

PUBLIC HEALTH AWARENESS OF CAUSES AND CONSEQUENCES OF ENVIRONMENTAL POLLUTION BY SECONDARY SCHOOLS TEACHERS AND STUDENTS IN ONITSHA SOUTH LOCAL GOVERNMENT AREA

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Abstract

The study investigated the public health awareness of causes and consequences of environmental pollution by secondary school teachers and students in Onitsha South local government area of Anambra State. The study was a survey study conducted among S.S.2 teachers and SS 2 students in Onitsha South local government area of Anambra State. The sample consists of 30 SS2 teachers and 240 SS2 students making a total of 270 persons. The study was guided by four research questions. A questionnaire designed by the researcher was employed to gather data. The data gathered was analysed using mean, the result of the analysis showed that both teachers and students are aware that wastes from household, smoke from generator, dirty water from industries and agricultural chemical cause environmental pollution and that some of the consequences include among others; damage of human health, leads to erosion and flooding, contribute to the depletion of the ozone layer and breakage of drainage systems.

Keywords: Public Health Awareness, Causes, Consequences, Environmental Pollution.

Introduction

Man's health and survival are dependent upon his relationship with their environment. The environment provides all life support system such as air, water, and land. Ocheri (2018) defined pollution as the direct or indirect alteration of the physical, thermal, biological or radioactive properties of any part of the environment in such a way as to cause hazard or damage to the public health, safety of welfare of any living species. In other words, the introduction of any harmful substance into the environment is called environmental pollution.

Types of Environmental Pollution

Pollution can be categorized into four major types namely; air pollution, water pollution, land pollution and noise pollution.

Air Pollution: The atmosphere is a mixture of gases and any undue interference with the natural composition of air constitute causes of air or atmospheric pollution. Air pollution is great environmental problem as the materials which are called pollutants could be in any of the different phases of matter namely solid, liquid, and gas. The liquid pollutants in the air exist in form of droplets which include those of cement, as best or ceramics, sand and soot. They are suspended in the air and interfere with man's visual respiratory system and digestive system.

Obi (2014) stated that air pollution of the air with un-wanted gases, smokes particles and other substances. Based on this, air pollution is considered as being the most universal type of pollution because of its rapid spread and rapid interference with public health and the equilibrium of the environmental ecosystem. In Nigeria, some of the signs that an area has been affected by air pollution are presence of fumes in the atmosphere, obnoxious smell of the air, irritation of the eyes, nose and throat, the reduction in visibility, colour changes in vegetation and so on.

Water Pollution: Water in wells, streams, lakes, rivers and oceans may be polluted in one way or the other among the different types of pollution. Its consequences are readily seen once the pollutants reach ground reservoir creating serious hazards to people drinking the water as well as the aquatic lives in the water. Water may be polluted with laundry detergent, pesticide, residues and oil spillage. The fresh water is mostly polluted through the discharge of sewage and other wastes from farm and industries. Agbazoie and Ekweozor (2018) were of the view that water is the commonest substance known and a good solvent for many substances rarely occurs in its pure forms in nature. The different salt of calcium and magnesium dissolve in water and causes hardness of water, washing down of fertilizer into the water bodies increases algae growth, while decaying organic matter in water gives a foul smell. Water can be sourced from rainfall, streams, rivers, boreholes, springs, lakes, dams

and all these sources are amenable to pollution. The water is polluted as a result of any organic material in it and it becomes a barrier to its desired use at anytime. The pollution of water is the intentional or unintentional addition of foreign matter or substances which reduce the quantity of water. Water is said to be of good quality if it is safe for the use by man and animals.

Land Pollution: The organic and inorganic wastes of domestic and industrial origins are very serious factors in land pollution. Land pollution can be described as the degradation of the earth surface through misuse of soil by poor agricultural practices, mineral exploitation, industrial and domestic waste dumping and indiscriminate waste disposal. Alina Bradford (2015) stated that all pollutants that equally pollute air and even water can pollute land too. Take for instance pesticides and excess use of fertilizer can pollute land, air and water. These pollute water when they are washed into water bodies. Most of the air pollutant equally pollutes land at the same time. Plants are affected through absorption, man is in variably affected either by eating the plants or by those pollutants destroying the plants when they fail to survive on the polluted land. In urban-environment, the major factors of land pollution are improper waste disposal, industrialization and deforestation.

