

# Modifiable Behavioural Risk Factors Associated with High Blood Pressure among Women Aged 18 Years and Above in the Kintampo North Municipality, Bono East Region, Ghana

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**Abstract—Background** Hypertension is a leading preventable cause of morbidity and premature mortality globally, with a disproportionately high burden in low- and middle-income countries including Ghana. Modifiable behavioural risk factors such as physical inactivity, alcohol consumption, unhealthy dietary practices, and tobacco use are central to the aetiology and prevention of hypertension, yet locally grounded evidence on their prevalence and distribution among women in district settings such as the Kintampo North Municipality remains sparse. The study assessed the modifiable behavioural risk factors associated with high blood pressure among women aged 18 years and above in the Kintampo North Municipality, Bono East Region, Ghana.

## **Methods**

A descriptive, community-based cross-sectional study was conducted among 427 women aged 18 years and above selected through purposive and convenience sampling across the Kintampo North Municipality. Data were collected using a structured, interviewer-administered questionnaire covering physical activity, alcohol consumption, dietary practices, and tobacco use. Data were analyzed using Microsoft Excel; findings are presented as frequencies and proportions in tables and figures.

## **Results**

The majority of respondents (90.87%) reported engaging in some form of physical activity, predominantly farming, walking, and household chores; however, only a minority met the

recommended intensity and duration thresholds. Alcohol consumption was low, with only 11.94% of respondents reporting current use, mostly at occasional rather than daily frequency. Tobacco use was similarly low (3.04% current users), with chewing tobacco and snuff more prevalent than cigarette smoking. Dietary practices emerged as the most significant concern: 96.96% consumed salt, 75.18% sometimes added extra salt after cooking, 83.52% consumed fried or processed foods regularly, and only 24.12% consumed fruits daily. Despite 82.44% believing diet affects blood pressure, only 52.69% knew that high salt intake specifically elevates it, and 41.22% had never received dietary advice from a health worker.

### Conclusion

Although alcohol consumption and tobacco use are relatively low among women in the Kintampo North Municipality, unhealthy dietary practices, particularly excessive salt and processed food intake combined with insufficient daily fruit and vegetable consumption constitute the most prevalent and urgent modifiable risk profile for hypertension in this population. Targeted community health education on dietary risk, routine blood pressure screening, and integration of nutrition counselling into primary care contacts are urgently recommended.

***Index Terms***—hypertension; high blood pressure; modifiable risk factors; physical activity; dietary practices; alcohol; tobacco; women; Kintampo North; Ghana; cross-sectional study

## I. INTRODUCTION

Hypertension, defined as a systolic blood pressure of  $\geq 130$  mmHg or diastolic blood pressure of  $\geq 80$  mmHg according to the 2017 American College of Cardiology and American Heart Association guidelines, is among the most prevalent chronic non-communicable diseases affecting adults worldwide (Whelton et al., 2018). Current global estimates indicate that approximately 1.28 billion adults aged 30–79 years live with hypertension, with a significant proportion remaining undiagnosed or inadequately treated (World Health Organization [WHO], 2023). Globally, prevalence is marginally higher in males (34%) than females (32%), though the gender differential narrows substantially with advancing age reaching 49% in both sexes between the ages of 50 and 79 years (Global Burden of Disease [GBD] Collaborative Network, 2019). Hypertension is a primary contributor to cardiovascular disease, stroke, myocardial infarction, renal failure, and premature mortality, collectively accounting for a substantial proportion of the global disease burden (WHO, 2021).

The burden of hypertension is disproportionately concentrated in low- and middle-income countries (LMICs), which account for approximately two-thirds of all persons living with the condition (WHO, 2023). In sub-Saharan Africa (SSA), rapid urbanization, changing dietary patterns, declining levels of physical activity, and increasing exposure to tobacco and alcohol have accelerated the transition toward non-communicable diseases, with hypertension at the leading

edge of this epidemiological shift (Schutte et al., 2021; Nwankwo et al., 2025). Ghana reflects this regional pattern: hypertension accounts for an increasing share of hospital admissions, outpatient consultations, and preventable deaths, and the condition is frequently undiagnosed given limited access to routine screening, particularly in rural and peri-urban district settings (Ghana Health Service [GHS], 2022).

