The Relevance of Social and Behaviour Change Communication in Sanitation and Solid Waste Management in Techiman South, Ghana

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Abstract	Journal of Policy and Development Studies (JPDS)
This study investigates Social and Behaviour Change Communication as a relevant enabler in managing sanitation and solid waste in the Techiman South District. Sanitation and solid waste management pose considerable challenges, impacting various aspects of life. While there is extensive research and interventions to help address this menace, little success is chalked as people in urban and peri-urban areas continue to engage in acts that complicate the matter. The study employed a mixed-method approach. Data were collected through survey questionnaire, semi-structured interviews, and observation. Purposive sampling and simple random sampling techniques were used to select participants. The findings showed that community mobilisation efforts in waste management are inadequate, primarily due to weak community participation in such efforts. Weak communication programmes within sanitation and waste management policies further exacerbate this issue, underscoring the need for enhanced community participation. The study concludes that there is a gap in communication and awareness efforts in the study area. It is recommended that duty-bearers in the district prioritise community mobilisation and participation efforts, such as regular clean-up exercises, and involve community leaders in planning and dissemination of information on sanitation and solid waste management in the Techiman South District.	

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1. Introduction

Sanitation and solid waste management are critical issues across the globe with low-income and middle-income countries often being the worst affected (WHO and UNICEF, 2015). Addressing these challenges necessitates a holistic approach that encompasses behaviour change practices at various levels. While there may be equally important factors for this undesirable situation, the fundamental reason for this issue is largely that rapid rural-urban growth has surpassed governments' capacity to provide and maintain essential social services, including proper sanitation and improved waste management (Mensah and Owusu, 2019). Urban populations are growing exponentially, with 95% of this growth rate occurring in cities of developing nations (Hoornweg and Perinaz, 2012, cited in Mensah and Owusu, 2019). Consequently, this escalating urbanization exacerbates the challenges of managing sanitation and solid waste in developing countries, thus exerting pressure on the existing limited resources.

A Joint Monitoring Report by WHO and UNICEF (2014) reveals that nearly 2.3 billion people lack access to improved sanitation, while nearly 1.1 billion people in the world today practice open defecation (UNICEF, 2012), particularly in developing countries including Ghana. In terms of waste generation and management, studies reveal that over 2.0 billion tons of municipal solid waste is generated annually, however, 33% of the generated solid waste is managed through open dumping or burning (World Bank, 2022) specifically in Africa with Ghana being a part of this situation. The trend in solid waste generation across the world is expected to rise marginally to 2.40 billion tons by 2050 (World Bank, 2022) despite several global measures in this sector. This practice poses a global health challenge, affecting almost 1 billion people around the world and contributing significantly to the estimated 842,000 people who die annually due to poor sanitation and improper waste management practices (WHO/UNICEF, 2014) with Sub-Saharan Africa being the worst affected (WHO, 2019).

Ghana faces serious sanitation and solid waste management challenges and the report by the World Bank in 2012 confirmed that nearly 20 million people in Ghana remain without access to basic sanitation with 5 million people having no access to toilet facilities (World Bank, 2012). In 2018, the United Nations Environment Program (UNEP) ranked Ghana among the ten dirtiest countries in the world (UNEP, 2018, as cited in Sarfo-Mensa et al., 2019). It was expected that this outlook would have served as an early warning signal to Metropolitan, Municipal, and District Assemblies (MMDAs) across the country to initiate and expand existing transformative mechanism to avert this situation, having recorded this abysmal performance in sanitation and waste management sub-sector.

Ghana spends nearly 420 million cedis each year on sanitation and waste management, which is equivalent to US$290 million Water and Sanitation Program (Water and Sanitation Programme, 2012). Unfortunately, however, this intervention is unsustainable due mainly to a lack of community participation and ownership. Inadequate awareness and unfavourable socio-economic conditions make the end users in peri-urban, cities, and urban areas, the most vulnerable to the adverse impacts of poor sanitation and solid waste management practices.

