Plastic Bags: Usage, Disposal and their Adverse Effects on Human Health and Environment in Kontagora Metropolis, Niger State, Nigeria.

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Abstract

Plastics are widely employed in our daily lives, and modern development would undoubtedly look very different without them. Waste from plastic bags seriously pollutes the environment and endangers both human and environmental health. In nations like Nigeria that are economically underdeveloped, the situation is even worse. This study's goal is to evaluate plastic bag consumption and its effects on the environment and people in Kontagora Metropolis, Niger State. A sample size of 400 was determined using Yamane's (1967) formula. The respondents' answers to a standardized questionnaire were gathered for data collection. Regardless of age, occupation, economic status, or level of education, the majority of respondents (76.3%) said they use plastic bags more frequently than any other plastic product. Easy availability (61.8%) and low cost (64.5%) were the primary drivers of these items' widespread use. Out of all the methods for getting rid of plastic bag garbage, open dumping into the neighborhood (52.3%) was one that practically every city dweller used. Sewage line blockages (74.3%), declining environmental beauty (63.3%), and issues with human health (51.3%) were some of the main issues. The study's conclusions also showed that, although locals are well aware of the harmful consequences of plastic bags, there is a trend towards increased use of these items on occasion. It was concluded that the majority of Kontagora town's citizens routinely dispose of plastic debris in the surrounding area carelessly, exposing them to dangerous chemicals. The study suggests using environmentally friendly materials (bags) made of paper, natural fibre, and clothing, or it offers a way to conduct studies on waxworms and mealworms, which have the capacity to consume and metabolize polythene and polystyrene at a rate that is unparalleled.

Keywords: Plastic waste, plastic bag waste, Plastic products, Waste disposal, Environmental pollution.

Introduction

Plastic is essential to our daily lives. Our lives are filled with plastics, and if they weren't used, modern development would undoubtedly appear considerably different (Padmini, 2019). Globally, it is projected that 500 billion plastic bags are used annually (UNEP, 2018a). They can be found all over the world in enormous quantities and kinds. The widespread use of plastic bags is attributed to their affordability and ease of handling. After just one use, the vast majority of these bags are discarded as waste. Furthermore, it is asserted that plastic bags can endure in the environment for up to a millennium without breaking down due to sunshine or microbes (Adane and Diriba, 2018).

Waste from plastic bags is extremely harmful to both the environment and human health. Plastic bag waste accumulation has negative consequences on the environment and human health that can take many different forms. Toxic compounds like Bisphenol A (BPA), which can cause serious respiratory system infections when consumed or come into contact with, are one of the issues affecting human health (Ram and Saiful Islam, 2018). Moreover, consuming large amounts of these hazardous leaks—which include phthalates, BPA, and antiminitroxide, among others—can result in fatal consequences (Gupta, 2019). Aside from this, deteriorating environmental beauty is another issue facing the ecosystem (Adane and Diriba, 2018). Additionally, burning plastics to manage waste adds significantly to air pollution, which in turn causes global warming. (2022; United Nations, COP 27). The death of domestic, wild, and even aquatic species as well as aquatic environments is another well-known issue related to these pollutants (Olanike, 2020). This necessitates taking preventative action to lessen the threat (Abdul Jalil, Nannu Mian, & Khalilur Rahman, 2018).

Due to 79% of plastic trash is dumped in landfills and waterways, sewage system blockages are a prevalent issue in Nigerian cities and towns as well as in developing nations. As a result, this produces foul odours and conducive living conditions for mosquitoes and other vectors, which may lead to an increase in a variety of illnesses like dengue fever, cholera, and malaria (Musa, Kola, and Lawal, 2018).

Reusing plastic bags has been linked in recent publications to the possibility of germs contaminating food (Aziegbe, 2017). Moreover, compared to open disposal, the use of plastic bags for the disposal of human and other household waste puts human health at greater risk (Samuel, Davou, Juliet, and Ruth, 2018). According to a concerning UNEP assessment (2018b), just 10% of the 50% of this single-use plastic has ever been recycled.

