An Assessment of Environmental Sanitation Management in Chilomoni (Nandolo Slums)

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Abstract

The study focuses on the health sanitation especially in slums which are near city council locations. The world health organization presents sanitation as the provision of health facilities and service for the safe disposal of human urine and faeces. Inadequate sanitation is the major cause of diseases worldwide and improving sanitation is known to have a significance beneficial impact on health both in households and across communities en.wikipedia.org/wk./sanitation (2005). The author has found it important to help manage sanitation in slums in order to try reduce the major cause of diseases. These slums have mostly been developed due to overcrowding of cities following rural to urban migration to which cities following rural to urban migration of which cities cannot manage to provide shelter thereby development of slums. The study helped to find out the impact of sanitation in these areas, does the environment play a role in effecting sanitation, and does the environment bring any effect as the areas that have the character of unplanned buildings, throwing of garbage's everywhere, sharing pit latrines. The study was conducted at Nandolo slums in chilomoni location in the city of Blantyre.

The researcher used both qualitative and quantitative data collection of questionnaires to collect data various respondents. The data has been taken in tow sets, firstly from the health personnel who are supervisors of sanitation in these areas the second one has been taken from the community of Nandolo. All data was analyzed using spss, chi-square program in order to group the data and to generate tables and graphs.

The result have shown that sanitation is poor in Nandolo slums the community do not have enough sanitation facilities like toilets (pit-latrines) many households use the same toilets the same applies to rubbish pits both of these lacking in the home shows bad indicators of sanitation. Number of sanitation supervisors who are health surveillance carrying out public health is less according to the number of people in the catchment area. Number of health education to change the attitude of the community hence bringing negative impact of sanitation by the manifestation of high rate of sanitation diseases like malaria and bilharzia.

The author recommends the responsible authorities like Malawi Housing Corporation. Ministry of health, Blantyre city and town planning to work in collaboration in order to fight poor sanitation in the community, community members HSAs who are on the ground providing practical public health to the community and village health committees which is within the community to take active role in managing sanitation and work in collaboration to achieve the goals. Recruiting more health surveillance assistance to meet the demand of the catchment area and to upgrade slums to city location in order for the city council take full responsibility of the areas.

Keywords: Environmental Sanitation Management; Chilomoni (Nandolo Slums)

Background

Sanitation is one of the key sections in public health. National sanitation policy goal is that every household should have some form of basic sanitation (2008) [1]. In line with the policy initiatives articulated in the MGDs, the Blantyre city authorities has under the same strategies provided standards to be followed in the city in trying to improve sanitation. Checking on sanitation facilities, sufficient area not over-crowded, structural quality, durability of dwelling security of tenure and poor economic aspect of life and trying to upgrade slums.

Chilomoni being partly city owned and partly slums is facing a challenge of achieving the national sanitation policy which is looking at indicators like public sewer, connection to a septic tank, poor flash latrine, simple pit latrines with a slab, ventilated pit latrines and rubbish pits, sewer connection to a septic tank, poor flash latrines with a slab, ventilated pit latrines and rubbish pits.

Ministry of health through the district office has assigned health surveillance assistance to take full responsibility of monitoring sanitation in the district with the supervision of the environmental assistant. They have shared the district with demarcation of catchment area reporting at health centres. Nandolo slums has been shared in three for proper sanitation supervision of environmental assistants, sanitation is one of the critical aspects of public health. Quality of health service delivery with all stakeholders is essential to improving the health outcomes. Therefore, continuous quality assessment of HSAs is vital in combating communicable diseases. This study is aimed at assessing the impacts of environmental sanitation on health at chilomoni especially Nandolo slums. This will be achieved through assessment of compliance to hygiene measures, enough hygiene utensils and safe water.

Aim of the Study

The aim of this study is to identify quality gaps and suggest ways of improving the identified weaknesses. This will contribute to reduction of communicable diseases through improving service delivery which is one of the meeting sanitation policy.

Geographical and demographical profile for Malawi

Malawi is one of the sub-Saharan countries. Blantyre is the commercial city of Malawi, the country has a total population of 19,261,563 total population of women is 50.1 % and 49.9% males growth rate of 2.3%, population rises by 16.3%. This is worrisome considering the economic status of nation, furthermore there is need for strengthening health system to carter for the growth population (NDHS 2010) (HSSP 11 2020).

