

# Roles and Responsibilities of Stakeholders towards Ensuring Health and Safety at Construction Site

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## Abstract

Health and Safety issues in the construction industry are of much concern to stakeholders, particularly because of their impact on the industry. This paper explored the roles and responsibilities of stakeholders in ensuring health and safety at the construction site. A well-structured interview guide was adopted for the qualitative study. Content analysis was adopted for the analysis of the results. The study revealed that the twelve roles identified by the stakeholders are only limited to the few laws and regulations they are aware of. Whereas the Contractors identified provision of welfare facilities, provision of health and safety policy, and health and safety plan as their key roles, the Consultants' role was mainly limited to provision of competent site agent and provision of site layout. Abiding by the contractors' instruction was identified by the Construction Workers as their key responsibilities. The local government officials also identified enforcement of CHS laws and regulations and reporting of incidents to the appropriate authorities, whereas the traditional authorities identified the enforcement of CHS laws and regulations including bye laws and enforcement of customs as their key roles. The findings further show that the stakeholders failed to appreciate some key roles and responsibilities enshrined in CHS laws and regulations in Ghana. The findings contribute to knowledge on stakeholders' responsibilities in ensuring CHS, and provide valuable reference and insight to practitioners on the roles and responsibilities of the various stakeholders. It is recommended to train and educate stakeholders on all the relevant laws and regulations on CHS in order to improve health and safety at the construction site. The government should also set up a body such as Construction Authority to educate, co-ordinate, monitor and audit the activities of stakeholders to improve CHS at construction sites.

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## Keywords

Ghana, Construction, Stakeholders, Roles and Responsibility, Health and Safety

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### 1. Introduction

The beginning of civilization made man get involved in various forms of construction directly or indirectly [1]. The construction industry has contributed significantly to the development of countries, with about 350 million people employed in it. Construction as an industry is responsible for the procurement of infrastructure generally. These infrastructure products are either for direct enjoyment (e.g. residential buildings), aid the construction process (e.g., offices, factory buildings and warehouses), supplement or improve existing infrastructure (e.g. roads, railways, harbours) or provide social utility (e.g. hospitals, theatres parks et cetera) [2]. It is a high stake endeavour that produces long-term, unique and complex building projects and infrastructure [3]. The construction industry is a project-based industry with each project being unique, hence notorious for its high levels of accidents and hazards [4] [5] [6]. According to Birhane *et al.* [7], the activities of the construction industry are of high risk and as such are prone to many hazardous outcomes. Some of these activities include working at heights, manual handling of tools and materials, working in confined spaces and other demolition activities. Exposure to a hazardous working environment has adverse effect on productivity and the socio-economic well-being of workers and their various families [8]. Construction work is carried out in constantly changing working environments, and this poses significant health and safety risks, such as injuries, accidents, and loss of skilled workers [9]. These accidents are, however, unavoidable in the industry and remain the main disadvantage in the construction industry [10].

The International Labour Office (ILO) reports that more than 2.3 million people die annually due to work related accidents. In addition, about 317 million work related accidents occur every year [11]. The construction industry, however, is not an exception. The construction industry though a major contributor to many economies, poses a lot of danger to the people involved in it [12]. Construction activities have raised serious health and safety issues among professionals, researchers and workers [13] [14]. In this regard, laws and regulations have been developed to guide the management of health and safety in the construction industry. Notwithstanding that, measures and techniques have also evolved to better minimize accidents and the risks of hazards, thus ensuring an effective health and safety management in the construction industry. The Health and Safety Executives (HSE) [15] summarized the causes of construction accidents and hazards into four major categories viz; 1) Worker and work team causes, 2) Workplace causes, 3) Materials and equipment causes and 4) Originality influences.

The causes of accidents and hazards grouped under worker and work team factors involve actions of the individual worker, their capabilities and communication problems. With regards to workplace causes, this includes the adequacy of working space, ground conditions, environmental conditions and welfare facilities. Unfavourable ground conditions such as uneven and precarious terrain or loose grounds could result in construction accidents and hazards on sites [15]. In addition, poor weather and environmental conditions such as dusty working conditions, poor lighting and sunlight reflection on concrete could result in accidents and hazards (European Statistics on Accident at Work, (ESAW) [16]. For causes of accidents and hazards relating to materials and equipment, this includes the variability in the quality of construction materials, the supply and availability of materials, lack of information regarding the usage of materials and equipment and the use of contaminated materials. The quality of construction materials and equipment, lack of information on how equipment and materials are being used often exposes construction operatives to accidents and hazards. It is therefore important for manufacturers and suppliers to provide adequate information on the usage of materials and equipment on site. Moreover, suppliers must avoid distributing faulty and expired equipment and materials for construction works [16]. Accidents and hazards belonging to the originality influences are regarded as the root causes of accidents and hazards [16]. These causal factors directly relate to the works design and project management techniques.

It may be inferred from the above classification that the causes of accidents and hazards may be attributed to the stakeholders involved in the construction industry such as construction workers on worker and work team causes; contractors, regulators, local government officials and consultants on work place causes; contractors, consultants regulators and manufacturers/suppliers on materials and equipment causes; Consultants, clients, contractors on originality causes. According to [10], a lot of studies have been done on the safety issues of the Ghanaian construction industry. However, not much attention has been given to the role of stakeholders in ensuring health and safety in the Ghanaian construction industry. This paper therefore aims at exploring the roles and responsibilities of stakeholders in ensuring construction health and safety on construction sites.

## 2. Literature Review

Safety management of the Ghanaian construction industry involves all the stakeholders of the Ghanaian construction industry. Philips [17] defines stakeholders as individuals or groups who contribute to and are affected by a decision making process. Prabhu [18] establishes that there are two types of stakeholders. These are the internal stakeholders who are made up of the owner or client, customers, contractors and suppliers. There are also the external stakeholders made up of the local community, financial institutions and the government. The various stakeholders in the construction process represent varying interests which

are likely to be protected as rights of each stakeholder change [9].

