

# Ascariasis: Beliefs and practices of a rural Malay community

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## INTRODUCTION

IN RURAL West Malaysia, the problem of intestinal helminthiasis is very considerable. Heyneman et al. (1967) observed that 94% of the residents of an island off the east coast of West Malaysia, Pulau Tioman, were positive for one or more helminth species. They noted that the percentage of *Ascaris lumbricoides* infections was the highest, being 89% compared with *Trichuris* (57%) and hookworm (31%) infections. In an effort to determine how rural Malays are attempting to control and to prevent the commonest intestinal helminthiasis, ascariasis, and in an effort to understand their reasons for these measures, the beliefs and practices of a rural Malay community were studied. The purpose of this paper is to present these beliefs and practices and to discuss their implications for public health programmes aimed at rural Malays of similar communities.

## PROCEDURE

### STUDY AREA AND POPULATION

A rural Malay community situated in the northern part of Kedah State, West Malaysia, was selected. It consisted of 54 households spread out on both sides of an earth track that passed through the valley. The

community was about five miles from the nearest metalled highway – the Asian Highway linking Malaysia with Southern Thailand – and was linked to it by a narrow single-laned earth track. The nearest government health centre, which had two resident doctors, was seven miles away in a small town which had one private practitioner and three Chinese drug stores. No scientifically trained medical and health personnel had been into the study area to carry out any public health activities. None of the households had any latrines, all residents resorting to the bushes for the act of defaecation. There were 283 persons, all of the Islamic faith, distributed among the 54 households. The two chief occupational activities were padi farming and rubber tapping. The modal range of income a month was Malaysian \$60.00 to \$79.00, 65% of households earning an income of less than Malaysian \$80.00 a month. Half (50.0%) of the heads of households and 59.3% of the housewives had never had any formal education and were illiterate. The community selected was thus a relatively remote one, still following traditional beliefs and practices.

### DATA COLLECTION

The data were collected by the writer assisted by a trained interviewer. Three methods were utilised in

**TABLE I**  
**DISTRIBUTION OF BELIEFS ABOUT THE CAUSATION OF ASCARIASIS**

Belief about the causation of ascariasis	Number and % of respondents mentioning belief	
1. Consumption of fish	36	( 66.7%)
2. Consumption of mature coconuts	10	( 18.5%)
3. Consumption of eggs	10	( 18.5%)
4. Consumption of peanuts	8	( 14.8%)
5. Weakness of the body	7	( 13.3%)
6. Consumption of large quantities of sugar and sweets	5	( 9.3%)
7. Consumption of unripe fruits	1	( 1.9%)
8. Irregular meals	1	( 1.9%)
9. Consumption of "dirty" food*	1	( 1.9%)
10. Micro-organisms (kuman2)*	1	( 1.9%)
TOTAL	80	(148.4%)

\*Both beliefs were mentioned by one respondent, the average number of items mentioned being 1.48 per respondent.

the data collection, and this served as a cross-check in respect of several of the items.

- (i) Interview with key personnel — Key personnel in the community such as the local leaders (**penghulu**, **ketua kampung**, members of the **Jawatan-kuasa Gerakan Maju**) and traditional medicine-men (**bomoh**) were interviewed. These interviews did not follow any set pattern.
- (ii) Interview with housewives — Each housewife was interviewed in her own house. The interviews were conducted in Malay and were standardised by using a previously prepared list of questions. During the course of the interview, each housewife was shown a specimen bottle in which were mounted three *Ascaris lumbricoides* worms. She was asked if she had had personal experience with such worms — whether any members of her family had been known to expel similar worms. In addition, she was asked questions in relation to her beliefs about the causation of ascariasis and her practices in regard to treatment and prevention.
- (iii) Direct observations — Inspections *in loco* were made of sources of therapy to check the availability of the treatments mentioned by key

personnel and housewives. In the process, samples of materials used, therapeutically and/or prophylactically, were obtained from the three sources available to the villagers — drugs from the government health centre, drugs from the Chinese drug stores, herbal remedies and talismans from the traditional medicine-men (**bomoh**)

## OBSERVATIONS

### BELIEFS ABOUT CAUSATION

Table I shows the frequency distribution of beliefs about the causation of ascariasis. A total of 80 items was mentioned by the 54 respondents. The average number of items mentioned was 1.48 per respondent. The most common belief (mentioned by 66.7% of the respondents) was that ascariasis is the result of the consumption of fish. Some implicated only freshwater fish, **ikan darat**, while others believed that sea fish, **ikan laut**, as well as freshwater fish were the cause of ascariasis. Salted as well as freshly caught fish was included in both the above categories. Ten of the respondents (18.5%) believed that the consumption of mature coconuts was a factor. A similar number (18.5%) implicated eggs, while eight (14.8%) believed that the consumption of peanuts was

