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Nutritional assessment of rural villages and estates in Peninsular Malaysia: I Socio-economic profile of households*

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ABSTRACT

A nutritional study was carried out on six (five rural and one urban) low income groups in Peninsular Malaysia from 1992-1995. In this paper, the socio-economic data for the five rural groups - padi farmers, rubber smallholders, coconut smallholders, estate workers, and fishermen - are presented. With the exception of the estate workers, the sample was predominantly Malay, with an overall mean household size of 5.30. Household incomes were generally low, and 47% of all households had incomes that were below the poverty line income (PLI) of RM405. Based on this PLI, the prevalence of poverty was above 50% among the padi, rubber, coconut, and fishing households. Nevertheless, the study population appeared to be better off in terms of the other indicators examined. Poultry rearing, for example, was widespread in the padi, rubber, and coconut villages; 65% of all households owned at least one motorised vehicle, 53% owned a refrigerator, and 83% owned a television set. Furthermore, over 80% of all households had access to piped water, 96% had electricity supply, and over 90% had a flush or pour-flush latrine. In comparison to the 1979-1983 poverty villages study (Chong *et al.,* 1984), the households in the current study enjoyed better living conditions. Strict comparisons between the two studies, however, is difficult owing to the different criteria adopted in the selection of the study villages.

INTRODUCTION

In a rapidly developing nation such as Malaysia, a knowledge of the nutritional and health status of community groups is important to indicate how economic development has affected the health and nutritional well-being of its people. In addition, such data can provide a basis for any remedial actions aimed at improving community health.

Although there has been no shortage of recent studies on the status of community nutrition in Malaysia, large-scale and comprehensive studies are however uncommon. In this context, two

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such studies are worthy of mention: one known as the ICNND study on military and civilian populations (ICNND, 1964), and the other the Institute for Medical Research (IMR) study on the status of community nutrition of rural poverty villages (Chong *et al.,* 1984).

Since more than a decade has elapsed since the study of Chong *et al.* (1984), the present study was undertaken between 1992 and 1995 to examine the current status of nutrition of six low-income groups namely, padi farmers, rubber smallholders, coconut smallholders, estate workers, fishermen, and urban flat-dwellers in Peninsular Malaysia.

In this paper, the socioeconomic data for five of the six groups,[1] collected between 1992-1994, will be presented. The basic intention is to describe the socioeconomic situation of study households so as to provide a background for the understanding of the nutritional data which will be presented in subsequent papers.

Comparisons with the 1979-1983 study on rural poverty villages (Chong *et al,* 1984) will be made wherever relevant as it is envisaged that references will be made to the poverty villages study in subsequent papers. Such comparisons should be viewed with the understanding that not only is there a gap of ten years or more between the two studies, but also that the selection of villages in these two studies had been based on entirely different criteria. While the rural villages in the present study were selected for their predominant economic activity, selection of villages in the poverty villages study was based primarily on their poverty status.

METHOD

Each of the five sample populations was independently selected by multi-stage random sampling. Three groups, the padi farmers, the rubber-smallholders, and the coconut smallholders were selected from the Department of Agriculture's 1990 census. For each crop, the 80 districts in the Peninsula were arranged in ascending order according to the total cultivated area, and the upper median of 40 districts were taken to be the sampling frame. A 10% sample was then randomly picked from the 300 sub-districts (mukim) located in these 40 districts. In the final stage of sampling, the study villages were randomly selected from all the villages in the 30 selected sub-districts.

Based on past reports, it was estimated that approximately 600 households would be the sample size required in order for the prevalence of malnutrition to be detectable. This number was therefore used as a target in determining the number of villages selected for each of the low income group.

The fishing villages were selected from the 1991 list of Fishermen Associations of the Fishermen's Development Authority (LKIM). The Fishermen Association Areas of the east and west coast of the Peninsula were separately listed ranging from the area having the highest number of fishing villages to the area with the lowest number. Again, the areas in the upper median of each of the lists, 11 areas in the east coast and 14 areas in the west coast, were chosen

[1] The data for the urban low-cost flat dwellers have not yet been processed. The five groups discussed in this paper are all rural group

to be the sampling frames. The study villages were then randomly selected from all the fishing villages in these areas; the number of villages being determined by an estimate of 300 households required for the east coast, and 300 for the west coast.

The estates were selected from a list provided by the National Union of Plantation Workers. All the estates in this list were first stratified into small-sized estates (less than 500 hectares), medium-sized estates (500-1,499 hectares), and large estates (1,500 hectares and above). Random sampling was then carried out in each category, with the number of the estates determined by an estimate of 200 households required for each category.

