

Research Article

‘Sundi’, a New Form of Snuff and Substance Abuse Among Residents of the Tamale Metropolis, Northern Ghana

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Abstract

This study investigates the use of “sundi”, a substance abused by people in the Tamale Metropolis. It identified the types of “sundi” commonly used among adults, such as AK47 Boss, Hajia Ayisha manpower, Sheihu Barhama etc. The process of using the ‘sundi’ in its moist form is called “soobu”. The study employed qualitative approach. Purposive and snowball sampling techniques were used to identify 80 participants. Data were collected through interview guide and focus group discussions with both men and women residing in the Tamale Metropolis. Through thematic analysis of the data, key themes emerged from the interviews, including knowledge of “sundi”, individual experience with the “sundi”, types of “sundi” and health implications of the use of “sundi”. The key theme that emerged from the focus group discussions is the “sundi” consumption patterns. The study revealed diverse insights into the impact of “sundi” substance on individuals and the community, indicating the reasons for “sundi” use and the various substances that are often mixed with it. The study makes recommendations to the Ghana Health Services, the Ministry of Health, Ghana Education Service, to implement comprehensive drug prevention programs, and strengthen law enforcement efforts to combat drug trafficking. Also, emphasizing awareness creation about the dangers of substance abuse and promoting community engagement is vital in tackling this complex issue. This study contributes to the existing body of knowledge on narcotic substance abuse and provides valuable insights to policymakers, healthcare professionals, and stakeholders working towards the prevention of drug abuse in the Tamale Metropolis. In conclusion, this study found that substance abuse has heavily impacted negatively on the lives of the young people in the Tamale metropolis.

Keywords

Sundi, Soobu, Snuff, Sankpang, Snowballing, Purposive, AK47, Hajia Ayisha Manpower, Sweet Mother, MoH

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1. Introduction

Narcotics also known as opioids come from the Greek word 'stupor' which was originally used to describe several substances that dulled the human senses [27]. Narcotics are a class of drugs known for their pain-relieving and sleep-inducing properties. They can also lead to physical dependence and, in some users, feelings of euphoria.

Narcotic substances abuse is a major problem worldwide. With increasing challenges such as lack of jobs, high cost of living, divorces, communal conflicts and several others, most of the youth are depressed and resort to narcotic substances of all sorts for solace. Narcotic substance addiction has many negative effects on individuals and their societies some include mental illnesses which cause a drain in the normal functioning of the society.

Santos highlights the shift from drug abuse being confined to specific local communities to a global phenomenon now affecting all sections of society [23]. The World Drugs Report of the United Nations Office on Drugs and Crime estimates that between 172 million and 250 million persons used drugs in [27]. Citing rapid social change and the erosion of traditional structures, Johnston [17] attributes Ghana's rising drug abuse trend to these evolving societal factors. Substance abuse is more common in the urban centers due to rapid urbanization and its associated social and moral decadence. This phenomenon is rapidly spreading to the rural areas where the adolescents see it more as a mark of civilization [1]. The rate at which the laws are broken in Ghana pertaining substance use is alarming with all sought of narcotics being sold, from pharmaceutical drugs to street drugs one would think there were no laws in place to curb their usage. laws in place to curb their usage.

Marijuana, tramadol, snuffs, alcohol, heroin among others are some of the most easily accessible substances in Ghana. According to the Bureau of International Narcotics and Law Enforcement of the U.S.A, Ghana is a main route where illicit drugs are smuggled into for consumption, and further transportation from Asia and south America to other African countries as well as the U.S and Europe.

Drug trade, production and consumption has been in existence in Africa over a long period of time. Based on history, alcohol, cannabis and tobacco are some narcotics which have been in existence throughout the continent. Social networks, local cultural beliefs and practices were used as forms of governance in drug trades. West Africa was the main point of transit to US markets. Later development of smuggling of local cannabis began with Nigeria's criminal groups from that point onward. Eligh [10].