**TABLE II**  
**DISTRIBUTION OF TREATMENTS SOUGHT BY 52 HOUSEHOLDS**

Type of treatment sought	Number of households	% of households
1. "Modern" drugs alone:	(30)*	(57.7)*
(i) Government health centre	10	19.2
(ii) Chinese drug stores	18	34.6
(iii) Both of the above	2	3.9
2. Both "modern" and traditional treatments:	(20)*	(38.5)*
(a) with "modern" as first choice:		
(i) Govt. health centre	2	3.9
(ii) Chinese drug stores	4	7.7
(b) with traditional as first choice:		
(i) Village herbs	4	7.7
(ii) Talismans	10	19.2
3. Traditional treatments alone:	(2)*	(3.9)*
(i) Village herbs	1	1.9
(ii) Talismans	1	1.9
(iii) Both of the above	0	0.0

Two households were excluded since their members had had no experience of ascariasis.

\*Sub-totals are given in parenthesis.

another factor. All four of these food items are utilised in the cooking of a side dish known locally as *lauk*. Fish and the milk of mature coconuts are the basic ingredients of such side dishes. Crushed peanuts and eggs may occasionally be added. The local Malays have an expression which they direct at children who ask for a helping from such side dishes, "*makan lauk nanti chaching!*"

("If you take these side dishes, surely you will have worms!").

Seven (13.0%) of the respondents mentioned weakness of the body, *tidak sehat*, as another cause of ascariasis. The local Malays have noted that ascariasis is most commonly a disease of children who may expel as many as 50 worms on treatment. They have also noted that it is the weak and sickly child who tends to expel numerous worms – even occasionally expelling one or two via the naso-oral passages. They note that adults, who are naturally stronger than children, do not exhibit such phenomena presumably since they are strong. On the other hand, since children are generally weaker, it is not surprising to note that ascariasis is a paediatric

disease and hence weakness itself is an important causative factor.

Only two (3.8%) of the items mentioned – the consumption of "dirty" food and micro-organisms, *kuman-kuman* – can be included as causative factors in the light of modern parasitological knowledge about ascariasis. Both these items were mentioned by the same respondent, a 30-year-old woman. Her husband was a 35-year-old rubber tapper. Neither she nor her husband had had any formal education. However, they had four school-going children, the eldest of whom was a 15-year-old boy attending a secondary school in town. Obviously, some of the concepts he had acquired had been passed on to his parents.

#### TREATMENT SOUGHT

Fifty-two (96.3%) of the households acknowledged that they were familiar with *Ascaris* worms, some member having expelled worms similar to those exhibited in the specimen bottle. As shown in Table II, a total of 30 (57.7%) of the 52 households used only "modern" drugs to treat their members, two (3.9%) used only traditional treatments and 30 (38.5%) used both "modern" drugs as well as traditional treatments.

PIPERAZINE  
from  
GOVT. CLINIC:

PATENT MEDICINES  
from  
CHINESE DRUG STORES:



Fig. 1: Samples of "modern" anthelmintics obtained from the local government health centre and local Chinese drug stores. The three on the left (Nos. 1, 2 and 3) are piperazine preparations while the last (No. 4) contains santonin.

(a) "Modern" drugs.

As shown in Table II, a total of 50 (96.2%) of the households used "modern" drugs either alone (57.7%) or in combination with traditional treatments (38.5%). These are obtained either from the government health centre or bought from urban Chinese drug stores. Table III details their local source, their commercial names (by which they are known in the village), their chemical composition, and the approximate cost of a dose of each drug for a child of four years of age. The first three drugs listed all contain piperazine salts, while the last contains santonin, a relatively dangerous drug. Figure 1 shows samples of these "modern" drugs obtained from the local government health centre and from local Chinese drug stores.

The "modern" drugs are used when parents perceive that their children have signs and symptoms believed to be due to worms — poor appetite, distended abdomen, diarrhoea or paleness. Anything from one to 50 worms may be expelled.

(b) Combination of "modern" and traditional treatments.

