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# Knowledge on Goitre: A Comparison Between Remote Inland and Coastal Areas

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ABSTRACT

*The main purpose of the study was to determine the level of knowledge of goitre among the Aborigines and that Malays in remote inland and coastal areas. According to our previous study, the prevalence of goitre in remote inland areas (Baling, Kedah) was 5 times higher Compared to coastal areas (Carey Island, Selangor). The Aborigines (30.2%) and Malays (30.8%) in remote areas had higher prevalence of goitre compared to the Aborigines (6.0%) and Malaysia (6.7%) in coastal areas. However, the difference between the two ethnic groups was small and it was not significant. The level of knowledge of goitre determined among the Malays and the Aborigines in both area. The were asked about goitre, than cause, its effects on growth, knowledge on iodine, etc. It was found that although knowledge on goitre in both area was low, the population living in remote inland areas were more knowledgeable compare to those living in coastal areas (p. 0.05).*

ABSTRAK

*Matlamat utama kajian ini adalah untuk menentukan tahap pengetahuan penyakit goiter di kalangan Orang Asli dan Orang Melayu di kawasan pedalaman dan di kawasan pantai. Berdasarkan kajian kami yang telah lalu, prevalens goiter di kawasan pedalaman (Baling, Kedah) adalah 5 kali lebih tinggi berbanding prevalens goiter di kawasan pantai (Pulau Carey, Selangor). Orang Asli (30.2%) dan Orang Melayu (30.8%) di kawasan pedalaman mempunyai prevalens goiter yang lebih tinggi berbanding Orang Asli (6.0%) dan Orang Melayu (6.7%) di kawasan pantai. Walau bagaimanapun, perbezaan di antara kedua-dua kumpulan etnik ini adalah kecil dan tidak bererti. Tahap pengetahuan mengenai penyakit goiter telah ditentukan dikalangan Orang Melayu dan Orang Asli di kedua-dua kawasan. Mereka ditanya mengenai goiter, penyebab, kesan ke atas tumbesaran, pengetahuan mengenai iodin, dll. Didapati bahawa tahap pengetahuan goiter di kedua-dua kawasan adalah rendah; walau*

*bagaimanapun, populasi yang tinggal di kawasan pedalaman adalah tinggi tahap pengetahuannya berbanding populasi yang tinggal di kawasan pantai (p.0.05).*

## INTRODUCTION

In an earlier study, the prevalence of goitre was founs to be 5 times higher in remote inland (Baling, Kedah) compared to the coastal area (Carey Island, Selangor). 'The prevalence among the Aborigines and Malays in Baling was 30.2% and 30.8% respectively, compared to 6.0% and 6.7% respectively in Carey Island. Nearly half of the goitre in the remote inland area was large and visible (45.1%). However, no visible goitre was found in coastal areas. The urinary iodine levels among the population in both area, were low and there was no significant difference between the two areas. Urinaty iodine levels in Baling was $1.79 \pm 1.40$ $\mu$g I/dl, which was lower than coastal areas (urinary iodine level $2.04 \pm 1.47$ $\mu$g I/dl , but the difference was not significant ($p > 0.05$).

In view of the high incidence of goitre in remote inland as compared to the coastal areas, a study was conducted to compare the knowledge of goitre between the two communities living in two different environment. The objective of the study is to find out whether lack of knowledge of goitre was associated with high prevalence of goitre in the remote inland area.

## METHODS AND MATERIALS

### SUBJECTS

The study was carried out among the Aborigines and Malays in two different environments to obtain the subjects' knowledge on goitre. The Aborigines villages were identified by the help of the Department of Aboriginal Affairs, Gombak, based on the comparison between remote inland areas, Baling, which is a location surrounded by land; and coastal areas, Carey Island, which is a small island at the coast side of Selangor that is connected to the main land by a bridge. The Malay villages were selected according to their nearest location to the Aborigines settlement. Three villages in remote inland areas, (Baling) and 3 villages in coastal areas (Carey Island) were selected using cluster sampling procedure. A total of 871 subjects were assessed during the study, comprised of 287 subjects from Kampung Padang Che' Mas, 254 from Kampung Baru Mukim Siong and 109 from Kampung Lubuk Legong (remote inland areas). For coastal areas, 38 subjects from Kampung Sungai Kurau 96

from Kampung Sungai Bumbun and 87 from Kampung Melayu were assessed. Kampung Lubuk Legong m Baling and Kampung Sungai Kurau and Kampung Sungai Btunbun in Carey Island are the Abongmal settlement whilst Kampung Padang Che' Mas and Kampung Baru Mukiin Siong in Baling and Kampung Melayu in Carey Island are the Malay settlement. Most of the villagers in Baling district work as rubber tappers whilst in Carey Island, a large part of the island were covered by palm oil trees; indicating that most of the villagers work in the palm oil estates.

