

Health aspects of sanitation among Eastern Cape (EC) rural communities, South Africa

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A descriptive study was conducted to determine the health aspects of sanitation among rural communities of the EC. A purposive sample of 145 villagers was drawn from 14 villages selected through systematic random sampling. Of these, 71 were male and 74 were female. The 145 participants were divided into 14 groups (M = 10 participants) by community and randomly assigned to 14 community-based trained facilitators. Each facilitator administered Dunker's (2001) KAP tool for hygiene to the assigned group. The responses from all the groups were collated and analysed. Communities' health was generally not considered good (78.6%) because of limited clean water, lack of money to treat water and unhealthy food. The prevalence of diseases in the last 6 months, included: skin diseases, worms, eye infections, diarrhoea, bilharzias and malaria; the perceived causes of diseases were mainly related to poor sanitation and the suggested disease prevention methods were sanitation improvement related. Institutional capacity was generally lacking as more than 50% of the communities did not have sanitation committees and environmental health officers (98.3%); health (64.3%) and water (57.1%) committees. The results have implications for policy-makers, programme planners, academics and practitioners in the field of water and sanitation in terms of policy and programme formulation, curriculum development, and service delivery.

Introduction

Sanitation facilities are not adequate in many countries including South Africa (Alcock, 1999: 5 and Johnstone & Porras, 2003: 108). Approximately 3 billion people in Africa lack access to adequate sanitation (DWAF, 2002b: 1; Stephen, 2003: 48 & Tladi, Baloyi, Schreiber-Kaya, Mathekgana, Mangold, de Klerk & Winde, 2002: 17). In 1994 it was estimated that approximately 21 million people in South Africa lacked access to adequate sanitation services (DWAF, 1994: 9). This figure went down to 18 million in 2001 (DWAF, 2001: 9). However, despite investments in sanitation programmes, the population with access to safe sanitation remains low (Stephen, 2003: 50), especially in rural areas. Poor sanitation affects the quality of life, and in many cases, can result in deaths and diseases which place an additional

financial and health burden on poor families (Tumwine, Thomson, Katui-Katua, Mujwanhuzi, Johnstone & Porras, 2003: 107). For example, an estimated 10 000 people die every day from water and sanitation related diseases and thousands more suffer from a range of debilitating illnesses (Tladi *et.al.* 2002:17). Hemson (2003: 3 & 2004: 14) reports that inadequate sanitation has an acute effect on child mortality rates in South Africa i.e. child mortality is twice as high for those households which do not piped water and four times high for those households which do not have flush toilets. The impact of inadequate sanitation on the health of the community and others downstream, is extremely serious as witnessed by the 1.5 million cases annually of diarrhoea in children under the age of 5 and the cholera outbreaks (DWAF, 1996: 40). Other health problems associated with

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inadequate sanitation are typhoid, bilharzias, malaria, cholera, worms, eye infections, skin diseases and increased risk for bacteria, infections and disease for people with reduced immune systems due to HIV/AIDS (DWAF, 1996: 39; DWAF, 2004: 19); Tladi *et. al.* 2002: 17). The current study explores the health aspects of sanitation, such as health status of communities; the prevalence, incidence, causes, prevention and treatment of diseases as well as available institutional capacity to deal with the diseases; among 14 rural communities of the Eastern Cape. Rural communities were chosen because they generally have little or no basic services (water, sewerage, communications, electricity) compared to the large towns, even when they are located adjacent to the large towns (DWAF, 2002b: 1; Tladi *et. al.* 2002: 17 and DWAF, 1996: 8). It is hoped that the information derived from this study not only sheds some light on the health status of rural communities but also provide critical information upon which sanitation policy and programming efforts can be based.

