

Challenges Faced by the Media in an Attempt to Play Their Roles in Public Awareness on Waste Management in Buea and Douala

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ABSTRACT

This study set out to examine challenges faced by the media in their attempt to play their roles in public awareness on waste management in Buea and Douala in the Southwest and Littoral Regions of Cameroon. The study was supported by the Agenda Setting Theory (1972) by McCombs and Shaw, Knowledge Gap Theory (1970) by Philip Tichenor, George Donohue and Claire Olien, and the Transtheoretical Model also called the Stages of Change Model developed by Prochaska and Diclemente, (1970). It employed a concurrent nested mixed-method combining quantitative and qualitative approaches in a survey design. The estimated sample size comprised of 415 community members involved in the study conveniently. As for other stakeholders, notably, Community Leaders, Media Houses, Waste Disposal Companies and Municipal Councils, they were sampled purposively and conveniently. The study was stratified between French and English speaking Cameroon. Data were collected using a semi-structured questionnaire and analyzed based on frequency, proportions and the process of thematic analysis. The qualitative approach was substantiated by the positivism paradigm considering qualitative interpretation as the dominant theoretical perspective. The main challenge was poor or no audience, that is people not interested in news related to waste management, environment, hygiene and sanitation and inadequate coverage. They suggested as response measures adequate sensitization and education of the communities on waste management; more attractive slots and time, programmes or mechanisms to gain the attention of people. It was recommended that social media, community radio and television should be further used to create awareness on issues concerning waste disposal and management, and helping media to be adequately equipped.

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KEYWORDS: Media, Public, Awareness, Waste, Management, Challenges

INTRODUCTION

Within the past few decades, Cameroon just like other developing countries is experiencing rapid growth in the generation of wastes (Minghua *et al.*, 2009; Guerro *et al.*, 2013). Waste management has become a matter of global concern and it is becoming apparent that the systems of waste management in most cities and towns are collapsing and thus, having a devastating impact on both the environment and public health (Pitchel, 2005).

Nearly all human activities generate waste and its management is a major concern (Hasan, 1996). Humans are therefore, the key element in the waste cycle; as they are responsible for the extraction and

processing of resources such as food products, papers, plastics, chemicals and the manufacture of automobiles (Miller, 2001) and other motor-based equipment. It is for this reason therefore, that much effort is needed to manage and control waste in our homes, communities, towns, cities, countries and the world as a whole so as to avoid devastating and hazardous consequences on our health and the local and global environment (UNEP, 2009).

Despite the fact that the government of Cameroon has taken cognizant of the need for immediate attention on issues concerning waste and notably the growing e-waste, little has been done in facilitating measures

being put in place for various waste management projects. Of all the types of wastes found in Cameroon, hazardous waste has been generated in an alarming rate despite unavailability of proper disposal facilities. This could be attributed to increased unplanned and unmanaged urbanization, industrialization, rapid population explosion in towns and cities and rapid economic growth while paradoxically, waste disposal and management facilities does not follow. According to Global Waste Management Goals (UNEP, 2015), total solid waste per year is estimated at 7 to 10 billion tons. Of this, about 2 billion tons is municipal solid waste (MSW). Meanwhile, Palouma (2013) confirmed that Cameroon generates approximately 6.0 million tons of municipal waste per annum; and this is not properly managed thus causing a significant environmental and public health hazard. The rate of waste generation now exceeds the capacity of local municipalities to deal with it due to inadequate infrastructure, financial resources, organizational capacity and technical expertise (Sujuddin *et al.*, 2008). Jackson (2005) opined that policy makers and municipal authorities have failed in meeting up with the socio-economic aspirations of the population with regards to proper waste disposal and management. The issue of waste has been looked upon as a mere 'removal and disposal' (Morrissey & Browne, 2004) which is far short of the problem.

In Cameroon however, efforts have been geared towards proper disposal and management of wastes in different municipalities. It is for this reason that the role of media in public awareness on waste management is very paramount, since the media is a key platform in public awareness creation resulting to behavioural change on important issues affecting society, of which waste management is one of them.

According to the UK Environmental Protection Act of 1990, waste can be defined as any scrap material or unwanted extra substance or article that needs disposal because it is broken, worn out, contaminated or otherwise polluted. The Basel Convention (2010) on the other hand defines wastes as substances or objects which are disposed of or are intended to be disposed of or are required to be disposed of by the provisions of national law. In other words, wastes which are the outcome of human activities or by-product of the materials consumed by man are those substances or objects which fall out of the business cycle or chain of utility that requires them to be discarded. The inability of man to deal decisively with these wastes has created both environmental and health problems (Bradshaw *et al.*, 1992). According to Arora (2004), waste management or waste disposal

is all the activities and actions required to manage waste from its inception to its final disposal. This includes amongst other things, collection, transport, treatment and disposal of waste together with monitoring and regulation.

Municipal waste management is a crucial problem that is experienced by all countries in the world. It is an issue mostly witnessed in urban areas as a result of high surge in population growth rate and increase in per capita income. Due to the nature of the operations involved, waste management has remained one of the major environmental problems man continues to face, and poses a danger to environmental quality and human health (Javaheri, 2006). The main sources of waste in urban areas are households, commercial centers, communal markets, industries, and waste resulting from demolition and construction work. When poorly managed however, it becomes an environmental and health hazard. WHO (2010) reports that the accumulation of wastes, open dumping, defecating and urinating in open land, in and around human settlements and work areas, is very widespread and suggest that good waste management systems are so important for protecting human health, keeping our planet in good shape, and ensuring that all our waste is put to good use.

Throughout history, information dissemination has been at the center of human development and actions. Various means and channels have been used and recently, with the advancement of technology, fast and efficient systems and mediums are being employed. It is this array of channels and actors that constitute the media which is highly implicated in the creation of awareness on issues of public interest such as waste management.

