Dengue Menace Posing A Threat To The Civic Body In Kolkata: A Sociological Inquiry

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Abstract: The study intends to describe the potential power of the newspaper articles to portray the Dengue Fever outbreak and the potential damage it causes to the Public Health in Kolkata a district of West Bengal in India. To detect the early spread of Dengue Fever Outbreak and to do proper surveillance and epidemiological research, the newspaper works as a valuable resource. The objective of the study was 1) To find out the Prominence Index of the articles comprising the news on Dengue in the year 2019. 2) To find out the Column space allocated to the news articles conveying the Dengue Fever Outbreak. 3) To find out the articles which highlight that the Dengue is an international concern between the two countries India and Bangladesh. The method used was the 'Media Content Analysis', here the two leading newspaper 'Anandabazar Patrika' and 'The Telegraph Calcutta', was used to analyse the Dengue Fever news articles and how they cluster together to communicate the Public Health massages to their audience through the press. A total of 8562 articles were analysed over a survey period of one year (January 2019 to December 2019), and they were searched according to the selected keywords. The articles were coded and framed according to their type. The data were then entered in 'Microsoft Excel 2007' and analysed. The results showed that the news articles comprising of the Dengue Fever Outbreak reported in both the newspaper rise up to 18 point in the Prominence Index which signified the importance of the news in the reported newspaper. The column space measured up to 425cm^2 which actually quite high comprised the news on Dengue. Only 2.96% of articles consists the international issue on Dengue Fever Outbreak between the India and Bangladesh. This study adopted an advance analysing approach where the newspaper articles were analysed to bring out important and valuable information to combat the Dengue Fever Outbreak in the early stage from the beginning of the monsoon in India and more specially in Kolkata and to have a better surveillance system ready to deal with the situation by the Health Professional and Health workers. As we know that in many instance the Dengue Case goes under reported or sometimes not reported at all due to the unwillingness of the government or its poor medical infrastructure.

***Keywords*: Aedes aegypti, NS1 positive, Aliza Test, Dengue, Pollution**.

INTRODUCTION

The public health model is defined as an approach that sees the causes of death and injury as preventable instead of inevitable. By studying the interaction among the victims, the agent, and therefore the environment, the general public health approach seeks to define risk factors, then develop and evaluate methods to stop problems that threaten public health. The goal of the model is to change the essential conditions in society that produce to and sustain such problem (Mercy et al. 1993). Now that epidemiologist's have identified these societal risk factors, this information is out there for reporters to incorporate in their stories, giving audiences a far better perspective on the matter and more information about identified risk factors and consequences Dengue Fever outbreak to individuals and society. Most studies, which usually examine reporting on more conventional health problems like illness and disease instead of crime and violence, show infrequent information of the contextual kind involved by the general public health model. Several studies have found this is often true for science stories (Friedman, Gomey, & Egolf 1992; Logan 1998; Logan, Zengjun, & Wilson 2000; Nelkin 1995). One of the leading founders of public journalism movement (Merritt, 1995) cites Iyengar's findings regarding episodic and thematic reporting, which involve journalists to start ``framing issues more broadly''. Merritt's point was that thematic reporting that discussed the underlying issues which helped encourage the ``true deliberation'' which was necessary to ``revitalize public life'' - which was the aim of public journalism approach (Merritt, 1995).

Understanding what is involved in the task of changing the way journalists report Dengue Fever outbreak necessitates some knowledge of schema theory, frame analysis or framing theory, and attribution theory. Another relevant theoretical perspective found is the role of the media in agenda setting.

Schema theory is that the overarching framework under which framing theory and attribution theory are often understood. Schemas defined as the knowledge structures that organize people's memories (Harris, 1994). Schema theory basically says that folks don't literally store and retrieve incoming information, including information they get from the media, but modify it in terms of their pre-existing beliefs. The new content of media messages is comprehended through interactions with the knowledge people have already got (Ajzen & Fishbein 1975; Brewer & Nakamura 1984; Petty & Cacioppo 1981; Rubin 1986; Rumelhart 1980; Thorndyke 1984) this is in similar with this research that people in general knows about Dengue and it causes and consequences, which in turn are portrayed in the daily newspaper in the public health interest and in turn people incorporate the new information within their previously formed schemas and draw inferences (Harris, 1994). People's schemas are often manipulated by the messages they receive is that the subject of frame analysis. This theory says that folks monitor their social environment for cues that signal once they should change their existing preconceptions or schema (Goffman, 1974) which is quite similar to this research that knowingly the people will degrade environment which will have an direct impact on the public health causing the Dengue virus to spread. Events are ``framed'' or given a field of meaning within which they will be understood (Severin & Tankard 1992). This theory implies that cues learned from the media are often used also to form sense of our experiences and social situation (Baran & Davis 1995). Framing essentially involves selection and salience. The frames that the media use in stories helped define some problems and signalize to some things while obscuring others (Entman, 1993). What is overlooked also contributes to the facility of frames. The thought of framing also implies that the frame features a common effect on an outsized portion of the audience (Entman, 1993). At the foremost general level, framing refers to subtle alterations in statement or presentation.

