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Factors Contributing to Environmental Degradation in the Kumasi Metropolis of Ghana

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Abstract:

The study was conducted to investigate factors contributing to environmental degradation in Kumasi Metropolis. The study was conducted in the Ashanti Region of Ghana and adopted the descriptive survey design. Simple random sampling with replacement and convenient sampling techniques were adopted to select subjects for the study. A sample size of 282 teachers and health personnel in 10 Senior High Schools (SHS) and four hospitals in the Kumasi Metropolis were used for the study. Three research questions guided the study. A 68-item questionnaire and a five-item interview guide were used for data collection. The findings revealed that the major challenge facing the Kumasi Metropolis was attitudinal which culminated into defecating and dumping of household refuse at unauthorized places. It was recommended that environmental education should form an integral part of the curriculum of the educational system and should be examinable by the West Africa Examination Council. The activities that are responsible for the degradation of the environment in the study area were: littering, indiscriminate disposal of refuse, defecating at unauthorized places and others should be discouraged. Dustbins should be provided by the Kumasi Metropolitan Assembly (KMA) at vantage points in the city to reduce littering in the metropolis. Media, Churches, Non-Governmental Organizations should intensify their campaign against environmental degradation and its ramifications.

Keywords: Environmental degradation, attitudinal, auto emission, unauthorized places, dustbins and West African Examination Council

1. Introduction

1.1. Background to the Study

The environmental problems that have emerged over the past few decades prompted the need for Environmental Education (EE). The meaning of environmental education has been evolving in the last fifty years. It was initially seen as the study of the natural environment (i.e., nature study): trees, soil, water, etc. The focus was on appreciation of 'nature' and on the study of selected species. In the 1960s, education about the environment acquired an ecological and global perspective. It focused on inter-relationships of biotic and abiotic elements in ecosystems. In the 1970s, the term Environmental Education (EE) was coined and ever since, there have been different perceptions about the exact interpretation of EE. However, the definition and objectives, ratified at the international EE conferences in Belgrade and Tbilisi by United Nations Educational, Scientific, and Cultural Organization (UNESCO) are still widely accepted. It defined environmental education as: "a process aimed at developing a world population that is aware of and concerned about the total environment and its associated problems, and which has the knowledge, value, attitudes, skills, motivation, and commitment to work individually and collectively towards solutions of current problems and prevention of new ones" (UNESCO, 1977, pp.11-15).

The main objectives of environmental education are to help people acquire:

- i. awareness and sensitivity to the environment and its problems through the development of the ability to perceive and discriminate among stimuli received within the environment, internalize and extend these perceptions, and use this new ability in a variety of contexts to improve their environment.
- ii. a basic understanding about how the environment functions, how people interact with it, how issues and problems arise, and how they can be resolved.
- iii. a set of values and feelings of concern for the environment, and the motivation and commitment for current and future generations.

- iv. knowledge and skills needed to identify and investigate environmental problems, and to contribute to their resolution through positive actions.

A review of a number of research reports indicates that in developing countries, the problem of environmental degradation is not so much with technology and industry. UNESCO-UNEP (1983) reported that in developing countries, environmental problems revolve around degradation and depletion of natural resources, inadequate water and poor sanitation. These problems are compounded by other social concerns like poverty, income disparities, unemployment, underemployment, and illiteracy.

Ghana is endowed with abundant natural resources. These served as a spring-board for the country's industrialization effort after the attainment of independence and they remain the fundamental endowment from which the citizens derive their livelihood. In the process of exploiting these resources to meet socio-economic needs, however, adequate care has not been taken to guard against the depletion of the resources. This has given rise to a host of problems which include deforestation, desertification, and soil degradation. Also, problems associated with industrialization, such as pollution of the air and water, have surfaced. A point has now been reached where it is necessary to balance national development efforts and the quest for economic growth with a rational exploitation of the resource base. This must be done to ensure that economic development can be sustained in the long term (EPC, 1994).

The major environmental problems confronting Kumasi metropolis are poor drainage system, industrial pollution, air pollution, fresh water pollution, improper waste disposal, sand winning, quarrying and many others. The environmental behavior of the populace in Kumasi is deplorable to the level that people dump refuse, faeces, and other waste materials around indiscriminately. They also litter the surroundings with paper, plastics, rags and many others without considering its effect on the environment. These environmental challenges have created numerous health problems for the residents. For example, the major effect of poor drainage system is the creation of good grounds for the breeding of mosquitoes and germs. Owing to the afore-mentioned reason, health reports on electronic media indicate that diseases such as malaria, cholera, typhoid, and schistosomiasis are so endemic in the affected areas (KMA, 2009).

