

A STUDY OF THE PREVALENCE OF ENDEMIC GOITRE IN AN INLAND IBAN COMMUNITY, SARAWAK

YAP SIM BEE

SUMMARY

Eight longhouses were selected randomly for a goitre survey in the Entabai area of the Sixth Division, Sarawak. 645 subjects were examined and a goitre prevalence of 46.4% (15 years and above) was found. The females had a higher rate of 69.5% as compared with their male counterparts with 24.4%. Below the age of 15 years, prevalence was low and there was not much difference between the two sexes. After the age of 15 years, the prevalence among the females increased from 40% to almost 80% by the age of 25 years. The males, on the other hand, showed a decrease in prevalence after the age of 15 years and levelled off at about 30%. The females also had much larger goitres than males. About 43% of the households surveyed consumed iodised salt but the rates tend to fluctuate according to supplies. There was however no direct correlation between goitre prevalence and consumption of iodised salt.

INTRODUCTION

Endemic goitre has been known for centuries and the knowledge that the simple administration

Yap Sim Bee MBBS (S'pore), MPH (Mal)
Lecturer
Department of Social & Preventive Medicine
Faculty of Medicine
University of Malaya
59100 Kuala Lumpur, Malaysia

of iodine can prevent or even cure the disease has been documented since 1820.¹ Its association with endemic cretinism has also been well established. Unfortunately, its benign appearance has caused it to be overshadowed by other health problems with overt morbidity and mortality. Thus it has remained an important health problem in many parts of the world. It has been estimated² that 400 million people in Asia (excluding China) are exposed to the risk of the disease and of these, 80 million (20%) are actually suffering from it.

Studies have shown that legislation for the iodization of salt has led to a reduction in goitre prevalence and also reduced the occurrence of endemic cretinism. A study in Columbia³ has shown that the prevalence of goitre had fallen from 80% to 30% within a period of ten years, after the legislation had been passed. However, in many countries, such programmes have not been as successful due to a number of reasons.⁴ Primarily, the programmes could not be fully implemented because of problems in production, marketing or distribution. This can be expected as many of the highly endemic areas are usually remote with poor communications and these countries are mainly those with limited resources and numerous problems with higher priorities.

Endemic Goitre in Sarawak

Sarawak is one of the areas in South-East Asia with a highly goitrous population. The prevalence studies conducted in Sarawak in the seventies have

been reviewed by Tan.⁵ The rates for endemic goitre was found to range from as low as 30% to very high rates in Lubok Antu (99.5%). Legislation for the iodization of salt was passed and between 1957 and 1959 two iodization plants were set up in Kuching and Sibul. A recent study in the Tinjar area⁶ showed a high prevalence of goitre with only 9% of the households consuming iodised salt. It is likely that much of the iodised salt does not reach those who need it.

The present study is part of a nutritional survey of the Entabai area of the Sixth Division, where a primary health care project had been implemented two years prior to the survey. The findings will serve as baseline data for the future evaluation of the project.

Study Area

The study area, which covers a total of 750 square kilometres, is located in the upper reaches of the Kanowit River, in the Sixth Division. The population consists mainly of Ibans who live in longhouses. There are 48 longhouses with a total of 817 households and a population of about 5,000. Most of the people are subsistence farmers growing *Padi bukit* (hill or dry rice) which has a low yield when compared with the wet variety. Some cash crops such as rubber and pepper are also grown to augment their income.

METHOD

A random sample of eight longhouses were selected for the study. All residents present in the longhouses were included. The goitres were graded using Perez's classification.⁷ Older children and adults were examined while seated on the floor and facing the examiner. Babies were examined while seated on their mothers' laps. Housewives were also asked about consumption of iodised salt and the regularity of supply.

RESULTS

The total population of the study sample was 843, of whom 23.5% were away from the long-

house at the time of the survey. Of the remaining 645,304 were males while 341 were females. The overall goitre prevalence for the respondents aged 15 years and above was 46.4%, with the females having a higher prevalence of 69.5%, which is more than two and a half times that of the males with 24.4%. In the younger age group below 10 years, the prevalence was low and there was not much difference between the two sexes, with a peak between the age of 10 to 15 years (Fig. 1). After this age group, the prevalence among the males started to fall and remained stable after the age of 20 years. The prevalence among the females, on the other hand, increased after the age of 15 years, reaching levels of 70 – 80% and then levelling out.