Frames (Entman, 1993) said have a minimum of four functions: to define problems, diagnose causes, make moral judgments, and suggest remedies. Framing are often viewed under the rubric of agenda setting, which is quite essentially described because the concept the media don't tell people what to think, but what to think about (Cohen, 1963) similar to this study where the news articles highlighted the public health about (n = 49) 36.29% of all the news article analyzed. This theory basically says that one among the consequences of mass communication is to direct people's attention to certain problems or issues (McCombs & Shaw 1972) here in this study the problem of the breeding of Aedes aegypti mosquito which breeds in clean water and spreads the disease dengue and creates a public health problem at large in Kolkata.

Agenda setting do concerns a more macro level of influence than framing theory. Whereas agenda setting deals with the themes or topics of media messages, framing are often thought of because the focus or angle within those subjects.

Attribution theory relates to framing because how a message is framed can have an impact on how people attribute responsibility or place blame. Attribution theory says that folks in Western cultures typically exaggerate the role of people' motives and intentions while downplaying the role of contextual or societal factors. Psychologists have termed this the elemental attribution error (Jones, 1979). Research has shown that certain sorts of news frames tend to encourage this fundamental attribution error of placing responsibility with individuals, while other forms of stories frames are related to a bent to attribute responsibility more to societal factors than to individuals (Iyengar's, 1991) in this study it was found that the 'blame' placed by the government of West Bengal country India placing the blame on the Aedes aegypti mosquito which enters into India more specifically in West Bengal in Kolkata from the border of the neighbouring country Bangladesh about (n = 4) 2.96% of all the news article analysed, on behalf of the government in the control and prevention of Dengue published in (ABP[1] dated 02-08-2019,03-08-2019, 06-08-2019,10-11-2019). The researcher showed that news stories typically used either episodic frames or thematic frames. The episodic frames depicted concrete events that illustrated issues, while thematic frames put issues during a more general context. He found that episodic framing, which is that the more common form of news frame, results in individual attributions of responsibility. The rarer thematic frame was more likely to end in societal attributions. Attribution of responsibility is critical to social change, who citizens hold in charge of social problems can determine the sorts of solutions they choose from (Iyengar's, 1991).

As no other researcher had undertaken this area of work, so the researcher in this study took the initiative to explore this area of the work. The purpose of this study is to make the data available at the earliest for the Health Professional and Health workers and the government agency so that they act soon with the onset of the Dengue Fever Outbreak and make arrange for a proper surveillance management system ready before hand from the on set of monsoon in India and more specifically speaking in Kolkata a city which suffers from Dengue epidemic year after year. As most often the Dengue Fever Outbreak report goes unreported or underreported

[1] ABP abbreviates Anandobazar Patrika a local Bengali version newspaper.

and not reported at all due to poor medical facility and infrastructure of the Government apparatus. Some times the government body does not accept the real cases of Dengue Death which occurs in around the Mega city of Kolkata Hospitals and Nursing Homes. This study will also supplement news to the government body to frame new policies and laws to stop prevent Dengue Fever Outbreak and to stop Environmental Pollution in kolkata.