The term media is derived from the word medium, which means carrier. It is specifically designed and meant to reach a large audience. Media was first limited only in the domains of newspapers and magazines. With the passage of time, the term was extended by the invention of radio, television, cinemas and internet. According to Bala (2012), the extensive impact of media on society and the environment can easily be seen nowadays especially with the advancement in technology and great expansion in the thoughts and ideas of towns and city dwellers. The media channels (radio, television, newspapers, magazines and most recently internet) are all the mass communication mediums which are catering for various interest of a large audience. While waste management remains a major issue due to its environmental and health impact, its coverage on mass media channels and platforms appears to be inadequate compared to other sectors of human life

which are considered to be more entertaining, economically rewarding and more dignifying. Due to its intrinsic ability to reach a large number of audience, it is commonly used to convey message on which public opinion is built and awareness created (Lewis, 2007). In addition, media is considered as “mirror” of the modern society, as it shapes our lives. It is the media which keeps the people updated and informed about what is happening around them and the world (Hoffman, 2013). Mass media therefore, should be an important and composite instrument in the crusade for proper waste management.

The contributions of media in creating public awareness on waste management are evident in Cameroon waste management actions especially as the media is assessed in its significant role of informing, educating and sensitizing the public on the devastating consequences of improper waste management in Cameroon (Achankeng, 2003). It is for this reason that the place of the media in creating adequate public awareness on waste management is very important.

Public awareness is an integral part of media and can be defined as the process of informing people about an organization, community or issues of public interest. In its most basic form, it consists of producing and distributing information on a regular basis on a specific issue. This requires knowledge and understanding that something is happening or exists. In the context of this study, it includes awareness creation on matters concerning waste management in Buea and Douala IV and the place of the media in this endeavour. It is paramount for the society to be aware of current happenings, attitudes and behaviours toward waste management through the various channels of mass communication.

Public awareness by the media is important in the fight against improper waste management. Creating awareness among the community and planners has been of paramount importance towards a healthy environmental and public health practice. It has been observed that many government services and Not-for-Profit Organizations have put in enormous efforts in creating awareness through sensitization and educative talks on matters concerning waste disposal and management. Despite these interventions, garbage, both domestic and industrial, is still dumped in unauthorized spaces, and in gutters and waterways. The efforts of various activists will prove to be successful only when media channels are involved in the continuous broadcast and dissemination of sensitization messages and awareness creation messages to the public.

The Cameroon government also promulgated a number of decrees and laws. Law No. 96/12 of 5th August 1996, specifies the general legal framework for environmental management in Cameroon. This law focuses on precaution, protection, corrective actions as well as prescribes Environmental Impact Assessment (EIA) for all projects that can lead to environmental degradation in Cameroon. In addition, there is Decree No. 2012/2609/PM of 26 September 2013 fixing the conditions for sorting, collection, stocking, transportation, recuperation, recycling, treatment and elimination of final waste. Also, Decree No. 2013/0171/PM of 14 February 2013 fixing modalities which concerns public awareness, waste disposal and management strategies have been put in place by some municipal councils. Some Councils have employed the services of a Hygiene and Sanitation Company notably *Hygiene et Salubrité du Cameroun* (HYSACAM). Its prime duty is to collect and dispose of wastes of each Municipal Council that is able to sign contract with them. Cameroonians saw this company as primordial to an extent in solving the acute problem of waste disposal and management in our towns and cities.

Despite the laws and regulations put in place, things have not gone in the expected direction. Towns and cities continue to be littered as people indiscriminately throw dirt and garbage on streets, highways, road junctions, gutters as well as in streams and rivers. This has far reaching consequences on the environment and health of the population. Malaria, diarrhea, dysentery, typhoid etc., are some of the illnesses common in our communities on a daily basis due to poor waste disposal and management. It is for this reason that the role of the media cannot be over-emphasized.

Statement of the problem

Some of the challenges related to waste management services are rudimentary especially in the area of collection and dumping since the current regulations do not sufficiently address waste disposal and management issues. In addition, there are inefficiencies in the implementation of waste management policies due to conflicting responsibilities between the numerous governmental agencies such as the Special Fund for Equipment and Inter-communal Intervention (FEICOM) and the Local Councils.

Cameroon, like other developing countries, is faced with the problems of high rates of waste disposal and management, lack of adequate public awareness creation, over population, rapid economic growth estimated at about 4% annually, compared to an annual population growth of about 2.7% (World

Bank, 2022). This problem stretches from collection, transportation, treatment, reuse, recycling, and recovery and disposal of waste, thus, making it difficult to evaluate and compare the present situation with other parts of the world (Ball, 2006). One of the causes is poor public awareness on how waste should be managed and this is a critical role of the media.

In our cities and towns, heaps of domestic and industrial wastes are found in nearly every available open space even where dust bins and trash cans are provided for by Municipal Councils. In the case of Buea and Douala IV, tons of municipal wastes are generated daily (Manga *et al.* 2008). According to Climate and Clean Air Coalition Municipal Solid Waste Initiative (2018), an estimated 694,483 tons of garbage were generated in Douala in 2018 while in Buea Municipality 19,862.4 tons of garbage was collected in 2019 (Bate, 2019). This volume of garbage which was dumped in landfills has devastating consequences on the environment and health of the population (Jain & Singh, 2013).

Dirty or filthy spots are the sources of diseases and when wastes or garbage mounts up bad smell will come from the scene. Also it has negative social and economic impact because there is no tourism for a dirty place. No one is going to spend their money to unclean places.

The technology, technical knowhow, financial capacity, culture, and required understanding of the community to properly manage solid wastes are not adequately available. Organic and inorganic waste especially plastic bags and bottles, and textiles littered in the cities and towns are also indicators of very low and inadequate education and awareness on waste disposal and management.

The behaviours and attitudes of the public indicate that, there is a weak response to household towards waste disposal and management. Since the primordial role of the media is to inform, educate and entertain as well as carry out social responsibilities to the public on issues concerning current happenings, it is necessary for the media to continue to play this paramount role in creating public awareness on the global issues concerning waste management. Evidence on media coverage on issues concerning waste management in Cameroon is scanty. It is for this reason that proper public awareness creation needs to be given to the inhabitants of Buea and Douala IV by media outlets. This study therefore examines the role of the media in creating public awareness on issues concerning waste management in Buea and Douala IV of the Southwest and Littoral Regions of Cameroon respectively.

