Prevalence Of Epilepsy In An Endemic Area For Neurocysticercosis In South Africa

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Citation

Abstract
Introduction: Eighty two people were interviewed in the Mngceleni area. The survey involved about neurocysticercosis and epilepsy. Objective to determine the prevalence of epilepsy and to screening knowledge about neurocysticercosis (NCC) in adult population of one South Africa rural community where NCC is an endemic disease.
Setting: Mngceleni community, at 30 km away from Umtata (Capital of the former Transkei).
Methodology: A group of 14 students conducted a descriptive study of the community, using a random sample survey (Appendix 1) of 100 households.
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 those house selected by block-randomisation procedure 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 and 10 percent of those screened as negative for epilepsy.
Results: A total 2 978 of adults were screened. The prevalence of active epilepsy among adult population was 13.6/1000, and 14.7/1000 in children. Most of epileptic patients were not under regular anti-epileptic treatment, 87% of the total population had not idea about NCC, but only 10% did not know the cause of AIDS. Conclusions: The prevalence of epilepsy is high compared with a similar community (Sidwadweni) but a poor utilization of anti-epileptic treatment is cause for concern. Traditional belief's roots on this community are considerably deep. HIV/AIDS awareness campaign for Mngceleni is functional, and a similar campaign for prevention of NCC should be performed while permanent solutions are implemented. The high prevalence's of both the diseases were attributed to poor sanitation and living standards, as well as a lack of education. The research revealed a need to build toilets, to educate the people about these diseases and about the major risk factors present.

INTRODUCTION
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. 1,2,3,4,5 Other aspects related to NCC from our region are also available on line 6,7 this study was designed for Sidwadweni location which is situated at the former Transkei. This region 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. Following the Community Based Education and Service (COBES) system of the Walter Sisulu University, the students set out on a research of the Mngceleni area, which is located in Sidwadweni. This community consists of approximately 3000 people, whom are served by Mhlakulo Health Centre for their medical attention.

The COBES system has been created in order to introduce to students to the community and to motivate them into helping the people of these communities. Based on the community and the people of the community, students are able to get a unique insight on the living conditions and health status, which opens gateways to offer help and find solutions to their difficulties.

The research that took place involved finding out general information about the community, such as their housing, occupation, health status, financial status, hygiene and demographics. The specific task at hand was to find out
about the communities knowledge and health status on epilepsy and neurocysticercosis (NCC).

Neurocysticercosis is a parasitic infection of the CNS caused by the larval stage of Taenia solium, the pig tape worm. This is the most common helminth to produce CNS infection in humans. NCC may remain asymptomatic for months too years and sometimes its diagnosis is made incidentally when neuroimaging is performed.

NCC is the most common cause of epilepsy in the developing world. Most patients are administered phenytoin or carbamazepine, which effectively controls their seizures.

It is important to inform the people that NCC can be PREVENTED! With proper sanitation and food cooking, there’s no need to fear the disease.

Signs and symptoms are related both to the parasite and to the inflammatory immunological response of the host. Typical manifestations are subcutaneous cyst presenting as nodules that tend to be asymptomatic. The natural history of the infection is unknown, but it is known that cysticercus’s complete there development within two to four months after the larval entry. Location of infestation, according to frequency, is the CNS; subcutaneous tissues; striated muscle, eyeball, heart and then other tissues. The may remain alive in these locations from months up to years.

Human cysticercosis is acquired after eating food contaminated with fertilized eggs excreted in the faeces from taenia carriers. It is well known that people eating infected pork meat acquire TAENIASIS as opposed to CYSTICERCOSIS. The latter is acquired from Taenia solium eggs, that auto-infect patients that are harbouring the adult parasite in their intestines. The cysts can develop anywhere, but have a predilection for the CNS.

Factors that contribute to the high prevalence in the Eastern Cape include free range farming, unsanitary toilet facilities, use of Taenia solium segments by self taught healers (to heal worm infestations) and also malevolent use of Taenia solium by angry women to punish unfaithful partners (added to beer).

Epilepsy is a chronic condition/illness that is characterised by attacks of seizures that vary from simple partial seizures to strong generalized seizures. The cause of epilepsy is often not found, but common causes are cysticercosis, trauma to the head, stroke, vascular malformations and alcohol or benzodiazepine withdrawal.