Social economic and health indicators

Malawi ranks among the poorest country in the world with a gross national income (GNI) of $340 (MG, 2017) and gross domestic product of about us $4.4% about 74% of the rural population live below poverty line while urban areas is approximately at $1.9 74% live. Low socio-economic status of the nation affects the general health status of the population, for instance government total expenditure on health was 9.6% according to World Bank compared to 15% the targeted one by Abuja declaration (NHA, 2010). The health status of this nation is based on several health indicators which includes life expectancy which is very low compared to other countries currently at 64.31 years according to macrotends.com. Malawi is still striving sustainable development goals.

Overview of chilomoni

Chilomoni is in Blantyre city with the total population of 37,982 according to 2018 population census and Blantyre urban had 939,637 Nandolo is one of the slums in chilomoni. It has a total population of 15,709 with total households of 535, Nandolo Mangochi total population of 2006 and total household of 342. The area is under T/A chilomoni. Chilomoni health Centre takes care of the public health of the people in the area. Partly city council which also had their HSAs and an NGO called village Hygiene.

Boesen J., *et al.* [2] stressed that improved water supply ought to be- made available in Tanzanian villages mainly due to the great work burden women daily have to cope with. It is claimed that reduced distance to the water source is more important to women than improved quality of the water and that, in many cases, improved water supplies are not utilized if they are farther away from household dwellings than traditional sources However, if an improved water supply is nearer than a traditional source, it is invariably used As to sanitation, figures are presented showing that the overwhelming majority of the households in Iringa, Mbeya and Ruvuma regions have pit latrines -of the traditional type, i.e. simple pits surrounded by fences for privacy. Furthermore, it is stated that between 90 - 100% of the adult population and between 85 - 100% of the children use the latrines. In Wang'ing'ombe region where a study on sanitation was carried out no culturally induced obstacles to latrine usage, e g. the idea that old people do not defecate, or avoidance relationships could be identified. Based on these results, a UNICEF project promoting the construction of VIP-latrines is criticized since these are more expensive than traditional ones and might have a demoralizing effect on the people who are proud of having followed the Tanzanian government's massive campaigns to build pit latrines Suddenly their efforts appear to be insufficient, What Bessin and others studied applies in our slums water and VIP latrines would be some of the areas the study would be for in assessing sanitation in Nandolo.

Chiutsa 2017 [3] did a study on environmental health finding out the impact of hygiene lessons in pupils' health especially those in schools in Lungwena area in Mangochi district, the objective of the study were to compare prevalence of faecal contamination, incidence of diarrhoea, attendance rates among girls, knowledge attitude and practices in schools receiving sanitary facilities and hygiene education and schools receiving sanitary facilities. The study demonstrated that the hygiene education intervention significantly reduced prevalence of hand faecal contamination by 20% (95% CI 10.3%. 29.7%) Chi square test while prevalence remained very high in control schools compared to the compared to the compared to the control schools.

The above findings suggested that participating hygiene education in school could be a plausible strategy to realize sustainable improvement in hygiene promotion among schools however though the just approved national sanitation policy had no provision for the same hence there is an urgent need to harmonize all relevant policies to facilitate institutionalization of his important strategy. In relation to my research the involvement of health surveillance Assistance in living health education on sanitation to the community would bring much positive impact in changing people's attitude and start practicing good sanitary measures.

According to Sanitation theory therefore emphasizes the importance of cleanliness and absence of germs and provision of facilities to achieve such absence [4]. According to Wall, Genthe, Steyn and Nortje (2012), sanitation theory states that microorganisms are responsible for infectious diseases.

Another study was done by Malawi polytechnic January 2012 studied on participatory slum upgrading programmes phase two. The study was done in Blantyre. A survey was done in 2 slums Ntopwa and Misesa slum overview was done to check sanitation facilities.

Sanitation facility in Ntopwa are temporary in nature, sacks or grass are usually used to construct such facilities are usually shared among families. Recently the non-governmental organization called Water for people launched a project where a lot of toilets were constructed for demonstration purpose. There are no proper drainage system for both waste and running water which are discharged form nearest toilets, as well as the dung and dead plants wastes have no proper dumping system. Water sanitation was also discovered to be the biggest problem, people complained of water bills and frequent water stoppages especially those newly connect houses. The majority of houses obtained water from communal point such as water kiosks or from neighbours. About 89% of the households draw water from unsafe sources as well as rivers. The main environmental problems in the area are the issues of pollution from emissions and dumping sites and the absence of proper drainage system. The use of contaminated water and inadequate sanitation facilities may result in water and sanitation diseases which are otherwise preventable.

