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Research Article

Evaluating Knowledge of First Aid Among Hospitality Management Students at the Cape Coast Technical University

Samuel Otoo[1, *], Richmond Yeboah[2], Marvel Hinson[1], Mary Adu Boakye[1]

[1]Department of Hospitality Management, Cape Coast Technical University, Cape Coast, Ghana
[2]Department of Tourism Management, Cape Coast Technical University, Cape Coast, Ghana

Abstract

The hospitality industry is characterized by fast-paced, high-risk environments where staff and students are consistently exposed to accidents such as burns, cuts, slips, and choking incidents. Given these occupational hazards, first aid proficiency is an essential competency for hospitality management students who regularly engage in hands-on training and interact with the public. This study evaluates the knowledge of first aid among hospitality management students at Cape Coast Technical University (CCTU), Ghana, using the Safety Competence Theory and the Theory of Planned Behaviour (TPB) as guiding frameworks. A quantitative cross-sectional survey design was employed, with a sample of 210 students proportionally selected from Diploma, Higher National Diploma (HND), and Bachelor of Technology (B-Tech) programmes. Data were collected through structured questionnaires covering first aid prevention, care, and maintenance, and analyzed using descriptive statistics, correlation, and regression techniques. Findings indicate that students demonstrated strong awareness of preventive measures, including the use of protective gear, inspection of equipment, and organization of workspaces. They also showed considerable competence in first aid care, reporting confidence in wound management, bandaging, recognizing heart attack symptoms, and handling choking emergencies. Moreover, first aid maintenance knowledge, such as keeping kits accessible, restocking supplies, and disposing of expired items, was the strongest predictor of preventive practices ($\beta = 0.609$). Correlation analysis revealed strong positive relationships among the three domains, confirming that prevention, care, and maintenance are interdependent. However, the study identified gaps in advanced life-saving skills such as cardiopulmonary resuscitation (CPR), with potential knowledge decay over time among students who had received training more than a year prior. The study concludes that while CCTU hospitality students possess generally good first aid knowledge, sustained competence requires structured, hands-on training integrated into the curriculum and reinforced through periodic refresher courses. Embedding such training will not only enhance student and guest safety but also strengthen professional readiness, aligning with the hospitality sector's standards for quality, safety, and risk management.

Keywords

Hospitality, First Aid, Students, Knowledge, Risk Management and Management

[*]Corresponding author: samuel.otoo@cctu.edu.gh (Samuel Otoo)

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1. Introduction

The hospitality industry encompasses a broad range of services including accommodation, food and beverage, event planning, and tourism. The hospitality industry requires daily, direct interaction with the public [34] and in such dynamic environments, accidents and injuries are common, and prompt first aid response becomes essential in mitigating their consequences. According to the [37], first aid is defined as the immediate assistance provided to someone suffering from either minor or serious illness or injury, with the goal of preserving life, preventing the condition from worsening, and promoting recovery. The importance of this intervention is underscored by global data indicating that approximately 4.5 billion people experience injuries annually, leading to about 2.2 million preventable deaths that could be avoided with proper first aid training [37, 21].

Hospitality management students, in particular, are frequently exposed to occupational hazards in food laboratories, including burns from hot equipment, cuts from sharp tools, and slips and falls in fast-paced kitchen environments [35, 7]. As noted by [10] and [26], imparting first aid skills to students equips them to effectively manage such incidents, thereby reducing morbidity and enhancing safety for themselves and those around them. Moreover, first aid training extends beyond immediate workplace benefits, it fosters a sense of social responsibility and preparedness, enabling students to act confidently during emergencies both on and off campus [6, 12].

Despite its significance, research shows that first aid knowledge among non-medical university students, including those studying hospitality management, remains inadequate [27]. This gap is especially concerned given the industry's inherent risks and the legislative requirement, as stated in Ghana's Factories, Offices and Shops Act (Act 328) of 1970, for institutions to provide first aid resources and training to safeguard workers and students [4]. Addressing this knowledge gap, this study seeks to evaluate the first aid knowledge of hospitality management students at Cape Coast Technical University (CCTU). The study focuses on three core dimensions: first aid prevention, first aid care, and first aid maintenance, and to explore the relationships among three key domains of first aid knowledge as conceptualized by [2] and [32]. By examining these areas, the study aims to provide empirical evidence to inform curriculum development, enhance student safety, and ultimately better prepare graduates for the demands of the hospitality sector, a field where guest and staff welfare is a critical component of service excellence [35].