Living with epilepsy creates many problems, such as inability to drive or to operate machinery; therefore many patients cannot work and earn a living. Another problem is that patients live with a constant fear, fear of when their next seizure will be or of sudden death. There is also a psychosocial aspect if living with epilepsy, for example the impact that the disease will have on the individual’s family. They will be on alert all the time, worrying about the patient’s well being, or the nagging stress about whether or not the patient has taken their medication for today.

Patients are only administered drugs for epilepsy if there is proof (eye witness) of more than one seizure/fit. However, if the patient only has about one seizure every two years, then it should be discussed with the patient that they may want to deal with the risk rather than taking drugs every day, particularly if the patient has no need to drive or operate machinery.

Drugs used for the treatment of epilepsy are carbamazepine; sodium valproate and phenytoin.

**AIM**

To evaluate the prevalence and the knowledge base of epilepsy and neurocysticercosis.

**OBJECTIVES**

- To analyse the effect that these diseases have on the community
- To know about other epidemiological aspects and risk factors (water, sanitation, lifestyle) that can affect the health of the community.
- To form, submit and discuss a comprehensive report of the results to the District Health and the provincial DOH.
- To promote health education and disease prevention
- To make recommendations if any problems are identified

**METHODOLOGY**

A group of 14 students from Walter Sisulu University (WSU) of the medical faculty were assigned to Mhlakulo Health Centre. Under the supervision of Community Medicine, the students conducted a descriptive study of the Mngceleni community. With the community leaders
permission, the students investigated by conducting a random sample survey (Refer to Appendix 1), door to door. Eighty two households were interviewed using the questionnaire formulated by the faculty.

All the objectives of the research and the questionnaires were checked by and given the go-ahead by the students, matrons of the health centre and the community leader. Also the CHESP members were informed about this research project. The community leader and matrons agreed to help the students with there study and compilation of there important learning activity. The students were taken into the community by transport provided by WSU.

The questionnaire included specific questions related to epilepsy, neurocysticercosis and other indicators (demographics, lifestyle, sanitation and environmental factors). [Appendix 1 is a sample of the questionnaire]

During the interviews, the students interacted with the population (health promotion), explaining the main risk factors and preventative measures for diseases. This included explaining the Taenia solium life cycle and the importance of well-cooked pork. Language barriers were taken into account for the interview and for the informed consent, therefore the interview was conducted in the native language, isiXhosa.

Afterwards, the results were graphically represented, analysed and interpreted. Links were found between lifestyle, habits, knowledge, environment and the diseases.

Finally, this report was compiled using Microsoft word and excel. Added information was obtained from the internet and text books, referred to in the bibliography. The presentation will be done using Microsoft Power Point.

**DEFINITION OF TERMS**

**COBES** - Community Based Education and Service

**Community** - The people living in the same area, or a group of people with similar interests or origins

**Epilepsy** – A disorder of brain function characterized by recurrent seizures that have a sudden onset

**Health Centre** – A building, owned or leased by a community trust or a Health Authority, that houses personnel and/or services from one or several sections of the National Health Service. Services provided by local authorities, such as social services, may also operate from such a centre

**Incidence Rate** – A measure of morbidity based on the number of new episodes of illness arising in a population over a period of time

**Neurocysticercosis** – A disease caused by the presence of tapeworm larvae, of the species Taenia solium, in the brain. Where they cause symptoms of mental deterioration, epileptic attacks, convulsions, paralysis and giddiness

**Population** – A group of living things of the same type living in the same area, inhabitants

**Prevalence Rate** – A measure of morbidity based on current sickness in a population, estimated either at a particular time or over a stated period

**Survey** – A general look at something.

**LOCATION**

Mhlakulo Health Centre is located 30km east of Mthatha on the N2, in the Eastern Cape Province. Mngceleni is the area next to the health centre.

