

HIV/AIDS, Home Care and Human Waste Disposal in Botswana¹

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Abstract

Batswana have been hard-hit by the HIV/AIDS pandemic. The Botswana government has initiated the Community Home-Based Care programme to provide material support for HIV/AIDS patients cared for at home by family members and relatives. This paper identifies and explores emerging home care issues and pays specific attention to potential risks related to poorly managed clinical human and solid waste disposal generated through home-based care of HIV/AIDS patients in Ngamiland and Kweneng Districts in Botswana. Data were collected through focus group discussion with care-givers, discursive interviews with professional service providers, and participant observation. The results of the study indicate that the majority of care givers received material benefits provided through the CHBC programme. However, it was clear that CHBC did not have the capacity to address other critical needs for the proper care of patients in the home. Most households studied are very poor and lack basic facilities such as toilets, basic waste receptacles and regular collection of solid waste. Access to these facilities is important for disposing of both clinical and ordinary human and solid waste from HBC patients. Poor sanitation facilities - especially the improper handling of soiled laundry and inadequate ventilation - increase risks of infection. The study recommends the formation of care-giver support groups to reduce risks associated with poorly managed clinical solid waste disposal generated from home care-giving of HIV/AIDS patients.

Introduction

During the last three decades, the Botswana government has delivered varying mixtures of direct goods to HIV/AIDS patients and service infrastructure to affected households and communities.⁵ Clearly, the Botswana government has made some strides in addressing the HIV/AIDS pandemic. However, institutional responses to the HIV/AIDS pandemic in Botswana have primarily tended to focus more on administrative access to social programmes with less attention paid to the likely immediate and long-term negative outcomes emanating from the socio-cultural processes of implementing such programmes. There is a growing concern, for instance, that the government has not been able to effectively address the problems relating to clinical human waste disposal generated at household and community level through the Home-Based Care programme. Clinical waste in the context of this paper is defined as any

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5. These programmes include the Community Home-Based Care Programme (CHBC) to provide home care for terminally ill persons, Voluntary Counseling and Testing Centres (VCTC) to promote knowledge of individual's HIV status, provision of routine HIV testing offered at public health facilities, provision of anti-retroviral drugs in public health facilities, Prevention of Mother To Child Transmission (PMTCT) and Isoniazid Prevention Therapy for people who test HIV positive but do not have active tuberculosis, diagnosis and treatment of sexually transmitted infections using the syndromic approach, promotion and distribution of free condoms, and Community Support Groups for people living with HIV.

waste which consists wholly or partly of human tissue, blood or other body fluids, excretions, swabs or dressings which, unless rendered safe, may prove hazardous to any person coming into contact with it (<http://www.envirowise.gov.uk>). Certainly, there is a need for the proper management of human waste material generated by HIV/AIDS patients and care-givers. The appropriate management of waste disposal is important because improper disposal is likely to compromise public health and safety. The indiscriminate disposal of solid waste, for instance, is likely to contaminate sources of drinking water and pose a threat to people's lives. Further, poor sanitation breeds bacteria, viruses and parasites which are major causes of diarrhoea. It is estimated that contaminated water, inadequate sanitation and poor hygiene cause over 80% of all diseases in developing countries (WaterAid and Tearfund, 2000).

According to a report by WaterAid and Tearfund (2000), human waste is responsible for the transmission of schistosomiasis, cholera, typhoid and other infectious diseases that affect billions of people worldwide. In South East Asia, including China, India and Indonesia, the number of people dying from diseases connected with diarrhoea is two and a half times greater than the number dying from HIV/AIDS. In Botswana, a study conducted in 1983 in the western part of Kweneng revealed that 90% of school children using the bush to relieve themselves were found to have hookworm, as opposed to only 10% of school children in eastern Kweneng where pit latrines were common (Tiroyamodimo, 2003).

The Government of Botswana has long acknowledged the existence of poor sanitation standards in the country, which fail to measure up to the World Health Organization's (WHO) definition of adequate sanitation.⁶ According to the Botswana Policy for Wastewater and Sanitation Management (BPWSM) assessment, only 39.9% of households in Botswana have access to adequate sanitation. Out of this total, 53% are from urban areas whereas 18% are from rural areas. This means that 61% of all households in Botswana are without adequate sanitation, with a significant proportion of these being in the rural areas.

Generally, concerns have been expressed in various quarters about Botswana's public insensitivity to environmental health hazards or risks posed by poor sanitation and waste management practices. For example, scraps of metal, plastics, beer and soft drink cans, bottles and paper are often thrown around carelessly once they are no longer in use. With the advent of HIV/AIDS, the indiscriminate disposal of used protective gloves, condoms and diapers have been added to the list. Tiroyamodimo (2003) argues that sanitation is not only an integral part of adequate and habitable housing as spelt out by the Habitat Agenda and Agenda 21, but a vital contributing factor to community health, hygiene, and environmental protection. The proper management of solid and human waste disposal in Botswana is critical, especially in the context of HIV/AIDS related infectious diseases which pose a threat to public health. The Government of Botswana's Vision 2016 seeks to improve health and develop strong measures to enhance pollution control that will promote a safe and clean environment (Vision 2016).

This paper is based on the findings of a recent study of communities in Ngamiland and Kweneng Districts. The paper examines how the inappropriate disposal of human waste materials generated from HIV/AIDS care may pose greater risks to public health and safety. The paper concludes with a number of suggestions on how to reduce risks associated with poorly managed human and solid waste disposal generated from home care-giving to HIV/AIDS patients in Botswana.