This research contributes to the broader discourse on integrating health and safety training within technical and vocational education, aligning with the global call to equip students not only with technical skills but also with life-saving competencies that have societal impact.

2. Literature Review

2.1. Theoretical Framework

This study is built on two complementary theories; Safety Competence Theory and Theory of Planned Behavior (TPB). These theories explain how students' knowledge and preparedness influence preventive behaviour in the hospitality context.

2.1.1. Safety Competence Theory

The Safety Competence Theory underscores that first aid proficiency should encompass not only the technical ability to manage common industry-related injuries such as burns, cuts, slips, and choking but also systematic preparedness and proactive risk prevention. Within this framework, first aid care reflects students' capacity to apply appropriate treatment procedures under pressure [24], while first aid maintenance involves ensuring readiness through actions such as stocking and inspecting first aid kits and removing expired supplies [37]. Equally important, first aid prevention emphasizes hazard reduction strategies, including wearing protective clothing, inspecting tools, and maintaining safe working conditions [32].

This holistic model positions safety competence as a continuous cycle which includes prevention, preparedness, and effective response integrated into hospitality training to minimize workplace hazards and improve emergency outcomes [15, 24].

These domains support first aid prevention, which refers to proactive behaviour that reduce the likelihood of accidents, like wearing protective gear and inspecting tools [32]. This framework aligns with research emphasizing that competence in safety-critical settings must be comprehensive, combining skills, preparation, and proactive attitudes to reduce workplace hazards [24]. Understanding how students' attitudes, perceived control, and social norms influence these safety behaviour can further be examined through the Theory of Planned Behaviour (TPB).

2.1.2. Theory of Planned Behaviour (TPB)

Theory of Planned Behavior provides a complementary perspective by explaining how knowledge and resource readiness shape intentions and actions. According to TPB, students' beliefs about the value and importance of care and maintenance influence their attitudes toward prevention. Access to properly maintained first aid kits (perceived behavioural control) increases the likelihood of students practicing preventive behaviors. Positive attitudes and supportive environments translate into stronger behavioural intentions and actual preventive actions.

Integrating the Safety Competence Theory with the Theory of Planned Behaviour (TPB) provides a comprehensive explanation of hospitality students' knowledge and application

of first aid. While the Safety Competence Theory emphasizes three interdependent domains which are first aid care (technical ability to treat injuries), first aid maintenance (readiness through equipment upkeep), and first aid prevention (proactive hazard reduction, TPB explains the psychological determinants influencing whether these competences are enacted in practice.

2.2. Conceptual issues

2.2.1. Concept of First Aid

First aid is widely defined as the immediate assistance provided to an individual who has suffered an injury or sudden illness, aiming to preserve life, prevent further harm, and promote recovery [3, 20]. Basic first aid procedures include cardiopulmonary resuscitation (CPR), controlling bleeding, and treating burns, managing spine injuries, and responding to choking incidents [16]. The importance of first aid is underscored by its potential to reduce morbidity and mortality [31]. Globally, injuries account for 9% of all deaths and 16% of the disability burden annually [29]. The timely provision of first aid can be life-saving, particularly in the critical moments following an incident [17].

In Ghana, Section 28 of the Factories, Offices and Shops Act, 1970 (Act 328) mandates the presence of first aiders and first aid boxes in workplaces to mitigate risks [4]. The type and extent of first aid arrangements vary depending on workplace hazards, size, and workforce composition. In the light of these, hospitality students' knowledge in first aid cannot be overemphasized.

2.2.2. Elements of First Aid

First aid is categorized into four types namely Emergency First Aid, Standard First Aid, Child Care First Aid, and Psychological First Aid [14]. State that Emergency First Aid focuses on life-saving measures while Standard First Aid includes care for common injuries and emergencies [22]. Child Care First Aid targets injuries and illnesses in children, and Psychological First Aid addresses emotional well-being following trauma [11].

According to [2], the key elements of first aid include prevention, care, maintenance, documentation, and seeking medical help and prevention involves recognizing risks and promoting safety [32]. Care encompasses wound management and bleeding control and maintenance ensures first aid supplies remain stocked and functional [37]. It must be noted that documentation and timely medical referrals are also critical to effective first aid response [25].

