to avoid this situation, I usually place one end of the cassava on the floor while peeling.
(IDI/Female/26-year/Peeling/Odogbo Cantonment/ July 2013)*

Workers in the peeling section perceived the environment in which they work as relatively safe and free from hazardous conditions. This position was maintained by majority of the workers in this section despite the numerous hazards such as knife cuts, exposure to harsh weather conditions, slips and fall, pain in the arm and around the shoulder and lower back pain caused by sitting in a particular position for a very long period. All these are serious health issues occasioned by the nature of the work they do. For the majority of the workers in this section, injuries such as knife cuts and slips and fall are caused by carelessness on the part of the workers. Also, itching was reported among some workers and this was caused by the cyanide present in the cassava when it comes into direct contact with the skin. The majority of the workers have experienced itching at one point or the other while working at this stage of cassava processing.

6.2 Hazards at cassava washing stage

Washing of the peeled cassava and grating take place around the same place in the wet section of the industry. Cassava washing is carried out by putting the peeled cassava into a wide container with water and the worker will continually use either one or both legs to march the cassava against themselves in the container until they become clean. This manual process requires great energy and strength on the part of the worker. Also, the worker bends frequently to park the cassava into a container for the purpose of transferring them into the container used for washing and she bends down while removing the washed cassava from the container. Lower back pain is a major health issue experienced by workers at this stage. Pain around the shoulder and thigh are also common health issues faced at this stage.

Commenting on some of the issues encountered, a particular worker said:

The work we do here is a little bit difficult because it requires moving cassava from one point to the other and bending down regularly causes pain at the waist. The nature of the washing process is also energy sapping and puts a lot of strain on some body part such as the thigh.

(ID/female/37 years/frying/March 2013, Odogbo cantonment)

6.3 Hazards at the Cassava grating stage

Women also dominated in the grating section of processing cassava into *gari*. Three sets of workers were involved in this section. They are: those who park the washed cassava into the grating engine; those who move the grated cassava mash from the engine after grating and those that apply pressure to the cassava in the engine to make it grate faster. The conditions in this stage of cassava processing are risky and laden with many hazards that can affect the health of the worker.

Acknowledging the danger inherent in this processing stage, one *gari* business woman maintained that:

We do not allow children to work in this section and we advised mothers to educate their children and wards on the dangers involved while working in this section. First, they must avoid walking with smooth slippers because the floor is usually very slippery and with water everywhere on the floor it becomes very risky. Also, the engine belt is another danger spot that must be avoided. This moving belt can cause serious injuries if the worker comes into direct contact with it. It is usually unguarded and capable of stripping the person naked and can leave the worker unconscious with lots of injuries all over the person's body. We have had cases in the past where the victim was admitted after the incidence.

(KII/female/30 yrs/March, 2013/Odogbo cantonment)

Another *gari* business woman said that:

*...Another danger during cassava grating usually happens when the grater is getting weak and not as sharp as it used to be. When this happens, it requires some form of pressure on the part of the operator to enable it to grate faster. New graters are always sharp and require no pressure to grate faster. The older the grater, the smoother the *gari* mash that is produced and this will favour the owners of grating mills because more customers are assured. Because an old grater will not grate faster, there is always a need for pressure to be applied. Applying pressure to the cassava in the engine while it is working is a very risky task especially when it is done with the bare hand. This has caused serious injury when the operator touches the grating drum by mistake while the engine is running.*

(KII/female/41yrs/March 2013/Odogbo cantonment/2013)

To minimize the injury that can result from putting pressure on the grater to grate faster, the use of plank was recommended by the owner of grating mill as this would go a long way in preventing the operator's hand from coming into contact with the working engine.

