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# Access to, and the delivery of, free healthcare in Kanakantapa, rural Zambia

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## SUMMARY

**This study determines the proportion of people experiencing health needs in rural Kanakantapa, Zambia and examines perceived barriers to healthcare access. Through the administration of face-to-face questionnaires, demographic data, information on health needs and the care received at the clinic or the reasons for non-attendance were obtained. Ninety six percent of respondents reported experiencing at least one healthcare need in the previous 12 months. Sixty six percent of reported healthcare needs resulted in clinic attendance. The main reasons for non-attendance were distance (55% of respondents) and a belief that medicine shortages would result in the clinic's inability to treat (20% of respondents). No factors were found to predict attendance for all symptoms but age predicted attendance for respiratory symptoms and distance predicted attendance for diarrhoea.**

**KEYWORDS:** albendazole, praziquantel, soil transmitted helminthiasis, schistosomiasis

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## Introduction

Zambia has a population of 11.7 million people, which is supported by a health workforce of only 25,000.[ 1,2] Life expectancy has fallen to 40 years for males and females, with the leading causes of death being human immunodeficiency virus (HIV) and acquired immunodeficiency syndrome (AIDS), lower respiratory infections, malaria, diarrhoeal diseases and perinatal conditions.[1,3] While great advances have been made in the cities in Zambia, many rural areas remain unchanged, with traditional farming techniques still being used. The majority of people in rural areas walk long distances, up to 30 kilometres (km) to reach the nearest rural health centre.[4]

Until recently, people in Zambia paid a fixed medical levy of 1,000 Zambian Kwacha (ZMK) to receive medical care. This price is 2% of the average weekly income in Zambia and included prescriptions.[5]

The government's overarching aims for health are to

reduce the burden of disease, improve treatment and care, curtail the exodus of medical professionals to other countries and ensure availability of essential drugs.[6] When user fees were introduced in Zambia, Van der Geest et al found that some people stopped attending the clinic and stayed at home or preferred to pay a traditional healer.[7] Interestingly, many people also preferred to attend missionary and church hospitals which also charge for care rather than access their local clinic, since they often have sufficient medicines.[7]

Policy makers have realised that user fees are a regressive form of tax and a barrier to accessing health services by the poor.[8] In light of this, user fees were abolished in all health institutions in rural areas, effective from April 1st 2006.[8] The only cost now, is a one-off payment to purchase a registration book for ZMK 500 (US\$0.12).[9] This new policy focuses on improving access to the clinic for poor, rural people.

Previous research has shown that fees at primary care

level can encourage inappropriate self-treatment and can act as a barrier to use of a health facility.[10,11] Whilst inability to pay is a barrier to obtaining healthcare, another barrier is physical accessibility of healthcare providers.[12,13] Tanser found that as distance increases, roads are important as more people make use of public transport.[12] In addition, Ager and Pepper found that villagers might be deterred from accessing the clinic by the length of the journey.[13] It is unknown whether people in Kanakantapa will be able to access the clinic even when cost is not a barrier.

The Director of Public Health and Research at the Ministry of Health did not expect a ‘dramatic increase in the number of patients’ as Zambia had free healthcare only a decade ago and certain segments of society, such as the elderly and pregnant women were already entitled to free primary healthcare.[14] However, the Ministry of Health’s Permanent Secretary believed that ‘Abolition of user fees should almost certainly lead to increased utilisation of health services which in turn is bound to [put] pressure on health inputs such as drugs and human resources.’[8]

In addition, evidence from Uganda has shown that removal of user fees resulted in substantial increases in utilisation of facilities since user fees had restricted utilisation and created a pool of unmet health needs.[ ] Similarly, when fees were abolished in South Africa, utilisation increased but health workers reported feeling unprepared for the increase.[10]

Oxfam have stressed, the next challenge facing Zambia’s healthcare system is the shortage of healthcare workers.[16] With only one doctor per 14,000 people, health services may struggle to cater for the increased demand that the abolition of user fees may have created.[16] It is uncertain whether the number of staff at the clinic in Kanakantapa is sufficient to meet the healthcare needs of the people in Kanakantapa. Kanakantapa is a rural resettlement area, which is 10,400 hectares and consists of 1200 farms and 12 villages (A-K and Extension).[17] It is situated east of the capital, Lusaka, in the district of Chongwe and the province of Lusaka. It was once a forest reserve, which was converted to an agricultural resettlement scheme, designed to resettle unemployed urban youths and later, retired public workers.[4] (See table 1.)