There was no collection of solid wastes by the city council in the studied slums, solid waste are disposed and indiscriminate wastes are thrown in pits, rubbish pits, river banks, road sides and garden. Ntopwa had a high percentage of indiscriminate solid waste disposal, the better alternative option is to introduce composite technology which will reduce the cost of purchasing fertilizer for farming. Percentage of household with rubbish pits is just 11.3%. This is against the national sanitation vision of ensuring that the majority of the residence solid waste recycling the majority of the residence is not aware that the solid waste is recycled as evidenced by the very low recycling percentage of 1.7% for Misesa and 28% Ntopwa. This could be attributed to high school dropouts in slums. Slightly over half over half of the households rely on the pit latrines some defecate in the bush. The goal of national sanitation policy is that every households should have a household basic sanitation. Basic sanitation is one that provides privacy and is above 30 meters away from the source of domestic water.

According Caimcross considerable attention has been paid to water supply and excreta disposal during the Decade, the question of appropriate standards and technologies for urban rainwater drainage in developing countries has been almost completely ignored. According to Caimcross health hazards posed by contaminated surface waters have more emphasis ought to be put on research concerning appropriate technology for urban rainwater drainage. It is suggested that previously installed drainage systems as well as project approaches in tropical cities be identified and evaluated in order to develop standards for future activities.

The study will help to evaluate the quality of environmental sanitation and identified impacts. Factors that affect sanitation will be revealed and areas for attention to necessary authorities and Blantyre city council, it shall be published to ensure knowledge is impacted and necessary actions have taken place for the betterment of the health care services deliveries. The research questions would be 1) why Nandolo has the high sanitation management problem? 2) What are the effects of poor sanitation management and 3) what mechanism can be drawn in order to improve sanitation management in Nandolo? The following objectives will help us to find the solutions: 1) to find out the cause of poor sanitation management in Nandolo. 2) To evaluate effects of poor sanitation management in Nandolo. 3) To draw mechanisms for improving sanitation management in Nandolo. There is high rate of communicable diseases which have risen due to compromised sanitation. About 2.3 % of children in Nandolo area have been suffering from communicable disease. In Month of June 2014 0.9% of cases contracted diarrhea. 1.9% trachoma, dysentery 0.08% and 0.01% scabies making a total 0f 5.9% 0f communicable disease. This is a result of overcrowding due to migration to major cities leading to development of slums. This shows that slums pose a new problem that the researcher wants to assess. Therefore, the aim of study is to access the impact of environmental sanitation in Nandolo slums using data from chilomoni health Centre and Blantyre city council.

Data

Nandolo had a total of 6830 people with a total of 1445 households. Nandolo slum is partly under the city council and a big part is slum. The catchment area is monitored by Disease surveillance assistants from the city council, DHO and village hygiene (NGO) and big part of

slum. The study used cross section design regarding the limited time needed to accomplish the study the limited time in addition cross section studies were relatively easy and helpful in assessing health needs [5]. The study was conducted in Nandolo slums, where no other study of sanitation in the environment has ever been done. It involved children under six years and parents especially women using systematic method available at chilomoni health centre, permanent staffs were asked various questions related to the study and selected few commonly numbers of Nandolo slums. The researchers believed that sampling is important to reduce cost, the study has a sampling frame was 70, interviews were done through self-administered questionnaires Combination of data collection instruments were used and these included interviews and observations. The researcher used both structured and semi-structured questionnaires were designed to capture both qualitative which had several variables which assisted in data collection like unsafe drinking water, garbage collection, congestion in the house, safe pit latrine, rubbish pits and hand washing as individual factors which were supposed to be addressed while the study targeted to address such problems and find ways to improve sanitation in slums and Quantitative data which is more helpful in qualifying data for easy understanding [6]. This meant both deductive and inductive methods were used. Disease Surveillances assistants, three prominent members as part of enumerators to assist in the data collection in Nandolo area. The enumerators were trained to observe ethics, health workers were interviewed through drop and pick up later methods to gather data from respondent. While going round the community the researcher used observation method to assess how sanitation measures being carried out in the locality like Checking the sanitation facilities around the house whether they have safe pit latrine, rubbish pits checking for water. Approval was sought from Exploits Research Ethics Committee to Blantyre city council, Blantyre District Council and Chilomoni health Centre and Chilomoni Chief where permission was granted to obtained data from potential participants after giving information on the purpose and duration of the study to ensure voluntary participation in the study.