6. WHO defines adequate sanitation as any private or shared excreta disposal system that hygienically separates human excreta from human contact. Access can be a household piped connection to a public sewer or an on-site sanitation system, including septic tanks, pour flush latrines, Ventilated Improved pit latrines, simple pit latrines or other locally defined technologies (Ministry of Local Government, 2001:22).

HIV/AIDS and Human Waste Disposal

The devastating impact of HIV/AIDS in Botswana and elsewhere in Africa has been well documented (Barnett and Whiteside, 2002; Ferreira, 2004; Mutangadura, 2000; Loevinsohn and Gillespie, 2003; UNAIDS, 2004; UNAIDS/UNICEF, 2004). Characteristically, the scale of the HIV/AIDS epidemic is staggering, it kills 'prime-age adults' and puts pressure on women to care for the sick and for orphaned children (Baylies, 2002). Given the scale of the epidemic, our preposition in this paper is that the HIV/AIDS pandemic is a shock.⁷ As such, the socio-cultural management of HIV/AIDS-related care in non-clinical settings, and the sanitary status of the patient's care-giving environment, produce a wide range of health risks to individuals and communities emanating from poorly managed and improper disposal of human and solid waste. Upton (1987) (as cited in Holzmann and Jorgensen, 2000) defines risk as the possibility of disaster or ruin.

Shocks and associated risks are often unpredictable, and it is usually the weak and poor who are most adversely affected given their vulnerability. Poorly resourced families are thus more likely than the non-poor to be vulnerable to HIV/AIDS care-giving risk. The availability of social service infrastructure such as health, education and sanitation services is likely to increase or reduce vulnerability experienced by individuals, households, social groups and communities in the context of the social management of HIV/AIDS care-giving.

While this framework has not been specifically applied to HIV/AIDS-related home care interventions in Botswana, we find it useful because it provides a better understanding of the risks as well as the alternative strategies to address the situation of home care-givers of HIV/AIDS patients.

The goal of community home-based care (CHBC) is to provide high quality and appropriate care to patients and their families in a home setting, to maintain independence, and to achieve the best possible quality of life (WHO, 2002). But the reality is that socio-economic and political inequalities in contemporary Botswana determine the 'quality' of home care of ordinary people, reflecting the level of access to and use of resources, as well as the risk aversion options available.

Research Sites

The data used here was obtained through field research conducted in Botswana in two administrative districts, namely Kweneng East and Ngamiland South. The villages in these districts include Maun, Shorobe and Sehithwa in Ngamiland South, and Mogoditshane in Kweneng East. A purposeful selection of these locations was done using the criteria peri-urban and urban-village with rural characteristics to allow comparability of social service infrastructure and for the concentration of HIV/AIDS related activities. The four sites are also ethnically diverse relative to other villages in Botswana.

Mogoditshane

Mogoditshane is a dormitory village located in Kweneng East 15 kilometers from Gaborone. Molepolole is the district capital. Mogoditshane is characterized by some cosmopolitan features, whilst having both urban and rural characteristics. The population of Mogoditshane

7. A shock can be regarded as a larger infrequent, unpredictable disturbance with immediate impact (Baylies, 2002; Drimie, 2002; Ellis, 2000; Loevinsohn and Gillespie, 2003; White and Robinson, 2000; Scoones, 1998:7).

grew from 4,563 in 1981 to 14,246 in 1991 (CSO, 1991) and 40,753 people in 2001 (CSO, 2002). Mogoditshane is a peri-urban village. Initially, an influx of migrant workers from elsewhere settled in Mogoditshane in search of affordable accommodation.⁸ Later, some major commercial activities, (e.g. super market chain stores, petrol stations, and hotels) were built, providing employment opportunities for the village residents. In terms of social development infrastructure, Mogoditshane has a clinic with a maternity wing, five primary schools, two Junior Secondary Schools and three private schools. Local institutions include churches, burial societies, Parents Teachers Association, Community Home Based Care Volunteers, women's groups and five Village Development Committees (VDCs).

Sehithwa

Sehithwa village is located in Ngamiland about 100 km southwest of Maun. The village has a population of 1,478 (631 male and 847 females) (CSO,2001). Sehithwa residents mainly practice livestock farming. The main ethnic groups in Sehithwa are Baherero and Batawana. Trade and commerce include shops, bottle stores, a bakery, a restaurant and a Chibuku (traditional beer) depot. Tribal administration infrastructure includes a headman, customary court, tribal police, a customary court office, *kgotla* and public toilets. Central government agencies include a Botswana police station and prison cell, veterinary assistant and a public library. Non-government organizations in the village include Banderu Cultural Organization, branches of Young Women's Christian Association (YWCA), Botswana Council of Women (BCW), Boy Scouts, and numerous Faith-Based Organizations such as an HIV/AIDS counselling centre run by the Lutheran Church. Modes of transport to Sehithwa from Maun include private cars and two mini-buses, while within the village donkey carts, horses and bicycles are commonly used. Telecommunications include cell phones, about 103 private fixed lines and three public booths. Formal sources of information for the literate in Sehithwa include access to newspapers, magazines, radio, and television (few households).