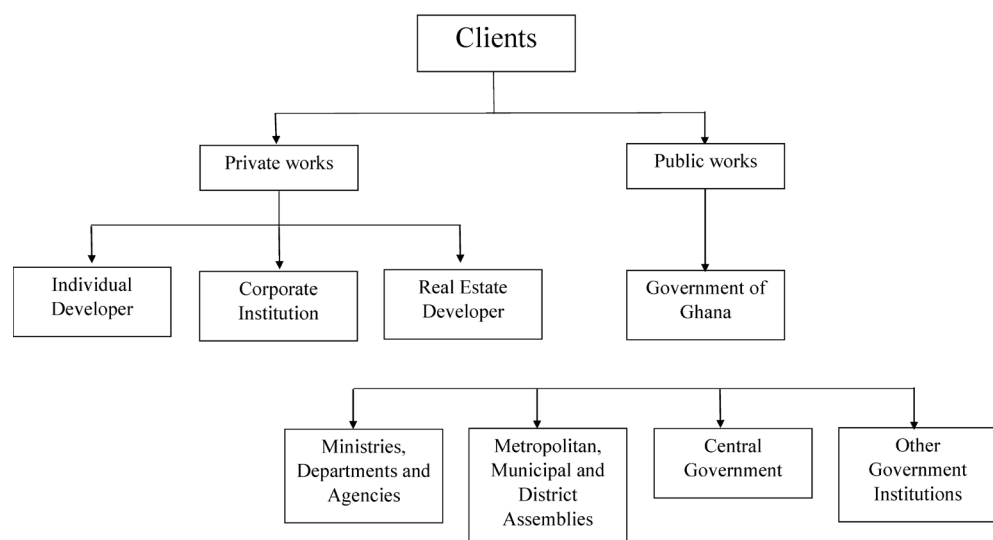
## 2.1. Key Stakeholders in the Ghanaian Construction Industry

Anyanwu [19] stated that it is expedient to have an effective building construction team to ensure the minimization of wastage on site, that the project is delivered according to specification and quality, that health and safety protocols are observed, and project is finished on time and within budget. The construction industry is complex and involves a number of stakeholders for the completion of the project. The key stakeholders include the clients, consultants, contractors, subcontractors, construction workers, manufacturers and or suppliers of construction materials, equipment and tools, the Regulating institutions, the local government, beneficiaries or users and some instances the financiers, insurers among others [17].

### Clients

Client has been defined “as the organisation, or individual, who commissions the activities necessary to implement and complete a project in order to satisfy its or his needs and then enters into a contract with the commissioned parties” [20] [21]. A client is the party that contracts other parties to undertake the construction works [22].

Client’s objective of the project is value for money that results in the performance of the project. The client is usually attracted by the aesthetic view of the project, quality of the workmanship and cost of the project [23]. Clients often do not concern themselves with the health and safety at the construction site but on safety of the finished product. In Ghana, Clients structure is as shown in **Figure 1** while **Figure 2** depicts the relationship among stakeholders. Clients achieve their objective through the consultant employed to take charge of the procurement of the project. Thus, client procures the work through the engagement of Construction Professionals, also known as the Consultant or Project Manager



**Figure 1.** Structure of clients in Ghanaian construction industry.

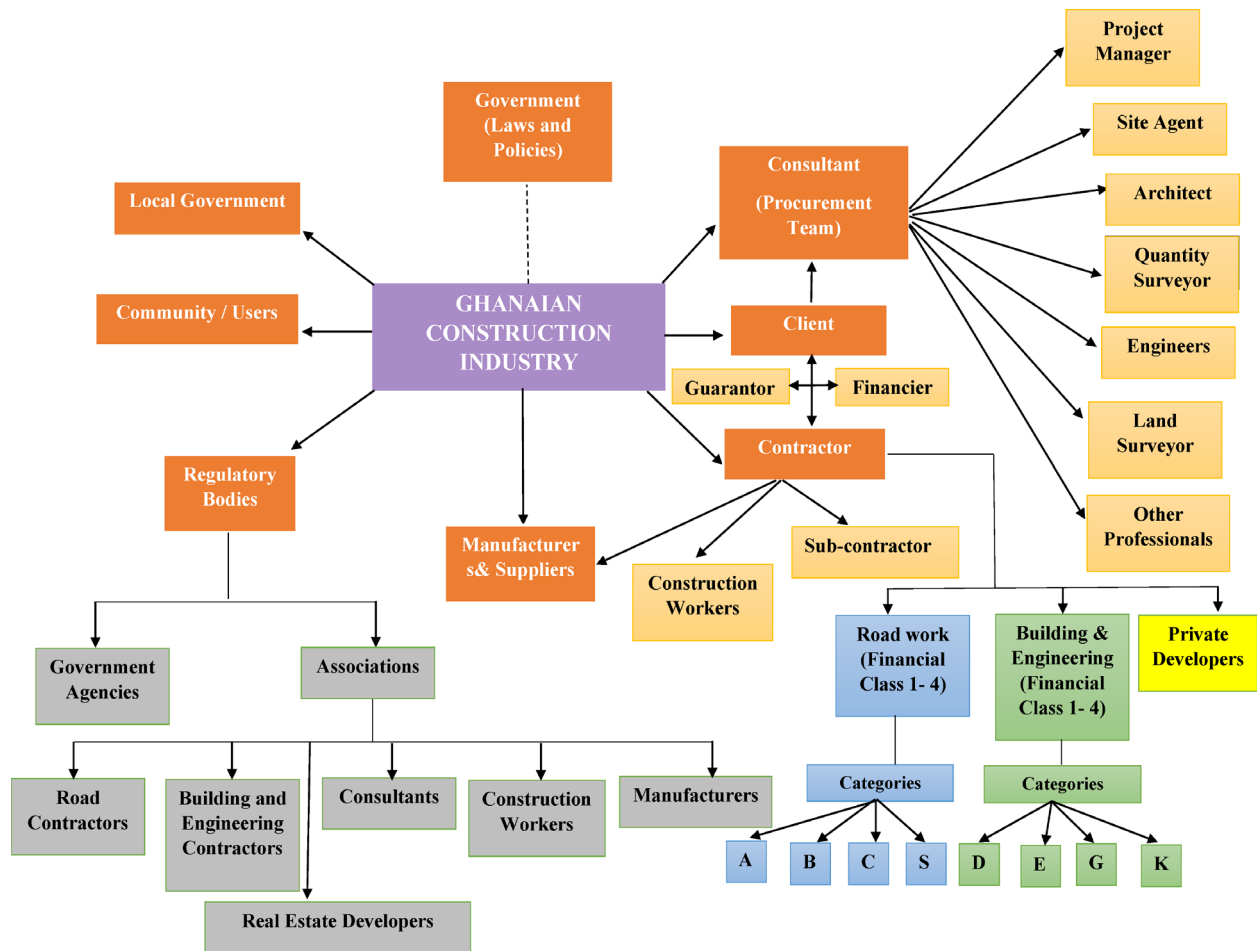


Figure 2. Relationship among stakeholders.

within the context of GCI. According to Affare [24], in Ghana four main clients are distinguishable: Government (being the major client for public development projects), Real Estate Developers, Corporate Institutions and Home Builders. The government as a client operates through the Ministries, Departments and Agencies (MDA) as well as the Metropolitan, Municipal and District Assemblies (MMDAs). Real Estate developers are mostly of the Real Estate Companies and Estate Agencies.