Noise Pollution: Noise pollution is said to occur whenever there is an unwanted sounds of any frequency intensity or when wanted sounds are produced at a very high frequency intensity in such a way that it becomes a disturbance to the ear. Noise pollution can be relative in the sense that one man's noise could be another man's music, fun or business. For instance, a dealer on audio music records whose shop is close to residential house might think that he is in business while neighbours would be crying of noise pollution. On the either hand, noise pollution can be absolute phenomenon in some situations. The absolute noise pollution include industrial machines, stand by generators and automobiles. Based on these sources of noise pollutants, noise pollution is defined as any unwanted sound. This means that the noise pollution can be harmful to human activities and public health. The undesirable sounds are becoming increasingly an environmental menace especially with global progressive development in a science and technology. Many industrial establishments in Nigeria have also brought about noise pollution.

Consequences of Environmental Pollution

Pollution has a number of effects (consequences) to man, other animals, plants and other living organism. Air pollution has a number of peculiar consequences which are the hall mark of its harmful effects. These include aggravation of respiratory ailment such as bronchitis reduction of light intensity at the ground level which lowers the rate of photosynthesis in the plants, deposition of smokers soot on clothes, cars and building making them difficult and costly to clean. Zerock (2014)

stated that the heaps of accumulated or uncleared refuse pose threat to public health and the environment at large. Whenever it rains, solid waste dumped in drainage causes blockage and flooding, this results to erosion and breeding ground for mosquitoes causing malaria. In agriculture, wrong application of pesticides and fertilizers has hazardous effects on lands and air pesticide man not only cause immediate harm to human but also long term effects in man's food web, for instance when domestic animal affected by pesticides are eaten by man, he will also be affected as in the case of gamalin-20, ppt and other dangerous pesticide (Mission, 2021). The various effects of pollutants that cause lung cancer are mainly smokes and gases like Sulphur (ii) oxide, sulphur (iv) oxide. Carbon monoxide is highly dangerous, poisonous and kills rapidly cyanides, lead, zinc and mercury are deadly environmental pollutants that interferes with the metabolic systems of the body in one way or the other and cause death. Improper waste storage in the home is associated with the presence of house flies in the kitchen during cooking is correlated with incidence of childhood diarrhoea. The poor handling and disposal of water are major causes of environmental pollution which creates breeding grounds for photogenic organism and spread of infectious diseases.

Research Questions

The following research questions guided the study:

1. What is the level of public health awareness of causes of environmental pollution by secondary school teachers?
2. What is the level of public health awareness of causes of environmental pollution by secondary school students?
3. What is the public health awareness of consequences of environmental pollution by secondary school teachers?
4. What is the level of public health awareness of consequences of environmental pollution by secondary school students?

Methods

Descriptive survey design was adopted for this study (Nworgu, 2015). This design is appropriate since the study sought to collect data from respondents in order to investigate the public health awareness of causes and consequences of environmental pollution by secondary school teachers and students in Onitsha South local government area of Anambra State, Nigeria. The population of the study comprised 56 SS 2 teachers and 1,133 SS 2 students in the 6 selected government owned secondary schools in Onitsha South local government area. The sample for the study comprised 30 SS2 teachers and 240 SS2 students drawn using simple random sampling. The instrument for data collection was a structured questionnaire

titled “Public Health Awareness of Causes and Consequences of Environmental Pollution by Secondary School Teachers and Students” (PHACCEPSCTS), contained 20 items each for both teachers and students which measured the level of public health awareness of causes and consequences of environmental pollution. The items of the instrument are structured on a five point likert scale of very High (VH), High (H), Moderate (M), Low (L), and Very Low (VL) weighed 5, 4, 3, 2, and 1 respectively.

