



Original Research Article

Knowledge, perceptions, and consumption of herbal medicine in the Greater Accra Region of Ghana

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This study adopted a cross-sectional survey to collect data in three cities in the Greater Accra Region of Ghana, namely, Tema, Ashaiman, and Madina, to assess respondents' knowledge, perception, and consumption of herbal medicines. These cities were selected because they have multitudes of herbal medicine sellers plying their trade in designated areas. A total of 400 respondents were drawn for this study using a convenience sampling technique. Using STATA Windows version 17.0, descriptive statistics were performed on the data. Logistic regression analysis was further performed to determine the socio-demographic predictors associated with the utilization of herbal medicine and the safety of herbal medicine. The analysis revealed that over two-thirds ($n = 290$; 72.5%) of the respondents disclosed that they had used herbal medicine products to treat some diseases before. A greater chunk of the respondents ($n = 316$; 79.0%) disclosed that herbal medicines were effective for them. Most of the respondents ($n = 394$; 96.3%) reported their inclination to recommend herbal products to others for the treatment of infections. Almost all respondents ($n = 387$; 96.8%) claimed that herbal medicines are very safe, while 19 (4.7%) of them reported some personal complications with them. Further, male respondents were 1.54 times more likely to believe that herbal medicine is safe to use as compared to females (cOR: 1.54; 95%CI: 1.01-2.37; p-value: 0.045). Further, respondents aged 51-61 had a higher odds of being 4.16 times more likely to use herbal medicine due to its safety (cOR: 4.16; 95%CI: 1.18-14.67; p-value: 0.026). We, therefore, conclude that there is a high patronage of herbal medicines among the population, and the tendency for the users to convince others to accept herbal treatment is high.

Keywords: Phytotherapy, medicinal and aromatic plants, knowledge, perception

INTRODUCTION

The utilization of plants for medicinal purposes dates back to ancient times. Thus, ancient civilizations drew largely on plants and herbs to satisfy their health needs, which have been handed down from generation to generation through time and space. Over two-thirds of the people in developing countries, particularly in Africa, rely on herbal and other traditional medicines for their primary healthcare (WHO, 1998; WHO, 2002). Traditional herbal medicines have been and still remain a well-sought-after source of treatment for

rural dwellers in Africa due to their beliefs, culturally acceptable indigenous knowledge, accessibility, and affordability (Okaiyeto and Oguntibej, 2021). Many herbal mixtures are indubitably expedient for maintaining good health or treating diverse diseases (Bandaranayake, 2006; Bodeker et al., 2005). Developed nations like the United States have recognized the usefulness of herbal medicines, as nearly 20 percent of its population patronizes such products (Bent, 2008).

Studies have shown that people in developed nations gravitate towards herbal medicines, likely due to the belief that plants or herbs are natural and, therefore, safer than orthodox medicines (Ernst, 1998; Tamuno, 2011). Individuals may opt for herbal medicines due to their dissatisfaction and discomfort with orthodox therapies that they perceive as ineffective or causing unpleasant side effects (Verhoef and Sutherland, 1995), while others find them appealing as they align with their personal values, religious beliefs, and health philosophies (Bishop et al., 2007). A Ghanaian study found efficacy rate, cost-effectiveness, fewer side effects, availability, and accessibility to be the variables that influenced malaria patients' use of herbal medicines (Mensah and Gyasi (2012). However, several studies have revealed that the 'safe' label on herbal solutions is not accurate, as the use of these products has led to the identification of some adverse effects (Bent, 2008; Ernst, 1998 and De Smet, 2002). Interaction between herbs and allopathic drugs produces adverse pharmacokinetic and pharmacodynamic outcomes (Neustadt, 2006). Suffice it to argue that the overall quality of healthcare delivery, particularly in connection with the probable side effects of herbal medicines, is contingent on the level of knowledge and attitude that physicians may have towards herbal medicines (Clement et al., 2005). This study examined the knowledge, perception, and consumption of herbal medicines in the Greater Accra Region of Ghana.

MATERIALS AND METHODS

Study design and setting

We used a cross-sectional survey to collect data for this study in three cities in Ghana's Greater Accra Region: Tema, Ashaiman, and Madina. We selected these cities due to the abundance of herbal medicine sellers operating in designated areas.

Study Area

Greater Accra is a cosmopolitan community with a population of 1,665,098 people (Ghana Statistical Service, 2010). Accra is Ghana's capital city, along with several other cities such as Tema, Ashaiman, and Madina. It shares boundaries with the Volta Region to the east, the Eastern Region to the north, the Central Region to the west, and the South with the Gulf of Guinea. Almost all ethnic groups in Ghana now occupy Accra, despite its traditional Ga-speaking community.