**Professional Consultants**

Professional consultants regularly engaged in construction projects by clients are Architects, Land Surveyor, Quantity Surveyors (QS), Planners and Engineers [25]. Professional bodies’ institutions, namely, Ghana Institution of Architects (GIA), Ghana Institution of Surveyors (GhIS), Ghana Institution of Planners (GIP) and Ghana Institution of Engineering (GhIE), regulates consultants [26]. It is expected from all professional consultants to exhibit good professional ethics in the delivery of service to clients. The consultants serve as the representative of the client on the project [25].

There may be other specialists who are included in the consulting team. The consultants usually appoint site agents or representatives to represent the team

of professionals [27]. The site agent usually deals directly with the developer at site. All instructions from the consultants are usually directed to the contractor through the site agent. The role of the project manager is to programme, monitor and manage the project from its beginning to completion and to ensure that a satisfactory result that conforms to the specification is produced. The client appoints the project manager as his representative [28] [29]. The quantity surveyor is the expert who is concerned with financial probity in the conceptualization, planning and execution of development projects both new and refurbishment works. He is the development costs adviser in the building, civil and other engineering projects. The work of the quantity surveyor in connection with building and engineering development has been published by Ghana Institution of Surveyor to include the following; Feasibility studies of capital projects, Cost modelling, Contract documentation, Contract administration and Project management [28]. Utěšená *et al.* [30] states that an architect is an aesthetic designer of a building in accordance with the available standards and regulations to produce a functional structure. The engineers are construction professionals responsible for assisting the overall design of the project within the scope of their specialist fields [31].

#### **Contractor**

The contractor translates working drawings, designs, schedules and specifications into a physical structure [19]. They take full and legal responsibility for supplying materials, labour, equipment and services necessary for a specific construction project [30].

## **2.2. Roles of Stakeholders in Ensuring Construction Health and Safety**

Over the years, research conducted on construction health and safety have delved into identifying the root causes of accidents on site, the impacts of construction accidents and hazards and the frequency of construction hazards and accidents in the construction industry [32] [33]. Eyiah *et al.* [34] assessed the effectiveness of occupational health and safety regulations in the Ghanaian construction industry and identified the influencing factors. Chang and Tsai [35] also emphasized that other studies have been conducted on other health and safety practices such as the influence of design on health and safety, performance approach to health and safety programmes and occupational health and safety interventions. Laryea and Sarfo [36] studied health and safety at the construction sites in Ghana. Donkoh and Duffey [37] conducted a study on the stakeholders' role in improving health and safety. In Ghana Health and safety (H&S) management has traditionally been the responsibility of the contractor, and most often, contractors are blamed for the accidents and other ill health that occur on their construction sites [37]. H&S performance is, however, enhanced when there is effective collaboration between those involved in the construction process [37]. When it comes to health and safety related issues in the construction industry, it involves all its stakeholders. This is because the duties of the various

stakeholders are inter-twined and related. Thus if one party fails to perform its obligation, there is a high likelihood of accident or hazard occurring. Donkoh and Duffey [37] found a conflict in the perceived functions and relation of stakeholders in the construction process, and suggested some recommendations to address the constraint to improving construction H&S including the identification of specific individuals responsible for supervision and employee training, the development of H&S policies by the government and contracts that clearly outline the contractual obligations of all parties involved. Wong *et al.* [38] identified that if stakeholders failed to provide proper working equipment and working platforms, it could result in site accidents. Also, according to Laryea and Sarfo [36], the various professional bodies have a role to play towards ensuring health and safety on sites. Some of these roles are enforcing health and safety policies on sites, and making stronger institutional framework for governing construction activities. A study conducted by Lee *et al.* [39] indicates that stakeholders have to provide training for the various workers on site, provide safety equipment, and ensure a safe working environment and proper communication to workers on site to prevent accidents on sites. In addition, construction workers who take alcohol and other hard drugs are prone to higher risk of work related accidents [40]. Again, stakeholders have to conduct proper and thorough investigations into the accidents that occur on site.

The client is referred to as the head of the procurement chain and has the most influence in establishing and monitoring H & S [37]. This influence can be exercised through the setting of criteria to promote a positive H&S culture throughout the life of a project [37]. [41] advised that governments (regulating institutions including MMDAs) can help promote better H&S by requiring projects to include a range of safety measures, such as specifying the safety budget, building layout or the use of certain construction materials. The contractor may be responsible for supplying labour and material and providing and overseeing staff if needed [42]. Contractors have the duty to provide a work environment which is free from recognised hazards that are causing or are likely to cause death or serious physical harm to their employees. The contractor is to ensure that employees comply with the H&S regulations on the site [37]. Finally, the contractor must provide H&S training for the employees. Employees or site operatives should ensure that they put on the appropriate personal protective equipment (PPE) for every type of work. They are also to adhere to the H&S rules on the site and should not do things that can put themselves and others in danger. The employees have to demonstrate an understanding of the H&S training they have received and subsequently work accordingly [37].

### 3. Research Methodology

This research followed a qualitative approach. A qualitative approach was chosen because it reveals existing knowledge in the form of questions and answers and its' results are easily accessible to interpret [43]. Gay *et al.* [44] also emphasized that qualitative approach gives a large quantity of in depth information.