Kanakantapa Rural Health Centre has recently relocated. It is now situated 50km north east of Lusaka and 13km off the Great East Road.[18] It has a catchment population of 13,051.[18] The clinic is

staffed by two general nurses, two midwives, one clinical officer, an environmental health technologist and several support staff. It is open 24 hours a day.

**Table 1:** Population demographics of Kanakantapa.

Category	Annual
Children 0-11 months	522
Children 12-59 months	2,088
Women of child bearing age	2,871
Population above 15 years	6,369
Total population	13,051
Expected pregnancies	705
Expected births	676
Expected live births	646

Source: Kanakantapa Administration. [18]

Data on the healthcare needs of the population and barriers to healthcare are essential for the further strategic development of services in this area and will inform other African countries facing policy reform. This is particularly important given that African countries are currently facing pressure to abolish user fees. For instance, Oxfam have advised the governments of developing countries to ‘end the imposition of user fees for basic health and education services’.[19]

#### **Aims:**

In the light of the recent policy changes, this study aims to determine the proportion of the population in Kanakantapa who report healthcare needs in the previous 12 months and also assess what proportion accessed the clinic. The study aims to explore which characteristics predict attendance at the clinic when a healthcare need exists. Furthermore, the researchers hoped to explore the barriers that exist to accessing medical care and whether medical care was available at the clinic.

#### **Materials and methods**

Ethical approval was obtained from the Research Ethics Committee at University Teaching Hospital in Lusaka and permission was granted by Dr Victor Mukonka, the Director of Public Health and Research for the Ministry of Health.

The questionnaire was devised following a literature review. Themes were identified and incorporated into the questionnaire. The questions covered demographic

data, the health needs of the respondent, their experiences at the clinic or their reasons for not attending, and an assessment of their health knowledge (as this may predict attendance at the clinic). Finally the respondent's opinion on the clinic since user fees have been abolished was noted. The researchers chose not to cover HIV/AIDS specifically in the questionnaire although it was identified as the leading cause of death in Zambia because there is stigma surrounding the illness and this may have influenced the response rate.[3] In addition, much research has been undertaken in this area.

The questionnaire was piloted in Chongwe town for understanding (both of the translators and the respondents) and minor changes in the wording of questions were made.

Questionnaires were administered face-to-face via translators. It was impossible to obtain a list of inhabitants in Kanakantapa and would have been difficult to find individuals selected randomly from a sampling frame, given the limited infrastructure and barrenness of the resettlement area. It was also unknown what proportion of inhabitants of Kanakantapa lived in each village so a stratified sample could not be obtained. Therefore, individuals were selected using a quasi-random method from each village and the researchers tried to obtain responses from people who lived geographically spread throughout the villages.

The interviews were conducted in each village in Kanakantapa so as to obtain a representative sample. The translators came from the nearby town of Chongwe and were matched to the respondent for sex.

Fully informed, written consent was obtained from every respondent. Where respondents were unable to write, a thumbprint was used to signify consent. All those under the age of 16 were excluded since their

ability to identify a health need and access the clinic may be dependent on their parent or guardian.

#### **Sample size:**

To be accurate to within 10% when calculating the proportion of patients with a health need that access the clinic, a sample size of 100 was needed. It was anticipated that 50% of respondents would report a healthcare need in the previous 12 months and therefore, a sample size of 200 would be necessary. As the research was conducted, it became clear that a higher proportion of people reported healthcare needs in the previous 12 months than expected and therefore, the number approached was reduced accordingly, still ensuring that the required sample size of 100 respondents with a health need was achieved.