Inclusion criteria

The target populations were individuals aged 18 and older who were residents of Tema, Ashaiman, and Madina. We used this approach because we believed these individuals could make sound decisions and significantly and effectively contribute to the study.

Sampling technique

We used a convenience sampling technique to sample the study respondents. The data was generated using a survey questionnaire. The sample for this study was determined using the Cochran formula: $n = N * [Z^2 * p * (1-p)/e^2] / [N - 1 + (Z^2 * p * (1-p)/e^2)]$

Where n = sample size, population size (N) = 1665 098, the critical value of the normal distribution at the required confidence level (Z-score = 1.96), sample proportion (p = 0.5), and margin of error (e = 0.005).

$$n = 1,665,098 * [1,96^2 * 0.5 * (1-0.5)/0.005^2] / [1,665,098 - 1 + (1,96^2 * 0.5 * (1-0.5)/0.005^2)]$$

$$n = 384.27$$

To account for contingencies (nonresponses and missing information), the sample size was increased by 4%. A further 4% = 384 * 0.04

$$= 15.37$$

Hence, the actual sample size is 384.27 + 15.37.

$$= 399.64$$

Therefore, we designed and administered a total of four hundred (400) questionnaires in the three cities to gather information on respondents' knowledge, perception, and consumption of herbal medicines, as well as the effectiveness of such products.

Data Analysis

The data was cleaned and exported to STATA Windows version 17.0 for analysis. We used descriptive statistics to describe all variables. A frequency distribution was used to compute proportions for all categorical variables. Logistic regression analysis was used to determine the socio-demographic predictors associated with the utilization of herbal medicine and the safety of herbal medicine. We first conducted a chi-square test analysis between the dependent and independent variables. Socio-demographic variables with p-values ≤ 0.05 in the chi-square analysis were fitted in the final logistic regression models to assess the strength of association by looking at the crude odds ratio (cOR) with a 95% confidence interval (CI).

Ethical Considerations

All respondents were given printed consent forms and were granted ample time to read through them. The researchers read the consent aloud in English and, if necessary, translated it into Twi or Ga. We encouraged respondents to seek any additional clarification. All study procedures were approved by the Noguchi Memorial Institute for Medical Research (IRB-CPN082/17-18).

RESULTS

Socio-Demographic Characteristics of Respondents

The study involved a total of 400 respondents. Male

Table 1. Socio-Demographic Characteristics of Respondents

Variables	Frequency (N=400)	Percentage (%)
Sex		
Female	197	49.25
Male	203	50.75
Age		
18 – 28	126	31.7
29 – 39	173	43.1
40 – 50	76	18.9
51 – 61	25	6.2
Level of education		
Basic School	50	12.5
Secondary school	172	43.1
Tertiary	178	44.4
Ethnicity		
Ewe	111	27.7
Akan	105	26.2
Dagomba	71	17.7
Ga	107	26.7
Ga Adangbe	7	1.7
Religion		
Christianity	307	76.8
Muslim	85	21.2
Traditional	8	2.0
Occupation		
Civil Servant	80	19.9
Self – employed	178	44.4
Unemployed	142	35.7

Source: Field survey, 2019

respondents accounted for 203 (50.6%) of the respondents. The age range of 29–39 years accounted for 43.1% of the respondents. Approximately 178 (44.4%) of the respondents had tertiary education as their highest educational background. We recruited up to one hundred and eleven (27.7%) respondents from the Ewe ethnic group. The majority of 308 (76.8%) were Christians, while the adherents of the traditional religion were the least (n = 8; 2%). In addition, 178 (44.4%) of the respondents indicated that they were employed. A detailed description of the socio-demographic characteristics of the respondents is presented in Table 1 above.

Utilization of herbal medicine among study respondents

From Table 2, over two-thirds (72.5%) of the respondents disclosed that they had used herbal medicine products to treat some diseases before. Out of this, more than half (50.5%) of the herbal medicine users claimed to procure them from market vendors, and 14.2% of them prepared such medicines by themselves (see Figure 1). Further, nearly one-fifth (18.0%) of the study respondents intimated that their family members use herbal products to treat diseases. 89 (22.2%) of the respondents mentioned that they have friends who use herbal medicines. Respondents most commonly used herbal medicine to treat malaria fever

(135, or 33.6%), followed by hypertension (17.2%) and ulcers (4.5%). Approximately 47.0% of the respondents indicated that they sometimes use herbal medicines to treat their ill-health. The findings revealed a significant proportion of 174 (43.4%) of the study respondents use herbal medicines to treat diseases (see Table 2).