This allows the researcher to gather more information by acting as an interviewer who forms part of the data collection process. In-depth face to face interviews based on the grounded theory approach was conducted with key officers and professionals who are the major stakeholders in the Ghanaian Construction Industry. Additionally, other actors who play important role in ensuring health and safety in the construction site were also considered in this study. The major stakeholders considered in this study are: Ghanaian Contractors (D1K1 and A1B1), Consultants, Suppliers/Manufacturers and Construction workers. The contractors in the class and categories D1K1 and A1B1 with at least 5 years experience were selected because these are the large and experienced construction firms, which are likely to make the effort to comply with the health and safety requirements. The other Actors considered in this study are the Traditional Authorities (Chiefs and Elders), Regulatory Bodies (Environmental Protection Agency, EPA, Factories Inspectorates, Ministry of Health, Public Departments/Agencies and Local Government Authorities). **Table 1** shows the stakeholders considered in the study.

The selection of interview participants was based on a purposive sampling technique. This sampling approach was adopted in order to have in-depth

**Table 1.** Criteria for group participants in interview.

Group Participants	Number	Criteria
Contractors (D1K1; A1B1)	7	The professionals working with the D1K1 (General Building and Civil Engineering category in Financial Class 1) or A1B1 (Road and Concrete Structures Construction category in Financial Class 1) class of contractors in Ghana. The interviewees belong to the professional bodies and construction associations of their status. They have experience between 12 and 22 years in the construction industry. The contractor must have a well-established health and safety management system where there are good accidents and hazards records procedures, safety kits, health and safety policy and plan for projects. The contractor must have engaged in construction projects in two or more regions in Ghana.
Consultants	7	The consultants must have had adequate knowledge and been trained in the area of health and safety management. The Consultants belong to the various professional bodies which are well recognized in the GCI. The interviewees were personnel of senior level and authority in their various Consulting firms. The interviewees have at least 5 years experience in their various field of expertise.
Suppliers/Manufacturers	7	The supplier/manufacturer must be a dealer of the major construction materials such as cement, reinforcement rods, roofing sheet and tiles. All the supplier/manufacturer interviewees must have at least two depots across the country and have been in business for at least 5 years. This indicates that the respondents have enough experience in the manufacturing and supply of construction materials in Ghana.
Construction Workers	7	The worker must have worked with a D1K1 or A1B1 classes of contractors in Ghana for a minimum of 5 years. The selected construction workers must be representatives of the most active trades within the GCI.
Traditional Authorities	7	The traditional leader/authority must be in a community with ongoing construction project.
Local Government Officers	7	Local Government officers must also be in a community with ongoing large-scale construction project. The officers must be in the management class such as Chief Executive, Coordinating Director, Planning Officer, Budget Analyst, Engineer etc.
Staff of Other Regulatory Bodies	7	Staff of Factories Inspectorate Department, Labour Department, Environmental Protection Agency (EPA), Police Service, Ghana National Fire Service, and Officials of Public Procurement Authority (PPA), identified to be senior management staff in the organization.
Total	49	



information on the phenomenon under study. The purposive sampling technique was used for selecting the interviewees from all the categories of participants. This was adopted also to ensure that persons familiar with the principles and management of construction health and safety were interviewed for the purpose. In purposively selecting participants, certain criteria outlined in **Table 1** were considered. In all, forty-nine (49) interviewees participated in the interview.

The interviewees responded to questions in relation to the roles of stakeholders in the GCI. The participants were taken through a well-focused interview using semi-structured open-ended questions. This provided participants the opportunity to elaborate more on the subject matter being discussed. Prior to the fixing of interview date, the open-ended questions were sent to all interviewees. To allow for convenience of the interviewees, the interview session took place in the offices of the interviewees, except for certain interviewees without offices where the interviews took place in the comfort of their residence or other convenient places.

The interview participants were personnel of senior level authority in their respective organizations. These Participants are part of the decision-making body within these organizations. Therefore, their views are highly reliable and dependable. On the average, the interview session took between 45 and 60 minutes per participant. All but five interviewees were recorded by means of an audio recorder. The five interviewees indicated they would not be allowed to be recorded by means of an audio recorder due to confidentiality. The audio recordings of majority of the interviews were done to ensure the accuracy of notes taken from the field and more also to provide more rendition of an interview. The audio recordings were then transcribed by creating a verbatim text of each interview. The qualitative data (face-to-face interviews) were analyzed by means of the content analysis technique. Content analysis seeks to identify the main facets of a set of data by counting the number of times an activity or theme occurs [45].

The first step in content analysis is the identification of the data or material to be analyzed. The second step is to identify the content technique to employ. The interview transcripts were analyzed by re-reading the transcripts to identify the themes that emerged from the interview participants' answers. The themes were summarized in tables and the number of times it was mentioned by Participants was tallied. There was regrouping on similar and closed responses. Each of the seven respondents in each of the identified organizations was given an identification code: an alphabet for the organization and a number from one to seven for the respondent. The first respondent of the Contractors for example, was identified as CA1, the second respondent as CA2 and so on. The participants of the interview were coded as shown in **Table 2**.

## 4. Results

The seven Stakeholder groups identified twelve responsibilities in ensuring CHS

**Table 2.** Coding of group participants.

No.	Groups of Participants	Code
1	Contractors	CR
2	Consultants	CT
3	Manufacturers/Suppliers	MS
4	Construction Workers	CW
5	Regulatory Bodies	RG
6	Local Government Officers	LG
7	Traditional/Community Leaders	TL

at the construction site in Ghana. **Table 3** shows the responses and the respective stakeholder occurrences.

#### 4.1. Roles of Contractors in Ensuring Health and Safety at Construction Site

The roles identified by the contractor interviewees in ensuring construction health and safety were five. The major roles are; provision of welfare facilities, (including provision of first aid kit and provision of helmets for workers on construction works) and provision of health and safety policy.

CR7 indicated that;

“welfare facilities such as drinking water, washrooms (sanitary facilities) and canteens allow basic needs provided for workers to work in conducive conditions”.

CR4 further indicated that:

“providing such facilities prevents workers from moving outside the construction area and therefore improve the performance of the workers”.

These assertions by the interviewees indicated that welfare facilities do not only ensure proper health and safety measures but also facilitate productivity and the progress of works. This is not surprising why most respondents provide such facilities as part of their health and safety measures for projects. Providing welfare facilities such as drinking water, is the basic provisions for ensuring health and safety on construction site.

CR3 further asserted that;

“the provision of first aid treatment is to comply with the provisions in the laws”.

CR7 indicated that;

“helmets forms part of the personal protective equipment (PPE) requirement stipulated in the law and therefore are provided, if contractors cannot provide anything for workers, at least safety helmet is better for protection against fallen items from heights”.