Interviews were conducted by trained enumerators who were either locally based community workers or students in the B.S. (Nutrition and Community Health) Programme of Universiti Putra Malaysia. Whenever possible, the head of household or the spouse of the head of household was sought for interviewing. Socio-economic data collected included information on educational levels, income, occupation, crops planted, land ownership, and other material possessions. A checklist was used to collect data on frequency of food purchase/obtained. Data on health problems were collected for pregnant women, those aged 55 years and above, and children below seven years old.

In any one village or estate selected, interviews were conducted for all households, whether or not household members were involved in the economic activity for which the village or estate was chosen. Thus, for example, in villages selected on the basis of padi planting,[2] interviews were conducted for all households of the village, including those households that were not actually involved in padi planting. Nevertheless, data on food purchase, food intake and health were only collected for households classified as padi households.[3] This paper, however, presents the socio-economic data for all the households in each village, whether or not classified as being involved in the main economic activity of the village.

RESULTS AND DISCUSSION

The study villages were located across nine states in Peninsular Malaysia (Table 1). The padi villages were in Kedah (in the districts of Kuala Muda, Baling, and Padang Terap) and Kelantan (Tumpat, Macang). None were located in double cropping areas. Many of these areas faced the problem of lack of water for irrigation besides pests and weeds.

The rubber villages were in Johor (Muar District), Perak (Kuala Kangsar and Manjung), Kedah (Kuala Muda) and Kelantan (Pasir Mas); and the coconut villages in Johor (Batu Pahat), Perak (Hilir Perak), and Pulau Pinang (Sungei Petani Tengah and Selatan). The estates were in Johor (Batu Pahat), Melaka, Selangor, and Negeri Sembilan; while the fishing villages were in Perak (Lumut in the district of Manjung), Kedah (Kuala Kedah in the district of Alor Setar), and Terengganu (villages in the districts of Kuala Terengganu and Marang). These villages were

[2] For convenience, these villages will be referred to as padi villages. In the same way, rubber, coconut, and fishing villages will refer to villages selected for rubber, coconut, and fishing respectively.

[3] Defined as households where at least one member is involved in padi planting, or owns padi land, whether or not presently cultivated

located close to towns, and the fishermen in these villages were inshore fishermen.

Table 1. Location of the study villages and estates

State	District	Mukim	Villages
			PADI
Kedah	Baling	Tawar	Kg. Tawar, Kg. Charok Purun, Kg. Charok Akar, Kg. Padang Stol, Kg. Bukit
		Kupang	Kg. Padang Cina. Kg. landak Jaya. Kg. Hangus. Kg. Tok Soba. Kg. Bukit Hijau
	Padang Terap	Belimbing Kanan	Kg. Semeling. Kg. Mak Gak
	Kuala Muda	Sg. Petani	Kg. Telok
		Merbok	Kg. Sg. Pial A
Kelantan	Macang	Pangkal Meleret	Kg. Mengketil, Kg. Peltah, Kg. Tandak, Kg. Chano, Kg. Mata Air, Kg. Limau Hantu, Kg. Gaung, Kg. Jeram
		Hulu Sat	Kg. Kemuning, Kg. Penakab
	Tumpat	Jal	Kg. Bendang Pak Yong
			RUBBER
Kedah	Kuala Muda	Merbok	Kg. Batu Hampar
Perak	Kuala Kangsar	Sayong	Kg. Rambal Tujuh, Kg. Kerlebor, Kg. Tanah Lapan, Kg. Senawan, Kg. Sendayang
		Pulau Kamiri	Kg. Temin
Johor	Muar	Lenga	Kg. Liang Batu, Kg. Rencong. Kg. Paya Lempah, Kg. Batang Batu, Kg. Bukit Sedenak
		Bukit Kepong	Kg. Tui, Kg. Raja, Kg. Sawah Laku
Kelantan	Pasir Mas	Kangkong	Kg. Sg. Baroh Pial 1, Kg. Sg. Baroh Pial 2, Kg. Bendang Ikan, Kg. Bukit Budu
			COCONUT
Penang	Seberang Prai Tengah	Mukim 12	Kg. Sekolab Juru
	Seberang Prai Selatan	Mukim 1	Kg. Padang Lalang. Kg. Kepala Gajah
		Mukim 13	Kg. Paya Mahang
Perak	Hilir Perak	Bagan Dato	Kg. Pasang Api, Kg. Nipah, Kg. Balai Darat
Johor	Batu Pahat	Mukim 10	Kg. Baru
		Mukim 11	Kg. Dulang Tengah. Kg. Dulang Laut
		Mukim 12	Kg. Sg. Kluang, Kg. Bagan Laut, Kg. Sg. Merlong, Kg. Sg. Jambi, kg. Punggur Kecil
			FISHING
Perak	Manjung	Pulau Pangkor	Kg. Masjid, Kg. Teluk Kecil, Kg. Sg. Pinang Besar
Terengganu	Kuala Terengganu	Cabang Tiga Pulau	Kg. Duyung Besar, Kg. Duyung Kecil, Kg. Kelak Aya, Kg. Pulau Ketam
	Marang	Rusila	Kg. Paya, Kg. Kijing
Kedah	Kota Setar	Kuala Kedah	Kg. Tok Pasai, Kg. Baru

