Health Dangers Associated With Solid Wastes Disposal among Students in Hostels Within and Outside University Accommodation

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Abstract - *This study examined solid waste disposal and health dangers involved living within and outside hostels in Ekiti State Universities, Nigeria. It precisely examined solid wastes generated, method of their disposal, and the health dangers associated with it. The population of the study comprised of students in hostels within and outside university accommodation in Ekiti state. Descriptive survey design was adopted for the study. The results showed that various solid wastes were generated by the students; different types of disposal were employed, communicable diseases, unrestrained rodents invasion, food and water borne diseases, were also identified as health danger involved. The findings further showed that there was a significant difference in the method of solid waste disposal and health dangers with improper solid wastes disposal on the health status between students living outside and inside residential hostels in Ekiti State Universities*

The study recommends that enlightenment programmes on methods of solid waste disposal, health dangers involved and the importance of good health should be mounted.

Keywords: *Assessment, Health Dangers, Solid Waste Disposal, Students, Hostel, Within and Outside University, Accommodation*

INTRODUCTION

Good health can be quantified or measurable. It is the application of good behavioural patterns of individual towards health, in terms of personal cleanliness. Disposal of solid waste is a good example of this. Good health does conflict with inappropriate disposal of wastes. Students living in university hostel accommodation do have good environmental sanitation condition provided by the university authority. However, some students who are unable to be provided with hostel accommodation do result to living in outside university accommodation [1]. Among the greatest risks to human being health is ineffective wastes disposal [2]. According to Onuzulike [3], good educational activities require a healthy environment, but the sanitary conditions in most learning institutions are usually/commonly poor in Nigeria. This could be as an outcome of students' usual/common practice of dumping refuse indiscriminately. According to Alakijah [4], waste is rejected materials from homes, streets, markets so also in industries/factories. Lawal and Uche [5] said that undiscriminating habit of regular disposal of wastes such as remnants/leftover of man can extremely affect human health predominantly in urban centres.

According to Moronkola and Okanlawon [6] and Olanipekun et al. [7], solid waste are particularly from human actions that are in form of leaves, paper, wood, dust and garbage, dead animal/carcass, and cellophane bags etc. While Ekpu and Archibong [8] reported that human activities mostly among many Nigerians form the habit of indiscriminate throwing away of concrete/solid wastes, which may be hard to get rid of. According to [9], solid waste can be classified as garbage, rubbish, ashes, house sweeping, bulky wastes, while various disposable methods used are open dumps, sanitary landfill, incineration, dustbin, composition, and disposal to the sea and burning. In the same Ekpu and Archibong [8], Moronkola and Okanlawon [6], and [10], reported that four common ways of disposing solid wastes are open dumping method, decomposition, controlled tipping or sanitary landfill and Incineration.

According to Oyerinde [11], Nigerians' attitudes towards waste disposal particularly in urban cities do help environmental pollution. Onuzulike [3] connoted that unhygienic wastes disposal can lead to spread of communicable diseases. Nwankwo [12] discovered

that improper solid waste disposal is a serious threat to human health and sound environmental sanitation.

According to Oluwande [13], indiscriminate solid wastes disposal do result an unhygienic environment that can lead to infectious diseases. The importance of good life depends absolutely on the state of the healthy environment in residential campus. Educational institutions should establish environmental sanitation upkeep as role models for the township to imitate [13]. In a study conducted by Izevbigie [14], students living off campus accommodation do perceive health risks. They are usually open to insects bite and debris (refuse) in obvious places thereby creating offensive odour and producing hidden place for pests' rodents.

Cointreus[15], and Sofoluwe and Bennett [16] confirmed that undesirable practices towards disposal of wastes influence people to faeco-oral diseases, such as typhoid fever and diarrhoea. According to Pruss-Ostun and Corvalan [17], good environmental health involve access to better-quality hygiene, and good health behavioural pattern that could interfere with the total structure of faecal-oral pathogen, infection of water, dirty indoor and outdoor environment, healthy air in order to improve well-being and human growth. According to [10], teachers and students can be exposed to various risks if environmental health is not given satisfactory attention. Undiscriminating defecation may affect drinking water; this can cause spontaneous occurrences of diseases, such as cholera, diarrhoea and typhoid fever etc. [10].