In 1994, the Environmental Protection Council (EPC) now Environmental Protection Agency (EPA) of Ghana was reported to have played a major role in creating public awareness on environmental problems facing the country (EPC, 1994). The agency called on local authorities to do all they could to solve environmental problems existing in their various communities. From the foregoing, it could be concluded that efforts have been made at the international, national and local levels to educate people on the issue of environmental degradation. However, the question is how much education have people had and are still having to enable them become fully aware of environmental problems? If people have been educated well on environmental issues, why are these problems still with us?

Sponsel (1987) stated that the underlying cause of environmental problems is the collective behavior of individuals in a society, behavior that is predominantly cultural. He also added that continued existence of many species, including possibly man himself depends upon our ability to make conscious changes in our cultural attitudes toward nature and our place in the biosphere. Many environmentalists have expressed their views that people's attitudes are and should be an important component of environmental education.

In view of the afore-mentioned reasons, it is very important that information about the factors contributing to present trends in environmental degradation should be investigated. It is hoped that this will be of great importance to the development of objectives and curricula for environmental education.

1.2. Statement of the Problem

In recent decades there has been a widespread concern about sustainability of the environment and all of its ramifications. The global concern about sustainability arose as a result of increasing environmental degradation. The concern about pollution and deterioration of environmental quality has been building momentum to various environmental movements. Despite the various organizations that are now spearheading political activism and campaigns for changes in policies, laws, technologies, and development strategies to enhance environmental health qualities, the achievement is minimal (Ewald, 1971). Moyer (1977) indicates that, the activities of man are the major causes of environmental degradation. The problems of the Kumasi Metropolis are mainly human traffic congestion, outbreak cholera during raining seasons, littering, pollution by car exhaust and smoke, disposal of refuse, defecation at unauthorized places, blocked drainage, sand winning, quarrying, as well as noise, air, and water pollution. Though, education through the media, newspapers, durbars, churches and many others have gone on for some time now, the above practices are rather on the increase (KMA, 2009). Because of this lack of achievement, this researcher decided to assess the knowledge and attitudes of the people in the Kumasi Metropolis toward environmental degradation.

1.3. Purpose of the Study

The main purpose of this study was to investigate the factors contributing to environmental degradation in the Kumasi Metropolis.

1.4. Specific Objectives

Specifically, the study sought to achieve the following specific objectives.

1. To investigate the attitudes of teachers and health workers towards the environment in the Kumasi Metropolis.
2. To find out the ways through which the Kumasi Metropolis is being degraded.
3. To find out the main environmental challenges facing the Kumasi Metropolis and the health of the people.

1.5. Research Questions

The study was intended to answer the following research questions:

1. What are the attitudes of teachers and health workers towards the environment in the Kumasi Metropolis?
2. In what ways is the Kumasi Metropolis being degraded?
3. What main environmental challenges face the Kumasi Metropolis and the health of the people?

2. Methodology

2.1. Design of the Study

The design of the study was a descriptive survey which attempts to collect data from members of a population in order to determine the current status of the population (Gay, 1987). The study was conducted in the Kumasi Metropolis in the Ashanti Region of Ghana. The target population was city dwellers. However, for the purpose of this study, simple random sampling with replacement was used to select 10-second cycle schools from a total of 17 schools in Kumasi. Two hundred and eighty-two (282) personnel in the health sector as well as teachers teaching Agricultural Science, Physics, Chemistry, Biology, Geography, Social Studies, and Integrated Science were conveniently sampled from the schools and hospitals. In addition to this, three Assemblymen, and 20 market women in the Metropolis were conveniently sampled and interviewed. The total number of these teachers was 809 and the staff strength of the health institutions was 380.

2.2. Instruments for Data Collection

A questionnaire and an interview guide were the main instruments for data collection. The questionnaire was in two parts. The first part was made up of four statements soliciting the general information on the respondents. The second part was made up of 22 statements based on general environmental problems in Kumasi. The items (statements) were mainly close ended with a few being open-ended for the respondents to express their opinions. The researcher used an open-ended interview format to solicit information from the Assemblymen, market women, and health personnel in the various communities and hospitals.

2.3. Reliability of the Instrument

The instrument was pre-tested on 50 people with similar characteristics as those in the study. They comprised of 25 teachers and 25 nurses randomly drawn from the Kwabre East District of the Ashanti Region. The reliability of coefficient of 0.8682 was realised upon calculation using Cronbach co-efficient alpha technique. This value was deemed appropriate for the study.

2.4. Data Analysis Procedure

Frequencies and proportions were mainly used in the data analysis.