			ESTATES
Melaka			Lian Hoe Estate
Selangor	Gombak	Kuang	Ladang Bukit Lagong
Negeri Sembilan	Sepang	Bahau	Ladang Risda, Bk. Keramat
		Sg. Gadut	Ladang Seremban
Johor	Kluang	Bandar Tenggara	Ladang Pekan
		Layang-layang	Ladang Bukit Badak

Household Size and Ethnicity

The majority of households was Malay, with the exception of the estate sample which consisted of 61% Indian and 35% Malay (Table 2). Chinese households (2% of total) were negligible in number - found mainly in the coconut villages, and the estates; while those classified as others (2%) were mainly Javanese.

The overall mean household size was 5.3, with a wide range of 1 to 19 (Table 3). The median household size was 5 in padi areas and estates, 4 in rubber and coconut areas, and 6 for the fishing areas. The fishing areas also had the highest mean household size at 6.4 members per household. Except for the fishing areas, the household sizes were on the whole smaller than the average household size of 5.7 persons found in the 1979-1983 poverty villages study (Chong et al., 1984: 16).[4]

Table 2. Ethnic distribution in the study areas

	Ethnic Group									
	Malay		Chinese		Indian		Others		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%
Padi	1007	99.7	2	0.2	0	0	1	0.1	1010	100
Rubber	882	99.2	6	0.7	0	0	1	0.1	889	100
Coconut	470	82.0	34	5.9	3	0.5	66	11.5	573	100
Estate	112	34.7	13	4.0	197	61.0	1	0.3	323	100
Fishing	1263	98.6	15	1.2	0	0	3	0.2	1281	100
Total	3734	91.6	70	1.7	200	4.9	72	1.8	4076	100

Household Income

The mean household income of each group is given in Table 3, while Tables 4 and 5 present the income distribution among them. In 1993, the mean monthly gross household income in Malaysia was reported to be RM 1563 (Mid-Term Review of the Sixth Malaysia Plan, p 61). The income levels reported in the present study were far below this national mean. This is in agreement with the national income distribution pattern, in which one third of the bottom 40% of

[4] This study had covered two coastal fishing villages in Kelantan, two rice-growing villages in Johor, four rubber and padi villages in Kedah (Baling), and six riverine villages in Perak Tengah with rice, rubber, and prawning as main economic activities. The estate sector was not represented.

households are in the agricultural sector.

Table 3. Mean household size and income

	n	Mean household size	Median household size	Mean monthly household income (RM)	Median household income (RM)	Mean monthly per capita household income (RM)	Median monthly per capita household income (RM)
Padi	1001	5.3	5	486	333	101	71
Rubber	883	4.8	4	466	370	110	84
Coconut	568	4.7	4	625	431	150	106
Estate	322	5.6	5	829	700	162	140
Fishing	1280	5.9	6	630	500	118	90
All	4054[(1)]	5.3	5	574	450	120	90

[(1)] Households which reported no incomes are not included.

Table 4. Percentage distribution of households according to income

		Monthly Household Income (RM)				
	n	1-250	>250 - 500	>500 - 1000	>1000 - 1500	>1500
Padi	1001	36.4	32.5	20.9	5.9	4.4
Rubber	883	31.1	37.7	23.0	5.9	2.3
Coconut	568	20.8	36.3	28.2	7.6	7.2
Estate	322	5.0	20.5	49.7	18.3	6.5
Fishing	1280	14.8	39.8	32.4	7.8	5.2
All Groups	4054	23.8	35.5	28.3	7.7	4.7