Thousands were affected by Dengue in the year 2011 and 2012 (published in ABP dated 13thOctober 2019). During 2017 in one day 250 cases of Dengue was registered (published in ABP 25thSeptember 2019) it rose till 37,746 with 86 Dengue Death (published in ABP dated 5thNovember 2019).The Kolkata Municipal Corporation (KMC) reported in the year 2018 the Dengue Fever affected patients were 550 (published in ABP dated 4th September 2019) it rose till 1500 (published in ABP dated 13thOctober 2019). During that period 12 men, 18 female and 12 children died due to Dengue (Mondal, 2020). Again KMC[2] reported till August 2019 Dengue Fever affected person rose to 420 (published in ABP dated 4th September 2019) it went up again and recorded 602 patients affected due to Dengue (published in ABP dated 23rd September 2019). According to KMC by October 2019 the Dengue affected patients reached the mark of 850 (published in ABP dated 13th October 2019). In Howrah ward number 66 recorded 1500 Dengue Fever patients (published in ABP dated 19thOctober 2019). Bidhannagar Municipality reported 750 cases of Dengue (published in ABP dated 8thNovember 2019). Swasthya Bhawan Kolkata registered 45,000 Dengue cases and reported 23 Dengue Death on 30thOctober 2019 (published in ABP dated 10thNovember 2019). Swasthya Bhawan reported that in Bidhannagar the Dengue affected was 1000 and in South Dum Dum was 500 (published in ABP dated 14thNovember 2019). Over all in Kolkata the Dengue Fever affected patients went up to 3000 (published in ABP dated 15thNovember 2019). Within one month the Dengue Fever affected patients went up to 2500 from 1500 in Howrah ((published in ABP dated 19thNovember 2019). In Singur hospital an average of 30 to 35 Dengue Fever affected patients were found (published in ABP dated 23thNovember 2019). Swasthya Bhawan Kolkata reported in Deganga over 18000 patients suffered from Dengue Fever (published in ABP dated 24thNovember 2019). Everyday 1000 new patients suffering from Dengue attend the Biswanathpur Block Swasthya Kendra (published in ABP dated 24thNovember 2019).

OBJECTIVE

1) To find out the Prominence Index of the articles comprising the news on Dengue in the year 2019.

2) To find out the Column space allocated to the news articles conveying the Dengue Fever Outbreak.

3) To find out the articles which highlight that the Dengue is an international concern between the two countries India and Bangladesh.

MATERIAL

Material used is the 30 cm normal scale to measure the articles (Tan et al., 2014)

METHOD

The goal of this study is to descriptively analyze the cause and the consequence of the epidemic of Dengue fever Outbreak in West Bengal more specifically Kolkata with the help of Public Health Model of Reporting (PHMR).

Increasingly, due to the growing importance of science and technology during this age of globalisation and therefore the pace at which new developments in science and technology are occurring there is also a demand to use high tech instrument to control and prevent Dengue Fever Outbreak in Kolkata. One such was the use of 'Drone'[3], which can easily reach out the open as well as closed space where the Aedes aegypti mosquito breeds which previously was not possible to reach by the humans. This high tech 'Drone' will not only reach out and take a close photograph of the affected place or space but also capable of carrying 'Oil' to spray out the Aedes aegypti mosquito. Print journalism is one such medium which keeps the general public update their knowledge and awareness about their health as well as the technology used to overcome the epidemic of the Dengue Fever Outbreak in kolkata. As these newspaper are circulated every day both national as well as local newspaper.

In this study a content analysis was done for two leading newspapers, Anando Bazar Patrika(Bengali version local newspaper) (newspaper 1) and The Telegraph Calcutta (English version national newspaper) (newspaper 2), these are the two newspaper which has the top circulation in Kolkata.

[2] KMC abbreviates Kolkata Municipal Corporation.

[3] Drone is an electronic flying machine which is capable of taking photograph and spraying oil to kill Aedes aegypti mosquito larva.

STRATEGY TO EXTRACT DATA

A total of 8562 news articles of both the newspaper 1 and newspaper 2 were collected, which represented the whole universe (news stories/editorials) for the specified survey period of 1 year (January 2019 to December 2019). Articles were excluded i f they were duplicating (articles found around the same time, with same number of words in the same publication and the duplicating text).