2.2.3. Knowledge of First Aid Among Students

Knowledge in first aid is critical for students not only to manage emergencies but also to foster confidence and social responsibility [12]. Due to the importance of this, the Ghanaian Ministry of Health promotes first aid education in schools to prepare students for emergencies in various settings [4]. However, studies show that there is insufficient first aid knowledge among Ghanaian students hence lacked preparedness for emergencies, this leads to increase in the severity of injuries and anxiety among students [28].

It must be noted that studies from different regions support this observation. For instance [30] indicated that many students in Poland lack adequate first aid knowledge. Similar results were reported in Kuwait [27] and among university students in Turkey [8]. In contrast, some training interventions have improved student knowledge and response capabilities [23, 15]. First aid has been shown to save lives, reduce morbidity, and facilitate recovery [3]. Early CPR can double survival rates after cardiac arrest, and immediate cooling can mitigate burn severity. In developing countries such as Ghana, both trained and untrained providers play significant roles in reducing injury-related deaths [5, 36, 18] hence First aid education thus holds substantial public health value [19, 38].

Hospitality management students face heightened risks of injury from hot surfaces, sharp tools, and fast-paced work environments [7]. Hence, first aid competence is crucial in hospitality settings to manage burns, cuts, and slips [26]. Yet, empirical studies reveal that hospitality students often lack comprehensive first aid knowledge [28]. This underscores the need to integrate first aid training into hospitality curricula [30]. At Cape Coast Technical University, the Department of Hospitality Management aims to equip students for careers in hotels, restaurants, and tourism [35]. Including first aid training aligns with these professional requirements and addresses practical risks faced in food laboratories and kitchens.

2.2.4. Empirical Evidence

Multiple studies show moderate to poor first aid knowledge among students globally [6]. In Ghana, studies on students' knowledge in first aid are limited, especially within hospitality programmes. Internationally, trained individuals in first aid sometimes underperform in practical scenarios despite theoretical knowledge [33]. Studies also reveal enthusiasm among students and teachers to receive first aid training [8]. More recent studies confirm these gaps. For instance, [1] indicates that only about 32.3% of medical students at Taibah University in Saudi Arabia demonstrated excellent first aid knowledge. Yet, targeted training, even among younger students, significantly improves knowledge levels [9].

3. Research Methodology

This study employed a quantitative, cross-sectional survey design to evaluate the knowledge of first aid among hospitality management students at Cape Coast Technical University. The quantitative approach enabled the collection of statistical data to identify trends and relationships regarding students' knowledge in first aid [13]. The cross-sectional nature of the survey provided a snapshot of students' current understanding of first aid practices without requiring longitudinal follow-up

[11]. The target population comprised all hospitality management students at Cape Coast Technical University, including Diploma, Higher National Diploma (HND), and Bachelor of Technology (B-Tech) students. According to the Department of Hospitality Management (2024), the total population of students was 440: 91 Diploma students, 76 HND students, and 273 B-Tech students.

The sample size was determined using Krejcie and Morgan's (1970) table, resulting in a sample of 210 students, proportionally distributed among the three groups. Simple random sampling was used within each subgroup, ensuring that each student had an equal chance of being selected. This approach reduced sampling bias and improved the representativeness of the sample.

Primary data were collected using a structured questionnaire, which consisted of four sections. Namely, demographic information (age, gender, level of study, prior first aid training), knowledge of first aid prevention, knowledge of first aid care, knowledge of first aid maintenance. All items were designed based on previous literature and tailored to the hospitality context. Responses for knowledge sections were measured on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree).

Data collection was conducted in person during scheduled class sessions, which facilitated a high response rate. Participants were informed about the study's purpose and assured of confidentiality and voluntary participation. Ethical approval was obtained from the university's ethics committee, and informed consent was secured before distributing questionnaires [13]. Completed questionnaires were anonymized and securely stored for analysis.

Collected data were analyzed using IBM SPSS Statistics software. The analysis process included:

Data cleaning to check for missing values and outliers, descriptive statistics (means, standard deviations, frequencies, and percentages) to summarize participants' demographics and their first aid knowledge levels, inferential statistics to explore relationships among knowledge domains: correlation analysis assessed associations between first aid prevention, care, and maintenance. Multiple regression analysis examined the extent to which first aid care and maintenance predicted first aid prevention practices. This combination of descriptive and inferential analyses provided both an overview and deeper insight into students' first aid knowledge and its determinants.