3. Results

3.1. Attitudes of Teachers and Health Workers towards the Environment in the Kumasi Metropolis

Research question one sought to find out the concerns of people about the environment. This was based on a 4-point Likert scale ranging from No Concern, Few Concern, Quite Concerned, to Extremely Concerned. The results are shown in Table 1.

| Item | No Concern | Few Concerns | Quite Concerned | Extremely Concerned |
|------------------------------------|------------|--------------|-----------------|---------------------|
| a. Air and Water Pollution | 1.8 | 7.4 | 29.1 | 61.7 |
| b. Indiscriminate garbage disposal | 1.8 | 5.7 | 21.6 | 70.9 |
| c. Bush Fires | 1.3 | 16.3 | 31.6 | 50.6 |
| d. Sewage disposal | 2.9 | 9.6 | 39.7 | 47.9 |
| e. Deforestation | 6.7 | 11.4 | 40.1 | 41.8 |
| f. Unsightly sand wining | 11.7 | 17.7 | 41.8 | 28.8 |
| g. Choked gutters | 2.1 | 7.1 | 25.9 | 64.9 |
| h. Desertification | 9.6 | 20.6 | 35.5 | 34.3 |
| i. Surface mining | 11.7 | 22.3 | 39.4 | 26.6 |
| j. Littering | 3.5 | 7.8 | 16.3 | 72.4 |

Table 1: Concern for the Environment

From Table 1, there is an indication that majority of the respondents in the study were concerned about environmental issues. On air and water pollution, 90.8% of the respondents indicated they are quite or extremely concerned. Only 9.2% indicated they have no concerns or few concerns. With indiscriminate garbage disposal, 92.5% of the respondents indicated they were quite or extremely concerned while only 7.5% opted for no concern or few concerns. On the issue of bush fires, the response pattern was similar. Majority, 82.4% indicated they are quite or extremely concerned. Only 17.6% indicated they have no concern or few concerns. Concerning sewage disposal, as many as 87.6% indicated they were quite or extremely concerned. Only 12.5% opted for no

concern or few concerns. The next, was the issue on deforestation. Majority, 81.9% of the respondents indicated they have quite or extremely concerns while only 18.1% opted for no concern or few concerns. On the issue of unsightly sand wining, the respondents maintained their response pattern. More than half of the respondents (70.6%) indicated they were quite or extremely concerned, while less than half (29.4%) chose no concern or few concerns. The next item was that of choked gutters. Here, 64.9%, 25.9%, 7.1% and 2.1% of the respondents indicated extremely concerned, quite concerned, few concerns and no concern respectively.

Concerning the issue of desertification, the distribution of the responses ranged from extremely concerned (34.3%), quite concerned (35.5%), to few concerns (20.6%). A very small proportion (9.6%) of the respondents indicated they had no concerns. Regarding surface mining, as many as 66% of the respondents indicated they were quite or extremely concerned while only 34% indicated they have no concern or few concerns. Lastly, concerning littering, as many as 88.7% of the respondents indicated they were quite or extremely concerned. Only 11.3% indicated they have no concern or few concerns.

The analysis above reveals that the respondents were generally concerned about all the environmental issues listed since most of the respondents indicated they were either quite or extremely concerned.

3.2. Ways through which the Kumasi Metropolis is being degraded

The respondents were asked to indicate the sources of negative impact on the environment in Kumasi. A 6–point Likert Scale ranging from one to five with one, having no effects, two, having few effects, three, having some effects, four, having quite effects, and five, having tremendous effects was used. Moreover, respondents were also given an opportunity to indicate DK (don't know) if they are unfamiliar with the item. Table 2 below gives analysis of respondents' responses.

| Item | No Effect | Few Effect | Some Effect | Quite Effect | Tremendous Effect | DK |
|--|-----------|------------|-------------|--------------|-------------------|-----|
| a. Household garbage | 0.7 | 16.7 | 22.7 | 19.9 | 39.4 | 0.7 |
| b. Automobile exhaust | 2.1 | 5.7 | 25.9 | 33.7 | 30.5 | 2.1 |
| c. Sewage pollution from cities | 0.7 | 3.2 | 20.2 | 32.6 | 42.2 | 1.1 |
| d. The mining industry | 3.2 | 11.0 | 23.4 | 27.3 | 34.4 | 0.7 |
| e. The fishing industry | 12.4 | 23.8 | 24.5 | 20.6 | 14.9 | 3.9 |
| f. Improper application of pesticides and herbicides | 5.3 | 13..5 | 25.2 | 28.7 | 25.9 | 1.4 |
| g. Indiscriminate cutting down of trees | 1.8 | 5.7 | 17.7 | 34.0 | 40.4 | 0.4 |
| h. Bush fires | 1.8 | 7.1 | 29.4 | 28.4 | 33.0 | 0.4 |
| i. Sand wining | 6.4 | 16.3 | 27.7 | 32.6 | 12.8 | 4.3 |
| j. Quarrying | 8.5 | 22.3 | 28.0 | 23.8 | 14.9 | 2.5 |
| k. Littering | 1.1 | 2.8 | 11.3 | 26.2 | 58.2 | 0.4 |