#### **Analysis:**

All responses were recorded on the questionnaires by the researchers at the time of interview. The data were dual-entered into an Access (2000) database and analysed using Statistical Package for Social Sciences (SPSS) 15.0 software. Qualitative data were transcribed and read and re-read to ensure familiarity. Emergent themes were identified

## **Results**

106 people were approached and asked to participate and 104 (98%) consented. 54 (52%) were men. The mean age of respondents was 39.7 for males (range 17-83) and 33.8 for females (range 16-63). People from all 12 villages were interviewed. (See table 2 for details of how many males and females were interviewed from each village.)

**Table 2:** Gender of the participants by village

Village	Number of participants			
	Male	Mean Age	Female	Mean age
A	5	48.6	4	40.3
B	5	37.4	5	28.0
C	1	20.0	7	26.0
D	7	34.9	2	38.0
E	0	-	2	24.5
F	5	36.4	2	32.5
G	2	44.0	1	36.0
H	4	51.8	9	35.9
I	8	38.0	5	38.4
J	7	37.9	4	30.8
K	5	38.0	5	37.8
Extension	5	42.6	4	38.3
<b>ALL VILLAGES</b>	<b>54</b>	<b>39.7</b>	<b>50</b>	<b>33.8</b>

Eighty two percent of respondents worked in agriculture, with the majority farming their own small-holdings, 7% did not work and the remainder (11%) worked as teachers, shop owners, bricklayers, well diggers, shop assistants or traditional birth attendants.

Of the 104 people interviewed, 100 (96%) had experienced at least one healthcare need in the previous 12 months. All those who reported having no health needs were male. Females tended to report more health needs in the time limit (as shown by figure 1), although this difference was not significant (mean for males 2.13, females 2.68,  $p=0.053$ ).

In total, 232 separate incidents of persons experiencing a health need were reported, and in 66% of cases, the clinic was attended.

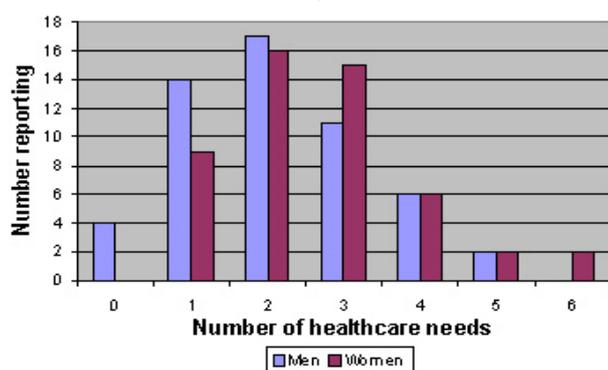
### Respiratory symptoms

Forty two percent reported symptoms suggestive of respiratory infections (cough, high temperature or difficulty breathing). Of these, 77% attended the clinic and a healthcare worker saw all who attended. Of those attending the clinic 74% received treatment that they felt helped, 15% did not receive treatment (some believed this was due to unavailability) and 11% received medicines, which they reported did not improve their symptoms. One man resorted to using traditional medicine as he believed the prescribed medicines were ineffective. (See figure 2 for a summary of these data.)

### Malaria symptoms

Eighty three percent reported symptoms suggestive of malaria, such as tiredness, headache, vomiting, high temperature or sweating. Sixty nine percent who reported symptoms attended the clinic and a healthcare worker saw all except one (98%), who commented that 'There was nobody there [at the clinic].' (See figure 2 for a summary of these data.) Of those seen by a healthcare worker, 97% received medicine they viewed as effective.

**Figure 1:** Number of healthcare needs experienced by males and females (12 month period).



### Diarrhoea

Thirty one percent reported having experienced diarrhoea. Of these, 41% attended the clinic; a healthcare worker saw all and 92% of those attending the clinic, received treatment, which they believed helped. The only person who did not receive treatment was given a prescription because the medicine was unavailable at the clinic. It cost him ZMK 5,000 (US\$1.24) to buy enough for his family (a precaution against other family members developing symptoms whilst medication was unavailable).[9] (See figure 2 for a summary of these data.)