In Ghana, soldiers from the World War II in Asia were the first to be introduced to cannabis and from then onward, while there is limited research on this specific topic, some reports suggest that Ghanaian soldiers who fought in World War II began using cannabis as a coping mechanism to deal with the stresses of war. In an article published by BBC in

[3], a historian by name Professor Kwame Essien stated that some soldiers used cannabis and other drugs to cope with the stresses of the battlefield, which contributed to a rise in drug use among the soldiers. Similarly, an article published by the Ghanaian Times in [15], states that an 89-year-old veteran of World War II, Private Tetteh Martey, recounted his experience and stated that Ghanaian soldiers initially used cannabis to calm their nerves during the war.

2. Definition of Key Terms

Sundi: This is a local made substance from tobacco leaves combined with Saltpeter and dried moringa leaves used in the mouth or inhaling in the nasal cavity.

Soobu: The process of applying wet sundi (moist substance) on the gum of the individual is called 'soobu'.

Snuff: Snuff is a smokeless tobacco made from ground or pulverized tobacco leaves. It is inhaled or "snuffed" into the nasal cavity, delivering a swift hit of nicotine and a lasting flavored scent [18].

3. Contribution to the Field

The study has contributed to informing people about the kinds of substance people consume to the detriment of their health. This understanding will provide inputs that can be used to design interventions to address this behavior. The study equally created an opportunity for health educators to design health promotion programs towards improving population health.

4. Theoretical Framework

The study adopted the Health Belief Model as a basis for the study. The model was developed in the 1950s by social psychologists to explain the widespread failure of people to participate in programs to prevent and detect diseases [4]. The model initially stated that individuals engage in preventive health behavior based on three main factors. These factors are perceived vulnerability, perceived severity and perceived benefits. However, three other constructs were added to the model to make it six. This means that a person would have to believe that he or she is vulnerable to a disease to take any action. The value of compliance is therefore based on the probability of the client's view that compliance would reduce the perceived threat and not to be too costly in money, time and emotional energy [4]. The Health Belief Model (HBM) has been one of the most widely used psycho-social approaches to explaining health related behaviors.

For the purpose of this study, four of the six major health belief model constructs were used in the study to assess the effects of snuff use on the health of adults in the study area,

(a) perceived susceptibility to snuff use, (b) perceived benefits of snuff use, (c) perceived severity to snuff use (d) perceived barriers to stopping snuff use.

Hence, the preventive action taken by adult snuff users depends on the individual's perception that he/she is personally susceptible, and that the occurrence of any disease related to snuff use would have at least some severe implications of personal nature. The assumption here is that acting reduces susceptibility by adult snuff users in the study area. The perception of threat is also affected by modifying factors. These include demographic, social, psychological and structural variables. These can influence both perception and corresponding cues necessary to instigate action.

The Health Belief Model is selected for this study because it can help to explain some factors responsible for snuff use among adults in the study area. The elements of the model assisted the study in recommending the most effective health education interventions that could influence adults' readiness to take steps to reduce or eliminate snuff use in the study area.

5. Methodology

5.1. Study Setting

The research was conducted in the Tamale Metropolis. Tamale metropolitan area is in the Northern Region of Ghana. It is the capital and the administrative center of the region. The Tamale Metropolitan Assembly (TMA) is further subdivided into two sub-metros which include Tamale Central, and Tamale South sub-metros.

The Tamale metro area has a human population of 293,881 people, with 146,979 males and 146,902 females, according to statistics from the [14]. In 2012 and 2013, the Metropolis' population was estimated to be 383,205 and 404,609 people, respectively [13].

Even though native Dagombas make up the bulk of the population, there is ethnic variety. In the city, all of Ghana's ethnic groupings are represented. There is also a wide range of religious beliefs, with Islam being the most predominant religion.