Of the 69 males with goitres, about three-quarters of them had Grade I goitres, while the rest were Grade II. The females had larger goitres, with more than half of them being 'visible' goitres, i.e. 42% Grade II goitres and 11% Grade III goitres. A statistical test showed that the females possessed significantly larger goitres. 1.4% of the goitres among the males were nodular while the proportion among the females was 2.5%.

The proportion of households consuming iodised salt at the time of survey ranged from 18% to 100% for the eight longhouses, with a mean of 43%. However supplies were rather irregular. There does not appear to be any direct relationship between consumption of iodised salt and goitre prevalence in the longhouse

DISCUSSION

The goitre prevalence of 46.4% can be considered to be on the low side compared with the rates reported in other studies ranging from 30% to 100%.⁵ However, this comparison should be made with caution since the studies used varying population groups for determining their rates. In order to ensure a more meaningful comparison, only the figures for females aged 15 years and above will be looked at (Table I). Goitre prevalence in this group was 69.5% in the study area, which can be considered moderately goitrous.

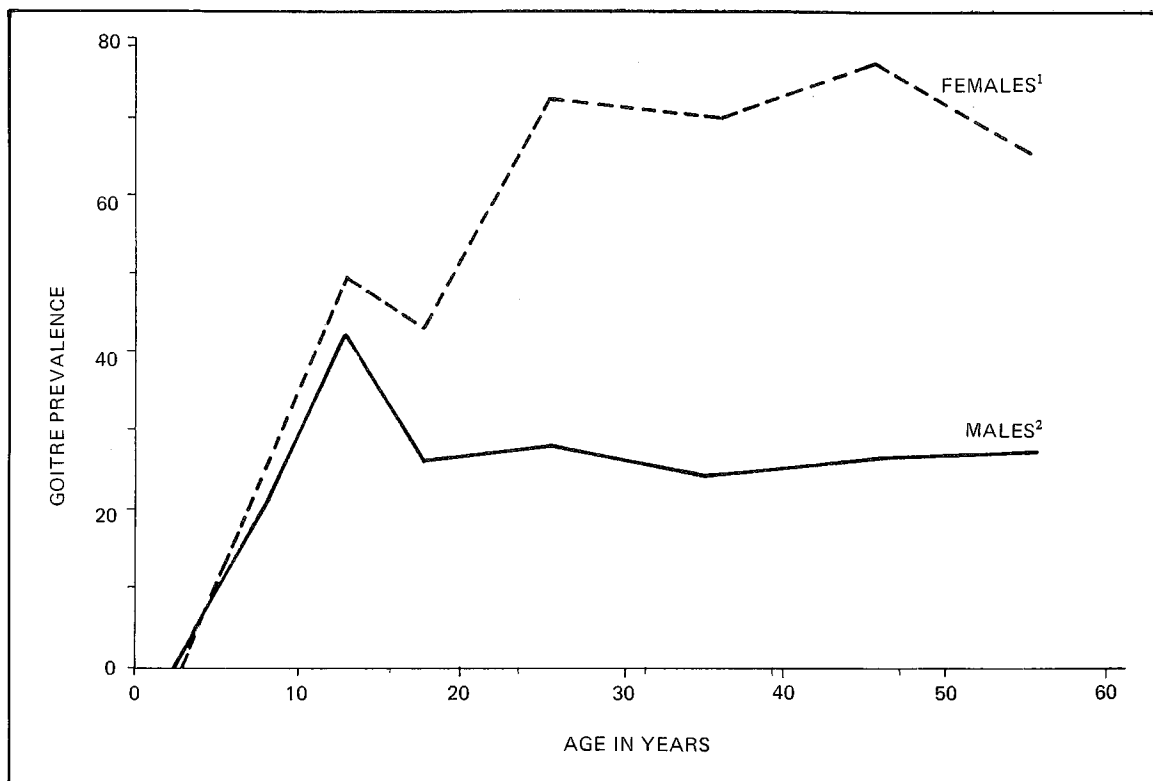


Fig. 1 Prevalence of endemic goitre according to age and sex, Entabai.

