Prevalence Of Epilepsy And General Knowledge About Neurocysticercosis At Nkalukeni Village, South Africa

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Citation

Abstract
Fourteen medical students from the University of Transkei medical school set out to make a community diagnosis of Nkalukeni Village. Our chief objectives were to evaluate the socio-economic status of the community, to identify major risk factors in the community, to discover the prevalence of epilepsy in the community and to learn valuable research and communication skills.

Setting: Nkalukeni community, is located at 80 km away from Umtata (Capital of the former Transkei).

The project was run by Department of Community Medicine. This department employs a Problem Based Learning and a Community Based Education learning structure. This means that students are presented with real-life problems in real communities and are forced to find solutions. This structure is part of the Unitra medical school mission to train doctors that are capable of dealing with real-life situations.

Design: A two-stage design study was used. The first stage involved screening of the general population on door-to-door basis by interviewing peoples living in 100 household selected by block-randomization procedure, and using an internationally validated questionnaire for detecting epilepsy and knowledge about some associated diseases. The second stage consisted of a neurological assessment of the peoples who screened positive.

The questionnaire covered four main areas: Demographics and Socio-economics; Main Risk Factors; Health Services and Traditional Medicine; Knowledge about cysticercosis and Prevalence of epilepsy in the community. The data was captured onto Microsoft Excel.

Results: A total of 2076 adults were screened. The prevalence of active epilepsy in these adults was 18.2. Only 12% of epileptic patients were under regular anti-epileptic treatment, 94% of the total population had not idea about NCC, and 67% of them did not know the cause of AIDS.

Our findings revealed that Nkalukeni village was a low socio-economic area. Unemployment was high, incomes were low, education level was mostly to high school, and housing was mostly of poor quality and crowded. There was a problem with the supply of water in the area. Few people actually boiled their water. There was much indoor pollution from cooking. Toilets were unhygienic and there were no flush toilets. Food storage was a risk for diseases as there was no electricity. Many people still used traditional healers and there was a general lack of knowledge regarding major illnesses.

Conclusions: The prevalence of epilepsy is high compared with a similar location but a poor utilization of anti-epileptic treatment is cause for concern. NCC and HIV/AIDS awareness campaign at the rural locations in the former Transkei should be made as soon as possible while permanent solutions are implemented.

INTRODUCTION
Neurocisticercosis (NCC) is an infection of central nervous system (CNS) caused by the larval stage (Cysticercus cellulosae) of the pig tapeworm Taenia solium. This is the most common helminthes to produce CNS infection in human being. The occurrence of acquired epilepsy or the syndrome of raised intracranial pressure in a person living in or visiting a region where taeniasis is endemic or even in one living in close contact with people who have taeniasis should suggest a diagnosis of cysticercosis; patients with NCC may
remain asymptomatic for months to years, and commonly a diagnosis is made incidentally when neuroimaging is performed, many symptomatic forms can predominate. Symptoms and signs are related both to the parasite, which can show a different biological behavior from one place to another, and different inflammatory-immunological responses on different hosts. NCC is the most common cause of acquired epilepsy worldwide and most of the patients taking phenytoin or carbamazepine for a proper control of their seizures, respond very well. Other aspects related to NCC from our region are also available on line, this study was designed for Nkalukeni location which is situated at the former Transkei. Transkei was one of the three administrative authorities of the so-called independent homelands (Ciskei, Transkei and the Cape Provincial Administration under different apartheid governments) it is currently region D and E of Eastern Cape Province of South Africa; Umtata is the capital for the former Transkei which is one of the poorest region countrywide, and serves as a labor reservoir for other wealthier provinces, with men leaving behind women and children whilst they seek and find employment elsewhere.