Furthermore, food products are commonly carried in similar bags in a number of emerging and impoverished nations, such as Nigeria. This crosses the entire nation, and Kontagora, a town in Niger State, is unavoidably included. The Sustainable Development Goal Agency (SDG, 2022) issued a serious warning in a recent report about the potential health risks associated with the careless disposal of plastic bags. The report noted that certain

plastic materials, such as colouring agents, may react chemically with food items, leading to the generation of agents that cause cancer. Furthermore, the Niger State Environmental Protection Agency's report (NISEPA, 2022) reaffirmed that once plastic bags enter agricultural fields, they lessen the filtering of water and adequate aeration in the soil. Such fields become less productive as a result (Tanimu, Jaafaru, Suleiman, 2020). Owing to the seriousness of disposing of plastic bags in landfills, on streets, in waterways, and frequently in fires around the state, a number of strategies, including recycling, are being used to lessen the harmful effects of plastic bag usage (NISEPA, 2022). According to a survey, Kontagora town is a hot place for plastic bag recycling plants and is of great concern.

However, the results of this increase in plastic bag waste in the environment have mounted the concern of many governments and environmentalists to proffer a sustainable solution. It was on this premise that the current study seeks to assess the usage of plastic bags and their human and environmental effect in Kontagora Local Government Area, Niger State. It is against this background that the research seeks to find answers to following questions:

- What are the factors attributed to the use of plastic bags in the in the study area?
- What are the factors for the increasing trends of plastic bags utilization in the study area?
- What are the problems associated with plastic waste disposal in the study area?

Plastics Bags Effects on Humans and Environment

Chemical substances present in plastics pose a health danger to humans. Plastics include harmful chemical substances that have an adverse biological impact on both humans and animals (Olanike, 2020). Bisphenol-A (BPA) and phthalates are the two main categories of chemicals associated to plastics that pose a significant risk to human health (Rayne, 2018). Bisphenol A, or BPA, can cling to the liquids or contents that a plastic container is containing, claims Gupta (2019). The fundamental unit of polycarbonate plastics, which include those used in bottled water, food packaging, and other products, is BPA. Since the 1940s, BPA has been recognised as an endocrine disruptor that impairs regular hormonal activity (Padmini, 2019). In order to create hard, clear plastic, or polycarbonate plastic, this hormone disruptor is utilised (Ram and Saiful Islam, 2018). Water bottles, Sippy cups, canned food liners, and infant bottles all contain bisphenol-A. Humans come into touch with plastics mostly by ingestion, including through food, skin contact, and sucking. According to several research (Adane and Diriba, 2018; Padmini, 2019 & Olanike, 2020), Bisphenol-A raises the risk of diabetes, heart disease, birth defects, early puberty, low sperm count, hyperactivity, aggression, and elevated levels of certain liver enzymes.

However, according to Abdul Jalil, Nannu Mian, and Khalilur Rahman (2018), phthalates are a class of chemicals that are used to bind scents in products, soften polymers like PVC (polyvinyl chloride), and function

as solvents and fixatives in items like nail polish. Human interaction takes place in various ways: Fixing agents Ingestion: When a youngster chews on a plastic toy, tiny holes in the plastic are created, which allows toxins to seep into the child's mouth. Lotion, fragrances, deodorants, and inhalation—that is, breathing in scents or solvent fumes—are examples of skin absorption (Olanike, 2020). Adefemi and Awokunmi's (2019) investigation made clear that some of the negative health impacts are as follows: low sperm count, undescended testes, asthma, preterm delivery, genital abnormalities, early puberty, hormone disruption, developmental and reproductive issues, and the development of some cancers. Polyvinyl chloride is another significant chemical that is frequently present in plastic products (PVC). As a result, the phthalates are released into the goods and liquids inside the containers. Reduced lung function, weight gain, increased insulin resistance, reduced sperm count, and sperm DNA damage are among the health impacts of these substances (Umunna, 2019). Subsequent research revealed adverse effects on reproductive development in male infants exposed to this toxin (Revel, Châtel & Mouneyrac, 2018; Umunna, 2019; & James, and Babu, 2019). In a further step, Rayne's (2018) research emphasized that BPA and phthalates due to their traces of unpredictableness in the air, dust, and water. In this way, the entire range of hazardous chemicals found in plastic bags is released into the environment.