Results

This chapter presents and discusses findings that were captured during the study. In order to provide answers to the research questions were raised to meet the research objectives relevant data was obtained and analyzed to bring the underlining points for the research. These have been outlined below.

Survey findings are the results of the findings of the interview as primary data, this gives that the true reflection of what is happening on the ground, and normally the recommendations based on the results of the survey findings.

Why there was poor sanitations management in Nandolo slum

Primary data on toilets

Many participants have safe toilets with covers on top of the hall of the latrine the only challenge came on the many households sharing the same toilet mostly the problem has come up due to congestion of houses on space to build toilets available of clean and safe toilets.

Data on importance of washing hands

Respondents were assessed on the poor sanitation management in Nandolo following indicator of toilet

Responses	Frequency	Percentage	Accumulative Percentage
No	5	20.0	20.0
Yes	20	80.0	100.0
Total	25	100.0	120.0

Table 1

Response	Frequency	Percent	Cumulative%
No	1	4.0	5.0
Yes	24	96.0	100.0
Total	25	100.0	125.0

Table 2
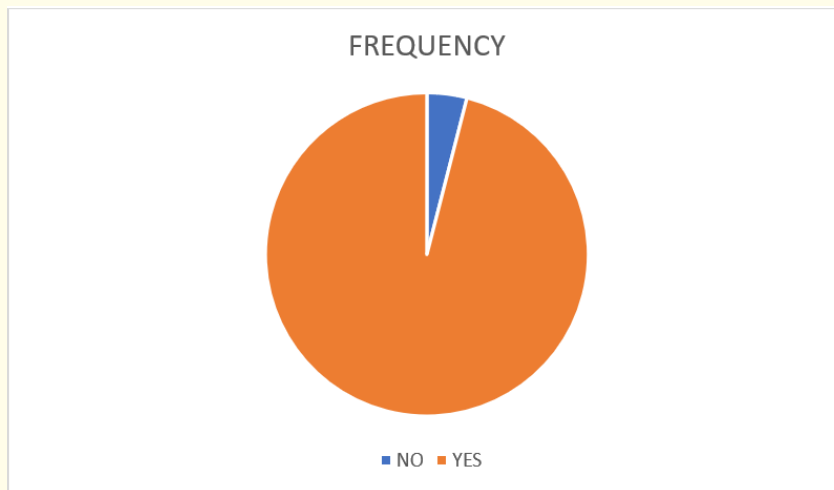
Figure 1

Responses	Frequency	Percent	Cumulative %
One toilet/one household	8	32.0	33.3
One toilet more than one house ho	16	64.0	80.0
Total	24	96.0	100.0
Not Applicable	1	4.0	5.0
Total	25	100	125.0

Table 3: How many households use same toilet.

Rubbish pits

Many households use one rubbish this is affecting the environmental sanitation as the disposal of wastes in not being done carefully others throw in the river not all can go just creating swamps, others are burning not all can be burnt. And for those who are benefiting from the city council monthly removal of wastes is not enough waste piles up causing pollution of the environment.

Owning a rubbish pit

Response	Frequency	Percent	Cumulative%
No	7	28.0	35.0
Yes	18	72.0	100.0
Total	25	100.0	125.0