Shorobe

Shorobe is situated 30 km to the northeast of Maun. The estimated population of Shorobe is 955 (409 males and 546 females). The main sources of livelihood in this village are the sale of grass and reeds, fishing, firewood collection, beer, vegetables, basket-making, livestock, *molapo* arable farming, and a community based natural resource management (CBNRM) initiative. Languages spoken are mostly Setswana and Seyei. There are no central government or district level departments in Shorobe. Tribal administration includes the *kgotla* and a senior chief. Trade and commerce include shops and a bottle store. There are no NGOs in Shorobe. People from Maun travel to Shorobe using mini-buses or private cars, and donkey carts and bicycles are used within the village. A survey by the Every River Has Its People Project suggests a high level of illiteracy (77.4% of sampled heads of households had no formal education, 16.1% had less than primary leaving certificate, 3.2% had primary leaving certificate and 3.2% had junior secondary).

8. People from Gaborone live in Mogoditshane to either avoid high rental prices or because of the shortage of residential plots and rented accommodations in Gaborone, hence the dormitory character of the village. Due to shortage of land in Mogoditshane, most people have given up farming and have resorted to non-farm activities. Unemployment and high crime rates still remain serious problems in the village.

Maun

Maun is the capital of the North-West District. Maun has 43,776 residents (20,299 are male and 23,477 are female). Maun is the district capital and is the hub of Botswana's tourist industry. Tourism related commercial activities include guest houses, hotels, lodges, campsites, chalets, restaurants, fast-food and craft outlets, retail, distribution and wholesale businesses, recreational facilities such as a sports complex and swimming pools, airport, cash-loan facilities and three commercial banks. As the North-West District headquarters, all central government and local government departments are represented in Maun: a post office, water, education, health, agriculture, police, telecommunications, district council, land boards, and well developed tribal administration facilities.

Research Design

This is an exploratory qualitative study aimed at comparing the availability and practice of human and solid waste disposal in the context of home care for terminally ill persons primarily, but not solely, with HIV/AIDS-related health conditions in villages in Ngamiland South and Kweneng East. Yin (1984: 23) defined a case study as an empirical inquiry that investigates a contemporary phenomenon within its real-life context. A case study is appropriate when the boundaries between phenomenon and context are not clearly evident since it enables multiple sources of evidence to be used. The design also allows multilevel data collection from groups of individuals included in a simultaneous application of quantitative and qualitative methods (Axin *et.al*, 1987; Babbie, 1990; Bernard, 1995; Massey, 1987; Weiss, 1994). Also, the case study design enabled us to explore complex issues of community resource access by individuals and families in relation to home care-giving.

Methods of Data Collection

Sampling Procedure

The study was focused specifically on men and women who were registered recipients of the Home-Based Care and anti-retroviral drug programme in the Department of Social and Community Development and Health Clinics respectively. The sample was drawn from a list of registered Community Home-Based Care (CHBC) care-givers provided by social workers from the Department of Social Services. The following criteria were used to select care-givers for the study : 1. age of at least 18 years, 2. live in the same household as an HIV/AIDS patient, 3. be either the primary home care-giver for the HIV/AIDS patient or be one of two primary care-givers for the patient, and 4. has served in the capacity of care-giver for at least 6 months. In Maun, due to the large size of the village, five wards were randomly selected from a list of 15 designated VDC-headed wards: Boseja, Thito, Mabudutsa, Boyei and Sedie. Care-givers were purposively selected using the CHBC register.

Data Collection Methods

Focus Group Discussions

Focus group discussions of participants sharing similar characteristics (such as age, gender, social standing and work) were held in each research site (Cohen & Garrett, 1999; Morgan, 1988; Morgan & Krueger, 1993; Vaughn, Schumm & Sinagub, 1996). An interview schedule

was used to guide the interview process and helped focus rather than standardize discussion on key themes. Further, the interview schedule was designed to be fluid and flexible in nature so that it could allow informal HIV/AIDS care-givers to 'take control' of the research process and provide as much information as possible. All focus group interviews were audio-taped and transcribed into computer files. The purpose was to keep a clear record of what participants said throughout the discussions. Audio recording was useful in cross checking interview data. Discussions lasted between 1± and 2± hours depending on the dynamics of each group. Meeting places varied, from clinic courtyards, offices and church rooms to open spaces under big trees. Focus group discussions consisted of 6-10 participants, the average size being six people. A total of 14 focus group discussions were conducted: 8 in Maun, 1 each in Sehithwa and Shorobe, and 4 in Mogoditshane. Overall 85 care-givers participated in focus group discussions: 53 in Maun, 6 in Sehithwa, 8 in Shorobe and 18 in Mogoditshane (Table 1).

Table 1. Socio-economic profile for home care-givers.

Characteristics	Maun	Mogoditshane	Sehithwa	Shorobe	Total	%
Gender						
Male	7 (8.24%)	1 (1.2%)	0 (0%)	0 (0%)	8	9.44
Female	46 (54.1%)	17 (20%)	6 (7%)	8 (9.4%)	77	90.1
Total	53	18	6	8	85	100
Age						
10-29	7 (8.2%)	0 (0%)	0	8 (9.4)	15	17.6
30 -49	34 (40%)	9 (10.59%)	4 (4.71)	0	47	55.3
50 - 69	10 (11.8%)	5 (5.88%)	2 (2.35%)	0	17	20
70 - 89	2 (2.35%)	4 (4.71%)	0	0	6	7.6
Total	53	18	6	8	85	100
Education						
Never attended school	3 (3.5 %)	4 (4.7%)	1 (1.2%)	0	8	9.4
Lower Primary	18 (21%)	8 (9.4%)	2 (2.35%)	0	28	32.9
Higher Primary	12 (14.12%)	5 (5.88%)	3 (3.53%)	0	20	23.5
Non formal	6 (7.0%)	1 (1.2%)	0	0	7	8.23
Junior Certificate	11 (12.9%)	0	0	8 (9.4%)	19	22.4
Cambridge	3 (3.53%)	0	0	0	3	3.53
Total	53	18	6	8	85	100

Quantifiable qualitative data such as that relating to the demographic and descriptive profile of the care-giver, occupation, level of education and source of income, was also collected using a structured interview guide administered immediately following focus group discussions. Generalization of findings from this case study are particular to the research setting and do not necessarily represent a description of family home care in Botswana.