Another significant factor contributing to plastics' detrimental environmental effects is the release of toxic chemicals during production. The production of plastic typically involves a wide range of neurotoxic, cancer-causing, and hormone-disrupting chemicals as inputs and waste products. These chemicals inevitably enter the environment through air, land, and water pollution (Yakub, Chavan & Husain, 2019). Among the well-known substances are phthalates, Bisphenol-A, or BPA, and other plasticizers found in PVC. Numerous of these are globally persistent organic pollutants, and when they are released unchecked into the environment, they have an impact on all living things, both aquatic and terrestrial. According to James and Babu (2019), the release of hazardous chemicals into the soil by chlorinated plastics on land can lead to the seepage of those chemicals into nearby water sources, such as groundwater. The creatures that consume this water may suffer grave consequences as a result. Numerous varieties of plastic are continuously stacked high in landfill locations. Numerous bacteria in these dumps hasten the biodegradation of plastics. Methane, a potent greenhouse gas that greatly contributes to global warming, is emitted during the breakdown of biodegradable plastics (Musa, Kola, and Lawal, 2018). According to a 2019 study by Adefemi and Awokunmi, dumping plastic debris close to roadsides, open plots, riversides, drainages, and public areas can clog drains and cause water to overflow, which happens frequently during rainy seasons. The study also found that plastic bag wastes caused a number of health issues, including fatalities, in cattle. In addition, the usage of plastic bags (as well as other foreign objects) is said to have decreased milk production.

On the other hand, biodegradable plastics also emit methane into the atmosphere as they break down on the ground; the process just takes longer. According to Umunna (2019), plastics take about 450 years to break down in water and 1,000 years to break down on land. Regarding this, Aziegbe (2017) stated unequivocally that the impact of plastic on the ocean poses a serious threat to animal habitat and life. According to the study, plastics do not biodegrade; instead, the chemicals they contain are discharged into the atmosphere and water, breaking down into small fragments that contaminate the environment and aquatic life.

The said discussions question our consciousness of the adverse effect of these plastic bags on human and the environment. This seems to have a devastating effect on the entire world's inhabitants now and for several generations to come if much is not done to at least decrease the wanton effects to the barest minimum or at least by providing sustainable alternatives. Bold steps must be taken to sensitize the populace about the adverse effects of plastic bag disposal and sustainable measures that could be embarked on to reduce its menace.

Study Area

The area under study is the Kontagora Metropolis located along the south bank of Kontagora River, Niger state. It is located between latitude 10° 24′01′′ N and 5° 28′11′′N, and longitude 10º40′00′′and 5º47′00E′′. It has an elevation of 335m above mean sea level and covers an area of 2,081 km². The local government area is surrounded to the North and East by Mariga LGA to the south by Mashegu LGA and the West by Magama LGA. It has a landmass of 2,081 km², making it one of the largest towns in Niger State (NSG, 2018).

The dominant tribes are Hausa, Kambari, Dakkarkari, and Dukkawa, and other tribes that exist are Nupe Gbagi (Gwari), Kamuku, Basawa etc. The economic activities of the inhabitants are farming, agro-allied and agro-based business, plastic manufacturing, sachet and bottled water production, bakeries, restaurants and eateries, and petty trading.