In the Techiman South District, the situation is as bad as the nationwide scenario (Addo et al., 2020; Mwinkom et al., 2018; Damnyag et al., 2014). Studies revealed that sanitation and solid

waste including garbage accumulation, street littering, clogged gutters, and drains have become literally the norm in the Techiman South District (Mwinkom et al., 2018; Addo et al., 2020) and posing a challenge to residents of the district (Mwinkom et al., 2018). This growing body of evidence points to the fact that there is inadequate awareness and a lack of attitudinal change among citizens regarding sanitation and solid waste management, yet little attention has been focused on the application of social and behaviour change communication to influence positive behaviour change largely because of lack of recognition of communication's potential in contributing towards the improvement of sanitation and solid waste management practices (Estrada and Park, 2018). There is the need to investigate how Social and Behaviour Change Communication (SBCC) as a relevant factor in addressing the situation at Techiman South. The study seeks to investigate the following questions:

i) How are enablers of communication influencing people's knowledge, attitudes, and behaviour toward sanitation and solid waste management practices in the Techiman South District?
ii) What are the prospects and challenges of the behaviour change interventions in promoting improved sanitation and solid waste management in the Techiman South?

2. Review of Related Literature
Strategies of Social and Behaviour Change Communication on Sanitation and Solid Waste Management

Health communication has evolved to address barriers and promote healthful behaviours among individuals and groups. The shift from Behaviour Change Communication (BCC) to Social and Behaviour Change Communication (SBCC) reflects the emphasis on considering the social context, systems, and processes that influence health conditions. Initially, health education and Information, Education, and Communication (IEC) approaches dominated, but they often overlooked people's perspectives and failed to yield expected health outcomes (WHO, 2001 cited in Nancy and Dongre (2021). The Social Marketing Approach brought consumer analysis to the forefront but lacked emphasis on correct product usage. BCC filled the gap by focusing on evidence-based communication to promote behavioural change. However, recognising that behaviours are shaped by the social and ecological context, SBCC emerged as an extension of BCC, incorporating support for the social environment in which individuals live (USAID, 2020). SBCC is grounded on three strategies, namely, Advocacy, Social Mobilisation, and Behaviour Change Communication.

Advocacy is a continuous and adaptive process of gathering, organising, and formulating information into an argument, to be communicated to decision-makers through various interpersonal and media channels, to influence their decision towards raising resources or political and social leadership acceptance and commitment to a development program, thereby preparing a society for its acceptance (C-Change, 2012). USAID (2020) also reports that advocacy is a key and primary strategy that SBCC uses in addition to capacity-building interventions aimed at strengthening the existing government systems at all levels and ensuring appropriate support and active involvement in achieving project objectives by enhancing active engagement with concerned stakeholders. Stakeholder engagement may take many forms at national, regional, district, and even zonal or community levels. Setting up SBCC technical advisory groups offers a

way for stakeholders to provide technical input throughout an entire development process (World Food Program, 2019). Engaging influential people within various levels to become advocates of behaviour change helps to give community members the sense that they have a voice and are heard, and they feel that the government in which they are prepared to place trust is listening to their concerns and responding to their preferences.

Designing well-developed media messages and applying them go a long way in bringing the much-needed change in sanitation and solid waste management practices. Scandlen (2004), posited that social advocacy does not minimise the importance of individual changes but, instead, he strongly argued that the latter requires changes in social conditions because external conditions are responsible for health issues, the social advocacy strategy should target those conditions instead of concentrating on lifestyle behaviours. One of the types of advocacies used in bringing about change in behaviour against poor sanitation and solid waste management is Community or Programme Advocacy. Green et al. (2010) stated that program advocacy consists of many information activities, such as lobbying with decision-makers through personal contacts and direct mail; holding seminars, rallies, and news-making events; ensuring regular newspaper, magazine, television, and radio coverage and obtaining endorsements from known people. The goal of advocacy is to make innovations a political or national priority that cannot be swept aside with a change in government. Another type of advocacy useful in addressing the problem of sanitation and solid waste management is policy advocacy which uses data and approaches to advocate to senior politicians and administrators about the impact of the issue at the national level, and the need for actions such as social mobilization towards resolving it.

Social mobilisation is one of the strategies of SBCC. It is a process that engages and motivates a wide range of partners and allies at national and local levels to raise awareness of and demand for a particular development objective through dialogue. It seeks to facilitate change through a range of players engaged in interrelated and complementary efforts (UNICEF, 2014). The goal of sanitation and solid waste management promotion is to facilitate the environmental conditions to support healthy behaviours. Members of institutions, community networks, civic and religious groups, and others work in a coordinated way to reach specific groups of people for dialogue with planned messages which are interlinked closely with media advocacy. Scandlen (2004) views social mobilisation as the glue that binds advocacy programmes to more planned and researched communication activities. It strengthens advocacy efforts and relates them to social marketing activities. Anaeto and Solo-Anaeto (2010) view social marketing as a systematic application of marketing principles and techniques to achieve behavioural goals for societal good. It is concerned with inducing positive change in the attitude and behaviour of the target audience and makes it possible to add efforts from different groups to reach all levels of society by engaging in different activities such as service delivery, mobilising resources, providing new channels for communication, providing training and logistical support for field workers, and managing field workers.

