

Socioeconomic, social behaviour and dietary patterns among Malaysian aborigines and rural native Malays

Osman Ali, M.D, M.P.H , FRIPHH , FRSH
Lecturer

Zarina Shamsuddin, BSc
Dietician
Department of Community Health

B.A.K. Khalid, BMedSc, MBBS, PhD, FRACP.
Professor
Department of Medicine

Faculty of Medicine, Universiti Kebangsaan Malaysia, 50300 Kuala Lumpur.

Summary

The socioeconomic, social behaviour and dietary pattern of 100 Aborigines and Malays, aged 7 years and above from Kuala Pangsoon , Selangor Malaysia were studied by using pretested questionnaires. The individual's dietary intake was estimated using 24 hour recall for 3 days within one week which was chosen at random. The household's food consumption pattern was evaluated using food frequency questionnaires. There was no difference in the total income per month for both communities, as well as the educational attainment of the head of household and property ownership. The proportion of smokers among the Aborigines and the Malays was almost similar (33 %) but the percentage of heavy smokers was higher among Aborigines compared to Malays. One third of the Aborigines regularly consume alcohol. The main energy source for both communities was rice, sugar and cooking oil whilst fish and eggs were the main sources of protein. More than 50 % of the Aborigines take tapioca or tapioca leaves at least once a week compared to less than 20 % among the Malays. There was no significant different in the intake of energy, protein and carbohydrate between the groups. However the Aborigines take less fats and iron compared to the Malays. The difference in terms of smoking, drinking habit and dietary intake may determine the distribution of disease in both communities.

Keywords: Socioeconomic, social behaviour, dietary pattern, Malays, Aborigines.

Introduction

The Aborigines comprise 1% of the Malaysian population and are divided into three major ethnolinguistic groups, namely Semang (Negrito), Senoi and Proto-Malays. The Semangs are divided into 6 tribes namely Kensiu, Kintaq, Jahai, Lanoh, Mendriq and Bateq. Being nomads, they move from area to area, using natural shelters such as caves and trees and subsisting on roots, jungle fruits as well as hunting and fishing. They practice communal ownership. There is no individual or family tenureship of land and properties. The Senoi are predominantly hill people and are divided into 6 major groups, namely Semai, Jahut, Temiar, Che Wong and Mah Meri. The Senoi have settled along high ground usually near rivers. They practice agriculture, planting hill paddy, tapioca, millet and bananas.

Hunting is limited to some areas. Each community has its own communal area. The Proto Malays have settled in jungle fringes and rural villages near the Malays. They consist of seven tribes, namely Temuan, Semelai, Temoq, Jakun, Orang Kanaq, Orang Laut and Orang Seletar. They practice individual ownership of properties. Agriculture, hunting and fishing are the main economic activities.^{1,2,3}

The Malays are the subsequent settlers in the Malay archipelago. They comprise 48% of the Malaysian population. They were merchants before the 16th century, but subsequently because of Western colonization, they engaged in subsistence farming and settled mainly in rural parts of Malaysia. Kuala Pangsoon is located at the jungle fringes of the foothills of the Main Mountain Range, 40 km from Kuala Lumpur, the capital of Malaysia. There are two villages in this area, each inhabited by Aborigines or Malays. The Aborigines had settled in their village for many generations, whereas the Malays developed the area since independence in 1957. They live symbiotically in terms of economy and share the same water supply and their children attend the same primary school. Both villages have electricity and are connected to the city by a regular bus service.

The Aborigines are from a Temuan tribe of the Proto-Malays. They are about 30 families with a total population of 210 people. They live in wooden houses built by the government, to which they have made some modifications. The headman, called 'Batin', is the most respected man in the community. He is the spokesman for the community. He deals with problems concerning the Aborigines in the community under his care and responsibility.

The Malays are descendants from Kerinci, Sumatera (Indonesia) who settled in the area about 30 years ago. They consist of 60 families with a population of about 300 people. They live in traditional houses. The headman is elected by the people and is assisted by a committee of 10 members to look after safety and welfare of the community. A small payment is given by the government to the headman for his contribution to the community. The aim of the study was to assess and differentiate the socio-economic, behavioural and dietary patterns of the two communities who have lived symbiotically for about 30 years.

Materials and method

The study was carried out among Aborigines and Malays in Kuala Pangsoon village by house to house survey using pretested questionnaires to obtain their socioeconomic status, social behaviour and their dietary pattern. Three days food recall with food frequency were utilized in the survey. Fifty subjects from each community were selected randomly to participate in the study.

The smoking, drinking habits and physical activities of subjects aged 7 years and above were evaluated using standardized questionnaires. The intensity of daily activities was evaluated by determining their nature of work and estimating their intensity as whether light, moderate or heavy.

