PROBLEMS OF URBAN SANITATION.

A CASE STUDY OF DAR ES SALAAM CITY 1993.

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A DISSERTATION SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE DEGREE OF MASTER OF SCIENCE IN TROPICAL DISEASE CONTROL (MSc. TDC) OF THE UNIVERSITY OF DAR ES SALAAM 1993.

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ABSTRACT

The rate at which cities and their populations are growing in developing countries is alarming. This has got its implication in the capacity of the administration to cope up with the growing demand for basic amenities.

The present cross-sectional study was undertaken to provide a description of the existing situation of public toilets and the associated factors in the city of Dar es Salaam.

Thirty different public places and 750 people were selected. Stratified random and quota sampling technique were employed respectively. Different data collection techniques were used. Regarding public places, observations were made on the cleanliness of the surroundings, availability, number and cleanliness of public toilets, also availability of other utilities. Estimation of the population size served by the public toilets was also done.

People were interviewed on the subject of investigation, places they went to help themselves and their perception of the state of public toilets. Discussions on constraints in the provision of public toilets were carried out with responsible authorities.

Only 14 out of 30 public places (46.7%) had public toilets. These places had a median of 2 public toilets in use. There was a total of 31 toilets and all of them were pit latrines. Water was available in ten percent of public toilets. All the toilets were not provided with amenities, such as ablution materials and handwashing facilities. The majority of the public toilets studied were very dirty (60.3%). This was associated with lack of public toilet attendants. The surrounding environment in 77% of the public places was also very dirty.

A substantial proportion of respondents interviewed in these public places used toilets at nearby hotels, houses, mosques or churches, and were of the opinion that lack of public toilets and the state of the few public toilets available posed great problems to them.

Factors which affect provision and maintenance of public toilets were found to include financial constraints as well as pilferage of some components of the toilets such as water taps and sinks.

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DECLARATION

I declare solemnly that the whole or part of this dissertation is my original work and has never been submitted for a diploma or degree in any other University.

Candidate Signature

28/10/1994

Date

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CHAPTER 1:

1. INTRODUCTION

Dar es Salaam, one of the rapidly growing cities in Developing countries is seriously facing the problem of overpopulation and the associated problems. In order to sustain their lives, many people spend the whole day at different public places for their daily economic and/or leisure activities. These public places do not seem to have been adequately provided with public toilets of acceptable hygienic standard. How people at the different public places perceive and cope with such a poor state of public toilets is not known. The perceptions and plans of authorities responsible for the provision of public toilets at public places are also important consideration for the present study.

1.1. Urbanization and basic services

It has been estimated that the level of urbanization in the developing regions is expected to increase from 37% in 1985 to 61% by year 2025. In Africa and South Asia, increases as high as 30% to 60% are expected in each decade from year 1990 to 2020. (Espagnet, et al, 1991).

Like other cities in the developing world, Dar es Salaam city is rapidly expanding both in terms of people's settlements and population growth. It has a population of 1,360,830 people (which is 5.9% of the Nation), and an average population growth of about 4.8% (that of the Nation is 2.8%) between year 1978 and 1988. (Population census, 1988).

The migration of people from rural to urban areas has led to the creation of squatter settlements and slums, where people live under conditions of deprivation and poverty. The rate of growth of the urban population is such that, they outstrip the capacity of the urban administration to face the growing demand for basic amenities. It has already been realized that, in most cities, local administrations are unable to meet the challenge. (Espagnet, et al, 1991). While the population is increasing tremendously in cities, the provision of basic services is lagging behind (McGarry, 1977).

In the developing world, rapid urban growth has rarely been accompanied by adequate investments in infrastructure. Housing is often inadequate and unsuitable. Houses have been built in an unplanned manner, at a low cost and with scarce resources. Most of these homes and neighbourhoods are crowded and cramped. Such conditions invite the risk of contagion

such as Meningitis and tuberculosis. Unpaved roads, absence of drains, sewers and piped water, are among the commonest problems facing such illegal settlements.

Moreover, many individuals and families are pavement dwellers leading harzadous lives. They inevitably suffer the consequences of lack of shelter, sanitation and clean water.

Following urbanization, there are also limited number of both schools, facilities and teachers to cope with the tremendous increase of school age children. All these have an effect in lowering the standard of education of most children.

In most slums and squatter settlements, lack of piped water means that there is little water to spare for hygiene. The uncovered barrels and drums in which water is kept, the unprotected small dug wells, invite contamination, and are ideal breeding grounds for mosquitoes. Where communal taps are available, they are so few that people have to queue for a long time. Again this has the effect of reducing water consumption below the level required for health. In addition piped water systems function only intermittently. This makes it particularly difficult for households relying on communal taps as the only source of water for daily use. People may be compelled to resort to other water sources whose quality of water is doubtful.

Sewerage system in growing cities is inadequate and frequently gets blocked due to misuse. Poor drainage produces stagnant pools and swamps where mosquitoes and other disease carriers breed. Moreover, the whole environment becomes offensive, and aesthetically unattractive to the public.

In most squatter areas and slums sewerage system is virtually unknown. People use pit latrines. When the contents fills up the pit, it entails emptying. Vehicles for waste water collection however are often few and unreliable. Moreover some of the settlements are inaccessible due to lack of paved roads. Consequently the pit latrines become a nuisance, offensive, and harzadous to the health of the people.

Garbage-collection services are inadequate or non-existence in most residential areas of Third World cities. An estimated 30 - 50% of the solid wastes generated within urban centres are left uncollected. They accumulate on streets, in open spaces between houses supporting rats and other vermin. Also they block drains and therefore contribute to health problems. (Goldstar, et al 1991).

The International Drinking Water Supply and Sanitation Decade has already come to an end. Many people in

Third World still live in conditions of misery, conditions which are constantly dangerous to their lives. (Arthus, 1989).

Cholera epidemics have been occuring now and then. People are asked to boil drinking water, practice personal hygiene, they are prohibitted from selling unprotected food items, and those with cholera get treated, while the unfortunate ones die. However, all these measures, can never be more than stop-gaps. Without adequate sanitation, the treated persons return to the pre-existing insanitary conditions only to get reinfected (Arthus, 1989).

In the abscence of Government's action to ensure that services are in place and pollution is controlled, environmental health problems are greatly exercerbated.

1.2 Availability of Public toilets

It is the obligation of individual households to make sure that household toilets are constructed and maintained, and that the family uses them. However, construction and proper use of household toilets is not enough. The whole environment needs to be maintained hygienically. This owes to the fact that man is not static, he is always in search of necessities of life and is therefore obliged to leave his house to look for

them. For example, people leave their houses early in the morning and go to the market places where they spend the rest of the day selling commodities. At the market the public toilets are either lacking, few, defective or poorly maintained. People travel within the city or to other regions or districts. They spend a number of hours at the bus stand before their departure. Some of them are accompanied by their children. There are no public toilets at these places. Thousands of people gather at play grounds during football matches. The same problem of public toilets is found in these place. Moreover, many individuals and families within the city have no proper houses or are pavement dwellers, some of them spending day and night in these streets.

Defaecation is a biologic reflex, control of which may be difficult in some circumstances. If that is the case, how do all these people at the different places manage in case of a desire to relieve themselves? Do they accomplish their desire at a toilet in a nearby house or private toilet? Where this happens it causes unnecessary inconveniences to toilet owners and such toilets get over-used. Where do mothers dispose of their children's faeces while awaiting departure at the

bus stand? All these are associated with health hazards let alone the nuisance and aesthetic problems to other people who may step on the faeces.

The above mentioned are some of the public places which need suitable public toilets. The toilets should be maintained at a high standard. This does not seem to be the case and the problem has not received sufficient attention.

In urban areas, public toilets in public places are either lacking, or are too few to accommodate the increasing population growth. Where they are present, they are either dilapidated and disgusting or they have been closed for various reasons. (James, et al 1978).