Behaviour Change Communication (BCC) evolved from two concepts; Health Education (HE) and Information, Education, and Communication (WHO, 2001) cited in Nancy and Dongre (2021). Both concepts attempted to disseminate information aimed at reinforcing some set of positive behaviours. Eventually, the two concepts transformed to become BCC, which is an extension of both Health Education and Information, Education and Communication. BCC is action-oriented and it is concerned with creating a congenial atmosphere for people to change their behaviours from negative behaviour to positive behaviour (National Health Mission, 2020). Strategic use of

BCC applies targeted messages and tailored approaches to promote healthy behaviours like maintaining good sanitation and solid waste management practices.

The concept of BCC is an interactive process with communities to develop tailored messages and approaches using a variety of communication channels to develop positive behaviours; and promote and sustain individual, community, and societal behaviour change; and maintain appropriate behaviours (FHI, 2002) cited in Ngigi and Busolo (2018). The Centre for Disease Control (CDC, 2018) also reports that BCC is the strategic use of communication to promote positive health outcomes, based on proven theories and models of behaviour change. It employs a systematic process beginning with formative research and behaviour analysis, followed by communication planning, implementation, and monitoring and evaluation. Audiences are carefully segmented, messages and materials are pre-tested, and both mass media and interpersonal channels are used to achieve defined behavioural objectives. This means it is evidence-based behavioural change and demand creation approaches which guide sanitation and waste management behaviour change intervention efforts USAID (2020) and uses communication to promote behaviours that lead to improvements in health outcomes intended to promote the necessary actions in the home, community, health facility, or society. These definitions all regard BCC as a process of working with individuals or groups of people, communities, and societies using communication strategies to promote positive behaviour and offer a supportive environment that enables people to imitate and sustain positive behaviours (Agba, 2019). To find an alternative intervention for addressing sanitation and waste management challenges in the study area, the researchers employed BCC as part of identifying drivers associated with the targeted behaviour regarding sanitation and solid waste management among residents in the Techiman South District.

Achieving successful sanitation and solid waste management require effective social and behavioural change. However, maintaining behaviour change over an extended period remains a challenge due to various factors. Limited capacity training and the availability of professionals and resources, including advertising agencies and media outlets, hinder the implementation of Social and Behaviour Change Communication (SBCC) programs. A study by Mensah and Owusu (2019) revealed that communication and information gaps are major barriers to improving sanitation and solid waste management. Duty-bearers often fail to consistently communicate relevant information to communities, impeding knowledge enrichment and empowerment. Methods used to communicate SBCC information also pose significant challenges, because one-way mass media channels such as posters, radio talks, brochures, and booklets may not effectively create the desired behavioural change. People need the opportunity to relate information to their own experiences, perceptions, and cultural backgrounds to enhance understanding and application of knowledge (Soyiri, 2017).

Yukalang et al. (2017) corroborated the issue of poor communication in sanitation and solid waste management, emphasizing that the lack of information coupled with inappropriate communication media. Antwi-Agyei et al. (2020) conclude that appropriate communication and information dissemination can demystify sanitation and solid waste management issues and positively impact social and behaviour change. Addressing these communication barriers is crucial for the effectiveness of sanitation and solid waste management interventions, and this requires more comprehensive and contextually relevant SBCC approaches to promote sustainable change in communities (Soyiri, 2017).

3. Enablers of Communication on Sanitation and Solid Waste Management

SBCC is an evidence-oriented approach that utilises various communication channels and resources to influence behaviours and improve health outcomes. It leverages mass media, mobile platforms, schools, religious bodies, interpersonal communication, and community-based channels to achieve a desired effect. Effective SBCC is essential at all stages of healthcare service delivery, including before, during, and after service provision. Before service delivery, SBCC helps create demand for health services and influences norms. During service delivery, it enhances patient experiences and supports behaviour change through improved counselling and support. After delivery service, SBCC aids in the follow-up and maintenance of behavioural changes. It also contributes to consistent service demand and access through mobilization and advocacy.

SBCC is an effective tool that can address sanitation and solid waste management challenges in the Techiman South. SBCC, through theory-based, and research-driven communication processes and strategies can influence individual and collective behaviours related to sanitation and waste management practices and foster sustainable societal development and public health improvements.