In Ghana's middle belt, a 2014 community-based screening study in the Kintampo North and South Municipalities documented a hypertension prevalence of 28.1% among 2,482 participants, with nearly half of those affected being unaware of their status at the time of screening (Dosoo et al., 2019). This finding elevated prevalence alongside low detection underscores the need for locally targeted evidence on the modifiable behavioural factors driving hypertension risk in this setting. The four principal modifiable behavioural risk factors for hypertension; physical inactivity, harmful alcohol consumption, unhealthy dietary practices, and tobacco use are each independently addressable through community-level public health interventions (Niu et al., 2024). However, the specific prevalence, distribution, and interrelationship of these risk factors among women in the Kintampo North Municipality have not been systematically characterized.

Women represent a population of particular importance in the hypertension epidemiology of this setting. Women in the Kintampo North Municipality constitute 50.6% of the population, play a central role in household food preparation and dietary decision-making, and face gender-specific biological vulnerabilities including differential alcohol metabolism and susceptibility to passive tobacco exposure that influence their hypertension risk profile in ways that are distinct from the male population (Bond et al., 2026; WHO, 2025). Yet women are consistently under-represented in hypertension prevention programming in Ghanaian district settings, and their specific risk factor burden remains poorly characterized.

This study was therefore conducted to fill that evidence gap by systematically assessing the modifiable behavioural risk factors including physical activity, alcohol consumption, dietary practices, and tobacco use associated with high blood pressure among women aged 18 years and above in the Kintampo North Municipality, with the aim of generating locally grounded evidence to inform targeted public health interventions in this and comparable Ghanaian district settings.

## II. METHODS

### 2.1 Study Design

A descriptive, community-based cross-sectional study design was employed. This design was appropriate for the study's objectives of estimating the prevalence of behavioural risk factors at a single point in time across the study population, and for generating the baseline epidemiological data needed to inform public health programme design. The cross-sectional design's acknowledged limitation including its inability to establish temporality between exposure and outcome. The findings are therefore presented as associations rather than causal relationships.

## 2.2 Study Setting

The study was conducted in the Kintampo North Municipality, one of the administrative districts of the Bono East Region of Ghana. The municipality is centrally located between latitudes 7°45'N–8°45'N and longitudes 1°20'W–2°1'E, covering a surface area of approximately 5,108 km<sup>2</sup>. The estimated population is 156,693, with females constituting 50.6% (n=79,346) and males 49.4% (n=77,347). The municipality is predominantly rural (73.1%), with agriculture as the principal economic activity. Healthcare is delivered through one government hospital, seven private facilities, multiple health centres, and 285 Community-based Health Planning and Services (CHPS) compounds. The municipality's profile characterized by a predominantly rural, agricultural population with documented high hypertension prevalence and limited access to preventive healthcare makes it an appropriate and strategically important setting for this study.

## 2.3 Study Population

The study population comprised all women aged 18 years and above who were permanent residents of the Kintampo North Municipality at the time of data collection and had resided in the municipality for at least six months. Women who were acutely ill or who had communicative impairments preventing informed consent were excluded.

## 2.4 Sample Size and Sampling

Sample size was calculated using Cochran's (1977) formula:  $n = Z^2pq/e^2$ , where  $Z = 1.96$  (95% confidence level),  $p = 0.50$ ,  $q = 1 - p = 0.50$ , and  $e = 0.05$  (5% margin of error), yielding a minimum of 384 respondents. Applying a 10% non-response adjustment produced a final target of 427 participants. A combination of purposive and convenience sampling was employed: purposive sampling was used to select the Kintampo North Municipality as the study area based on the documented local hypertension burden, and convenience sampling was used to recruit participants who were available and willing to participate at the time of data collection.

## 2.5 Data Collection

Data were collected using a structured, interviewer-administered questionnaire developed by the research team and aligned with the four study objectives. The instrument comprised five sections: (A) socio-demographic characteristics (age, marital status, education, occupation); (B) physical activity (frequency, type, duration, and perceived benefits); (C) alcohol consumption (current use, frequency, type, and intention to quit); (D) tobacco use (ever-use, current use, type, frequency, and perceived benefits); and (E) dietary practices (fruit and vegetable intake frequency, salt use, fried and processed food consumption, use of seasoning cubes, sugary beverage intake, and dietary knowledge). The questionnaire was pre-tested before full-scale data collection to ensure clarity, completeness, and appropriate sequencing of questions. Data were collected through face-to-face household visits, with questions read aloud by trained interviewers to accommodate participants with limited literacy.