Public toilets which were constructed to serve a relatively smaller population of people are unable to cope with the current population. Long queues of waiting users may lead to indiscriminate excretion in public places creating an offensive and ill health environment.

Maintenance and upkeep of public toilets is the function of Urban Authorities. Many urban authorities do not seem to take these function seriously. The real problem is not known. Various factors could be contributing to the problem. These include financial

constraints or problems in allocating the scarce resources, lack of open spaces due to faulty planning. Again, it might be possible that, some of these places were not initially planned to serve such as public places. This is particularly the case with bus stands. Owners of buses tend to utilise whatever space they can find to accommodate the buses and for people to board the buses. Presence of essential social services such as public toilets does not appear to be an important consideration.

Public toilets might be poorly maintained because of lack of motivation by public toilet attendants. Attendants need to be equipped with working facilities and protective clothings. Are the toilets provided with water for cleanliness of toilets, flushing and washing hands after excretion? This is an important aspect of any sanitation facility, because lack of water for personal hygiene invalidates the benefits of the toilets.

It is also possible that people could misuse the public toilets and therefore contribute greatly to the dirty and unsightly facilities.

1.3 Statement of Research Problem

According to population census (1988), Tanzania mainland has a population of 22,533, 758 million people.

Available data from population census (1978) shows that a high proportion of Tanzanians have access to household toilets as shown in the table below.

Table 1: Percentage of households with access to households toilets

Area	Total number of households	Number of households with access to toilets	%
Tanzania (Mainland)	353,726	326,696	92.4
Tanzania (Rural)	107,581	94,471	87.8
Tanzania (Urban)	246,145	232,225	94.3
Dar es Salaam (Rural)	2,395	1,917	80.3
Dar es Salaam (Urban)	16,563	16,281	98.3

Table 1 shows clearly the great achievements in the coverage of household toilets attained especially in Dar es Salaam (Urban). Dar es Salaam has the highest proportion of households with access to household toilets (98.3%).

However, the above data should be interprated with caution since the quality of such facilities is not known. It is possible that some of the toilets may not be functional.

Most people do not spend the whole day at home. The fact that there may be toilet facilities at home does not guarantee use of such facilities everytime such people feel the urge to go to the toilet.

Are there public toilets at public places in Dar es Salaam city? Where they are available, are they regularly cleaned? Are there well paid, motivated, equipped and constantly supervised attendants? Are the toilets provided with handwashing facilities? Are they provided with water for flushing and washing hands after excretion? Are the toilets provided with other cleansing materials like toilet papers?

If the state of public toilets at public places in the city is not up to the standard outlined above, how do people cope under such conditions? Do they perceive lack of public toilets, inadequate public toilets, or

poorly maintained and unhygienic public toilets as a problem?

What factors contribute to the state of public toilets in the city. How do responsible authorities perceive the state of public toilets? What are the constraints experienced in providing and maintaining such facilities at public places in the city? What are the present and future plans regarding the problem of public toilets in the city?

This dissertation reports on an investigation which sought information on the above stated aspects of the problem of public toilets at public places in Dar es Salaam city. The investigation entailed observation of the number and state of available public toilets, estimation of the population of people at the different public places and interview of people at the selected public places.

Discussion with responsible City authorities was carried out as well.

1.4 Rationale of the study

The importance of providing and maintaining public toilets at public places in Dar es Salaam city should not be under-estimated. Just like it is important and necessary to construct and maintain household toilets,

so it is with public toilets at public places. This is because both urination and defaecation are biological reflexes. People can control such reflexes for some time, but eventually they have to relieve themselves. Unless toilet facilities are available people with the urge to urinate and/or defaecate may experience great problems. As a result some people may resort to indiscriminate excretion. Such a behaviour creates an aesthetically unattractive environment, with nasty and offensive smells.

The state of public toilets at public places in the city of Dar es Salaam has been deteriorating over the decades. They are unsuitable and unacceptable for human utilization. Responsible Municipal authorities have not been able to act upon the problem of public toilets.

This problem has not been properly documented. Thus, the extent of the problem of public toilets at public places in Dar es Salaam city is unknown.

This research sought to contribute towards an understanding of the problem and to alert the city authorities about the potential danger to the health of Dar es Salaam residents as a result of the unhygienic conditions, under which many of them carry out their daily economic and leisure activities.

CHAPTER 2

2. REVIEW OF LITERATURE

Public toilets are those type of toilets which have been constructed so that anybody in their vicinity can use them. They are toilets whose beneficiaries are diffuse. Such toilets are required at places of public gatherings like market places, bus stands, shopping centres and recreation grounds.

When public toilets are provided at public places, it is important that, the number of toilets provided takes into account the number of people to be served. This is to avoid long queues of waiting users, especially during peak hours. Experience has shown that no toilet can function satisfactorily if used by a greater number of people than it was planned to serve. (Davey, et al, 1979).

The importance of providing public toilets at places of public assembly was considered since colonial times. Rules governing the provision of adequate number of toilets in relation to the number of people at such places were made. In particular, one toilet is required for every 200 persons with a minimum of one for each sex where the authority considers separate accommodation necessary.

Relevant literature on public toilets is scanty. However, some documents dealing with the hygienic status of communal toilets are available. Communal toilets are those facilities which have been constructed so that a defined group of people like families, schools, and institutions can use them. This literature on communal toilets shows that such toilets are usually not maintained hygienically. This is attributed to the fact that communal toilets do not belong to any one person, therefore there is no commitment from individual users to keep them clean. Once a toilet compartment is fouled, the next user has no choice, but to foul it further. (John, et al, 1980; Caincross, et al, 1983; and Marais, 1977). Owing to poor maintenance of such systems, untidiness of squatting area, smell and lack of privacy, some people in India and Upper Volta are reported to prefer open air defaecation to using a communal toilet (Mara, et al, 1980; Wright , et al, 1978; Maitra, et al, 1978 and Caincross, et al, 1983).

In order to maintain the cleanliness of communal toilets, it is suggested that, well paid attendants who should keep the toilet clean at least for the period of use, should be employed. Water points should be provided in each toilet so as to facilitate and encourage sanitary habits among the users. Employers

of attendants should regularly inspect the facilities to make sure that they are properly cleaned. (Mara, et al, 1980 and Pineo, et al, 1975).

The general conditions of communal toilets in developing countries provide general ideas concerning the hygienic status of public toilets at public places, that, the condition of public toilets could even be worse. This is because, unlike communal toilets which serve distinctive groups, public toilets are there for anyone who happens to be in the vicinity.

The above mentioned deficiencies which contribute to the occurrence of the unacceptable state of communal toilets, were assumed to be relevant for the state of public toilets in the city of Dar es Salaam and were taken into consideration in designing this study.

2.1 OBJECTIVES

2.1.1. Broad Objective

To determine the availability, adequacy and hygienic status of public toilets and associated factors at selected public toilets in Dar es Salaam city.

2.1.2 Specific Objectives

1. To determine the availability and number of public toilets in selected public places.
2. To determine the level of cleanliness of public toilets at selected public places
3. To find out whether public toilets are provided with water, handwashing facilities and other ablution materials.
4. To find out where people who spend time at selected public places go to relieve themselves.
5. To determine perceptions of people who spend time at selected public places regarding public toilets available at respective public places.
6. To determine constraints which affect the provision and maintenance of public toilets in the city of Dar es Salaam as perceived by responsible city authorities.

3. METHODOLOGY

3.1 Study design

A cross-sectional study aimed at providing a description of, and explanation for the existing situation of public toilets at selected public places in Dar es Salaam city, was done over a period of two months, starting from Mid September to November, 1992.

3.2 Study sites and public facilities

3.2.1 Study sites. These are public places which consisted of:-

- Market places. There were sixty eight (68) registered markets in the city of Dar es Salaam
- Bus stands. There were twenty bus stands in the city of Dar es Salaam
- Shopping Centres: There were seven shopping centres in the city.
- Recreation grounds: There were five recreation grounds in the city of Dar es Salaam.