4. Results and Discussions

4.1. Demographic Characteristics

A total of 210 questionnaires were distributed to hospitality management students at Cape Coast Technical University. 170 completed questionnaires were retrieved, resulting in an effective response rate of 85%. Majority of respondents were female (62.9%), while males represented 37.1%. Majority of the students were aged 18-22 years (33.5%), followed by 23-27 years (29.5%), 28-32 years (24.1%), and those above 33 years (12.9%). Fourth-year students formed the largest group (31.2%), followed by third-year (30%), second-year (20%), and first-year students (18.8%). Also, the findings revealed that 66.5% had received formal first aid training; of these, 40% received training more than a year ago, 38.8% within the last six months, and 21.2% between six months and one year.

4.2. Knowledge of First Aid Prevention

Students' knowledge of first aid prevention was assessed using a 5-point Likert scale (1=strongly disagree to 5=strongly agree). Findings indicated generally positive attitudes and practices:

Table 1. *Knowledge of First Aid Prevention.*

Item	Mean	Std. Deviation
Awareness of common first aid prevention measures in the food laboratory	3.56	1.33
Always wearing protective gear during practical work	3.79	1.18
Regularly cleaning and organizing workspace to prevent hazards	3.74	1.19
Inspecting tools and equipment to ensure proper condition	3.86	1.12
Conducting regular checks on appliances to identify malfunctions	3.71	1.07
Ensuring safety equipment is accessible and well-maintained	3.76	1.18
Belief that wearing protective gear prevents injuries	3.97	1.06

The results as indicated in Table 1 revealed that students demonstrated good awareness and proactive behaviour in first aid prevention, including wearing protective gear (Mean=3.79), inspecting tools and equipment (Mean=3.86), and organizing their workspace to prevent hazards (Mean=3.74). These findings are encouraging given the documented risk profile of hospitality work [7, 26]. This aligns with literature suggesting that awareness of safety protocols is foundational to accident prevention [32]. The positive scores also reflect the impact of partial integration of safety content in the curriculum, even if formal first aid training was not universal (66.5% of students had received such training). The study by [6] similarly observed that targeted educational interventions significantly improve students' preparedness and response in emergencies. Whiles the results indicate good knowledge, it is essential to ensure that these preventive behaviour translate into consistent practice**,** especially in high-pressure hospitality settings where time and workload can increase complacency. Results from this study align with recommendations in first aid literature, which emphasizes proactive risk management to reduce workplace injuries [32, 2].

4.3. Knowledge of First Aid Care

Students demonstrated considerable knowledge of first aid care, as summarized in Table 2 below:

Table 2. *Knowledge of First Aid Care.*

Item	Mean	Std. Deviation
Knowing basic emergency steps	3.89	1.13
Knowing how to clean a wound properly	3.68	1.20
Confidence in disinfecting wounds correctly	3.89	1.11
Ability to effectively dress cuts and burns	3.79	1.22
Understanding importance of using sterile materials	3.88	1.15
Awareness of proper bandaging techniques for different injuries	3.94	1.14
Understanding steps involved in disinfecting cuts and burns	4.11	1.05
Knowing when and how to use a tourniquet to stop severe bleeding	3.99	1.22
Ability to identify symptoms of a heart attack	4.18	0.99
Understanding how to handle choking emergencies	4.27	0.88
Familiarity with first aid kit contents and their use	3.93	0.99

The findings from Table 2 shows, that students reported high confidence in managing basic first aid care, such as cleaning and dressing wounds (Mean=3.79-3.89), recognizing heart attack symptoms (Mean=4.18), and handling choking emergencies (Mean=4.27). This suggests a solid foundation in key emergency responses, supporting studies by [23] and [6] which highlight that even basic first aid knowledge can dramatically improve outcomes in medical emergencies. However, the findings echo concerns from other research that advanced skills, including CPR and complex trauma care, may remain limited [9, 32].