Table 2: Sources of Negative Impact on Kumasi Environment

The result from Table 2 shows that with the issue of household garbage, as many as 82% of the respondents indicated that it has some, quite, and tremendous negative effects on the environment in Kumasi. Only 17.4% of the respondents indicated that household garbage has few or no negative effects at all. However, 0.7% indicated they do not know whether it has effects or not. On the problem of automobile exhaust, the majority (90.1%) of the respondents opted for some or quite or tremendous negative effects on the environment. Only 9.9% indicated they do not know or no effects or few negative effects on the environment.

Next, was sewage pollution from cities. The response pattern of the respondents remained the same. Most of the respondents, 95% pointed out that it has some or quite or tremendous negative effects on Ghana's environment while 5% opted for do not know or few or no negative effects at all. With regard to the mining industry, the majority (85.1%) indicated it has some or quite or tremendous negative effect on the environment while the minority (14.1%) chose do not know or no or few negative effects.

On the fishing industry, as many as 60 % of the respondents pointed out that fishing activities have some or quite or tremendous negative effects while only 40 % chose for no or do not know or few negative effects on the environment. The next item was on the improper application of pesticides and herbicides by farmers. With this, most of the respondents (79.8%) opted for some or quite or tremendous effects on the environment, with only 20.2% choosing no or few effects or do not know. The next item was the indiscriminate cutting of trees. Most respondents (92.1%) indicated some or quite or tremendous negative effects on the environment. Only 7.9 % indicated that indiscriminate cutting down of trees has no or few effects on the environment. The implication was that all the respondents were very aware that indiscriminate cutting of trees has negative effects on the environment.

With regards to the issue of sandwining, as many as 73% of the respondents pointed out that it has some or quite or tremendous effects while only 27% of the respondents opted for do not know or no or few negative effects. On quarrying, as many as 66.7% of the respondents pointed out it has some or quite or tremendous negative effects on the environment, with 33.3% opting for do not know or few or no negative effects at all.

Next, was the issue of bushfires. As many as 90.8% of the respondents indicated that it has some or quite or tremendous effects while only 9.3% pointed out it has no or few negative effect. No respondent chose do not know. Lastly, on the issue of littering of the environment, majority (95.7%) of the respondents pointed out it has some or quite or tremendous negative effects on the environment, while the minority (4.3%) indicated no or few negative effects. No respondent chose do not know. This also implies that all the respondents were aware of the negative effects of littering on Kumasi environment. Moreover, it was also noted more than half of the

respondents (58.2%) indicated that littering has tremendous effects on Kumasi's environment. Here littering has the greatest negative impact on the Kumasi environment.

3.3. Environmental Challenges Facing the Kumasi Metropolis and the Health of People

The respondents were asked to indicate the major environmental problems affecting the Kumasi Metropolis. The result is shown in Table 3.

| Problem | Frequency | Percent (%) |
|--|-----------|-------------|
| a. Air pollution | 30 | 10.6 |
| b. Water Pollution | 21 | 7.4 |
| c. Deforestation | 3 | 1.1 |
| d. Human Lifestyle or attitudes (littering, defecating, dumping of household refuse at unauthorized places, etc. | 218 | 77.3 |
| e. Ineffective of the government and other responsible state agencies | 4 | 1.1 |
| f. Quarrying | 0 | 0 |
| g. Sand wining | 0 | 0 |
| h. Garbage (solid waste) disposal | 4 | 1.4 |
| i. Bush fires | 0 | 0 |
| j. Sewage (liquid waste) disposal | 2 | 1.1 |
| k. Surface mining | 0 | 0 |
| Total | 282 | 100.0 |

Table 3: Environmental Challenges Facing Kumasi Metropolis

From Table 3, more than two-thirds of the respondents, 218 (77.3%) indicated that human lifestyles or attitudes (littering, defecating, dumping of household refuse at unauthorized places, etc.) constitute the major problem facing the Kumasi Metropolis whereas the remaining less than one-third, opted for the other problems.