## KNOWLEDGE ASSESSMENT

Knowledge on goitre was assessed by questionnaires through house to house interview. Subjects were interviewed individually by trained interviewers. Communication with the Aborigines was not a problem since majority of the community are able to converse and understand Malay language quite well.

TABLE 1. Knowledge on goitre among the Malays and the Aborigines in Baling and Carey Island

| Knowledge | Category | Malays | | Aborigines | |
|---|---|---|---|---|---|
| | | Carey (%) n = 87 | Baling (%) n = 541 | Carey (%) n = 134 | Baling (%) n = 109 |
| Have ever heard of goitre? | Yes | 43.7 | 69.9 | 31.4 | 34.9 |
| | No | 31.0 | 2.2 | 53.7 | 35.8 |
| | Do not know | 25.3 | 27.9 | 14.9 | 29.3 |
| Seriousness of goitre | Normal | 18.4 | 28.2 | 21.4 | – |
| | Harmless | 7.9 | 20.6 | 9.4 | 2.6 |
| | Fatal | 68.4 | 42.5 | 64.3 | 97.4 |
| | Do not know | 5.3 | 8.7 | 4.8 | – |
| Causes of goitre | Infection | 37.9 | 15.7 | 27.6 | 17.4 |
| | Malnutrition | 3.5 | 2.4 | – | 0.9 |
| | Hereditary | 11.5 | 15.7 | 4.5 | 10.1 |
| | With craft | 1.2 | 0.2 | 1.5 | 0.9 |
| | 'Sintok' roots | – | 5.2 | – | – |

(*continued*)

Table 1 (*continued*)

| Knowledge | Category | Malays | | Aborigines | |
|---|---|---|---|---|---|
| | | Carey (%) n = 87 | Baling (%) n = 541 | Carey (%) n = 134 | Baling (%) n = 109 |
| | Left over food | – | 1.1 | – | – |
| | Do not know | 45.9 | 59.7 | 66.4 | 70.7 |
| Relationship between geography and goitre | Yes | 17.2 | 15.5 | 8.2 | 16.5 |
| | No | 41.2 | 46.8 | 41.0 | 34.9 |
| | Do not know | 41.4 | 37.7 | 50.8 | 48.6 |
| Infectiousness of goitre | Yes | 26.1 | 24.6 | 24.6 | 38.5 |
| | No | 40.2 | 2.2 | 42.6 | 18.5 |
| | Do not know | 37.9 | 27.9 | 32.8 | 43.1 |
| Any physical characteristic of goitre patients | Yes | 8.1 | 5.6 | 1.5 | 6.4 |
| | No | 47.1 | 61.5 | 48.5 | 50.5 |
| | Do not know | 44.8 | 32.9 | 50.5 | 43.1 |
| Have ever heard of iodines? | Yes | 33.3 | 58.6 | 11.2 | 39.4 |
| | No | 37.9 | 12.9 | 64.9 | 24.8 |
| | Do not know | 28.8 | 28.5 | 23.9 | 35.8 |
| Relationship between goitre and gender | Yes | 18.4 | 34.8 | 11.2 | 16.5 |
| | No | 41.4 | 34.0 | 60.4 | 43.1 |
| | Do not know | 40.2 | 31.2 | 28.4 | 40.4 |
| Relationship between goitre and age | Yes | 25.3 | 50.7 | 23.1 | 26.6 |
| | No | 27.6 | 16.7 | 33.6 | 25.7 |
| | Do not know | 47.1 | 32.5 | 43.3 | 47.7 |

## RESULTS

The knowledge of goitre among the population living in remote inland compared to the coastal areas is shown in Table 1. Among the Malays, population in Bating (rural area) were more familiar with goitre compared to those in Carey Island (coastal area) ($p < 0.05$). Higher prevalence was also observed among the Baling Aborigines; however, the difference was not significant. In Baling, prevalence of goitre was higher

among the Malays compared to the Aborigines ($p < 0.05$); however, in Carey Island, the difference was not significant.

