

# TOBACCO USAGE AMONG RURAL BAJAUS IN SABAH, MALAYSIA

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**Abstract.** As part of a larger study to bring attention to smoking and smokeless tobacco use among the indigenous people of Sabah State in Malaysia, the Bajaus were interviewed in a cross-sectional survey. 74.4% of the men smoked compared to 3.3% of the women and 77% of women used smokeless tobacco compared to 4.3% of men. Local handrolled cigarettes called *kirais* were popular and smokeless tobacco was used as an ingredient in the ritual of betel-quid chewing. Tobacco was also used because it was thought to have medicinal effects. The prevalence of smokeless tobacco use was significantly lower among the better educated women but for smoking, education had no relation with prevalence. Both habits could be easily maintained as they were cheap practices which were socially and culturally accepted. Awareness of the adverse effects of such tobacco habits was poor and intervention programs to curb tobacco use is required.

## INTRODUCTION

The prevalence, adverse effects and control of tobacco habits especially cigarette smoking have been well researched in the developed countries as shown by the abundance of articles found in electronic database reviews such as *Medline*. In the developing countries, scientific documentation of such habits are limited and organized control measures are often lacking or absent. Smokeless tobacco use in particular is not well documented in the developing countries except for India and Pakistan (WHO, 1988; IARC 1985; Bhonsle *et al*, 1992). In the absence of prevalence data, the magnitude of tobacco usage in a country is usually estimated by parameters such as per capita manufactured cigarette consumption. In communities where locally grown tobacco are smoked in forms other than manufactured cigarettes or are chewed, the tobacco threat can be underestimated using such parameters.

In Sabah, one of the states in Malaysia located on Borneo island (Fig 1), tobacco is often grown as a cash crop and is widely sold. The indigenous people, particularly rural folk, use the locally grown tobacco in hand-rolled cigarettes or as an ingredient in betel quid chewing. The magnitude of the tobacco threat would remain unknown or underestimated if these practices among the indigenous groups were not documented. The results presented in this article constitute part of that of a larger study on the prevalence, practice and implications of tobacco use in Sabah. The overall objective of this larger study was to determine the extent of the

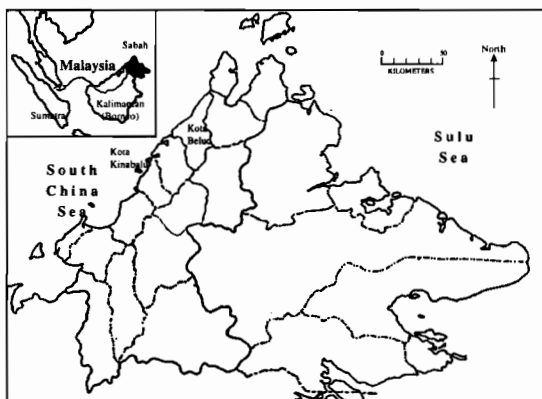


Fig 1-Kota Belud district, Sabah Malaysia.

tobacco threat and to identify appropriate control strategies for the local communities.

## MATERIALS AND METHODS

The Bajaus were surveyed as they were the second largest indigenous group in Sabah (Department of Statistics, Malaysia, 1995). The survey was conducted in Kota Belud, one of 23 districts in Sabah (Fig 1). The district was selected as it had a high proportion of Bajaus and had been identified as the district where Bajau culture was dominant (Harrison, 1973). The people of Kota Belud resided in 134 villages and in a small town of the same name.

A cross-sectional survey was conducted using a questionnaire designed for structured interview by

a trained interviewer. Adults 18 years or older were included in the study. Sample size was estimated using the software EPI-INFO for population surveys. Through multistage sampling. Fourteen Bajau villages were included in the study. House to house surveys were not feasible as farm houses were widely scattered and it was difficult to locate farmers in the field. Instead, all adult villagers were requested by the village heads to participate at a fixed date in the village community hall. The villagers were known to respond positively to their village heads but it was expected that a small proportion would be missed for various reasons. Participation was voluntary and the purpose of the survey was made known to the villagers. The programs EPI-INFO and EGRET (Epidemiological graphics, Estimation and Testing package) were used for data analysis. The survey was conducted in a three week period in 1994.