The potency of herbal medicine among users

Only 44.3% of respondents stated that one herb has the potential to treat multiple infections in terms of the potency of herbal medicines. In addition, 52 (14.0%) of the respondents indicated having ever used one herbal product to treat multiple disease conditions before. However, a greater chunk of the respondents (n = 316; 79.0%) disclosed that the herbal medicines were effective for them. Given this, the majority (96.3%) reported their tendency to recommend herbal products to others for infection treatment. However, the preceding statistics showed that 46.3% of the respondents mentioned that herbal medicine is potent in treating infections (Table 3).

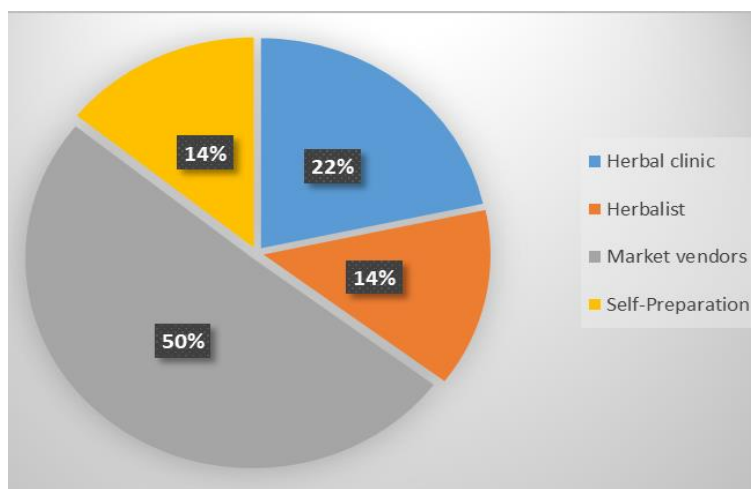
The safety of herbal medicine among its users.

The study further attempted to assess respondents' opinions about the safety of herbal medicines, and almost

Table 2. Utilization of herbal medicine among study respondents

Variables	Frequency (N=401)	Percentage (%)
Ever heard about herbal medicine in Ghana		
No	6	1.5
Yes	394	98.5
Ever used any herbal medicine/products in treating any disease condition before		
No	110	27.5
Yes	290	72.5
Sources obtained this herbal product		
Herbal Clinic	63	21.6
Herbalist	40	13.8
Market vendors	146	50.5
Self-Preparation	41	14.1
Family members also depend on herbal usage for the treatment of diseases		
No	328	82.0
Yes	72	18.0
I have friends who use herbal products for the treatment of diseases		
No	311	77.8
Yes	89	22.2
Ever used herbal products for treating the following		
Malaria fever	133	33.3
Typhoid fever	62	15.3
Ulcer	18	4.5
Hypertension	69	17.2
Diabetes	95	23.8
Other	23	5.8
Number of times you have been using these herbal medicines/products		
More Often	66	16.5
Sometimes	187	46.7
Not Often	147	36.8
Overall herbal usage for the treatment of diseases		
Not used	226	56.5
Used	174	43.5

Source: Field survey, 2023

**Figure 1:** Respondents source of herbal medicine

Source: Field survey, 2019

all respondents (n = 387; 96.8%) claimed that herbal medicines are very safe, while 19 (4.7%) proffered some

personal complications with them. Further, 190 (47.4%) of the respondents averred that herbal treatment is more

Table 3. The potency of Herbal medicine among the users

Variables	Frequency (N=400)	Percentage (%)
I believe that one herb has the potency of treating multiple infections		
No	223	55.7
Yes	177	44.3
Ever used one herbal product to treat multiple disease conditions before		
No	348	87.0
Yes	52	13.0
These herbal medicines/products work for you		
No	84	21.0
Yes	316	79.0
Likely to recommend herbal products to others for treatment of infections		
No	15	3.7
Yes	385	96.3
Overall potency of Herbal medicine		
Not potent	215	53.7
Potent	185	46.3

Source: Field survey, 2019

Table 4. The safety of herbal Medicine among users

Variables	Frequency (N=400)	Percentage (%)
Herbal products are safer		
No	13	3.2
Yes	387	96.8
Any personal complication out of herbal usage before		
No	195	48.7
Not sure	186	46.5
Yes	19	4.8
Herbal treatment is more efficacious than orthodox treatment		
No	88	22.0
Not sure	122	30.5
Yes	190	47.5
Overall score of the safety of herbal Medicine		
No safe	124	31.0
Safe	276	69.0

Source: Field survey, 2019

efficacious than orthodox treatment. The overall score on the safety of herbal medicine showed that a proportion of 69.0% of the respondents mentioned that herbal medicine was safer (Table 4).