**RESULTS AND DISCUSSION**

**Figure 1**

Graphic 1: The Prevalence of Epilepsy in the Community

From the total 82 interviewees, 13.6% of them have epilepsy. In comparison to the 1% average prevalence in developing countries, this is very high. However, in comparison with the research done in 2006, of the Mngceleni location, the prevalence on epilepsy has dropped from 13.6% to 6%, which shows a great improvement. This
could be due death of the affected individuals, emigration and probably no new cases. A major cause of epilepsy in this community is neurocysticercosis (4%), post-traumatic head injury and alcohol abuse.

**Figure 2**
Graphic 2: Prevalence of epilepsy in 2006 (12 %)

Most of the population (67%) have no knowledge at all about epilepsy. 30% of the interviewees had some knowledge, for example “…person falls down with convulsions and drooling saliva…” and “…worm induced illness…” Then only 3% of these interviewed persons had a good knowledge about epilepsy.

After the survey was done at each household, the interviewers explained what epilepsy is and briefly on the aetiology.

The lack of knowledge on epilepsy is due to the lack of education. Being a rare disease, unlike HIV there is no media behind the education of this disease. For example, there aren't any bill boards explaining epilepsy, where as HIV has a whole campaign called “Love Life.”

**PREVALENCE OF NEUROCYSTICERCOSIS**

Of the 82 interviewees, 4% have confirmed cysticercosis by identification of proglotids on human faeces, (diagnosis of NCC depend of CT Scan facilities and laboratory support). This high prevalence is directly due to improper toilet facilities. The ingestion of the larvae of Taenia solium, which is passed out from the gravid proglottids via defecation, results in the eggs penetrating the wall of the gut. They then enter the bloodstream and lodge in various tissues, encysted, and differentiate into cisticercus.

Neurocysticercosis is when the cysts lodge in the brain. Here they can cause features such as headaches and seizures.
however the symptoms may vary in accordance to the sites affected.

Eggs from *T solium* in faeces can not be differentiated from those from *T saginata*.

**Figure 5**

Cystic lesions can be accompanied by peri-lesional oedema

**Figure 7**

Graphic 5: Level of knowledge about Neurocysticercosis
Eighty two people were interviewed during this survey, and only 3% of them had a full knowledge of what neurocysticercosis is. 18% have some brief knowledge and 79% have absolutely no knowledge on neurocysticercosis.

The reason for this lack of knowledge is understood when taking into consideration that NCC is not a very common disease and also that this community is generally lacking a good level of education.

**Figure 8**
Graphic 6: In 2006 the level of knowledge about NCC was less compared with 2007, indicating a positive awareness campaign.

With regards to consumption of pork, the people of Mngceleni either have never eaten pork (16%), or they eat it infrequently or don't eat it anymore.

The 67% of the community that don't eat pork anymore say that it is because the state (veterinary control) has taken away their pigs and it is too expensive for them to buy pork meat. The measure will reduce the prevalence and incidence of tokensis on the region and better veterinary control will contribute to eradicate NCC from our province.

**LIMITATIONS**

Since the information obtained relies entirely on the verbal recollection of the interviewees, the results could be slightly inaccurate, because the information received may not be all true.

Certain members of the community were reluctant to participate in the survey, partly because the saw no benefit to them. This made collecting the data difficult for the interviewers.

The stigma attached to epilepsy, i.e. witchcraft, lead to some members lying about their health status during the survey, which also resulted in inaccurate data collection.

Due to the survey being done during working hours of the
day, some households were empty because residents were at school or work.

Some houses were inaccessible due to aggressive dogs being present

People should be educated more and there should be more health promotion for epilepsy and neurocysticercosis, because it was found that there is a lack of knowledge. This lack of knowledge causes the individual to not seek the proper health care needed, but also leads to improper beliefs and stigmas attached to those who suffer from these ailments.

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 labeled 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.

As before-mentioned, that misinformation about epilepsy (among other explanations) will impede to establish the exact number of untreated epileptic patients, and it 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.

To ensure a good identification of epileptic patients, to re-assess a 10% of cases classified as negative of epilepsy is strong recommended.

RECOMENDATIONS
Toilets should be built in the community, to prevent the infectious diseases that are caused by poor sanitary conditions. Sustainable supply of clean safe water and easy access to a good primary health care system for all should be established. Health promotion on hygiene and sanitation should be improved, which will reduce the incidence if infectious diseases. And poverty should be eradicated.

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