According to Sada [18], human excreta with pathogenic organisms come about a very severe danger to the health of the community. The solid waste which is originated from human and other actions and their leeches' enter the food and water chains do equally affect the environment and the health of the people.

There is the necessity for efficient disposal of wastes to promote healthy living [3]. In a study conducted by Onuzulike [3], it was observed that substantial number (58.3%) of the respondents established that they disorganized the college environment with polythene bags/sachet water packs; while 56 % of the respondents agreed to the action of indiscriminately throwing empty cans within and outside the hostel. In a study carried out by Fakeye et al. [19], perceived health risks connected with open dumping, sanitary landfill and composing was detected. Oyediran [20] as cited by Ojo [1], stated that roughly 0.43kg/head of solid wastes are produced daily in Nigeria, but a total of 87% of Nigerians use harmful refuses disposal methods. Water borne diseases such as typhoid, cholera, and food poisoning were also found to be in the increase in recent years. Poor solid waste management causes a serious health and environmental disorderliness, and to resolve this situation, policy approaches such as effective and sustainable solid waste management was proposed by the Federal Government of Nigeria [21].

OBJECTIVE OF THE STUDY

a) Determine the various solid wastes generated by the students living within and outside university residential hostels in Ekiti State?

b) Examine the methods of solid wastes disposal used by the students living within and outside university residential hostels in Ekiti State?

c) Identify the health dangers associated with solid wastes disposal methods by the students living within and outside university residential hostels?

Hypotheses

(a) There is no significant difference in the methods of solid waste disposal on the health status of students living outside and inside residential hostels in Ekiti State Universities

(b) There is no significant difference in the health dangers with improper solid wastes disposal on the health status between students living outside and inside residential hostels in Ekiti State Universities.

METHODS

Research design and instrument

The descriptive survey design was adopted for the study. The population of the study comprised of all the students living in and outside university campus accommodation in universities in Ekiti State. A total of three hundred students from within and 200 students from outside the university hostel accommodation making a total of 500 students were selected from the total population using simple random sampling techniques. The sampled respondents were selected using accidental sampling technique. The instruments used for data collection were a self-developed structured questionnaire titled ''Solid Waste Disposal and Health Dangers'' (SWDHD). This contained two sections. The first section of the questionnaire sought information on bio-data variables such as location, age, religion and sex.

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The second section was developed on 'Strongly agreed'/'Strongly disagreed' alternative responses that elicited information on Solid Waste Disposal of students living within and outside university campus accommodation. The questionnaire was given to two research experts for content validity, and subjected to a test-retest reliability index of 0.82 and found reliable. The researchers visited the selected hostels within and outside the universities to administer the instrument used by the researchers with the help of two research assistants. The respondents were asked not to write their names in the questionnaire, to feel free to respond to each of the items listed appropriately, and that all information provided would be treated with strict confidentiality. Data collected were coded and analyzed descriptively with simple percentages and t-test. Inferences were made at 0.05 alpha levels.

RESULTS AND DISCUSSION

From Table 1, it was observed that a total of 186(62%) respondents from within university hostels and 132(66%) respondents from outside university hostels agreed that they generated Papers, Leaves, polythene, dust and cellophane from house sweeping, while 86 (28.7%) respondents from within university hostels and 88 (44%) respondents from outside university hostels identified that they generated Garbage and Rubbish. As regards carcass or dead animals, 124 (41.3%) respondents from within university hostels and 68 (34%) respondents from outside university hostels agreed. This table shows that both the respondents generated frequently papers, leaves, polythene, dust and cellophane from house sweeping. This is similar to the findings of Moronkola and Okanlawon [6] and Olanipekun et al. [7], that solid waste are particularly from human actions that are in form of leaves, paper, wood, dust and garbage, dead animal/carcass, and cellophane bags etc.

Table 2 above shows that a total of 244 (81.3%) respondents from within university hostels and 118(58%) respondents from outside university hostels agreed that they threw refuse anywhere in the hostel,158 (52.7%) respondents from within university hostels and 108 (54%) respondents from outside university hostels identified with using of dust bin, and covered waste bin. While 18 (06%) respondents from within university hostels and 86(43%) respondents from outside university hostels agreed that they used open dumps.