While the study did not measure CPR skills directly, international research shows students often feel underprepared in these areas, despite confidence in simpler tasks [12]. Given the hospitality sector's exposure to severe burns, cuts, and even cardiac emergencies among guests, further training is necessary to move students beyond awareness to skilled application under pressure. This finding supports earlier research suggesting that even non-medical students can achieve meaningful first aid competence when trained [23, 6]. However, gaps remain, particularly in advanced care techniques like CPR, reflecting patterns observed internationally [9, 32].

4.4. Knowledge of First Aid Maintenance

Students also showed strong understanding of maintaining first aid resources as shown in Table 3:

Table 3. *Knowledge of First Aid Maintenance.*

Item	Mean	Std. Deviation
Knowing proper disposal of expired supplies	3.79	1.08
Regularly checking stock of essentials like plasters and bandages	3.87	1.00
Knowing that the first aid box should be kept easily accessible	4.24	0.98
Recognizing the need to promptly replenish used supplies	4.00	1.12
Understanding that regular maintenance helps ensure workplace safety	4.25	0.99

Table 3 indicated that students showed the strongest performance in first aid maintenance: knowing to keep first aid kits accessible (Mean=4.24) and understanding the importance of regular restocking and disposal of expired supplies (Mean=3.87-4.25). This reflects an operational mindset consistent with hospitality management's emphasis on readiness and service quality [34]. The strong association identified in the regression analysis between maintenance and prevention (β=0.609) underscores that preparedness including well-maintained equipment and supplies directly supports accident prevention. These results are consistent with [37] recommendations emphasizing systematic audits and maintenance of first aid resources as essential safety measures.

4.5. Relationships Between First Aid Care, Maintenance, and Prevention

In addition, correlation analysis was performed to explore relationships between first aid care, maintenance, and prevention:

Table 4. *Relationships between First Aid Care, Maintenance, and Prevention.*

	First Aid Prevention	First Aid Care	First Aid Maintenance
First Aid Prevention	1.000	0.976**	0.980**
First Aid Care	0.976**	1.000	0.983**
First Aid Maintenance	0.980**	0.983**	1.000

Note: Correlations significant at $p < 0.01$.

The correlation analysis as indicated in Table 4 revealed significant and strong positive associations between first aid prevention and both first aid care **(**$r = 0.976$, $p < 0.01$**)** and first aid maintenance **(**$r = 0.980$, $p < 0.01$**).** Similarly, first aid care and first aid maintenance were also strongly correlated **(**$r = 0.983$, $p < 0.01$**).** These high correlation coefficients suggest that students who are knowledgeable about first aid care procedures (such as wound cleaning, bandaging, and handling emergencies) are also more likely to engage in preventive behaviour, like wearing protective gear and keeping the workspace organized. Likewise, students who understand the importance of maintaining first aid kits and supplies demonstrate stronger preventive practices.

These findings align with previous literature emphasizing that first aid competence is holistic and involves practical care skills, readiness (maintenance), and proactive prevention behaviour often reinforce each other [15, 19]. According to [24], effective first aid education should address not only how to respond during emergencies but also how to reduce the likelihood of such emergencies occurring in the first place.

4.6. Regression Analysis

Multiple regression was conducted to identify predictors of first aid prevention practices.

Table 5. *Predictors of First Aid Prevention Practices.*

Predictor	Unstandardized Coefficient (B)	Std. Error	Beta	t	p-value
(Constant)	-4.583	0.498		-9.196	0.000
First Aid Care	0.237	0.048	0.378	4.895	0.000
First Aid Maintenance	0.976	0.124	0.609	7.889	0.000

The multiple regression analysis as shown in Table 5 offered further insights into how first aid care and maintenance predict first aid prevention practices among students. The model showed a high explanatory power, with an adjusted R^2 of 0.966**,** indicating that together, first aid care and maintenance accounted for about 96.6% of the variance in first aid prevention practices. The standardized coefficients (Beta) revealed that first aid maintenance ($\beta = 0.609$) was the strongest predictor of first aid prevention, followed by first aid care ($\beta = 0.378$). This suggests that while both domains significantly contribute to preventive practices, students' emphasis on maintaining first aid readiness (e.g., regularly checking supplies, disposing of expired items, ensuring kit accessibility) has a greater influence on their proactive prevention behaviors.

