Public Perceptions on Media Coverage on Waste Management in Buea and Douala IV Municipalities

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ABSTRACT

This study set out to appraise public perceptions on waste management in Buea and Douala IV municipalities 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. The study was stratified between French and English speaking Cameroon. Data were collected using a structured questionnaire and analyzed based on frequency and proportions. It was generally perceived by community members in both Buea and Douala IV municipalities that media have played a role in creating public awareness on issues concerning waste management with proportions of 74.8% (169) and 76.9% (336) respectively. Cumulatively, 70.1% perceived that media have contributed in raising public awareness on issues concerning waste management to a very large or large extent and this trend was almost the same between Buea and Douala IV municipality. The adequacy of this action was however nuanced as roughly the majority of 52.9% (231) perceived this awareness creation mechanism to be very adequate and this trend was the same in Buea and Douala IV municipalities. Television was the most recommended and the use of diversified languages notably literary and vernacular languages was perceived as major asset to information outreach. The time or period of broadcast was fairly satisfactory. It was recommended that the role of media to enhance public awareness on waste management to be sustained with particular focus of television while adjusting the broadcasting time.

KEYWORDS: *Media, Public, Perception, Coverage, Waste, Management.*

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 concerned 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 (Pitchtel, 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 disposable 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 (Sujauddin *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 is needed in Buea and Douala IV by media outlets. This study therefore examines public perception of media coverage of 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 public perception of media coverage of 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 public perception as far as media coverage of waste disposal and management are concerned.

Geographically, the study is limited to Buea and Douala 1V 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 1V 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 1V 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 perception media coverage of waste 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.

Demographic Characteristics of Participants
Table 4: Demographic characteristics of participants

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

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

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 with a proportion share of 67.3% (294).

Marital status

They were also diversified in their marital status with all the categories represented; but the mode was 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 IV 47.6% (208).

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.

**Assessment of public perceptions on media channels coverage of waste management issues**

Table 5: Extent of Media channels coverage of issues on waste management

Media	Adequate	Inadequate	Not Aware
Magazines	19.5% 85	24.2% 109	56.3% (246)
Newspaper	36.8% 161	20.6% 90	42.6% (186)
Radio	54.0% 236	14.8% 65	31.1% (136)
Television	76.0% 332	7.3% 32	16.7% (73)
Internet	56.6% 247	10.4% 45	33.2% (145)
Billboards	16.1% 70	27.2% 119	56.8% (248)
Posters	22.9% 100	28.1% 123	49.0% (214)
Flyers	21.3% 93	24.2% 106	54.5% (238)
Social Media	59.3% 259	11.9% 52	28.8% (126)

Table 5 presents the results on the extent to which Media Channels cover issues on waste management in the two municipalities. With respect to the "Adequate Coverage" criteria, the TV was rated the highest by 76.0% of the respondents. This was followed by Social Media with 59.3% and Internet with 56.6% respectively. On the other hand, Poster (28.1%), Billboards (27.2%), Flyers and Magazines (24.2%) respectively were rated the media channels with the most "Inadequate" coverage. 56.8% (Billboards), 56.3% (Magazines) and 54.5% (Flyers) were not aware that these media channels covered issues on waste management.

Periods of broadcast and Number of Slots/Publication on issues concerning waste management
Periods of broadcast / publication on issues concerning waste management
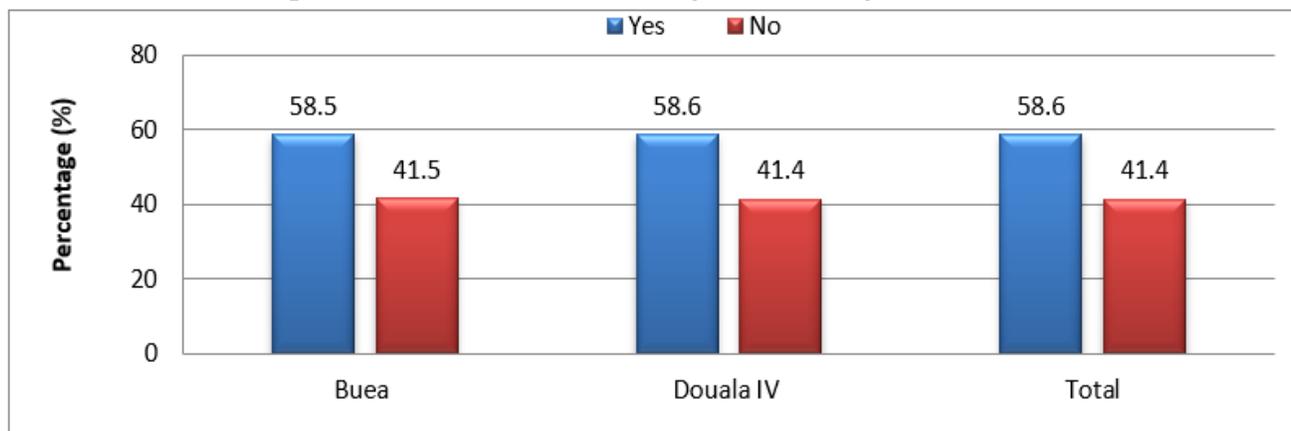
N=415, χ^2-test: χ^2=0.001; df=1; P=0.979

