ALTERNATIVE LOW COST SANITATION FOR NIGERIA'S URBAN POOR

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Abstract

The recurring incidence of cholera in Nigeria is traced to the consumption of polluted water. Polluted water, in turn, is seen to result from faulty sewage and other unhealthy faeces disposal systems. Burgeoning urban population, especially urban poor, is adjudged to be mainly responsible for over utilisation of public utilities like the sewage. As an interim measure, the use of pit latrines is advocated pending radical modification of urban development policies.

Introduction

Between January and August, 2010 Nigeria's Federal Ministry of Health reported 6,497 cases of cholera in 11 states of the federation (Ikeje, 2010). Out of these, over 400 cases were fatal. This calamity is socially alarming. And as the epidemic spreads to other states of the federation, its scorge may finally surpass that of HIV/AIDS estimated at 2.95 infected Nigerian nationals (Federal Ministry of Health, 2010). Yet, the alarm triggered off is of critical import in the health profile of the Nigerian nation. The Obvious conclusion is that Nigeria's health system remains basically inchoate especially if compared with other countries like the United States, for instance, which had its last major cholera outbreak in 1911 (Ikeje, 2010).

Medically, however, cholera is associated with poor sanitation generally. Unhealthy water sources polluted by animal waste are regarded as quintessential medium for the spread of cholera bacteria. What the question arises is the cause of water pollution? Four major factors are pertinent. First is natural pollution due to organic impurities in the soil. Second is pollution due to contamination resulting from toxic wastes from industries. Third is pollution from open air defecation. And fourth is pollution from substances emanating from broken sewage pipes and septic tanks.

Of these variables, this article addresses the last. Burst sewage pipes and faulty septic tanks feature frequently in urban poor residences across Nigeria. This is more so, in semi high-rise buildings and low-income estates housing the urban poor. They feature also in student residences across Nigeria's university campuses. On the Nsukka campus of the University of Nigeria, for instance, the incidence of broken sewage pipes and faulty septic systems has become acute. The worst occurrences include the Zik's Blocks of flats that house close to 500 students. Each block is a four

storey building and on the precincts of the ground floor are seapages of human waste from broken pipes. The same applies to some of the newer hostels on the main campus. The danger, nevertheless, is that after each rain, these infected wastes are conduited into water sources in rain floods.

Thus, cholera and other bacteria are transmitted into the human body when such water is consumed untreated. Untreated water, by the same token, is a common health hazard among Nigeria's urban poor. Only a small proportion of Nigeria's urban population has access to treated water. Maduekwe (2005) puts the figure at less than 5% of the population. Hence the frequent recourse to water packaged in 50cl cellophane bags euphemistically labeled "pure water." In a good number of cases however, water packaged in this way is seldom pure being sometimes scooped unprocessed from neigbhourhood bore-holes.

Among other factors, impurities contained in water sources such as the "pure water" cause cholera and other diseases. The argument projected in this article is that contamination of water sources correlates strongly with causation and spread of cholera. But contamination of water sources frequently results from the incidence of broken sewage pipes and faulty septic tanks among other unsatisfactory methods of faeces disposal like the dry latrine. The utility of these methods linked with the spread of cholera is therefore seriously called to question. They now seem to cause more problems than they were designed to solve. This article aims at projecting the inadequacies of these hazardous methods in one breath. In another breath, it also advocates their replacement with the pit system pending the rectification of the problems associated with their use. Before advocating preferable alternatives to the hazardous methods, it is plausible to highlight their main features.

The Main Features of the Hazardous Methods

- ***Sewage***

Sewage became common in Nigeria after the nineteen fifties when the water closet system gradually replaced dry latrines. Throughout the world, however, most people think that sewage is the normal form of sanitation. For example, a World Bank publication over-emphasised its importance while discussing poverty alleviation (Psacharpoulas, 1990). This is because of the perceived advantages of the sewage system. Its advantages are obvious provided the water closets are connected to ample and continuous water supply. For example; if well kept, there is virtually no nuisance from bad smell, flies, or mosquito.