This assertion from interviewees clearly indicates that the basic PPE like helmet are provided for safety and protection.

CR5 indicated that;

“the construction health and safety policy with sometimes the health and safety plan are submitted as a requirement to the tender. The implementation of these policy and plan is very expensive and unless under very strict supervision they are not implemented”.

The submission of construction health and safety policy and plan have always remained a tender document but not strictly enforced in the contract implementation.

#### **4.2. Roles of Consultants in Ensuring Health and Safety at Construction Site**

**Table 3** shows the roles of consultant in ensuring health and safety on site. The major role identified is the provision of competent site agent.

Site Agents play crucial role in the supervision of construction works. Often site agents are representatives of consultants on construction sites, therefore it is not surprising consultants ensure health and safety on constructions projects through competent site agents.

CT4 pointed out that;

“when competent clerks of works are appointed, they ensure strict adherence to health and safety practices by contractors and workers and reporting of any accidents and hazards to the appropriate authorities for action.”

In the opinion of the CR6, the laws of Ghana do not mandate Consultants to ensure CHS.

CT3 stated that;

“Construction health and safety is the so responsibility of the contractor. The contractor produces the health and safety plan and policy that he implements at the Site. The consultant only approves of the plan and policy, our laws do not require the consultant to play any major role in ensuring construction health and safety.”

This assertion is false as laws such as the Building Regulations, Public Procurement Act etc specifies roles of the consultants in ensuring CHS in Ghana.

#### **4.3. Role of Construction Workers in Ensuring Health and Safety**

The role of workers in ensuring construction health and safety is to abide by instructions of their employers as shown in **Table 3**.

CW2 stated that:

“there is only one fundamental role and that is to ensure that instructions given by our supervisors and superiors are complied with. Instruction related to construction health and safety are often given by the site supervi-

sors and we are expected to comply with them”.

The impression of the workers suggested compliance of instruction on construction health and safety at site. They however did not mention the extent of the instruction on construction health and safety given to Construction Workers.

#### 4.4. Role of Manufacturers/Suppliers in Ensuring Health and Safety at Site

Suppliers as stakeholders in the GCI also play vital role in the management of health and safety in the GCI. The key role mentioned by Manufacturers/Suppliers as shown in **Table 3**, is the provision of adequate information on materials and equipment manufactured and or supplied. MS1 indicated that;

“enough guidelines are provided to the users of materials manufactured and supplied for construction works. The guidelines are mostly attached to the supplied materials to clients. However, some contractors always fail to abide by the provided information or guidelines for the usage of materials”.

The Suppliers give the impression that whilst they perform their role by providing the required instructions on construction health and safety, failure of the contractors to abide by the instruction causes the accident.

#### 4.5. Roles of Local Government Officials to Ensure Health and Safety at Construction Site

Local authorities indicated that they often visit site to inspect the construction

**Table 3.** Roles of interviewees in ensuring construction health and safety at construction site.

Code	Roles	Contractors (CR1-CR7)	Consultants (CT1-CT7)	Workers (CW1-CW7)	Suppliers (MS1-MS7)	Local Government Officers (LG1-LG7)	Traditional Authority (TL1-TL7)	Regulatory Bodies (RG1-RG7)
R1	Provision of welfare facilities	7	-	-	-	-	-	-
R2	Organization of Health and safety training	1	2	-	-	-	-	-
R3	Provision of Health and safety plan	4	-	-	-	-	-	-
R4	Conducting accident investigations	2	-	-	-	-	-	-
R5	Provision of Health and safety policy	6	-	-	-	-	-	-
R6	Provision of Proper site layout	-	4	-	-	-	-	-
R7	Provision of competent Site Agent	-	7	-	-	-	-	-
R8	Enforcement of H &S laws and regulations	-	2	-	-	7	5	7
R9	Abide by Instructions	-	-	7	-	-	-	-
R10	Provision of adequate information on materials & equipment	-	-	-	7	-	-	-
R11	Reporting major incidents on site	-	-	-	-	5	7	-
R12	Enforcement of Customs	-	-	-	-	-	7	-
<b>TOTAL</b>		<b>5</b>	<b>4</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>1</b>

activities to ensure a better management of construction process including health and safety. Three key roles mentioned by the Local Government Officers are; enforcement of safety regulations, reporting of major incidents at site, and enforcement of by-laws of the District as shown in **Table 3**.

LG2 stressed that;

“inspections are periodically organized to check on poor health and safety practices on construction site. We do not have a plan for our visit to site, but we do visit as and when the resources such as vehicle are available”.

The visit to construction site by local government officers is to monitor the work of Contractors but the visit to site is not regular depending on the availability of resources.

Another role indicated by interviewees was the compliance of by-laws. All the Interviewees agreed that;

“the key by-law that takes us to site is to ensure that permit for construction has been approved by the District. However, government projects are not required to take permit before the construction. Other by-laws such as winning of sand for the construction, transporting of materials to site must all comply with the by-laws of the District” (LG3).

The monitoring of the by-laws to ensure construction health and safety is likely to face the challenge of resources as indicated earlier by the respondents. All the Interviewees also indicated that:

“in visiting the sites, major incidents are reported to the Police for action. The major incidents may include accidents at the site, robbery, fighting and other activities that may disturb the peace of the community and the progress of the works” (LG5).

The interviewees did not concern themselves with minor accidents.

#### **4.6. Roles of Traditional Authorities in Ensuring Health and Safety**

Traditional Authorities within a community also play vital role in ensuring health and safety for the construction of works within a particular community. As shown in **Table 3**, all the interviewees indicated the enforcement of customs as the main role.

“the major role played is to ensure the enforcement of cultural norms and customs, by-laws within our community, and reporting incidents on site that are likely to affect the progress of work to the Police and the Local Government Officers. We ensure that any accident whether minor or major is reported to the authorities for further enquiry or investigation” (TL4).

TL3 pointed out that:

“most contractors do not report accidents which however affect the workers, therefore as leaders within the community the welfare of workers and

other pedestrian is our interest so we report any accident to the authorities for further investigations or compensations”.

TL7 indicated that;

“the traditional leaders protect the interest of the workers who often are residents within their community through visits to site from time to time. They ensure that accidents are reported for compensation of the victim or sanctions to be given to the culprit”.