5.2. Research Design

Yim & Schwartz-Shea, [29] states that investigation design is a crucial component of the study process, as it essentially needs to be the best to collect the data needed to draw accurate inferences and evaluate the things that need to be measured.

The study employed the Phenomenological Research Design to allow the researcher to describe participants' lived experiences concerning soobu "Sundi".

Phenomenological research design is a qualitative approach focused on exploring and understanding the essence of human experiences. This method aims to study deep into

participants' subjective experiences, capturing their perceptions and emotions regarding a particular phenomenon. In this context, the study investigated the lived experiences of women and men who have used "sundi" in the Northern region of Ghana. This approach allows researchers to gain profound insights into the personal and often deeply emotional experiences of these adults, providing a rich, nuanced understanding of the impact of snuff on their lives.

"Soobu" is a deeply personal and emotional experience, and phenomenology can capture the complexities and nuances of how women and men in the Northern Region of Ghana experience and make sense of this event.

Creswell [9], noted that phenomenological study "culminates the essence of the experiences several individuals have undergone in a phenomenon." Thus, the researcher describes participants' lived experiences in a phenomenon.

5.3. Sampling Technique

Purposive and snowball sampling techniques were employed to identify participants who were engaged in the use of "sundi" substance in the Tamale Metropolis. These sampling techniques were chosen due to the sensitive nature of the phenomenon. These participants were recruited from 9 communities in the metropolis: Kasalgu, Kalpohini, Sakasaka, Aboabu, Lamashegu, Kakpag Yili, Nyohini, Nyanshagu, and Bulpeila. All participants were active "sundi" users and sellers. Each interview lasted 25 to 30 minutes and the FDGs also lasted 80 minutes in each group. The interview guides used, and the interviews conducted helped the authors to identify and clarify the various types of "sundi" substance consumed both men and women in the Tamale Metropolis. The focus group discussions were centered around the topic of snuff/"sundi" use.

5.4. Study Population

Boye & Kusi, [6] intimated that a population is a collection of persons or things who have similar traits and are of interest to the research

The target population is the group of individuals, cases, or objects the researcher aims to learn about and draw conclusions applicable to [19]. The target population of this study constituted the adults between ages 30 to 60 who use new forms of Narcotic Substances called "sundi" in the Tamale Metropolis.

5.5. Data Collection Tools

An interview guide and a focus group discussion guide were used in data collection. This study employed a unique recruitment strategy. Collaborating with community gatekeepers, individuals within the community served as bridges, introducing the researchers to the potential participants. In qualitative research, community gatekeepers act as trusted bridges, opening doors and paving the way for con-

nection with the community [12]. Interview details and date for interview was scheduled and participants were given the option of having the interview conducted wherever they chose to create a more comfortable and relaxed environment for discussion. The focus group discussions on the other hand, involved participants who met the eligibility criteria.

To protect participants' identities, real names were replaced with numbers to help in making identification easy and several steps were taken to ensure the ethical treatment of participants and the accurate representation of their responses.

The purpose and objectives of the study were explained to the participants. Participants were assured of the voluntary nature of their involvement and that their participation would not have any negative impact on their rights or relationships. All the participants were provided with informed consent, staying their willingness to be part of the interviews or FGDs.

To ensure accuracy, all interviews and FGDs were recorded using audio tape recording devices. The use of recording equipment enabled the research team to capture the participants' exact words, expressions, and emotions during the discussions.

After the interviews and FGDs were completed, the recorded audio files were carefully transcribed. Transcription involved converting the spoken language into written text, preserving the content and nuances of the discussions.

5.6. Data Analysis

Content analysis was employed in analyzing data collected. The recorded audio data was listened to and transcribed. This helped the research team to gain in-depth understanding of the participants' perspectives and experiences related to use of "sundi" in the study area. Words and phrases that represented main ideas or thoughts were taken note of. The significant parts were put into groups based on similarity of ideas. This provided themes that indicated the common things the people talked about, and the original data was revisited to make sure our themes were valid. Descriptive names were assigned to each theme, this helped us remember what each theme was about. These themes were examined to gain insights into the participants' experiences. Detailed explanations and interpretations of each theme was provided. The results were reported clearly and comprehensively to communicate the depth of the participants' perspectives.