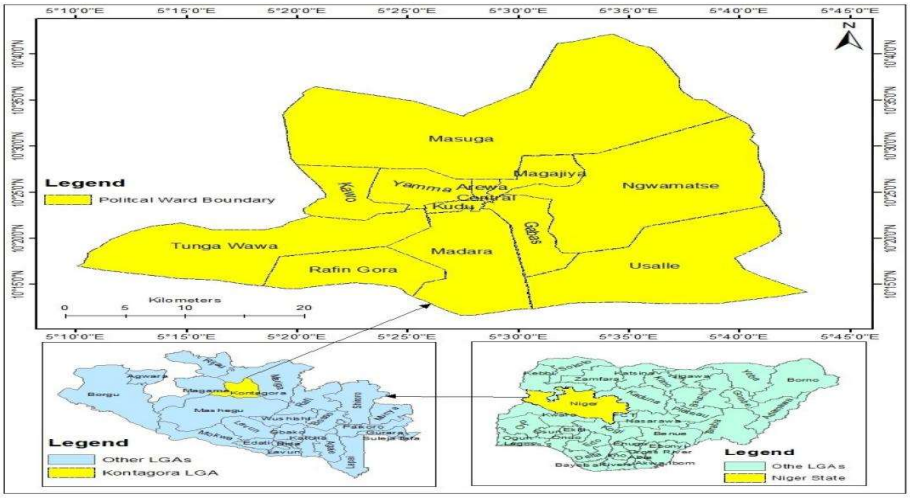

Figure1. Administrative Map of Kontagora Local Area

Materials and Methods

The study population is made up of 213,500 (NPC, 2016). Yamane's (1967) formula was used to determine a sample size of 400. Data were collected from 400 respondents which consisted of 236 males and 164 females. The respondents were drawn using systematic sampling technique from neighbouring households which were at a distance of 50 to 100 meters away from each other. Among the visited households, at least one member of the family was picked randomly for the study regardless of his/her age, education status, sex and occupation as long as he /she was willing to respond to questions. A structured questionnaire was used to collect data from the respondents. Erstwhile to the administration of the questionnaire conversations were held with the selected respondents to explain the objectives of the research work. Research assistants were duly trained and made to help the respondents who were willing but not able to attend to the questionnaire. Respondents are grouped into different categories based on the data collected. Analysis of the collected data was carried out using SPSS software version 20.

Results and Discussion

Table 1. Demographic Background of the Respondents in Kontagora Metropolis

Variable	Categories	Numbers (No.)	Percentage (%)
Sex	Male	280	70
	Female	120	30
Age	Less than 20 Years	70	17.5
	20 to 30 Years	172	43
	30 to 40 Years	96	24
	40 years and above	62	15.5
Educational Status	Illiterate	46	11.5
	Primary Education	74	18.5
	Secondary Education	94	23.5
	Tertiary Education	186	46.5
Occupation	Students	106	26.5
	Private	78	19.5
	Government Employee	176	44
	Others	40	10

Source: Field Survey (2023)

Demographic background respondents within the age (of 20-30) years (43%), tertiary education (46.5%) and government employees (44%) depict the highest scores respectively. Similarly, out of the 400 respondents, the

largest proportion of them (305, 76.3%) used plastic bags frequently as compared to other plastic products. This was followed by the usage of plastic bottles (86, 21.5%), plastic buckets, containers and baskets (71, 13.1%) and plastic shoes (63, 10.8%) shown in Table 2.

Table 2. Types of Plastic Bags Commonly Used in Kontagora Metropolis

Variables/Categories	Plastic Bags		Plastic Bottles		Plastic buckets, Containers and Baskets		Plastic Shoes	
	(n)	(%)	(n)	(%)	(n)	(%)	(n)	(%)
Sex								
Male	245	(61.3)	58	(15.0)	52	(13.0)	43	(10.8)
Female	60	(15.0)	28	(6.5)	24	(6.0)	20	(5.0)
Total	305	(76.3)	86	(21.5)	76	(19.0)	63	(15.8)
Age								
Less than 20 Years	35	(8.8)	14	(3.5)	12	(3.0)	11	(2.8)
20 to 30 Years	132	(33.0)	30	(7.5)	29	(7.3)	23	(5.8)
30 to 40 Years	76	(19.0)	31	(7.8)	25	(6.3)	20	(5.0)
40 years and above	62	(15.5)	11	(2.8)	10	(2.5)	9	(2.3)
Total	305	(76.3)	86	(21.5)	76	(19.0)	63	(15.8)
Educational Status								
Illiterate	24	(6.0)	12	(3.0)	9	(2.3)	8	(2.0)
Primary Education	52	(13.0)	14	(3.5)	15	(3.8)	13	(3.3)
Secondary Education	80	(20.0)	10	(2.5)	11	(2.8)	6	(1.5)
Tertiary Education	149	(37.3)	50	(12.5)	41	(10.3)	36	(9.0)
Total	305	(76.3)	86	(21.5)	76	(19.0)	63	(15.8)
Occupation								
Student	90	(22.5)	42	(10.5)	40	(10.0)	36	(9.0)
Private	58	(14.5)	12	(3.0)	10	(2.5)	9	(2.3)
Government	138	(34.5)	20	(5.0)	15	(3.8)	13	(3.3)
Employee	19	(4.8)	14	(3.5)	11	(2.8)	5	(1.3)
Others[a]	305	(76.3)	86	(21.5)	76	(19.0)	63	(15.8)
Total								

[a] Labourers and Housewives.