The instrument was subjected to face validation by two experts, one expert in measurement and evaluation unit of the Department of Educational Foundations and the other expert from the Department of Science Education all from Nnamdi Azikiwe University, Awka, Anambra State. The reliability of the instrument was ascertained through single administration of copies of PHACCEPSCTS to 20 teachers and 80 students from Awka Education Zone of Anambra State, Nigeria which were outside the study area. The Pearson Product Moment Correlation value of 0.77. This is inline with Doval, Viladrick and Angulo-Brunet (2023) who recommended that a co-efficient (r) of 0.70 and above should be considered high enough to judge an instrument as reliable. The researcher with the help of two research assistants who are secondary school teachers in state secondary schools in Onitsha South local government area of Anambra State, Nigeria administered 270 copies of the questionnaires distributed, duly filled and successfully retrieved were used for data analysis. The data collected from the facts and figures on the questionnaire of SS 2 teachers and SS 2 students were analysed using weighted mean on a five point likert scale. The decision on the research questions were based on range of values obtained from mean scores. Thus, mean scores ranging 4.50 – 5.00 indicates Very High (VH), 3.50 – 4.49 indicates High (H), 2.50 – 3.49 indicates Moderate (M), 1.50 – 2.49 indicates Low (L) and 0.00 – 1.49 indicate Very Low (VL) respectively.

Results

Research Question 1: What is the level of public health awareness of the causes of the environmental pollution by secondary school teachers?

Table 1: Mean Rating Scores of Secondary School Teachers on the Level of Public Health Awareness of Causes of Environmental Pollution

S/N	ITEM	MEAN	REMARK
1.	Development of technology contributes to environmental pollution.	3.37	Moderate
2.	Industrial machines and effluents cause environmental pollution.	4.90	Very High

3.	Waste from household are the source of environmental pollution.	4.77	Very High
4.	Home music or sounds, church programmes, vehicle horns and standby generators can result to noise pollution.	3.70	High
5.	Environmental pollution are caused by natural disasters.	4.33	High
6.	I observe that smoke from generator causes air pollution.	4.87	Very High
7.	Dirty water from industries causes environmental pollution.	4.60	Very High
8.	Waste generated from households such as bottles, cans and nylons cause environmental pollution.	4.43	High
9.	Agriculture chemicals like inorganic fertilizers; pesticides cause environmental pollution.	4.37	High
10.	Flooding due to heavy rainfall pollution.	4.47	High
	Grand Mean	4.38	High

Table 1 revealed that the grand mean of 4.38 showed that the teachers are highly aware that the items listed are causes of environmental pollution.

Research Question 2: What is the level of public health awareness of causes of environmental pollution by secondary school students?

Table 2: Mean Rating Scores of Secondary School Students on the Level of Public Health Awareness of Causes of Environmental Pollution

S/N	ITEM	$\bar{x}$	REMARK
1.	Development of technology contributes to environmental pollution.	3.72	High
2.	Industrial machines and effluents cause environmental pollution.	3.84	High
3.	Waste from household are the source of environmental pollution.	4.71	Very High
4.	Home music or sounds, church programmes, vehicle horns and standby generators can result to noise pollution.	4.65	Very High

5.	Environmental pollution are caused by natural disasters.	3.66	High
6.	I observe that smoke from generator causes air pollution.	4.66	Very High
7.	Dirty water from industries causes environmental pollution.	4.69	Very High
8.	Waste generated from households such as bottles, cans and nylons cause environmental pollution.	3.90	High
9.	Agriculture chemicals like inorganic fertilizers; pesticides cause environmental pollution.	4.41	High
10.	Flooding due to heavy rainfall pollution.	4.28	High
	Grand Mean	4.25	High

Table 2 revealed that the grand mean of 4.25 showed that the students are highly aware that the items listed are the causes of environmental pollution.

Research Question 3: What is the level of public health awareness of the consequences of environmental pollution by secondary school teachers?

Table 3: Mean Rating Scores of Secondary School Teachers on the Level of Public Health Awareness of the Consequences of Environmental Pollution

S/N	ITEM	$\bar{X}$	REMARK
1.	Environmental pollution lead to damage of human health and even death.	4.70	Very High
2.	The yield or crops and land productivity are reduced by environmental pollution.	4.15	High
3.	Pollution of released into the air deplete the ozone layer.	4.05	High
4.	When refuse are indiscriminately dumped in the environment, it lead to blockage of drainage systems.	4.73	Very High
5.	Erosion and flooding are consequence of environment pollution.	4.00	High
6.	Environmental pollution promote spread of deadly diseases.	4.24	High

7.	Toxic chemicals when released to farm lands reduce crop yield and land productivity.	4.10	High
8.	Air pollutants contribute to the depletion of the ozone layer.	4.17	High
9.	Pipes used in drainage systems are usually broken during flooding.	3.75	High
10.	Erosion is one of the negative effects of environmental pollution.	3.93	High
Grand Mean		4.18	High

Table 3 revealed that the grand mean 4.18 showed that secondary school teachers are highly aware that the items listed are consequences of environmental pollution.