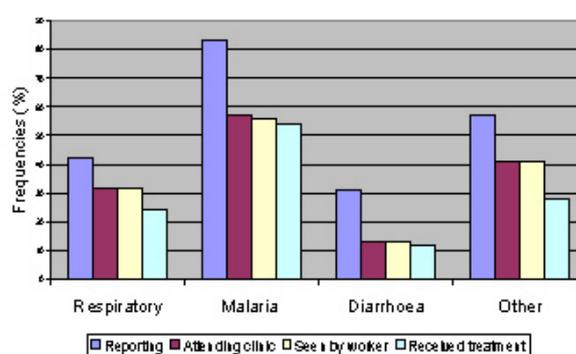
### Pregnancy

Eighteen women had been pregnant in the previous 12 months. Of these, all received antenatal care except one, who miscarried at four months (before she had planned to start antenatal care). The remainder all delivered live births. Seventy five percent of women received screening for high blood pressure and the prevention of mother to child transmission of HIV. Sixty nine percent of women delivered at the clinic, and a skilled birth attendant assisted all except one, who was successfully assisted by a cleaner at the clinic. Of those who gave birth at home, a traditional birth attendant assisted four out of five. All mothers reported attending 'Under 5 clinics' with their children. These are held one day each week at the clinic and once a month at outposts of the clinic in the three villages furthest from the clinic.

### 'Other symptoms'

Fifty seven percent reported experiencing at least one 'other symptom' in the previous 12 months. These included stomach pain (36%), painful legs (20%), backache (15%), painful arms (8%) and toothache (8%). Of those reporting other symptoms, 72% accessed the clinic and a healthcare worker saw all. Sixty nine

**Figure 2:** The percentage experiencing each symptom and the care they received.



percent (69%) of those attending the clinic received treatment, which they perceived to be effective. Of those who did not receive effective treatment (eight), four reported being referred elsewhere. (Two were advised to go to Lusaka and could not afford the cost of transport or treatment and two were advised to go to Chongwe and mistakenly believed that it would cost money to be treated.) The remaining four found no drugs at the clinic and three then described using 'African Medicine' or 'traditional medicine.' For one man experiencing painful legs, this involved having a tattoo and drinking a herbal remedy. He was still taking the medicine at the time of the interview and was uncertain if it had been effective or not. (See figure 2 for a summary of the care respondents received for respiratory symptoms, malaria, diarrhoea and other symptoms.)

**Attendance and gender:**

For each symptom, attendance at the clinic is higher for females than males. However, this difference was not significant for any of the symptoms or all health needs. (For respiratory symptoms,  $p=0.36$ ; for malaria symptoms,  $p=0.66$ ; for diarrhoea,  $p=0.47$  and for other symptoms  $p=0.54$ ). (See table 3 for the percentage of males and females attending the clinic for symptoms.)

**Attendance and village:**

Attendance at the clinic is lowest in villages D, G and K and highest in village E. (See figure 3.) Villages G and K are furthest from the clinic by road and this may explain the low attendance. However, village D is not particularly far from the clinic but attendance is poor. The reasons for this may be complex and social. However, small samples from each village may explain the observed differences (type 1 error).

**Knowledge of services:**

Ninety eight percent (98%) of respondents knew where the nearest clinic was. The remaining 2% did

not realise that the clinic had moved location. Seventeen percent were unaware that user fees at rural clinics had been abolished and 21% were unaware that the clinic now offers a 24-hour service.

**Predicting attendance at the clinic:**

Logistic regression was used to identify predictors of attendance at the clinic. No common predictors were found but characteristics of attending for respiratory illness or diarrhoea were identified (Table 4). Individuals who consulted with respiratory illness were younger in age (mean age of attenders 35.15 versus 45.50 for non-attenders). Consultation with diarrhoea was predicted by the presence of respiratory symptoms (OR 46.2) but was significantly less likely where other conditions existed alongside diarrhoea (OR 0.02). Pregnancy also significantly predicted attendance with diarrhoea; 14 women had experienced diarrhoea, of which 7 were pregnant. Five of the 7 pregnant women attended the clinic compared to only 1 of the not pregnant women. Distance from the clinic did not appear as a significant predictor of attendance for any symptom although for diarrhoea the association approached conventional levels of significance, with attendance predicted by greater distance from clinic (mean distance from clinic in attenders 6.05 km versus 5.64 km in non-attenders).