This implies that the respondents within and outside university hostels threw refuse anywhere and equally used dust bin and covered waste bin. The highest method of waste disposal among the respondents was throwing of refuse anywhere in the hostel.

Table 1. Descriptive analysis of various solid wastes generated by students living outside and within university hostels in Ekiti State

Items	Within University hostels (300)		Outside University hostels (200)	
	Agreed	Disagreed	Agreed	Disagreed
1. Papers, Leaves, polythene, Dust and cellophane from house sweeping	186(62)	114(38)	132(66)	68(34)
2. Garbage and, Rubbish	86 (28.7)	214(71.3)	88(44)	112(56)
3. Remnants	112(27.3)	188(37.6)	89(44.5)	111(55.5)
4. Carcass or Dead animals	124(41.3)	176(58.7)	68(34)	132(66)

NB: Percentage responses are enclosed in parentheses

Table 2. Descriptive analysis of the method of solid waste disposal used by students living outside and within university residential hostels in terms of methods of refuse disposal in Ekiti State

Items	Within University hostels (300)		Outside University hostels (200)	
	Agreed	Disagreed	Agreed	Disagreed
1. Throwing of refuse anywhere in the hostel.	244 (81.3)	56(18.7)	118(58)	82 (42)
2. Using of burning system.	62(20.7)	238(79.3)	16(08)	184(92)
3. Using of dust bin, and covered waste bin.	158(52.7)	142(47.3)	108(54)	92(46)
4. Using of open dumps.	18 (06)	282(94)	86(43)	114(57)

NB: Percentage responses are enclosed in parenthesis.

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Table 3: Descriptive analysis of health dangers associated with solid wastes disposal methods on the students' health status between students living outside and inside residential hostels in Ekiti State universities.

S/N	Health Dangers	Within University hostels (300)		Outside University hostels (200)	
		Agreed	Disagreed	Agreed	Disagreed
1.	Unrestrained rodents invasion	182 (60.7)	118(39.3)	152(76)	48(24)
2.	Food and water borne diseases	210 (70)	90(30)	84 (42)	116(58)
3.	Mosquito bite	218(72.7)	82(27.3)	78(39)	122(61)
4.	Communicable diseases	186(62)	114(38)	72(36)	128(64)

NB: Percentage responses are enclosed in parenthesis.

This contradicts [9], that names the various disposable methods used in solid waste are; open dumps, sanitary landfill, incineration, composition, disposal to the sea and burning, while vein [8], [6], 10], that four common ways of disposing solid wastes are open dumping method, decomposition, controlled tipping or sanitary landfill and Incineration.

As seen on table 3, a total of 182 (60.7%) respondents from within university hostels and 152 (76%) respondents from outside university hostels agreed to unrestrained rodents invasion as health danger associated with waste disposal methods, 210 (70%) respondents from within university hostels and 84 (42%) respondents from outside university hostels identified with Food and water borne diseases as health danger associated with waste disposal methods, 218(72.7%) respondents from within university hostels and 78(39%) respondents from outside university hostels said that Mosquito bite is a health danger associated with wastes disposal methods. As regards communicable diseases 186(62%) respondents from within university hostels and 72(36%) respondents from outside university hostels agreed. It is observed that the responses of the respondents were never the same, but majority of the respondents were knowledgeable about the health dangers associated with wastes disposal methods on the students' health status within outside and inside residential hostels in Ekiti State universities.

This is in line with the following authors, [11], who stated that Nigerians' attitudes towards waste disposal particularly in urban cities do help environmental pollution. Onuzulike [3] who connoted that unhygienic wastes disposal can lead to spread of communicable diseases. Nwankwo [12], who said that improper solid waste disposal is a serious threat to human health and sound environmental sanitation, and Oluwande [13], that indiscriminate solid wastes disposal do result an unhygienic environment that can lead to infectious diseases.