As shown in Table II, six (11.6%) households used "modern" drugs as the first line of treatment, backing this up with traditional treatments — two households using village herbs and four relying on talismans as secondary boosters to the "modern" drugs. The talismans used in these instances were used in the belief that their magical properties would prevent *Ascaris* worms — stimulated by anthelmintics — from rising and appearing via the naso-oral passages.

A total of 14 (26.9%) households elected to use traditional treatments as the main therapeutic measure, conceding that "modern" drugs were to be used as supports only after the traditional treatments had been tried.

(c) Traditional treatments.

As shown in Table II, only two (3.9%) households used traditional treatments alone. One housewife treated her children with an indigenous herbal remedy while the other used talismans known locally as *tali chaching*.

TABLE III  
THE "MODERN" DRUGS USED

Source	Commercial name	Chemical composition	Approximate cost of a recommended dose*
1. Government health centre	—	Piperazine citrate (equivalent to 750 mgm piperazine hydrate per 5 ml.)	Free
	(a) "Antepar"	Piperazine citrate (equivalent to 750 mgm piperazine hydrate per 5 ml.)	\$0.60
2. Chinese drug stores	(b) "Ridto"	Piperazine 550 mgm per fluid drachm.	\$0.50
	(c) "Flower cakes"	Santonin 0.33% Phenolphthalein 0.33% Colour Q.S. Saccharum ad.	\$0.20

\*The approximate cost is the retail price, in Malaysian dollars, of the dose recommended by the manufacturers for a four-year-old child, where one Malaysian dollar is equivalent to US 33 cents.

The same herbal remedy was used by a total of seven households. It is obtained from the roots and leaves of the sweet sop, *Anona squamosa*, locally known as *nona sri kaya*. Corner (1952) notes that the *Anona squamosa* is common in Malaya. The fruit (Figure 2), which is edible, is set with knobby, separable bulges and is light green in colour. The tree is between ten and 20 feet high. An alkaloid, anonaine, has been found in this plant, and the leaves are used in South America and Gambia as an insecticide and to prevent bed-bugs (Irvine, 1961). Neal (1965) records that in the Philippines, the plant is believed to be efficacious against witchcraft. The root and bark of a related species, *Anona senegalensis*, is used as a vermifuge in Northern Nigeria, for dysentery and diarrhoea in Senegal, and as an antidote for snake-bite in Central Africa (Irvine, 1961).

A prescription for the herbal remedy *nona sri kaya*, as used for the treatment of intestinal worms by the Malays in the community studied, is given below: "Take the bark of the roots and the leaves of the *nona sri kaya* and boil them. When sufficiently

cool, bathe the sick child with it, and let the worms be expelled."

Burkill and Mohamed Haniff (1930), Gimlette and Burkill (1930) as well as Gimlette and Thomson (1939) have mentioned several Malay medicines for intestinal worms. Some of these, like the herbal remedy described above, are used externally, while others are taken internally. Burkill and Mohamed Haniff (1930) describe one vermifuge taken internally, it being made from garlic, the root of *Tinospora crispata* and coarse salt. The three ingredients are ground to a fine pulp, strained after steeping in water, and the fluid is given to the child to drink on three successive days. However, none of the several medicines described by the above authorities were in use within the community studied.

#### PREVENTION PRACTISED

Based upon their beliefs about the causation of ascariasis, as shown in Table I, the primary preventive measure practised was dietary taboos against the foods listed. Thus foremost amongst these foods were



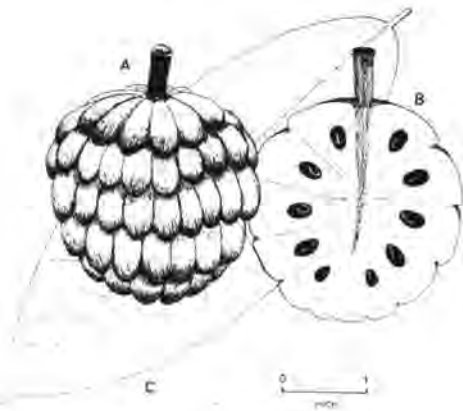


Fig. 2: *Anona squamosa*: A, the fruit. B, longitudinal section of the fruit. C, a leaf.

side dishes, known locally as *lauk*, containing fish, milk of mature coconuts, peanuts and eggs. The consumption of large quantities of sugar and sweets were also considered taboo for children although small quantities were permitted.

