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Awareness and adoption levels of ecological sanitation latrines introduced by Synod of Livingstonia Development (SOLDEV) department in traditional authority Mzukuzuku in Mzimba district in Malawi

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ABSTRACT

Synod of Livingstonia development department (SOLDEV) started implementing community water and sanitation project in Mzimba district in 2002. Ecological sanitation promotes personal hygiene and use of human manure for fruits and crops production. The research was conducted to assess awareness, coverage and adoption levels of the ecological sanitation latrines in Traditional Authority Mzukuzuku in Mzimba District.

The assessment engaged cross-sectional and observatory approaches in the quantitative paradigm. The structured questionnaire was used to conduct interviews with the adults in the sampled villages; targeting heads of households.

Many people; 92.3%, heard about ecological sanitation while 45.6% had satisfactorily defined ecological sanitation in simple terms. The coverage of basic sanitation latrines is 58.9% and that of ecological sanitation is 25%. Furthermore, the results showed that 33% of the households have ever used compost manure from the human faeces and 76.8% of the household accepts use of human manure for fruit and crop production.

The results suggest that awareness is not adequate and adoption levels are low. In brief, awareness has to be improved so that many people have adequate knowledge about ecological sanitation. It is also suggested that the promoters be added and accessibility to construction materials should be improved for promotion of coverage and adoption of ecological sanitation latrines in the district. Despite low adoption levels, the project contributed to introduction of Ecological sanitation latrines and improvement of sanitation standards and coverage of latrines in the impact communities.

Keywords: Adoption, Ecosan, Awareness

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INTRODUCTION

Diarrhoea is a very common disease and remains a leading cause of morbidity and mortality in developing countries, killing nearly 2 million children annually. It is estimated that 88% of the diarrhoeal diseases are caused by unsafe water supply and inadequate sanitation and hygiene worldwide. Like other developing countries, diseases related to inadequate water, sanitation and hygiene are a huge burden in Malawi. [1,2,3]

In Malawi, at least 2.1 per 1000 new cases of non-bloody diarrhoea in-patient cases in under-five children die each year. With reference to the Malawi Health Sector Strategic Plan 2011-2016, prevalence of diarrhoea diseases is 24.1%. In Malawi, an average of 88% of population use basic sanitation facilities.[4] In Mzimba, the coverage of community latrines is 69% while that of portable water is 81.2 %. According to Mzimba district health office; the district targets to reach 75 % in latrine coverage and 85 % coverage of portable water.

Before the project had started in the community, there was a traditional system of disposal of faecal matter. These traditional ways included open defecation and use of conventional latrines or traditional pit-latrines. The project was introduced in the community in 2002 by initiating ecological sanitation latrines. The project has been into effect for 10 years. There was no recent evaluation of the project impact at a Traditional Authority level. SOLDEV expected the community members to adopt this new technology for sustainability and scaling up of the project in the target area. There was need to assess the coverage, awareness and adoption levels of the contemporary ecological latrines in the community since the introduction of the technology.

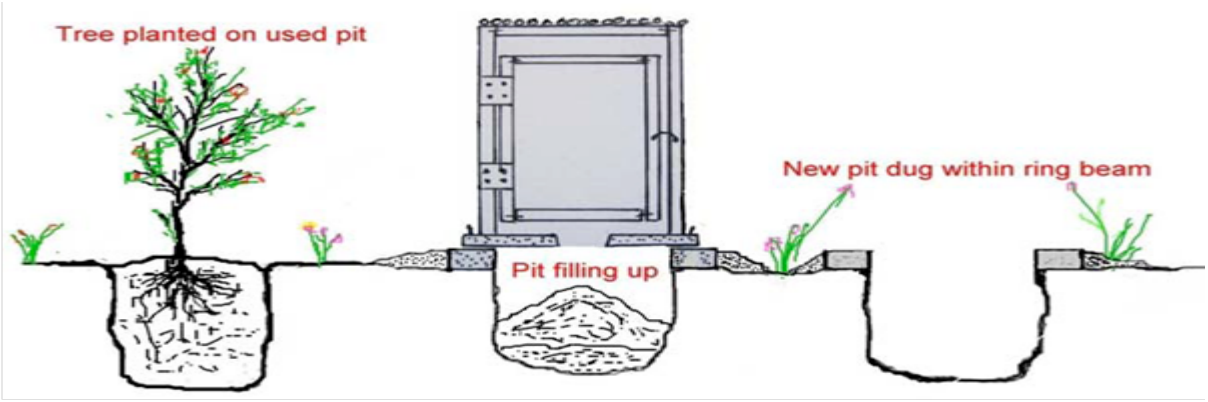

Fig 1 Illustration of the Utilisation of the Filled Pit of an Arbor Loo Latrine [5]

METHODOLOGY AND DATA ANALYSIS

The assessment engaged cross-sectional and observatory approaches in the quantitative paradigm. The structured questionnaire was used to conduct interviews with the adults in the sampled villages; targeting heads of households. The same questionnaire had spaces to fill the observed evidence and ecological sanitation structures noticed during data collection. This helped the investigator, assisted by trained data collectors, to find out coverage and adoption levels of ecological sanitation latrines in T/A Mzukuzuku.

The sample size was calculated basing on the populations of the study subjects. The sample size was calculated at 5% significant level and 95% statistical power.[6] The villages were stratified into two categories. The first stratum was the villages where the project is directly reaching or has been directly reaching while other stratum was villages where the project did not or is not directly implementing ecological sanitation activities and these villages were far from the impact villages. These households were, thereafter, selected by applying the systematic random sampling method. The sample calculation formula was used.[7] The following formula was used;

$n_1 = ((Z_{\alpha} + Z_{\beta})^2 * \sigma^2) / d^2$;

where; n= calculated sample size,

$Z_{\alpha=}$ the probability of falsely rejecting a true null hypothesis {1.96},

$Z_{\beta =}$ the probability of failing to reject a false null hypothesis at 95% power {1.645},

σ= standard deviation of the population being studied.

