Neuroepidemiological Survey For Epilepsy And Knowledge About Neurocysticercosis At Ngqwala Location, South Africa

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Citation

Abstract
Objective: To determine the prevalence of epilepsy and knowledge about neurocysticercosis (NCC) and HIV/AIDS in adult population of one South Africa rural community.

Setting: Ngqwala location, at 14 km away from Umtata (Capital of the former Transkei).

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 randomly using an internationally validated questionnaire for detecting epilepsy and knowledge about other associated diseases. The second stage consisted of a neurological assessment of the peoples who screened positive.

Results: A total of 2987 adults were screened. The prevalence of active epilepsy in these adults was 13.7/1,000. Only 7.6% of epileptic patients were under regular anti-epileptic treatment, 87% of the total population had not idea about NCC, and 57% of them did not know the cause of AIDS.

Conclusion: The prevalence of epilepsy is high and 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 other permanent solution will arrive.

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 Ngqwala 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 the 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, 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.

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 Oliver Thambo municipality situated in the Vidgesville area which periphery is 14 Km from Umtata.

**MATERIAL AND METHOD**

Ngqwala (Figure 1) has a population of 2987 inhabitants; the Mbekweni health centre (Figure 2) which is in the same area serves it. The Mbekweni health centre was built in 1983, in this Vidgesville area, which is under the monarchy of King Buyelekhaya Dalindyebo, this health centre serves several locations located in rural areas of that municipality, and is staffed by three family doctors coming from Umtata on daily basis and 6-7 registered nurses.

*Figure 1*

Figure 1: Ngqwala location in Oliver Thambo municipality. Umtata Eastern Cape, South Africa.

*Figure 2*

Figure 2: Mbekweni Health Centre provide primary health care attention to Ngqwala since 1983.

A team of 12 senior medical students from University of Transkei (Unitra) 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. The study was outlined in two stages, and the investigation was door-to-door in a total of 100 houses.
selected randomly (Figure 3). This community was never interviewed before this time. 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.

**Figure 3**
Figure 3: Door-to-door interview conducted by senior medical students from University of Transkei. South Africa.

**RESULTS**

The results of the instrument showed a sensitivity of 88% (CI-95%, 84.9-93), specificity of 97% (CI-95.95-98). 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 13.7/1,000. 6.4% of who had active epilepsy on the prevalence day (October 14th, 2003). The mean age of age at onset was 23.7 years for motor partial epileptic seizures and 12.3 years for generalized seizures. Only 7.6 % of patients had received anti-epileptic medication for more than three month of there live.

Socioeconomic status in general was characterized by unemployment or very low salaries, limited access to primary health care and health education, limited access to toilet facilities (Figure 4), proper refusal disposal, safe and clean water (Figure 5-6-7), 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 8-8a)
Figure 6
Figure 6: On site we found that water supply to be inconsistent and unfit for human consumption due to the pollution from household and animal sources.

Figure 7
Figure 7: One of the major problems for this community is water supply.

Figure 8
Figure 8: Free-range pig farming is always practiced.

Figure 9
Figure 8a: Monthly pork consumption rate is not very high.

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 (87%) did not know about NCC (Figure 9) and 56 % of the peoples interviewed did not the cause of HIV/AIDS (Figure 10).
Neuroepidemiological Survey For Epilepsy And Knowledge About Neurocysticercosis At Ngqwala Location, South Africa

Figure 10
Figure 9: Most of the population had no idea about neurocysticercosis.

Figure 11
Figure 10: Many people did not the cause of AIDS and its mechanism of transmission.

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 7.6 % 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 leading to acute renal failure usually when wrong mixtures of plants, wrong selection, 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 is 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 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
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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 coastal 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.

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 awareness campaign in order to reduce the increasing number of epileptic patients due to NCC.

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References

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