Objective

Based on the statement of the problem and the issues raised in the background, the study seeks to investigate challenges faced by the media in an attempt to play its role on issues concerning waste management in Buea and Douala IV municipal Councils.

Significance of the study

The enormous role of media in educating and creating public awareness on critical issues affecting the society has been well established. The case of waste management is not different. This is because the media is seen as a very important development instrument to the society; as it gives relevant information about current happenings in the country and the world at large. Despite the multi-faceted roles played by the media, the aspect of public awareness creation as regards waste management may be considered not to be adequate especially in developing countries such as Cameroon. This study is therefore important in bringing to the fore the problems of waste management in two urban municipalities in Cameroon, the extent of media coverage and the important role of media in creating awareness with the view to solving the problems of waste management. The results obtained are also important in defining policies and strategies for waste management and the implications in the health, environment and tourism sectors. It will also contribute to new knowledge in the field of development-communication by informing, educating and sensitizing the public on the importance of proper hygiene and sanitization on issues concerning waste management.

Justification of the Study

The motivation to carry out this study stems from observations on the manner in which waste is managed in the Councils under study. In fact, it has been observed that most towns and cities in Cameroon are littered with huge heaps of dirt dumped everywhere in the streets, road junctions, market squares, streams, gutters, vegetated or forested unexploited land, and these causes unpleasant smell and environmental pollution and health hazards. It was therefore assessed that the media could have a significant role to play in creating awareness and sensitizing the population on the proper method to manage wastes.

Furthermore, personal interest on issues concerning pollution, environmental protection, hygiene and sanitation triggered interest in this research domain. The current poor waste management situation observed is evident that despite the contribution of the media with regards to awareness creation, this

intervention may not have been leading to the devastating consequences observed as a result of improper waste disposal and management.

Scope of the study

Conceptually, the study focuses on the challenges faced by media to raise public awareness as far as proper waste disposal and management are concerned.

Geographically, the study is limited to Buea and Douala IV Municipalities.

With respect to the time frame, it is a cross-sectional study carried out within 2023.

The study employed a survey design combining both quantitative and qualitative approach.

The study is substantiated by the Agenda Setting Theory developed by McCombs and Shaw in 2004 among others. It is the main theoretical framework guiding this study. The theory holds that repetition of an idea day after day by the media will make the idea stand out as very important. In other words, if an idea or an issue is given prominence by the media, it is likely going to be considered as important by the public. This theory was developed based on a study on the 1968 US Presidential election. The Knowledge Gap Theory developed by Tichenor *et al.* (1970) states that the mass media information influences the public according to their knowledge into a social system. This theory also confirms that the increase of information in society is not evenly acquired by every member of that society. Rather, people with higher socio-economic status tend to have better ability and exposure to acquire information (Weng, 2000). According to Fishbein (1975) and Ajzen (1980), Behavioural Change Theories are attempts to explain why human behaviours change. These theories cite environmental, personal, and behavioural characteristics as the major factors in behavioural determination. As for the Trans-theoretical Model (also called the Stages of Change Model), it was developed by some researchers in the 1970s. This model was created to help people to stop harmful behaviours. Today, the model has been useful in preventing habits from worsening. According to Prochaska and DiClemente (1970), this model was developed through studies, by examining the experiences of smokers who quit on their own with those requiring further treatment to understand why some people were capable of quitting on their own. This explains an individual's readiness to change their behaviour. It describes the process of behaviour change as occurring in stages. The Trans-Theoretical Model (TTM) holds that to progress through the

stages of change, people apply cognitive, affective, and evaluative processes. Ten processes of change have been identified with some processes being more relevant to a specific stage of change than other processes. These processes result in strategies that help people make and maintain change.

Research Design

This was a cross-sectional study employing a concurrent nested mixed-method combining quantitative and qualitative approaches in a survey design. However, for the qualitative study, the theoretical perspective was dominantly qualitative in a positivism consideration.

Area of study

The study was carried out in Buea and Douala IV Councils.

Population of the Study Sites

A population is the totality of persons, events, organization units, case record or other sampling units which concern the research problem. The population defines the limit within which the research findings are applicable. The study was conducted in the Buea and Douala IV Municipalities respectively and both female and male inhabitants of these municipalities were involved.

Table 1: Population of the municipalities under study

Municipalities	Population
Buea Municipality	377,130
Douala IV Municipality	1,027,526
Total	1,404,656

Source: Buea and Douala IV Council offices 2022.

Target population

The target population was estimated from the population above considering that 60% of the population of Cameroon is aged 16 years and above (NIS, 2013).

Table 2: The target population is made of inhabitants in the Buea and Douala IV Municipalities

Municipalities	Population	60% of the population
Buea	377,130	226,278
Douala IV	1,027,526	616,516
Total	1,404,656	842,794

Accessible Population

The accessible population considered those who could be reached for the administration of the questionnaire in the two municipalities. Risky and inaccessible areas were avoided.

Sample and Sampling Technique

Sample

According to Nana (2018), a sample is a proportion of a population under study which is estimated from the targeted population. For this study, the sample consisted of a portion of the population of Buea and Douala IV municipalities and the number for each was estimated as explained below.

Sample size was estimated using sample size calculation for one population proportion with the support of Epi Info 6.04d (CDC, 2001) as explained by Nana (2018).

$$n = \frac{NZ^2P(1-P)}{d^2(N-1)+Z^2P(1-P)}$$

Where:

N= total population here 842,794;

Z= Z value corresponding to the confidence level;

d= absolute precision;

P= expected proportion in the population;

n effective= n*design effect (DEFF).

The following additional parameters were used to estimate the sample size:

d= 5%

P= 50%, this value is used for optimal sample size.

DEFF=1.1 (greater than 1 because convenience sampling and not simple random sampling is used) as to improve the variability.

Confidence interval=95% giving a $Z_{\alpha/2}$ = level of significance = 1.96.

The sample size estimated based on the parameters above was 423 participants. This sample size was distributed to the two municipalities proportionately to the sizes of their population.

Table 3: Sample size per Municipality

Municipalities	Sample Size	Minimum*
Buea	114	91
Douala IV	309	248
Total	423	338

* Considering 80% return rate

From the above, 450 questionnaires were administered instead of 338 as proven from the above calculation. This was to make sure that one does not fall below the acceptable return rate of 80% in order to increase the degree of reliability of the results.