Research Question 4: What are the levels of public health awareness on the consequences of environmental pollution by secondary school students?

Table 4: Mean Rating Scores of Secondary School Students on the Level of Public Health Awareness of the Consequences of Environmental Pollution

S/N	ITEM		REMARK
1.	Environmental pollution lead to damage of human health and even death.	4.47	Very High
2.	The yield or crops and land productivity are reduced by environmental pollution.	3.77	High
3.	Pollution of released into the air deplete the ozone layer.	4.70	Very High
4.	When refuse are indiscriminately dumped in the environment, it lead to blockage of drainage systems.	4.50	Very High
5.	Erosion and flooding are consequence of environment pollution.	4.10	High
6.	Environmental pollution promote spread of deadly diseases.	4.53	Very High

7.	Toxic chemicals when released to farm lands reduce crop yield and land productivity.	3.42	High
8.	Air pollutants contribute to the depletion of the ozone layer.	4.70	Very High
9.	Pipes used in drainage systems are usually broken during flooding.	3.70	High
10.	Erosion is one of the negative effects of environmental pollution.	4.27	High
Grand Mean		4.21	High

Table 4 revealed that the grand mean of 4.21 showed that the students are highly aware that the items listed are the consequences of environmental pollution.

Discussion

The findings of the study indicated that both secondary school teachers and students are aware of the causes and consequences of environmental pollution. Further findings revealed that teachers are aware that environmental pollution leads to damage of public health and even death. This is due to wastes produced by industry which produces pollutants that are extremely harmful, for instance asbestos which results in inhalation of fibre in industry. It can cause lung cancer and an illness known as asbestosis (fibrosis of the lungs). Flooding is another consequence that teachers are aware of the environment suffers when floods happen, chemical and other hazardous substances end up in the water and eventually contaminates the water bodies. During flood also, roads, household, automobiles are destroyed, people become homeless, many people have lost their lives as a result of flood, many more are injured and others are made homeless. The flooding after heavy rain can result in sewage overflow and wide spread of water contamination. The polluted air causes respiratory diseases among others.

Further, result indicated that secondary school students are aware that environmental pollution leads to depletion of the ozone layer. Today there is widespread concern that the ozone layer is deteriorating due to the release of pollutants containing the chemical chlorine and bromine, such deterioration allows large amount of ultra violet rays to reach earth which causes skin cancer and

cataracts in humans. Environmental pollution reduces the level of soil nutrient which leads to reduction in crop yield and land productivity. The students are also aware that indiscriminately dumping of refuse in the environment leads to blockage of the drainage system. This is consonance with the finding of Zerock (2014) which revealed that drainage systems are constructed to ensure that waste water and sewage are transported neatly and free of wastes but because the residents regularly dump their waste in gutters and this clog the gutters and prevent the flow of water.

Conclusion

The study set out to ascertain the level of public health awareness of causes and consequences of environmental pollution by secondary school teachers and students in Onitsha South local government area of Anambra State of Nigeria. The researcher concludes that both secondary school teachers and students are aware that industrial machines and effluents, waste from household, natural disaster, smoke from generators, home music or sounds, agricultural chemicals causes environmental pollution and they are also aware that environmental pollution leads to damage of public health, deplete the ozone layer, promote the spread of deadly diseases, reduce crop yield and land productivity and block drainage systems.

Recommendations

Based on the findings of the study, the following recommendations were made:

1. The monthly environmental sanitation and clean up should be observed thoroughly in Onitsha South local government area.
2. The refuse dumping sites established in various parts of Onitsha should always be disposed when its due and not until it contributes nuisance to the public health. A situation whereby waste products are scattered all over the place before disposing does not help matters.
3. There is need for schools and government to organize seminars and conferences on pollution because it is not enough for them to be aware of the causes and consequences of environmental pollution without practicing on how to keep the environment clean because most of the environmental pollution are caused by human activities.

Government should encourage internationally coordinated research and development aimed at a better understanding of atmospheric processes and effect of air pollution on man and the environment.

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