Results

Demography of family and household

The mean size of the family among the Aborigines was 6.9 ± 3 , comparable to 6.9 ± 2 among the Malays. The mean number of persons who actually lived in the household however was 6.3 ± 2 among the Aborigines, compared to 4.9 ± 2 among the Malays, an indication of the migratory habit of the Malay community in whom young adults migrate to the city for work or education which is not seen among the Aborigines, (Table I). The mean age of the head of household among the Aborigines was 37.6 ± 13.4 years old, compared to 46.5 ± 12.1 among the Malays.

Table I
The size of the family and number of resident family member by household

Number	Family sizes	HH%	No. of resident	HH%	Family sizes	HH%	No. of resident	HH%
< 5	4	16.7	4	16.7	3	10.4	13	44.8
5 – 7	12	50.0	16	66.7	18	62.1	10	34.5
8 – 10	5	20.8	3	12.5	7	24.1	6	20.7
> 10	3	12.5	1	4.1	1	3.4	29	0
Total	24	100.0	24	100.0	29	100.0	29	100.0

HH = Household

The average total family income per month was MR\$ 233 ± 111 for the Aborigines and MR\$ 315 ± 188 among the Malays ($p > 0.05$) (US\$ 1 = MR\$ 2.75). In terms of educational attainment, more than 80% of the head of household and his wife did not have any formal education or only had primary school education in both communities (Table II).

Table II
Educational attainment by head of household and spouse

Educational attainment	Aborigines (n = 24)				Malays (n = 29)			
	HH	%	S	%	HH	%	S	%
1. Not schooling	14	58.3	16	66.7	6	20.7	9	31.0
2. Primary school	9	37.5	7	29.1	19	65.5	18	62.2
3. Secondary school	1	4.2	1	4.2	2	6.9	1	3.4
4. University / College	0	0	0	0	0	0	0	0
5. Informal school / adult literacy class	0	0	0	0	2	6.9	1	3.4
Total	24	100.0	24	100.0	29	100.0	29	100.0

HH = Household

The wealth of the family was assessed based on the ownership of 4 common properties. Radio, television sets and motorcycles were owned by more than 50% of the two communities. A significantly higher percentage of Malays own refrigerators compared to the Aborigines (Table III).

Table III
Household properties ownership

Properties	Aborigines (n = 25)		Malays (n = 29)	
	No. owned	%	No. owned	%
Radio	15	60	22	75.9
Refrigerator	6	24	16	55.2
Television	13	52	13	44.8
Motorcycle	17	68	16	55.2

Social behaviour

The proportion of non-smokers among the Aborigines and the Malays were similar (67%). However among those who smoked, the percentage of heavy smokers (20 cigarettes or more per day) was slightly higher among Aborigines compared to Malays as shown in Table IV. The major difference is seen in alcohol consumption, one third of the Aborigines regularly consume alcohol whereas only 5% of the Malays do so, and occasionally. Alcohol consumption among the Aborigines is a tradition during festivals or after a good harvest season (Table V).

Table IV
Pattern of cigarette or tobacco smoking

Properties	Aborigines		Malays	
	No.	%	No.	%
Never / not smoking	25	58.14	27	61.36
Stop smoking	4	9.3	3	6.82
Smoking:				
< 10 cig. per day	3	6.98	4	9.09
10 – 20	7	16.28	7	15.91
> 20	4	9.3	1	2.27
Other tobacco	0	0	2	4.55
Total	43	100.0	44	100.0

Thirty percent of the Aborigines do heavy work or activity as compared to only 10% among the Malays (Table VI). The majority of the subjects in both communities did not participate in sports or exercises. Only 34% of the Aborigines and 10% of Malays were involved in any formal physical exercises or games (Table VII).

Table V
Alcohol consumption

	Aborigines		Malays	
	n	%	n	%
Yes	13	30.23	2	4.55
No	30	69.77	44	95.45
Total	43	100.0	44	100.0

Table VI
Pattern of daily physical activities

Grade	Aborigines		Malays	
	n	%	n	%
Light	11	25.58	15	34.09
Moderate	19	44.19	25	56.82
Heavy	13	30.23	4	9.09
Total	43	100.0	44	100.0

Table VII
Involvement in sports or games

Involvement	Aborigines		Malays	
	n	%	n	%
None	26	60.47	32	72.73
Sometimes	13	30.23	8	18.18
Regular	4	9.30	4	9.09
Total	43	100.0	44	100.0

Household food frequency and individual intake's pattern

All the households consumed rice, sugar and cooking oil daily as part of their meals (Table VIII). Fish and eggs were the main source of protein for both communities, taken at least once a week. Seafood such as squid, cockles and prawns were taken rarely by most of the Aborigines, whereas significantly more Malays take them at least once a week. Meat, beef and mutton was rarely taken by the Aborigines compared to the Malays ($p < 0.002$). More than 50% of the Aborigines take tapioca at least once a week compared to less than 20% among the Malays ($p < 0.004$) as shown in Table VIII.