2.1 Theoretical Framework

The study is anchored on the Social Ecological Model (SEM). The study adopts SEM, which recognises the interlinking relationship that exists between an individual and their environment (Starovoytova & Namang, 2018). These determinants are individual, interpersonal, community, organisational and policy-enabling environments. The model addresses the complexities and interdependences between socioeconomic, cultural, political, environmental, organisational, psychological, and biological determinants of behaviour (Gombachicka et al., 2012). This model is found to be appropriate for this study since sanitation and solid waste management are issues that are multifaceted in nature and demand a multifaceted approach in tackling the issues.

4. Methodology

The study employed a mixed-methods approach, specifically using a concurrent-parallel design (Creswell and Creswell, 2018; Jensen, 2020). This choice was made to enhance the study's credibility by comparing and validating findings from both quantitative and qualitative data sources. It helped to produce a more complete picture and provided an opportunity for a greater assortment of divergent and or complementary views that are valuable as they not only lead to extra reflection and enrich our understanding of the phenomenon under investigation but also open new avenues for future inquiries (Jensen, 2020; Teddlie and Tashakkori, 2009). Hence, it brings a variety of data in the approach to answering a research question (Creswell and Creswell, 2018). Quantitative data was collected using survey questionnaires while qualitative data was collected using semi-structured interviews comprising both interviews and focus group discussions. Simple random sampling was used to select 197 respondents from the study's electoral areas-Kenten Electoral Area and Dagombaline Electoral Area (see Table one) respectively for the quantitative data. It was done using the lottery method to randomly select participants from the study's electoral areas. This was to afford residents of the study areas an equal opportunity to be selected to participate in the study. Fifteen of the participants, made up of Assembly members, Unit Committee members, Techiman Environmental Officers, Chiefs, and Officials of Zoomlion Company limited were selected using a purposive sampling approach. Qualitative data analysis was done through thematic analysis while quantitative data was processed with Statistical Package for Social Science (SPSS 16v) software. Specifically, the software was also utilised to compare

and analyse the results of various variables in the form of frequencies and other descriptive statistics.

Table 1: Selected electoral areas used for the study

Name of Electoral Area	Total Registered Voters
1. Kenten Electoral Area	Seven Thousand and Eighty-Nine (7,089)
2. Dagombaline Electoral Area	Four Thousand and Seventy-Four (4074)

Source: Field Data (2023)

3.2 Profile of Study Area

The Techiman South District is one of the 260 Metropolitan, Municipal, and District Assemblies (MMDAs) in Ghana, located within the Bono East Region. Its administrative centre is Techiman. Geographically, it sits in the central part of the Bono East Region, spanning between longitude 10°49' East and 20°30' west and latitude 80°00' North and 70°35' south. The establishment of the Municipal Assembly was formalized by Legislative Instrument (L.I) 2096, and it covers a land area of approximately 649.0714 square kilometers (GSS, 2014b). It shares its borders with four other districts: Techiman North District, Wenchi, and Nkoranza South Municipalities in the Bono East Region, and Offinso North in the Ashanti Region. Techiman, the municipal capital, serves as a central hub, with major roads converging from Sunyani, Kumasi, Wa, and Tamale, making it a bustling commercial centre operating around the clock.