Table 1

Distribution of respondents by occupation and sex.

Occupation	% of males (n=414)	% of females (n=431)
Farmers	57.0	66.4
Fisherman	4.8	0.7
Fishing + farming	6.5	0.0
Skilled workers*	5.1	2.0
Unskilled workers**	4.8	0.5
Teachers/others with training	6.3	4.4
Students	2.9	1.9
Retired/unemployed	12.6	9.5
Housewives	0.0	14.6
Total	100.0	100.0

\* Skilled workers hold jobs requiring training eg barber, clerks, machine operator.

\*\* Unskilled workers hold jobs not requiring training eg labourer.

## RESULTS

A total of 414 males and 431 females responded and their ages ranged from 18 years to 102 years. Their occupations by gender are displayed in Table 1 which shows that these are rural folk. As many as

308 (74.4%) of males were current smokers but only 14(3.3%) of the women smoked currently. However, 77% of women used smokeless tobacco compared to 4.3% of the men. The prevalence of tobacco habits by gender is shown in Table 2. Smoking was predominantly a male habit while smokeless tobacco use was predominantly a female one.

Of the 308 male current smokers, 262 were daily smokers while the rest were current smokers who smoked regularly but not daily. The types of cigarettes used by male daily smokers is shown in Table 3 and it is seen that the majority preferred handrolled cigarettes locally called *kirais*. (The term *kirai* refers to the wrapper for the handrolled cigarette as well as to the hand-rolled cigarette itself). A small amount of locally grown shredded tobacco was rolled in a small piece of dried palm leaf and smoked. *Kirais* were preferred because they had a

Table 2

Tobacco habits by gender.

Tobacco habits	% of males (n=414)	% of females (n=431)
Daily smokers	63.3	2.8
Occasional smokers	11.1	0.5
Smokeless tobacco users	4.3	77

Table 3

Types of cigarette smoked by male daily smokers.

Types of cigarette	No.	%
Hand-rolled ( <i>kirai</i> )	156	59.5
Manufactured	56	21.4
Both	50	19.1
Total	262	100.0

special fragrance and were cheaper than manufactured cigarettes. Cigarette consumption per day among daily smokers is shown in Table 4. The majority smoked fewer than 15 cigarettes (hand-rolled or manufactured) per day. As high as 61.8%

of these smokers acquired the habit before they were 20 years old and the main reasons for acquiring the habit is shown in Table 5. Age specific prevalence rates (ten years grouping) were high for all groups and had no linear trend (chi-square for linear trend = 0.56  $p = 0.45$ ). Smoking prevalence rates were also high for all educational levels (tertiary, secondary, primary and nil) and also showed no linear trend (chi-square for linear trend = 3.02  $p = 0.08$ ). Respondents were asked whether they

were aware of adverse effects of smoking and to name the health problems that smoking was associated with. Table 6 shows that 26.6% of all current smokers were unaware of any adverse effects compared to only 11.3% of non-smokers. This difference was significant with smokers being 2.8 times more likely to be unaware of ill effects than non-smokers (odds ratio = 2.84 95% confidence interval: 1.43-5.77). As many as 332 (77%) of the 431 women used tobacco in their chewing habit. Tobacco was commonly used in the habit of betel quid chewing. Table 7 shows the various combinations of ingredients Bajau women used in their chewing

Table 4

Number of cigarettes smoked per day by male daily smokers.

No. of cigarettes	No.	% (n=262)
1 - 14	197	75.2
15 - 24	43	16.4
25 or more	22	8.4
Total	262	100.0

Note: Cigarettes include both hand-rolled and manufactured.

Table 5

Main reasons for acquiring the habit of smoking.