Only the articles which include exact keywords words like Dengue, Dengue Fever, Fever, Dengue death, Mosquito Bite, Canal, water logging, Dengue 2, mosquito were included in the analysis [Figure 1]. A codebook was developed as an adaptation of (Eckler et al., 2016)

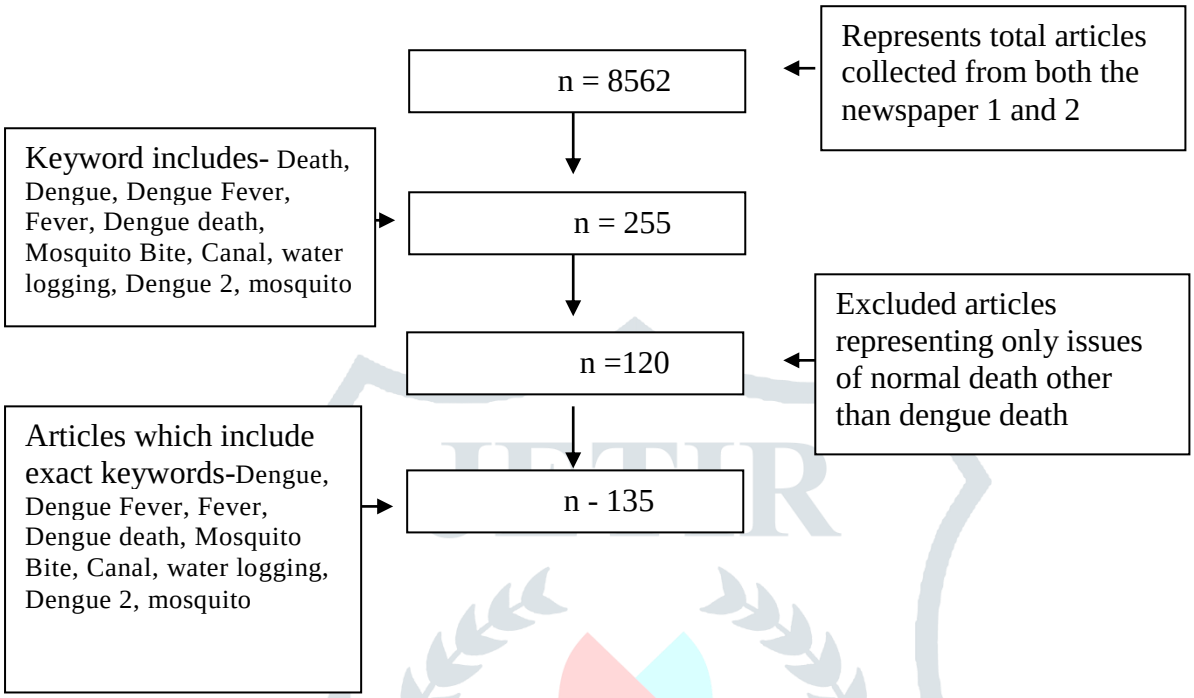

Figure 1: Flow chart showing sample selection process

Source: Author

QUANTITATIVE ANALYSIS

The various variables were categorized and coded by the author. The frequency of appearance of every coding was analysed employing a frequency count. The unit of study was the news article.

QUALITATIVE ANALYSIS

The headlines, subhead, and text of all articles were analysed descriptively; the full text of each article was reviewed by the author again and again for the emerged study variables.

Table 1: Showing the operationalization of the categories

Categories	Example of Articles
Public Health	Dengue, Dengue Fever, DHF,DSS, etc.
Earth Science	Environmental Pollution, Clogged drains, etc.
ICT/Technology	Drone, 4G, Camera, Android App, Digital Map, etc.
Chemistry	Mosquito Oil, Bleaching Powder, Timifus, Lime, Larvicide's , etc.
Biology	Eggs of Aedes aegypti mosquito, Aedes aegypti Larva, Breeding Aedes aegypti.
General News	Interviews, Policy, Opinion,

Source: Author

CODING

The author of this study read and coded the articles for 10 variables see [Table 2].

Table 2: Showing the classification of the articles according the coding scheme used

Variable	Description
Date	The period surveyed from (1st January 2019 to 31st December 2019)
Day	The choice of values runs all the 7 days a week every day in a week.
Title of the article	This refers to the article headline
Column space	This refers to the space occupied by an article which is expressed in cm^2
Column length	This refers to the length of the column of an article and is expressed in cm
Visuals	This refers to whether there is a picture or graphic present or accompanying the article. The possible choices were yes/no.
Headline font size	This refers to the size of the headline of an article and is measured in cm.
Location	This refers to where an article appears in the newspaper means; the possible positions are left, above fold; right, above fold; left, below fold; and right, below fold
Section	This refers to whether the article appears in the main section or not (i.e., in the section attached to the front page or in one of the other sections)
Category	This refers to the subject matter covered in the article and is among one of the following: Public health, Earth Sciences, ICT/technology, Chemistry, Biology and General News (interviews, policy, opinion, etc.)