Discursive Interviews and Participant Observation

In addition to focus group discussions, discursive interviews (Weiss, 1994) were held with relevant stakeholders. Discursive interviews also generated insights regarding wider household and community concerns about clinical waste disposal, the sanitation risks involved, and about

the general living conditions and challenges confronting the home care-giving programme. Participant observation was carried throughout the research process in all the research sites (Spradely, 1980). Participant observation is a reciprocal physical presence and inter-subjective experience that uses the senses of sight, sound and smell. Body expressions are an integral aspect of the social construction and cultural contexts of care-giving practices (Fetterman, 1989; Weiss, 1994).

Data Management and Analysis

Issue Focus and Thematic Analysis

The individual care-givers within a family compound constitute the unit of analysis. Qualitative data from informal interviews, focus group discussions, open-ended questions from the questionnaires, and participant observation were analyzed through issue focus or thematically (Weiss, 1994). Data analysis for this study involved data reduction, data display, generating conclusions and verification (Miles & Huberman, 1994). The mass of data from focus groups was transcribed, reduced and summarized into themes, patterns and clusters. Codes for each of the categories generated were developed and data displayed in each category for verification. Finally, conclusions were drawn on the basis of emerging themes which formed patterns and clusters, and which then provided the basis for the write-up of the analysis. In the data display stage, an analysis matrix was developed to enable researchers to make an overall assessment of care-givers.

Emerging Home Care Themes and Issues

Socio-economic Status of Care-givers

The data shows that female participation in caring is higher than that of their male counterparts. Out of 85 respondents who participated in focus group discussions, there were 77 (90.1%) female respondents and 8 (9.44%) males. The gender imbalance shows the social pressure on females to perform care-giving roles. Although Botswana society has transformed over the years and many traditions have changed, giving way to modernity, care-giving appear to have remained a predominantly female preserve as was the case in the past. Approximately 47 (55.3%) of the respondents were aged 30-49, while 17 (19.9%) were in the 50-69 age group. Care-givers in the age bracket 10-29 comprise 15 people (17.6%) of the profile, while an insignificant proportion (6 people or 7.6%) was in the age group 70-89. The factor of age is significant because a person's age can explain her/his capacity and motivation to provide effective care. It can also explain their perception of care-giving as well as the decision to choose to provide care or not. Age bracket is also important because it challenges the myth that care-giving is a domain of the elderly as some studies have shown in the past, but has now become concentrated in the middle ages of 30-49. It is important to note that in this study there was a deliberate attempt to correlate age with care-giving.

With respect to education, the study revealed that a higher proportion of respondents (28, or 32.9%) had lower primary education, while 20 (23.5%) had higher primary, 19 (22.4%) a junior certificate, 7 (8.23%) non-formal education, 3 (3.53%) had Cambridge certificate and 8 (9.4%) had never attended school. Care-givers' ability to protect themselves against risks of infection and to provide quality care could be influenced by their level of education. It is possible that care-givers with different educational levels may have different perceptions about solid waste disposal and associated risks (Table 1).

Table 2. Care-givers - marital profile of care-givers.

Characteristics	Maun	Mogoditshane	Sehithwa	Shorobe	Total	%
Married	27 (32%)	8 (9.4%)	4 (4.7%)	0	39	45.8
Never married	3 (3.52%)	1 (1.2%)	0	6 (7.0%)	10	11.8
Divorced/separated	13(15.3%)	4 (4.7%)	0	0	17	20
Widowed	3 (3.52%)	3 (3.52%)	2 (2.35%)	0	8	9.4
Living together	7 (8.2%)	2 (2.35%)	0	2 (2.35%)	11	12.9
Totals	53	18	6	8	85	100

Consistent with their level of education, not all respondents were formally employed and as such fully engaged in care-giving. For example, most respondents (37, or 43.5%) were not employed; some respondents (20, or 23.5%) were self employed, the majority (13, or 15.3%) of whom were engaged in farming; only 9 (10.6%) were gainfully employed; while 6 (7.1%) received volunteer allowance. This finding is significant and central to this study because it has implications for quality care-giving, particularly where a care-giver is unemployed and caring for a patient who has no source of income. It is likely that low income status could increase the burden of care, stress and other risks associated with caring. Low income levels mean that the family cannot afford basic needs such as a toilet, soap and clean water (Table 3). Thus, most families are vulnerable to shocks and associated risks triggered by a lack of employment opportunities and loss of jobs. Extended periods of unemployment have a devastating psychological effect which make both care-givers and patients more vulnerable to a whole range of risks, from destitution to anti-social behaviour.

Table 3. Source of income of care-givers.