*“We need to protect our environment, the rivers, forest and other natural resources. We not only report accidents but any violation of our customs and works which can cause serious harm to residents within the community”* (TL5).

TL3 stressed that;

“any construction works which could cause harm to residents in a community is also reported to appropriate authorities for actions”.

It may be concluded from the responses that traditional authorities play important role in ensuring the health and safety of residents in a community and workers on a construction site within their community. However, the reports made to the appropriate authorities is followed up by the Traditional Leaders could not be confirmed.

#### **4.7. Roles of Regulatory Bodies in Ensuring Health and Safety at Construction Site**

From **Table 3**, the respondents identified their role as ensuring the enforcement of construction health and safety regulations. All the Interviewees identified the enforcement of laws related to their respective institution.

“the role played by us in ensuring the safe construction of works within our jurisdiction is the enforcement of the laws, and the recording, and investigation of accidents at site.” (RG5 from Labour Department)

RG2 (Factories Inspectorate) pointed out that;

“our role is limited by lack of resources. Unless someone reports an incident to us, we hardly visit the construction sites”.

RG3 (Factories Inspectorate) stressed that;

“the contractors hardly inform us of any new project. We don’t have data of projects within our jurisdiction. The field work part of our mandate is gradually dwindling and we these days hardly visit the site of construction works.”

RG1 (PPA) stated that;

“we used to organize workshops and training seminars for the stakeholders to ensure that they comply with the enforcement of the relevant laws, but because of lack of resources I don’t remember the last time such workshops

and trainings were organized.”

The regulatory bodies are not functioning as they ought to. There is no coordination between the Regulators. There is the need to revamp the bodies for the enforcement of the construction health and safety laws and regulations to act in a coordinated manner.

## **5. Discussion**

Each stakeholder has specific duties and roles to perform to ensure construction health and safety as provided under laws and regulations. These laws and regulations are fragmented and are identified from various sources. The key roles of stakeholders identified by the stakeholders are discussed under this section.

### **5.1. Role of Contractors in Ensuring Health and Safety at Construction Site**

The key roles of contractors were the provision of: welfare facilities, health and safety policy and health and safety plan. Other minor roles were conducting accidents investigation and organisation of health and safety training for the construction workers.

#### **Provision of Welfare Facilities**

The key role identified by all the contractors is the provision of welfare facilities. Under Section 57 (8) of Factories, Shops and Offices Act, 1970 (Act 328), the Minister is obliged to make regulations to provide more health and safety provisions, scaffolding, the lifting machinery, excavations, site supervision, provision of welfare facilities and the imposition of duties on stakeholders to construction or engineering projects. Provision of welfare facilities is one of the areas required by law for the Minister of Labour to provide regulations. The health and welfare regulation is to serve as guidance for carrying out the principles and purposes of section 13 to 30 (section 30 of Act 328). Sections 13 to 30 of Act 328 provides for provision of cleanliness, overcrowding, ventilation, washing facilities, lighting, drainage of floors, sanitary conveniences drinking water, accommodation for clothing, seating facilities and removal of dust or fumes. Other areas under the health and welfare include taking meals, protective clothing and appliances, noise and vibrations, prohibition of lifting excessive weights, first aid and power to require medical supervision.

The welfare facilities claimed to be provided by the contractors to ensure health, safety is quite broad. The extent of the welfare facilities expected to be provided by the contractors that were not known. However, sections 13 to 30 of the Factories, Offices and Shops Act, 1970 (Act 328) as amended require that an employer provides basic welfare facilities for health and safety. These include the provision of sanitary facilities differently for each sex; adequate wholesome water in a suitable vessel if there is no standpipe-supply of water with the container being renewed at least daily. The employer must ensure that the water and the vessels are free from contamination. Personal protective equipment (PPE) such

as overalls, safety booths, goggles, and head covering to workers exposed to excessive exposure to wet, injurious and offensive substance are to be provided by the Contractor. The contractor has the duty to reduce noise at workplace through the adoption of appropriate and practicable measures. Again the contractor must ensure that workers do not to carry load which is likely to cause injury. There must be at the workplace, availability of first aid box or cupboard during working hours and compliance with regulations for noise control, vibrations, ventilations, washing facilities and lighting. The provision of safety facilities such as measures taken in case of fire; proper safe means of access etc. are not part of welfare facilities under Act 328. It is not clear whether the contractor's use of the term "welfare facilities" is inclusive of the provision of safety facilities. Ensuring health and safety is not complete without the safety measures and facilities.

#### **Provision of Health and Safety Policy**

The provision of health and safety policy is the second key role of the contractors towards ensuring CHS on site. Six out of the seven contractor interviewees endorsed this position. Health and safety policy (HSP) is considered as a powerful tool for communicating an organization's health and safety practice and procedure to its employees [46]. One major requirement towards ensuring effective health and safety management on construction sites is the development of a safety policy. HSP is a policy document that indicates who does what, when and how to do it. In fact, health and safety policy actually exhibits an organizational commitment towards ensuring safety at the workplace and more also the policy can only be effective if it is honoured and reviewed periodically [47]. Contractors are sometimes required during the tendering stage of procurement of works to submit HSP. They are however not used as part of the main criteria for the award of contract. The content of an organization's policy on health and safety could be divided into four sections with each section clearly articulating the roles and activities to be played by all stakeholders. These sections include: the policy statement of intent, organization of health and safety, arrangements for health and safety, and review of the health and safety policy [15].

Policy statement of intent addresses the aim and objectives of the company. Therefore, the aim and objectives should be clear and unambiguous and more over must demonstrate commitment in ensuring health and safety [48]. Often policy statement is signed by the most senior manager or the Chief Executive Officer to give authority to the policy document [49]. The interview indicated that the implementation of the HSP is something that is in doubt. The contractors have given the indication through the interview that the implementation is expensive. It is therefore of a necessity that strict supervision is given for its full implementation.

#### **Provision of Health and Safety Plan**

The third key role perform by contractors according to the interviewees is the provision of health and safety plan. Four out of the seven interviewees agreed on



this provision as one of the roles performed by the contractors. According to [50], health and safety plan defines and describes the regulations, procedures and management actions necessary to control health and safety risks through all development phases of a specific construction project. In addition to health and safety policy often developed by an organization, it is also important for health and safety plan to be prepared. Like health and safety policy, health and safety plan is a legal requirement for construction projects in many developed countries [51] and it is prepared for specific works or projects. It however establishes all the safety procedures and measures required for a safe execution of a particular project. Moreover, the success of ensuring health and safety management for construction projects heavily relies on the effectiveness of the health and safety plan.