Its greatest disadvantage, however, is that it is very expensive and requires a great deal of piped water supply. In Nigeria, nevertheless, most of the urban poor do not have piped water and even those with water connections have intermittent supply. In many of their residences water is only available at low pressure for two of three days a week. But with the urban poor growing continuously in population and

many of them living in slums, there is little possibility of providing functional sewage systems to them all.

Other problems associated with the sewage system involve the sewage treatment process. This is mandatory for an effective waste disposal exercise. Wikipedia (2010) identifies these causes of problems in the sewage treatment process as:

- Chemicals used in photography that contain silver nitrates;
- Garden weed killers that contain sodium nitrate;
- Drain cleaners that contain sulphric acid;
- Paints that contain phenols;
- Floor cleaners that contain hydrochloric acid;
- Engine oil that provides a masking for biological growth;
- Bleach that contain caustic soda;
- Laundries that provide detergents;
- Dish waters that contain surfactants; and
- Food processing chemicals that contain high starch content.

The sewage system, therefore, comes with a baggage of problems. Some of these are technical, some are social and others are environmental.

- ***Dry Latrines***

Before sewage became widespread in the nineteen sixties, various forms of dry latrine were common in many Nigerian towns. If efficiently operated this system sufficed for use. Users defecated into a bucket that was from time to time evacuated. Emptying was often carried out at night, hence the name 'nightsoil' for excreta. However 'collection is unpleasant and socially degrading. Nightsoil collection everywhere results in health hazards. Where collection is infrequent, dry latrines are malodorous and cause much nuisance from flies. Today, in Nigeria, among the urban poor, there are still dry latrines which cause rapid multiplication of the flies that carry cholera bacteria.

- ***Overhung Latrines***

These latrines are built over water into which faeces fall and excreta related diseases are almost invariably transmitted. Only when the water has sufficient flow to carry excreta and is not used by downstream people is the health hazard low enough for the latrines to be considered satisfactory. These latrines are common in riverine communities of Nigeria. Their effects on community health are same as those of open air defecation.

- ***Septic Tanks***

These offer same benefits to users as the sewage system (Pickford, 1980) They also have the same disadvantages high cost and the need for piped water.

Effluent from household septic tanks may be discharged to a soakaway or drainage field. However, this effluent is highly charged with potentially pathogenic organisms with consequent health hazards.

Practical experience demonstrates that the use of these faeces disposal methods amongst Nigeria's urban poor is fraught with health hazards. The bottom-line, however, is the issue of over utilised facilities. Sewage pipes tend to burst when too many individuals use the same system. Logically, the influx of people into the cities creates the phenomenon of the urban poor. In corollary, there is an increased demand for social amenities such as portable water, electricity, accommodation and, most importantly, sanitation. As a result, acute shortages of these services is experienced. And as Okeke (2001) observes this often leads to the unwholesome practice of drinking water from many doubtful sources, thereby, leading to high incidence of water-borne diseases.

Because of the inherent hazards associated with the use of the sewage and other affected methods amongst the urban poor in Nigeria, there is the need to consider preferable alternatives even if as temporary measures.

Less Hazardous Sanitation Alternatives

- ***Pit Latrines***

These consist of holes in the ground in which faeces decompose forming gases and liquid solid residue remains in the pits gradually filling them. Good pit latrines would provide similar health benefits to sewage at much lower costs. Well built and properly maintained pit latrines would create minimal nuisance from odour, flies or mosquitos. The ventilated improved pit with close fitting lid is recommended. The ventilation would allow for the escape of bad smells. Fly-proof netting necessarily is important to prevent fly escape.

A pit should be taken out of place when it is filled to a reasonable height. If there is sufficient space, a second pit may be dug even as the first pit is topped with soil and abandoned. Alternatively, a full pit may be emptied using a vacuum tanker (as used for septic tanks) To increase the life span of the pit very big pits, could be dug from the outset. Alternating twin or double pits can also be dug for use. These have been known to last sometimes for twenty years especially where the soil allows digging of pit for more than ten metres deep.