Regarding the question on the seriousness of goitre, more than 40% of the population in both areas believed that goitre is a *fatal* condition. The prevalence was higher among the Malay population in Carey Island compared to Baling population ($p < 0.05$), however, higher percentage was found among Aborigines in Baling compared to Carey Island ($p < 0.05$). Between ethnic groups, the percentage was higher among the Aborigines compared to Malays in Baling ($p < 0.05$). The difference between ethnic groups in Carey Island was not significant.

Although it is known that nutrition deficiency is the main cause of goitre, most of the populations studied thought that infection was the cause of goitre development. However, among subjects who thought that malnutrition was one of the causes of goitre, they identified cassava as one of the important food that cause goitre. Most of the population also believed that there was no relationship between geographic location and goitre. The Malays and the Aborigines in Carey Island believed that goitre was not infectious, however, in contrast, the population in Baling believed that goitre was infectious, particularly the Aborigines. Approximately half of the populations studied did not believe the relationship between certain physical characteristics and goitre.

Malays in Baling were better informed about iodine ($p < 0.05$) compared to Malays in Carey Island. Similar results were shown among Aborigines ($p < 0.05$). In Carey Island, Malays showed better knowledge on iodine compared to the Aborigines ($p < 0.05$). The same result was also shown in Baling ($p < 0.05$). It is known that females were more susceptible to goitre. Subjects in both areas however believed that there was no association between goitre and gender. It is a known trend that the elderly were more commonly affected by goitre than the children and adults. It was found that Malays in Baling knew better the relationship between goitre and age compared to the Aborigines ($p < 0.05$).

## DISCUSSION

The distribution of goitre in Malaysia is quite similar to that of other countries, where the problem is more in the inland areas than in the coastal regions, and in mountainous rather dm low-lying areas. Populations affected by goitre are almost exclusively agricultural and the disease is rarely seen in nomadic population.

Our earlier study showed that goitre occurrence in remote inland areas (Baling) was 5 times higher than that of coastal areas (Carey Island). However, despite of the low prevalence of goitre in Carey Island,

Selangor (coastal area), knowledge on goitre among this population was significantly lower compared to population in Baling, Kedah (remote area) ($p < 0.05$).

In this study, most of the subjects agreed that goitre may cause death at advance stage, but only a few of them knew that malnutrition or certain foods is related to the development of the disease. They might have heard about iodine before but did not know its usage. In this situation the public has to be better informed about goitre and its prevention.

Endemic goitre was known to be associated with the geography of the regions especially hilly regions. However, sporadic evidences accrued to indicate that pockets of endemic goitre might also exist in low-lying regions of the country. Reports from other countries indicate that the problem of endemic iodopenic goitre may also be of public health significance in lowland and coastal regions. But in Malaysia, it is well known that endemic goitre is more of a problem in inland regions. This study showed that the Malay population in the inland areas seemed to be more aware of goitre compared to the coastal community. This is probably due to the higher development and education exposure in Baling compared to Carey Island. Besides, since they have higher prevalence of goitre, these population were more exposed and familiar with goitre disease compared to the population in coastal areas, for the chances to observe goitre and the associated conditions are higher. Most of them believed that inland areas were a goitre-associated region. However, the Aborigines were less knowledgable about goitre.

The knowledge on complication of goitre was poor in all the populations studied. The Malay community was more convinced of the association between low socioeconomic status in males, a finding which agrees well with the data obtained from other geographical areas. Most of the Malays and Aborigines in both areas agreed that goitre is more prevalent among the females than males.

## CONCLUSION

Despite the low prevalence of goitre among populations in Carey Island (coastal area), the knowledge on goitre was significantly lower compared to population in Baling, Kedah (inland area). This is probably because of lack of experience regarding the disease since not many people here developed goitre. The Malays in both areas were more knowledgeable about goitre than the Aborigines. It was noted that not many Aborigines from both areas obtained medical advice and treatment from local health centres. Most of them still believed in their traditional medicine more

than the modern treatment. This might be one of the factors why they were not familiar with goitre, particularly concerning the iodine and goitre treatment, compared to the Malays. In general population in both areas were deficient in knowledge regarding the association of goitre with malnutrition, iodine and geography of the area. Health education on goitre may help in promoting the well being of population in both areas. This can be obtained through educational videos, talks, pamphlets and advertisement.

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