Figure 1: Appropriateness of periods of broadcast or publication

In Figure 1, a total of 58.6% (243) of the respondents perceived the period of broadcast or publication to be appropriate while 41.4% (172) of the respondents indicated that the periods of broadcast were inappropriate.

This trend was the same in Buea and Douala IV municipalities. In fact, programmes on waste management issues are mostly broadcast between 1-2 PM. instead of the expected 3–5 and 6-8 PM.

Number of slots/publications on issues concerning waste management

Table 6: Number of slots/publications on issues concerning waste management as perceived by inhabitants in the municipalities

Number of slots/publications on issues concerning waste management	Stats	Municipality		Total
		Buea	Douala IV	
Daily	n	22	52	74
	%	10.4%	25.6%	17.8%
Bi-Weekly	n	27	19	46
	%	12.7%	9.4%	11.1%
Weekly	n	55	48	103
	%	25.9%	23.6%	24.8%
Bi-Monthly	n	62	42	104
	%	29.2%	20.7%	25.1%
Quarterly	n	16	20	36
	%	7.5%	9.9%	8.7%
Yearly	n	30	22	52
	%	14.2%	10.8%	12.5%
Total	n	212	203	415
	%	100.0%	100.0%	100.0%

χ^2-test: χ^2=19.364; df=5; P=0.002

The number of slots/publications on issues concerning waste management is presented in Table 6. Weekly and Bi-Monthly slots/publication were rated the highest by 25.0% of the respondents followed by daily slots/publications by 17.8% of the respondents. The least were Quarterly (8.7%), Bi-weekly (11.1%) and Yearly (12.5%) slots/publication respectively. These results contradicts the perceptions of Journalist (Figure 2) whereby the highest was 38.5% were for weekly slots/publication followed by Daily and Bi-weekly with 19.2%.
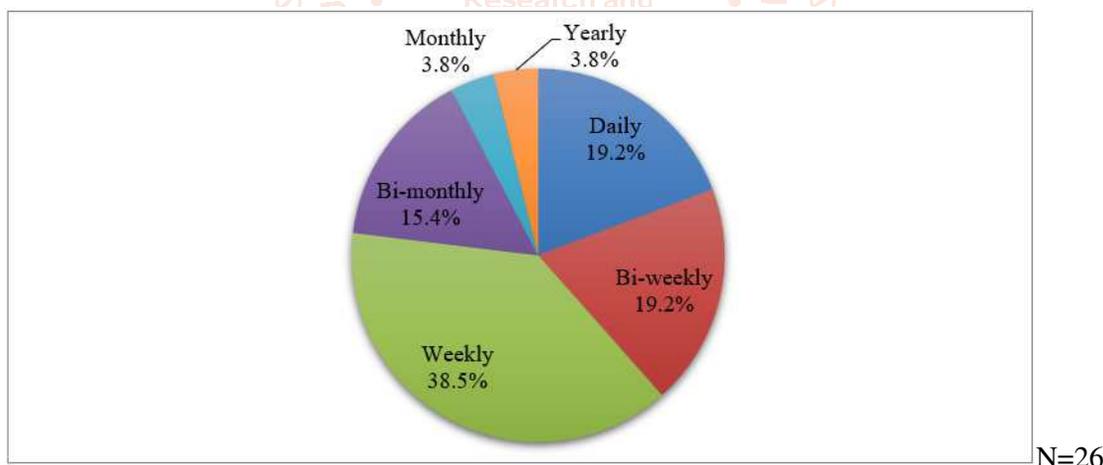

N=26

Figure 2: Frequency at which media outlet cover issues concerning waste management as perceived by Journalists

Language of broadcast

Table 7: Language in which media covered issues concerning waste management

Municipality	Stats	Language				Total
		English	French	Pidgin English	Vernacular	
Buea Council	n	161	75	125	10	210
	%	76.7%	35.7%	59.5%	4.8%	51.3%
Douala IV Council	n	154	109	82	5	199
	%	77.4%	54.8%	41.2%	2.5%	48.7%
Total	n	315	184	207	15	409
	%	77.0%	45.0%	50.6%	3.7%	100.0%