This finding highlights the operational mindset of hospitality management students, whose training emphasizes safety management, readiness, and quality assurance consistent with industry demands [35]. The result also supports [37] recommendations, which stress that regular audits and maintenance of first aid provisions are crucial for preventing accidents and ensuring quick response. In a broader context, the strong correlations among the three domains confirm the interconnected nature of first aid knowledge. Prevention is not isolated but it is supported by both practical care skills and systematic maintenance practices. This supports findings by [6] and, who argue [32] that first aid education should be comprehensive, covering immediate care, hazard prevention, and resource readiness.

The stronger predictive effect of maintenance over care is particularly relevant for hospitality management students, as their environment requires constant vigilance and preparedness to handle high-paced, high-risk scenarios [7]. Maintenance-oriented practices, such as ensuring fully stocked first aid kits and accessible safety equipment, serve as structural enablers for effective prevention. Moreover, the high R^2 value suggests that enhancing students' competencies in maintenance and care could have a direct and substantial impact on improving their preventive behaviors. This reinforces the call by [15] and [20] to embed structured, practice-oriented first aid training into hospitality curricula.

5. Conclusions and Recommendations

In line with previous research emphasizing the value of structured first aid training in non-medical settings [6, 15], this study concludes that hospitality management students at Cape Coast Technical University generally exhibit good awareness of first aid prevention measures, helping to reduce risk in practical training environments. Students also have confidence in basic care techniques, enabling initial response to common injuries. Finally, the study concludes that students have strong practices in first aid maintenance, which serve as critical enablers of prevention. However, the study also shows that formal first aid training had often occurred over a year for some students (40%), suggesting potential knowledge decay over time [25]. Moreover, gaps remain in advanced life-saving procedures like CPR and multi-casualty response, echoing similar findings in studies among university students globally [9, 33].

The study reinforces the importance of integrating comprehensive, hands-on first aid education including periodic refreshers into hospitality curricula to prepare students for real-world emergencies. Such integration will not only enhance student and guest safety but also strengthen professional readiness, aligning with the hospitality industry's standards for quality and risk management [22].

Theoretical and Practical Implications

This study contributes to the literature by integrating the Safety Competence Theory and the Theory of Planned Behaviour (TPB) to explain first aid knowledge among hospitality management students. The findings align with the Safety Competence Theory's which asserts that a combination of technical knowledge, preventive awareness, and preparedness behaviour enhances safety performance in high-risk environments. In addition, the results of this study reinforce TPB's proposition that positive attitudes toward first aid, coupled with perceived self-efficacy, are associated with higher levels of preparedness. By empirically linking these frameworks in the hospitality education context, the study extends theoretical understanding of how safety competence and behavioural intentions interact to influence students' readiness for emergency response.

Furthermore, the findings of the study have direct relevance for hospitality education and training. Hospitality training institutions should prioritise embedding structured, hands-on first aid modules into hospitality curricula. Emphasis should be placed on both prevention and intervention skills to equip students for the job market. It is prudent that this training will not be a periodic but a key component of the hospitality pro-

gram. Courses and scenario-based simulations should be introduced to maintain competence over time and strengthen students' confidence in applying first aid in real situations. Industry stakeholders, including hotels and event facilities, can also leverage these findings to design targeted safety training for interns and new recruits. By fostering strong first aid competence, the hospitality sector can enhance workplace safety, reduce accident-related risks, and improve guest wellbeing.

Abbreviations

BTech	Bachelor of Technology
CCTU	Cape Coast Technical University
CPR	Cardiopulmonary Resuscitation
HND	Higher National Diploma
TPB	Theory of Planned Behaviour
WHO	World Health Organisation
SO	Samuel Otoo
MAB	Mary Adu Boakye
MH	Marvel Hinson
RY	Richmond Yeboah

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Author Contributions

Samuel Otoo: Conceptualization, Data curation, Formal Analysis, Funding acquisition, Investigation, Project administration, Resources, Supervision, Validation, Visualization, Writing – review & editing

Richmond Yeboah: Conceptualization, Data curation, Funding acquisition, Investigation, Methodology, Project administration, Visualization, Writing – review & editing

Marvel Hinson: Data curation, Formal Analysis, Funding acquisition, Investigation, Methodology, Project administration, Supervision, Visualization, Writing – original draft, Writing – review & editing

Mary Adu Boakye: Conceptualization, Formal Analysis, Funding acquisition, Supervision, Validation, Visualization, Writing – original draft, Writing – review & editing

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Conflicts of Interest

The authors declare no conflict of interest.

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