Methods

Design and setting

A descriptive survey was conducted in the Eastern Cape Province which is situated along the southeast coast of South Africa and covers an area of 170 000 km², representing about 14% of the country's landmass. It has a population size of approximately seven million, representing 16% (third largest) of the South African population. The non-urban population amounts to nearly 4 100 000, and dense concentrations of rural and peri-urban settlements occur in other districts and areas. The Eastern Cape is one of the provinces with the highest levels of poverty, underdeveloped infrastructure and unemployment (Eastern Cape Department of Social Development, 2004: 14). The province consists of seven district municipalities, namely: Oliver Tambo (Kei), Amatole, Western, Chris Hani (Stormberg), Ukhahlamba (Drakensburg), Alfred Nzo and East Griqualand Kei (Wild Coast). One district municipality was identified for the study, namely Amatole District Municipality (ADM). The ADM is divided into 8 local municipalities which are Nxuma (Adelaide), Mquma (Butterworth), Nkonkobe (Fort Beaufort), Mbashe (Idutywa), Great Kei (Komga), Ngqushwa (Peddie), Amahlathi

(Stutterheim) and Buffalo City (East London and King Williams Town). The study was confined to the Ngqushwa local municipality due financial and time constraints. The Ngqushwa local municipality has 14 wards with a total population of 93 997 people, made up of 20 757 households. The population is evenly spread across the 14 wards. The average number of people per ward is 6 714 (1 483) households. The average household size is 4.5% persons. The total number of villages across the 14 wards is 112.

Sample and procedure

Approval for the research was requested from and granted by the Ngqushwa Municipality. A list of 112 villages spread across the 14 wards of the Ngqushwa local municipality was provided. Systematic random sampling was used to select 1 village from a list of the villages in each ward. The 14 villages identified for the study included: Bongweni, Dubu, Gcinisa North, Gcinisa South, Lower Qeto, Luxolweni, Machibi, Mpeko, Mtati, Nobumba, Ntloko, Peddie extension, Qawukeni, and Woolridge. In each village, the researcher requested the local authorities to provide a list of 15 villagers who were knowledgeable about their community sanitation issues. Subsequently, the person chosen by the local authorities to assist the researcher with the research process in each village provided the researcher with a list of 15 villagers including grassroots women, nurses, teachers, the youth, village health workers, pastors, social workers, traditional leaders, traditional healers, representatives from various community structures, and pressure groups. The list contained the name of the participant, telephone number, fax number, office number and email address (where applicable). The total number of villagers across the 14 villages amounted to 210 (15 villagers per village). These villagers were considered a purposive sample for the study. From a purposive sample of 210 villagers, 145 who constituted 69% of the total sample consented to participate in the study after being advised of their: a) their status as volunteers, (b) their right to refuse to answer any question, (c) the legal liabilities of their participation, (d) confidentiality, and (e) the limitations of anonymity due to the nature of the study. The researcher ensured that: the group was sufficiently representative; there was an agreement on goals; and group

members understood the constraints that applied. The distribution of villagers per village was as follows: 10 for Bongweni, Dubu, Gcinisa North, Gcinisa South, Lower Qeto, Luxolweni, Machibi, Mpeko and Mtati respectively and 11 for Nobumba, Ntloko, Peddie extension, Qawukeni, and Woolridge respectively. Only 31% did not participate in the study, as they were not available at the time when the study was conducted. Of the 145 villagers, 49% (N=71) were males and 51% (N=74) were females.

Instrument

Dunker's (2001: 1-11) KAP tool for hygiene in rural areas was adopted for the study. Prior to administering the tool, a pilot study with 10 villagers was undertaken in one of the non-sampled villages at Ngqushwa District. Thereafter, the wording of the original tool was reviewed and modified accordingly. Ambiguity of meaning was eliminated; clarity, comprehensibility and simplicity of items were ensured. The tool was adjusted in order to accommodate the cultural sensitivity of the participants.

Data collection method

Group interviews were used to collect data from the 14 randomly selected community groups. Information was collected from each small group in a single session. The group interviews involved an interactive procedure where the researcher collected the data in a dialogue with informants. This method of data collection was chosen because of its suitability to the type of data being collected and cost-effectiveness.