χ^2-test: χ^2=15.37; df=3; P=0.001

As presented in Table 7, 77.0% of the respondents indicated listening on radio, watching on TV and reading publications written in English Language. This was followed by Pidgin English (50.6%), French Language (45.0%) vernacular being the least with 3.7%. These results is in line with that of Journalist as presented in Figure 4; and could be attributed to the fact that English Language Media outlets broadcast more slots in the English Language and Pidgin English than in the French Language media channels.
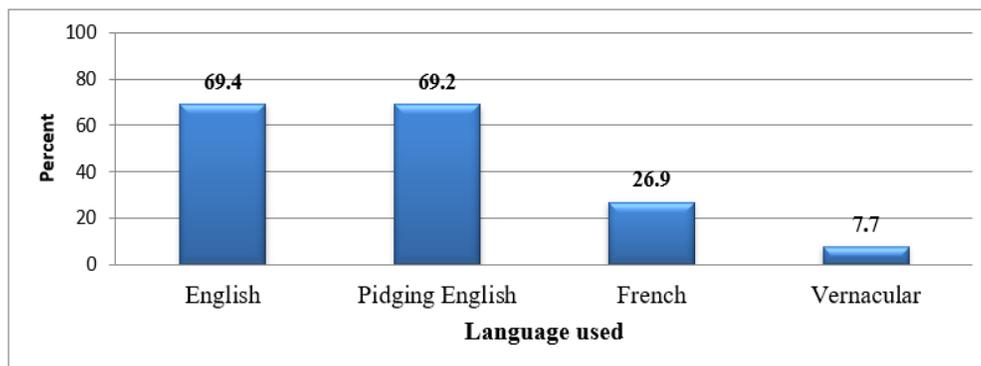

Figure 4: Language used by media house on waste management issues as perceived by Journalists

Suitability of language of communication used by the media

Table 8: Suitability of language of communication used by the media (print or broadcast) on issues concerning waste management

Municipality	Stats	Suitability of languages of communication used by the media outlets on issues concerning waste management		Total
		Yes	No	
Buea	n	168	44	212
	%	79.2%	20.8%	100.0%
Douala IV	n	173	30	203
	%	85.2%	14.8%	100.0%
Total	n	341	74	415
	%	82.2%	17.8%	100.0%

χ2-test: χ2=2.528; df=1; P=0.112

As evident in Table 8, 82.2% of the respondents were of the opinion that the languages of communication used by Media outlets on issues concerning waste management were suitable while 17.8% of the respondents were of the opinion that the languages were not suitable. The opinions on this parameter were not significantly different between the two municipalities.

Programme Slots by Media Outlets

From the survey/interview with Media Outlets, eight (8) major programme slots concerning issues on waste management and environment were identified as presented in Figure 5. The slots dealing specifically with issues related to waste constitute 22.2% made up of: Waste management (11.1%) and HYSACAM (11.1%). The other six (6) slots (77.8%) are a mix of waste management, environment and other related issues.
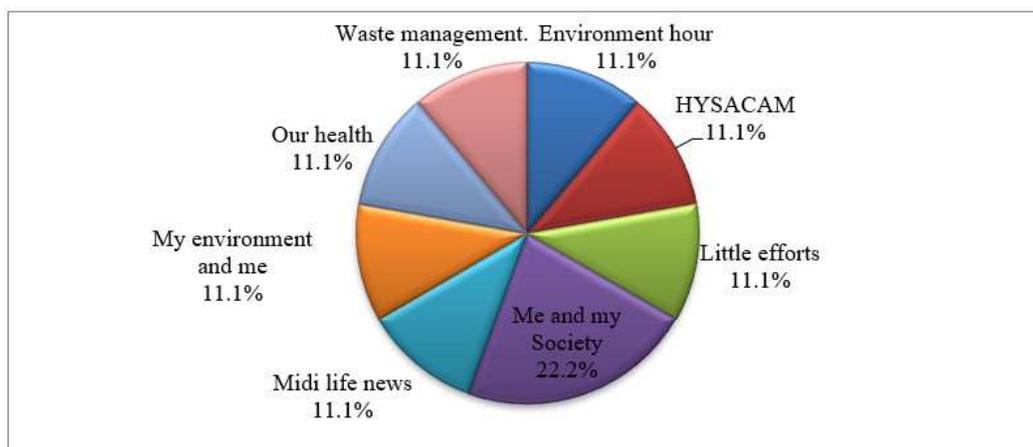