Source of Income	Maun	Mogoditshane	Sehithwa	Shorobe	Total	%
Farmer	11 (12.9%)	0 (0%)	2 (2.35%)	0	13	15.3
Self-employed	10 (11.7%)	6 (7.05%)	4 (4.7%)	0	20	23.5
Not employed	19 (22.35%)	10 (11.7%)	0	8 (9.4%)	37	43.5
Employed	7 (8.24%)	2 (2.35%)	0	0	9	10.6
Volunteer allowance	3 (3.52%)	3 (3.52%)	0	0	6	7.1
Total	50	21	6	8	85	100

The majority of respondents (39, or 45.8%) were married, while 17 (20%) were divorced or separated, 11 (12.9%) were living together, 10 (11.8%) never married and 8 (9.4%) were widowed. In Tswana culture marriage is still valued, which explains why the majority of the respondents were married. An interesting finding in the study is that a substantial number of people were divorced or separated, and that others were living together. It is possible that families were breaking apart due to the stresses related to prolonged sickness and the burden of care-giving. For those cohabiting, it might be that economic pressures have pushed them into living together outside marriage. However, in this era and age of HIV/AIDS, cohabitation may not be the best option. This is because cohabiting couples have a tendency to use a condom the first few months of their cohabitation and discontinue thereafter on account of trust. This often exposes the couple to the risk of contracting HIV/AIDS, and it is possible that it might spread to their patient, further increasing the burden of care and risks associated with clinical waste disposal.

Family Size

Family size in this study means the number of people resident in a particular household for extended periods of time. The type of housing and family size are very important because these have implications on the amount of clinical waste generated in the family and how it is disposed of. The study found that most care-givers live in mixed housing structures consisting mostly of traditional and modern houses, while others lived in corrugated iron roof houses. The traditional houses were classified as those made of mud, grass thatch or reeds. The research found that these types of houses were generally owned by the lower income group and the poorer members of the community, while the modern houses, made from bricks, galvanized roof sheets and tiles, belonged to the middle income and rich families. Overall it was observed that household conditions were generally very poor. For instance, the general appearance of the households, in terms of their physical conditions such as fencing, cleanliness, housing structures and the general condition of the neighborhood, was not hospitable.

In terms of family size, the study found a mixture of both large and small families. Table 4 shows that 17 (20%) of the respondents indicated that they had between 1-5 family members, while 40 (47.1%) had 6-10 members and 16 (18.8%) had 11-15 members. The remaining 12 (14%) had families ranging from 16-21 members. Households with more than 15 members were likely to be composite households, that is they consisted of two or more families (unmarried adult children or married siblings with children staying together). Families with composite households were usually overcrowded relative to the household size in comparison to households with few family members.

Table 4. Care-givers - family size.

Family size	Frequency	%
1-5 members	17	20
6-10 members	40	47.1
11-15 members	16	18.8
16-20 members	7	8.24
21+ members	5	5.9
Total	85	100

Thus, given the high prevalence of HIV/AIDS in Botswana, it is not unreasonable to suggest the possibility of some members in the composite family being infected with the HIV virus. Overcrowding conditions are likely to worsen the situation. For example, the disposal of materials such as diapers may be a problem especially where the family share a pit latrine. The latrine may fill up quickly given high family numbers, and some members may be forced to use the nearby bush to relieve themselves. This has a serious implication for the environment and the health of the household. In addition, an increase in family size has resource implications, in particular regarding housing. Obviously, the family will require more housing space to cater for its large numbers. Many families in Botswana cannot afford decent housing, which leads to overcrowded conditions. People living in such conditions are at a high risk of contacting infectious diseases, including HIV/AIDS.

As reflected in Table 4, it is very clear that most care-givers belong to very large families. The critical question is, what does this mean in the era of HIV/AIDS? A high number of small children in the family means that many families still engage in unprotected sex. As indicated earlier, families lack facilities such as toilets for the proper disposal of waste materials

generated in the care of their patients. Overcrowding and lack of facilities put considerable strain on the home-based care programme and has serious implications for public health. It is important to point out that compromises in the health of the household have a multiplier effect, as they lead to major compromises in the health of the public. As more family members are affected and die from HIV/AIDS, the result is an increase in the number of orphans and vulnerable children.

Knowledge of HIV/AIDS

Almost all care-givers had knowledge of HIV/AIDS and how it is transmitted, and understood its symptoms. They indicated that AIDS is a killer and that there is no cure for AIDS. Some care-givers claim that they could see if a person is suffering from HIV/AIDS. They could tell because they have seen parents, brothers, sisters, sons and daughters, friends, relatives, neighbours and other members of the general public who are suffering from or have lost their lives to HIV/AIDS. Most participants pointed out that AIDS is a terrible disease, often referred to in the local jargon as *bolwetse jwa radio*, which literally means 'Disease of the Radio'. Phrases such as *bolwetse jwa radio* were echoed in all focus group discussions. The phrase signifies the prominence and publicity given to the disease by the national and private radio stations. Publicity is meant to create awareness, so that people know the dangers and risks associated with HIV/AIDS.

In addition, most respondents were able to identify symptoms of a person suffering from and/or infected by HIV/AIDS. The most common symptoms cited include TB, night sweats, loss of appetite, diarrhoea, loss of weight and vomiting. However, they pointed out that since one is never really sure and absolutely certain about these signs, it is important to confirm and validate them through proper and professional HIV/AIDS testing.

While the majority of the care-givers indicated they understood and were aware of what HIV/AIDS is, there were a few who expressed lack of understanding. Although we do not expect full knowledge of HIV/AIDS by everyone, it is surprising given the level of publicity campaigns and information dissemination on HIV/AIDS. Information is disseminated mainly through both the electronic and print media, workshops and *kgotla* meetings. Clearly, what this means is that the message is not able to reach everybody, including care-givers who need it most. It might also mean that health care workers who are charged with the responsibility for delivering the message at the grassroots level are unable to do so effectively.