Source: Field Survey (2023)

These findings showed that plastic bags are used on a daily basis by respondents in every category. The findings also demonstrated how common plastic bag use is among Kontagora city dwellers, who occasionally noticed a rising trend in plastic bag consumption. This discovery aligns with Padmini's (2019) study from Dujit Town, Uganda, which reports on the growing trend of plastic bag usage among the locals. In summary, these data support the idea that plastic bags are widely used items in other major cities around the nation.

Regardless of gender, educational attainment, age, or profession, the survey's findings showed that most town residents made considerable use of plastic bags in their day-to-day activities. Table 3 clearly illustrates some of the primary factors contributing to the widespread use, which were low cost (258, 64.5%), simple availability (247, 61.8%), and lightweight (56, 31.1%). These results are consistent with the Gupta (2019) report, which cited resource economy, low cost, lightweight design, and superior usability as the main drivers behind the widespread usage of plastic bags by billions of consumers worldwide.

Table 3. Factors Attributed to the Use of Plastic Bags in Kontagora Metropolis

Variables	**Low Price**		**Easy Accessibility**		**Light Weight**		**Lack of Substitute Materials**		**Durability**	
	(n)	**(%)**	**(n)**	**(%)**	**(n)**	**(%)**	**(n)**	**(%)**	**(N)**	**(%)**
Sex										
Male	206	(51.5)	198	(49.5)	36	(9.0)	31	(7.8)	22	(5.5)
Female	52	(13.0)	49	(12.3)	20	(5.0)	21	(5.3)	14	(3.5)
Total	258	(64.5)	247	(61.8)	56	(14.0)	42	(10.5)	36	(9.0)
Age										
Less than 20	50	(12.5)	46	(11.5)	14	(3.5)	11	(2.8)	9	(2.3)
Years	96	(24.0)	90	(22.5)	21	(5.3)	18	(4.5)	16	(4.0)
20 to 30 Years	70	(17.5)	64	(16.0)	17	(4.3)	10	(2.5)	6	(1.5)
30 to 40 Years	42	(10.5)	47	(11.8)	4	(1.0)	3	(0.8)	5	(1.3)
40 years and above	258	(64.5)	247	(61.8)	56	(14.0)	42	(10.5)	36	(9.0)
Total										
Educational Status	40	(10.0)	37	(9.3)	13	(3.3)	8	(2.0)	6	(1.5)
Illiterate	65	(16.3)	62	(15.5)	18	(4.5)	15	(3.8)	14	(3.5)
Primary	80	(20.0)	78	(19.5)	14	(3.5)	10	(2.5)	4	(1.0)
Education	73	(18.3)	70	(17.5)	11	(2.8)	9	(2.3)	12	(3.0)
Secondary	258	(64.5)	247	(61.8)	56	(14.0)	42	(10.5)	36	(9.0)
Education										
Tertiary										
Education										
Total										

Occupation									
Student	58	(14.5)	56	(14.0)	20	(5.0)	15	(3.8)	14 (3.5)
Private	68	(17.0)	64	(16.0)	13	(3.3)	19	(4.8)	17 (4.3)
Government	82	(20.5)	80	(20.0)	12	(3.0)	5	(1.3)	4 (1.0)
Employee	50	(12.5)	47	(11.8)	11	(2.8)	3	(0.8)	1 (0.3)
Others[a]	258	(64.5)	247	(61.8)	56	(14.0)	42	(10.5)	36 (9.0)
Total									

[a] Labourers and Housewives.

Source: Field Survey (2023)

On the other hand, while durability (36, 9%) and a lack of substitute materials (42, 10.5%) were indicated as additional contributing factors to the town's excessive usage of plastic bags, their significance was determined to be smaller than that of the previously described variables displayed in table 3. The primary causes of plastic's widespread use and associated issues are said to be the product's low cost and retailers' or store owners' free distribution of it. Some survey results from various cities around the world (Aziegbe, 2017; Rayne, 2018; Adane and Diriba 2018; Padmini, 2019) are congruent with this. Regarding the methods that the respondents employed to get rid of their trash plastic bags. The findings indicated that the typical methods for getting rid of the garbage associated with plastic bags are as follows: burning (200, 50%), burying (42, 10.5%), and open dumping (209, 52.3%). Table 4 illustrates these methods. Most of the residents routinely dispose of their rubbish carelessly in the surrounding area. These support the Kontagora Metropolis people' "use and throw-away" culture.