Sample Technique

Simple random and stratified sampling techniques were adopted to sample the municipalities. The simple random sampling consisted in balloting and drawing the municipalities for the study while the

stratified sampling was to give a representation of English and French Speaking Cameroonians.

Instrument and Measurement

Data were collected using a semi-structured questionnaire centered in gathering demographic information of the participants and their appraisal of challenges faced by media in raising public awareness with respect to proper waste disposal and management.

Validity and Reliability of Instruments

Mugenda *et al.* (2003), opined that a major concern in research is the validity of the procedures and conclusions. Nana (2018), Amin (2005) and Gay *et al.* (2000) further explained that validity is the quality of a data gathering instrument or procedure that enables it to measure what it is supposed to measure. A valid research finding is one in which there is similarity between the reality that exists in the world and the research results. Content validity, construct validity, face validity, internal validity and external validity were given prime attention. Guba's model for trustworthiness addresses ways for warding off biases in the results of qualitative analysis (Mohlokoane, 2004). In this study, however, the model is used to develop strategies that would introduce standards of quality assurance in the qualitative and quantitative analysis. The five strategies are identified in UNISA (2003). This considers credibility, transferability, comparability, dependability and conformability. The pilot study was conducted in municipalities not sampled for the study, notably Tiko and Douala I Municipalities. No major issue was reported with the data collection instrument but one respondent drew attention on certain aspects that were omitted in the questionnaire. During the Pilot study, the questionnaire was trial-tested using 20 participants whereby 10 were sampled from Southwest Region and 10 from the Littoral Region. Reliability analysis using Cronbach's Alpha was centered at appraising the internal consistency of responses. The internal consistency assumption was not violated with a Cronbach's Alpha reliability coefficient value of 0.868, greater than the acceptable 0.5 threshold. This therefore implies that the questionnaire items were understood and answered with a satisfactory level of objectivity. As for the qualitative study, the panel of judge method of reliability was employed in this study. The method is a palliative to most of test-pretest methods' problems. Rather than submitting people to the same questionnaire in two different occasions, this method allow two or more judges to appraise the data collection instrument, the indicators or the codes and then check for level of agreement.

Data management and analysis

Structured questions were analyzed using frequency and proportions and presented in tables and charts. As for textual data, they were analyzed using the process of thematic analysis whereby concepts or ideas were grouped under umbrella terms or key words. The primary documents of textual data were coded for every independent idea/concept as it emerged from the data and for frequency of occurrence following the positivism principle, but the interpretation of findings were dominantly qualitative. However, the frequency or grounding also reflects how many times a concept emerged and was a major indicator of emphasis. Precautions were taken to clearly determine the meaning of themes or umbrella terms and what they stand for. In the context of this study, to satisfy this requirement, findings were organized in code-grounding-quotation tables whereby themes or codes were clearly explained or described, followed by their grounding or frequency of occurrence and at the same time backed by their related quotations. The code-quotation table ensures the objectivity and reliability of qualitative analysis in the sense that if code/concepts/umbrella terms and their descriptions can be subjective to relative error, the quotations are grounded and real and thus helps compensate for potential interpretation bias (Nana, 2018).

Ethical Considerations

Each question distributed was accompanied by a cover letter informing the respondent about the purpose of the study, consequently giving them the option and confidence to decide whether to participate or not in the survey. By this, the ethical issue of informed consent was given adequate attention. Administrative clearance was also obtained from the University of Douala and the two Municipal Councils. Data were collected by well-trained research assistants and the principal researcher. Throughout the research process, it is essential that the rights and well-being of the participants are protected. From the time that the participants are recruited, through the data collection and analysis phases, to when the findings are being disseminated, researchers need to be aware of the ethical issues that can arise and have the appropriate safeguards in place (Mertens, 2010; Schram, 2006).

Findings

The findings of this study highlight the socio-demographic characteristics of the participants and their perception of problematic at stake.

Socio-demographic characteristics

Participants were really diversified in term of all the demographic characteristics, which was good for the diversity and representativeness of the sample.

Table 4: Socio-demographic characteristics

Sex	n	%
Male	207	47.4
Female	230	52.6
Age	n	%
18-24	294	67.3
25-34	92	21.1
35-44	31	7.1
45-54	13	3.0
55 and above	7	1.6
Marital status	n	%
Married	86	19.7
Single	332	76.0
Divorced	9	2.1
Widow/er	4	.9
Separated	6	1.4
Level of school attained	n	%
No Formal Education	17	3.9
Adult Education	36	8.2
Primary	5	1.1
Secondary	62	14.2
Vocational	62	14.2
University	255	58.4
Municipality	n	%
Buea	229	52.4
Douala	208	47.6
First official language	n	%
English	312	71.4
French	55	12.6
Bilingual	70	16.0

Sex

Both male and female were well represented in the sample, with proportion of 47.4% (207) and 52.6% (230) respectively.

Age

Participants were quite diversified in the ages, with the mode at 18-24 years having a proportion share of 67.3% (294).

Marital status

They were also diversified in their marital status with all the categories represented, with the mode being the single 76.0% (332).

Level of school attained

All the levels were represented and the mode was University level 58.4% (255).

Municipality

Buea had a share of 52.4% (229) and Douala 47.6% (208), which was proportionate to their population sizes.

First official language

The first official language was dominantly English, 71.4% (312), followed by those that were Bilingual 16.0% (700), then French 12.6% (55).

Localities

A total of 44 localities were sampled in Buea and 32 in Douala, covering both rural and urban area, thus testifying of a good geographical coverage.

From this description of the sample, we can realize that the stratification was good as it embodies the diversity of the population for the various characteristics, and the geographical coverage as well. These are major assets for the representativeness, reliability and validity of the findings. In fact, the characteristics of the sample are major parameters considered by the methodological technical requirements.