5.7. Rigor

The study adopted Lincoln and Guba's assessment criteria [8, 2] to evaluate data accuracy, credibility, reliability, transferability, comfortability and dependability.

Regarding dependability, interviews were conducted with appropriate tools and time required.

People with knowledge in the field were contacted during

the preparation of the interview guide and data analysis to ensure credibility.

Experts in the field were contacted about the suitability of the primary and sub-teams for comfortability.

Snowball and purposive sampling techniques were used to ensure transferability making sure of the maximum diversity [8]. At the end of the interview, participants were debriefed on the transcripts.

6. Results

This section focuses on the main themes and discussions of the findings that emerged because of the interview guide and the focus group discussion process. Following the data analysis, the main themes that emerged because of "soobu" as a new form of substance abuse in the Tamale Metropolis included understanding the knowledge of "sundi" as a substance abused, personal experience of "sundi" substance; types of "sundi" substances and consequences of the use "Sundi".

Snuff is a fine aromatic powder made from dried and thin leaves combined with tobacco, roots, peels and seeds [7]. Snuff, also known as smokeless tobacco, can be classified into two, nasal snuff and moist snuff. In the Northern part of Ghana, nasal snuff is known as "sundi" while the moist snuff is known as "soobu".

Moist snuff is a form of smokeless tobacco used orally and anally. It comes in various forms, such as loose snuffs and portion snuffs (these are placed in little pouches for easy use and less spilling). Like other forms of tobacco, moist snuff also contains nicotine and carcinogenic substances which can be very addictive. Moist snuff is said to be a less harmful alternative to smoking since it does not harm the airway and there is no smoke associated with its use and does not affect the environment negatively. However, there are still high levels of risk involved in the use of moist snuff such as cancer to the pancreas, mouth and esophagus, can be a cause of cardiovascular diseases and can be a causative factor for Type 2 diabetes, as well as cause damage to the membranes in the mouth [23]. But nasal snuff is another form of smokeless tobacco sniffed in the nostrils. Its associated health risk are different from those who smoke tobacco [22].

The findings indicate that there are several types of snuff/soobu in the study area. One is called *AK47 Boss*, this substance is made from tobacco mixed with tramadol and saltpeter. It is a moist snuff used on the gum. It works very fast and produces powerful results. When one takes AK47, the person immediately becomes weak, resulting in sleeping after which everything seems fine.

Another type is called *Hajia Ayisha manpower*. This is also made from a combination of moringa leaves tramadol, salt peter and tobacco. It is a moist snuff and applied to the gum to enhance manpower and energy. However, when one swallows it, the person will run diarrhea and experience stomachache.

There is also a sweet mother. This is made from moringa leaves and saltpeter. It is a nasal type and inhales through the nostrils. When one inhales this substance, it makes him/her feel dizzy, weak and lazy to speak. The in-activeness is the characteristics of this type soobu.

There is also Sheihu Barhama. This is made up of moringa leaves and some herbs from Burkina Faso. These substances are combined to produce the drug. It is a nasal type of use through the nostrils.

We have also *Lamashegu*, this substance is made up of tobacco leaves and moringa leaves plus salt peter.

There is Sangkpang, this is made from grounded tobacco leaves and salt peter. It is used to treat tooth ache.

Participants knowledge of sundi/snuff use

Participants knowledge about the ingredients that are used to make 'sundi' was assessed, and they responded indicating what they knew are the ingredients which include, dried moringa leaves, saltpeter, tobacco, tramadol and glue which are the main ingredients used by most people in the study area. The use of these substances is in different forms, and they adapt to individual preferences. Bobo et al., [7] indicates that youth substance use was associated with community's cultures. Most people use snuff as a form of treatment, especially for headache and migraine (dirigu) in the Tamale Metropolis.

