特集：合同臨地訓練

Diarrhoea prevelence and risk factors in slums

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ABSTRACT

Objective: To determine the prevalence and risk factors and associated with diarrhoea in children below five years.

Design: Cross- sectional survey.

Study Area: Laini- Saba Village of Kibera Slum, Nairobi

Methodology/Subjects: Purposive sampling the households with children aged below five years. 105 households with a total of 170 children were included in the study. Structured questionnaire and observation check list were used. The respondents were mothers/care takers of the children

Main Outcome Measure: Children who had diarrhoea during the exercise and those who had had diarrhoea two weeks preceding the study were compared with those without. The prevailing environmental conditions, methods of faeces disposal and hygienic parctices were also put into consideration.

Results: The socio-demographic information revealed overcrowding with each person occupying living area of 12.8 sq. feet. Only 58% of the respondents received health information from recognized health facilities. Prevalence of diarrhoea diseases was at 36% while at least 2 children out of every 100 (2%) stood the risk of death due to diarrhoea. 79% of pit latrines were filled up and evidently not in use. This problem had been aggravated by lack of access roads. Hence the community resulted to other crude unhygienic methods of faeces disposal. High proverty level (77%) had no permanent source of income.

Conclusions: Diarrhoea is a serious health problem in the overcrowded Kibera slum. There is inadequate source of health information for the slum dwellers. Poor environmental conditions, poor methods of faeces disposal and high poverty levels expose the community to diarrhoea diseases.

Key Words: diarrhoea, overcrowding, slums, latrines, poverty

INTRODUCTION

Viewed globally, the improvement of child health in the past fifty years has been tremendous. However in measuring this trend there has been both success and failure. These has encouraged research studies in epidemiological patterns of diseases, diarrhoea included. Diarrhoea diseases in children are most common and associated with considerable morbidity and highly mortality mainly in developing countries. (UNICEF, Facts and Figures, 1998, Table 1).

In this region, diseases and associated with illiteracy, poverty, malnutrition, overcrowding and low level of personal and general hygiene. Diarrhoea defined as a condition whereby and individual produces frequent waterly stools (faeces) in excess of normal in 24 hours

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TABLE 1 Disease Ranking Table of Deaths among the under 5 years of age in developping Countries.

No	Cause	No. in millions	Percentage (%)
1	Acute Respiratory Illness (ARI)	2.2	19
2	Diarrhoea Diseases	2.2	19
3	Peri-natal	2.1	18
4	Non-communicable diseases	1.2	10
5	Measels	0.8	7
6	DPT & Polio	0.7	6
7	Other Communicable diseases including AIDS/TB	0.7	6
8	Injuries	0.7	6
9	Malaria	0.6	5
10	Others	0.4	4
	Total	11.6	100

Source: UNICEF facts & figures in developing countries of deaths among the under five years of age (1998).

period may lead to dehydration and malnutrition especially in children. Sometimes this condition may be accompanied by vomiting resulting in severe loss of body fluids and electrolytes.

According to World Halth Organization (WHO 1990), 37% of all diarrhoea diseases in the world occur in Sub-Sahara Africa.

In Kenya, the Ministry of Health reports of 1992 rates diarrhoea as the second leading killer of children. The same report states that on average a Kenyan child experiences four episodes of diarrhoea per year. The study carried out by UNICEF in 1994 says that the number of episodes increase to twelve bouts per year in the slums.

It might be possible that child survival in slums areas is threatened by environmental factors which impact on the infectious agents leading to higher transmission of diarrhoea diseases where such conditions as given earlier prevail.

Some of the major etiological factors associated with diarrhoea diseases in children include microbial agents (bacteria, parasites and viruses). These organisms are usually transmitted through food, water, milk etc that have been contaminated by human faces either directly or indirectly by for example from hands, flies or utensils including bottle feeders.

World Bank reprort on child survival 1994, states that an ordinary African child under five years of age has five episodes of diarrhoea per year. 10% risk of suffering from diarrhoea on any given day and 14% risk of dying from severe episode. In the same report, diarrhoea accounts for 25% of all illnesses of childhood and 15% of all admissions to health facilities. It is with this knowledge that the researchers decided to carry out the survey in one of the most densely populated slums of Kenya.

Study Significance:

Policy makers, donors, non-governmental organizations and other researchers will utilize results of this study for future developments.

METHODOLOGY

Kibera slum is situtated 6 km to the West of Nairobi City and estimated population of 300,000 to 500,000 people. Laini-Sava village with an estimated population of over 40,000 people was randomly selected for the study. Houses are semi-permanent and some temporarily (mud houses) walled and iron roofed. The residents are mostly tenants. The main road to the slum is tarmac but feeder roads are inaccessible during rainy seasons. Most homesteads are only accessible through foot paths.

The area has several private clinics as well as traditional

herbalists. Goverment health facilities are located 2-5km away. There is piped water supply but not to every homestead. The cross-sectional survey of 13th September to 8th October, 1999 targeted households with children aged 0-5 years. 105 households were purposively selected. 170 children were included in this study. The response rate was 98%.

Data Collection Instuments

1. Structured interview questionnaires

Each questionnaire was designed to cover specific area as per the specific objectives. Some health behaviour has been classified in the action domain as non-observable health behaviour (Stephen 1981). Administration of the questions was done by the 5 investigators. The respondents were mothers/care takers of children in every household. The respondents also gave their own opinions based on the most common health problems that they faced.