Granted, pit latrines may not be suitable for small plots in urban areas. For example in Jamaica, there is a regulation that pit latrines should not be constructed on plots with higher density than ten houses per acre. In Nigeria, this density is often surpassed. Yet there latrines would provide a temporary relief. Besides in Kumasi, Ghana, they are very commonly used especially after numerous master plans for sewage had led to nothing (Pickford, 1991).

- ***Communal Latrines***

These are alternatives to household latrines and would be satisfactory preferences to the sewage system if well maintained. At present, it is in use in some rural communities in south eastern Nigeria. There is a remarkable one in Afikpo in Ebonyi state, Nigeria, which has 22 cubicles serving both males and females in separate compartments. It is efficiently maintained through regular levies. This method of faeces disposal may be experimented upon especially for large urban communities where open air defecation is in practice.

Though an interim measure, pit latrines will be less hazardous then the sewage amongst Nigeria's urban poor. An empirical study carried out by Raman *et al* (1985) found this alternative beneficial in Bangladesh. Among about 2500 infants over four weeks old, they found out that mortality was about 3 - 12 times higher in households with faulty sewage system compared to those who used pit latrines. Therefore, because of the obvious health hazards associated with the sewage and other related systems currently in use among Nigeria's urban poor population there is clear need for behavioural and policy modifications.

Behavioural Modifications

Studies involving a sample of 250 undergraduate female students occupying a university hostel showed that 50 of them had at one time or the other defecated open air. On why they did so in spite of in built toilet facilities in the hostel, they responded that this was for fear of contacting sexually transmitted infections from toilet seats (Nwosu, 2005). The indication is that part of the reasons why occupants of over populated urban estates and similar places where toilets are shared defecate open air is to forestall contacting Sexually Transmitted Infection (STI). Going by the increasing incidence of STI contacted through public toilets this fear is genuine. It is common knowledge that candiditis staphilicocus and gonorrhea are sometimes contacted through shared use of toilets. To avoid these diseases therefore, some poor urbanites resort to open air defecation which partly accounts for the spread of cholera.

Behaviour modification thus becomes inevitable if the spread of cholera is to be stemmed. This involves several fronts. First is the very practice of open air defecation. Nigerians, urban or rural, should be educated away from this practice through deliberate advocacy. Similar advocacies in the fight against HIV/AIDS, and malaria fever have shown much positive result. The same vigour should be extended to the parallel issue of open air defecation. The resultant awareness of its insidy could help to reduce cholera.

Second is the fear of contacting STI through shared use of toilets. This calls for further behaviour modification of sex life. Prudence becomes inevitable in the practice of having multi-sex partners. There are already gains in this regard accruing

from existing concerted efforts against the spread of HIV/AIDS. These efforts need be sustained. Proactive measures including, for instance, sustained emphasis on abstinence amongst unmarried youths should be re-inforced. At the very worst the urban poor should be encouraged to avoid unprotected sex. Since this war has made some success with respect to HIV/AIDS, the case of infected public toilet seats would re-inforce it.

Third is maintenance culture. Constraints delaying the release of funds needed for the maintenance of public equipment could be reduced if public officers undergo some re-orientation. The concept that government property is "no man's property" is also partly responsible for poor maintenance culture. This could be rectified by better information and better dissemination of the same. Maintenance, however, is better observed in private property ownership for the obvious reasons that individuals would wish their property last long span. Thus, it is with public property that maintenance requires real time improvement.

Fourth is the practice whereby sewage pipes are sometimes blocked with hard or bulky materials like sanitary pads. Behaviour modification in this area may also help in reducing the mal functionality of sewage. Soft paper should be used instead and where convenience allows, the use of water for anal cleansing could also be beneficial. Alternative means of disposing discarded sanitary pads could also be adopted. Burning may be more hygienic.

Fifth is water wastage. This is corollary to poor maintenance culture. The practice of leaving broken water pipes unattended to for days or weeks on end leads to wastage of much needed water. In the face of much scarcity, as much as possible of that which is pumped into the delivery pipes should be conserved for maximum use. Of course the water supply service is an important criterion for selecting a sanitation system for an area. For households with only hand carried supplies (as is quite common among Nigeria's urban poor), conventional sewage or septic tank with soakaways are technically infeasible. Insufficient sullage would always be generated in such cases. Minimum recommended amount of sullage for successful running of such systems would always be more than 10 litres per flush.