Table 5. Percentage Distribution of households according to per capita income

		Monthly Per Capita Household Income (RM)				
	n	>0 - 42	>42 - 84	>84 - 150	>150 - 250	>250
Padi	1001	27.0	33.8	21.3	11.1	6.9
Rubber	883	16.3	33.7	28.2	16.4	5.3
Coconut	568	11.3	26.8	31.7	15.8	14.4
Estate	322	1.2	15.8	40.7	32.6	9.6
Fishing	1280	10.2	35.5	33.0	14.9	6.3
All Groups	4054	15.1	31.9	29.5	15.8	7.6

In general, the income levels in the padi and rubber areas were lower than the others (refer to Table 3). This is reflected in a comparison of mean as well as median incomes. Relative to the padi and rubber areas, the households in the fishing areas had a higher mean income, which was almost similar to the income level in the coconut areas. The fishermen's per capita mean was lower, however, and closer to the households in the padi and rubber areas. The higher mean household income but lower per capita mean income reflects the presence of bigger households

with more household members earning. The estate group had the highest mean and median incomes, while households located in coconut villages were intermediate between the estates on the one hand, and the rubber, padi, and fishing villages on the other.

In 1993, the poverty line income (PLI) for a household of 4.8 in Peninsular Malaysia was RM405 (Mid-Term Review of the Sixth Malaysia Plan, pp 58-59), while the hard-core poverty line income was defined as half of that. Using these absolute criteria, 47% of the study households were under the poverty line, with 31.9% categorised as poor, and 15.1% categorised as hard-core poor (Table 5, Figure 1).[5] In comparison to the 14.9% incidence of rural poverty, and 3.7% of rural hardcore poverty in Peninsular Malaysia in 1993, the study population consisted of a substantially higher proportion of poor households.[6]

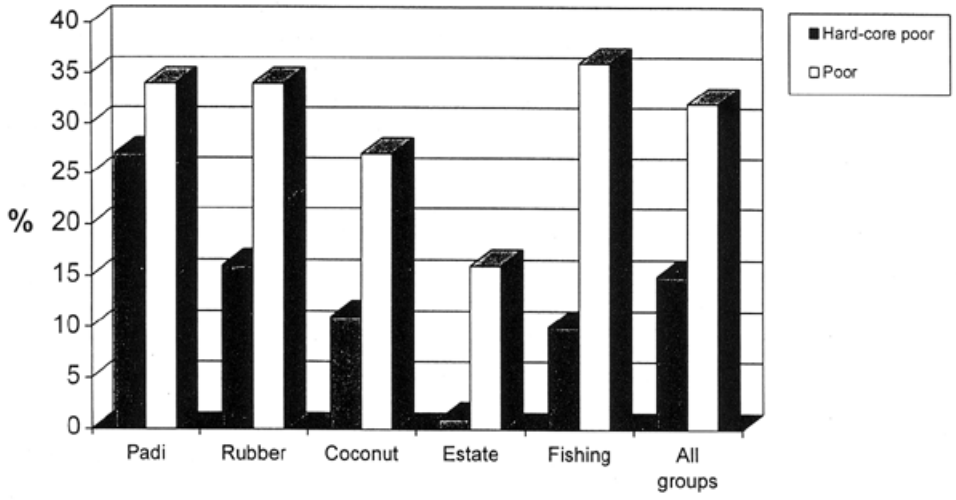

Figure 1. Distribution of poor and hard-core poor households

In the present study, the prevalence of poverty was the highest in padi areas (61%), followed by rubber areas (50%), and then by fishing areas (46%). The estate households were on the whole better off, with only 17.0% under the PLI. The prevalence of poverty in the coconut areas was 38%, higher than the estates, but lower than the padi, rubber, and fishing areas.

Occupation of Heads of Households

Table 6 summarizes the main occupations of the heads of households among four of the study groups. In each of the group, the majority of household heads have occupations which were related to the main economic activity for which the village was selected, which were mainly agricultural. In the padi areas, however, a large proportion of heads of households were engaged in manual work (17%). The other non-agricultural occupations were in factory work, petty

[5] Based on the PLI of RM405 for a household size of 4.8, the per capita PLI would be RM84.38, and the hard-core per capita PLI would be RM42.19.

[6] In the poverty villages study (Chon et al., 1984:16), 78% of all the households studied were under the poverty line income of RM290 per month per household at that time. But the high prevalence of poverty was to be expected since poverty was the basis of selection.

trading, and government employment.