Figure 5: Name of the programme slot or print that educates or sensitizes the public on issues concerning waste management as perceived by journalists

Knowledge of existing garbage collection points

Table 9: Responses on knowledge of existing garbage collection points

Municipal council	Respondents	Stats	Are there garbage collection points in the area?	
			Yes	No
Buea	Inhabitants	n	200	18
		%	45.8%	4.1%
	Council workers	n	20	0
		%	100	0
	HYSACAM workers	n	10	0
		%	100	0
Douala IV	Inhabitants	n	195	24
		%	44.6%	5.5%
	Council workers	n	18	0
		%	100	0
	HYSACAM workers	n	10	0
		%	100	0

χ2-test: χ2=0.309; df=1; P=0.578

Based on the results of Table 9, 90.4% of the inhabitants in the two municipalities were aware of existing garbage collection points while 9.6% indicated not to be aware of existing garbage collection points. As expected, all the Council and HYSACAM workers were aware of existing garbage collection points.

Perception on role played by media in creating public awareness on issues concerning waste management

Table 10: 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

χ2-test: χ2=1.216; df=2; P=0.545

On the role played by the media in creating public awareness on issues concerning waste management in the two municipalities surveyed, 336 (76.9%) of the respondents admitted that the media has played a role. On the other hand, 54 (12.4%) of the respondents said the media has not played any role while 47 (10.8%) 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 10).

Table 11: Extent to which media has 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%

χ2-test: χ2=1.497; df=2; P=0.473

With respect to this parameter in the Buea Municipality, 144 (67.9%) of the respondents said the media has contributed in a very large extent in creating public awareness on issues concerning waste management, while 51 (24.1%) said the contribution of the media was very small. As concerns Douala IV Municipality, 147 (72.4%) were of the opinion that the media has contributed to a large extent and 45 (22.2%) opined that the media contributed to a very small extent. The general opinions in the two municipalities were not significantly different (table 11).

Discussion

It was generally perceived that media play a role in raising public awareness on waste management. In terms of the adequacy in creating public awareness on waste management issues, the TV was ranked the highest by the respondents (52.3%) in the two municipalities. This was followed by Social media channels (45.8%) and Internet (43.0%) respectively. Communication Science has proven that Audio-Visuals stimulates two critical sensory organs – eyes and ears. Therefore, 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. This ties with the study by Grabe *et al*. (2009) which proved that people have the ability to store and recall TV news and information but have less memory capacity for newspapers and magazines (print media). This is because information through TV is presented in animating sounds and visuals to its audience.

The waste collection and disposal company (*HYSACAM*) and the Municipal Councils (Buea and Douala IV) have established specific points for the disposal of waste. 90.4% of the respondents have knowledge of these existing garbage collection pints. Yet, garbage disposal in non-established points is still on the rise.

Results of the extent to which issues of waste management are covered by some Media Outlets in the two Municipalities showed that most Private Media Outlets had a higher coverage rate than State operated Media Outlets. For example, Equinox TV based in Douala and Revival Gospel Radio based in Buea had the most coverage on waste management issues with 33.3% and 20.8% respectively while the two CRTV Stations (Buea and Douala) had a combined coverage rate of 20.7%. This is due to the fact that Private Media Outlets are more liberal in their community out-reaching than State operated Media Outlets. However, 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. This confirms the study by Forcha, et al (2022). Media owners were found to have an influence on journalist and media content which affects professional aptitude by using various means, including media policy, direct instructions, sanctions and orientation of new recruits to the editorial policy of the media house.

Furthermore, the results obtained also revealed that TV and Radio were the most used media channels which covered issues concerning waste management as against Print Media Outlets. This ties with the results obtained on Media channels used by respondents to get information on waste management in which poor/lukewarm reading culture was identified among Cameroonians.

On aspects of sensitisation through the media, 95.0% of the respondents in the Buea and Douala IV Municipalities indicated to have been sensitized through the media on issues concerning waste management. This affirms the results obtained on the responses that the media has adequately contributed in creating awareness on issues concerning waste management and corroborates the study by Hansen (2007) who elucidated that media does not only play a significant role in modelling the public's knowledge on environmental issues, but rather play vital role in the public's possibility to participate in public's attitude and behaviour.

As concerns public perception on the coverage of waste management issues by various media channels, TV was rated the highest with 76.0% of adequate coverage followed by Social Media with 59.3% and Internet with 56.6% respectively. The high perception rating for TV tallies with the results obtained in the study on TV consumption and effects on youth behaviour in Buea - impact of TV on perception of viewers on current issues. This is because what people see and hear is highly remembered and influences their behaviour compared to what people only hear.