Complementing what was said above, a particular woman working in this section said:

...the floor around the grating section is usually slippery as a result of water from the different activities that take place there. This explains the numerous cases of slips and fall witnessed by workers in this section. Working in this stage requires a lot of bending and lifting that put a lot of strain on the lower part of the body. To the person parking the cassava into the engine and the worker parking the grated cassava mash from the engine, waist pain is a common health issue with them. Also, the person parking the grated cassava mash from the engine needs to be very careful and should resist the temptation of using his/her hand to park the grated cassava mash from underneath the grater while the engine is still running. This is very dangerous and has resulted in numerous injuries to hand and fingers of workers

*in this section.
(IDI/female/48yrs/grating/march 2013/Odogbo cantonment)*

6.4 Hazards at Gari frying stage

Women dominated in the gari frying stage, although few boys were seen around the section but they merely assist the female. The frying section, which was the last stage at which occupational hazards was investigated, takes place in traditional frying shed built by those who are into the business of *gari* production for the purpose of protecting their workers from rain and sunlight. In the shed, there are various oven made from clay sand. The oven is designed in such a way that the *agbada* (cast-iron pot used for roasting the sieved flour to produce *gari*) will fit well to prevent it from shaking while the frying process is going on. A hand full of male workers were also seen working in certain areas such as sieving (filtering) the ungrated cassava fibrous materials from the cassava flour before frying the fine flour to produce *gari*. These males were ignored because they were not part of the focus of the study.

The tools needed to accomplish the task of *gari* frying are: cast iron pot (*agbada*) and scapula-shaped calabash popularly called *igbako*. The *agbada* is heated with fire from the oven and the *igbako* is used for stirring the *gari* to avoid burning. Almost all the workers interviewed perceived the job as tedious, stressful and the circumstances as unhygienic and harmful to their health and well being. The negative perceptions held by these women about their conditions of work did not deter them from taking part in the frying section. The traditional *gari* frying shed is depicted in the diagram below:

Picture 1: Women frying gari



The picture above depicts the *gari* frying process. From the picture above, it is evident that the workers sit close to the oven which usually becomes hot and unbearable for the worker after some time. Also, the calabash (*igbako*) used for stirring the *gari* in the pot is small and that exposes the fingers and the hand to intense heat emanating from the roasting cast iron pot commonly known as *agbada*. The long sewn bag (*ashasha*) tied in front of the oven was meant to barricade air from blowing towards the workers thereby reducing the smoke which is one of the most disturbing issues to workers in the *gari* frying stage. This processing stage is dominated by women with men only functioning minimally, sometimes just assisting the female processors in other tasks within the frying shed.

Speaking on the danger involved in working at the *gari* frying stage, one of the key informants that has worked at the frying stage but currently into the business of *gari* production for profit maintained:

*.....I had to stop frying gari and move to the grating and peeling section then because of the pain I often felt in my eyes during and after the whole frying exercise. Except you have never worked in this section, issues of swollen and eye irritation are common.
(KII/female/45yrs/March 2013/odogbo cantonment).*

Another informant emphasizing the danger inherent in *gari* frying said:

Sometimes, it is difficult for you to get people to fry gari for you. This is because of the increasing awareness of the various health issues that have come to be associated with it. This is one of the reasons responsible for the growing

*involvement of old people in this area which was not the case in the past.
(KII/female/51 years/March 2013/Odogbo Cantonment)*

Presenting another dimension of the situation under which *gari* frying takes place, a female worker in this section said:

*I have witnessed the collapse of some sheds while workers were working underneath them. I have also experienced some collapse shed during mild as well as heavy rainfall. You can imagine the experience when these sheds give in with people working underneath them. Although there has not been any case of death recorded that I know of, but the situation has produced some devastating results when it happened. This goes to show that workers in the frying section work under dangerous and uncertain conditions because even the shed that is meant to shelter them from rain and sunlight also constitutes a threat to their lives and well being.
(IDI/Female/37 years/frying/Odogbo cantonment/March, 2013)*

Making a statement as regards workers' condition during *gari* frying, another respondent said:

*It is very obvious that women and children (especially girls) are the most active categories of workers in the frying section. As a result, they constitute the most vulnerable group in the *gari* frying section. The risks they are exposed to include smoke effect, heat effect, working under weak shed that can give in at any time among others. Male workers are always very few in this section of *gari* processing.
(Female IDI/18 yrs/Frying/Odogbo cantonment/March,2013)*

The workers in the frying section also acknowledged the danger in their places of work, but most of them attributed safety to God and not man. Excerpts from some of the responses gathered were presented below.