Therefore there were in total one hundred public places in the city of Dar es Salaam.

3.2.2 Public facilities: These consisted of public toilets. All public toilets available at selected public places, and which were in use were studied.

3.3. Study population. These consisted of:

1. People at the selected public places. These were:-

- Consumers at the market places and shopping centres.
- Businesspeople at the market places, shopping centres and bus stands.
- Travellers and escorts at the bus stand.
- People at the recreation ground.

2. City officials responsible for the provision and maintenance of public toilets. These were:-

- City and Zonal Health Officers
- Town Planner
- City Engineer

3.4 **Sample Selection**

3.4.1 Selection of public places

In order to obtain a representative sample of the different types of public places, stratification of the public places was done according to the type of the public place. Since there was a total of one hundred public places of all types in the city of Dar es Salaam, only a proportion of them were studied. A

convenient sample of 30% of all public places was selected. A uniform sampling fraction of 3/10 was used to determine the number of public places which should be selected in each type of public place. Observation units within each strata were randomly selected. The number of observation units within each strata was as follows:

Table 2: Distribution of the public places studied according to the type of the public places

TYPE OF PUBLIC PLACE	TOTAL NUMBER OF PUBLIC PLACES	NUMBER OF PUBLIC PLACES ACTUALLY STUDIED	NUMBER OF PUBLIC PLACES SELECTED
Markets	68	16	20.4
Bus stands	20	8	6.0
Shopping centres	7	5	2.5
Recreation grounds	5	1	1.5
TOTAL	100	30	30

The discrepancy between the studied and selected public places as shown in table 2 is due to inaccessibility of some market places. Other public places, shopping centres which were accessible were selected and studied instead.

3.4.2 Selection of public toilets

All public toilets which were available and were in use at the selected public places were studied.

3.4.3 Selection of people for interview at selected public places .

A convenient sample of seven hundred and fifty (750) adult people spending time at the selected public places was selected. Three hundred and twenty five (325) people were selected from market places, two hundred (200) people were selected from bus stands, one hundred and twenty five (125) people from shopping centres and one hundred (100) people from the recreation ground.

There was no sampling frame for the selection of people for interview in public places. Therefore quota sampling was used in which stratification of respondents was done according to sex. This was complemented by the type of item sold for selecting people at market places. Therefore business people who spend the whole day at such places and consumers were selected.

Determination of the male to female ratio in the total population at the public places was done during peak hours. This was between 9.00 am and 12.00 noon and/or

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between 2.00 p.m. and 5.00 p.m. at market places and shopping centres. At the bus stand it was between 7.00 a.m. and 12.00 noon. At the recreation ground the ratio of males to females was determined at 5.00 p.m. when people were watching the play.

3.4.3.1 Selection of consumers at the market places and shopping centres

After being familiar with the respective market place or shopping centre, a place of entry into the market and the shop into which many people seemed to enter was identified. This was the point at which selection of consumers was made. Therefore interviewers had to stand at such places. One interviewer started enrolling every 5th adult male until the required sample size of males was obtained; and then every 5th female. If a person refused to be enrolled, another 5th person of the respective sex was selected instead. Two interviewers interviewed the selected respondents.

3.4.3.2 Selection of business people at the market places, shopping centres and bus stands

Business people at such places differ on the basis of the commodities they sell. This formed the basis for selection of respondents among this category. At least one respondent was selected from each cluster of business people selling particular kinds of

commodities. If a businessman or woman refused to be interviewed another person within the same cluster was selected.

3.4.3.3 Selection of travelers, escorts and people at the recreation ground

Travellers and escorts at the bust stands were selected in a similar manner used for selecting consumers at the market places and shopping centres. At the recreation ground every 5th person on the benches was selected. Females were few and all of them were enrolled.

3.5 Survey team

The survey team consisted of the author of this study assisted by two research assistants. Both of the research assistants were form six leavers who were temporarily employed as laboratory assistants.

3.5.1 Training of research assistants

Research assistants were trained for two days. Explanation of the purpose of the study was made. Explanation of research instruments and how each question should be asked was also made. Research assistants were instructed on how to approach people for interview and how to obtain their consent for the interview, followed by a brief explanation of the purpose and importance of the study.

3.5.2 General field organisation

Preliminary plans on how the study would be undertaken were communicated to the City Health officers and City Market Managers, then to Zonal Health and Cultural Officers. These officers then sent information to the leaders of the respective public places. Public places where there were no specific leaders were shopping centres and bus stands. In these cases, the Ward Health Officer responsible for the ward in which such places are located, were informed. The Ward Health officers and the different leaders at the selected public places introduced interviewers to respondents. Authorities responsible for the provision of public toilets at the city council were also contacted and briefed about the purpose of the study.

Authorities at the city council and/or zone provided the list of the public toilets in their areas of jurisdiction.

3.6 Pilot study

A pilot study to determine the feasibility of the research was done at one market place. Interviews with both consumers and business people were obtained. Experience gained from this study was used to revise the interview forms. None-response was minimal. Out of twenty five (25) business people, one person (4%) refused to be interviewed, and two (8%) out of twenty five (25) consumers refused interview.

3.7 Research methods and research instruments

Two types of methods were used for data collection

1. Interview
2. Observation of public toilets and the general surroundings of public places.

3.7.1 Interview

The interview schedule was the instrument used for interviewing people at the different public places. It had two main parts. The first part covered the identification of places, type of public places, time for interview, sex, age, educational level of respondents and their place of residence. The second part consisted of ten questions which dealt with the substantive issues of the investigation.

Before each person was interviewed consent was obtained, the aim of the study and its importance to the health of people were explained. Every person was interviewed separately. Interviewers asked questions and immediately recorded responses on an interview form. Interview time ranged from three to five minutes.

3.7.2 Observation of the cleanliness of public toilets

Observation of the cleanliness of public toilets which were available and were in use at the selected public

places was done. Observations were done for twenty days. Ten days of observations were done during morning hours and the other ten days during afternoon hours. Only one observation per day was done for each public toilet. Public places where public toilets were available were divided into two groups. While one group was visited during morning hours (8.00 a.m. - 12.00 noon), the other group was visited during afternoon hours (1.00 p.m. - 6.00 p.m.). This was done in an alternating manner.

The author of this study was assisted by one male research assistant in carrying out the observations. This was necessary for observation of public toilets which were used by males. Investigators had to enter respective public toilets so as to assess them. Observations were recorded on the observation form immediately. Photographs (black and white) to illustrate the state of public toilets were also taken.

3.7.3 Observations of the general environment at selected public places

Availability of public toilets was noted at all selected public places. The type, number and structure of public toilets which were in use were observed. Also availability of water, handwashing facilities and ablution materials such as toilet paper, were noted. The presence of faecal matter and/or signs suggestive

of people urinating around such as dry grass and the smell of urine, at the surrounding environment of all selected public places were noted. An observation form was used and findings were recorded immediately.

At some public places the leaders pointed out the places where people excreted.

3.7.4 Discussion with City Authorities

Authorities responsible for the provision and maintenance of public toilets namely the City Health Officer, City Engineer and Town Planner were contacted. An interview guide was used in interviewing them. This was constructed such that it could elicit their views regarding availability and the general state of public toilets in the City of Dar es Salaam; Planning for public toilets, constraints experienced in the provision and/or maintenance of public toilets, present and future plans.

3.8 Data analysis

Data coding was done by the author of this study. Data cleaning after its entry into the computer was also done to avoid inconsistencies. Data were analysed with a microcomputer using a statistical package for the social science (SPSS PC). Comparisons were made using the Chi-square test.

4. FINDINGS

The findings of this study are based on the following categories:

i. Selected public places and availability of public toilets.

ii. Observations of the level of cleanliness of public toilets in use and the surrounding environment at selected public places.

iii. Seven hundred and fifty questionnaires which were the instruments for interviewing people at selected public places.

iv. Discussions with city officials responsible for the provision of public toilets in the city.

