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Original Research Article

Awareness and Knowledge of Konzo and Tropical Ataxic Neuropathy (TAN) Among Women in Andom Village - East Region, Cameroon

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ABSTRACT

Background: Konzo and Tropical Ataxic Neuropathy (TAN) are toxico – nutritional neurological diseases associated with sub-lethal and moderate dietary cyanide exposure respectively, resulting from the consumption of insufficiently processed cassava products. In Cameroon, the cassava growing and consuming rural communities appear to have little awareness and knowledge of these nutritional diseases.
Objective: To provide a preliminary insight into the awareness and knowledge of Konzo and TAN among rural women specifically in Andom village located in the East Region of Cameroon.
Methodology: A convenient sample of 57 women between the ages of 20 - 70 years from a cassava growing/consuming local community was surveyed about Konzo and TAN. In this survey, we used face to face interviewer - administered questionnaires to determine the type of cassava products/other carbohydrate-rich foods consumed, frequency of consumption, source of information on Konzo/TAN and level of understanding concerning the existence of cyanide in cassava products. Having heard of Konzo and TAN was defined as "awareness". Abstinence from consuming raw cassava tubers, low frequency of consumption per week and knowing the importance of processing cassava tubers before consumption were defined as "knowledge".
Results: The survey findings showed that all the interviewed women consumed cooked cassava tubers (100%), cassava leaves (100%) and cassava flour (100%). 15.79% of the women consumed miondo/bobolo while none (0%) consumed garri and wet fufu. 88% women consumed raw cassava tubers with 2%, 4%, 10% and 84% consuming it 1day, 2 days, 3 days and more than 3 days per week respectively. All the women (100%) never heard of Konzo/TAN and were all (100%) ignorant of the importance of processing cassava tubers before consumption. The findings also revealed moderate consumption of other carbohydrate-rich foods; yams (56%), cocoyams (49%), plantains (46%) and sweet potatoes (26%).

Conclusion: It is clear from our findings that the women were unaware of Konzo/TAN and had no knowledge of Konzo/TAN etiology and prevention. There is an urgent need for Cameroon government to put in place sensitization campaign activities about Konzo/TAN, symptoms, etiology and prevention especially for the cassava producing/consuming rural communities.
Key words: *Cassava products; Konzo; TAN; Awareness; Knowledge; Women*

INTRODUCTION

Konzo and TAN are gradually gaining ground among the cassava consuming communities in Cameroon. As noted in literature, Konzo is an irreversible paralysis of the legs that occurs mainly in children (above two years) and women of child bearing age who consume insufficiently processed cassava products as staple food combined with low quality protein intake (Ministry of Health, 1984; Howlett, 1990; Cliff et al., 1997; Ciglenecki et al.,2011). It is characterized by the sudden onset of non progressive spastic paraparesis, increased knee and ankle reflexes (ankle clonus), muscle wasting and walking difficulties (World Health Organization, 1996; Bradbury, 2008; Ciglenecki et al., 2011). Tropical ataxic neuropathy (TAN) is a nutritional disease of gradual onset that occurs mainly amongst older people who have consumed a monotonous unprocessed cassava diet over many years (Bradbury, 2008). Its symptoms include loss of vision, ataxia of gait (unsteady walking), deafness, weakness and loss of feeling in hands and feet (Osuntokun, 1994; Howlett, 1994; Onabolu et al., 2001; Bradbury, 2008). These nutritional diseases associated with dietary cyanide intoxication have no cure but can be prevented by the consumption of sufficiently processed cassava products.