In the fishing areas, only 1% of heads of households were engaged in non-fishing agricultural occupations. Those who were neither involved in fishing nor agriculture were manual workers (16%), petty traders (14%), government employees (7%), and factory workers. In the estates, all but four households had at least one member who is an employee of the estate. The household heads were primarily labourers (64%), with small proportions who were drivers (11%), supervisors (5%), factory workers (3%), and others (17%) who included skilled workers, mechanics, typists, clerks, petty traders, kindergarten teachers, child minders, and policemen.

Livestock Rearing

Livestock rearing was widespread in the padi, rubber and coconut areas, where 60-80% of households reared some kind of livestock (Table 7). In estates, livestock rearing was lowest, with only 32% of households rearing livestock; primarily because livestock rearing was discouraged by some estate managements.[7] Livestock rearing was also low in the fishing areas (41%). This may be due to the proximity of the fishing villages to urban areas, and also the crowded nature of these villages.

Table 6. Occupations of heads of households[1] among four study groups

Occupation	Padi (n = 1010)		Rubber (n = 889)		Coconut (n = 573)		Fishing (n = 1281)	
	No.	%	No.	%	No.	%	No.	%
Related to main economic activity of study[2]	297	29.4	414	46.6	288	50.3	-	-
Agriculture related[3]	182	18.0	74	8.3	50	8.7	12	0.9
Fishing	22	2.2	6	0.7	27	4.7	572	44.7
Manual workers[4]	168	16.6	107	12.0	14	2.4	201	15.7
Factory workers	9	0.9	36	4.0	5	0.9	11	0.9
Petty traders	86	8.5	68	7.6	31	5.4	173	13.5
Govt. employees	69	6.8	35	3.9	31	5.4	84	6.6
Housewives	27	2.7	24	2.7	18	3.1	31	2.4
Not working[5]	150	14.9	125	14.1	109	19.0	197	15.4

[1] As defined by the respondent. There may be households where the heads are not involved in the main economic activity of the study area, but other household members are.
[2] Occupations related to padi in padi areas, rubber areas, and so forth.
[3] Occupations related to agriculture other than the main economic activity of the area.
[4] Includes skilled and unskilled workers, drives, security guards, contract workers.
[5] may be for a variety of reasons, including old age, sickness, or unemployment.

Among the households which reared livestock, the most common livestock reared was chicken, and sometimes ducks, with most households (96% of those who reared chickens or ducks) reporting that they reared these for their own household consumption only. Poultry rearing had

[7] To the extent that livestock rearing can potentially contribute to the status of community nutrition, estate managements should be persuaded to review this policy.

also been very common in the 1979-1983 poverty villages study. Excluding the fishing villages in that study, it was found that about 90% of all households reared poultry (Chong *et al.*, 1984:20); usually about 10-20 per household, and primarily for self-consumption.

In both the current study as well as the poverty villages study, the majority of households did not rear goats, cows, or buffaloes. Among those who did so in the present study, about 40% reared these livestock for the market rather than for their own use or consumption. The buffalo is of specific significance to padi households as it is used to plough the padi fields, but in padi areas, out of the 27% who reared cows and buffaloes, only 3% reared buffaloes, while 26% reared cows. Nevertheless, the rearing of buffaloes and cows was more predominant in padi areas compared to the other areas. Fresh-water fish rearing was rare, and all in all, only ten households had fish ponds, five of which were in rubber areas. Of these ten households, eight were engaged in fish rearing for the market.

Table 7. Percentage of households which rear livestock

	n	Households rearing livestock (1)	Type of livestock reared				
			Cow/Buffalo	Goat	Chicken/Duck	Other(2)	Fish
Padi	1010	60.9	27.2	8.6	50.2	2.4	0.4
Rubber	889	78.7	13.0	7.1	75.6	2.0	0.6
Coconut	573	71.1	3.8	1.9	69.5	2.1	0.2
Estate	323	31.8	2.2	3.1	30.3	0.3	-
Fishing	1281	40.7	1.2	2.2	39.4	0.9	-
All Groups	4076	57.4	10.7	4.9	53.4	1.6	0.2

(1) Households which rear any livestock at all
(2) Geese, turkey, pig, sheep, quail, rabbit

Vehicle Ownership

The motorcycle was the most widely owned vehicle, being generally more affordable than a car or van, but significantly more useful than a bicycle (Table 8). This may be observed from the generally low proportions of households which owned at least a car or van, in contrast to the much higher proportions which owned at least a motorcycle. (For example, only 10% of households in rubber villages owned at least a car or van, whereas 75% of such households owned at least a motorcycle, car, or van.) The percentage of households which owned at least a bicycle ranged from 79% in the fishing areas to 96% in the coconut areas.