**Reasons for not accessing the clinic – qualitative data**

In 34% of reported health needs, the person did not attend the clinic. When asked what their reasons were for non-attendance, 55% gave reasons related to the distance to the clinic or lack of transport, 20% felt that there would not be medicine at the clinic, 15% gave reasons related to time, 6% preferred to use traditional medicines, 1% didn't go because they couldn't afford the fees at the clinic and 3% gave other reasons

*a) Distance/lack of transport*

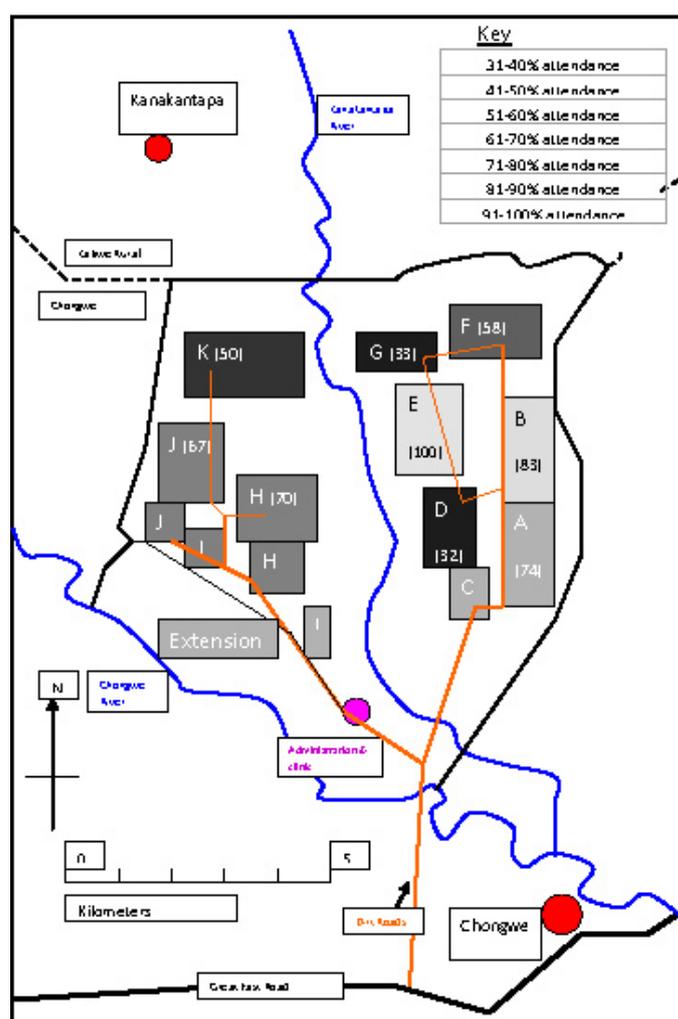
*"As it is far I would have to go in a wheelbarrow or on a bicycle, which I don't have. As I can't get there I treat at home, which is dangerous but I am only risking myself"* (65 year old male).

**Table 3:** Attendance at the clinic for each symptom for males and females.

Symptoms	Males		Females		Between group difference p value
	% Reporting	% Attending	% Reporting	% Attending	
Respiratory	39	73	44	82	$p=0.36$
Malaria	72	65	92	74	$p=0.66$
Diarrhoea	31	39	28	43	$p=0.47$
Other	54	58	50	71	$P=0.54$