Awareness of media channels in Buea and Douala IV Municipalities

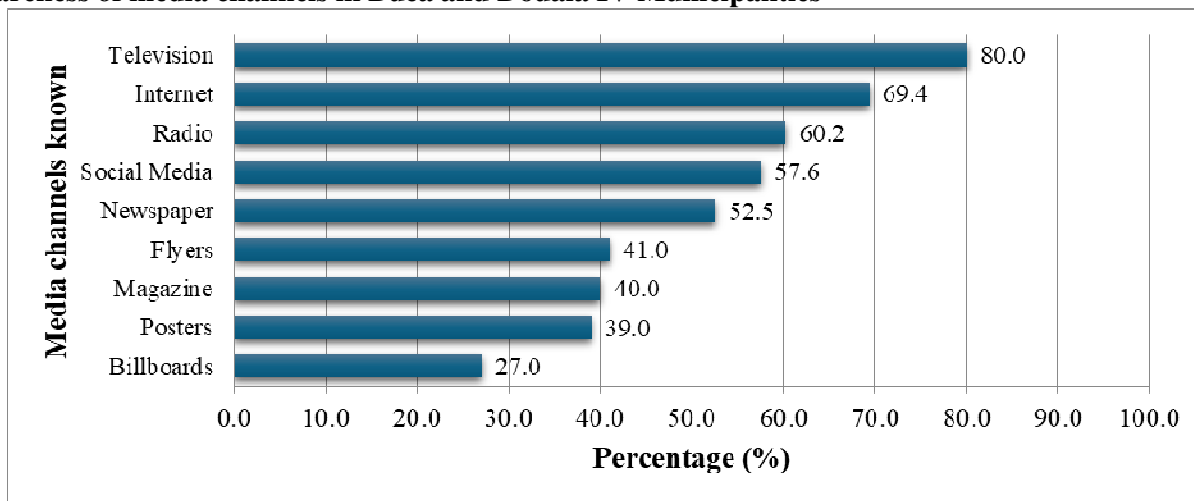


Figure 1: Awareness of media channels in Buea and Douala IV Municipalities

The results on the awareness of media channels with respect to waste management in Buea and Douala IV Municipalities are presented in Figure 1. The results obtained showed that television was the most known channel (80.0%) followed by internet with (69.4%) and Radio with (60.2%) while the least was billboards with 27.0%. This trend was to a large extent consistent across the two municipalities studied. In the Buea municipality, 75.1% of the respondents indicated that television is their main media channel of information on waste management while in Douala IV municipality, it was 85.0%. The least is billboards with 30.1% in Buea and 23.8% in Douala IV Municipalities respectively

Media channels used by respondents to get general information

The result of the survey on the use of the various media channels to get information by respondents in the two municipalities is presented in Table 5. Social media was the most used channel with 64.3% of the respondents who used it very often, followed by internet 62.7% and television 51.5%. The least percentages were recorded for all the print media channels—magazines (7.6%), billboards (7.3%), posters (7.1%), newspapers (13.3%) and flyers (7.1%).

Table 5: Frequency on Media channels used to get general information

Media	Very Often	Often	Sometimes	Rarely	Never
Magazines	7.6% (33)	3.4% (15)	14.4% (63)	28.4% (124)	46.2% (202)
Newspaper	13.3% (58)	11.0% (48)	20.8% (91)	23.1% (101)	31.8% (139)
Radio	23.1% (101)	17.2% (75)	24.5% (107)	10.5% (46)	24.7% (108)
Television	51.5% (225)	22.7% (99)	10.8% (47)	3.4% (15)	11.7% (51)
Internet	62.7% (274)	12.8% (56)	6.4% (28)	2.7% (12)	15.3% (67)

Billboards	7.3% (32)	10.5% (46)	15.8% (69)	15.3% (67)	51.0% (223)
Posters	7.1% (31)	16.7% (73)	24.9% (109)	14.9% (65)	36.4% (159)
Flyers	11.9% (52)	17.8% (78)	19.5% (85)	14.6% (64)	36.2% (158)
Social Media	64.3% (281)	11.9% (52)	6.9% (30)	1.8% (8)	15.1% (66)

Media channels used to get information on waste management

The media medium used in getting information on waste management was mostly social media, 59.0% (125), followed by television 47.6% (101), internet 47.2% (100), radio 17.0% (36) and newspapers for the top three.

Table 6: Media channels used to get information on waste management

Media	Very Often	Often	Sometimes	Rarely	Never
Magazines	6.6% (14)	5.2% (11)	8.0% (17)	21.2% (45)	59.0% (125)
Newspaper	9.0% (19)	11.8% (25)	18.4% (39)	16.0% (34)	44.8% (95)
Radio	17.0% (36)	25.0% (53)	18.9% (40)	5.7% (12)	33.5% (71)
Television	47.6% (101)	19.3% (41)	17.0% (36)	2.4% (5)	13.7% (29)
Internet	47.2% (100)	16.5% (35)	9.0% (19)	3.8% (8)	23.6% (50)
Billboards	1.9% (4)	10.4% (22)	12.7% (27)	16.5% (35)	58.5% (124)
Posters	8.0% (17)	11.3% (24)	22.2% (47)	15.1% (32)	43.4% (92)
Flyers	7.1% (15)	16.5% (35)	16.0% (34)	9.4% (20)	50.9% (108)
Social Media	59.0% (125)	17.5% (37)	6.6% (14)	1.4% (3)	15.6% (33)

Opinion on the role played by media in creating public awareness on issues concerning waste management in Buea and Douala IV Municipalities

On the role played by the media in creating public awareness on issues concerning waste management in the two municipalities surveyed, 76.9% (336) of the respondents admitted that the media has played a role. On the other hand, 12.4% (54) of the respondents said the media has not played any role while 10.8% (47) said they were not aware of the role played by the media in creating public awareness on issues concerning waste management in the study area.

Table 7: Opinion on the role played by media in creating public awareness on issues concerning waste management in Buea and Douala IV Municipalities

Media has played a role in creating public awareness on issues concerning waste management	Buea		Douala IV		Total	
	n	%	n	%	n	%
Yes	169	74.8	167	79.1	336	76.9
No	31	13.7	23	10.9	54	12.4
Not aware	26	11.5	21	10.0	47	10.8
Total	226	100.0	211	100.0	437	100.0

χ^2 -test: $\chi^2=1.216$; $df=2$; $P=0.545$

Extent to which media have contributed in creating public awareness on issues concerning waste management in Buea and Douala IV Municipalities

With respect to this parameter in the Buea Municipality, 67.9% (144) of the respondents said the media has contributed in a very large extent in creating public awareness on issues concerning waste management, while 24.1% (51) said the contribution of the media was very small. As concerns Douala IV Municipality, 72.4% (147)

were of the opinion that the media has contributed to a large extent and 22.2% (45) opined that the media contributed to a very small extent. The general opinions in the two municipalities were not significantly different.