The process

Fourteen (14) trained community-based facilitators served as data collectors for the study. Their main function as facilitators was to guide the group through the interviewing process. The purpose was to achieve an end result which is one that the group members have reached by themselves and which reflects their real views. For this to happen, each member of the group was made to feel able to contribute her/his views safely. Group members were also encouraged to listen to one another (or a genuine group consensus cannot emerge), and to communicate cooperatively rather than competitively. Facilitators helped each group to generate its own information while it takes responsibility for its own effectiveness in doing so. Each facilitator reminded group members that they were

Table 1: Health of Community

| | |
|---|--------------|
| Perception of health | N (%) |
| Community's health is considered good | 3 (21.4) |
| Community's health is not good, because: | 11 (78.6) |
| Clean water is not enough | 1 (7.1) |
| No money for treatment | 8 (57.1) |
| Unhealthy food | 2 (14.3) |
| Causes of poor community health: | N (%) |
| Unemployment and poverty | 5 (35.7) |
| Unavailability of health workers | 1 (7.1) |
| Lack of sanitation resources | 3 (21.4) |
| Insufficient knowledge | 2 (14.3) |
| Lack of health facilities i.e. clinic | 3 (21.4) |
| Flies | N (%) |
| The community thinks flies are a problem | 13 (92.9) |
| Reasons flies are a problem: | N (%) |
| They spread diseases | 3 (21.4) |
| They are germ carriers | 10 (71.4) |
| They cause diseases | 1 (7.1) |
| They are filthy | 1 (7.1) |
| Flies are attracted by | N (%) |
| Dirty dishes | 4 (28.6) |
| Dirty water | 7 (50.0) |
| Dirty surroundings | 3 (21.4) |
| What does community do to prevent flies? | N (%) |
| Use disinfectants | 3 (21.4) |
| Use fly catchers | 3 (21.4) |
| Clean surroundings | 3 (21.4) |
| Beat them with hands | 2 (14.3) |
| Doom them | 3 (21.4) |
| Hygiene Education | N (%) |
| Is hygiene education necessary? | 14 (100) |
| Community aware of: | N (%) |
| Re-hydration mixtures for diarrhoea | 9 (64.3) |
| Medicines and bandages for treating burns | 10 (71.4) |
| Antiseptics and bandages for treating cuts, bites, etc. | 10 (71.4) |
| Insect repellent for mosquitoes, flies, fleas, etc. | 10 (71.4) |
| Nutrition | N (%) |
| Does the community have vegetable gardens | |
| Yes | 9 (64.3) |
| No | 6 (42.9) |
| If not, where do they get vegetables? | |
| Market | 8 (57.1) |
| No response | 6 (42.9) |
| How often does the community eat vegetables? | |
| Daily | 3 (21.4) |
| Twice a week | 4 (28.6) |
| Once a week | 5 (35.7) |
| When they are ready | 1 (7.1) |
| During festive seasons | 1 (7.1) |

using a collaborative process. Their goal was to understand and communicate the view or views of the community as a whole. The facilitators then administered the questionnaire to the group members. Group members answered questions individually. Summaries of the responses to the questions were then written up and used as the basis for discussion. Group members used their individual responses as a means of knowing if there is close to a group consensus on some items. They decided on what should finally be written as a group response and they agreed on the wording with which the responses must be communicated. When the final wording was agreed on, it was then transferred to an appropriate space on the questionnaire without neither changing the words nor leaving out material. The group interviews were conducted in the indigenous language (Xhosa). The average number of members per group was 10. Each group interview lasted for about two hours.

Data Analysis

The 14 facilitators submitted completed group interview questionnaires for their respective groups to the researcher. Each group questionnaire was numbered to ensure that data capturers were able to go back to it should there be some queries. The researcher created the variables for quantitative data on SPSS version 11.0. Responses were then entered on SPSS. The data was then cleaned and analysed as reflected in the results section. Qualitative responses to open ended questions were quantified using thematic content analysis.