A 30 year old woman averred:

*I am used to working under this situation and I don't think the shed will collapse when I am working under it. She attested to the dangerous situation in which she works by saying that: I know the situation is risky but it is only God that protects us all. Even when the shed collapse as we have experienced in the past, there was no death recorded...I think it is God that made that possible, not man.
(Female IDI/30 yrs/Frying/Odogbo cantonment/March, 2013)*

Also reiterating the point made by the 30 year old participant above, an elderly woman who also works in this section made the following statement:

*...only God saves and protect us from the danger in our workplace. Even when some of these old shed collapse, they often happen in the night when people are not underneath it and even when people are working under it, most of them ran out before the shed eventually collapse. Also when the shed collapse on them, there has never been a case of death but various degrees of injury have been observed, she said. That means it is God who protects people.
(Female IDI/52 years/Frying/odogbo cantonment/March,2013)*

Observation of these sheds during the fieldwork clearly shows that some of the sticks used for holding these sheds into positions are old and weak. This increases the chances of these sheds giving in under little pressure therefore putting the lives of those working underneath it at risk. The number of abandoned sheds as a result of collapse shows that this issue should be given serious attention in the study area where the numbers of abandoned sheds due to collapse was found to be high. This is because there is no substitute for human life and it is not a good thing for the health and life of human to be sacrificed on the altar of work.

Also, the long uncomfortable sitting position constitutes another worrisome dimension of the risk identified during *gari* frying. Almost all the respondents interviewed were aware of the danger in *gari* processing, and almost all of them have experienced one type of health issue associated with the nature of their work. Fatigues and body pain were common health issues reported across board while skin irritation and eye irritation were commonly faced by workers in the peeling and frying sections respectively. Ergonomic issues still constitute serious threat to the health and safety of workers during *gari* frying.

7. Conclusion

This study examined the involvement of women in the processing of *gari* with special interest on the various hazardous

conditions within which they function. Women's involvement in *gari* processing was investigated at the peeling, washing/grating and *gari* frying stages. The study concludes that involvement of women in *gari* processing reflects their disadvantaged position in the existing patriarchal structure in society. Their lack of access to land for farming and the cultural norms that prescribe their involvement in the private realm coupled with the lack of requisite skills for asserting themselves in other well-rewarding occupation are some of the reasons that necessitated their involvement in *gari* processing industries. The interaction between women, machine and the environment create certain conditions that have negative consequences on their health during *gari* processing.

The study also confirms the position of many scholars that women are mostly involved in *gari* processing and other agro-based products. Physical hazards especially those of ergonomic origin were found to dominate across the processing stages where occupational hazards were investigated. Musculoskeletal disorders were the major health issues faced by women in *gari* processing industry. These are injuries that affect the body muscles, tendons, ligaments and nerves with lower back and shoulder pain as the most acknowledged and recurring health issues experienced by workers in almost all the stages where occupational hazards were investigated. The skeletal and the muscles systems are the most threatened parts of the human body during cassava processing. The frying stage was found to be the most dangerous and therefore workers at this stage of *gari* processing are subject for intervention.

The wearing of protective clothing will go a long way in reducing the level of exposure of workers to cyanide at the various cassava processing stages. Since it was reported that skin irritation is a major health issue associated with cyanide exposure, the wearing of protective clothing will significantly reduce the level of exposure thereby reducing the various health issues associated with such exposure.

Conducting enlightenment programmes at regular intervals which will sensitize women on the dangers inherent in their work, the best ways of avoiding these dangers and reducing the accidents will be steps in the right direction by health and safety managers. This will reduce, to a greater extent, the careless attitudes of workers towards their work as well as equip them with reasonable amount of knowledge on the safest ways of working in hazard-prone environments like the *gari* processing industries.

Since improper work design constitutes the major causes of the various accidents and hazards that negatively affected the workers' health, redesigning the work environment for the purpose of making sure that the human body fit into the work process will be the surest way of reducing these hazards faced by women in *gari* processing industry. This will reduce the musculoskeletal disorders that constitute the most recurring health issues faced by workers in these industries. For this to be successful, most of the modern *gari* processing technologies should be introduced and women should be borne in mind when designing these new machines. It is pertinent to therefore assert that women, though in subordinated position, are indeed indispensable because they have made significant contributions to the processing of agro-based products despite the discrimination, subjugation and cultural constraints suffered by them.

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