Table 8: Extent to which media have contributed in creating public awareness on issues concerning waste management in Buea and Douala IV Municipalities

Municipality	Stats	Extent to which media has contributed in creating public awareness on issues concerning waste management			Total
		Very large extent	Small and very small extent	Undecided	
Buea	n	144	51	17	212
	%	67.9%	24.1%	8.0%	100.0%
Douala IV	n	147	45	11	203
	%	72.4%	22.2%	5.4%	100.0%
Total	n	291	96	28	415
	%	70.1%	23.1%	6.7%	100.0%

$$\chi^2\text{-test: } \chi^2=1.497; \text{ df}=2; \text{ P}=0.473$$

Media channels that have adequately contributed in creating public awareness on issues concerning waste management

Media channels that have adequately contributed in creating public awareness on issues concerning waste management was mostly television with a high proportion of very adequate contribution of 52.9% (231). This was followed by social media channels with 45.8% (200) and Internet with 43.0% (188) respondents respectively. From the data, the difference between these channels is not significant. The media channels that were assessed to have very inadequate contributions on issues concerning waste management were respectively flyers 7.6% (33), posters 6.9% (30) and billboards 3.0% (16).

Table 9: Media channels that have adequately contributed in creating public awareness on issues concerning waste management

Media	Very Adequate	Adequate	Inadequate	Very Inadequate	Not Aware
Magazines	9.4% (41)	16.7% (73)	12.1% (53)	6.4% (28)	55.4% (242)
Newspaper	14.2% (62)	25.2% (110)	10.3% (45)	6.4% (28)	43.9% (192)
Radio	27.7% (121)	28.1% (123)	9.4% (41)	2.1% (9)	32.7% (143)
Television	52.9% (231)	22.0% (96)	6.2% (27)	1.4% (6)	17.6% (77)
Internet	43.0% (188)	17.6% (77)	5.9% (26)	2.7% (12)	30.7% (134)
Billboards	3.7% (16)	12.1% (53)	14.4% (63)	7.8% (34)	62.0% (271)
Posters	6.9% (30)	19.5% (85)	14.2% (62)	9.4% (41)	50.1% (219)
Flyers	7.6% (33)	16.5% (72)	14.6% (64)	9.2% (40)	52.2% (228)
Social Media	45.8% (200)	19.7% (86)	5.5% (24)	3.4% (15)	25.6% (112)

Challenges faced by the media in an attempt to play their roles on issues concerning waste management

Table 10: Thematic analysis depicting challenges faced by the media in an attempt to play their roles on issues concerning waste management

Theme	Code description	Challenges		Response	Response measures to overcome challenges
		Number of respondents			
		n	%		
Inadequate sensitization	Population not sufficiently sensitize	83	19.6	Poor sensitisation of the population.	Continuous and intensive dissemination of

	on waste management			Poor method of communication on waste management issues. Lack of information or method of communication.	information on waste management.
Inadequate facilities	Inadequate waste disposal facilities	79	18.7	Not enough waste disposal vans Inadequate number of waste disposal containers	Waste collection institutions and the Councils should make available and place many waste collection containers in the council neighbourhoods.
Inadequate media coverage	Inadequate coverage as all quarters are not covered by media	72	17.0	There is no media channel particularly for sensitising and educating the population on issues of waste management. Insufficient allocation of space for the print media or broadcast slots for the audio-visual media channels. Inadequate logistical means to undertake field coverage on issues concerning waste management.	Media institutions should allocate sufficient space and broadcast slots for waste management issues. Adequate funds should be allocated for the acquisition of equipment and vehicles to facilitate field coverage of issues concerning waste management
Information / knowledge by the population	Inadequate information, education or knowledge on waste management by the population.	69	16.3	Lack of adequate information. Inadequate knowledge on methods of waste disposal.	Organisation of information workshops and seminars by Councils in partnership with Media Institutions.
Sensitization time	Inadequate sensitization time	53	12.5	Timing: most information especially TV and Radio do not reach the target due to inappropriate broadcast time. Lack of strategic timing. Print media are not regular in printing issues concerning waste management.	Use appropriate timing when broadcasting on waste management Print media outlets should regularly publish articles and pictures on waste management
Sensitization tools	Posters, Bill Boards, Magazines, Flyers, Pictures, TV, Radio, etc	49	11.6	Inadequate and in most places absence of sensitisation tools. No sensitisation tools. Billboard are not in the municipality. Where available, they are not properly placed and or properly written Weak usage of community information	Visible posters, bill boards, pictures should be placed at strategic points such as road junctions, markets, schools, community halls and churches. Posters, magazines and flyers should also help in announcing things and programmes.

				means such as town criers, mobile sensitisation vans	
Poor accessibility to the communities	Inadequate coverage of waste disposal due to poor road network	40	9.5	Poor road infrastructure in the municipalities makes it difficult to evacuate waste and to access communities to carry out awareness campaigns by Media and Council personnel.	Municipal Councils should improve on roads within the Council Areas to ease waste evacuation and awareness creation activities.
Inadequate reporting	Inadequate reporting, actualization as media should be current in their reporting	36	8.5	The Media should be very current about recent waste management issues The write-up are usually long and boring with little facts included. The titles are not captivating Their Head-Lines are not catchy enough. The publications sometimes are irregular	Recruitment of qualified personnel
Inadequate collaboration with media	No partnership between Councils and Media outlets.	25	5.9	Municipal Councils not sufficiently partnering/using Media outlets in order to carry out waste management awareness crusades in the communities	Partnership and Memoranda of Understanding should be signed between Media outlets and Municipal Councils
	Inadequate collaboration with media as the population do not inform media about what is going on in their community	2	0.5	Collaboration between Community members and Media outlets is weak. People do not like to talk or give opinions which would be published or broadcast.	People should be adequately sensitised on the role of the Media and should have confidence in the Media.
Laxity of population	Laxity of the population as the population is not committed or respect measures for proper waste disposal and hygiene and sanitation	13	3.1	The population is non-challenge and do not respect laws and regulations concerning waste management.	Education and sensitization of the population. Organisation of workshops and seminars on laws and regulatory mechanisms.
Inadequate/low audience interest.	Poor audience - people are less interested in news related to waste management, environment, hygiene and sanitation.	11	2.6	People do not like to listen or read news items related to waste. Nonchalant attitude of population towards waste disposal issue.	Continuous sensitisation and introduction of interest motivating slots such as games and drama.
Sensitisation outlets	Visibility and strategic location of	9	2.1	Sensitisation outlets/tools are poorly placed.	Place visible posters at critical areas such as