Table 4
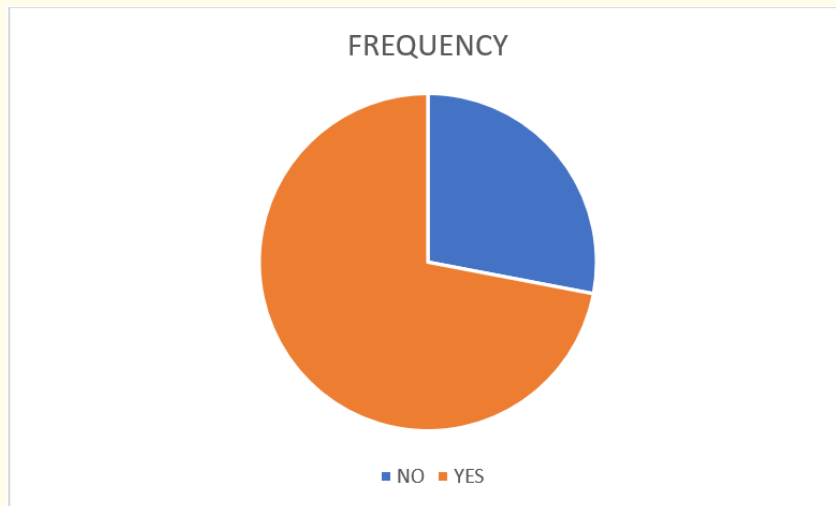
Figure 2

How wastes are disposed

Response	Frequency	Percent	Accumulative %
By burning	2	8.0	10.0
Disposed by Council	3	12.0	15.0
Dumpsite	5	20.0	25.0
Just throwing	20	80.0	100.0
Total	25	100.0	125

Table 5

Citation: Patricia Singini. "An Assessment of Environmental Sanitation Management in Chilomoni (Nandolo Slums)". *EC Nursing and Healthcare* 5.1 (2023): 184-199.
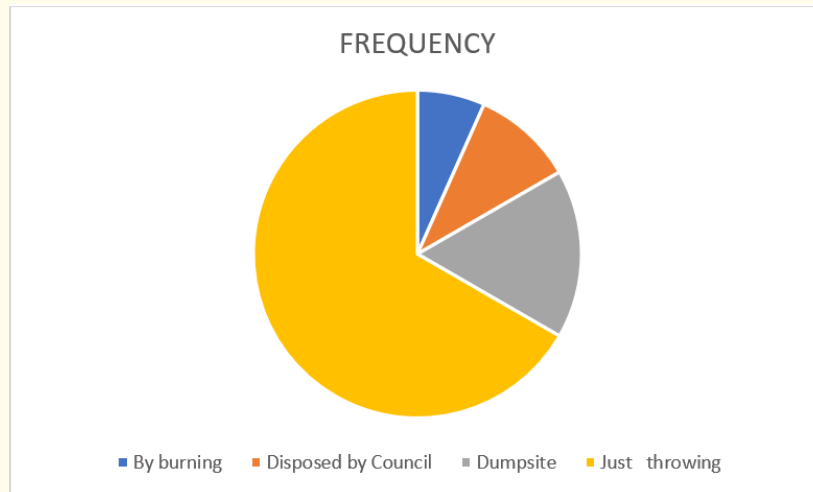
Figure 3

How often city council collects garbage

	Frequency	**Percent**	**Valid %**	**Cumulative %**
Monthly	3	12.0	100	115.0
At times	22	88.0	100	200.0
Total	25	100.0	100	225.0

Table 6

Respondents were assessed on causes of poor sanitation management in Nandolo checking.

Sanitation facility of rubbish pits.

Water

Quite a good number of people are drinking safe water from the taps but they are using communal taps of which storage of water has been an outstanding problem which needs to be addressed with maximum care and some of them draw water from springs and wells, this definitely is accelerating high bilharzia rate in the community.

Whether water is treated before use

	Frequency	**Percent**	**Cumulative**
No	6	24.0	24.0
Yes	19	76.0	100.0
Total	25	100.0	

Table 7: Data on how water is treated pie-chart.

Environment

There is congestion of house in the area which is affecting much of the surrounding creating no space for toilet, rubbish pits. Health hazards are upmost in the area in the area and some waste are being kept for almost the whole month before they are removed by the city council.

Health workers

They are few health surveillance who are supervisor of public health is the community their ratio does not much with the number of paper in the catchment area this affect the output of service delivery. Number of supervisor of the direct supervisors of the HSAs presented with other catchment areas not being visited at all.

How often the HSAs visit their catchment area

Response	Frequency	Percent	Cumulative %
Weekly	12	66.7	66.7
Whenever needed	6	33.3	100.0
Total	18	100.0	

Secondary data

Esrey., *et al*. (1991) reviewed all the available evidence and concluded that latrines ownership could reduce diarrhoea incidences by 37%, Ascaris prevention by 284 range from 0 to 83%, hookworm prevalence by 4%.