Knowledge of Patient Illness

Almost all care-givers had knowledge of their patients' illnesses. Asked what type of illness their patients were suffering from, a large proportion of the respondents were able to tell that their patients have been diagnosed HIV+ and were on ARV, while others said their patients were HIV+ but not on ARV. Only a few respondents indicated that they did not know the diagnosis of their patients. This is a significant finding because it shows that the secrecy surrounding HIV/AIDS is gradually declining as more and more people disclose their HIV/AIDS status. An element of shared confidentiality is beginning to emerge around something which hitherto has been a closely guarded secret.

Asked about how they came to know about the patient's diagnosis, the majority of respondents said they were told (with the patient's consent) at the hospital upon the patient's enrolment on the ARV programme.

Length of Care-giving

Most people in Botswana with HIV/AIDS rely on care from their families, friends and neighbours. Care-givers reported that the length of care-giving varies according to each patient and between care-givers. The period of care-giving ranges between two months and 8 years. Most care-givers who have been playing the care-giving role for a long time have cared for several people in the family; unfortunately most of the long-term care recipients have passed away. This means that the larger the number of care recipients over time, the greater the likelihood that care-givers will experience more deaths and trauma.

Those who have been giving care to various patients need support and breaks from the caring role. Relief support may boost their coping capacities and keep their interest in home care-giving. When such help is not forthcoming, the care-givers are likely to experience burn-out, with the following adverse implications:

- Increased risk of infection among care-givers;
- Negative impact on the nutritional status of care-giver (loss of appetite and irregular eating habits);
- Inability to eat certain foods triggered by repeated exposure to death and the dying;
- Cumulative stress due to grief and loss; and
- In some cases prolonged stress may lead to clinical depression.

Increased tension and stress also result from the multiple household chores that care-givers have to perform - on many occasions single-handedly. These include collecting firewood and water, preparing and serving food, cleaning, washing, bathing children and the sick, ministering to the sick, administering medication, taking the patient to the clinic or hospital, and fostering relationships with family and neighbours (Ogden, Esim and Grown, 2004).

Clearly, care-givers need support in order to deal with the above problems. Support is crucial to help care-givers cope with HIV/AIDS patients and to help reduce the burden of care as well as the risk of infection or re-infection.

Sanitary Facilities and Waste Disposal

In Botswana, approaches to home-based care and treatment for HIV/AIDS patients have largely been guided by the HIV/AIDS policy and delivered through the CHBC programme. All respondents shared their understanding and experiences of care-giving within the broader context of CHBC. They related both their positive and negative experiences of care-giving. In terms of the positive experiences, the results of the study showed that the majority of care-givers received benefits provided through the CHBC programme. They were happy with the help received and wished it continued because it has in various ways reduced the burden of care. On the negative side, the majority of care-givers pointed out that while they receive material benefits from CHBC, it was clear that CHBC did not have the capacity to address other critical needs for the proper care of patients in the home. Most of the households studied are very poor and lack basic facilities such as toilets, which are important for disposing of both clinical and ordinary human and solid waste from HBC patients.

For example, when asked about the availability of sanitary facilities and solid waste disposal at the household level, the majority of respondents (35, or 41%) reported using the bush to dispose of both human and solid waste materials generated from care-giving. This is a substantial number of people given that there are very few undeveloped places left in Maun and the surrounding villages of Sehitwa and Shorobe. This was followed by 30 (35.3%) of those

who use their own toilets, while 12 (14%) use the neighbour's toilet. The remaining 8 (9.4%) have modern flushed toilets (Table 5). The most commonly reported sanitation facility is the bush, while only a few care-givers have access to a neighbour's toilet or has a flush toilet. The data clearly shows that many people have no access to toilet facilities. This has serious implications on care-giving because a lack of toilet facilities increases the risk of infection, contamination of the environment, and hence the spread of the disease.

Table 5. Household toilet facilities.

Village/Ward	Flush toilet	Own pit latrine	Neighbour's toilet	Bush	Sample size
Maun Wards					
Sedie	0	3 (23%)	1 (7.6%)	9 (69.2%)	13
Thlto	5 (25%)	6 (30%)	3 (15%)	6 (30%)	20
Mabudutsa	2 (20%)	3 (30%)	2 (20%)	3 (30%)	10
Boyei	0	9 (81.8%)	2 (18.1%)	0	11
Boseja	1 (6.6%)	4 (26.6%)	1 (6.6%)	9 (60%)	15
Sehithwa	0	2 (25%)	2 (25%)	4 (50%)	8
Shorobe	0	3 (37.5%)	1 (12.5%)	4 (50%)	8
Total	8	30	12	35	85
%	9.4	35.3	14	41	100

The situation in Boseja and Sedie wards (the biggest wards in Maun) was the worst amongst the areas studied, as can be seen from Table 5. Only 3 in 13 respondents in Sedie indicated that they have access to their own pit latrine, while the remainder use the bush. In Boseja, 4 care-givers out of 15 have access to their own toilet facility. This means that while the number may differ from ward to ward, generally the majority of people in both Sedie and Boseja were without toilet facilities.

The bush was generally preferred for disposal because it is regarded as no man's land as one moves from the realm of society to that of nature and wilderness. It is this type of thinking that makes people take less responsibility for the environment to the detriment of public health and safety. This has serious implications on both household and public health generally.