Cassava is a staple food for Cameroonians and Cameroon government encourages its cultivation and consumption. Cameroonians consume daily different forms of cassava products such as cassava flour, raw cassava tubers, cooked cassava tubers, cooked cassava leaves, bobolo, miondo, garri and wet fufu (bobolo, miondo, garri and wet fufu are products obtained after traditional processing of cassava tubers). The natives of East Region, Cameroon have been noted for daily consumption of raw cassava roots, cooked cassava roots, cooked cassava leaves and cooked cassava flour. Due to ignorance, they attribute cyanide intoxication and the associated health problems to witchcraft. A report by 'Medecins Sans Frontieres' (Ciglenecki et al., 2011) indicated Konzo outbreak in this part of Cameroon where 469 patients were diagnosed with Konzo (80% were refugees from Central African Republic and 20% were natives of East Region, Cameroon). Unfortunately in Cameroon, less attention is given to Konzo/TAN related activities probably due to no funding and the cassava producing/consuming population have little awareness and knowledge about Konzo/TAN, its symptoms, its incidence/distribution, how it is acquired, its dangers and prevention. The public awareness and understanding of a medical disease is crucial in the prophylaxis, the formulation of public health policy and allocation of funds (Neni *et al*., 2010). This study aimed to provide a preliminary insight into the awareness and knowledge of Konzo/TAN among rural women specifically in Andom village located in the East Region of Cameroon.

MATERIALS AND METHODS

The present study was conducted during the month of February 2013 in a cassava producing/consuming rural community that is Andom village located in Diang Subdivision, East Region of Cameroon. A convenient sample of 57 women between the ages of 20 - 70years

was surveyed to evaluate the level of awareness and knowledge of Konzo/TAN using face to face interviewer-administrated questionnaire. Majority of the questions were closed ended to enable coding and computation. The questionnaire was developed in English and all questions were then translated into the common local language during administration. Prior to the administration of the questionnaire, the target population was given an explanation of the study, its aim and their verbal consent was obtained. The survey collected information on type of cassava products/other carbohydrate-rich foods consumed, frequency of consumption, source of information on Konzo/TAN and level of understanding concerning the existence of cyanide in cassava products. Having heard of Konzo and TAN was defined as "awareness". Abstinence from consuming raw cassava tubers, low frequency of consumption per week and knowing the importance of processing cassava tubers before consumption were defined as "knowledge". The survey also assessed socio-demographic information. The data was analyzed descriptively using Statistical Package for Social Sciences version 17.0 (SPSS 17.0) and presented as frequencies as well as percentages.

RESULTS

Socio-demographic characteristics

Fifty seven women were interviewed in the study. The mean age was 41 ± 14.0, ranging from 20 to 70 years. All the respondents were farmers, 53% married, 21% single and 26% widowed. 58% had primary level education, 19% had secondary education and 23% had no formal education. These sample statistics reveal that Andom village is typically an agricultural based community that trade practically in primary products. Further details are indicated in Table 1

Table 1: Socio-demographic characteristics of sample respondents (N=57)

Variable	Frequency (n)	Percentage (%)
Marital status		
Married	30	53
Single	12	21
Widowed	15	26
Educational level		
Primary education	33	58
Secondary education	11	19
No formal education	13	23
Age		
20-35 years	18	32
36-50 years	26	46
51-70 years	13	22

Table 2: Responses on consumption of cassava products and other carbohydrate-rich foods (N=57)

Response	Frequency (n)	Percentage (%)
Do you consume cassava/cassava derivative products?		
No	0	0
Yes	57	100
What Cassava derivative product are you consuming?		
Cook Cassava Tubers		
No	0	0
Yes	57	100
Raw Cassava tubers		
No	7	12
Yes	50	88
Cassava leaves		
No	0	0
Yes	57	100
Miondo/bobolo		
No	48	84
Yes	9	16
Garri		
No	57	100
Yes	0	0
Kumkum		
No	0	0
Yes	57	100
Water Fufu		
No	57	100
Yes	0	0
Apart from Cassava, do you eat other Tubers and Plantains?		
Yam		
No	25	44
Yes	32	56
Cocoyam		
No	29	51
Yes	28	49
Sweet Potatoes		
No	42	74
Yes	15	26
Irish Potatoes		
No	48	84
Yes	9	16
Plantains		
No	31	54
Yes	26	46

Consumption of cassava products and other carbohydrate-rich foods

The survey findings showed that all the interviewed women consumed cooked cassava tubers (100%), cassava leaves (100%) and cassava flour (100%). 88% women consumed raw cassava tubers, 16% consumed miondo/bobolo, while none (0%) consumed garri and wet fufu. The findings also revealed moderate consumption of other carbohydrate-rich foods; yam (56%), cocoyam (49%), plantain (46%) and sweet potatoes (26%). Refer to Table 2 for further details.