## 2.6 Data Analysis

Data were entered and analyzed using Microsoft Excel. Completed questionnaires were reviewed for completeness prior to entry, and only complete data were included in the analysis. Results are presented as frequencies and proportions in tabular and graphical formats. Descriptive statistics were used to characterize the prevalence and distribution of each risk factor and to describe socio-demographic characteristics of the sample.

## 2.7 Ethical Considerations

Written permission was obtained from the Kintampo North Municipal Health Directorate prior to the commencement of data collection. Each participant received a full explanation of the study purpose, voluntary nature of participation, confidentiality of responses, and the right to withdraw at any time without consequence. Written informed consent was obtained from all participants. Data were anonymized using unique identifiers, and no personal identifying information appears in any dataset or report. The study was conducted in accordance with the ethical standards of the Ghana Public Health Act, 2012 (Act 851) and the principles of the Declaration of Helsinki.

## III. RESULTS

### 3.1 Socio-Demographic Characteristics

A total of 427 women participated in the study. The sample was predominantly composed of young to middle-aged adults: the largest age bracket was 18–28 years (29.27%), followed by 39–48 years (23.89%), and 29–38 years (20.41%). Only 4.22% of respondents were aged 69 years and above. Slightly more than half of respondents were married (51.05%). Regarding educational attainment, basic education was the most common level (42.15%), while 19.20% reported no formal education. Farming was the most frequently reported occupation, consistent with the predominantly agricultural economy of the municipality. Socio-demographic characteristics are summarized in Table 1.

Table 1: Socio-demographic characteristics of respondents (n = 427)

Characteristic	Frequency (n)	Percentage (%)
Age group (years)		
18–28	125	29.27
29–38	87	20.41
39–48	102	23.89
49–58	72	16.86
59–68	23	5.39
≥69	18	4.22

Marital status		
Married	218	51.05
Single	126	29.51
Divorced	52	12.18
Widowed	31	7.26
Educational level		
No formal education	82	19.20
Basic education	180	42.15
Secondary education	130	30.44
Tertiary education	35	8.20
Occupation		
Farming	195	45.67
Trading	118	27.63
Artisan	72	16.86
Government employee	42	9.84

Source: Field data, 2026

### 3.2 Physical Activity

The majority of respondents (90.87%) reported engaging in some form of physical activity, while only 9.13% indicated no physical activity participation. The most commonly reported activity types were farming (cited by most respondents), walking, household chores (including washing), and playing football; gymnasium attendance and recreational exercise were minimal. In terms of duration, a considerable proportion reported engaging in physical activity for less than 60 minutes per day, falling below the WHO-recommended minimum of 150 minutes of moderate-intensity activity per week. When asked about perceived benefits, 81.5% indicated that physical activity makes them stronger, while others cited disease prevention and longevity. Physical activity characteristics are presented in Table 2.

Table 2: Physical activity levels and characteristics of respondents (n = 427)

Physical Activity Characteristic	Frequency (n)	Percentage (%)
Currently engaged in physical activity		
Yes	388	90.87
No	39	9.13

Duration per day (among active respondents)		
Less than 60 minutes	—	Majority
60–90 minutes	—	Moderate proportion
91–120 minutes	—	Smaller proportion
>121 minutes	—	Minority
Type of physical activity (multiple responses)		
Farming	—	Most common
Walking	—	Common
Washing / household chores	—	Common
Jogging / football / other	—	Less common
Perceived benefit — 'makes me stronger'	348	81.50

*\*Multiple options were allowed. Source: Field data, 2026*

### 3.3 Alcohol Consumption

The majority of respondents (88.06%) reported that they did not currently consume alcohol. Among the 11.94% who reported current alcohol use, daily consumption was extremely rare (0.47%), while occasional consumption was the most common pattern. Types of alcoholic beverages consumed included locally brewed drinks such as palm wine and pito, consistent with the cultural beverage patterns of the region. A proportion of current alcohol consumers expressed a desire to quit, citing health concerns, financial considerations, and religious reasons as motivators. Table 3 presents the alcohol consumption profile of the study population.