Table 4. Plastic Bags Waste Disposal Practices in Kontagora Metropolis

Variables	Dumping Openly		Burning		Burying	
	(n)	(%)	(n)	(%)	(n)	(%)
Sex						
Male	180	(45.0)	147	(36.8)	22	(5.5)
Female	29	(7.3)	53	(13.3)	20	(5.0)
Total	209	(52.3)	200	(17.5)	42	(10.5)
Age						
Less than 20 Years	41	(10.3)	38	(9.5)	4	(1.0)
20 to 30 Years	60	(15.0)	57	(14.3)	9	(2.3)
30 to 40 Years	49	(12.3)	47	(11.8)	17	(14.3)
40 years and above	59	(14.8)	58	(14.5)	12	(3.0)
Total	209	(52.3)	200	(50.0)	42	(10.5)
Educational Status						
Illiterate	30	(7.5)	39	(9.8)	9	(2.3)
Primary Education	56	(14.0)	53	(13.3)	5	(1.3)
Secondary Education	48	(12.0)	40	(10.0)	13	(3.3)
Tertiary Education	75	(18.8)	68	(17.0)	15	(3.8)
Total	209	(52.3)	200	(50.0)	42	(10.5)

Occupation						
Student	52	(13.0)	50	(12.5)	8	(2.0)
Private	57	(14.3)	55	(13.8)	10	(2.5)
Government Employee	68	(17.0)	65	(16.3)	18	(4.5)
Others[a]	32	(8.0)	30	(7.5)	6	(1.5)
Total	209	(52.3)	200	(50.0)	42	(10.5)

[a] Labourers and Housewives.

Source: Field Survey (2023)

Moreover, as Table 4 illustrates, burning is the most popular technique for getting rid of plastic bag waste in the research area. The percentage of female respondents (53, 13.3%) who burn their plastic bag garbage was nearly twice that of female respondents (29, 7.3%) who dispose of their rubbish outside. One explanation might be the prevalence of women using plastic bag waste to light charcoal and firewood in kitchens. It is a known fact that burning can aid in the removal of plastic bag waste or in lowering its environmental impact. However, this is in line with reports from Rayne (2018), which state that people prefer open dumping as a preferred method of disposing of plastic bag waste, usually after a single use, in many cities across the nation and around the world, especially in developing nations. Kontagora metropolis faces a number of issues with plastic bag trash, similar to other developing country towns (Rayne, 2018; Adane and Diriba, 2018; James and Babu, 2019; Tanimu, Jaafaru, and Suleiman, 2020). The information in Table 5 showed that among the issues raised by the respondents were sewage system blockage (297, 74.3%), destruction of natural beauty (253, 63.3), human health issues (205, 51.3), and animal death (166, 41.5). Additionally, the data demonstrated that each of the elements is an issue of comparable importance in the city (Figures 2 and 3). These findings are consistent with research from other nations on the negative environmental effects of plastic bag waste (UNEP, 2018b).

Table 5. Problems Associated with Plastic Waste Disposal in Kontagora Metropolis

Variables	**Sewage Systems Blockage**		**Destruction of the Natural Beauty of the Environment**		**Human Health Problem**		**Animal Health Problem**	
	(n)	**(%)**	**(n)**	**(%)**	**(n)**	**(%)**	**(n)**	**(%)**
Sex								
Male	240	(60.0)	205	(51.3)	175	(43.8)	134	(33.5)
Female	57	(14.3)	48	(12.0)	30	(7.5)	32	(8.0)
Total	297	(74.3)	253	(63.3)	205	(51.3)	166	(41.5)
Age								
Less than 20 Years	35	(8.8)	30	(7.5)	23	(5.8)	20	(5.0)
20 to 30 Years	124	(31.0)	105	(26.3)	84	(21.0)	79	(19.8)
30 to 40 Years	76	(19.0)	65	(16.3)	56	(14.0)	36	(9.0)
40 years and above	62	(15.5)	53	(13.3)	42	(10.5)	31	(7.8)
Total	297	(74.3)	253	(63.3)	205	(51.3)	166	(41.5)