Source: Author

PROMINENCE INDEX

The term 'Prominence Index' is quite prominent in the literature (Caburnay Kreuter & Luke 2003; Granner et al. 2010; Schooler, Sundar & Flora 1996) and is used to give a numerical measure of the extent of coverage an article has been given in the press. Well the theoretical range of the Prominence Index is 7–18. Articles with a higher Prominence Index are more likely to be read than those with a lower Prominence Index.

Now to define Prominence Index (I) as

$$X = X_1 + X_2 + X_3 + X_4 + X_5 + X_6$$

Where

X_1 = whether or not article appeared in the front page (3 if yes and 2 if no)

X_2 = whether or not article appeared in main section (3 if yes and 2 if no)

X_3 = location of the taken article on page (3 if left, above fold; 2 if right, above fold; 1 if left,

Below fold; and 0 if right, below fold)

X_4 = size of headline in cm (3 if > 1.91; 2 if > 1.27 and 1.91; 1 if > 0.64 and 1.27; and 0 if 0.64)

X_5 = whether there is a presence of image or graphic (3 if yes and 2 if no)

X_6 = length of column in cm (3 if > 91.4; 2 if > 34.8 and 91.4; and 1 if 34.8)

STATISTICAL ANALYSIS

Regression test was conducted to draw comparisons between the two newspapers ($P < 0.05$). Statistical analyses were performed using Microsoft Excel version 2007.

RESULT

A total of 130 articles from newspaper 1 and 5 articles from newspaper 2 were retrieved for content analysis which was publish in a 1 year period from 1st January 2019 to 31st December 2019.

Table 3: Showing the categories with the number of articles and their percentage

Categories	Newspaper 1, n (%)	Newspaper 2, n (%)
Chemistry	16(11.85)	3(2.22)
ICT/Technology	17(12.59)	1(0.74)
General News	18(13.33)	1(0.74)
Public Health	49(36.3)	0
Biology	22(16.3)	0
Earth Science	8(5.93)	0
Total	130(100)	5(100)

Source: Author

It is found that the articles from newspaper 1 included in the category chemistry was 11.85% in respect to the newspaper 2 which is 2.22%,

In newspaper 1 the ICT/Technology category the news articles comprises 12.59% in comparison to the newspaper 2 which is 0.74%. General news in both the newspaper 1 is 13.33% and in newspaper 2 is 0.74%.

Category Public Health, Biology, Earth Science in case of newspaper 1 is 36.3, 16.3, 5.93 among all the articles analysed where as none of the category is in newspaper 2.

Table 4: Showing the column space occupied by the articles from different category

Column space ($cm^{2)}$	Public Health		Earth Science		ICT /Technology		Biology		General News		Chemistry	
	Newspaper 1	Newspaper 2	Newspaper 1	Newspaper 2	Newspaper 1	Newspaper 2	Newspaper 1	Newspaper 2	Newspaper 1	Newspaper 2	Newspaper 1	Newspaper 2
400-499											1	
300-399	1		4								3	1
200-299	5		8		2		6	1			3	

100-199	18		3		10	1	12		6		6	
<100	25				3		3		10	1	1	1

Source: Author

Here in the above table 4 showing the articles from different categories from both the newspaper 1 and newspaper 2 according to their column space. Among (n- 135), the category of Public Health comprises 49 articles from newspaper 1 and none in newspaper 2. From category of Earth Science it is 15 articles from newspaper 1 and none in the newspaper 2. The category of ICT/Technology includes 15 articles from newspaper 1 and only 1 article from newspaper 2. Category Biology includes 21 articles from newspaper 1 and 1 from newspaper 2. Category General News has 16 from newspaper 1 and only 1 from newspaper 2.Category Chemistry comprises 14 articles from newspaper 1 and 2 article from newspaper 2.

Table 5: Showing the Prominence Index of all the articles from both the newspaper

Prominence Index	Newspaper 1	Newspaper 2	P
18	1	0	P < 0.05*
17	1	0	
16	1	0	
15	10	0	
14	25	1	
13	28	3	
12	26	1	
11	10	0	
10	15	0	
9	4	0	
8	8	0	
7	1	0	

Regression test in Microsoft Excel version 2007, * statistically significant

Source: Author

Here in the above table 5 showed that the articles from the newspaper 1 has the highest Prominence Index reached up to 18 point in the scale whereas there are no articles in the newspaper 2. The difference is statistically significant [P < 0.05].