Results

Health

Communities' health was generally not considered good (78.6%) because of limited clean water, lack of money to treat water and unhealthy food. The majority of the communities (64.3%) did not have vegetable gardens and therefore did not eat vegetables daily (78.5%). Flies were perceived as a problem in the communities and participants indicated that they were attracted by dirty dishes, dirty water and dirty surroundings. Various methods were evenly used to prevent flies, namely disinfectants, fly catchers, maintaining clean surroundings, dooming them and beating them with hands. All participants felt that hygiene education was necessary within their communities even if more than 60%

Table 2: Prevalence and incidence of diseases (Positive responses)

| Any member of community suffered from the following diseases in the last 6 months | | N (%) | | |
|---|---------------|----------------|----------------|--------------|
| Diarrhoea | | 4 (28.6) | | |
| Worms | | 9 (64.3) | | |
| Bilharzias | | 3 (21.4) | | |
| Malaria | | 1 (7.1) | | |
| Eye infections | | 6 (42.9) | | |
| Skin diseases | | 13 (92.9) | | |
| Disease suffered in the last 6 months | None N (%) | 1 – 2 N (%) | 3 – 4 N (%) | 5 + N (%) |
| Diarrhoea | 10 (71.4) | 1 (7.1) | 2 (14.3) | 1 (7.1) |
| Worms | 5 (35.7) | 2 (14.3) | 1 (7.1) | 6 (42.9) |
| Bilharzias | 10 (71.4) | 1 (7.1) | 1 (7.1) | 2 (14.3) |
| Malaria | 12 (85.7) | 2 (14.3) | 0 (0.0) | 0 (0.0) |
| Eye Infections | 7 (50.0) | 2 (14.3) | 2 (14.3) | 6 (42.9) |
| Skin Diseases | 1 (7.1) | 1 (7.1) | 0 (0.0) | 12 (85.7) |

of the groups indicated that their communities were generally aware of re-hydration mixtures for diarrhoea,

medicines and bandages for treating burns, antiseptics and bandages for treating cuts, bites, etc. and insect

repellent for mosquitoes, flies, fleas, etc.

Table 3: Causes of Diseases (Positive Responses)

| Diseases | Causes | N (%) |
|----------------|---------------------------------------|-----------|
| Diarrhoea | Dirty water | 8 (57.1) |
| | Unpurified water from dams and rivers | 4 (28.6) |
| | Unhealthy diet | 2 (14.3) |
| Worms | Dirty water | 2 (14.3) |
| | Unhealthy diet | 10 (71.4) |
| | Don't know | 2 (14.3) |
| Bilharzias | Swimming in stagnant water | 3 (21.4) |
| | Dirty water | 8 (57.1) |
| | Don't know | 2 (14.3) |
| Malaria | Mosquitoes resulting from dirty water | 13 (92.9) |
| | Dirty water | 1 (7.1) |
| Eye Infections | Touching eyes without washing hands | 2 (14.3) |
| | Unhealthy diet | 6 (42.9) |
| | Harmful bacteria | 1 (7.1) |
| | Diabetes | 1 (7.1) |
| | Don't know | 4 (28.6) |
| Skin diseases | Dirty water | 7 (50.0) |
| | Harmful bacteria | 2 (14.3) |
| | Infected blood | 2 (14.3) |
| | Irregular body wash | 2 (14.3) |
| | Basking in the sun regularly | 1 (7.1) |

Diseases

The prevalence of diseases in the last 6 months in descending order, were: skin diseases, worms, eye infections, diarrhoea, bilharzias and malaria. However, the incidence rate was low across all diseases (<50%) except for skin diseases (92.8%), worms (64.3) and eye infections (50%), respectively.

Participants indicated that diseases suffered in their communities, were caused, to a large extent, by poor hygiene/sanitation. The distribution of responses, in descending order, was as follows: diarrhoea (100%); malaria (100%); skin diseases (92.9%); worms (85.7%); bilharzias (78.5%); and eye infections (64.3%).

The methods highlighted with regard to prevention of diseases, were all related to improving hygiene/sanitation. The suggested methods were evenly spread across the identified diseases. They ranged from using purified water, keeping environment clean, being hygienic to having a healthy diet and attending health consultation.