4.1 Description of public places, public toilets and study population.

4.1.1. Public places

4.1.1.1 Market Places

All sixteen market places which were selected were covered during the study. Eleven (68.8%) market places had public toilets. Forty five point five per cent (45.5%) of these market places were located in the periphery of the city. The other 54.5% were located in the city centre. All market places located in the city centre were inadequately provided with public toilets (Table No. 3 and 4).

Five out of the sixteen (31.3%) market places had no public toilets. Of those market places, four (80.0%) were located in the periphery of the city while one (20.0%) was located in the centre of the city.

Leaders at respective market places reported that the organisation for the cleanliness of public toilets and the surroundings of all public places was basically the responsibility of the city council. Employment and supervision of public toilet attendants, emptying of public toilets which are full and collection of garbage. The latter two functions are done only after a request is made by concerned people at the respective public place.

Public toilet attendants were available at only one out of the eleven market places. In most of the observations which were done at such a public place, one of the attendants was either seen drunk or not seen at all. The other public toilet attender was on leave.

Five market places (45.6%) had also local arrangements for the cleanliness of public toilets. Leaders selected businesspeople to clean the toilets. The cleaning was done in the evenings after the days work.

4.1.1.2 Bus Stands

All eight bus stands selected for the study were covered. Two of these were serving people travelling upcountry, and all of them were situated in the city centre. The City Planner reported that, none of those bus stands was purposely constructed to serve as a bus stand. Some of them were initially constructed to serve as taxi parking areas.

The other two bus stands were identified with particular bus owners. These were basically road pavements and close to domestic buildings. They also served buses travelling upcountry. During peak hours all bus stands were congested with people of all kinds, travellers, escorts and petty traders selling all sorts of commodities, clothes, cooked food items, fruits and drinks.

Bus stands for city buses are scattered throughout the city. None of the bus stands had public toilets which were in use.

4.1.1.3 Shopping Centre

All shopping centres selected for the study were covered. All of them are located in the city centre. These comprised permanent shops of different sizes and scattered groups of temporary shops and kiosks. None of shopping centres had public toilets which were in use.

4.1.1.4 Recreation ground

The ground which was selected for the study is located close to the city centre. This is a football ground and some national leagues matches are staged here. However, there was no public toilet available at the ground. A communal toilet for the workers was available. This was locked when not in use. The key was available in one of the offices.

4.2. Public toilets

4.2.1 Public toilets in use (table No. 3)

A total of 31 public toilets in use were studied. All of them were pit latrines. The number of such public toilets found at the eleven market places ranged from 1 to 10 with a median of two toilets. Some market places had separate toilets for males and females. All such facilities were constructed with bricks and their squatting plates were made of cement. About 22.5% of the public toilets had no roof or door. All of them had no lid to cover the hole.

Ninety per cent (90%) of all public toilets studied had no water supply. All of them had no handwashing facilities and they were not provided with any ablution material.

4.2.2. Closed public toilets (table No. 3

Twenty five public toilets were found closed. Of these, thirteen (52.0%) were water closets which were constructed during colonial rule. This was reported by leaders or Ward Health Officers at the respective public places. The City Health Officers also reported that such facilities were closed following disconnection of water and electrical supply due to nonpayment of bills by the city council. As a result of the lack of water for flushing the faecal matter, the drains were blocked and the condition of the facilities became too unhygienic.

Eight out of twenty five (32.0%) closed public toilets were pit latrines. These were found to be full. They remained closed and therefore unempted for the whole period of the study. The other four (16.0%) closed public toilets had some mechanical defects such as cracks on the floor which rendered them unsuitable for utilization.

4.2.3 Cleanliness of the surrounding environment and public toilets in use at selected public places

None of the surroundings of public places studied was found clean. Most of them were very dirty, 81.3% of market places, 75.0% bus stands, 60.0% shopping centres and 100.0% recreation ground. Most of the surroundings of market places which had public toilets in use, were also very dirty. (Table 7 and 8).

Public toilets in use were also found very dirty in most of the observations. A high proportion of such observations were done during afternoon hours. On very few occasions public toilets were clean. Such observations were done in the morning hours. Public toilets which the city council was responsible for were very dirty in most of the observations (68.0%) and none of them was found clean. In some few occasions, public toilets which were cared for by the local organization, were found clean (Table 5 and 6).

4.3. People

4.3.1 People for interview at selected public places.

A total of 750 persons were interviewed. Of these, (61.0%) were males and (39.0%) were females. Most of respondents (38.0%) were 24 - 34 years old. While those who were 45+ years old, were few (9.0%). The highest proportion of respondents (63.6%) had attained primary level education, while 13.7% had no formal education, 0.9% had attained adult education and 21.7% had attained secondary or college level education. Most of respondents had stayed in Dar es Salaam for more than a year. Most respondents at the market places and bus stands reported that they visited these places daily. Only 50.0% of respondents at shopping centres reported visiting such places daily. Forty five per cent (45.0%) of the respondents at the recreation ground, had come to watch matches on more than five occasions.

Some respondents at the different public places reported that they used a toilet at a nearby hotel. Others used a toilet at a nearby house, mosque or church and others used a public toilet or communal toilet available at the respective public place. Few respondents reported that they went to relieve at a hiding place, and others didn't know where they could go to relieve themselves. Market places had the

highest proportion of respondents who reported that they went to relieve at a toilet at a nearby house, mosque or church (56.0%). Shopping centres had the highest proportion of respondents who reported that they used a toilet at a nearby hotel (61.0%). While the recreation ground had the highest proportion of respondents who used a communal toilet (25.0%). Bus stands had the highest proportion of respondents who reported that they went to other places to relieve themselves (12.0%) (Table 9).

Nevertheless most respondents who visited public places > 3 times per week used a toilet at a nearby house, mosque or church. While most respondents who visited such places for < 2 times per week used a toilet at a nearby hotel (table 10). There was no association between the duration of stay in Dar es Salaam and the frequency of visits at public places in the determination of the place to relieve themselves (table 11, 12, 13).

Respondents at all studied public places reported that they went to relieve themselves at a toilet available at the various mentioned places regardless to whether they had seen or had not seen signs of indiscriminate excretion (table 13).

Most respondents (66.0%) at the market places which had public toilets were of the opinion that such facilities were dirty because they were not regularly cleaned; and that lack of water contributed to the situation. More than 90.0% of respondents at all the public places perceived the lack or poor state of public toilets to be great problem to them (table 14).

Traders at public places which had no public toilets expressed concern about the monthly tax they pay. They wished the taxes were used to provide and maintain public toilets and other amenities at such places.

The involvement of people in the construction and maintenance of public toilets was considered important by most of respondents at all public places. (63.0%, 66.0%, 64%% and 87.0%) at market places, bus stands, shopping centres and recreation ground respectively.

4.3.2 Discussions with authorities responsible for the provision of public toilets at public places in the city.

All City officers (Health, Planning and Engineering) who are responsible for the provision of public toilets at public places in the city, perceived the lack or poor state of public toilets to be a problem.

They expressed concern that the Decentralization act in the 1970's was the source of all problems of public toilets. Nobody was given responsiblity of taking care of toilets. As a result they were misused, became very unhygienic and some components of the toilets were stolen. City Authorities became responsible to public toilets in 1980's, and inherited all the problems of public toilets. It was too expensive to rehabilitate and to construct new public toilets. However, these were also the consequences of the failure to budget for public toilets.

Authorities also expressed concern on the government which promised to provide funds for rehabilitation of public toilets in 1990. Such funds were not released until 1992, when Tanzanian currency had already been devaluated. Thus, the funds were not enough. Also people were stealing components of the toilets.

The City Planner reported that the planning for public places was deficient. There is no space which is specifically meant for construction of public toilets. Also some of the important public places like bus stands have never been planned for in the City of Dar es Salaam. People are using the so called bus stands illegally.