¹Prevalence for females aged 15 years and above = 69.5%

²Prevalence for males aged 15 years and above = 24.4%

The females had higher prevalence rates and also larger goitres when compared with their male counterparts. This sex difference has been noted in other studies,⁸ where the prevalence among the males decline after puberty while the female rates persist or increase during the child-bearing period. 2.5% of the goitres among the females were nodular. Nodularity reflects the severity of iodine deficiency and is mainly seen in the older age groups. The affected females were in the age group 35 – 55 years.

In the study area, 43% of the households were consuming iodised salt, a much higher rate than that found in the Tinjar area⁶ where only 9% of the households used iodised salt. However the rate in the present study tends to fluctuate

depending on the availability of the commodity in the local shops. This erratic supply of iodised salt can also explain the lack of correlation between iodised salt consumption and goitre prevalence seen in the various longhouses studied. There is also a possibility that environmental goitrogens such as cassava, may play an important role in the aetiology of goitre in this area. A dietary investigation of the area showed that three-quarters of the population did not have enough rice to last one year. Other staples, especially cassava, were used when supplies of rice were exhausted. Cassava leaves are also used frequently as a vegetable to supplement their diet.

This study has shown that the distribution of iodised salt remains a crucial problem in the

TABLE I
GOITRE PREVALENCE AMONG WOMEN AGED 15
YEARS AND ABOVE, SARAWAK*

Source	Location	Ethnic	Prevalence
Polumin (1970)	1st Division	Chinese, Malay, Bidayuh	52.2%
	2nd Division	Iban, Malay, Chinese	80.7%
	3rd, 6th & 7th Division	Iban, Chinese, Malay, Kejaman	55.2%
	5th Division	Malay, Iban Chinese	45.0%
Alexander (1979)	2nd Division Upper Lemanak River (Interior)	Iban	93.3%
	3rd Division Kanowit District (Rejang River)	Iban	38.7%
Chen & Lim ⁶	4th Division Tinjar River	Kayan, Kenyah, Iban	77.7%

*Adapted from Tan.⁵

control of endemic goitre. The state government is aware of this problem and legislation was passed in 1982, requiring the import of iodised salt. The medical and health authorities have also taken steps to distribute iodised salt through the various health facilities. However the quantity involved is still inadequate. Other methods such as iodized

oil injections and iodination of water supplies have also been considered. However before any such measures are taken there should be detailed studies to exclude other environmental goitrogens such as cassava and other food items.

REFERENCE

- 1 Langer, P. History of of endemic goitre. *In: Endemic goitre. WHO Monograph Series* No. 44: 9-23.
- 2 Gilbert, C. Endemic goitre: the cassava factor. *World Health Forum*, 1984, 5:170.
- 3 Delange, F, Ahluwalia, R. (ed). Cassava toxicity and thyroid research and public health issues. *Proceedings of a workshop* held in Ottawa, Canada, 31 May - 2 June 1982, Ottawa, IDRC, 1983: 159.
- 4 Schaefer, A. E. Status of salt iodization in PAHO member countries. In Dunn, J T. Medeiros-Neto, G.A. (ed). *Endemic goitre and cretinism: continuing threats to world health*. Report to the IV meeting of the Pan American Health Organisation Technical Group on Endemic Goitre 1974: 242.
- 5 Tan, Y.K. Endemic goitre in the state of Sarawak, Malaysia. In Delange, F, Ahluwalia, R. (eds). Cassava toxicity and thyroid: Research and Public Health Issues. *Proceedings of a workshop* held in Ottawa, Canada, 31 May - 2 June 1982. IDRC, 1983: 64-68.
- 6 Chen, P C Y, Lim P P E. The prevalence of endemic goitre in the Tinjar area. *Sarawak Med J Malaysia* 1982; 37(3): 265-269.
- 7 Perez C, Scrimshaw N S, Munoz J A. Technique of endemic goitre surveys. *In Endemic goitre. WHO Monograph Series* No. 44, 1960:369.
- 8 Thilly C H, Delange F, Ramioul L, Lagasse R, Luvivila K, Ermans A M. Strategy of goitre and cretinism control in Central Africa. *Int J Epidemiology* 1977; 6:43.