Community Institutional Capacity

Institutional capacity was generally lacking as more than 50% of the communities did not have sanitation committees and environmental health

Table 4: Prevention of Diseases

| Diseases | Yes Responses N (%) | How | N (%) |
|---------------|------------------------|--|--|
| Diarrhoea | 13 (92.9) | Purified water Tap water Health consultation Being hygienic | 6 (42.9) 3 (21.4) 2 (14.3) 2 (14.3) |
| Worms | 13 (92.9) | Healthy diet Health consultation Being hygienic Keep pigs away | 8 (57.1) 2 (14.3) 2 (14.3) 1 (7.1) |
| Bilharzias | 11 (78.6) | Avoid swimming in dams Not drink water with tadpoles Use purified water Use tap water | 2 (14.3) 1 (7.1) 7 (50.0) 1 (7.1) |
| Malaria | 9 (64.3) | Avoid throwing water on same spot Opening furrows Using sprays Keep surface dry Keep the area clean Health consultation | 3 (21.4) 2 (14.3) 1 (7.1) 1 (7.1) 1 (7.1) 1 (7.1) |
| Eye Infection | 10 (71.4) | Healthy diet Health consultation | 5 (35.7) 5 (35.7) |
| Skin diseases | 13 (92.9) | Treatment from health facility Using purified water Taking bath regularly Eating healthy | 5 (35.7) 5 (35.7) 2 (14.3) 1 (7.1) |

officers (98.3%), respectively; health committees (64.3%); and water committees (57.1%). Communities consulted with various sources when sick (42.9%), though most of them (57.1%) preferred to go to the hospital/clinic mainly because they received free treatment and had confidence that hospital personnel have knowledge/experience about diseases (28.6%). Participants indicated that traditional healers could treat various diseases.

Discussion

Health of communities

Communities' health was generally not considered good (78.6%) because of limited clean water, lack of money to treat water and unhealthy food. Flies were perceived as a problem in the communities due to unhealthy surroundings (92.9%). It is assumed that the availability of flies in the communities contributed to diseases that led to poor health. The majority of the communities (64.3%) did not have vegetable gardens

and therefore did not have vegetables daily (78.5%). It is assumed that the lack of vegetables in communities' daily diet contributed to poor nutrition and consequently poor health. The poor health status in the communities is a cause of concern because poor health keeps families in a cycle of poverty and lost income, which could otherwise be avoided. The national cost of lost productivity, reduced educational potential and curative health care is substantial (DWAF, 1996: 9; DWAF, 2002b: 1). Investing in sanitation can lead to increased life expectancy and savings in health care costs (DWAF, 2001: 9). It can contribute to enhancement of the quality of life through improved general health conditions and well being of the people. All participants were of the opinion that hygiene education is necessary within their communities, even though more than 60% of the groups indicated that their communities were generally aware of re-hydration mixtures for diarrhoea, medicines and bandages

for treating burns, antiseptics and bandages for treating cuts, bites, etc. and insect repellent for mosquitoes, flies, fleas, etc. This view is supported in literature as (DWAF, 1996:14) states that health and hygiene education should be provided to communities in order to: raise awareness of the diseases caused by unhealthy behavior and practices; enable communities to improve their health through correct hygiene practices and increase the demand and willingness to pay for appropriate sanitation facilities (DWAF, 1996: 14). DWAF (1996: 8) further states that often the sanitation challenges in rural areas are associated among others with the lack of access to health and hygiene education (DWAF, 1996: 8). Lack of hygiene education results in an ignorance of the consequences of personal and family hygiene custom and practices (DWAF, 1996: 41). In this regard, DWAF (2002b: 9) has set as its target, the provision of hygiene education to 3 million households by 2010. The enormous backlog of basic water and sanitation services to local communities will not be reduced unless communities themselves

are empowered to undertake their own development. This is not possible if they do not have the skills required which they can only acquire through hygiene education (DWAF, 1994: 20). Although education/training is not cheap, the costs of inadequate sanitation are greater. DWAF (2002a: 48) states that adequate education, among others, is a prerequisite to cost recovery and effective management of service delivery.