Latrine with open and service/bucket latrine have been defined as unimproved, and farmers due to their failure to isolate faeces from the environment and later due to potential health risks associated with manual emptying.

Safe disposal implies not only that must excrete hygienically but also that their excreta must be treated to avoid adversely affecting their health or that of other people. File:///G/sanitation and health.htm (2015).

What are the effects of poor sanitation management in Nandolo?

Primary data

Diseases

On the aggregate of data from both groups Nandolo has poor sanitation. There is rate of diarrhoea, malaria and bilharzia to poor sanitation. He hookworms from the rivers causing bilharzia, the swamp creating bleeding places for mosquitoes.

Sanitation diseases

	Responses		Percentage of case
	Number	**Percent (%)**	
Diarrhoea	23	35.4	92.0%
Cholera	22	33.8	88.0%
Dysentery	20	30.8	80.0%
Total	65	100.0	260.0%

Table 9: *Data on sanitation diseases.*

Description: of three water-bone conditions, diarrhoea, cholera and dysentery received almost same ratings.

Most common diseases

	Response number		Percent of cases
	Number	**Percent**	
Diarrhea	13	65.0%	76.0%
Malaria	2	10.0%	11.8%
Conjunctivitis	5	25.0%	29.4%
Total	20	100.0%	117.6%

Table 10.

Common communicable disease

	Responses		
	Number	**Percent**	**Percent of cases**
Diarrhoea	13	65.0%	76.5%
Bilharzia	2	10.0%	11.8%
Malaria	5	25.0%	29.4%
Total	20	100.0%	117.6%

Table 11: *Data on communicable diseases.*

Description: most participants mentioned diarrhoea as a common communicable disease (N = 13).

Respondents were assessed the evaluating effects of poor sanitation management in Nandolo.

Secondary data

Fecal oral disease represents the largest health burden associated with lack of improved sanitation, diarrhoea being the most burden-some of these and accounting for 1.6 million children deaths each year.

	Responses		
	Number	**Percent**	**Percent Cases**
Up-grade slums to city location	2	9.1%	11.8%
Supply of preventive treatment	13	59.1%	76.5%
Supervise to avoid congestion	1	4.5%	5.9%
Responsibility on clearing of waste	5	22.7%	29.4%
Leave it in the hands of the community	1	4.5%	5.9%
Total	22	100.0%	129.4%

Table 12

Response	Frequency	Percent	Cumulative %
Poor	9	50.0	50.44.40
Good	8	44.4	94.4
Don't Know	1	5.6	100.0
Total	18	100.180	

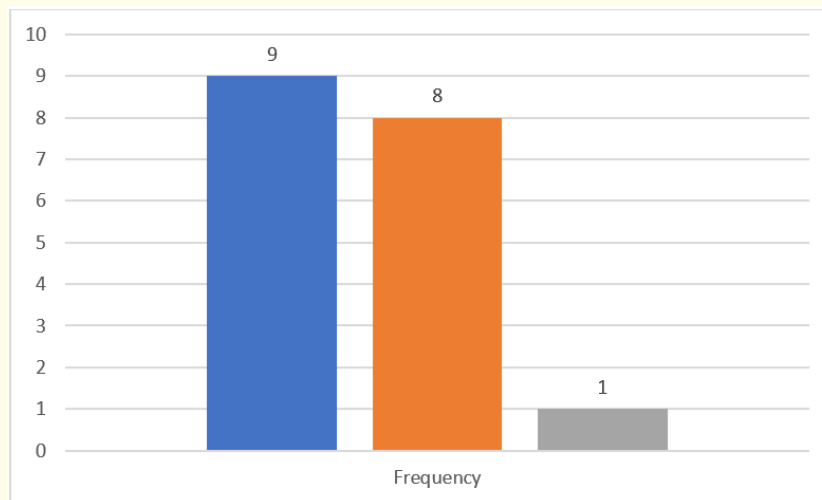*Table 13: Show how do you rate sanitation in your catchment area.*

Figure 4

The diseases associated with poor sanitation are particularly correlated with poverty and infancy and lone account for 10% of the global burden of disease. At any given time close to half of the urban population of Africa, Asia and Latin America have a disease associated with poor sanitation, hygiene and waterborne diseases.