Knowledge of participants were measured about their awareness and understanding of sundi/snuff, motivations and reasons for soobu. Most of the participants indicated that they only heard of soobu through peers, family members, other participants had in-depth knowledge of 'sundi' substances, as they have used it themselves.

A participant in FDG2 expressed:

For me, it is medicine. I have migraine (dirigu), and the continuous headaches worry me. So, I use it as a form of pain killer. When I use it, the headache goes away, and it is more effective than the white man's medicine. (FGD2 number 6)

Another participant in an in-depth interview indicates that.

"I know how it is prepared; they grind the tobacco into powder with dry moringa leaves then mix them together with cocaine. If they are not ready to package them, they cover it up and because they say the air reduces the potency. When ready, they take it into an enclosed room where there is no free flow of air and get them packaged." (Interviewee number 3))

Consumption pattern of snuff/soobu

The participants reported varying ages of onset and duration of snuff use. Some started using snuff in their early thirties, while others started later in life. The duration of use ranged from few months to several years.

One participant narrates in a FGDs said thus:

I started using snuff when I was about 30 years old. It was something that my friends did, and I wanted to be with them. However, the way we use it is different instead, inhaling it we apply it to the gum in the mouth and it acts quickly and

makes it feel high. I have been using it ever since." (FGD1 number 3)

Motivations for using snuff: Each participant mentioned different motivations for using snuff, including stress relief, enjoyment, and as a substitute for smoking.

A participant said this in an in-depth interview as:

What keeps me continuing is that most people do not see this to be a problem, you know most of the aged in our communities look down on you and insult you if they see you holding maybe weed but with snuffs even the old people use it so I can use it anywhere as a substitute for drugs. And yes, I use other narcotic substances it is just that I cannot go around using or holding them but with sundi I am free to do so. It is like a replacement for cocaine when I am in public." (FGD1 number 1)

Family and friends were identified as the main influences on snuff use. Participants noted that they were introduced to snuff use by friends or family members who were already using it.

One participant has this to say:

My father used snuff, and he introduced me to it when I was young. My father was a farmer, and we went to the farm together, he could work throughout the day without feeling so tired or when he was so tired from working, he would use it to help him calm down and aid in sleeping. He encouraged me to begin using it. That is how it has become a part of my life." (FGD2 number 4)

The difference in their preferences was another discussion which took place. Some participants preferred using moist snuff and others used dry snuff.

Peer influence on soobu

The study equally found that majority of the participants are being influenced by their peers.

A participant in FGDs observed thus:

"Growing up when I was out with my friends, they would pour some into my hands and show me how to use it, the first time I tried it I would not stop sneezing, I told them I would not try it again but the encouraged me to try it again they claimed I would feel much better as I was young, getting influenced was so easy." (FGD2 number 2)

A participant in an in-depth interview commented:

"When my friends and I buy snuff, we add cocoa powder the pure cocoa powder to it then we sniff it, that one makes you high. A Zambarima man taught us how to do this. When we use it the effect it different from the normal snuff." (Interviewee number 4)

Experience of the participants

The participants experience also influence them to make certain preferences regarding sundi/snuff and describing the circumstances that led to the use of sundi and its impact on their lives. Some participants asserted that soobu is coping strategy to deal with difficult life situations, such as peer pressure, stress, depression, trauma, and social pressures.

According to FGD2 participant 3 said thus:

"I understand what the others are trying to say, but we all

have different “tastes” in what is best for us. I like using “soobu” (wet snuff) because the dry snuff makes my nostrils uncomfortable after use” (FGD2 number 3)

A participant shared firsthand knowledge of using snuff:

“What I know is that tobacco is one of the substances found in it some include cocaine and moringa with a bit of flavor into it” (FGD2 number 6)

Health implication of sundi/snuff use

Most of the participants indicated that they were aware of the health risks associated with snuff use, and this knowledge served as a significant motivator to quit. Some say that a lot of harmful chemicals are present in snuff, such as nicotine and they pose harmful threats to the users. The concerns discussed by the respondents stemmed from their experiences. They described their worry about their own health.