Table 3: Alcohol consumption history among respondents (n = 427)

Alcohol Use Characteristic	Frequency (n)	Percentage (%)
Current alcohol use		
Yes (current user)	51	11.94
No	376	88.06
Frequency of use (among current users)		
Daily	2	0.47
Weekly	—	~3–4%
Monthly	—	~3–4%

Occasionally	—	Majority of users
Beverage types consumed (multiple responses)		
Palm wine / locally brewed beverages	—	Most common
Beer / spirits	—	Less common
Intention to quit (among users)	—	Substantial proportion

*\*Multiple options were allowed. Source: Field data, 2026*

### 3.4 Tobacco Use

Tobacco use was very low among the study population. The large majority (90.40%) reported never having used tobacco, 3.04% identified as current tobacco users, and 6.56% were unsure of their tobacco use status. Among current users, chewing tobacco and snuff were more prevalent than cigarette smoking. The duration of use was generally short, with most users reporting use for one to five years, and frequency was low. Tobacco users most commonly cited stress relief, perceived performance enhancement, and increased strength as perceived benefits of tobacco use. Tobacco use characteristics are presented in Table 4.

Table 4: Tobacco use history among respondents (n = 427)

Tobacco Use Characteristic	Frequency (n)	Percentage (%)
Tobacco use status		
Never used	386	90.40
Current user	13	3.04
Not sure	28	6.56
Type of tobacco used (multiple responses)		
Chewing tobacco	—	Most common
Snuff	—	Common
Cigarettes	—	Less common
Duration of use		
1–5 years	—	Most common duration
Perceived benefit (multiple responses)		
Helps overcome stress	—	Most cited
Helps work hard / performance	—	Cited

*\*Multiple options were allowed. Source: Field data, 2026*

### 3.5 Dietary Practices

Dietary practices represented the most epidemiologically significant risk factor domain identified in this study. While the majority of respondents (91.57%) reported consuming fruits and vegetables as part of their meals, the frequency of consumption was insufficient to confer optimal cardiovascular protection: only 24.12% consumed fruits daily and 39.34% consumed vegetables daily, with most consuming these foods weekly or occasionally. Nearly all respondents (96.96%) reported consuming salt, and 75.18% reported sometimes or always adding extra salt to food after cooking. Among identified unhealthy dietary practices, 83.52% consumed fried or processed foods regularly, and use of seasoning cubes in cooking was widespread. Despite 82.44% of respondents believing that diet affects blood pressure, only 52.69% specifically knew that high salt intake raises blood pressure, and 41.22% had never received any dietary advice from a health worker. Dietary practice characteristics are presented in Table 5.

Table 5: Dietary practices and dietary knowledge among respondents (n = 427)

Dietary Characteristic	Frequency (n)	Percentage (%)
Fruit and vegetable consumption		
Consume fruits and vegetables	391	91.57
Consume fruits daily	103	24.12
Consume vegetables daily	168	39.34
Salt and sodium intake		
Consume salt	414	96.96
Add extra salt after cooking (sometimes/always)	321	75.18
Processed and fried food intake		
Regularly consume fried/processed foods	357	83.52
Use seasoning cubes in cooking	—	Majority
Dietary knowledge and counselling		
Believe diet affects blood pressure	352	82.44
Know high salt intake raises blood pressure	225	52.69
Received dietary advice from a health worker	249	58.78
Never received dietary advice	178	41.22

Source: Field data, 2026

#### IV. DISCUSSION

This study provides the first community-based, cross-sectional assessment of modifiable behavioural risk factors for high blood pressure among women in the Kintampo North Municipality, Ghana. The findings reveal a population whose hypertension risk profile is shaped predominantly by dietary practices, specifically excessive salt and processed food intake alongside insufficient daily consumption of fruits and vegetables rather than by alcohol or tobacco use, which remained comparatively low. This risk configuration has important implications for the design of targeted preventive interventions.

##### *Physical Activity*

The finding that 90.87% of respondents reported engaging in some form of physical activity is superficially encouraging but requires careful contextual interpretation. The predominant activities reported; farming, walking, and household chores are forms of occupationally and domestically generated movement rather than intentional, structured exercise. Purewal et al. (2026) emphasized that while occupational physical activity confers cardiovascular benefit, it is qualitatively distinct from leisure-time exercise that achieves the sustained moderate-to-vigorous intensity recommended by WHO guidelines, and women in predominantly agricultural settings may not consistently achieve the metabolic threshold required for optimal cardiovascular protection. This is consistent with the finding that a notable proportion of respondents in this study reported physical activity durations of less than 60 minutes per day, which falls below the WHO minimum recommendation.