Agriculture and related trade are the primary economic activities in the Municipality. The main crops cultivated include staple foods like yams, potatoes, maize, cassava, cocoyam, and plantains. Vegetables such as tomatoes, garden eggs, pepper, and okra are grown, along with cash crops like cocoa, cashews, mangoes, oranges, and ground nuts. Traditional farming methods like shifting cultivation, rotational bush fallow, and slash-and-burn are commonly practiced. Livestock farming is also prevalent, with chickens, guinea fowls, goats, and sheep being raised, among other animals. Agriculture remains rain-fed, relying on both soil fertility and chemical fertilizer for productivity. The irrigation potential has not been fully explored yet (GSS, 2014b). The days for the market activities start from Wednesday and end on Friday of every week although trading occurs throughout the week. Items traded include foodstuffs (yam, vegetables, and grains) and livestock. Techiman has a relatively high consumption rate due to the increasing Annual Mean Per Capita household consumption expenditure (GSS, 2014b).
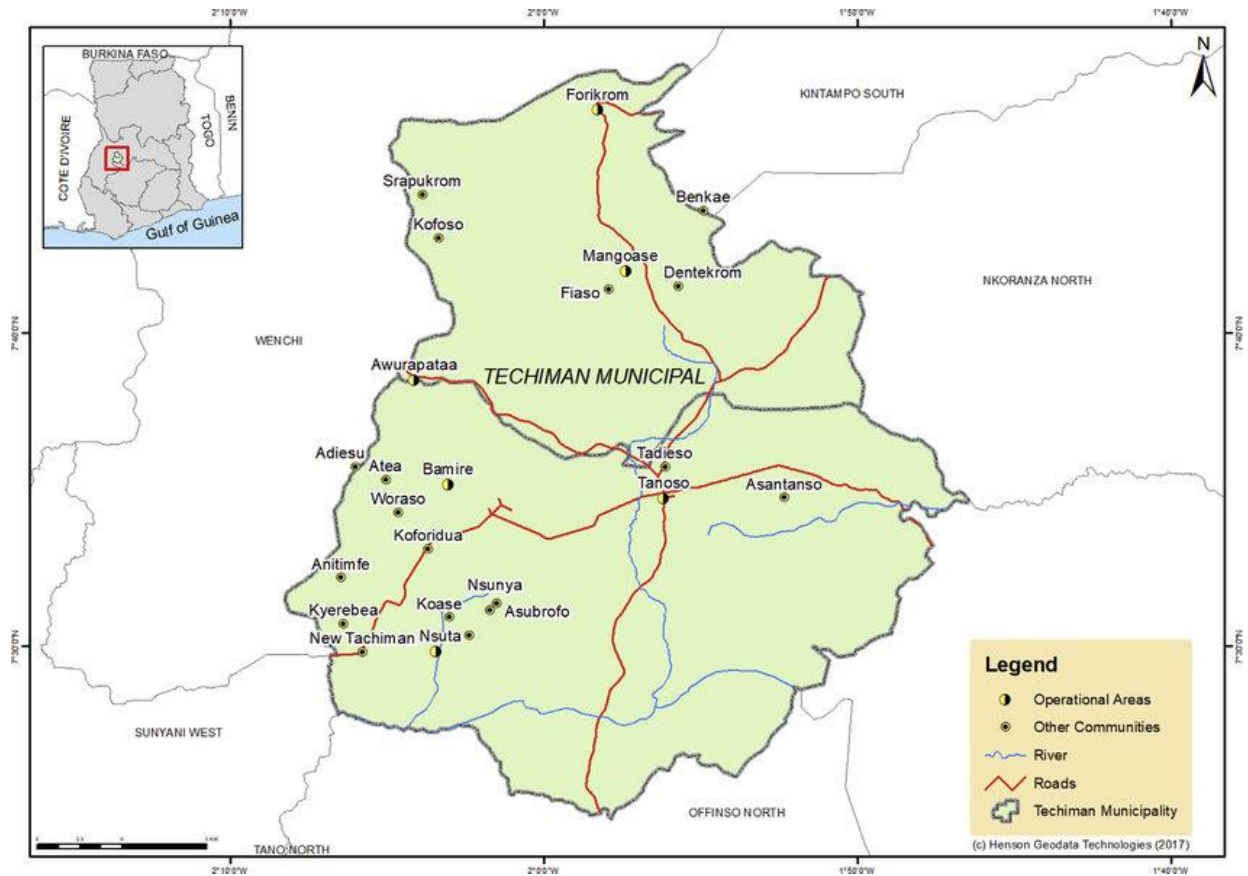
Figure 1: A map of Techiman South

SOURCE: Darkwah, Kwawu, Agyire-Tettey and Sarpong, 2019

4   Findings and Discussion

7.1 The Role of Social and Behaviour Change Communication Strategies

Sanitation and the management of solid waste are pressing issues for Ghana, and the Techiman South District is not immune to these challenges. As noted by Lissah et al. (2021), the substantial population growth and rapid urbanisation in Ghana's urban areas have led to the accumulation of substantial volumes of solid waste, surpassing the capacity of local authorities to effectively handle and dispose of this waste in a sanitary manner.

The complexities in managing waste due to challenges in the district, the role of social and behavioural change communication strategies is multifaceted, involving actions on the part of community members and local authorities. Promoting awareness, knowledge, and positive behaviour change can help communities adopt sustainable sanitation and waste management practices. However, disseminating information on sanitation and solid waste management was found to be a problem because of the communication gap between the residents and the local authorities. During the focus group discussions at Kenten and Dagomba line, it was found that there is a gap in communication regarding information dissemination. Some of the respondents

indicated that "they never had any official coming to my area to educate us on sanitation." The Environmental Officer of Techiman Municipality affirmed this:

> There is a communication gap in disseminating sanitation and solid waste information in the Municipality to residents. The Municipal Assembly often intends to do so, but we cannot be due to circumstances beyond our control, which creates a communication gap. However, we sometimes use radio stations to educate people or send officials to do house-to-house information dissemination. (Interview, 20/01/2023).