The City Health Officer reported that, they were not in a position to solve the problem of public toilets immediately due to financial constraints. Therefore, they had decided to call for private companies to do the work. Such companies could then run public toilets commercially.

4.4. Availability and adequacy of public toilets at selected public places

4.4.1 Table No. 3: Availability of public toilets at selected public places

Public Places	Public places with or without public toilets available				Public toilets available at selected public places				Total			
	Places with Public Toilets		Places without Public Toilets		Public Toilets Available and in use		Public Toilets available but closed		Public Place		Public toilets	
	n	%	n	%	n	%	n	%	n	%	n	
Markets	11	68.8	5	31.3	31	62.0	19	38.0	16	53.3	50	89.
Bus stands	1	12.5	7	87.5	0	0.0	2	100.0	8	26.7	2	3
Shopping Centre	2	40.0	3	60.0	0	0.0	4	100.0	5	16.7	4	7
Recreation ground	0	0.0	1	100.0	0	0.0	0	0.0	1	3.3	0	0
Total	14	46.7	16	53.3	31	55.4	25	44.6	30	100.0	56	100

4.4.2 Table No. 4: Public places, adequately or inadequately provided with public toilets according to their location in the city

Location of Public Places	Public places adequately or inadequately served with public toilets.						Total	
	Places adequately served with public toilets		Places moderately served with public toilets		Places inadequately served with public toilets		Public Places	
	n	%	n	%	n	%	n	%
Remote Public Places	2	40.0	2	40.0	1	20.0	5	45.5
Public places situated close to the town centre	0	0.0	0	0.0	6	100.0	6	54.5
Total	2	18.2	2	18.2	7	63.6	11	100.0

KEY:
Adequately served: Public place which public toilets were serving an average number of fifty people or less than fifty.

Moderate adequate: Public places which public toilets available were serving an average number of 51 - 100 persons per toilet.

Inadequately served: Public places which public toilets available were serving an average number of more than hundred persons per toilet.

Table No 4 shows that, a significantly high proportion of public places (63.6%) were inadequately served with public toilets. All public places which were situated close to the town centre were inadequately served with public toilets.

4.5 Cleanliness of public toilets and the surrounding environment at all selected public places

4.5.1 Table No. 5: Level of cleanliness of public toilets in use at studied public places by the time of observations

TIME OF OBSERVATION	LEVEL OF CLEANLINESS						TOTAL OBSERVATIONS	
	CLEAN		DIRTY		VERY DIRTY			
	Number of observations		Number of observations		Number of observations			
	n	%	n	%	n	%	n	%
Morning								
8.00 am to 12.00 noon	6	1.9	142	45.8	162	52.3	310	50.0
Afternoon								
1.00 p.m. to 6.00 p.m.	1	0.3	97	31.3	212	68.4	310	50.0
TOTAL	7	1.1	239	38.5	374	60.3	620	100.0

KEY:

Clean: Neither faecal matter nor urine observed

Dirty: Only urine observed

Very Dirty: Either faecal matter alone or both faecal matter and urine observed

$X^2 = 18.7$, $P < 0.001$

4.5.2 Table No. 6: Level of cleanliness of studied public toilets by the type of organisation responsible for their cleanliness at study sites

TYPE OF ORGANISATION FOR THE CLEANLINESS OF PUBLIC TOILETS	LEVEL OF CLEANLINESS OF PUBLIC TOILETS											
	CLEAN			DIRTY			VERY DIRTY			TOTAL OBSERVATIONS		
	Number of observations			Number of observations			Number of observations					
	N	n	%	N	n	%	N	n	%	N	n	%
Locally organised	4	7	3.9	9	101	56.1	9	72	40.0	9	180	29.0
City Council	0	0	0.0	22	138	41.4	22	302	68.6	22	440	71.0
TOTAL	4	7	1.1	31	239	38.5	31	374	60.3	31	620	100.0

KEY:

Clean: Neither faecal matter nor urine observed

Dirty: Only urine observed

Very dirty: Either faecal matter alone or both faecal matter and urine observed.

N = Number of toilets observed

n = Number of observations

% = Percentage observations.

$X^2 = 5.45$, $P > 0.05$

4.5.4 Table No. 7: Cleanliness of the surrounding environment at selected public places

Public Places	Cleanliness of surrounding Environment					
	Dirty		Very Dirty		Total	
	N	%	N	%	N	%
Markets	3	18.8	13	81.3	16	53.3
Bus stands	2	25.0	6	75.0	8	26.7
Shopping Centre	2	40.0	3	60.0	5	16.7
Recreation ground	0	0.0	1	100.0	1	3.3
Total	7	23.3	23	76.7	30	100.0

KEY:

Dirty: Only signs suggestive of people urinating indiscriminately noted.

Very Dirty: Either faecal matter alone or faecal matter and signs suggestive of people urinating indiscriminately noted.

$X^2 = 1.28$, $P > 0.05$

4.5.5 Table No. 8: Cleanliness of the environment by availability of public toilets in use at selected public places

Public places with or without public toilets	Cleanliness of the environment				Total	
	Dirty		Very Dirty			
	N	%	N	%	N	%
Place with Public toilets	2	18.2	9	81.8	11	36.7
Places without public toilets	7	36.8	12	63.2	19	63.3
Total	9	30.0	21	70.0	30	100.0

KEY:

Dirty: Only signs suggestive of people urinating indiscriminately noted.

Very dirty: Either faecal matter alone or faecal matter and signs suggestive of people urinating indiscriminately noted.

$X^2 = 1.15$, $P > 0.05$

4.6. Place to relieve as reported by respondents at selected public places

4.6.1 Table No. 9: Distribution of respondents according to the type of public place and places they went to relieve themselves.

Type of public Places	Places where respondents relieved themselves								Total	
	Toilet at a nearby hotel		Toilet at a nearby house, mosque, church.		Public Toilet or communal toilet.		Others			
	n	%	n	%	n	%	n	%	n	%
Market	69	21.2	182	56.0	68	20.9	6	1.84	325	43.3
Bus stand	85	42.5	71	35.5	18	9.0	26	1.30	200	26.7
Shopping centres	77	61.6	35	28.0	0	0.0	13	10.4	125	16.7
Recreation ground	15	15.0	41	41.0	25	25.0	19	19.0	100	13.3
Total	246	32.8	329	43.9	111	14.8	64	8.5	750	100.0

KEY: Others: Hiding places such as dark alleys or don't know

Table 9 shows the highest proportion of respondents who reported using toilet at a nerby hotel were found from shopping centres. While the highest proportion of respondents using toilet at a nearby house, mosque or church were found at the market places. Those using public or communal toilet were mostly found at market places and recreation ground.

Table 10: Distribution of respondents according to frequency of visits at public places and places they went to relieve themselves

Frequency of visits per week	Places where respondents went to relieve themselves								Total	
	Toilet at a nearby hotel		Toilet at a nearby house, mosque, church.		Public Toilet or communal toilet.		Others			
	n	%	n	%	n	%	n	%	n	%
≤ 2 times	93	45.8	68	33.50	3	1.48	39	19.2	203	27.06
≥ 3 times	153	28.00	261	47.71	108	19.74	25	4.57	547	67.93
Total	246	32.80	329	43.86	111	14.80	64	8.53	750	100.0

KEY: Others: Hiding places such as dark alleys or don't know

Table 10: The highest proportion of respondents went to relieve themselves at a toilet at a nearby house, mosque or church. Most of such respondents visited public places more than two times per week. Most of the respondents who utilized a toilet at a nearby hotel visited such public places two or more times per week. Most respondents who utilized public toilets or communal toilet visited public places three or more times per week.

4.6.2 Table No. 11: Distribution of respondents who utilized a toilet at a nearby house, mosque, church according to duration of stay in Dar es Salaam and the frequency of visits at market places.