Data was analysed by using statistical package for social science (SPSS) complemented by content

analysis. SPSS was applied by creating data base and thereafter conducting the descriptive statistics and running the frequencies and cross-tabulations.[8,9] Content analysis was used to analyse the responses that were not out of the coded categories.[10,11] Additional explanations and comments from the respondents were also analysed by using the content analysis.

RESULTS

Demographic Characteristics and Awareness

Majority of the households are headed by adults who almost half attained a senior primary school level. At least over 50% of the households depend on substance farming for the living. The results further suggest that many people; 92.3%, heard about ecological sanitation while 45.6% had satisfactorily defined ecological sanitation in simple terms.

Table 1 Demographic Characteristics and Awareness

Age of Head of Household (n=112)			
Age Groups	**Frequency**	**% of Age Group**	**Cumulative Frequency (%)**
21-25	5	4.5	4.5
26-30	12	10.7	15.2
31-40	24	21.4	36.6
41-50	30	26.8	63.4
51-60	37	33.0	96.4
61 or above	4	3.6	100.0
Highest Level of Education (n=112)			
Education Level	**Frequency**	**% per Education Level**	**Cumulative Frequency (%)**
No Education	5	4.5	4.5
Junior Primary	23	20.5	25.0
Senior Primary	56	50.0	75.0
Secondary	27	24.1	99.1
Tertiary	1	0.9	100.0
Main Source of Income for Household or Occupation (n=112)			
Category	**Frequency**	**% per Main Source**	**Cumulative Percentages (%)**
Subsistence Farming	55	49.1	49.1
Commercial Farming	31	27.7	76.8
Employment	9	8.0	84.8
Business	13	11.6	96.4
Piece Works	4	3.6	100.0

Table 2 Definition of Ecological Sanitation (n=112)

Options Provided	Frequency	% Response	Cumulative Frequency (%)
Latrine Free of Flies	8	7.1	7.1
Shallow Pit-Latrines	23	20.5	27.7
Modern and Shallow Pit-Latrines	17	15.2	42.9
Making use of Human Excreta by Turning into Farm Manure	34	30.4	73.2
Simple and Affordable Latrines	1	0.9	74.1
Forgotten	1	0.9	75.0
I do not Know	11	9.8	84.8
I only know the Terminology	13	11.6	96.4
Children Latrine	2	1.8	98.2
Others	2	1.8	100.0

Adoptions Level

The coverage of basic sanitation latrines is 58.9% and that of ecological sanitation is 25%. Furthermore, the results showed that 33% of the households have ever used compost manure from the human faeces and 76.8% of the household accepts use of human manure for fruit and crop production.

Table 3 Cross Tabulation of Observed Ecosan Latrine at Household and Direct Project Impact Village (n=112)

Observed Ecosan Latrine at Household	Direct Project Impact Village		
	Yes	No	Overall Total
Yes	27 (48.2%)	1 (1.8%)	25.0%
No	29 (51.8%)	57 (98.2%)	75.0%

Qualitatively; many participants do not adopt the use of human manure because the practice is not accepted to the community. It is taken as a taboo(12)(10). Others fail to adopt because they cannot manage the construction and utilisation of the ecosan latrines. However, adoption has been improved in the direct impact areas than in the control villages.

Table 4 Reasons for not having and Ecosan Latrine (n=112)

Category	Frequency	Percent (%)
No Knowledge about Them	25	22.3
Lack of Materials to Build	20	17.9
Inadequate Knowledge to Build	19	17.0
No Need of Ecological Latrine	4	3.6
Cannot Manage	7	6.2
Expensive	8	7.1
Has an Ecosan Latrine**	26	23.2
Others	3	2.7

** Has an Ecosan Latrine and they were not asked as to why.

DISCUSSION AND CONCLUSION

The results suggest that majority of people in Mzukuzuku are literate and that they can easily understand the concepts of ecological sanitation. Many families in Mzukuzuku are of small sizes; between 3 and 6 members (58%), such that effective management of an ecological sanitation latrines can be well accomplished. This agrees with the Malawi Demographic Health Survey 2010 findings.[4] Many people could not describe or mention any type of ecological sanitation latrine; thus 39.3% failed to mention any type of ecological sanitation latrine that they know. The results suggest that awareness levels are relatively low in the area. On the other hand, the survey found out that coverage of Ecological Sanitation latrines in Mzukuzuku is 25% while the coverage of basic excreta sanitation is 58.9%. The results also suggest that sanitation coverage has not significantly changed in the area since 2010. Adoption of the ecosan latrines is reasonably good since 33% households have ever used human manure through ecological sanitation latrines and 25% of the households had an Ecosan latrine during data collection. Many others reported having an ecological sanitation latrine in the past; these were Arbor Loos and children latrines which do not last long.

The results suggest that awareness is not adequate and adoption levels are low. In brief, awareness has to be improved so that many people have adequate knowledge about ecological sanitation. It is also suggested that the promoters be added and accessibility to construction materials should be improved for promotion of coverage and adoption of ecological sanitation latrines in the district. Despite low adoption levels, the project contributed to

introduction of Ecological sanitation latrines and improvement of sanitation standards and coverage of latrines in the impact communities.

Further research need to be done on safety of the manure and promotion of the technology in rural areas.

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