Diarrhoea disease are the most dangerous fecal oral diseases globally, which are causing around 1.6 to 7.5 million deaths annually, Many of them among children under the age of 5 in developing countries in sub-Saharan African, resulting in 19% of all deaths in this age group. File///Sanitation and health.htm (2015).

What are the mechanism for improving sanitation management in Nandolo?

Primary data

Heath surveillance realizes that there is a need for them to report to the relevant authorities for fast intervention on the out breaks in order to achieve positive results in the community. But they are reluctant to take up the challenge and find solution.

Advising the authorities on public health

	Responses		
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Total	22	100.0%	129.4%

Table 14

An intended objective result

The results of the objectives shows that poor sanitation brings a negative impact on health by bringing high rate of infectious diseases like diarrhea but with change of behavior development.

Health workers research

	Age	Length of period worked	Size of catchment area	Number of HSAs in the catchment area	Total Population
Mean	32.28	10.6	493.17	1.00	2225.50
Median	32.00	8.00	517.50	1.00	1245
Mode	28	7	620	1	696.538
St Deviation	4.650	4.412	148.176	-000	.242
Skewness	0.512	1.761	-077	0	2387
Range	15	14	603	1	1245
Minimum	26	7	205	1	3632
Maximum	41	808	808	18	40710
Sum	581	181	.517	1.00	1648.00
Percentage	32.00	7.00	517.50	1.00	2225.50

Table 15

Length of period worked

The mean length of period worked was ten years. The least number of years stayed were seven years and most number of years worked were 21 percent of the participants (quarter) had worked for 7 years and below half had worked for 8 years and below and 75 percent of the participants whilst 50% (three quarter) had worked for about 10 years and above.

Response rate

On community data the intended number to be interviewed was 35 and 25 responded well and 7 forms did not reach me in the time form did not reach me representing 8.2% therefore 71% of participants responded.

The other set of participant were health workers of whom 35participants were supposed to be interviewed only 18 respondent due to difficult to meet the whole group due to their schedule. Therefore the response rate was 51.4%.

Total participants interviewed was 43 and they are the ones that responded well representing 100%.

Discussion

Lack of rubbish pit was chosen by a considerable number of participants (N = 11). This was followed by lack of safe Pit Latrines (N = 9) Respondents were assessed on evaluating effects of poor sanitation management in Nandolo. Many are those who are just throwing litter which may invite different infectious diseases. Community members should take active role in trying to have sanitation facilities within their reach as this lessen poor sanitation being a health hazard.

Respondents were assessed measured to draw mechanism for improving sanitation management in Nandolo. Other literature still emphasizes that the health sector has a strong role to play in improving sanitation programmes. Health education should be given to the community to allow them change attitude on sanitation and improve their health.

There should be Political leadership willingness to establish clear budget institutional responsibility and specific budget lives for sanitation by ensuring that public sector agencies working in health has water resources and utility source, working together.

Shift from centralized supply led infrastructure provision to decentralized, people centered demands creation coupled with support service providers to meet that demand full involvement of health sector in sanitation. The health sector has a powerful motivation for improving sanitation and much strength to achieving this goal.

Nandolo is very densely populated, hence many infectious diseases there public health issues has to be addressed, space for refuse is lacking due to no space between the houses, town planning should come in address such issues in order to have health for all. Preventive measures will be much more beneficial than curative to avoid complications.

Analysis

Data collected by interviews has been entered and summarized, analyzed, using excel and SPSS. Double checking was done throughout the study to check completeness and consistency of the data. Quantitative data was analyzed using the interpretation process with deductive approach further the confidence level was attained by chi square.

	Value	DF	ASYMP. Sig (2-side)	Exact sig. (2-sided)	Exact sig. (1-sided)
Pearson Chi-square	.701	1	402		
Continued correction	.108	1	-742		
Likelihood ratio	.712	1	.399		
Fishers' exact test		1		.620	.373
Linear-by-linear association	.660	1	.417		
No. of valid cases	18				

Table 16

The summary indicates 25 percent of the catchment area (quarter) had 1,648 households and below of the catchment area, whilst 50% (half) had 2,226 households and below and 75% pf the catchment area (three - quarter) had about 2,913 households and below.