Duration of Stay in Dar es Salaam	Frequency of visits per week						Total	
	1		2 - 5 times		6 - 7 times			
	n	%	n	%	n	%	n	%
≤ 1 year	4	(12.5)	10	(31.25)	18	(56.20)	32	(17.6)
> 1 year	6	(4.0)	36	(24.0)	108	(72.0)	150	(83.3)
Total	10	(5.5)	46	(25.3)	126	(69.2)	182	(100.0)

Table 11: There is no association between the duration of stay in Dar es Salaam, the frequency of visits at the market places, and the utilization of toilets at nearby houses, mosques or churches. (X^2 = 4.961, P > 0.05)

4.6.3 Table No. 12: Distribution of respondents who utilized a toilet at a nearby hotel according to duration of stay in Dar es Salaam and the frequency of visits at shopping centres

Duration of Stay in Dar es Salaam in years	Frequency of visits per week						Total	
	1		2 - 5 times		6 - 7 times			
	n	%	n	%	n	%	n	%
≤ 1 year	9	(33.3)	7	(25.9)	11	(40.7)	27	(35.1)
> 1 year	19	(38.0)	13	(26.0)	18	(36.0)	50	(64.9)
Total	28	(36.4)	20	(26.0)	29	(37.7)	77	(100.0)

Table 12: There is no association between the duration of stay in Dar es Salaam, the frequency of visits at shopping centres, and the utilization of a toilet at a nearby hotel. ($X^2 = 0.2097$, $P > 0.05$)

4.6.4 Table No. 13: Distribution of respondents who utilized a communal toilet according to duration of stay in Dar es Salaam and the frequency of visits at the recreation ground

Duration of Stay in Dar es Salaam	Frequency of visits				Total	
	≤ 5 times		> 5 times			
	n	%	n	%	n	%
≤ 1 year	3	(37.5)	5	(62.5)	11	(32.0)
> 1 year	2	(11.8)	15	(88.2)	17	(68.0)
Total	5	(20.0)	20	(80.0)	25	(100.0)

Table 13: There is no association between the duration of stay in Dar es Salaam, the frequency of visits at the recreation ground, and the utilization of a communal toilet. ($X^2 = 2.25$, $P > 0.05$).

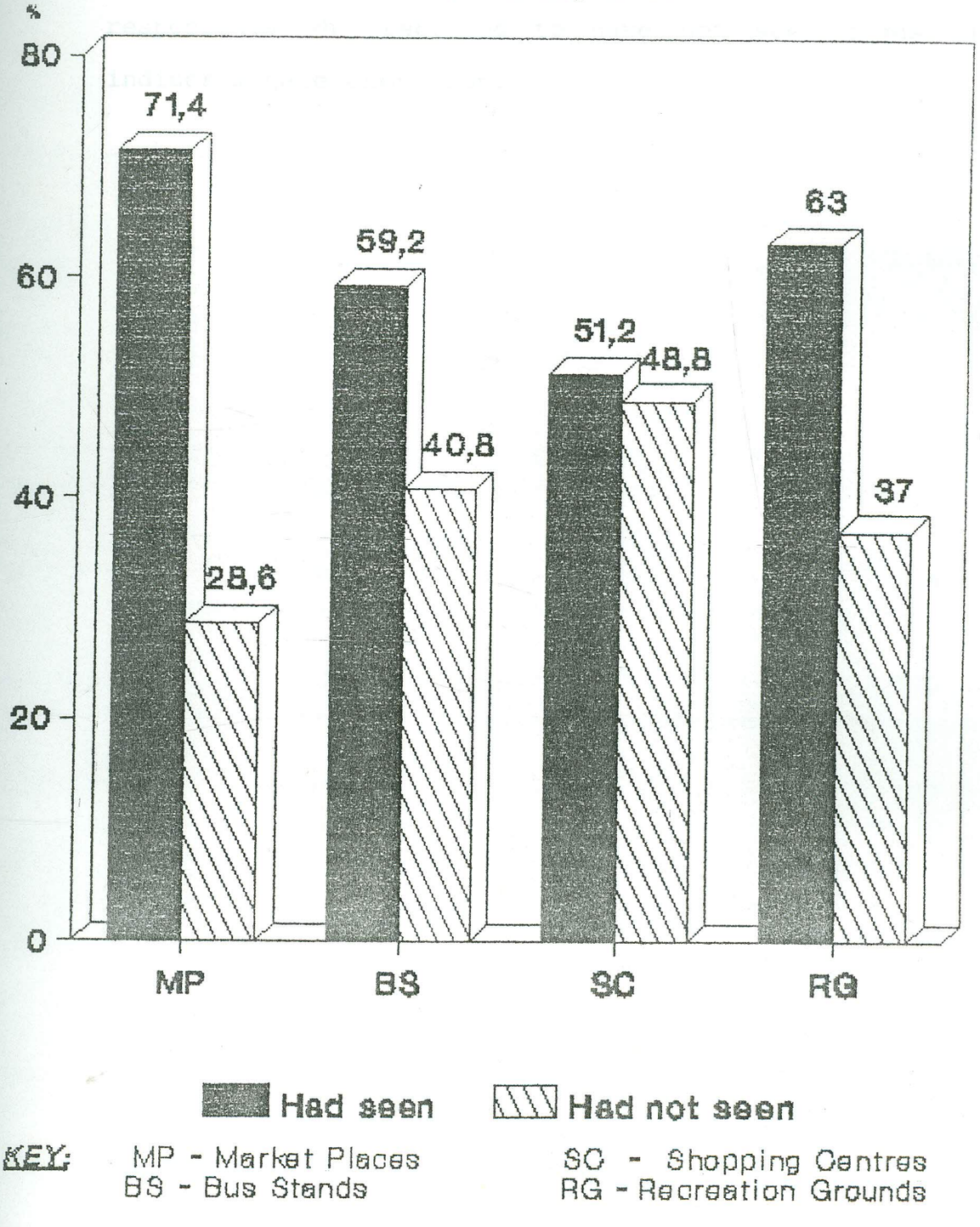
4.6.6: Table No. 14 Percentage of respondents who had either seen or not seen signs of indiscriminate excretion by the places they went to relieve themselves.

Seeing signs of indiscriminate excretion	Places where respondents relieved themselves								Total	
	Toilet at a nearby hotel		Toilet at a nearby house, mosque, church		Public toilet communal toilet		Others			
	n	%	n	%	n	%	n	%	n	%
Have seen	125	26.2	220	46.1	80	16.8	52	10.9	477	63.6
Have not seen	121	44.3	109	40.0	31	11.4	12	4.4	273	36.4
Total	246	32.8	329	43.9	111	14.8	64	8.5	750	100.0

KEY: Others - Hiding places such as dark alleys or don't know

Table No. 14 shows that a significantly high proportion of respondents had seen signs of indiscriminate excretion at public places. Most of them went to relieve themselves at a toilet at a nearby hotel, nearby house, mosque or church. A small proportion of respondents went to other places to relieve themselves.

Figure 1: Percentage of Respondents reported to have seen signs of indiscriminate excretion at study sites



KEY: MP - Market Places
BS - Bus Stands
SC - Shopping Centres
RG - Recreation Grounds

A high proportion of respondents at all public places studied had seen signs of indiscriminate excretion. Shopping centres had the highest proportion of respondents who reported to have not seen signs of indiscriminate excretion.

4.7 Table 15: Distribution of respondents according to their perception of the state of public toilets at selected public places

Public Place	Perception of the state of public toilets				Total	
	Problem		Not a Problem			
	Number of respondents	%	Number of respondents	%	Number of respondents	%
Markets	290	89.2	35	10.8	325	43.3
Bus stand	185	92.5	15	7.5	200	26.7
Shopping centre	115	92.0	10	8.0	125	16.7
Recreation ground	94	94.0	6	6.0	100	13.3
Total	684	91.2	66	8.8	750	100.0

Table 15: A significantly high proportion of respondents interviewed at the public places perceived the state of public toilets both in terms of their poor standard of cleanliness or their inadequacy as posing great problems to them.