Those who use the neighbour's toilet facilities run the risk of being denied access at any time. Obviously the relationship between neighbours is unpredictable. It is possible that from time to time people may be denied the use of toilet facilities by their neighbours, leaving them with no other means but use of the bush. This means that the number of people using the bush may increase over time depending on the relationship between neighbours. Worse still, one may be allowed to use the toilet to relieve oneself only but not to dispose of diapers given the stigma attached to HIV/AIDS. It is important to note that, as a rule, diapers and other clinical waste materials should not be disposed of in the toilet but should be safely kept in a bag and sent to a health facility for incineration.

Lack of toilet facilities is a cause for concern for most people. It is in stark contrast with the picture often painted by the government that the health status of the country has greatly improved.

Based on the evidence presented above, it may not be entirely unreasonable to conclude that the health status of many Batswana in Ngamiland and Kweneng are at risk, given the

number of people without proper sanitation facilities. Lack of proper sanitation facilities in the era of HIV/AIDS poses a greater risk to both the household and the public. Another important point to note is that Maun is located at the base of the Okavango Delta, which is one of the major tourist attractions in Southern Africa. The indiscriminate disposal of solid waste in the Delta environs is an eye-sore to the tourist and may be detrimental to the tourist industry. This may result in reduced revenue from the industry as well as a loss of employment opportunities from the same.

Inadequate sanitary facilities further means that soiled water from patients' baths and laundry are thrown everywhere in the yard. This practice may pose a danger to young children who play on the ground. Small children still at the oral stage may eat the contaminated soil, which could expose them to a number of health risks. The disposal of used gloves and condoms needs to be considered when addressing issues of clinical waste disposal. These may expose children to other health risks if not properly disposed of. For example, care-givers in all focus groups were concerned that the indiscriminate disposal of condoms and gloves is putting children's lives at risk, because children often play with condoms as they resemble balloons.

Alternative Sources of Clinical Solid Waste Disposal

It is important to note that almost all care-givers were very much aware of the consequences of the indiscriminate disposal of clinical solid waste, in particular of using the bush to dispose of waste. Asked if there was any alternative to the bush, the majority said that most people have rubbish pits in their homes. In addition, the North-West District Council has roadside collection points. The Council provides refuse bins and is supposed to empty them regularly. However, during fieldwork we observed that most rubbish pits were full and unhygienic. Further, the Council was not able to collect bins regularly, hence overflows were very common, and dogs were seen around the village dragging litter and contaminating the environment. Most sanitary facilities appeared rudimentary and very poor. The North-West District Council (2003) confirmed this observation by pointing out that, due to limited resources, it does not have the capacity to collect litter in time. The collection schedule is irregular and unpredictable. The inconsistent and irregular collection of solid waste by the North-West District Council is a major concern because it exposes the community and the environment at large to a wide range of risks.

Further, the Council does not have adequate roadside collection points to cover the whole village, thus roadside collection points are not accessible to many households. This situation may contribute to littering. Fieldwork observations confirmed information and views expressed by the care-givers. For example, we observed a considerable number of over-filled rubbish pits in the homes, as well as over-filled roadside collection bins. This means that soiled waste is left for long periods of time in the pit or uncollected on the roadside, becoming a breeding ground for vectors such as flies, rats and cockroaches which feed on organic waste. These vermin are known carriers of microbial pathogens, which may pose other health risks to the rest of the household (WHO, 1999).

At the household level, efforts to burn solid waste (napkins, diapers, gloves and other related waste) in order to maintain better hygiene practices have also proved futile because of a lack of firewood. For example, statistics reveal that about 87% of the people in Maun use firewood for cooking, but in recent years it has become more difficult to obtain firewood (CSO, 2001). People must now travel long distances to collect firewood. For care-givers, who are looking after very ill patients, it is difficult to leave patients for long hours in order to search for firewood.

Discussion

The increase in quantity of clinical and ordinary human and solid waste material generated in the process of care-giving is certainly becoming a major concern in the provision of home-based care for HIV/AIDS patients in Botswana. This issue took many stakeholders by surprise, as nobody ever predicted that an increase in the number of home-based AIDS patients would result in an increase in clinical solid waste which, if not managed and disposed of properly, could become a major health problem. Based on evidence from the findings of this research, it may not be entirely unreasonable to conclude that care-givers are increasingly under threat of being infected with the HIV virus. Members of the family and the community at large are also under constant threat and exposure to the risks of infection posed by the indiscriminate disposal of clinical solid waste. Evidence from this research suggests that the indiscriminate or careless disposal of clinical solid waste and the lack of adequate sanitary facilities pose major risks for care-givers, patients and the environment. The WHO (1999) and Water AID and TearFund (2000) revealed similar findings in their study of the impact of the indiscriminate disposal of solid waste in South East Asia.

The account given by this study, although not exhaustive, helps shed some light on the complexities of the problems that care-givers face and the implications that these have on both the family and community health and safety. Further, the study sought to establish whether or not there was awareness of the risks that may be occasioned by the indiscriminate disposal of waste. Data revealed several factors that are responsible for the careless disposal of solid waste. These factors were found to be fundamental in the analysis of the situation of care-givers:

- A lack of knowledge of infection prevention amongst care-givers;
- Limited or lack of sanitary facilities and services such as toilets;
- Irregular collection of clinical waste (e.g. soiled napkins and disposable sheets) by the Council Sanitation Unit. It is not uncommon for garbage to remain uncollected for many days. The risk to animals, humans and the environment increases as the number of days the garbage remains uncollected increases;
- Limited access to protective clothing such as gloves and masks;
- A lack of adequate knowledge in HIV prevention and management. This implies a high risk of cross infection among families; and
- Family size and type of housing.