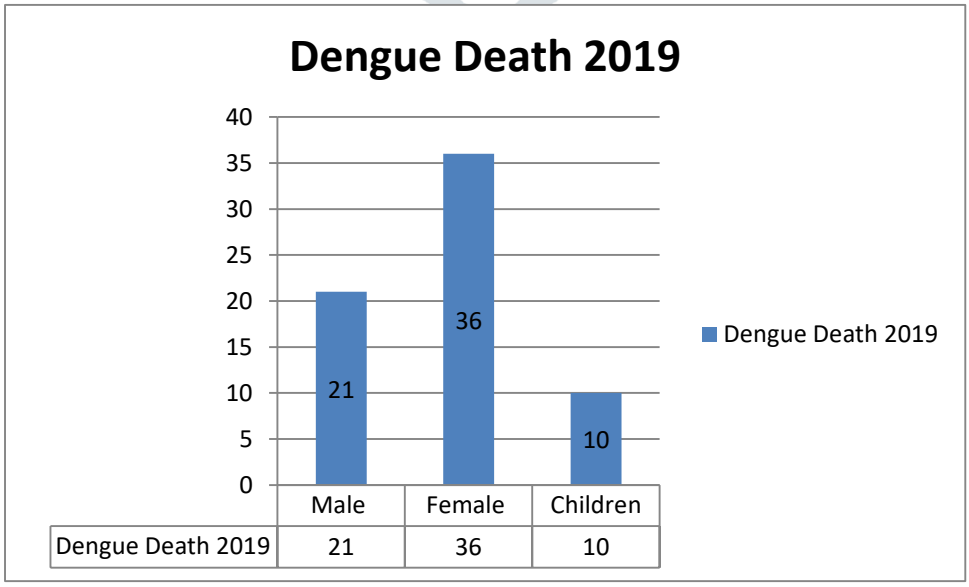

Figure 2: Demographic presentation of Dengue Death in Kolkata in the year 2019

Source: Author

Figure 2 showing that the female (n – 36) who had died suffering from Dengue in the year 2019 outnumbered the male (n – 21) and the children died were (n – 10). Here we can see that the female had the highest number of death due to Dengue.

CONCLUSION

Answering the research question 1 the Prominence Index of the articles on Dengue from the newspaper 1 attended the highest 18 point, whereas none of the articles on Dengue from the newspaper 2. The ANOVA result showed difference is statistically significant with R^2=.61 [F=1, 10(16.180, p = 0.0024)]. As its was said earlier in this study that the articles which have more Prominence Index are more likely to be read by the audience, so here with a highest Prominence Indexed Dengue Fever Outbreak and Dengue Death articles has the probability to be read by the audience and the knowledge and the awareness on public health can be reached to a greater population through the media as newspaper. So it is clearly stating that how important and necessary it was to publish the articles on Dengue so that it reaches the wider audience and also the extent of the epidemic of Dengue Fever Outbreak in Kolkata.

Answering the research question 2 where it is quite surprising that the articles which had the highest column space did not had the highest Prominence Index or did not attend the highest score in the Prominence Index this is quite similar to the study conducted by (Tan et al., 2014) where this researcher also experienced the same thing while doing their research.

Answering the research question 3 it is found that only 2.96% of all the articles on Dengue mentioned the international problem on Dengue which include both the country India and Bangladesh. Government of West Bengal gave reason by saying that the Aedes aegypti mosquito enters into West Bengal India by crossing the boundary of Bangladesh and spreads the disease Dengue in West Bengal.

Where as the Bangladesh seek advice from the Kolkata Municipal Corporation (KMC) on how to prevent and combat the Dengue in Bangladesh as they believed that (KMC) was successful in combating, preventing and taking adequate measure to stop the spread of Dengue in Kolkata (published in ABP on 02-08-2019, 03-08-2019, 06-08-2019, 10-11-2019).

In addition to this 5.19% of all the articles under analysis published in the first page of the newspaper 1 and none of them in the newspaper 2. As the newspaper 1 is local so a greater importance is given to the public health in the local environment of Kolkata and the articles will reach a maximum audience who can read Bengali (regional language in Kolkata, West Bengal).

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