4.8 Constraints in the provision of public toilets as reported by the relevant authorities at the city council

City authorities identified the following factors, as playing a key role in hindering the provision and maintenance of public toilets:

1. Limited financial resources.

2. Theft - people stealing some components of the toilets for example sinks, corks, taps.

CHAPTER 5

5. DISCUSSION

5.1 Availability of public toilets at public places

This study has shown that a high proportion of public places studied had no public toilets. Only 11 public places had public toilets in use. All of such public places with such toilets were market places. Availability of public toilets at market places was associated with the presence of an administrative structure which organised for financial contributions from business people and supervised the construction of such public toilets. Such an administrative structure was lacking at bus stands and shopping centres.

The lack of public toilets at public places is of much concern since public toilets are among the basic requirements of people at public places. It is important that responsible authorities provide public toilets in all public places. The fact that 53.3% of public places studied had no public toilets suggests that responsible authorities did not put much emphasis on the provision of such facilities, even though the representatives of the City Authorities who were interviewed perceived the lack of public toilets to be a problem.

Lack of funds was reported to be the major constraint which attributed greatly to the lack of such public facilities at public places.

However, failure to budget or to make alternative plans for the provision of public toilets shows that public toilets were not brought into the mainstream of city development.

Deficiency in the planning of public places in the city also contributed to the lack of public toilets at such public places as bus stands. A big city like Dar es Salaam which is growing at a tremendous rate with increased population growth needs to be provided with a well planned and constructed bus stand which is provided with all basic amenities. As a consequence to such a deficiency, owners of buses are compelled to look for convenient places to park and for people to board buses. Provision of public toilets at such places is not a priority to them. Yet even though responsible authorities are aware of the situation, not much efforts have been made to provide public toilets at such public places.

"Both effective and committed leaders are among the necessary pre-requisite for proper running and supervision of public facilities at public places. Without effective leadership the movement to urban

health will founder, and with each passing day the damage to the environment from man made pollution is endangering peoples lives (Nakajima, 1988)."

5.2 Adequacy of public toilets in use at public places

According to the criteria used in this paper, most of public places which were located in the city centre were inadequately provided with public toilets. An average population size of people at such public places was bigger than that which could be catered for by the toilets. It is obvious that under such a situation whereby available public toilets are unable to accomodate the population of people at such public places, some people may be compelled to foul the surroundings, an act which is associated with negative health effects to the people themselves.

5.3 Public toilets in use and availability of other amenities

It is disconcerting that even the few public toilets which were in use were of very poor quality. Some had no roof and others lacked doors. All of them were not provided with ablution materials or handwashing facilities. For the toilets to serve the purpose for which they were intended they have to provide for privacy to the user and protect the user from potential

ailments. Otherwise people will by pass them and foul the surrounding environment. In India and Upper Volta, people have been observed to defaecate in open places instead of using toilets due to the untidiness of squatting area, smell and lack of privacy (Mara, et al, 1980, Wright, et al 1978).

It is noteworthy that some of the toilets observed were constructed and maintained with financial resources collected locally. This shows that people are willing to contribute money in order to make these kinds of amenities available for their own use. It is important that such local initiatives be supported by the relevant authorities in particular, it is imperative that City Authorities, set up proper machinery for proper maintenance of the facilities.

Lack of ablution materials and water in toilets may prohibit other people from utilizing such toilets, and others may use unsuitable cleansing materials like magazines, walls of the superstructure of the toilets. This contributes to the unhygienic state of public toilets. Of particular concern is the belief shared by some religions that unless water is used for cleaning the pelvic area after excretion, one is not considered clean. Such people experience great problems at such public toilets which are not supplied with water.

This study found that it was not possible to practice personal hygiene at most of the public toilets due to lack of water. This implies that many people were greatly exposed to health risks. Low standards of hygiene both personal and public are responsible for many communicable diseases everywhere in the world and particularly in developing countries where living conditions are low and the population is increasing rapidly. (Davey, et al, 1979).

5.4 Closed public toilets

Thirteen out of twenty five closed public toilets were water closets which were constructed during colonial rule. These were closed due to blockage of the drains. The drains were blocked as a result of lack of water. Water supply was disconnected because of unpaid bills by responsible authorities.

Financial constraints therefore hindered rehabilitation of closed public toilets. However, the government promised to provide funds in the year 1990 budget. The funds were not released until 1992. During this time Tanzanian currency had already been devalued. The funds were therefore not adequate for

the rehabilitation of the public toilets. Also private companies which had applied to deal with public toilets were not given permission to start work due to bureaucratic bottlenecks. Such findings shows the slowness of the government officials in the implementation of important decisions. This delays the development of some useful services in the City which in turn jeopardizes the health of the people.

Hardoy et al (1987) reported that, "both the National and City Governments frequently claimed that, the cost of safe and hygienic disposal of excreta is very expensive and therefore they can't afford them. However, there are various low cost alternatives than the conventional waterborne system". The low cost Sanitation Project of the Dar es Salaam sewerage and Sanitation Division was established in the year 1980. It is basically promoting the construction of ventilated improved Pit latrines to interested customers, households, institutions and public places. Such a project is relatively cheap than the conventional waterborne system. It is also feasible and particularly suitable to most of the places which are not covered by the sewerage system in the city.

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Nevertheless, it has not been effectively utilized by authorities responsible for the provision of public toilets. It is important that representatives from both the providers and users of public toilets make up a proper machinery to deal effectively and seriously with the problem of public toilets by making use of the project.

5.5 Cleanliness of public toilets

In most of the observations public toilets were very dirty. Most of such observations were made at public places where the cleanliness of public toilets was the responsibility of the city council alone, in contrast to public places where local organisations were responsible for the cleanliness of such facilities. This observation can be explained by the lack of public toilet attendants to clean the toilets, as well as lack of supervision coupled with poor morale of the cleaners.

Public toilets at public places which had local organisations responsible for cleaning the toilets were also observed to be dirty during some observations.

This shows that even under such organisations toilets were not cleaned regularly. Public toilets tended to be cleaned during the evening hours when the businesspeople had finished the days work. And yet it was during the day time when public toilets were mainly used and when there was great need to clean them. Sanitation facilities should be kept clean for the whole period of use (Mara, et al, 1980). It was noted that businesspeople were occupied with work during the day and they couldn't clean the toilets.

Misuse of public toilets was another factor which contributed to the poor state of cleanliness of the public toilets. Such a behaviour was also observed in Northern Bangladesh. (Pineo, 1978, James, et al, 1978). The reason for such a behaviour could be due to the fact that such public facilities appear to belong to no one. There was nobody to guard against misuse of public toilets.

Cleanliness of public toilets is of much importance. An unhygienically maintained toilet provides a potential health hazard to people. This is due to the fact that food vendors were also found at such public places which had dirty public toilets and the surroundings had a lot of flies.

Municipal authorities need to employ public toilet attendants and constantly supervise them. The cleanliness of sanitation facilities which are used by everybody has to be the responsibility of a specific person who is adequately rewarded, otherwise those facilities will not be cleaned and maintained as required. (Mara, et al, 1980; Goyder, 1978; Pineo, 1975)

5.6 Place to relieve

A significantly high proportion of respondents irrespective of the frequency of their visits to public places reported that they went to relieve themselves at various places where a toilet was available. Such findings were in agreement with the comment that in towns, people dislike the squalor and lack of privacy that accompanies excretion in the open, so any toilet which is cleaner will be used (Goyder, 1978). Respondents who utilized the available public toilets consisted mainly of those who visited public places frequently. People who visit public places infrequently and spend short times at such public places, go back to their homes or working places where either a household or communal toilet is readily available to them. Public toilets at public places are the only toilet available for people who visited public

places frequently and stayed there for a long time. They had no other choice but to use such dirty public toilets. A small proportion of such respondents however went to relieve themselves at other places such as dark alleys. Others did not indicate where they went to relieve themselves. Since excretion is a personal act, habits associated with it are learnt early in life. Disclosing the actual place one went to excrete seemed impossible for others.