**Table 4:** Predictors of attendance at the clinic for all men and women for each symptom.

Symptom	Predictor	Predictors of attendance			
		Coefficient	SE	OR	Significance
Respiratory	Age (years)	-0.307	0.157	0.735	0.050
Malaria		None significant			
Diarrhoea	Respiratory illness	3.834	1.646	46.229	0.020
	Other condition	-3.741	1.472	0.024	0.011
	Distance to clinic (km)	0.535	0.285	1.707	0.061
	Pregnancy (females)	2.708	1.366	15.000	0.047
Other condition		None significant			



**Figure 3:** A map of Kanakantapa showing attendance at the clinic by village (With percentage attendances for each village in brackets)

b) Perceived lack of medicine at the clinic  
*"I thought I wouldn't find any medicine at the clinic. I couldn't afford to buy any but I still didn't go to the clinic"* (38 year old male).

c) Time  
*"I was busy ploughing so I didn't go to the clinic"* (42 year old male).

d) Traditional medicines  
*"I used traditional medicine as I thought it was better"* [regarding burns from water on his legs] (37 year old male).

e) Cost  
*"I didn't go because I had no money"* (64 year old male).

f) Other reasons  
*"I thought I was bewitched so that the clinic couldn't help"* [regarding shoulder pain] (30 year old male).

### **Other comments**

Respondents were asked to provide their views on the clinic. Thirty six percent of comments related to how access has improved, 27% related to lack of medicines, 12% complained about the distance, 6% gave opinions about the staff, 6% commented on services available at the clinic, 5% of comments were about waiting times, 5% suggested improvements for the clinic, two people felt there hadn't been any change at the clinic and one viewed the high attendance as a problem.

#### *a) Improved accessibility*

*"When we used to pay and a child was sick we would delay going to the clinic. Now if a child is sick we go immediately as we don't have to look for money"* (34 year old female).

#### *b) Lack of medicines*

*"The medicines are not able to cater for everybody"* (30 year old male).

#### *c) Distance*

*"Transport is a problem if you don't have money. Sometimes I use a bicycle or sometimes a good Samaritan will take you by coach cart. It is 12km, It would take 3 hours to walk"* (49 year old female).

#### *d) Staff*

*"There are few nurses at the clinic and they open late"* (32 year old female).

*"Before there was a shortage of nurses and clinical officers. Now there are enough"* (28 year old female).

#### *e) Available services*

*"The other good thing that is happening here is Home Based Care for people with various diseases. They help people who are sick with domestic chores and even take food"* (60 year old female).

*"Now the clinic is open anytime you are sick – night or day, and we learn a lot nowadays. As TBAs [traditional birth attendants] we are taught how to help in the village and we are given gloves"* (50 year old female).

*"Sometimes when you are very sick they can pick you up from Kanakantapa to go to Chongwe by ambulance but getting to Kanakantapa [clinic] is a big problem"* (49 year old female).

*"I can't get ARVs [antiretrovirals] from Kanakantapa but I can go to Chongwe and they have them and they're free. I get the bus every month. It costs K 6,000. Go, come back is K 12,000. I haven't been stuck yet but it would take about 4 hours to walk there"* (44 year old female).

*"There is a voluntary medical attendant who lives here [K village]. He has been trained by the clinic so we see him before we go to the clinic"* (36 year old male).

#### *f) Waiting times*

*"They are very slow. You can die on your own due to waiting"* (37 year old male).

However, when respondents were asked how long they waited at the clinic, 21% waited less than 5 minutes and the mean waiting time for all attendances was 54 minutes. One person waited 210 minutes to be seen at the clinic.

#### *g) Possible improvements*

*"The clinic should have a post out here" [K village]* (41 year old female).

*"They need more cleaners"* (28 year old male).

*"It would be better if we had an ambulance that could collect people so that we don't lose the lives of those who can't get to the clinic"* (30 year old male).

*"We need more staff so that waiting times are shorter"* (32 year old male).

*"We need more staff houses, more personnel, somewhere for relatives to sleep if a patient is admitted. We need a qualified doctor and an ambulance for emergency cases"* (62 year old male).

*"They should provide an ambulance and more drugs. It would be easier to get to the clinic if there was an outpost"* (46 year old male).

*"I want the clinic to be improved. We need a mortuary and a doctor"* (30 year old male).