Factors that influence the use of herbal medicine among the respondents

The study examined the various factors determining the usage of herbal solutions among the respondents, and a strong nexus was established between respondents' age and occupation and the utilization of herbal medicines (see Table 5). Respondents within the age group 29–39 years had the highest odds of utilizing herbal medicine as compared to respondents aged 18–28 years, and the difference was statistically significant (cOR: 2.24; 95% CI:

1.39–3.61; p-value: 0.001). However, the utilization of herbal medicine was reduced by 49% among unemployed respondents (cOR: 0.51; 95%CI: 0.29–0.90; p-value: 0.020).

The study examined the association between the background characteristics of respondents and the safety of herbal medicine using an unadjusted logistic regression analysis.

Significantly, there was an association between respondents' sex, age, and the safety of herbal medicine. Male respondents were 1.54 times more likely to believe that herbal medicine is safe to use as compared to females (cOR: 1.54; 95%CI: 1.01-2.37; p-value: 0.045). Further, respondents aged 51–61 had a higher odds of being 4.16 times more likely to use herbal medicine due to its safety

Table 5. Bivariate logistic regression of factors influencing the use of herbal medicine among the respondents

Variables	cOR	[95%CI]	p-value
Sex			
Female	Ref		
Male	0.88	(0.59-1.31)	0.534
Age			
18 – 28	Ref		
29 – 39	2.24	(1.39-3.61)	0.001
40 – 50	1.47	(0.82-2.64)	0.196
51 – 61	1.13	(0.46-2.79)	0.777
Level of education			
Basic School	Ref		
Secondary school	1.21	(0.63-2.31)	0.570
Tertiary	1.66	(0.87-3.17)	0.124
Ethnicity			
Ewe	Ref		
Akan	0.91	(0.53-1.56)	0.740
Dagomba	0.92	(0.50-1.68)	0.802
Ga	1.07	(0.63-1.82)	0.807
Ga Adangbe	0.50	(0.09-2.72)	0.427
Others			
Religion			
Christianity	Ref		
Muslim	0.88	(0.54-1.44)	0.624
Traditional	0.75	(0.19-3.23)	0.709
Occupation			
Civil Servant	Ref		
Self – employed	1.02	(0.61-1.74)	0.919
Unemployed	0.51	(0.29-0.90)	0.020

Source: Field survey, 2023

(cOR: 4.16; 95% CI: 1.18–14.67; p-value: 0.026) (see Table 6).

DISCUSSION

This study engaged four hundred (400) respondents to ascertain their knowledge, perception, and consumption of herbal products in Accra, Ghana, on the extent of herbal use and the most commonly antimalarial herbal drug patronized in Ghana. Two hundred and six (206) males, representing 51%, and one hundred and ninety-four (194) females, representing 48.5%, were involved (Table 4.1). The same observation was made by Bhat and colleagues in their assessment of the knowledge and attitude of patients towards herbal medicines in the Udupi region of Karnataka, India, where there was a higher percentage of males than females (Bhat et al., 2019). In Ethiopia, researchers observed a similar trend, with a higher representation of males than females (Asmelashe et al., 2017). We, therefore, argue that the high male participation in this study may not necessarily mean that there is a higher patronage of herbal medicines in the male population than their female counterparts. This assertion is in sharp contrast with Aina and colleagues' observation on prevalence, determinants, and knowledge about herbal medicine and non-hospital utilization in south-west Nigeria, where more men

(p<0.001) were found to patronize herbal medicine than women Aina et al. (2020).

Studies have established that about 80% of people in developing countries, particularly in Africa, rely on the use of herbal and other traditional medicines for their primary healthcare (Mensah and Gyasi, 2012; Mahomoodally, 2013; WHO, 1998; WHO, 2002; Zaidi et al., 2022). This aligns with the findings of this study, where 72.5% of its respondents revealed that they had ever used herbal medicines. This finding further corroborates Johnson and Blanchard's findings on alternative medicine and herbal use among university students, revealing a similar trend in awareness and usage at 88.1% and 59.9%, respectively (Johnson and Blanchard, 2006). The study found malaria, hypertension, and ulcers, respectively, as some of the common health conditions that herbal treatments are sought for.