The findings reflect very little training, if any, has been provided for the care-givers, although they were expected by the health system to provide care with some level of proficiency. It is important to point out that human beings generate waste all the time. Our responsibility therefore is to ensure proper waste disposal and protection of the public from hazards caused by carelessness in clinical solid waste disposal. Of particular concern is waste generated through caring for AIDS patients, which poses the risk of opportunistic infections.

It is important to point out that, in the context of this study, solid waste disposal means getting rid of material supplies used in the care of AIDS patients. These materials include diapers and gloves. The manner in which clinical solid waste is disposed of by care-givers is crucial. This is because such waste may be hazardous to public health and safety, and as such must be carefully managed. Proper disposal of clinical waste is important in any community because it ensures a clean and safe environment.

Based on the evidence from the findings of this research, it is reasonable to conclude that if the above factors are not addressed at household and community level the problem of poorly

managed clinical solid waste will escalate to epidemic proportions. When this happens, the risk of infection and other associated risks will also increase. Furthermore, if clinical solid waste is not managed, it will pose a threat not only to the patient who has a compromised immune system due to HIV/AIDS, but also to the rest of the household, especially small children. Beyond the household, the mismanagement of such waste may pose a greater risk to public health and safety.

The above factors are mutually reinforcing. They combine and manifest themselves in various ways, the outcomes of which are risks and serious threats to family health, and to public safety.

The findings of this study have highlighted and confirmed assumptions underlying this study, that the indiscriminate and poorly managed disposal of human and solid waste is a threat to both households and public health and safety, which may ultimately lead to the spread of HIV/AIDS. Similar findings by Tiroyamodimo (2003) confirms these problems and argue that they are compounded by inadequate access to sanitation and portable water, and by overcrowded dwelling places. To address the situation, innovative strategies for the proper and safe management of clinical solid waste disposal is suggested within the broader framework of CHBC.

Recommendations

All care-givers in Botswana are vulnerable and at risk. This research has shown that care-givers are subjected to numerous risks including the careless disposal of HIV/AIDS patients' ordinary and clinical human and solid waste, re-infection and cross-infection, poverty and social isolation. These different risks are mutually reinforcing and have serious implications for the environment and public health and safety. The challenge is therefore for all the stake-holders (Government, NGOs, CBOs and care-givers) to develop strategies that reduce these risks and that promote innovative interventions that enhance care-givers lives and effectively meet their needs. It is recommended thus:

- That government should create awareness of clinical solid waste disposal at two levels. First, at Policy level, government should develop legislation which compels manufacturers of items such as disposable nappies, gloves and masks to use biodegradable materials which are environmentally friendly. At local level, local authorities in collaboration with communities should develop waste management strategies that take into consideration waste generated from the caring for AIDS patients.
- That government, NGOs, communities and family members should form care-giver support groups to reduce the social risks associated with poorly managed human and solid waste disposal generated from home care-giving of AIDS patients.
- Local authorities and communities should create awareness among community members to help them understand the effects of clinical solid waste on the environment - especially solid waste generated from care-giving of AIDS patients - and its implication to public health and the natural resources that communities are dependent upon.
- Local communities must be sensitized to the dangers that clinical solid waste could cause on farm animals - a source of livelihood for most rural households.

- Government, local authorities and communities should conduct research on indigenous knowledge systems in order to identify indigenous skills that communities can use to address the problems of waste disposal.
- Local authorities should provide closable, leak-proof containers or bags and other sanitation facilities in each ward, where care-givers can dispose of their waste materials.
- Government and local authorities should ensure that the disposal of all infectious waste is in accordance with applicable laws.
- Government should build community incinerators that are environmentally friendly.
- Most communities have volunteer care-givers, and they could be trained in proper clinical waste disposal of waste from patients with AIDS and other chronic illnesses. These care-givers could then assist in collecting solid waste from households and delivering it to government incineration facilities.
- Local authorities should develop cheaper, and more user and environmentally friendly, biodegradable toilets.
- Local authorities should enhance the home-based care programme and assist care-givers with basic knowledge about the connection between waste disposal, hygiene and diseases.
- Health education in communities should be an integral part of the health care system and should include topics such as the safe disposal of human waste.

Conclusion

The aim of this paper was to identify and explore potential home care risks associated with poorly managed clinical human and solid waste disposal generated from home care-giving of HIV/AIDS patients in Ngamiland and Kweneng Districts. It has identified and explained emerging home care-giving issues such as the socio-economic status and demographic characteristics of care-givers, care-givers' knowledge of HIV/AIDS, length of care-giving and availability of sanitary facilities or lack thereof.

The findings reported in this paper suggest that care-giving is generally a female domain. Further, the indiscriminate and improper disposal of human and solid waste was found to be a major problem experienced by care-givers, with far reaching implications for family and community health and safety.

Finally, the formation of care-givers support groups has been suggested as an appropriate strategy to reduce social risks associated with indiscriminate and poorly managed human and solid waste disposal. Care-givers will have to be empowered in order to effectively address the problems cited above. This process will afford the family and the community the opportunity to develop the capacity to manage and dispose of clinical solid waste safely and hence reduce potential risks. To this end, support groups offer hope, since they are based upon the strengths of the care-givers, and view the development of empowering and supporting relationships as a means of increasing the possibilities of risk reduction in home care-giving.

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