Educational								
Status	8	(2.0)	6	(1.5)	5	(1.3)	3	(0.8)
Illiterate	62	(15.5)	55	(13.3)	43	(10.3)	34	(8.5)
Primary Education	86	(21.5)	66	(16.5)	58	(14.5)	46	(11.5)
Secondary	141	(35.3)	126	(13.5)	99	(24.8)	83	(20.8)
Education	297	(74.3)	253	(63.3)	205	(51.3)	166	(41.5)
Tertiary Education								
Total								
Occupation								
Student	90	(22.5)	82	(20.5)	60	(15.0)	49	(12.3)
Private	58	(14.5)	42	(10.5)	36	(9.0)	29	(7.3)
Government	130	(32.5)	117	(29.3)	98	(24.5)	83	(20.8)
Employee	19	(4.8)	12	(3.0)	11	(2.8)	5	(1.3)
Others[a]	297	(74.3)	253	(63.3)	205	(51.3)	166	(41.5)
Total								

[a] Labourers and Housewives.

Source: Field Survey (2023)

According to a paper by Revel, Châtel, and Mouneyrac (2018), after domestic animals were slaughtered, significant amounts of plastic products—specifically, shopping bags—were recovered. Additionally, it has been noted that these household animals witlessly consume plastic bags—particularly those that contain meal leftovers—when there is a food shortage. Animal health issues and digestive system problems arise from this.

The majority of respondents (282, 70.5%) shown in Table 6 valued the crucial roles that radio, TV, and other social media platforms performed in educating the public about the negative effects of plastic bag waste. Additional information was obtained from schools (158, 39.5%), health professionals (166, 41.5%), and published materials (121, 30.3%). According to these findings, a sizable portion of the sample had access to radio, television, and various social media sites, like Facebook, Twitter, and the like. Additionally, regardless of educational status or/and, age level, people can get messages from TV and radio and other media platforms. Consequently, educating the community via these media and social media can help to a better understanding of the negative

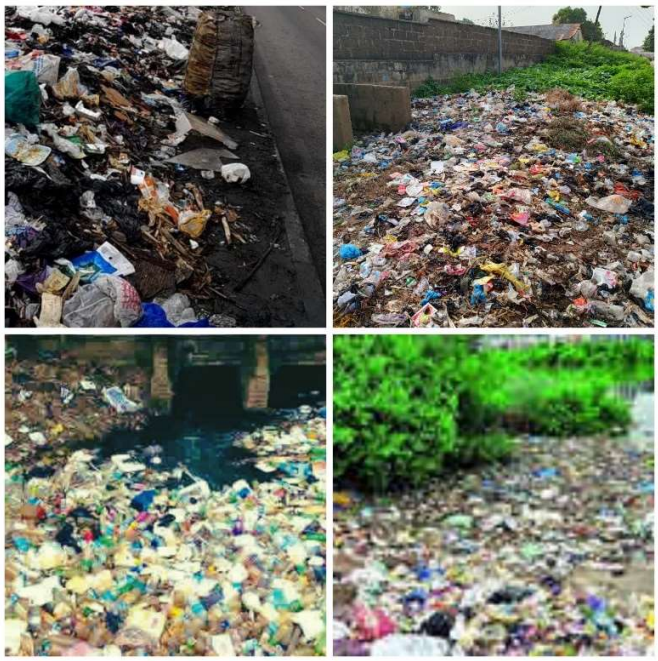

Figure 2: Huge Accumulation of Plastic Wastes on the Street, Land, Sewage and Water Ways

Source: Field Survey (2023)

Table 6. Media Awareness of the Community to get Information about Plastic Bags Wastes

Variables Categories	Radio/TV/other Social Media Platforms (n)	(%)	Health Professionals (n)	(%)	School (n)	(%)	Publish Materials (n)	(%)
Sex								
Male	186	(46.5)	134	(33.5)	120	(30.0)	98	(24.5)
Female	96	(24.0)	32	(8.0)	38	(9.5)	23	(5.8)
Total	282	(70.5)	166	(41.5)	158	(39.5)	121	(30.3)
Age								
Less than 20 Years	61	(15.3)	26	(6.5)	24	(6.0)	20	(5.0)
20 to 30 Years	113	(28.3)	80	(20.0)	78	(19.5)	53	(13.3)
30 to 40 Years	76	(19.0)	41	(10.3)	39	(9.8)	36	(9.0)
40 years and above	32	(8.0)	19	(4.8)	17	(4.3)	12	(3.0)
Total	282	(70.5)	166	(41.5)	158	(39.5)	121	(30.3)
Educational Status								
Illiterate	54	(13.5)	17	(4.3)	16	(4.0)	10	(2.5)
Primary Education	76	(19.0)	34	(8.5)	32	(8.0)	27	(6.8)
Secondary	88	(22.0)	46	(11.5)	43	(10.8)	30	(7.5)
Education	64	(16.0)	69	(17.3)	67	(16.8)	54	(13.5)
Tertiary Education	282	(70.5)	166	(41.5)	158	(39.5)	121	(30.3)
Total								