Reasons for smoking	No.	%
Socializing	132	50.4
For fun/ to feel good/to relax	49	18.7
Acceptance as cultural norm	41	15.7
Result of peer pressure	25	9.5
To chase away mosquitos	15	5.7

Table 6

Awareness of adverse effects of smoking among Bajau males.

Adverse effects of smoking	Percentage of responses from smokers (n=308)	Percentage of responses from non- smokers (n=106)	Percentage of responses from all male respondents (n=414)
Not aware of adverse effects	26.6	11.3	22.7
Respiratory problems	51.6	59.4	53.6
Tuberculosis	11.4	17.0	12.8
Lung cancer	6.5	6.6	6.5
Other cancers	2.9	3.8	3.9
CNS problems	1.0	2.8	1.4
High blood pressure	0.3	1.9	0.7
Other diseases or conditions*	12.7	35.8	18.6
Unable to state disease	6.5	3.8	5.8

Note: Except for the 1<sup>st</sup> response, all other categories can have multiple responses.

\* Includes chest pain, diabetes, stomach ailment, birth deformities, tooth and gum ailments, jaundice, adverse effects on pregnancy.

habit. Generally, a small piece of betel leaf (*Piper betel* L.) was smeared with lime (paste from boiled sea shells) and other ingredients such as areca nut (fruit of *Areca catechu* L.) and gambir (a preparation from leaves and twigs of the shrub *Uncaria gambir*) were added. The preparation was chewed together to form a quid and the initial juice from this quid was spat out. A small amount of tobacco was

added last to this quid which could be placed between upper and lower lips or within the mouth until it became tasteless. However some women preferred to place the tobacco between the lips in isolation from the chewed betel quid which remained in the mouth. The age specific prevalence rates (by ten year age groups) of smokeless tobacco use increased with increasing age and there was a significant linear trend (chi-square for linear trend = 75.62  $p < 0.001$ ). The prevalence rates of smoke-

Table 7

Combinations of ingredients used by Bajau women in chewing habit.

Ingredients used	No. with chewing habit	% (n=431)
Tobacco, betel leaf, areca nut, lime, gambir	183	42.4
Tobacco, betel leaf, areca nut, lime	137	31.8
Tobacco, betel leaf, areca nut	1	0.2
Tobacco and lime	3	0.7
Tobacco and areca nut	2	0.5
Tobacco only	6	1.4
Various combinations of above ingredients but without tobacco	14	3.2
Total number with a chewing habit	346	80.2

Note: 332 (77%) of the women were smokeless tobacco users.

Table 8

Number of fresh preparations used per day.

Fresh preparations used per day	No. of tobacco users	% (n = 332)
< 5	170	51.2
5 - 9	72	21.7
10 - 14	58	17.5
15 - 19	4	1.2
20 or more	26	7.8
Number unknown	2	0.6
Total	332	100.0

Table 9

Reasons for having a chewing habit.

Reasons for chewing	No.	%
Cultural norm	144	43.3
Socializing/peer pressure/fun	93	28.1
Medicinal value	82	24.7
Cravings	6	1.8
Did not ask/no clear reason	7	2.1
Total	332	100.0

Table 10

Awareness of the adverse effects of smokeless tobacco use among users.

Adverse effects of chewing	Smokeless tobacco users (n=332)	
	No.	%
Not aware of adverse effects	283	85.2
Oral problems related to mucosa/teeth/gum	15	4.5
Oral cancers	12	3.6
Lung cancer	1	0.3
Other cancers	2	0.6
Heart and circulatory problems	7	2.1
Respiratory problems	4	1.2
Tuberculosis	3	0.9
Central nervous system problems	1	0.3
Other diseases	4	1.2
Aware but unable to state disease	5	1.5

Note: Except for those unaware of adverse effects, more than one response can be given.

less tobacco use decreased with increasing levels of education (no education, primary, secondary and tertiary). The trend was linear and significant (chi-square for linear trend = 82.1  $p < 0.001$ ). After adjustment for age, those with low education (<6 years or nil) were 8 times more likely to be smokeless tobacco users than those with higher education (odds ratio = 8.07 95% confidence interval: 4.77-13.69).