Table VIII
Pattern of household food consumption

Food Item	Aborigines (n = 25)					Malays (n = 28)					% Significant difference
	Dly	2-4 times per week	Once a week	Once a mth	Rarely or never	Dly	2-4 times per week	Once a week	Once a mth	Rarely or never	
Rice	24	1	-	-	-	28	-	-	-	-	NS
Tapioca	1	8	4	1	11	1	2	2	2	21	0.004
Sugar	24	-	-	-	1	26	1	-	-	1	NS
Oils	25	-	-	-	-	28	-	-	-	-	NS
Fish	7	13	2	-	3	12	15	1	-	-	0.029
Squid	-	1	2	1	22	1	5	4	3	15	0.001
Prawn	-	1	1	4	19	-	6	5	4	13	0.004
Cockles	-	2	1	4	18	-	6	3	4	15	0.04
Meat / beef	-	-	1	3	21	-	5	5	12	6	0.002
Chicken	-	-	7	6	12	-	6	7	10	5	0.08 (NS)
Pork	-	1	2	3	19	-	-	-	-	28	< 0.005
Eggs	5	3	8	2	7	8	10	4	1	5	0.12 (NS)
Vegetables	20	5	-	-	-	16	10	-	1	1	0.08 (NS)
Fruits	1	6	6	-	12	1	8	9	2	8	0.18 (NS)

* The difference of proportion of food consumed at least once a week between the Aborigines and the Malays

In terms of individual intake, there was no significant difference in the intake of total energy, protein and carbohydrate between the subjects of the two communities, but there was a significant difference in the intake of fats and iron. The Aborigines take less fat and iron compared to the Malays (Table IX).

Table IX
Daily Nutrient Intake

Nutrients	Aborigines			Malays			Significance p < 0.05
	n	Mean	SD	n	Mean	SD	
1. Energy (Calories)	43	1400.0	473.0	44	1590.0	475.0	0.065 (NS)
2. Protein (gm)	43	56.6	36.3	44	71.2	80.2	0.279 (NS)
3. Fats (gm)	43	37.4	23.0	44	49.6	24.0	0.018 (S)
4. Carbohydrate (gm)	43	215.2	63.0	44	236.9	64.2	0.115 (NS)
5. Ferum (gm)	43	7.4	3.1	44	11.3	5.9	<0.005 (S)

Discussion

Rurality and remote areas have been associated with poverty, malnutrition and diseases⁴. Primitive hunter-gatherer life style has now evolved into modern urban civilisation. Even though there are not many hunter gatherers nowadays, their life style has been associated with lower prevalence to certain diseases. Some of the Aborigines in many countries are still adopting this lifestyle. Many of them however have been settled and become subsistence farmers, where they are liable to famine and chronic malnutrition. Their dependence on a single staple food will expose them to increased risk of kwashiorkor and keratomalacia during periods of poor harvest. Lack of vitamins such as thiamine (vitamin B1) causing beri-beri, and nicotinic acid causing pellagra, are prevalent in such communities. In this study, both communities were subsistence farmers, with some influence from the city. Urban migration was more common among the young Malays. The communal way of life and cultural factors probably discouraged urban migration among the Aborigines. Such social influences also depend on leadership of the headman (Batin) who is the most influential person in the community. The cultural heritage, beliefs and direction of the community are maintained by him and his heritary successor.

Urban migration probably has an effect on the mean age of head of the household. Early marriage among the Aborigines could also have contributed to the younger age of the Aboriginal head of household. The differences in age may explain the differences in terms of activities and social behaviour.

Based on family incomes, the Malays had more average income than the Aborigines but due to variability of income among the Malays, the difference between the two communities was not statistically significant. The high standard deviation is probably due to inability to correctly estimate their income which is seasonal and harvest-dependent. The monthly average of per year income (annual) of production per month may not reflect their true incomes.

As for the educational attainment of the head of household and spouse, the Malays had a better education than their counterpart. The proportion not having been to school among the Aboriginal head of household and spouse was 58.3% and 66.7% respectively, almost doubled that (20.7% and 31.0%) among the Malays. Education, especially mother's education, is strongly associated with maternal care and growth of the children. Other socioeconomic variables such as income, father's occupation, urbanization are also associated with growth and child care, but this was not a main factor in this study.