	awareness messages			Audio-Visual (Radio and TV) signals absent or weak Poorly printed articles on issues concerning waste on Print media tools.	churches, community halls, schools, road junctions, etc.
Inadequate availability of electricity	Inadequate availability of electricity reducing people's consumption of media	5	1.2	Absence of electricity in most localities makes it difficult for inhabitants to get audio-visual sensitisation messages. It also limits Media outlets to broadcast their messages on waste management issues.	Media institutions and audience should acquire generators.
Inadequate informative culture	Inadequate informative culture as people do not get inform through media.	5	1.2	Some members of the population do not pay great attention to public awareness on media. Weak interest of the Public to listen to news.	Intensify campaign on the role of the Media to inform, educate and entertain. Increase sensitisation There should be more announcements on issues concerning waste management.
Inadequate press freedom	Media regulatory policies and mechanisms	3	0.7	Inadequate press freedom as media are afraid of disseminating information that portray a negative image of the country even if it is the reality	Media personnel should be educated on Media regulatory policies and legal instruments so as to avoid conflicts.
Inadequate information / knowledge by media	Inadequacy of information, education or knowledge on waste management by media	3	0.7	The media, most of the time do not have adequate knowledge on the subject. Most Media personnel have little knowledge on the issues concerning waste management so they find it difficult to come up with appropriate awareness creation programmes.	Media personnel should undertake courses or attend workshops on how to formulate communication strategies on issues concerning waste management.
Illiteracy	Illiteracy reducing access to information	2	0.5	Language of broadcast not appropriate to most of the audience	More broadcast slots in local languages and pidgin English
Inadequate collaboration with media	No partnership between Councils and Media outlets.	25	5.9	Municipal Councils not sufficiently partnering/using Media outlets in order to carry out waste management awareness crusades in the communities	Partnership and Memoranda of Understanding should be signed between Media outlets and Municipal Councils
	Inadequate collaboration with media as the population do not	2	0.5	Collaboration between Community members and Media outlets is weak. People do not like to talk	People should be adequately sensitised on the role of the Media and should have confidence

	inform media about what is going on in their community			or give opinions which would be published or broadcast.	in the Media.
Inadequate media personnel	Inadequate media personnel	1	0.2	Lack of competent communication personnel.	Qualified staff especially those in the domain of waste management and environment should be recruited/hired.

Discussion

Media's challenges in creating awareness on wastes management issues are not different from challenges faced by the media as a whole in carrying out the same responsibility in other sectors. Inadequate coverage and facilities and in most places, absence of print mass media sensitisation and awareness creation tools such as billboards, banners, posters, flyers and slips were identified as one of the main challenges in the municipalities. Similar results were obtained in a study by AFD (2012) where city inhabitants in Douala and Yaounde claimed they were not adequately informed through mass media channels. Community radio, banners, notice boards, television, social media and HYSACAM Magazine were the most used in creating public awareness on issues concerning community responsibility on waste management.

The results obtained also revealed that where they are available, the messages are either poorly printed, written in poorly crafted language or the informative platforms placed at inappropriate points.

With regards to audio-visual mass media channels (TV and Radio), the signals are either weak or absent in most parts of the communities thus impacting on the information access index of the inhabitants on waste management issues. This same scenario is observed during relays to national networks by various local audio-visual media outlets. Low audio-visual coverage is widely reported in Cameroon with only 40% national coverage (Ngono, 2021). In Cameroon, official statistics indicate that the country has nearly 700 newspapers, about 100 television stations, more than 150 radio stations, including about 50 community radio stations and 39 cyber media (Mincom, 2022). Despite this wide array of media channels, the overall response to issues of community interest such as waste management is low. This is because people are generally more interested in sensational news and human interest stories, and loss of confidence in the media since it is widely acclaimed that the media is highly regulated by government (Nyamnjoh, 2012).

Furthermore, media outlets are constrained by financial challenges. For example, the operation of a

private TV station requires the payment of CFA 100 million to obtain a license while a private radio station requires CFA 50 million (Law on Social Communication, December 1990). This is an enormous sum of money which most media houses cannot afford. As a result, with the exception of the public radio and television as at 2021, none of the over 150 radio stations (including over 50 community radio stations and 39 cyber media) and 100 TV stations is in order (Mincom, 2022). Therefore, they are careful not to engage in domains that require huge financial engagements but with little income gained.

Most information on waste management especially TV and radio do not reach the target population due to inappropriate broadcast time and lack of strategic timing. The research results obtained indicated that waste management slots are generally during working hours when most of the inhabitants in the municipalities studied are not disposed to listen. Secondly, 53% of the respondents opined that Print media are not regular in publishing issues concerning waste management either due to repetition of the story line or lack of funds for staff to undertake field visits in order to get new stories and pictures. This corroborates the work of Tanjong (2012) in which inadequate funding is a major cause of poor media coverage in Sub-Saharan Africa.

Another major challenge faced by the media is that of low staff capacity and knowledge on waste management issues. Due to the technical nature of the subject on waste management and considering that waste management became a national issue in Cameroon only within the past two decades (Minghua, *et al.* 2009; Guerro, *et al.* 2013), training institutions including those responsible for the training of media personnel, are still to develop appropriate curriculum on waste management.