The two other minor roles performed by the contractors including, Conducting Accident Investigation and Organization of Health and Safety Training for Construction workers.

## **5.2. Role of Consultants in Ensuring Health and Safety at Construction Site**

The key roles of the consultant include: provision of competent site agent, proper site layout, enforcing health and safety laws and regulations and Organization of Health and Safety Training for Contractors and Construction Workers.

### **Provision of Competent Site Agent**

The consultant is the person appointed by the client to render advice and technical expertise to the client to take certain actions under the works contract on behalf of the client, or to exercise certain independent functions under the contract (United Nations Commission on International Trade Law [52]). The consultant is responsible for design and supervision of the execution of the works including the administration of the contract. The consultant appoints a qualified or competent person during the execution of the works and delegates the duties of the consultant to such person for effective supervision of the works at the site. The appointed person is the agent of the consultant at the site and usually called the Site Agent. Any acts or communication taken or given by a person to whom authority has properly been delegated by the consultant shall have the same effect as if the acts had been taken by the consultant himself [52]. The consultant's authority to give instruction to the contractor usually is delegated to the site agent.

The site agent provides the day-to-day supervision of the construction. All the consultant interviewees' assertion is that when a competent site agent is appointed to the site, he would supervise and ensure that the contractor provides all requirements of CHS.

### **Provision of Proper Site Layout**

Provision of proper site layout is the second key role of consultants in ensuring CH & S at the site, according to the consultant interviewees. A proper site

layout provides a plan for the use of the site effectively to avoid accidents and hazards, especially working at a busy area or limited space area. The site plan provides the proper entrance gate to the site to give access to the construction workers and other staff, visitors, vehicles and plant and other equipment such as fire-fighting equipment. A proper site layout provides an effective location for materials to site and storage place of materials not yet in use. The site layout also shows proper place for putting up temporary buildings such as site offices, accommodation, sanitary places etc. The effective planning of site through proper layout reduces accidents and hazards at site. It is a constitutional obligation of every employer to ensure safe and healthy working environment, under Article 24 of the 1992 Constitution of the Republic of Ghana. The two other duties and responsibilities performed by the Consultants are enforcement of Conditions and Contract which is part of CHS laws and regulations and organization of health and safety trainings for Consultants and workers at construction site. It is however, surprising that the consultants are not aware of a number of laws and regulations that mandates the consultant in his design and supervision to perform or comply with in ensuring CHS at site such as Insurance Act, Labour Act, PPA, EPA, Building regulations, fire regulation and electrical installation regulation. The continuous and regular training of contractors and construction workers will develop the knowledge and skills of the construction workers to ensure CHS on site.

### **5.3. Role of Construction Workers in Ensuring Health and Safety at Construction Site**

The construction worker is hired or employed by the contractor for the execution of the works. They are under the influence of the contractor and therefore must perform all instructions from the contractor in the course of their employment. The contractor is liable for all acts of the construction worker in the course of his employment. The contractor however is not liable for the acts of the worker when the worker is on the frolic of his own. The construction workers role to comply with laws and regulations mandating them to perform an act, omit or forbear a duty also ensures health and safety at site. Among the laws and regulations are Factories, Offices and Shops Act, 1970, Act 328, Labour Act 2003 (Act 651) and Collective Bargaining Agreement.

### **5.4. Role of Manufacturers/Suppliers in Ensuring Health and Safety at Construction Site**

The manufacturers/suppliers identified the provision of adequate information on materials and equipment under a supply or purchase contract as the only role they perform to ensure health and safety at site. Low level of education on the use of materials and equipment causes accidents and hazards as identified in this study by the manufacturers/suppliers. The low level of education leads to lack of knowledge on the use of materials and equipment at site. In the opinion of the manufacturers/supplier, providing adequate information on materials and equip-

ment will give the required knowledge on the use of the supplied materials and equipment and therefore reduce accidents and hazards. According to the manufacturer/supplier interviewees, just providing adequate information is not enough. It is also required that the user of the material and equipment must be aware of the information, understand the information provided and must be able to apply the information effectively and efficiently. This may be achieved through training and education of the user of the material or equipment and their supervisors at the construction site. The manufacturer/supplier's role is to supply goods in accordance with the specification and instruction of the buyer. The adequate information on use of the material or equipment must therefore meet these specifications and instructions. The manufacturer/supplier will be able to provide adequate information if they have the knowledge on the health and safety laws and regulation applicable to the materials and the equipment under the supply contract. Knowledge of PPA, 2003 (Act 663) as amended including manuals, regulations and contract administration of goods, Sale of Goods Act 1962 (Act 137) and Hire Purchase Act, 1974 (NRCD 292) and other case laws will help the manufacturer/supplier to provide adequate information on the materials and equipment supplied by them.

### **5.5. Role of Local Government Officials in Ensuring Health and Safety at Construction Site**

The key roles identified by the officers of the Local Government are: Enforcement of health and safety laws and regulation and Reporting of Incidents at Construction Site.

#### **Enforcement of health and safety laws and regulation**

The Local Government officials identified enforcement of laws and regulations as the major role performed by them in ensuring CHS within the District of jurisdiction. The Central Department, Department of Health and Department of Works are the main wings of the District Assembly responsible for ensuring healthy and safety in construction environment within the District respectively. The laws and regulations complied with by the District Assembly officials is the Local Governance Act, 2019 (Act 936) as reported by the Local Government Official interviewees in **Table 3**. The Act provides for the governance of the District Assembly and the duties of the various stakeholders of the local governance. In ensuring health and safety in the construction industry, the Act imposes some duties on District Planning Officers, Department of Works and other District Personnel to ensure proper monitoring and enforcement of health and safety in all operations and at workplaces within the District. The regulations that the District Assembly officials comply with are the by-laws of the Assembly. The District Assembly sets out by-laws specific to the District for the governance of the District including ensuring health and safety at the construction site. The District Assembly is expected to make proper checks and the designs for the construction before issuing permit for the construction. During the construction, the District Assembly through the District Engineer and District Health

Inspector is expected to monitor the works to ensure proper health and safety at the construction site. The other regulations expected to guide the monitoring and supervision of works to ensure health and safety is the building regulation. The District officials revealed through the interview that one of the reasons for non-compliance with laws and regulations is lack of resources for monitoring.