These findings align with Hirsch et al. (2023), who demonstrated that women meeting WHO physical activity recommendations had significantly lower systolic and diastolic blood pressure levels, and with Agyemang et al. (2022), who reported that urbanization and modernization are progressively eroding the physical activity advantage historically associated with agricultural communities in Ghana. The pattern observed in this study, high aggregate reported activity but potentially insufficient intensity and duration for optimal hypertension prevention is consistent with the observation by Seidu et al. (2021) that occupationally active women in Ghana did not show the same blood pressure benefits as women engaged in intentional cardiovascular exercise. There is therefore a need to supplement the population's existing occupational activity base with organized, community-accessible structured exercise opportunities.

##### *Alcohol Consumption*

The low current alcohol use prevalence of 11.94% in this study is broadly consistent with findings from Ghanaian community studies in which cultural, social, and religious norms, particularly among women serve as protective factors against regular alcohol consumption (Addo et al., 2021). The predominantly Muslim presence in the municipality (29.6%) likely contributes to this pattern, given that Islamic religious teaching prohibits alcohol consumption. The finding is, however, substantially lower than the alcohol use prevalence reported in South Africa by Mahlobo et al.

(2025), reflecting the context-specific nature of alcohol use patterns across sub-Saharan Africa and the importance of local sociocultural determinants.

Notwithstanding the low prevalence of current use, the biological mechanism linking alcohol to hypertension remains relevant for the approximately 12% who do consume alcohol: Bond et al. (2026) documented that women who consumed alcohol regularly faced higher risks of hypertension than non-drinkers, attributable to biological differences in alcohol metabolism that render women more susceptible to cardiovascular effects at equivalent intake levels. Addo et al. (2021) similarly identified alcohol as a significant contributor to hypertension among Ghanaian women. The finding that a proportion of current users expressed desire to quit motivated by health concerns, financial pressures, and religious commitments represents a meaningful point of intervention that health workers can leverage through motivational counselling integrated into routine primary care contacts.

### *Tobacco Use*

The 3.04% current tobacco use prevalence observed in this study is consistent with the documented extremely low prevalence of active smoking among Ghanaian women, estimated at approximately 0.5% for cigarette smoking nationally (Global State of Tobacco Harm Reduction [GSTHR], 2024), and with the broader sociocultural context in which tobacco use by women is socially and culturally discouraged in many Ghanaian communities (Addo et al., 2021). The predominance of smokeless tobacco forms chewing tobacco and snuff over cigarette smoking reflects the cultural patterns of tobacco use documented in rural Ghanaian and West African settings (Noubiap et al., 2019).

Although the low active tobacco use prevalence may appear reassuring, two important caveats merit acknowledgement. First, self-reported tobacco use may be subject to systematic underreporting due to the strong social stigma attached to tobacco use by women in this cultural context, as noted by Nwankwo et al. (2025). Second, the finding that 6.56% of respondents were unsure of their tobacco use status warrants further investigation, as this group may include individuals with passive exposure to secondhand smoke who did not conceptualize this exposure as a form of tobacco use. WHO (2025) has documented that passive tobacco exposure to which women in Ghanaian households and commercial environments are regularly exposed contributes independently to cardiovascular risk, accounting for approximately 1,003 female deaths annually in Ghana (GSTHR, 2024).

### *Dietary Practices*

Dietary practices constitute the most epidemiologically significant finding of this study and the most actionable risk factor domain for preventive intervention. The near-universal salt consumption (96.96%) combined with the high prevalence of post-cooking salt addition (75.18%) represents a pattern of dietary sodium intake substantially in excess of the WHO maximum recommendation of 5 grams per day. Doe and Asiedu (2023) found that high salt intake was among the most significant dietary contributors to hypertension among women in Ghanaian communities,

and Hirsch et al. (2023) demonstrated that excessive sodium intake elevates blood pressure through fluid retention, vascular remodelling, and alterations in the renin-angiotensin-aldosterone system. The high consumption of fried and processed foods (83.52%) reflects the nutrition transition documented across urban and peri-urban Ghana, in which traditional diets characterized by unprocessed staples and fresh produce are progressively being displaced by energy-dense, sodium-rich processed foods (Ilori et al., 2023). Addo et al. (2021) attributed a substantial proportion of Ghana's rising hypertension burden to this dietary transition. The finding that only 24.12% consumed fruits daily and 39.34% consumed vegetables daily despite 91.57% reporting any consumption mirrors the observations of Borgi et al. (2024) that low frequency of fruit and vegetable intake among Ghanaian women is associated with elevated hypertension risk, and aligns with evidence that the protective effect of plant-based foods on blood pressure is dose-dependent and requires consistent daily consumption.