#### *h) No change*

*"It has not changed much. You go and get medicine as before"* (36 year old female).

#### *i) High attendance as a problem*

*"Attendance is too high"* (65 year old male).

## **Discussion**

The percentage of people reporting health needs is extremely high (96%). The proportion reporting symptoms suggestive of malaria is particularly high (83%) and could be due to a shortage of mosquito nets.[18] However, it may be an overestimate since the symptoms were self-reported retrospectively and are vague.

Diarrhoea was the least reported symptom (31%) although this may have been underreported, as responses may have been influenced by social acceptability. The researchers would have expected a higher proportion of respondents to experience diarrhoea since it is known that only 49% of residents have access to safe, clean water and sanitation is poor, with only 50% having access to latrines.[18]

Women reported more health needs than men. This did not include antenatal care in women. The difference was not found to be statistically significant and may

be an artefact of a small sample size (not powered to identify differences between genders). However, it is likely that women experience more health needs, due to the social forces that affect them and the sex differences in power and status that exist in Zambia. For instance, it is known that for many women, educational and economic opportunities are limited and women have low status and financial autonomy and these influence their health needs.[20,21]

Attendance at the clinic was high, especially for respiratory illness, other symptoms and malaria (77%, 72% and 69% respectively). Attendance may be lowest for diarrhoea (41%) due to stigma or because it is not perceived to be a serious illness despite the fact that the World Health Organisation has identified it as one of the biggest causes of death in Zambia.[3]

Attendance at the clinic for respiratory symptoms was predicted by age. Older people being less likely to attend. This may be due to difficulty accessing the clinic or more traditional health beliefs.

In this study, there was a suggestion that an increase in distance was associated with an increase in likelihood of attending the clinic with diarrhoea ( $p=0.06$ ). This is the opposite of Ager and Pepper's findings and is likely to be a spurious result (type 1 error).[13] Alternatively, it may be that those who lived further from the clinic were more likely to hire transport. Future research should focus on the time taken to travel to the clinic, as this would take mode of transport into account.

Other predictors for attendance at the clinic for diarrhoea were experiencing symptoms suggestive of respiratory illness and an 'other symptom' in the previous 12 months. Those who had experienced a cough were more likely to attend the clinic with diarrhoea whilst those who had experienced an 'other symptom' were less likely to attend. It may be that these are spurious findings, as there does not seem to be a plausible explanation although the range of other symptoms if fully explored may have facilitated an understanding of this.

Pregnant women were more likely to attend the clinic with diarrhoea, which is likely to be explained by heightened health concern during pregnancy. In this study, sex was not found to predict attendance at the clinic although the percentage of attendances for each symptom was higher for females than males. While this difference was not significant, it is the opposite of that expected. The World Health Organisation's Department of Gender, Women and Health have commented that;

*'Powerful barriers including poverty, unequal*

*power relationships between men and women, and lack of education prevent millions of women worldwide from having access to health care and from attaining – and maintaining – the best possible health.'*[22]

In this study, a significant difference was not identified. This may be due to lack of power (type 2 error).

Attendance was extremely high for the antenatal clinic, with all mothers who had delivered in the previous 12 months attending. This could be due to the outreach service the clinic offers so that distance is not a factor. Alternatively, it could be that mothers are more concerned about their baby's health than their own.

Of the 163 attendances at the clinic, 161 (99%) were seen by a healthcare worker and 83% received medicine, which they perceived to be effective. The percentage that was seen by a healthcare worker is extremely high and suggests that the healthcare workers at the clinic are able to cope with the patient load.

While respondents complained of the waiting times, this study found that a high proportion (21%) was seen within five minutes of arriving at the clinic. The difference in perceptions and reported times may be due to heightened awareness of waiting since an elderly gentleman recently died at the clinic while waiting to be seen by a healthcare worker.

Of the 17% who did not receive medicine, it is likely that a high proportion did not need medicine. However, some reported being given prescriptions as the medicines were unavailable at the clinic but could be purchased from the chemist.