On the communication gap, Zoomlion Ghana Limited's Supervisor in the Techiman Municipality also made the following comments:

> There is a communication gap because we do not provide people with information on sanitation and solid waste management. No agency provides information on sanitation and solid waste management practices to the people in the Municipality (Interview, 25/12/2022).

It was discovered that institutions and agencies whose core mandate is to ensure proper sanitation and waste management practices in the area do not participate in educating people on waste management practices. It was more disturbing as they justified the problem as not their job. The Zoomlion Ghana, private waste company indicated that they only stick to cleaning the public areas. Due to this breakdown of waste management communications on roles, people in the communities often throw plastics indiscriminately, believing that it is the work of Zoomlion Ghana to clean the communities and not their responsibility to keep their areas clean.

Communication plays an instrumental role in addressing barriers, shaping demand for and adopting preventive measures, and adopting practices related to good health. Effective communication is essential to addressing behavioural change through promoting educational interventions on sanitation management (Anyawu, 2014). On the impacts of effective communication on providing clear information on sanitation and solid waste management to promote sustainable practices, the Supervisor of Zoomlion Company Limited stated:

> Communication can help provide clear information on sanitation and solid waste management and change people's attitudes and behaviours towards sanitation and solid waste management. When there is adequate and precise information on sanitary practices, it will help reduce indiscriminate littering and motivate people to take the cleaning of their environment seriously (Interview, 25/12/2022).

The Environmental Officer at the Techiman Municipal Assembly also stated:

> People in the Municipality need to be educated on sanitation and waste management practices, as effective communication can help people clean their environment and change their behaviour (Interview, 20/01/2023).

When further questioned about the role of communication and its relationship with sanitary attitude, the respondents indicated that:

> The behaviour of people in the neighbourhood shows that they lack education and information on sanitation and solid waste management. People throw rubbish expecting Zoomlion to clean them; therefore, effective communication can educate them and promote sustainable sanitation (P1, FGD – Dagomba Line 17/01/2023).

Anyanwu (2014) posits that effective communication plays a key role in behavioural change, which demonstrates that the social context influences the behaviour of the respondents thus, extending social and behaviour change communication to addressing sanitation and waste

management challenges can help influence and educate the people on sustainable waste management practices.

7.2 The Effectiveness of Social and Behaviour Change Communication Strategies and their Usefulness in Enhancing Individual and Community Behaviour

Respondents of the study expressed their views about ways through which information about waste management can spread. Figure 4 shows the various channels through which respondents receive information about waste management and sanitation activities.
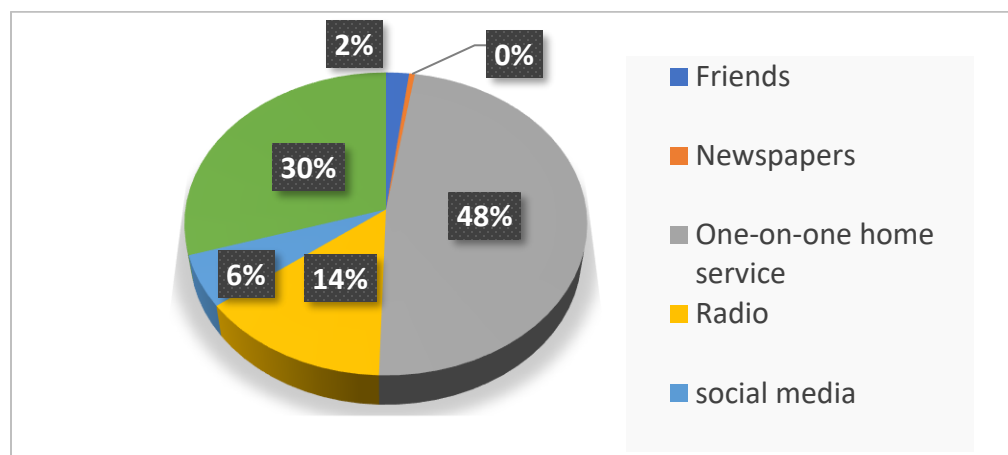

Figure 4: Effective channels of receiving information on waste management and sanitation activities

Source: Field Data (2023)

5.3 Community Mobilisation

Community mobilisation is a practical approach to waste and sanitation management. Mobilising communities can help raise awareness about waste management issues, promote sustainable waste management practices and encourage community involvement in waste management initiatives (Thakur, Parida & Raj, 2022; Ngwu, 2017).