Finally, evidence suggests that relatively wide use of health officials known as "sanitors" helped to improve public health in different parts of Nigeria in the nineteen fifties and sixties. The surprise visits of these officers to residential compounds created awareness of the need to keep toilets, living rooms, kitchens and surroundings clean. Reports however indicated that there were occasional cases of corruption and highhandedness among some of these officers. This abuse apparently led to the discontinuance of their services. However, recent developments in some of the states show that they are re-emerging as "environmental officers". These developments are positive in the fight against cholera and should be encouraged in all other states of the federation in which these services are yet to be re-introduced. Their

pay should be commensurate with the importance of their services. This may help to stem abuse of office among them.

Policy Modifications

In the short term, policy should be geared toward ensuring that the incidence of broken sewage pipes is reduced. This could be achieved by ensuring that the right quality of materials are ab initio, used in fabricating such pipes. Wherever such pipes have been damaged, action should be swift in effecting repairs. In laying such pipes, conflict should be avoided between their location and public roads where there is heavy traffic.

In the long term sustained attention should be paid to the consequences of increased urbanisation through which Nigeria is passing. Principal in this regard are overcrowding and housing density. Olotuah (2005) has remarked that the average room occupancy in Nigeria is 4.42. However, the World Health Organisation recommends 1.8. Evidently, therefore, overcrowding is a visible feature of urban housing in Nigeria. This leads to over-utilisation of available sewage facilities.

There is need therefore to take due cognisance of the housing density amongst Nigeria's urban poor to determine what facilities should be provided. Thus, urban and regional planners in Nigeria should evolve policies aimed at controlling and managing urbanisation. Certainly, as a result of rapid urbanisation, planning and managing cities has become more demanding in terms of resources, organisation and skills. However, as Fourchard (2002) has observed, though the number and size of agencies responsible for generating policies and exerting powers in Nigerian cities has grown over the years, there has not been a corresponding improvement in quantity and quality of urban services rendered. Why is this so?

This is partly due to the faulty plan on which Nigerian urban planning is based. The Nigerian Town and Country Ordinance of 1946 which, till date, constitutes the legislative basis for all laws and regulations governing urban and regional planning is faulty. Designed after the British Town and Country Planning Act of 1932, the Nigerian Ordinance empowered local planning authorises to initiate plans "coordinating and facilitating the construction of public utility services, transport, communication and other public services as well as conserving and developing resources of the area concerned" (Adenihi, 1982). Nevertheless, this plan from how it has operated is ineffective for controlling national urban development and urbanisation. This has been part of the urbanisation problem in Nigeria. In retrospect thus, there is need to create a 'fresh' national urban policy through a national urban and regional plan document that would provide a broad framework for the distribution and size of urban centres as well as relate the urbanisation process to general national goals.

In the interim, in locations most prone to burst sewage pipes and resultant faeces seapage, pit latrines would serve as temporary alternatives. Those with tight

lids are particularly recommended for these locations as well as those places where dry and over hanging latrines still prevail. The superiority of these alternatives over the extremely hazardous systems should be emphasised and the urban poor encouraged to adopt them.

Conclusion

The most recent occurrence of cholera in Nigeria has been seen as violating the credentials of Nigeria's health system. This is especially so, in the 21st century. This cholera scorge has been traced to unwholesome faeces disposal systems among Nigeria's urban poor. The most culpable systems have been identified as the sewage, the septic tank, and dry latrines. Also culpable is open air defecation. Severally and collectively these mechanisms have contributed to the multiplication and spread of the cholera and other bacteria. The case has been made of the urgency of addressing the health hazards posed by these unwholesome faeces disposal systems. Short term and long term remedies have been advocated. Cumulatively, the entire existing policy on urban and regional planning in the country has been recommended for modification. Recommended for modification, also, are several unwholesome behavioural habituations that prey on the health profile of Nigerian nationals.

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