An independent sample of T-test was conducted to examine whether an independent T-test was conducted to examine whether there was a significant difference between male and female in relation to their length of period worked. The test did not yield statistical difference between males and females (t = 0.368, df = 16, P = 0.718) i.e. being male and female has no effect no length of period worked. Results are shown in table below.

Relation between gender and participants ratings of sanitation in their catchment area. A Pearson Chi-square test of independence was performed to taste the relationship between gender and participants rating of sanitation in their catchment area. The probability of the alpha level of the square of 0.05. This does not give us sufficient evidence to conclude that gender might significantly influence participant. Influence on rating of sanitation in their catchment area I.e. gender has no effect on participants' rating of sanitation in their catchment area. The test are shown in the table above.

Analyzing the effect of gender on length of period worked

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The mean size of catchment area for the HSAs was about 493 household. The smallest catchment area has 205 households and the biggest area had 808 households. It was skewed to the left (skewness = -0.007). the summary indicates 25% of the catchment area (quarter) and about 403 household and below, whilst 50% percent (half of the catchment areas had about 518 households and below and 75 percent of the catchment areas (three quarter) had about 607 household and below. Each catchment area was served by at least one DSA this number was considered on a lower side considering the required population ration. The mean catchment population was about 2,262. The smallest catchment in terms of population had 1,245 and the biggest catchment area had 3,632 people. It was slightly skewed to the right (skewed = 0.242).

Further government has to play a role in managing demography in cities for rural migration is expanding the cities bringing a challenge to accommodate those searching for jobs rather pushing development to rural areas to help in rescuing overpopulation [7-19].

Conclusion

Based on the survey findings the following conclusion have been drawn and recommendations formulated in order to lay out a practical path in achieving health for all by updating its health services mainly in the side of environmental sanitation. Three important objectives were as follows: 1) To find out the cause of poor sanitation management in Nandolo. 2) To evaluate effects of poor sanitation and to draw mechanisms for improving sanitation management in Nandolo. Based on these findings of this research the following conclusion came out clearly regarding the research objective.

Objective one: The following were the causes of poor sanitation in Nandolo: Several households using one rubbish pit and dumping into rivers, Several household using one toilet, No visitation of sanitation supervisors therefore no enough health education, No link between the health workers and councilors for easy presentation of issues to Blantyre city council and the councilors do not take health issues on the priority so to improve sanitation in their area, Less sanitation facilities in their areas.

Objective two: In evaluating the Effects of poor sanitation in Nandolo the study found that there is High rate of sanitation diseases which are also communicable diseases like diarrhoea and bilharzia. The swamps create the breeding place for mosquitoes leading to malaria which is another killer disease. Poor sanitation is a bad indicator of health, it is a big health hazard.

Objective three: In drawing the Mechanisms for improving sanitation management in Nandolo. There is inadequate Health education which brings a change in people's attitude. There is minimal Supervision in Blantyre DHO health services delivery. There is little situation analysis on feed backs on the data of diseases and follow up on what is actual on the ground and act accordingly.

Therefore Government should provide prophylaxis treatments to the community to avoid communicable diseases like water guards HTH and Mertzon to control bilharzias, initiate town planning policies before building houses in slums in order to avoid congestion as it has proven to be one of the contributory effect of poor sanitation, allocate enough financial resources in public health facilities so that the demands for the society on health projects be implemented and easily supervised by the Disease surveillance assistants, efforts should be put in place to expand city boundaries. They are many companies in the city which requires more human resource of which the people have flooded and formulated slums for shelter, considering these places being part of the city so they could benefit from the city residents.

This would improve sanitation in the city and upgrading slums would bring a positive impact of sanitation. Chiefs being custodians of culture they should take influence in the encountering their society to have all the sanitation facilities around their home to avoid sanitation diseases. Chiefs should be part of the village health committees for the smooth running of health activities in their area, they should put some measures to sensitize the community to abide by the hygienic measure and have sanitation facilities in their premises District health office to always act center in order to meet every shortfall in time. District Health Office to recruit enough environmental health offices so that they should be able to supervise health surveillance assistants for work could be done effectively. District health office to be a link between the community and health surveillance Assistance and district health office to encourage preventive health by giving incentives to its health workers while carrying out hardships in their daily endeavor.

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