The period of broadcast of messages concerning waste management is also an aspect that increases awareness of the problem and positive perception of the contribution of media. On this, a total of 58.6% of the respondents perceived the period of broadcast or publication to be appropriate while 41.4% of the respondents indicated that the periods of broadcast were inappropriate. Based on the results, programmes on waste management issues are mostly broadcast between 1.00 - 2.00 p.m. and the period 3.00 – 5.00 p.m. by most audio-visual media outlets. These periods were indicated as appropriate because of the urban nature of the study area. However, in rural communication, the evenings are suitable broadcast periods for audio-visual and radio channels when most of the audience would have returned home from the farms (Tanjong, 2012).

With respect to frequency of broadcast or publications on waste management issues, the highest rating (25.0%) was obtained for Weekly and Bi-Monthly slots/publication followed by daily slots/publications with 17.8% of the respondents.

Language is the means of communication. Messages concerning waste management in the two

municipalities are broadcast principally in the two official languages – English and French. At times, vernacular languages are used. With regards to this study, 77.0%, 50.6% and 45.0% of the respondents listened to radio, TV or read messages in English, Pidgin English or French languages respectively. These results reflect the extent of coverage of waste management issues by the various media outlets based on linguistic background. Furthermore, 69.0% of the respondents indicated that their first official language is English and 28.6% are Bilingual. This gives a higher leverage for English language over French language and therefore a higher audience for messages broadcast in English. Additionally, most inhabitants in the two municipalities whether predominantly English or French speaking, do communicate in Pidgin English. This justifies the higher score Pidgin (50.6%) over French (54.0%). While vernacular languages are also used in passing over messages on waste management, these are used mainly by radio outlets during specific slots. It was also found out that no print media channels published articles in vernacular languages. Although some dominant vernacular languages (Douala, Bassa, Bakweri) in the two municipalities are developed and written, the readership population is small and waste management issues are not the concerns of only those who can read and understand these languages. Only the waste collection and disposal company *HYSACAM*, has two quarterly magazines captioned in the Douala language – *BOURDI* and *BOSANGI*.

With regards to programme slots or print that educate or sensitize the public on issues concerning waste management by the Media outlets in the Buea and Douala IV Municipalities, eight (8) main slots were identified with only two (22.2%) dealing solely with waste management and *HYSACAM*. Understandably, there are many societal issues to be covered by both the print and audio-visual media and waste management issues are not top on the list although it is a sector that affects the entire community. This limited number of slots has an impact on the extent to which media can affect level of awareness creation. Therefore, there is a need to create and set-up media outlets which deal specifically on issues concerning waste management.

Conclusion
The importance of media in raising public awareness on waste management cannot be overemphasized. Audio-visual channel appeared the most suitable in creating public awareness in waste management as well as coverage, with private media outlets having higher coverage. There was growing concern for waste disposal in non-established points. Sensitization coverage on waste management was recommendable,

which is a major asset for waste management and public hygiene and sanitation. The period and frequency of broadcast is crucial as far as information outreach is concerned, but it grade roughly average. Language of communication as well is a major ingredient or factor to reckon with in information outreach. The diversification of languages combining literary languages and vernaculars was a major asset for information outreach.

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

For the public
➢ Continue public awareness creation and sensitization on issues concerning waste management, and a call for collective participation.
➢ Stakeholders should take up the responsibility by promoting public awareness, funding the production and placement of billboards, posters and flyers.
➢ Defaulters should be punished based on the laws and regulations in force.

For the media outlets
➢ Continue to undertake aggressive sensitization campaigns on issues of waste management through the mediums (TV, Radio and Social media Platforms) that are mostly used by the population.
➢ Acquired appropriate equipment and recruit more qualified staff.
➢ Improving public education on waste management with hygiene and sanitation as corollaries as to significantly hinder the growing of non-established points of waste disposal.
➢ Revisit the hours or periods of broadcast given that the trend seems not highly appreciated.

For the municipal council
➢ Partners with media outlets to undertake waste management sensitization campaigns. This will lead to more effective public awareness creation and behavioural change on waste management issues.
➢ Proper town planning should be undertaken by the Municipal Council with provision for garbage disposal, easy access and treatment facilities.

For the community leaders
➢ Traditional information dissemination channels such as town criers, quarter meetings, schools and churches should be engaged in waste management awareness creation drive.
➢ Close collaboration and advocacy to policy makers and the implementers.

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