#### **Reporting of Incidents at Construction Site**

The Factories, Offices and Shops Act, 1970 (Act 328) and Labour Act, 2003 (Act 651) provide for accidents and hazards to be reported by the contractor and workers to the District Inspectors. The Local Government officials through their inspection and monitoring of construction works within the District also report accidents and hazards at construction site to the appropriate authority, especially to the Police. The reporting of accidents and hazards helps in accident and hazards investigation and recommendation of appropriate measures for the prevention of future accidents and hazards. This mandate has been given to the District Inspectorate of Factories, and the reporting of accidents and hazards at construction site to the District Inspectors to support the work of the Department of Factories.

### **5.6. Role of Traditional Authorities in Ensuring Health and Safety at Construction Site**

The major role of the traditional authorities in ensuring CHS is to ensure the enforcement of the customs/customary law of the community within which the construction works is taking place. The traditional authorities also assist the District Assembly in ensuring that the by-laws of the Assembly are complied with by the contractor and the construction workers.

#### **Customs/Customary law**

Customs are the specific cultural norms of particular community. The Black's Law Dictionary defines custom as a practice that by its common adoption and long, unvarying habit has come to have the force of law. Customs have been recognized under Ghanaian laws as the customary law. Customs are applicable to particular communities in Ghana that have existed for a considerable long time and accepted in the community as binding. The customs must be reasonable and conform to public policy and not inconsistent with or contrary to any enacted law. The traditional authorities ensure that no one abuses the cultural norms or customs. Customs may include a sacred day that no one goes unto a land, a forest or the catchment area of water body. In some instance, certain activities such as noise making, fighting, insults and other bad attitudes are forbidden on the land meant for the construction works. All these are to protect the land and other natural resources from degradation.

#### **Enforcement of health and safety laws and regulation**

Under the local governance, each community has a representative at the District Assembly, called the Assemblyman. The Assemblyman communicates to the community all the activities of the District Assembly including educating the community on the provisions of the Local Governance Act, 2016 (Act 936) and

the by-laws of the Assembly. The traditional authorities therefore ensure that these laws and regulations affecting the community are complying with by all including contractors at the various sites within the community.

### 5.7. Role of Regulators

The regulatory bodies even though were found to be aware of most of the laws regulating their various offices. There is lack of resources to enforce their mandate.

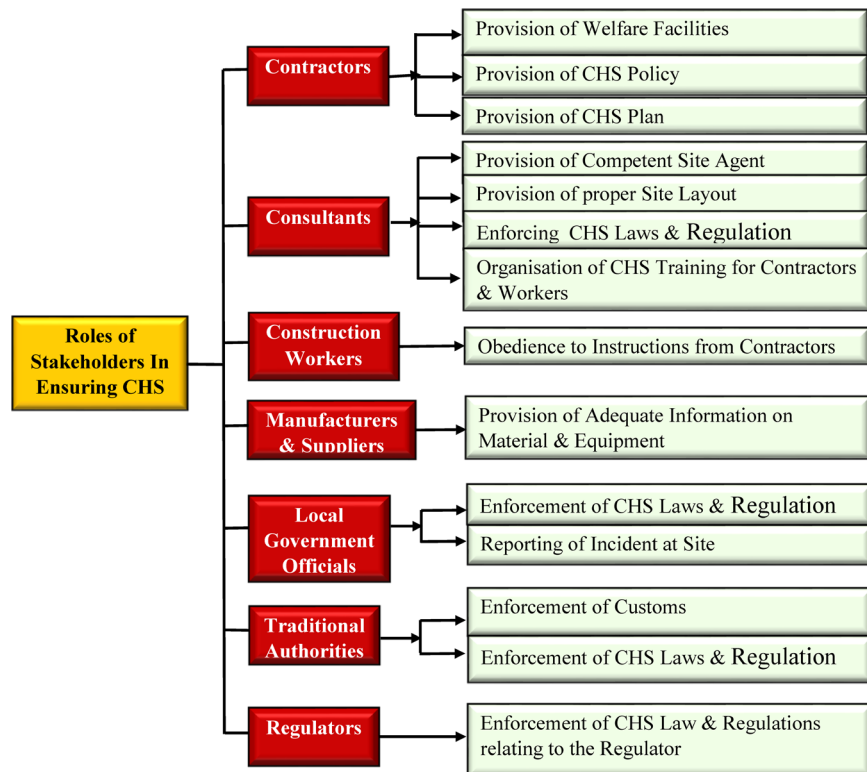
The regulatory bodies are not functioning as they ought to. There is no coordination between the Regulators. There is the need to revamp the bodies for the enforcement of the construction health and safety laws and regulations to act in a coordinated manner.

## 6. Summary of Findings

The stakeholders identified 12 roles and responsibilities from the study. It was however found that not all duties and responsibilities were known to the stakeholders. The Regulators were aware of the laws regulating their own institutions. **Figure 3** shows the summary of key roles and responsibilities of stakeholders in ensuring CHS at the construction site in Ghana.

## 7. Conclusion and Recommendation

The construction industry is a hazardous industry with a number of fatalities and long-term injuries. Therefore, stakeholders in the GCI should not be



**Figure 3.** Key roles of stakeholders in ensuring CHS at site.

complacent of their achievement in the fight to ensure effective and efficient construction health and safety practices. According to [53], safety on construction sites will continue to be an important and developing area of Construction Law. As a complex industry, it is made up of a number of stakeholders who ensure that daily activities on site are undertaken. The findings show that the stakeholders failed to appreciate some key roles and responsibilities enshrined in CHS laws and regulations in Ghana. The findings contribute to knowledge on stakeholders' responsibilities in ensuring CHS, and provide valuable reference and insight to practitioners on the roles and responsibilities of the various stakeholders.

It is recommended to train and educate stakeholders on all the relevant laws and regulations on CHS in order to improve health and safety at the construction site. The fragmented laws and regulations on CHS in Ghana should be put together into one document for ease of reference. The government should also set up a body, such as Construction Authority to educate, co-ordinate, monitor and audit the activities of stakeholders to improve CHS at construction sites. The findings of this research were limited to practitioners in the built environment in Ghana as well as other developing countries.

### Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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