2. Observation Check List

This was designed to assess general environmental condition and any other observable evidence such as presence of faeces in the compound, filled-up latrines, uncollected garbage, open raw sewage, presence of insects, cleanliness of the compound etc as dependent variables (risk factors) associated with diarrhoea.

3. Interview Schedule for corps (community resouces persons).

This was designed to seek the views of at least one community leader e,g the chief to highlight the needs of the community in general.

Planning

The instruments were pre-tested in the same slum but different village. 10 households were used. These tools were adjusted accordingly. Data analysis procedures involved appropriate tabulations and calculations using percentages and Chi-square test. This was done throught Microsoft Exell software applicadtion.

The main objective of the survey was to determine diarrhoea prevelnce and associated risk factors in under fives in Kibera slums, Kenya.

Children who had diarrhoea during the exercise and those who had had diarrhoea two weeks preceding the study period were included. The number of children who had suffered diarrheoa was compared the those without in order to determine diarrhoea frequency. To associate the risk factors, the number of affected and unaffected children was compared to the prevailing socio-demographic characteristics such as educational background, household size, knowledge about diarrhoea management, control and hygienic practices plus general environmental status of the homestead. Tables and percentages were used.

Results

The socio-demographic information revealed over-crowding as a serious public health problem in the slum with each person occupying an area of 12.8 sq. ft, far below the recommended 40sq. ft. Only 58% of the respondents received health information from recognized health facilities. 48% received this information from elsewhere. 8.6% had never gone to school, 57.1% had attained primary educatioin and 32.4% secondary education. Only 1.9% had attained college education. Of the 53% who indicated that they boiled drinking water most expressed that this depended on availability of fuel. Breast feeding was quite adequate at 95%. Immunization was at 93% and 7% had partial coverage. Prevalence of diarrhoea was at 36% while at least 2% of the children born in Kibera stood the risk of death due to diarrhoea diseases. The cost of treatment per diarrhoea episode ranged from khs 10-1,000 of which 61% of the respondents could not comfortably afford. 77% of respondents had no permanent source of income. There was no sewage or proper drainage system. 79% of pit latrines were filled-up and evidently not in use resulting to other crude methods of disposal of feaces such as use of polythene bags. Diarrhoea was ranked first followed by malaria and respiratory illness in the community.

DISCUSSION

Diarrhoea is a major health problem among children below five years in the overcrowded slums (UNICEF 1994). Prevalence rate can be as high as 36% in the Kibera slums. Overcrowding imposes strain on facilities making observation of hygienic practices difficult which further predisposes children to diarrhoea diseases. The high prevalence rate of diarrhoea diseases in the slum

Table 2 Chi-square test results associating diarrhoea prevalence with some of the dependent variables

a) Level of Education

	Yes	No	Total	χ^2
Nome	2	6	8	8.9>7.82
Primary	36	26	62	
Secondary	11	23	34	
College/University	0	1	1	

This showed a significant relationship with diarrhoea occurance. Education is hard to change at this level but knowledge and practices can be changed.

b) No. of children per household

	Yes	No	Total	χ^2
1-2	78	35	63	1.5<7.82
3-4	17	16	33	
5-6	4	4	8	
7 and above	0	1	1	

Does not have statistical significant relationship with occurrence of diarrhoea. Therefore if living conditions are improved overcrowding does not contribute to diarrhoea prevalence among this community.

was seen to be directly associated to the knowledge level, poverty and hygienic practices of the community.

Recommendation

In order to reduce morbidity and mortality rates due to diarrhoea diseases the researchers recommend

- Regular community health education
- Latrines promotion
- Construction of access roads
- Provision of proper sewage and drainage systems as long as outsanding solutions
- Self-help income generating projects to be initiated by policy makers/donors/NGO to uplift the living standards of the community

Conclusion

Further research (Analytical) to determine the etiological factors causing diarrhoea among the community should be carried out.

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Acronyms

IM-Information management
JICA- Japan International Co-operation Agency
KMTC-Kenya Medical Training College
MLMT-Middle Level Manpower Training
MLT-Medical Laboratory Technology
MTC-Medical Training Centre
NGO-Non-Governmental Oraganization
OT.-Occupational Therapy
PHO-Public Health Officer
UON-University of Nairobi

References

1) Ministry of Health, CDD Programme news. Nairobi, (1992).
2) UNICEF. Facts and Figures-(1998)
3) Holy Bible, Deut. 23: 12-13.
4) World Health Organisation Report. Geneva, (1987, 1988).
5) UNICEF Report. State of the African Child, Nairobi, (1987).
6) Bangladesh-Journal of Diarrhea Diseases Vol. 2 (1984)
7) World Bank Report (1994)
8) Royal Society of Medicine and Hygiene 76: 164-168
9) Jose Mr. Babadilla JR FEB. 1994.
10) Byrne M and Bennet FJ. Community Nursing in Developing Countries. Oxford University Press, New York, 1986.
11) Jellifte DB, Stanfield JP, Diseases of Children in Sub-tropics. 1981.
12) African Child Survival Initiative Combating Childhood Communicable Diseases, 1991.