Table 2: Community mobilization assessment

Community Mobilization Assessment	Frequency	
Community Mobilization in tackling waste management		
Yes	32	16.2
No	172	86.9
Availability of planning input ideas		
Yes	26	81.3
No	6	18.8
Input Actions		
Yes	22	84.6

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No	4	15.4
Service Providers and Educational Campaign		
Yes	14	53.8
No	12	46.2

Source: Field Data (2023)

The findings were backed by the Environmental Officer's statement that "the Municipal Assembly does organize educational campaigns once or twice a year." The respondents of Kenten also stated, "The Sanitary Inspectors ("SamaSama") used to educate the communities on the need to improve sanitation and solid waste management, but they have stopped their campaigns". The findings show that community mobilisation is essential in waste management and behavioural change communication. However, the current communication gap does account for the continuous pollution of the environment in the community. Ngwu (2017) stated that this is one of the biggest problems, which leads to the non-utilisation and acceptance of developmental waste management programmes because of the lack of involvement of service providers in adequate sensitisation and mobilisation.

This can also be attributed to the weak communication programme that has been put in policies on sanitation and waste management actions, of which 92.9% of the respondents agree. Because of the gap, the community needs to get involved in sanitation and solid waste management. Most of the respondents (99%) believe that the community needs to get involved in sanitation and waste management practices. According to Serge-Kubanza (2021), community involvement can increase knowledge and awareness of the causes and consequences of waste problems, as well as the potential solutions and benefits of waste reduction, reuse, and recycling. This aligns with the Social-Ecological Model (SEM), which considers behaviour within a broader context, taking into account individual, interpersonal, community, and societal factors. SBCC strategies based on SEM will target multiple levels of influence. For example, interventions may focus on individual knowledge and skills (intrapersonal level), social networks and peer influence (interpersonal level), community norms and resources (community level), and policy or environmental factors (societal level). The researchers assessed the comprehensive impact of SBCC strategies on enhancing behaviours related to sanitation and waste management.

7.4 Social and Behaviour Change Communication Interventions

Effective communication shapes individuals' knowledge, attitudes, and behaviours toward sanitation and solid waste management practices. In the context of Techiman South District, several enablers or mediums of communication can contribute to positive change and promote sustainable waste management practices. The media, for instance, is an essential tool in communicating positive changes in waste management practices. It was found that 94% of the respondents listen to the radio or watch television.

The intensity of exposure or how often a person has access to media outlets (TV and Radio) impacts knowledge level. According to Schafer and Schemer (2024) the media, particularly news media play a vital role in providing the information necessary for informed decision-making. Therefore, the relationship between news consumption, knowledge, and participation is of a high normative value. Based on the information gathered, it can be observed that a significant proportion of individuals in the Techiman South District watch TV or listen to the radio. This

indicates that television or radio has a high potential to reach and engage the community on sanitation and solid waste management messages. Furthermore, it was found that 47% of the respondents believe that the media has helped raise their awareness about sanitation and solid waste management. Almost half of the respondents' positive response suggests that the media has served as a tool for raising awareness about sanitation and solid waste management practices in the Techiman South District.

However, it is essential to acknowledge that a proportion of respondents (53%) indicated that the media has not helped raise their awareness about sanitation and solid waste management. This highlights the need for continuous efforts to improve and expand media initiatives in the district. The media should strive to reach a wider audience, ensure the relevance and accessibility of the information, and address any gaps in knowledge or understanding that individuals may have regarding waste management practices.

Effective communication is an instructional intervention that helps in education and BCC. Effective communication is essential in ensuring that general awareness is created on sanitation and solid waste management. Majority of the respondents (94.9%) believe there is a need for effective communication to provide clear information on sanitation and solid waste management to promote sustainable practices in their communities. This finding highlights the importance of effective communication in creating awareness about the implications of improper solid waste management. Nancy and Dongre (2021) had noted that emerging and re-emerging infectious diseases in the future need to be tackled by developing behavioural immunity through effective BCC strategies. According to the Supervisor of Zoomlion Company Limited:

> Effective communication can help provide clear information on sanitation and solid waste management and change in attitude and behaviour towards sanitation and solid waste management. People lack clear information on it, and therefore having clear information can help reduce indiscriminate littering and motivate people to take the cleaning of their surroundings seriously (Interview, 20/01/2023).