One participant commented:

“A doctor once told me I could easily develop cancer of the throat if I did not stop using it. Although that information has stayed with me for a long time. For me it is not easy to quit just like that, I tried but it never worked for me. So honestly, I am concern about my health, but I cannot stop.” (FGD2 number 5)

Another participant said:

“Okay when I started using it, I never thought it was something that can cause harm to the body. I have been ill a few times. I was admitted and was told it was as a result the substance I put in my nose where the air passes through to my body and it was caused by the things I sniff. I know I will stop, but it is so tempting.” (FGD1 number 2)

One participant observed this in an in-depth interview thus:

“Most of us here can testify that using “soobu” has a bad effect on your teeth. Look at mine, right now no amount of brushing or chewing of sticks can help me and I do have bad breath too so most of the time I chew gum before I can go into public.” (Participant number 3)

A participant commented:

“After coming back from the hospital a few times from having respiratory tract infections, I am trying hard to quit the use of snuff. So, I have reduced my intake drastically. I know I would be able to stop the use soon. The hospital medics have seriously warned me that it can lead to much serious problems if I do not stop the use.” (FGD1 number 1)

Sources of sundi/snuff

Many participants explain how they get their supply as follows.

Participant offered this perspective:

“Getting it, is not difficult. There is a lady in my area who sells it. She brings them in very large quantities. Her place is like the wholesale point for the whole neighborhood. Snuff is like the one that you will not have problems with the law over because I have never seen them arresting or giving someone jail term over it.”

Another participant observed that:

“Okay, when I began using it, it was quite hard to come

across. But lately it is everywhere. There was this one time I am not sure when, but there was a shortage, and the prices shot up. So, I would say it is easy to find and purchase snuff at the market at much less prices. And for people who sell at home, they have varying prices, and the quantity is normally reduced to give them more to sell.” (FGD2 number

7. Discussions

7.1. Types of Soobu/Snuff 3

The participants had knowledge of the various types of soobu/snuff substance such as AK47 Boss, Lamashegu, Hajia Ayisha manpower, sweet mother, and Sangkpang and their uses. Some of the snuffs are in powdery form, others are liquid and white and are applied in the gum. The one that is apply in the gum is called soobu. The powdery form is applied in the nostrils. The nasal snuff is another form of smokeless tobacco, sniffed into the nostrils. Its association with health risks is different from those who smoke tobacco, so it could be seen as a substitute for smoking. The risks of cardiovascular diseases are lower but continuous use can lead to damage the nasal mucosal lining [23].

The use of substances includes so many varieties. Other substances may include glue, dry cell batteries while others sniff the shoemaker’s glue. In an interview with some of these sundi users, they explained that it was less costly as compared to other substances which was within their means. Once they obtain a tube of glue, it is emptied into a bottle with a little amount of water added. The cap is placed back for about two minutes to enable it flame up, the cap is then taken off and replaced with their thumbs and inhaled little by little. The gas formed in the bottled after the mixture is what gives them the “high” they need.

7.2. Knowledge of Soobu/Snuff

The participants in the study area were able to identify various types of snuffs/sundi such as moist ones which is used on the gum. They were able to identify health risks such as cancers, cardiovascular illnesses etc. This finding supports the findings of WHO, 2011, that the impact of snuff-related diseases, mortality from cancer, respiratory and circulatory diseases in Africa is high. The mortality rate of male age 45 above that contacted Trachea, Lung and Bronchus Cancer was 23% with total population 171,000 [20].