Based on the study, 40% of the respondents opined that accessibility to residential and industrial areas (major waste generating sites) within the two Municipal Council areas due to poor road infrastructure, is a noticeable constraint to media outlets to carry out awareness and sensitisation campaigns on waste management by Media and Council personnel. This is in line with the opinion

raised by Ymelé (2012) in an assessment of Cameroon's path towards municipal solid waste management. Inaccessible neighbourhoods is caused by poor town planning, none respect of regulations concerning constructions, weak community spirit to develop and maintain roads within residential and industrial areas and irresponsible waste management by the authorities and the inhabitants. Also, media outlets are not adequately equipped with transportation means to access neighbourhoods; and the fear of moving expensive media equipment (photo and video graphic equipment, recorders, etc.) to risky areas notably in the Southwest region facing socio-political crisis since 2016. This panoply of challenges has great negative impact on the level of awareness creation by media in the municipalities.

Conclusion

The positive power of the media to create awareness, inform, educate and its contribution to improving social conditions has been widely examined. Based on the results obtained from this study, television was the most known channel followed by internet and radio respectively with respect to creating awareness on issues of waste management while billboards and other print media channels were lesser notorious. TV and Internet were the most acknowledged as awareness creation channels. It is worthy to note that the results obtained from respondents at institutional level (Traditional Leaders, Municipal Council Workers, Media Outlets and HYSACAM workers) supported the trend of perceptions from the community members. This poor notoriety of print media was perceived to be due to irregular publications coupled with the poor reading culture among the Cameroonian population. The high awareness index recorded under TV and internet is as a result of the increase number of TV stations, level of exposure, the audio-visual potential while at the other hand, internet connectivity within the municipalities due to their urban nature and literacy level could enhance the exploitation of social media. Waste management messages broadcast on TV are bound to create a more positive impact to the audience especially as viewers are generally more relaxed when watching television; and also, as established in communication science and psychology, people remember what they simultaneously see and listen to.

There were significant variations on opinions on the role played by the media in awareness creation with respect to waste management in the two municipalities. However, the role of media in this aspect was widely acclaimed with journalists advocating that more emphasis should be given to

issues related to waste management in the two municipalities.

In terms of the intensity and quality of the issues treated during broadcast, State operated Media Outlets were rated higher than Private sector Media outlets because of the quality of persons who contribute in their waste management coverage programmes. Furthermore, a low feedback rate on programmes broadcast or printed media obtained with regards to this study makes it challenging in assessing the role of Media in creating public awareness on waste management issues. Therefore, using various media channels (radio, television, bill boards, posters, flyers and newspapers) in creating mass awareness by the institutions involved in waste management was given a positive perception by the major stakeholders involved in this study.

Media challenges in creating awareness on wastes management issues are not different from challenges faced by the media as a whole in carrying out the same responsibility in other sectors. Inadequate and in most cases, absence of print mass media, sensitisation and awareness creation tools such as billboards, banners, posters, flyers and slips were identified as one of the main challenges in the Municipalities studied. Other challenges identified are inadequate funds, poorly qualified personnel, infrastructure, inaccessibility, insufficient broadcast slots and time, weak audio-visual signals and low readership and audience indices on waste management issues.

Although there are nearly 700 newspapers, about 100 television stations, more than 150 radio stations and 39 Cyber media in Cameroon, the overall response to issues of community interest such as waste management is low. Whatever the scenario and the stakes, the media in all its forms remains a major stakeholder in creating awareness on waste management issues in the Buea and Douala IV Municipalities.

Recommendations

Based on the results obtained from this study, the following recommendations are proposed:

1. Despite legal laws and regulations put in place by the government on waste management, Media outlets and Councils do not take advantage of this opportunity. Therefore, it is recommended that media outlets should come out with more educative, exciting and captivating programmes on the dangers of improper waste disposal and management. These should be broadcast alongside with sensitisation and awareness creation campaigns organized periodically through the various media channels on waste management. More educative and interesting

programmes will attract better audience and readership.

2. Recognising that no socio-economic activity can be successfully executed without adequate resources, it is recommended that through collaborative partnership and networking, municipal councils and media outlet operators should allocate sufficient resources for the acquisition of suitable equipment, logistics and employment of qualified staff for the implementation of awareness creation strategies concerning waste management. In this connection, the government of Cameroon should continue to support media outlets (both private and public) to carry out through the Municipal Councils, programmes which are linked to the management of waste.
3. Furthermore, the matter of the impact of improper waste handling – disposal, collection and treatment, is not the sole responsibility of the Media and the Councils. It is collective societal and community challenge. It is therefore recommended that all stakeholders – industry managers, State and privately owned institutions, Councils and Community Based Organisations should at their various levels, ventilate messages that will lead to increase awareness of issues concerning waste management. In this regards, besides television and internet, other proposed media channels which will captivate the public are banners, billboards, posters, flyers and magazines.
4. Concerning audio-visual and print media outlets, it is recommended that more programme slots and space should be allocated on waste management issues. To meet up with this, qualified persons should be invited to give educative talks and sensitise the audience on waste management concerns. Print media publishers and editors should also request write-ups from persons who are very knowledgeable on the subject matter of waste management.
5. In order to increase consciousness and response to waste management concerns at community and local levels, it is recommended that traditional information dissemination channels – town criers, quarter meetings, traditional meetings, churches and schools should be engaged in the waste-management-awareness creation drive. This shall require support and partnership with the other stakeholders.
6. Considering that the council areas are large and huge volumes of waste are generated daily, it is

recommended that the waste collection and disposal company HYSACAM should use the various media channels to publish the location sites of its garbage bins and the regular collection schedule in the various sites. In this case, households and industry will plan to convey their garbage to the appropriate points for collection. This shall minimise the dumping of waste in unauthorised places and the accumulation of garbage along the streets, road junctions and water ways.

7. Although the Buea and Douala IV Municipal Councils have Communication and Hygiene and Sanitation Units, they still do not make adequate use of the Media in creating public awareness on issues concerning waste management. Therefore, it is recommended that Municipal Councils should use the various media outlets in creating better educative, creative and exciting slogans and slots on the dangers of improper hygiene and sanitation and the devastating consequence on public health and the environment.

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