Hypothesis 1: There is no significant difference in the methods of solid waste disposal on the students' health status between students living outside and inside residential hostels in Ekiti State Universities

The result on table 4 indicates that there was a significant difference in the methods of solid waste disposal on the students' health status between students within and outside residential hostels in Ekiti State Universities. This is indicated by the t-calculated value (2.359) which is greater than the t-critic (1.892). Therefore, the null hypothesis is rejected.

Table 4. T-test of significant influence in the methods of solid waste disposal on the students' health status between students living outside and inside residential hostels in Ekiti State Universities

Level	Mean (x)	Std	t-cal	t-critical
Within the residential hostels (N=300)	19.360	3.356		
Outside the residential hostels (N=200)	17.452	3.144	2.359	1.892*

**Significant; df=265*

Hypothesis 2: There is no significant difference in the health dangers associated with solid wastes disposal on the health status between students living outside and inside residential hostels in Ekiti State Universities

The result on table 5 shows that there was a significant difference in health dangers associated

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with solid wastes disposal on health status between students living outside and within residential hostels in Ekiti State universities. It is observed that the t-calculated value (2.437) is greater than t-critical of (1.892). The null hypothesis that there is no significant difference in the health dangers associated with solid wastes disposal on the health status between students living outside and within residential hostels in Ekiti State Universities is therefore rejected.

Table 5. T-test of significant difference of health dangers associated with solid wastes disposal on the health status between students living outside and inside residential hostels in Ekiti State universities

Level	Mean (x)	Std	t-cal	t-critical
Within the residential hostels (N=300)	22.360	3.121	2.437	1.892*
Outside the residential hostels (N=200)	20.452	2.397		

**Significant; df=265*

CONCLUSION

The majority of the respondents both within and outside university hostel accommodation generated frequently papers, leaves, polythene, dust and cellophane from house sweeping.

The majority of the respondents both within and outside university hostels threw refuse anywhere and equally used dust bin and covered waste bin for disposing their wastes.

The majority of the respondents both within and outside university hostels were knowledgeable about the health dangers associated with wastes disposal methods. Such health dangers were; unrestrained rodents invasion, food and water borne diseases, mosquito bite and communicable diseases.

There is no significant difference in the methods of solid waste disposal on the health status of students living outside and within residential hostels in Ekiti State Universities.

There is no significant difference in the health dangers associated with solid wastes disposal on the health status between students living outside and inside residential hostels in Ekiti State Universities.

IMPLICATIONS OF THE STUDY

The findings of the study have series of implications for the university authority, their parents, the students, the community and the 3 tiers of the government. The findings of the study on the health dangers associated with solid wastes disposal among students in two different locations (hostels within and outside university) suggest the need for good environmental sanitation and a healthy living both in the community and the university environment.

These findings have important implication on the university authority to have the welfare of the students in mind by introducing into the university curriculum a course that should involve all faculties in the university to create awareness of health dangers in unhealthy living.

Another important implication derivable from this study is that the parents should make it a point of duty to educate these students on personal cleanliness, once they aware of personal cleanliness, then they will be cognizance of good environmental condition, the students should also be aware of the facts that the health dangers involved could be detrimental to their health.

It can also be implied in this study that the 3 tiers of the government should understand that these students are our future, therefore should be handled with care by organizing health campaign through the mass media (Radio and Television etc.), involve health officers to go round to ensure a healthy environment so as to change the students' bad attitude both in the community and in the university.

RECOMMENDATION

Based on the findings derived from this study, the following recommendations were made to enhance a healthy living and good environment of the students:

Health Campaign through the mass media (Radio and Television etc.) should be organized to ensure a healthy environment so as to change the students' behavioural patterns by the 3 tiers of the government.

A course that should cut across all faculties in the university should be introduced into the university curriculum to create awareness of the health dangers of unhealthy living.

There should be health seminar or health talk organized by the University Health Service/Sector in charge of environmental health officers and Student Affairs Office to sensitize the students on the

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awareness of health dangers in poor environmental sanitation.

Limitations of the study

The administration of the questionnaires was hectic. The researchers had to move from one hostel to the other within and outside the universities. The condition was so cumbersome and weighty particularly with students living in hostels outside the university, because the hostels were scattered and they students did not normally come to the hostels the same time due to differences in the departmental time table.

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