Most participants mentioned nasal as well as moist snuff as they used mostly in the study area. This supports the findings of Tomar et al., [26] survey which revealed that, participants had adequate knowledge on snuff use at the study place in Nigeria but did not have knowledge on the health effects of using snuff on the people lives. Yim and Schwartz-Shea [29] revealed that participants in a study area in Nigeria had ever heard of snuff from their friends and at the neighborhoods, but these participants did not have knowledge on the

health effects of snuff use at the time of the study.

Worldwide, snuff products range in complexity from simple cured tobacco to elaborate products with numerous chemical ingredients and, in some cases, non-tobacco plant material that may affect the attractiveness, addictiveness, and toxicity of the products [26, 24, 11]. Increasingly, new varieties of manufactured snuff products appear in a discrete, spitless form that can be used where smoking is prohibited or socially inappropriate [5, 16, 25].

7.3. Peer influence

The finding indicates several factors that influence the snuff use among the adult population in the Tamale Metropolis. Among them are peer influence, family members, Advertisement, pleasure relaxation etc. This finding aligned with Nemeth et al., [21] in rural Ohio Appalachia, whose findings show that pleasure and relaxation were the main reasons for use of snuff among the population sampled in the survey.

One of the findings of this study is that Soobu, which is the wet one, is used to treat 'Sangk pang' (toothache). This finding equally supports a study in South Africa where major reasons for taking snuffs were medicinal purpose, pleasure/taste, expectation from friends and ritual process [16]. A large proportion of the snuff users first knew about snuff via advertisement. Mutti et al., [30] observed that about 34% of the current users of snuff were most influenced by advertisements in their decision to take a snuff product.

7.4. Health implications of soobu/snuff use

The participants shared their experiences regarding the soobu/snuff use and the health risks, including oral cancers, respiratory tract infections and cardiovascular complications. This finding supports WHO, [28], indicates that the prevalence of diseases that are attributable to snuff use in veteran population in the United State had cases of 90% lung cancers. Some participants expressed concern about the potential physical and social consequences of snuff use. They cited risks of tooth decay, gum disease, and addiction, among other negative effects. Some participants indicated that they were aware of the risks associated with snuff use, and this knowledge served as a significant motivator to quit. A lot of harmful chemicals are present in snuff, such as nicotine and they pose harmful threats to the users.

7.5. Conclusion

Overall, the findings suggest that substance abuse is a common issue among respondents, with many reporting regular use of a variety of substances. The negative effects of substance abuse reported by respondents highlight the need for increased awareness and support for those struggling with addiction. The variety of substances reported by respondents also suggests the need for a multifaceted approach to addressing substance abuse that includes education, prevention,

and treatment for a wide range of substances.

In conclusion, this study has provided profound understanding into the impact of substance abuse on the adults in the Tamale Metropolis. The findings indicate a high rise in poly-substance abuse among individuals.

7.6. Recommendations

The researchers make the following suggestions:

- 1) The outcome of the study revealed the reasons people engaged in 'soobu' in Tamale Metropolis. Among which include unemployment, peer pressure, curiosity, etc. The study recommends GHS, MoH and GES to provide health and civic education to the adult population and the effects of this practice.
- 2) The study found a critical gap in understanding the full range of substances employed by adults and their associated risks, threats and consequences. We recommend MoH and GHS to open up communication channels like social media, local media, and peer-to-peer education programs.

Abbreviations

TMA	Tamale Metropolitan Assembly
WHO	World Health Organization
GHS	Ghana Health Service
MoH	Ministry of Health
GES	Ghana Education Service
GSS	Ghana Statistical Service

Author Contributions

Abukari Salifu: Conceptualization, Formal Analysis, Supervision, Writing – original draft

Abdul Muizz Muktar Tikumah: Formal Analysis, Supervision, Validation, Visualization, Writing – review & editing

Ayisha Tiyumba Sadik: Conceptualization, Data curation, Funding acquisition, Investigation, Methodology, Project administration, Writing – original draft

Conflicts of Interest

The authors declare no conflicts of interest.

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