Relative to the other groups, the proportion of households in the fishing group owning at least a motorcycle was lower (50%). This could mean that the fishermen were less able to afford motorcycles, or that they were in less need of them, being nearer to the towns. Nevertheless, a larger proportion of fishing households owned motor-boats (8.6%) compared to the other groups (ranging between 0.3 to 2.4%), and also compared to the other groups owning either a tractor or lorry (0.3-2.1%). A small wooden boat fitted with an outboard motor is relatively inexpensive compared to a lorry or a tractor, and may be very useful in villages which are located across a

river or estuary away from the town. In such cases, the motorboat may be used as a means of transport to ferry villagers besides being used for fishing activities, and may be more comparable to a car, van, or even motorcycle, rather than a lorry or tractor.

In comparison, vehicle ownership among the households in the 1979-1983 poverty villages study was generally lower. In the earlier study, ownership of motorcars ranged from 1% to 5% in the four study areas, motorcycles from 7% to 50%, and bicycles from 27% to 83% (in the fishing villages). In the fishing villages, 7% was found to own motorboats in the poverty villages study, as compared to 9% in the current study.

Table 8. Ownership of vehicles

	n	Percentage of households which own						
		Car/Van	Car/Van/ Motorcycle	Car/Van/ Motorcycle/ Bicycle	Lorry/ Tractor	Motor-boat	Any motorised vehicle[1]	None[2]
Padi	1010	13.6	59.8	81.9	1.9	0.7	60.3	18.1
Rubber	889	9.8	74.8	88.2	1.3	0.7	75.0	11.8
Coconut	573	17.1	74.7	95.6	2.1	2.4	76.1	4.2
Estate	323	7.7	75.9	82.7	0.3	0.3	76.2	17.3
Fishing	1281	7.2	50.3	79.4	0.9	8.6	54.5	19.8
All Groups	4076	10.8	63.4	84.5	1.4	3.4	65.2	15.3

[1] Households which own at least one motorized vehicle
[2] Households which do not own any vehicle, not even a bicycle

Household Amenities

The refrigerator, which is taken for granted in most urban Malaysian households, serves as one indicator of the quality of life. Overall, 53% of the households in this study owned a refrigerator. Its ownership was more widespread in the coconut, estate, and fishing areas, where more than 50% of households had refrigerators, compared to the padi and rubber areas, where less than 50% of households had them (Table 9).

Ownership of washing machines, at 30% of households for all groups, was not as widespread as the refrigerator. A similar pattern however was observed among the various groups, with higher proportions of households in the coconut, estate and fishing areas having washing machines compared to the padi and rubber areas. In the padi and rubber areas, more than 50% of households neither had a refrigerator nor a washing machine.

Table 9. Ownership of household amenities

	n	Percentage of households which own					
		Refrigerator	Washing Machine	Both[1]	Neither[2]	TV or Radio	TV
Padi	1010	37.5	16.5	14.9	60.8	85.2	73.0
Rubber	889	45.1	16.5	14.4	52.8	88.1	78.0
Coconut	573	71.0	42.6	40.0	26.4	97.0	92.1

Estate	323	73.1	30.7	26.9	23.2	97.2	94.7
Fishing	1281	57.8	43.2	36.9	36.0	93.4	88.5
All Groups	4076	53.1	29.7	26.2	43.4	91.0	83.4

(1) Households which own both a refrigerator and a washing machine.
(2) Households which own neither a refrigerator nor a washing machine.

The above ownership pattern may be indicative of the rural-urban disparity, as the coconut and fishing villages were located closer to urban centres, where there is a greater tendency for the refrigerator, and to a lesser extent the washing machine, to be viewed as a necessity, perhaps due to greater exposure to sales promotional activities, including hire-purchase sales terms. The washing machine, on the other hand, is still generally viewed, although increasingly less, as a luxury good.

In comparison, practically none of the households in the 1979-1983 poverty study owned a refrigerator or washing machine (Chong *et al.*, 1984:19). In this earlier study, radios and televisions were found to be more widely owned than refrigerators and washing machines: 20-42% of households in the various study areas were found to own television sets and 26-76%, radios. In the current study, 91% of all households owned a radio, a television, or both. The proportions of households having radios and televisions were high for all groups, although, again, relatively lower among the households in the padi and rubber areas.