4. Discussions

4.1. Attitudes of Teachers and Health Workers towards the Environment in the Kumasi Metropolis

All the respondents were of the view that air and water pollution, indiscriminate garbage (solid waste) disposal, bushfire, sewage (liquid waste) disposal, deforestation. Unsightly sand wining, choked gutters, desertification, surface mining and littering are matter of either quite or extremely concerned.

These results are in agreement with recent environmental problems of the Kumasi metropolis which are mainly human traffic congestion, outbreak cholera during raining season, littering, pollution by car exhaust and smoke, disposal of refuse, defecation in unauthorized places, blocked drainage, sand winning, quarrying, as well as noise, air, and water pollution (KMA, 2009). It is also in agreement with the general environmental problems in Ghana which include pollution, soil and coastal erosion, inefficient waste management, deforestation and population (IIED, 1992; EPC, 1994;). The results also confirm the UNESCO-UNEP (1983) report that in developing countries, environmental problems revolve around degradation and depletion of natural resources, inadequate water and poor sanitation. These problems are compounded by other social concerns like poverty, income disparities, unemployment, underemployment, and illiteracy. The interview conducted also confirms that out of concern, sanitary organizations have been formed in some of the communities to ensure appropriate disposal of waste. Also, city guards have been employed by KMA (Kumasi Metropolitan Assembly) to arrest and fine people who litter in the city. A periodic clean-up exercise was done in some of the communities. It is also worth noting that the Asantehene, Otumfuo Osei Tutu II in conjunction with the KMA periodically organize clean-up exercises in the Kumasi Metropolis.

4.2. Ways through Which the Kumasi Metropolis Is Being Degraded

All the respondents indicated that all the following issues have negative impacts on the environment in Kumasi: Household garbage, Automobile exhausts, Sewage pollution from cities, the mining industry and the fishing industry. Others are Improper application of pesticides and herbicides, Indiscriminate cutting down of trees, Bushfires, Sand wining, Quarrying and Littering.

However, it was found that littering has the greatest negative impact on the Kumasi environment. This is in line with the interview conducted since it was confirmed that littering is the major problem in the Kumasi Metropolis. The finding confirms the report that the people in the metropolis also litter the surroundings with paper, plastics, rags and many others without considering their effects on the environment (KMA, 2009). The finding agrees with the Presidential Report to Parliament (1995) which identified that the country's principal environmental problems include pollution, soil and coastal erosion, inefficient waste management and deforestation. Pollution is largely caused by mining activities and manufacturing industries as well as by automobiles. Deforestation is due to uncontrolled methods of timber extraction, shifting cultivation and collection of fuel wood and fodder, which also contribute to soil erosion. Inefficient waste management is the result of insufficient facilities for collection of wastes and insanitary practices of the people.

4.3. Environmental Challenges Facing the Kumasi Metropolis and the Health of People

The results showed that all the respondents were of the view that human attitudes (littering, defecating, dumping of household refuse at unauthorized places, etc.) was the major problem facing the Kumasi metropolis. The interview conducted by the researcher also confirmed that human attitude is the major problem in Kumasi metropolis. The result is in agreement with Field (1994) who reported that many programmes have been going on across the country to educate the people on environmental degradation, yet practices that degrade the environment are still going on. He concluded that individual attitudes were the major problem and recommended that environmental education could be reviewed to address these problems.

Sponsel (1987) also reported that the underlying cause of environmental problems is the collective behavior of individuals in a society, behavior that is predominantly cultural. He also added that continued existence of many species, including possibly man himself depend upon our ability to make conscious changes in our cultural attitudes toward nature and our place in the biosphere. This finding is also in agreement with Moyer (1977) that the activities of man are the major causes of environmental degradation. It is also in line with research conducted by Kotey (1998) on attitudes of people toward environmental degradation at Cape Coast Beach that people have a positive attitude toward the environment, but do not agree with the actual situation on the ground.

4.4. Conclusions

From the major findings, it can be concluded that, in general, people are concerned about the environment. Littering, auto emission, defecating and dumping of refuse at unauthorized places are the major problems that affect the environment in the Kumasi Metropolis. This means that human attitudes and lifestyles are the major driving force of environmental degradation in the Kumasi Metropolis.

4.5. Recommendations

The following recommendations are very important if the physical development and human well-being are to be improved in the Kumasi Metropolis. Firstly, all the activities that are responsible for the degradation of the environment in the study area such as littering, indiscriminate disposal of refuse, defecating at unauthorized places and others should be discouraged. Dustbins should be provided by KMA at vantage points in the city to reduce littering in the metropolis. Secondly, Environmental Education (EE) should form an integral part of the educational system and should be examinable by the West Africa Examination Council. The Mass Media, Churches, and Non-Governmental Organizations must be at the forefront of EE in the Metropolis.

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