Diseases

The prevalence of diseases in the last 6 months, in descending order, included: skin diseases, worms, eye infections, diarrhoea, bilharzias and malaria and their causes were mainly related to poor sanitation. The results in this regard are in line with the literature that point out that health problems associated with inadequate sanitation are typhoid, bilharzias, malaria, cholera, worms, eye infections, skin diseases and increased risk for bacteria, infections and disease for people with reduced immune systems

Table 5: Capacity in dealing with diseases (positive responses)

| | |
|--|--------------|
| Community has a: | N (%) |
| Health committee | 5 (35.7) |
| Environmental health officer | 1 (7.1) |
| Community health worker | 8 (57.1) |
| Community water committee | 6 (42.9) |
| Sanitation committee | 1 (7.1) |
| Services consulted when family member is sick | N (%) |
| Traditional Healer | 3 (21.4) |
| Community Health Care Worker | 1 (7.1) |
| Self treatment | 2 (14.3) |
| Clinic / hospital, because | 8 (57.1) |
| Receive free treatment | 4 (28.6) |
| Knowledge / experience about diseases | 4 (28.6) |
| Always available | 1 (7.1) |
| Have medication | 1 (7.1) |
| Illnesses treated by Traditional Healers | N (%) |
| All | 1 (7.1) |
| Cancer | 2 (14.3) |
| Diabetes | 1 (7.1) |
| High blood pressure | 1 (7.1) |
| Epilepsy | 1 (7.1) |
| Diarrhoea | 1 (7.1) |
| Sores | 1 (7.1) |
| Cough | 1 (7.1) |
| Severe headache | 1 (7.1) |
| Demons / evil spirits | 2 (14.3) |
| Stroke | 1 (7.1) |
| Syphilis | 1 (7.1) |

due to HIV/AIDS (DWAF, 1996: 39; Tladi *et. al.* 2002: 17). All diseases suffered, were to a large extent, caused by poor hygiene/sanitation as follows: diarrhoea (100%); malaria (100%); skin diseases (92.9%); worms (85.7%); bilharzias (78.5%); and eye infections (64.3%). The prevalence of sanitation-related diseases in rural communities is not surprising in view of the fact sanitation conditions in rural areas are far from satisfactory (Alcock, 1999: 27).

Like in literature, the methods cited by the participants in preventing the above-mentioned diseases were related to the improvement of the sanitation conditions (*ibid*), i.e. they ranged from using purified water, keeping environment clean, being hygienic to having a healthy diet and attending health consultation.

Community Institutional Capacity

Institutional capacity was generally lacking as more than 50% of the communities did not have sanitation committees and environmental health officers (98.3%), respectively; health committees (64.3%); and water committees (57.1%). Improved local capacity to manage and maintain completed sanitation facilities is key to sustain sanitation in rural communities (Alaska Native Health Board, 2002: 8). No single agency has the capacity to address all sanitation challenges. The various stakeholders should be brought together to work in collaboration and co-operation to benefit the communities in adopting safe hygienic practices. This implies that other sources that communities consult when they are sick, such as those revealed in the current study (42.9%),

should be acknowledged and used. Collaboration and cooperation of the various stakeholders within communities are critical in addressing hygiene/sanitation issues (DWAF, 1994: 11 & DWAF, 1996: 4). UNICEF (1997: 11) states that communities should use existing community organisations rather than creating new ones and that education should be provided to improve both the organisational capacity of the community groups and their problem solving skills. Actions that encourage local leadership, governance and economic development can contribute to enhanced capability in a village to manage, operate and maintain sanitation facilities and other services. Actions that can promote village self-governance and leadership include: an acknowledgement that people know their needs and know where to start in meeting these needs; recognize that people can develop solutions to their needs; trust people with resources to directly implement solutions they have identified; and exercise flexibility in programme and project time lines (Alaska Native Health Board, 2002: 4).

Conclusion

The results of the present study have implications for policy-makers, programme planners, academics and practitioners in the field of water and sanitation in terms of policy and programme formulation, curriculum development, and service delivery. They serve as a knowledge base on which the national, provincial, local governments as well NGOs and the private sector can build strategies for promoting good sanitation practices.

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