The behaviour of people excreting indiscriminately can also be due to the pre-existing poor state of public toilets, hence the dirty surrounding environment found at public places which had public toilets. Dirty public toilets also contributed to people excreting indiscriminately in India (Murthy, et al, 1990).

The act of excreting indiscriminately poses great concern since it creates an offensive, ill-health and aesthetically unattractive environment to the public. Although the proportion of people who claimed that they went to relieve themselves at hiding places was small, the public hazards of insanitary conditions might be great owing to the increased population growth in the city.

5.7. CONCLUSION

Provision of public toilets at public places in the city of Dar es Salaam has not received sufficient attention. Only 11 public places were provided with public toilets which were in use. All the public toilets were pit latrines and most of them lacked other important amenities like water, handwashing facilities and ablution materials like toilet papers. The public toilets which were in use were constructed following financial contributions by business people at respective public places. Most of the public toilets which were closed were water closets which were constructed during colonial rule. They were closed because they were defective and funds had not been set aside for their rehabilitation.

The above situation of public toilets has resulted from limited financial resources. However, the passive and uncommitted leaders and deficiencies involved in the planning of public places in the city of Dar es Salaam have contributed significantly to the poor conditions of public toilets.

On the other hand, public toilets which were in use, were found to be very dirty. This was attributed to the lack of well paid and constantly supervised public toilet attendants.

People interviewed at various public places went further afield to relieve themselves. Such places included toilets at nearby hotels, private houses, mosques, or churches. Some people admitted to going to relieve themselves at other places such as dark alleys.

Most respondents perceived the existing state of public toilets to be a problem.

However, public toilets are only among the many public problems prevailing in the city. Therefore, the government and Municipal authorities have no choice. They have either got to make the necessary investments in environmental health interventions which include public toilets, or they risk the consequences of neglect which include economic loss, as well as sufferings, diseases and death of their own people.

5.8 SUGGESTIONS

Based on the findings of this study, the author suggests to the Municipal authorities that there is need:-

1. To put much emphasis and seriousness on the construction and maintenance of public toilets in the City of Dar es Salaam. Attention should be put on the ventilated improved Pit Latrine Project available in the city. The project is feasible and inexpensive. Combined efforts of financial resources from both the City Council and people at public places should be obtained and used in the provision of public toilets. It is however important that a proper machinery to deal with public toilets should be established by both the City Council and the people at public places. These representatives should also make sure that the provision of public toilets goes hand in hand with the provision of water and other amenities in the toilet.

   The cleanliness of the public toilets should receive sufficient attention. Thus Municipal Authorities should employ public toilet attendants who should ascertain the cleanliness of public toilets for the whole period of use. They should be equiped with working facilities and protective

clothing. They should also guard against misuse of public toilets. They should be well paid. Ward Health Officers should supervise public toilet attendants at their respective public places constantly. Also Zonal and/or City Health Officer should visit public places frequently.

2. As an alternative strategy, private companies which have indicated their willingness to provide public toilets at some of the public places should be allowed to do so, so that the work of construction and/or rehabilitation starts immediately.

3. To construct a modern bus stand for upcountry travellers. Such a bus stand should be provided with all basic amenities including public toilets.

4. By laws against the indiscriminate excretion behaviour should be formulated and made known to the public and should be enforced.

5. As a long term strategy construction of other types of public toilets like water closets should be taken into consideration. This entails improvement of the sewerage system in the city.

REFERENCES

Arthus C.: urban unfinished business. Journal of Public Health Policy 1989, vol. 10 No 2: 214 - 221.

Caincross S, Feacham RG. Communal latrines. Environmental Health Engineering in the Tropics. An introductory test. John Wiley and Sons Chichester 1983: 114 - 142.

Curtis CF, Hawkisn PM: Entomological studies of on-site sanitation systems in Botswana and Tanzania. Transactions of the Royal Society of Tropical Medicine and Hygiene. 1982 Vol. 76 No 1: 99 - 108.

Davey TH, Wilson T: Diseases associated with low standards or Personal and Public hygiene. Davey and Lightbody's. The control of Diseases in the Tropics. 4th Edition Lewis HK and Company LTD 1979: 57 - 86, 318 - 338.

Espagnet AR, Goldstein GB, Tabibzadel I.: The urban crisis. World Health Statistics Quartery 1991 Vol. 44 No 1. 189 - 197.

Feacham R: The water and sanitation decade. Journal of Tropical Medicine and Hygiene April 1981 Vol 84 No 2: 47 - 48.

Feacham RG,: Interventions for the control of diarrhoeal diseases among young children promotion of presonal and domestic hygienic. Bulletin of the World Health Organisations 1984 Vol. 62 No 3: 467 - 476.

Fitzroy JH: Enviromental sanitation. Infection and Nutritional status of infants in Rural St. Lucia West Indies. Transactions of the Royal Society of Tropical Medicine and Hygiene 1981 Vol. 25 No 4: 507 - 513.

Goldstar GB, Tabibzadeh I: Espagnet AR. Urbanisation and the urban enviroment. World Health Statistics Quarterly 191 Vol. 44 No 1: 198 - 204.

Goyder C: Putting technology to work, the social factor. Sanitation in Developing countries. (Editor) Anold Pacey. John Wiley and Sons Chichester 1978: 162 - 185.

Hardoy E, Satterthwaite ED: Third World Cities and the environment of poverty. World Health Forum 1987, Vol. 8 No1: 86 - 93.

James McL, Fraser James H.: Technology to serve the urban poor, sanitary innovation for a local situation. Sanitation in Developing Countries. (Editor) Arnold Pacey. John Wiley and Sons, Chichester 1978: 139 - 144.

John MK, Mars DD, Charles GG: Communal sanitation facilities. Appropriate technology for water supply and sanitation. World Bank: 140 - 143.

Khan MV: Interuption of shigellosis by handwshing. Transactions of the Royal Society of Tropical Medicine and Hygiene 1982 Vol. 76 No 2: 164 - 168.

Maitra MS, Howard J, Handa BK, Curtis D, Goyder C et al: Technology for communal latrines. Sanitation in Developing countries. (Editor) Arnold Pacey. John Wiley and sons Chichester 1978: 152 -161.

Mara D, Feacham R: Technical and Public Health Aspects of Low cost sanitation programme planning. Journal of Tropical Medicine and Hygiene. Dec. 1980 Vol. 83 No 6: 229 - 240.

Marais GVR, Sanitation and low cost housing. Water, Waste and Health in Hot Climates. (Editor) Richard Feacham, Michael McGarry and Duncan Mara. John Wiley and Sons London 1977: 231 - 238.

McGarry MG: Waste collection in hot climates. A technical and Economical Appraisal. Water waste and Health in hot climates. (Editors) Richard Feacham, Michael Mcgarry and Duncan Mara. John Wiley and sons London 1977: 239 - 263.

Morgan RF: The pit latrine - revived. The central African Journal of Medicine. 1977 VOl. 23 No.1; 1- 4.

Murthy GNS, Goswani A, Narayanan S, Amar S. Effect of Educational Intervention on defaecation habits in an Indian urban Slum. Journal of Tropical Medicine and Hygiene 1990 Vol. 93 No 3: 189 - 193.

Nakajima H: Health for all, the way ahead. World Health Forum 1988 Vol. 9 No 3: 287 - 289.

Population Census: Private Households by access to toilets. 1978 Vol. VI: 49 - 55.

Population Census 1988. Region of Dar es Salaam Preliminary Report 1988: 77 - 82. Public latrines. Rural sanitation in the Tropics Bulletin 1963 No 8: 29 - 33.

Wright AM, Owusu SE, Handas VK: Communal latrines, sanitation and health in rural areas. Sanitation in Developing Countries. (Editor) Arnold Pacey. John Wiley and Sons. Chichester, 1978: 4 - 18.