The amount of tobacco used per day was estimated by the number of fresh preparations used for chewing per day. Table 8 shows that nearly half of the smokeless tobacco users chewed more than 5 times in a day. The majority (87.4%) claimed that the quid with tobacco was retained in the mouth or between the lips for less than an hour. Table 9 shows that the main reasons for having a chewing habit were because the habit was perceived as a cultural norm, was socially acceptable and was thought to have medicinal value. As high as 22.3% of smokeless tobacco users claimed that betel quid juice with tobacco if placed on a new-born baby's umbilical cord stump would prevent infection and ensure the formation of nice navel. As high as 85.2% (Table 10) of the women were totally unaware of any adverse effects associated with smokeless tobacco use. Some adverse effects named (such as tuberculosis) were incorrect.

## DISCUSSION

Smoking was highly prevalent among rural male Bajaus while smokeless tobacco use was highly prevalent among rural Bajau women. There were few female smokers and few males had a chewing habit. Smoking was perceived as a male social habit while the chewing habit was perceived as a female one. (The reasons for such gender difference were documented in other surveys to collect qualitative data and are not discussed in this article.) Smoking prevalence was unrelated to age or educational level, but awareness about adverse effects were significantly higher among nonsmokers than smokers. Health education would be an immediate control measure against smoking particularly when there appeared to be a general inability to identify major diseases associated with smoking. The prevalence of smokeless tobacco use among women was significantly higher in those with low or no education. There was also an alarmingly large proportion of women who were totally unaware of the adverse effects of smokeless tobacco use. These findings make health education a necessary and immediate control measure for women in Sabah.

The habit of smoking is easily maintained and perpetuated in the Bajau community as it was socially acceptable and cheap. The *kirai* wrapper from either *Nipa fruticans* or *Metroxylon sagus* palms (Burkill, 1966), like tobacco, are locally grown and easily available. Although the majority smoked fewer than 15 cigarettes per day, the tar level and nicotine level of the *kirai* have never been studied. The majority had acquired the habit in their teens and would most likely smoke for a life-time. The various indigenous people of Sabah live rather similar agriculturally-based lifestyles and it can be expected that smoking would be a common habit among them. The adverse effects of smoking have been well studied and summarized in reports such as that from the Surgeon General of the United States (US Department of Health and Human Services, 1989) and from the International Agency for Research on Cancer (IARC, 1986). The findings in this study can but warrant that organized control programs against smoking (hand-rolled or manufactured cigarettes) be implemented.

Smokeless tobacco use among the women is also a habit easy to maintain for a lifetime. The habit is thought to be traditional, is socially acceptable, is viewed as having some medicinal use and is cheap. All the ingredients used are locally available and widely sold. The prevalence and practice of smokeless tobacco use among Kadazans (the largest indigenous group in Sabah), has already been reported by the author (Gan, 1995) and the findings were rather similar to that of the Bajaus. It can be expected that the smaller indigenous groups in Sabah would have the same pattern of smokeless tobacco use since the two major indigenous groups, despite having different religions (Kadazans are Roman Catholics while Bajaus are Muslims), have similar habits. The adverse effects of smokeless tobacco use have also been well summarized by the United States Surgeon General's report (US Department of Human and Health Services, 1986), the International Agency for Research on Cancer (IARC, 1985) and also journal articles (Murti *et al*, 1992; Winn, 1992). The findings in this study warrant that control programs against smokeless tobacco and targeted towards women be implemented in Sabah.

## ACKNOWLEDGEMENTS

The project was funded by the China Medical Board. The writer is grateful to the Director of the

Medical and Health Department of Sabah and his staff for their assistance and cooperation. Special thanks is given to MF Chen, Raja Isaiah and SC Woon for assisting in the field work.

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