Other than such taboos, 24 (44.4%) of the 54 households used talismans as a preventive measure against ascariasis. These talismans were obtained from the traditional medicine-man, the *bomoh*. Figure 3 shows a pre-school child with a talisman round his neck. In the little black cloth bundle is a piece of paper inscribed with magical signs or some koranic text over which magical incantations have been pronounced. These talismans purport to protect toddlers from the unwelcome attention of *Ascaris* worms and are also reputed to prevent worms that develop in the bodies of weak children from rising and leaving via the naso-oral passages. Talismans for other diseases and other purposes were also found, but these will not be included in this paper.

With the exception of the household that mentioned the consumption of "dirty" food and micro-organisms as causative factors, none of the households mentioned any measures even remotely related to the sanitary disposal of infected human faeces or the encouragement of satisfactory hygienic habits on the part of children such as the washing of hands before the handling of food. On the other hand, all the 54 households admitted that human faeces were indiscriminately disposed of behind any bush, scrub or other vegetation that provide sufficient privacy for the act of defaecation. In the case of children, the act was performed in the immediate vicinity of the

dwellings, and it is here that soil contamination is most dangerous since the yard or garden is where they play and thus acquire *Ascaris* ova.

## DISCUSSION

The most common belief among the community studied was that ascariasis is caused by children eating a side dish *lauk*, containing fish, the milk of mature coconuts, peanuts and eggs. In spite of their unscientific beliefs regarding causation and their consequently futile attempts at prevention, 50 (96.2%) of the households used piperazine or santonin preparations for treatment. Piperazine salts are relatively safe since piperazine narcotises *Ascaris* worms without causing stimulation and therefore the danger of obstruction or perforation is minimal. Santonin, once widely used as an anthelmintic in ascariasis, may produce violent gastro-intestinal irritation and severe disturbances involving the central nervous system in therapeutically effective doses. DiPalma (1965) notes that the use of santonin is no longer justified.

The adoption, by rural Malays, of "modern" drugs in the treatment of ascariasis makes the task of health education much easier. The evidence indicates that village herbs are being replaced by the truly effective "modern" drugs. The rural Malay undoubtedly recognises their frequently dramatic efficacy, reporting that as many as 50 worms may be expelled upon their use. However, from the preventive point of view, anthelmintic treatment alone, unless carried out on the whole population simultaneously and repeatedly, will be ineffective since repeated infections will occur from contaminated soils. The infective ova of *Ascaris lumbricoides* are chiefly transmitted from hand-to-mouth by children whose hands have come in contact with contaminated soil or by eating dirt. *Ascaris* ova are most abundant near dwellings where soil is contaminated through the lack of sanitary faecal disposal (Belding, 1965). The traditional method of faecal disposal among adults in rural Malay communities, as exemplified by the community studied, has been behind bushes close to human dwellings. In the case of children, defaecation is in the yard or garden. Undoubtedly, this accounts for the high prevalence of ascariasis noted at the beginning of this paper.

The dramatic success of "modern" anthelmintics has made a lasting impression and this augurs well for modern scientific medicine as successes of this nature will in turn open doors for other health services (Read, 1966). Their desire to prevent ascariasis is



Fig 3: A pre-school child wearing a talisman as a preventive measure against ascariasis.

evidenced by the food taboos rural Malays advocate and the talismans their children use. The challenge to modern medical services is to channel this desire towards effective prevention – sanitary faecal disposition. The acceptance of “modern” anthelmintics is evidence of faith in scientific medicine, and all health personnel concerned in rural health programmes should exploit this by persuading the people to place the same faith in and act upon the advice given to them regarding the prevention of a widespread and distressing condition as they do in the advice given to them by the same personnel regarding its cure. It must be recognised that one cannot expect the same immediate and dramatic results from preventive measures as from therapeutic, and the first step in health education is to acquire full understanding of relevant indigenous, traditional concepts

before attempting to replace them. Towards such understanding this paper is presented as a small contribution.

#### SUMMARY

The beliefs about causation and the practices, with regard to treatment and prevention of ascariasis, of a rural Malay community are reported. The most common belief was that ascariasis is caused by children eating a side dish, *lauk*, containing fish, the milk of mature coconuts, peanuts and eggs. The vast majority (96.2%) of households used piperazine or santonin preparations for treatment, some (38.5%) combining this with traditional treatments – village herbs and talismans. The use of talismans and food taboos against children constituted the main attempts at prevention. The whole community indiscriminately disposed of human excreta behind bushes close to human dwellings. None of the households encouraged hygienic habits on the part of their children, such as the washing of hands before the handling of food. The implications of the above observations are also discussed.

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