Epilepsy is the most common chronic disorder of the central nervous system (CNS) manifested by recurrent unprovoked seizures that affect approximately 1% of the U.S. population. During 1986-1990; approximately 1.1 million persons in United States annually reported having epilepsy and the overall prevalence of epilepsy was 4.7. The point prevalence of epilepsy is estimated at about 0.4 % to 0.8 % in some European countries, the prevalence of epilepsy is said to be about 3 to 9 per 1,000 population. As countries in Asia, the prevalence rates from published reports are: China (4.6), Parsi (4.7), Kashmir (2.47) rural Bengal also in India (3.05), Pakistan (9.0), Guam (4.9), Singapore (3.5), rural Thailand (7.2), and the Philippines League Against Epilepsy (2.3). The lower prevalence rate reported in the last study was most likely related to differences in the communities surveyed, because the Philippine study was conducted in a mixed urban and rural community. Central and South American countries exhibit high prevalence rate of epilepsy compare with North America. In Andean region of Ecuador lifetime point-prevalence rates between 12.2/1000 and 19.5/1000 were recorded in rural Bolivia (12.3) confirming that epilepsy is a major health problem in rural areas of developing countries. African countries show different prevalence rates from Gambia (4.6) to Benin (15.9). However, that prevalence in Gambia may be an underestimate as some studies from other developing countries (such as Colombia, Liberia, Togo, Bangladesh, Cameroon, Mali, Madagascar, West Uganda, Nigeria, Panama, United Republic of Tanzania and Venezuela) suggest a prevalence of more than 10 per 1,000. In 2000 a two-phase design study for to determine the prevalence of epilepsy in rural South Africa children aged 2-9 years was done showing a prevalence rate of 7.3/1 000. A similar study done in Ngqwala and Sidwadweni locations showed a prevalence of 13.7/1 000 and 13.2/1000.

The main objective of this study is to determine the prevalence of epilepsy, and the knowledge about NCC and HIV/AIDS as conditions extremely frequent associated with recurrent epileptic seizures and other epidemiological aspect from one of our rural locations at Qumbu municipality situated 80 Km away from Umtata.

**MATERIAL AND METHOD**

This descriptive study is based in 100 questionnaires applied on 100 households from Nkalukeni villages. Nkalukeni (Figure 1) is a community belonging to Qumbu Municipality, Eastern Cape Province, South Africa as was before cited. The Qumbu Health Center offers primary health care services to other rural communities from this municipality, and it was staffed by 7 registered nurses at the prevalence day. A team of 14 senior medical students from University of Transkei in South Africa trained in the diagnosis of epilepsy and NCC (among other issues) implemented the questionnaire. The training consisted of a series of seminars, graphic bibliographic material and PBL (Problem Basic Learning) tutorials about these topics. They administered a standard screening instrument for epilepsy, NCC, HIV/AIDS, and socioeconomic living conditions among other issues. After to be introduced to the CHESP coordinator for the community and obtained permission for this survey from the Community Leader, the group was divided into smaller group of two member each, where at least one was fluent in their native language (Xhosa). The survey was conducted between 12 and 16 hrs when most of the men would be out working therefore most of interviewed were women.

The study was outlined in two stages, and the investigation was door-to-door in a total of 100 houses selected by block-randomization procedure. Since its foundation Nkalukeni community was interviewed for the time along this study. First phase consisted in preparation, co-ordination through community's leaders, training and data collection, and the
second one for reassessment of identified candidates and processing of findings.

RESULTS

On screening, the positive subjects found re-assessed by one of us were predominantly females being also a number of inhabitants women twice fold than men. On the basis of the definition proposed by the International League Against Epilepsy, we detected a prevalence of 18.2/1000 (Figure 2). 68% of who had active epilepsy on the prevalence day (October 14th, 2003). The mean age of age at onset was 21.4 years for motor partial epileptic seizures and 18.3 years for generalized seizures. Only 12% of patients had received anti-epileptic medication for more than three month of there live.

Figure 1

Figure 1: Nkalukeni location in Umtata, Eastern Cape, South Africa.

Figure 2: Prevalence of epilepsy on October 14th, 2003 (18.2/1000). Higher prevalence compared with similar locations as Ngquala (13.7/1000) and Sidwadweni (13.2/1000) at the same prevalence day.

Socioeconomic status in general was characterized by unemployment or very low salaries (Figure 3), limited access to primary health care and health education, limited access to toilet facilities (Figure 4), no proper refusal disposal, limited access to safe and clean water (Figure 5), lack of education of the most peoples to limit access of pigs to human feces while free-range pig farming is commonly practiced. Pork meat consumption is high at least once a month (Figure 6) compared with other foods.

Figure 3

Figure 3: Socioeconomic status. Currency on October 2003: 1USD = 7.28 Rands) and 78% had a monthly income of 500-1000 Rands for 5 or more peoples.
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Figure 4
Figure 4: Seventy seven percent of toilets were pit latrine. Sixty seven percent of inspected household had unhygienic toilets.

In spite of the high qualifications of the interviewers whom had not communication problems due to language-barrier a number epileptic patients were probably not reported because of poor recognition of some non-convulsive epileptic attacks, traditional beliefs, cultural traditions, and stigmas associated with epilepsy.