Furthermore, respondents preferred herbal medicines to biomedicine as they perceived the former to be effective than later. This synchs with the position that individuals could resolve to use herbal medicines due to their dissatisfaction with orthodox therapies that are considered ineffective or have unpleasant side effects (Verhoef and Sutherland, 1995). Southwest Nigeria observed a similar trend, with the majority of study respondents perceiving herbal medicines as more efficacious than biomedicines (Aina et al., 2020). In addition, the study established that perceived or experienced efficaciousness or potency

Table 6. Association between background characteristics of respondents and the safety of herbal medicine (Unadjusted logistic regression analysis)

Variables	cOR	[95% CI]	p-value
Sex			
Female	Ref		
Male	1.54	(1.01-2.37)	0.045
Age			
18 – 28	Ref		
29 – 39	1.39	(0.85-2.27)	0.180
40 – 50	1.23	(0.67-2.25)	0.501
51 – 61	4.16	(1.18-14.67)	0.026
Level of education			
Basic School	Ref		
Secondary school	0.75	(0.37-1.53)	0.434
Tertiary	0.78	(0.38-1.59)	0.504
Ethnicity			
Ewe	Ref		
Akan	1.05	(0.58-1.89)	0.859
Dagomba	1.21	(0.62-2.34)	0.575
Ga	0.87	(0.49-1.53)	0.634
Others	0.58	(0.12-2.77)	0.503
Religion			
Christianity	Ref		
Muslim	1.35	(0.78-2.33)	0.269
Traditional	1.42	(0.28-7.17)	0.670
Occupation			
Civil Servant	Ref		
Self - employed	1.10	(0.62-1.95)	0.741
Unemployed			

Source: Field survey, 2023

of herbal medicines compelled respondents to always recommend herbal treatments to other people. We can assert that the media, families, or friends typically initiate the use of traditional or herbal medicines by providing convincing information about their effectiveness (Kretchy et al., 2021; Aziato and Antwi, 2016).

The study further endeavored to assess respondents' opinions about the safety of herbal medicines, and almost all respondents (n = 388; 96.8%) claimed that herbal medicines are very safe, while 19 (4.7%) of them proffered some personal complications with them. This somewhat supports the claim that efficacy rate, cost-effectiveness, fewer side effects, availability, and accessibility remain the variables that influence malaria patients' use of herbal medicines (Mensah and Gyasi, 2012; Aziato and Antwi, 2016). This position is, however, contested by some scholars who claim that the 'safe' tag on herbal solutions is not true because certain complications have been identified after the utilization of herbal products (Ernst, 1998; Tamuno, 2011; De Smet, 2002).

This study found a significant association between respondents' age and occupation and the utilization of herbal medicines, as respondents within the age group of 29–39 years obtained the highest odds of utilizing herbal medicine in comparison with those aged 18–28 years, and the difference was statistically significant (cOR: 2.24; 95%

CI: 1.39–3.61; p-value: 0.001). This contradicts Jibril et al.'s study, which found no positive association between respondents' sociodemographic profiles (gender, age, and occupation) and their usage of herbal medicines (Jibril et al., 2019). It, however, confirms other studies that herbal medicine usage was significantly associated with all respondents' sociodemographic profiles (residence, age, education level, and occupation) except for sex (Kretchy et al., 2021; Ogunsola and Egbewale, 2018; Huang et al., 2020).

Males were 1.54 times more likely than females to admit that herbal medicine is safe to use (cOR: 1.54; 95%CI: 1.01-2.37; p-value: 0.045). This could suggest that females are more careful about herbal medicine usage than their male counterparts. Further, respondents aged 51–61 had a higher odds of being 4.16 times more likely to use herbal medicine due to its safety (cOR: 4.16; 95%CI: 1.18–14.67; p-value: 0.026). This aligns with findings elsewhere that there is a strong association between older populations and higher usage of herbal medicines (Skinner and Rangasami, 2002; Rashrash et al., 2017).

CONCLUSIONS

Herbal medicine patronage is not limited to a population-

limited orthodox healthcare system, as this study has observed that it is even more common among Ghana's population with a comparatively better orthodox healthcare system. Surprisingly, individuals who trust the effectiveness and safety of herbal medicines are most likely to convince other people to accept herbal treatments for their ill health. In addition, the study has unearthed strong connections between respondents' sociodemographic profiles, herbal medicine usage, and perceptions about their safety. We, therefore, recommend intensified education on the safety of herbal medicines among Ghanaians, including those in urban, semi-urban, and rural settings, to save them from suffering treatment complications.

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Conflict of Interests

The authors declare that there is no conflict of interests regarding the publication of this manuscript.

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