Occupation								
Student	80	(20.0)	50	(12.5)	49	(12.3)	42	(10.5)
Private	70	(17.5)	38	(9.5)	36	(9.0)	29	(7.3)
Government	97	(24.3)	50	(12.5)	48	(12.0)	33	(8.3)
Employee	35	(8.8)	28	(7.0)	25	(6.3)	17	(4.3)
Others[a]	282	(70.5)	166	(41.5)	158	(39.5)	121	(30.3)
Total								

[a] Labourers and Housewives.

Source: Field Survey (2023)

Effects of plastic bags. As also, shown in Table 6, only 121 (30.3%) of the respondents get information from published materials (newspapers and magazines). This could be credited to the lack of these materials having coverage on these wastes.

Table 7. Factors Responsible for Increasing Trends of Plastic Bags Utilization in Kontagora Metropolis

Variable/Categories	Lack of Awareness	
	(n)	(%)
Sex		
Male	107	(26.3)
Female	47	(11.8)
Total	154	(38.5)
Age		
Less than 20 Years	22	(5.6)
20 to 30 Years	64	(16.0)
30 to 40 Years	41	(10.3)
40 years and above	27	(6.8)
Total	154	(38.5)
Educational Status		
Illiterate	10	(2.5)
Primary Education	38	(9.5)
Secondary Education	46	(11.5)
Tertiary Education	60	(15.0)
Total	154	(38.5)
Occupation		
Students	35	(8.8)
Private	29	(7.3)
Government Employee	66	(16.5)
Others[*]	24	(6.0)
Total	154	(38.5)

[*] Labourers and Housewives.

Source: Research Survey (2023)

Remarkably, just 38.5% of respondents cited "lack of awareness" as the primary reason for the observed rising trend in plastic bag use, as seen in Table 7. Additionally, with the exception of the illiterate respondents, a larger portion of respondents in each category had a good understanding of the issues related to plastic bag waste in Tables 6 and 7. This suggests that organizing locals to take action against the usage and disposal of plastic bags after use only requires a little amount of work.

Conclusion

In conclusion, plastics offer a lot of advantages for the future, but it's clear that the ways we currently produce, use, and dispose of them are unsustainable and pose risks to the environment and public health. Nonetheless, the current investigation found that, irrespective of the respondents' demographic background:

1. The main reasons why the people of Kontagora town use plastic bags so often are because they are inexpensive, lightweight, and useful for carrying groceries and other goods.
2. Most people in Kontagora town regularly dispose of plastic debris carelessly in the surrounding area, putting them in danger of exposure to dangerous chemicals.
3. The people of Kontagora town are aware of the negative consequences of plastic bag trash, such as its toxicity, and air pollution ingestion risks on human health and the environment.

Recommendations

Based on the aforementioned discussion, the study recommended as follows:

1. To curb the overuse of plastic materials, the relevant authorities should implement strict measures such as fines, penalties, or outright bans.
2. To reduce the needless build-up of plastic bag waste in the environment, stakeholders such as government agencies, research institutions, business associations, retailers, non-governmental organizations, donors, youth associations, women associations, religious institutions, and the media should be encouraged to engage in intensive and widespread public sensitization campaigns against the careless use and disposal of plastic bags.
3. The national and subnational governments should encourage people to use environmentally friendly alternatives like paper, cloth, and natural fibre bags. Alternatively, they should provide a research avenue for scientists to develop and utilize studies on recently discovered bioremediation worms called Waxworms and Mealworms, which have the ability to ingest and metabolize polythene and polystyrene at a never-before-seen rate.

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