Smoking is known to cause cardiovascular diseases and cancers. About 33% of both communities smoke, but a larger proportion of heavy smokers was found among the Aborigines (9%). Alcohol consumption was also more predominant among the Aborigines. Consumption of alcohol among the Malays was low because this is prohibited by their religion, Islam. Drinking of alcohol especially the locally brewed 'samsu', is a tradition among the Aborigines, especially during festivals.

In terms of activities and exercise or sports, the Aborigines were more active and involved in manual work. This included jungle trekking carrying jungle produce such as cane, wood, herbs and durian fruits. They were also more involved in sports and exercises, probably because there are more young ones among the Aborigines compared to the Malays.

Most of the environmental and social factors affecting growth and health in the community are directly or indirectly related to nutrition⁶. By examining the food consumption pattern of the community and individual, one could interpolate their nutritional status and its relationship to disease and events in the community. In this study, household food frequency and individual's intake pattern were evaluated. In both communities, rice was their staple food and the main source of energy. The Aborigines also depend on tapioca (cassava) as a source of carbohydrate and energy because it is easily grown in their backyard^{3,7}. The majority of the Aborigines took tapioca or tapioca leaves at least once a week in their meal but less than 20% of Malays took it once a week. The frequency was about 30% among the Dusun community in Tuaran, Borneo⁸. Fish and eggs were the main sources of protein in the two communities. The aborigines ate fresh fish caught in nearby rivers and dams. Most of the Malays bought their fish or seafoods from the local market or traders who come daily to the village. The intake of sea foods was very little among the Aborigines. Some Aboriginal tribes have taboos on consumption of eggs. They believed that eggs may cause infertility⁴, but this taboo did not apply to this group because 64% of the household took it at least once a week. This is comparable to the Dusun community in Sabah (70%) but less than the Malays in this study (79%).

Meat was rarely taken by the Aborigines. Only 25% consume chicken once a week, 4% for beef and 7.5% for pork, compared to 35%, 46% and 0% respectively among the Malays. None of the Malays ate pork because it is prohibited by their religion. The meat intake was better than that of the Dusun Community in Sabah of which only 10% took chicken at least once a week and intake of other meats was irregular⁸. The Aborigines also hunt for wild boar, deer and mousedeer for food but the supply was very irregular and becoming scarce³.

The majority of the Aborigines and Malays took fruit and vegetables in their diet at least once a week, the frequency being more among the Malays. Most of the vegetables were grown in their backyard such as tapioca leaves or long beans, or collected from the jungle such as edible ferns and banana radish, but some vegetables such as cabbage, 'sawi' and carrot had to be purchased from traders. Fruits were mainly bananas and papayas that were planted in their farm as a cash crop. Sometimes they collect jungle fruit especially wild bananas. During the fruit season, they eat a lot of durians, rambutans, mangosteen and 'rambai' (*Boccaurea motlegana*) taken either from their orchard or from the jungle. Jungle fruits are a significant source of income especially for the Aborigines. Among the Malays, the fruits eaten either planted in their orchard or bought from a local market.

In term of the individual's intake pattern, the mean intake of calories, protein, fats, carbohydrate and iron was higher among the Malays. With the exception of carbohydrate and iron, the mean intake of calories, protein and fats were not statistically significant.

Conclusion

The study showed that the two communities, Aborigines and Malays who lived in the same environment were quite comparable in terms of socioeconomic status but different in terms of smoking and drinking habits as well as their dietary pattern.

Acknowledgement

This work was supported by a grant from the IRPA program no. 03 - 07 - 03 - 051. The authors gratefully acknowledge the support of the Department of Aboriginal Affairs and assistant science officers from Department of Community Health, Universiti Kebangsaan Malaysia for their assistance in collecting and analysing dietary data.

References

1. Department of Aboriginal Affairs. A brief note on the Orang Asli of Peninsular Malaysia and their administration. Government Press; 1972.
2. Robson P, Bolton J M, Dugdale A E. The nutrition of Malaysia aboriginal children. *The A J Clin Nutrition* 1973; 26 : 95 - 100.
3. Bolton J M. Food taboos among the Orang Asli in West Malaysia: a potential hazard. *The A J Clin Nutrition* 1972; 25 : 789 - 799.
4. Chen P C. Food habits and malnutrition: *Med J Malaysia* 1977; 31 : 170 - 174.
5. Davidson S, Passmore R, Brock J F, Truswell A S. *Human Nutrition and Dietetics*. Seventh edition. Churchill Livingstone, Edinburgh 1979.
6. Rona R J. Genetic and environmental factors in growth in childhood. *British Medical Bulletin* 1981; 37: 265-272.
7. Lin K G. Malnutrition among Semai children. *Med J Malaysia* 1988; 43: 318 - 326.
8. Chen P C. Ecological factors influencing the growth of the child. *Med J Malaysia* 1979; 34: 6-12.