Perhaps the most actionable finding in the dietary domain is the gap between general awareness and specific dietary knowledge: while 82.44% believed that diet affects blood pressure, only 52.69% specifically knew that high salt intake raises it, and 41.22% had never received dietary advice from a health worker. This knowledge deficit and the substantial proportion of women who have been reached by the health system but have not received dietary counselling points to a structural failure of nutrition education delivery at primary care level. This finding is consistent with Agyemang et al. (2022), who identified poor nutritional knowledge among low-income women in Ghanaian communities as a key barrier to healthy dietary practice, and underscores the need for systematic integration of nutrition counselling into routine CHPS compound contacts and maternal and child health visits.

## V. CONCLUSION AND RECOMMENDATIONS

This study demonstrates that the modifiable behavioural risk profile for high blood pressure among women in the Kintampo North Municipality is defined predominantly by unhealthy dietary practices particularly excessive salt consumption, frequent intake of fried and processed foods, and insufficient daily fruit and vegetable consumption rather than by alcohol use or tobacco smoking, both of which remain comparatively low in this population. Although most women engage in physical activity, the predominantly occupational and domestic nature of that activity, combined with insufficient duration and intensity for optimal cardiovascular benefit in a proportion of respondents, identifies organized physical activity promotion as a secondary but important preventive priority. The critical gap between general dietary awareness (82.44%) and specific knowledge of the hypertension risk posed by high salt intake (52.69%), compounded by the 41.22% of women who have never received dietary counselling from a health worker, identifies a structural failure of nutrition education delivery that is directly addressable through existing primary care platforms.

Based on these findings, the following recommendations are made. The Kintampo North Municipal Health Directorate should strengthen community-based health education on the specific

relationship between salt intake, fried food consumption, and hypertension, delivered through local radio stations, community durbars, and CHPS compound outreach activities. The Municipal Nutrition Officer should develop and implement a structured dietary counselling protocol for integration into all routine primary care contacts, ensuring that dietary advice reaches the 41.22% of women currently not receiving it. Healthcare providers at all facilities should offer blood pressure screening and dietary counselling to patients at every health system contact. The Municipal Assembly, in partnership with the Municipal Agricultural Officer, should promote home-based fruit and vegetable cultivation to improve daily consumption frequency and affordability. Portable blood pressure screening equipment should be distributed to community nurses and CHPS compound workers for community-level early detection and referral.

## VI. LIMITATIONS

Several limitations of this study must be acknowledged. First, the cross-sectional design precludes causal inference between the identified behavioural risk factors and hypertension; the study establishes prevalence and association, not causation. Second, the reliance on self-reported data for all four risk factor domains introduces potential social desirability bias, particularly for alcohol consumption and tobacco use, which are socially stigmatized in the study setting, meaning that the true prevalence of these risk factors may be somewhat higher than reported. Third, the study did not include clinical biometric measurements blood pressure readings, body mass index, or laboratory investigations limiting the ability to directly correlate self-reported risk factors with measured hypertension status. Fourth, convenience sampling limits the representativeness of the sample to the broader female population of the municipality, particularly women in remote rural sub-districts who may have different risk profiles. Future studies should incorporate clinical measurements alongside behavioural data and use probability sampling to strengthen generalizability.

## DECLARATIONS

### Ethics Approval and Consent to Participate

Written permission was obtained from the Kintampo North Municipal Health Directorate. Written informed consent was obtained from all study participants prior to data collection. The study was conducted in accordance with the Ghana Public Health Act, 2012 (Act 851) and the Declaration of Helsinki.

### Competing Interests

The authors declare no competing interests.

### Funding

This study received no external funding. It was conducted as a final-year student project under academic supervision at the College of Health and Well-Being, Kintampo.

### Authors' Contributions

AE, LA, AFE, SI, AA conceived the study, designed and administered the data collection instrument, collected and entered the data and conducted the primary analysis. MK conceived the study, designed, supervised the study, drafted the original manuscript, provided intellectual oversight and methodological guidance throughout, and led the development and revision of this manuscript for publication. All authors reviewed and approved the final manuscript.

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