Housing Indicators

Several indicators reflecting the housing situation are shown in Table 10. With the exception of the estate group whose houses belonged to their employers, the majority lived in their own houses. This is similar to the 1979-1983 poverty villages study, where more than 90% of households were found to live in their own houses (Chong *et al.*, 1984:19). In this earlier study, the fishing villages were all traditional Malay fishing villages; whereas in the current study, 20% of households in fishing areas lived in squatter houses.[8] This reflects the differences in the fishing villages studied, for example, in the present study, the fishing village at Kuala Kedah was located at the port, on government land.

Except for the houses in the estates, most of the houses were made of wood, or a combination of bricks and wood, with a zinc roof. The use of bricks is in contrast to the poverty villages studied in 1979-1983, where houses were reported to be made of wood and bamboo only, with a zinc or attap roof. In the current study, some of the houses had an asbestos ceiling or a concrete roof, with the majority of the estate houses being made of brick rather than wood, with asbestos ceilings, and tiled or concrete roofs.

The overall mean number of bedrooms per household member was 0.49 (n=4067), that is, on average, a bedroom was shared between two persons. There were, however, sizable proportions of houses which did not have bedrooms. If the number of bedrooms per household member is used as an indicator of overcrowding, then residents in padi, rubber, and fishing areas tended to

[8] It should be noted that 'squatter house' and 'own house' are not exclusive categories, that is, 'own house' can also be 'squatter house'.

live in more crowded houses with 28%, 29% and 26% respectively having 0.2 or less bedroom per household member (including households with no bedrooms), whereas only 15% of houses in coconut areas and 7% of houses in estates had 0.2 or less bedroom per household member.

Social Amenities

Unlike the predicament encountered in the 1979-1983 poverty villages where piped water was only available in one village (Chong *et al.,* 1984), in the current study, piped water was available in all the villages, and in 75% of all households (Table 11). Likewise, none of the 1979-1983 poverty villages had electricity supply (Chong *et al*, 1984:21), whereas in the current study, all villages, and 96% of all households, had electricity (Table 12).

In general, however, the supply of piped water by the authorities has not achieved as wide a coverage as the supply of electricity.[9] Furthermore, although the overwhelming majority of estate households had piped water supply, this may be water collected and treated by the estate managements rather than the water authorities.

Table 11. Water supply

	Percentage of households					
	Padi	Rubber	Coconut	Estate	Fishing	All
Primary water Supply for drinking:						
Piped water in the house	60.5	68.0	68.9	92.9	88.0	74.5
Piped water from elsewhere(1)	5.9	6.5	6.6	1.9	7.3	6.3
Well water	33.1	17.1	0.9	-	4.6	13.5
Hill-water/Rain water	-	7.3	23.6	-	-	4.9
River/Canal/Pond	0.5	1.0	-	5.3	0.1	0.8
n	1010	872	572	323	1278	4055
Secondary water Supply for drinking:						
Piped water from elsewhere(1)	4.2	4.5	1.1	90.0	4.1	5.6
Well water	91.6	61.8	11.1	10.0	87.8	66.1
Hill-water/Rain water	0.5	2.2	87.8	-	-	19.2
River/Canal/Pond	3.7	31.5	0	-	8.2	9.1
n	190	89	90	10	49	428
Primary water Supply for washing:						
Piped water in the house	59.7	67.4	72.1	92.6	86.9	74.3
Piped water from elsewhere	5.7	5.7	7.0	2.2	7.4	6.1
Well water	34.0	17.6	3.3	-	5.6	14.5
Hill-water/Rain water	-	6.9	16.8	-	-	3.8
River/Canal/Pond	0.6	2.4	0.7	5.3	0.1	1.2

[9] Only a small proportion had to use generators for electricity.

n	1010	973	570	323	1278	4054

(1) Mostly stand-pipes or from a neighbouring house/building

Piped water was generally available to households in fishing areas, whether this was piped to the house (88%) or not (7%);[10] this again reflects on the more 'urban' character of the fishing villages. In the padi, rubber and coconut areas, however, although the majority of households had access to piped water (61%, 68%, and 69% respectively), there were sizable proportions that resorted to the use of well water, rain water, spring water from the hills, and even water from rivers, canals, and ponds, for drinking as well as washing.