This underscores the point that clear and effective communication is essential for disseminating information, educating the community, and raising awareness about the significance of proper sanitation and solid waste management practices. The findings align with the observations of Kala and Bolia (2020) that stakeholders and individuals recognise the role of communication in empowering them with knowledge and enabling them to make informed decisions regarding waste management. House-to-house education and community mobilisation effectively promote good sanitation and proper solid waste management. Community mobilisation, participation and education can increase knowledge and awareness of the causes and consequences of waste problems and the potential solutions and benefits of waste reduction, reuse, and recycling (Serge Kubanza, 2021).

5.5 Challenges of Behaviour Change Interventions in Promoting Sanitation and Solid Waste Management in Techiman South District

Behaviour change interventions are crucial in promoting sanitation and solid waste management. They aim to influence individuals' attitudes, beliefs, and behaviours toward waste disposal, hygiene practices, and cleanliness. Figure 7 shows that 93.4% of the respondents viewed sanitation and solid waste management practices as facing problems in the Techiman South District. The reasons provided by the Kenten community members include bad behaviour, lack of awareness,

and low level of education, which shed light on the challenges faced in achieving adequate sanitation and solid waste management in the community (Mensah & Owusu, 2019).

Furthermore, the findings highlighted the area's main problems with current sanitation and solid waste management systems. From Table 6, 54.5% of the respondents indicated that waste lying around is a significant problem in the area. The Supervisor of Zoomlion Ghana Limited in the Municipality stated, "Plastic materials are often littered in the environment, which often choke gutters leading to the release of bad smell in the community (Interview, 17/01/2023)." This suggests that improper waste disposal and inadequate collection services contribute to waste accumulation in the area.

About 5.6% of the respondents identified flies as a problem associated with the current sanitation and solid waste management systems in the Techiman South District. Furthermore, about 6.6% of the respondents indicated that they did not perceive any specific problems with the current sanitation and solid waste management systems. This suggests that a small portion of the respondents did not observe any significant issues or claimed they were unaware of the prevailing insanitary problems. A minimal percentage (0.5%) of respondents reported other problems not explicitly listed in the options provided. The nature of these problems is not specified in the data, but it indicates the possibility of additional challenges not covered by the provided response categories. In their research titled "Solid Waste Management Challenges in Urban Areas of Ghana: A Case Study of Bawku Municipality," Douti et al. (2017) noted that insanitary environment could lead to the proliferation of disease-carrying pests and create grounds for serious public and environmental health hazards as previously reported by Oteng-Ababio et al. (2013).

5. Conclusion and Recommendations

The study concludes that while many individuals rely on waste management services, there is a deficit in the dissemination of crucial information related to these services. This knowledge gap is perpetuated by various barriers, including financial constraints, logistical challenges, social and environmental factors, and organizational limitations. Limited presence of penalties for waste management offenders is a pointer for more effective enforcement mechanisms and heightened public awareness.

Community mobilisation efforts in sanitation and waste management appear to be inadequate, primarily due to a lack of active participation by the communities. Weak communication programmes within sanitation policies further exacerbate this issue, underscoring the need for enhanced community involvement. Education emerges as a pivotal factor in instilling positive attitudes and behaviours regarding sanitation and waste management. However, the findings highlight that a significant proportion of respondents do not receive adequate sanitation education, indicating a failure on the part of agencies providing environmental services and the media to disseminate essential information on proper waste management and disposal practices in communities. The implication of this development is that multi-sectoral collaboration and dialogue towards tackling waste management issues has been taken for granted for some time, though it can be the cornerstone to awaken people to take charge of finding sustainable solutions to the menace of improper solid waste management.

The study recommends community engagement as one of the functional ways of addressing sanitation challenges. Community-based programmes that encourage active participation in sanitation and waste management should be launched by the district environmental office in collaboration with local media organizations to promote good sanitation and proper solid waste management. Community leaders need to be proactive by mobilising and educating people to regularly keep their surroundings clean and how to properly dispose of their garbage.

There is a need to strengthen information dissemination in the communities. Government and waste management service providers, especially in the Techiman South district, should allocate more resources to improve the dissemination of information regarding sanitation and waste management services. If service providers are appropriately resourced, it is possible to develop and implement sanitation education campaigns, using multi-media channels to target all age groups, with a particular focus on communities and schools in the study area. These campaigns should emphasize the importance of proper sanitation and waste management practices for good health and environmental sustenance.

Data Availability statement/Data Access Statement

We agree to make data and materials supporting the results or analyses presented in our paper available on reasonable request, unless we are unable to do so for ethical, privacy, or security concerns. For ethical, privacy or security reasons, we may be unable to do so when the request has the tendency to cause psychological or other harm to those connected to the study and if it may lead to breach of confidentiality or conflict.

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