Frequency of consumption of cassava products per week

Majority of the interviewed women consumed on average all the cassava products more than 3 days per week. 84 % of women consumed raw cassava tubers more than 3 days per week. Further details are given in Table 3.

Table 3: Responses on frequency of consumption of cassava products per week

Response	Frequency (n)	Percentage (%)
How often do you eat cassava derivative products per week		
Cook Cassava tubers		
1 day	2	4
2 days	4	7
3 days	7	12
> 3 days	44	77
Total	57	100
Raw cassava tubers		
1 day	1	2
2 days	2	4
3 days	5	10
> 3 days	42	84
Total	50	100
Cassava leaves		
1 day	1	2
2 days	3	5
3 days	4	7
> 3 days	49	86
Total	57	100
Kumkum (Cassava flour)		
1 day	3	5
2 days	11	19
3 days	17	30
> 3 days	26	46
Total	57	100

Awareness of Konzo/TAN and cyanide in cassava products

All the women interviewed (100%) never heard of Konzo/TAN, cyanide in cassava products and were all (100%) ignorant of the importance of processing cassava tubers before consumption. Responses are showed in Table 4.

Table 4: Responses on awareness of Konzo/TAN and cyanide in cassava products (N=57)

Response	Frequency (n)	Percentage (%)
Have you heard of Konzo and TAN?		
No	57	100
Yes	0	0
Have you heard of cyanide in cassava products?		
No	57	100
Yes	0	0
Do you know the importance of processing cassava tubers/leavers before consumption?		
No	57	100
Yes	0	0

DISCUSSION

To the best of our knowledge, these are the first population-based data on awareness and knowledge of Konzo/TAN in Cameroon, particularly in Andom. The data is of particular importance because recently we diagnosed 14 Konzo and 20 TAN cases in Andom.

Majority of the women interviewed consumed both raw (88%) and cooked (100%) cassava tubers almost on daily basis. This indicates that they are ignorantly exposed to dietary cyanide which could be eliminated during processing of the tubers. Chronic dietary cyanide exposure as a result of the consumption of unprocessed or improperly processed cassava product is associated with the etiology of Konzo/TAN (Ministry of Health, 1984; Howlett, 1990; Cliff et al., 1997; Bradbury, 2008; Ciglenecki et al., 2011). As such, findings suggest that women (who are responsible for the preparation of meals for the families) from cassava growing and consuming rural communities should be educated about Konzo /TAN, their etiology and prevention.

The findings presented in the current study involved a cassava producing and consuming community's general level of

awareness and knowledge which was found to be zero. Disappointingly, all the interviewed women (100%) had never heard of Konzo/TAN, presence of cyanide in cassava products that they consumed or known the importance of processing to eliminate cyanide. Knowledge and awareness of a disease is considered one of the prerequisites of health behavior (Weinstein, 1988; Prochaska and DiClemente, 1992). Therefore our findings suggest that it is necessary for Cameroonian government to put in place strategies and interventions aimed at increasing the general public's awareness and knowledge o f these nutritional diseases which have no cure but could be prevented.

CONCLUSION

The non existence of rural public's awareness and knowledge towards Konzo/TAN clearly suggest that there is an urgent need for health education in cassava producing/consuming communities in order to raise awareness/knowledge. This is particularly important in Cameroon, where the government is promoting the cultivation/consumption of cassava to boost food security and about 80% of Cameroonian households (most of them subsistence farmers) consume several cassava products on daily basis. Increasing awareness and knowledge of Konzo/TAN will encourage consumers of cassava products to practice post harvest processing techniques that eliminate cyanide, the major cause of Konzo/TAN. The consumption of properly processed or cyanide-free cassava products is a preventive measure and approach to eliminate Konzo/TAN.

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