Table 12. Electricity, fuel, toilet and rubbish disposal

	Percentage of households					
	Padi	Rubber	Coconut	Estate	Fishing	All
With electricity supply(1)	97.1	92.8	97.0	98.8	97.4	96.4
n	1010	889	572	323	1281	4075
Fuel for cooking						
Electricity/gas(2)	71.7	72.5	87.4	81.4	91.7	81.1
Wood	25.0	23.1	3.8	9.0	2.4	13.2
Kerosene	3.2	3.6	2.4	3.1	4.2	3.5
Other types(3)	0.2	0.8	6.3	6.5	1.6	2.1
n	1010	888	572	323	1280	4073
Type of toilet:						
Flush	7.0	4.1	2.4	69.3	4.1	9.8
Pour-flush	84.3	83.8	95.8	29.7	83.5	81.2
Pit	1.5	2.4	1.0	-	1.6	1.5
Bucket	0.3	0.1	0.2	0.9	0.5	0.4
River	2.9	4.3	0.2	-	6.6	3.7
Other(4)	4.1	5.4	0.3	-	3.6	3.4
n	1010	887	572	323	1281	4073
Rubbish disposal:						
Govt. collection	1.4	1.6	1.6	96.0	25.0	16.4
Burn	87.6	82.6	91.4	3.7	54.2	69.9
Bury	8.5	8.8	3.1	-	1.6	5.0
Throw (river)	1.0	4.2	3.7	0.3	13.3	5.9
Throw (anywhere)	1.5	2.8	0.2	-	5.9	2.9
n	1010	887	572	323	1281	4073

[10] Rubber hose connection from stand-pipes to the house might also have been mistakenly interpreted as ' pipes water in the house'.

(1) Includes generators
(2) Usually, electricity refers to the use of rice-cookers.
(3) Mostly charcoal and coconut husk.

For cooking fuel, the majority of households used a combination of electricity and gas, usually electricity for cooking rice and gas for cooking other foods. Nevertheless, there were substantial proportions of households, particularly in the padi and rubber areas, that relied on wood, and to a lesser extent kerosene, as fuel. In the 1979-1983 poverty villages, firewood was reported to be the most common cooking fuel used.

The overwhelming majority of households in the current study have pour-flush latrines, except for the estate households which were equipped with flush latrines. It is cause for concern, however, that there were still households which did not have toilets,[11] particularly in view of the existence of the Ministry of Health's toilet construction programme in the rural areas. Nevertheless, the 91% with pour-flush or flush latrines was favourable compared to a range of 9% to 51% of the households with pour-flush latrines in the 1979-1983 poverty villages study (Chong *et al.*, 1984).

In terms of garbage disposal, there is not much difference between the 1979-1983 poverty villages and the current study, as most households in both studies resorted to burning. In the current study, the estate households had a rubbish collection service, but in the other study areas, rubbish, if not burnt, was thrown into the river, or disposed of elsewhere.

CONCLUSION

The five groups represented in this study belonged largely to the low-income category, with a large proportion of the households below the poverty line. Nonetheless, the study population as a whole fared better in terms of household possessions and other indicators. Livestock rearing was fairly widespread, although this was limited primarily to chickens and ducks, rather than the larger farm animals. An average household owned a motorcycle and a television set, while one in two households owned a refrigerator. Most households owned the houses that they lived in, which more often than not were constructed of wood, or a combination of brick and wood, with a zinc roof.

Electricity was generally available, but treated piped water was lacking in some areas. Gas was widely used as fuel, although about a quarter of the households in rubber and padi areas relied on wood. The predominant type of toilet was the pour-flush latrine, and the most common method of rubbish disposal was by burning.

Comparing the groups, the estate group appeared to be the most well-off, with higher income levels, and also in possession of better housing indicators and household amenities. Nevertheless,

[11] Most of those coded as 'other' had actually responded 'everywhere' in answer to a question on the type of toilet.

the estate group did not own the houses that they lived in. For rural agricultural households, the availability of land may enable the growing of vegetables and fruits, or the gathering of edible plants, and livestock rearing, which make a crucial difference in the quality of life when income levels are low.

An urban household with a similar level of income will not have recourse to these 'safety margins' and, in that sense, will be worse off. We may consider the fishing households in this light as the fishing villages were located close to urban centres and ports or jetties. The fishing households had income levels comparable to the other groups, but they were distinctly worse off in terms of livestock rearing and motorcycle ownership, with a higher proportion living in wooden (rather than brick) houses. Applying these indicators, it would appear that the impact of poverty on fishing households would be more acutely felt.[12]

In comparison to the 1979-1983 poverty villages study, the households in the current study generally had much better socioeconomic status and living conditions. This holds true for all the indicators investigated, except perhaps for livestock rearing, and particularly striking was the widespread access to social amenities such as electricity supply and piped water.

Nevertheless, comparability of the results of the two studies is restricted by the different criteria adopted in the selection of the villages in these two studies.

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[12] This is of course not denying that there were fishing households which were well-off

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