In contrast to the quantitative data, the qualitative data indicates that distance to the clinic is a barrier to receiving care since 55% of non-attenders gave it as the reason for non-attendance. Perhaps the conflict between the quantitative and qualitative data is due to the way that distance was measured or because perception of distance is subjective, or related to what modes of transport are available.

When Zambia cancelled user fees, Bethan Emmett, a policy advisor with Oxfam-GB commented that;

*"Cancelling user fees alone is not the solution to make healthcare accessible to all – governments have to take into consideration that they have to have the infrastructure and resources to cope with the increased demand. Investment is critical in more drugs and better wages for health workers."*[14]

These sentiments were found among the respondents too. When respondents were asked for other comments, 6% commented on the staff at the

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clinic. Of these, 73% were negative and referred to the shortage of staff at the clinic, that staff were busier and consequently, could not provide a high enough standard of care. In contrast, 27% of comments were positive and related to the high level of commitment that members of staff show. The difference in opinion among members of the community may be explained by the fact that the clinic has recently gained a clinical officer, which has reduced the number of patients each healthcare worker sees each day. However, some felt that the addition of a doctor at the clinic would be beneficial.

Perceived lack of medicines was also identified as a problem with 20% of non-attenders giving it as the reason they did not attend the clinic and 27% of other comments complained of a lack of medicines at the clinic.

In summary, the majority of people are able to access the clinic when they have a health need and receive care when they attend. The study found that the clinic performs well with the resources that are available, but as some community members have commented, there are always things that can be improved.

#### **Limitations:**

Originally, the researchers had intended to obtain a random sample using a list of all residents of Kanakantapa over the age of 16 as a sampling frame and then selecting a stratified sample for age and sex using random number tables. However, as no list of residents existed, respondents were approached quasi-randomly in each village. This sampling technique may have introduced an element of bias although interviews were conducted in each village to minimise this and attempt to ensure that a representative sample was obtained.

In addition, sample size was calculated with power to measure the primary outcome. Therefore, the study was underpowered to measure secondary outcomes.

#### **Conclusion**

This study aimed to assess whether people in Kanakantapa can access the clinic when they are ill and whether the clinic delivers the healthcare that the community needs. No previous study has been undertaken to assess this.

The study found that an extremely high proportion of people reported experiencing healthcare needs in the past 12 months. Future healthcare work in Kanakantapa should focus on the prevention of illness

through health promotion activities, such as education on preventing spread of respiratory illnesses and diarrhoea, and the provision of treated mosquito nets for each family.

A high proportion of those experiencing health needs attended the clinic and the majority were seen by a healthcare worker and received treatment that they believed was effective. This shows that despite the large number of healthcare needs and the perceived shortage of workers and medicines, the clinic is meeting the healthcare needs of most members of the community.

This study has also identified predictors of attendance for different symptoms so that these groups can be targeted with health promotional activities. For instance, for respiratory symptoms, since older people were less likely to attend the clinic, they could be targeted for educational activities especially as they are at higher risk.

Despite the abolition of user fees, barriers to care do still exist for some people. The qualitative data showed that the main reason for non-attendance was distance. Future research could investigate the feasibility of a clinical outpost in one of the villages or a scheme to train members of each village to be able to assist those who are sick. Alternatively, as one respondent commented, the provision of an ambulance for distant villagers may assist those who are currently unable to get to the clinic.

However, this study has found that the majority of people believe that the abolition of user fees has improved accessibility to the clinic. As one respondent said;

*“When we used to pay and a child was sick we would delay going to the clinic. Now if a child is sick we go immediately as we don't have to look for money.”*

In light of the perceived improved accessibility and the high proportion attending the clinic and receiving treatment in Kanakantapa, the researcher would suggest other African countries considering the abolition of user fees in rural areas should assess their own situations and also use Zambia as a case study because it is proving to be successful in Kanakantapa.

#### **Author contributions**

Carol Chatt was responsible for the design of the study, data collection and analysis, and the drafting of the manuscript. Lesley Roberts supervised design and conduction of the study and was involved in the critical revision of the manuscript.

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