Most of the population (94%) did not know about NCC (Figure 7) and XX % of the peoples interviewed did not the cause of HIV/AIDS (Figure 8).

Figure 6
Figure 6: Just over a tenth of the sample eats pork on a regular basis. At Nkalukeni only 8 % of the surveyed eat pork meat once a week. For economic reasons, boiling seems to be the preferred method of pork meat preparation.

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Figure 7
Figure 7: Most of the population have no idea about neurocysticercosis. 8.7 % of the respondents were able to say that it was an infection associated with pork and it affects the brain.
DISCUSSION

Within the Problem Based Learning (PBL) curriculum at Unitra, our students are enabled to conduct their own community diagnosis. This has been achieved due to the implementation of the COBES (Community Based Education System) programmed, which provides an opportunity for medical students to observe and experience the communities they may serve in future. Opportunities to participate in health promotion are provided. Students gain valuable insight into the many aspects of community life and their various problems, both medical and psychosocial. Armed with this knowledge, future doctors are equipped to provide a more holistic approach to health care, able not only to treat the illness, but to also address other concerns. The community also gains substantial benefit from the liaison with the University. Several projects are designed to alert authorities to the community's health status. As a result of the research done here and at other centres, valuable data that show areas of health promotion and health service that need attention are brought to light. Also, it provides the opportunity for the members of the community a chance to actively participate in improving their standard of living.

South Africa is a diverse country that represents peoples of different cultural background, who also are living in environment completely different for each others, and the former Transkei does not escape to that sentence which is also enriched by the consequences of more poverty and underdevelopment compare with other more advantage areas. Throughout these different regions, exist various traditional beliefs pertaining to epilepsy and its causes and treatment. NCC is the most common cause of acquired epilepsy in Transkei, being a preventable disease with a tendency to increase and spread all over the country gradually if not effective measure are taken. Our survey found that only 12 % of epileptic patients were under regular anti-epileptic treatment for the past three consecutive months. Most of epileptic patients are under traditional treatment taking herbal remedies with “anti-seizure effect” however some of them die due to herbal intoxication and an acute renal failure when they mixture of plants wrongly, because of wrong selection or preparation and storage are made.

Speaking-Xhosa sangomas treat an important number of epileptic patients because epilepsy is thought to be related to a visitation by the devil, to witchcraft or to spirits, and those families also belief that they have been visited by their ancestors, whom arriving at night while they are sleeping they also consider that the first place for visiting is the toilet being it another powerful reason why they do not use the toilet more often in spite of its availability. In other places epilepsy is thought as a disease where the heart gets blocked by foam, restricting circulation and resulting in seizure. One generalized belief is that Xhosa-sangomas shaking some bones and helped by their ancestors (while is Imphepho burned) can find out the cause of the problem and treat it. Conventional medical care was not available for peoples living in most of those region during apartheid era therefore almost all traditional medicines and cures were made from available material, such as leaves, roots, spider webs, axle grease, and water among other products.

We have many species of plants in flower throughout the year but the greatest displays are over the short spring during the period from late August to early October. It is an area of moderate winter and hot dry summers when temperature can reach 38° C. The average annual rainfall over the area varies between 125 and 350 mm, virtually all of it falling between April and September. Most of our medical plants grow up on sandy costal flats or sandy soils among rocks, often granite, costal bush or deep forest with very difficult access reason being it another explanation for unavailability of herbal medication, misreplacement or miscombination leading to intoxication; nevertheless if the patient does not develop complications then an acceptable outcome may be observed because placebo effect play a large role in traditional medication on strong religious and spiritual belief of the
patient among other reasons that we do not know.

Many studies have shown that there are still many misconceptions existing within many cultural communities, where only tonic-clonic seizures are recognized as epilepsy and non-epileptic seizures are labelled as nervous disturbances, emotional stress or insanity, and for most of peoples member of those community epilepsy is still considered an infectious disease an invasion by supernatural unknown spirit or ancestors. Poverty, poor food hygiene and sanitation, lower cultural level, myths and superstitions attached with epilepsy on those region impede to move forward in the early detection of the disease, identification of their causes, and an adequate management. Because that misinformation about epilepsy the exact number of untreated epileptic patients will remind unknown for a long time until a sustained campaign to build up public awareness on this matter, and a better health education plus alleviation of poverty among other factors will take effect. Same statement should be applied to NCC/HIV/AIDS awareness campaign in order to reduce the increasing number of epileptic patients due to NCC/HIV/AIDS.

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