

Traditional knowledge of orang asli on forests in peninsular Malaysia

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It is estimated that the population of indigenous people of Peninsular Malaysia (called *Orang Asli*) is around 178,000. Traditionally, the *Orang Asli* lived in the forests, and, for them, the forest is the source of their livelihood. This study investigates the traditional knowledge of the *Orang Asli* about the forest. This study covered 53 villages in six states of Peninsular Malaysia and involved primary data collection from the fieldwork and information obtained from the policy documents of the Malaysian Government and previous research. In this survey, eight variables were used to assess the traditional knowledge of forests among the *Orang Asli*. The results showed that knowledge relating to forests, lakes and rivers along with knowledge about farming, gardening and hunting scored the highest percentage among the *Orang Asli*. This study also revealed that for all eight variables relating to traditional knowledge, males have higher participation compared to women. The findings demonstrated that there is a direct relationship between age and knowledge – the older generation tend to have higher traditional knowledge compared to the younger generation.

Keywords: *Orang Asli*, Traditional knowledge, Malaysia, Forest

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Although, there is no single accepted definition of indigenous people, one of the most cited descriptions of the concept of indigenous was outlined in the study of Jose R. Martinez Cobo, which defined ‘indigenous people’ as follows: “Indigenous communities, peoples and nations are those which, having a historical continuity with pre-invasion and pre-colonial societies that developed on their territories, consider themselves distinct from other groups of the societies now prevailing on those territories, or parts of them. They form at present non-dominant sectors of society and are determined to preserve, develop and transmit to future generations their ancestral territories, and their ethnic identity, as the basis of their continued existence as peoples, in accordance with their own cultural patterns, social institutions and legal system”.¹ Globally, there are roughly 300 million indigenous people, one third of whom are poor.² Many of these indigenous people live in remote areas of the world and depend substantially on the natural resources in the ecosystem for subsistence.³

It is estimated that there are 30 million indigenous people in Southeast Asia.² As a country in Southeast Asia with a population of 28 million, Malaysia is host to approximately 3.5 million indigenous people, which is 12% of the total population. Malaysia was formed in 1963 through a Federation of the former British colonies of Malaya and Singapore, including the East Malaysian States of Sabah and Sarawak on the northern coast of Borneo, and West Malaysia (also known as Peninsular Malaysia). The indigenous minority people of Peninsular Malaysia are known as ‘*Orang Asli*’, which is a Malay term meaning ‘original people’ or ‘first people’.⁴ They number around 150,000, representing a mere 0.6% of the national population.⁵ The majority of *Orang Asli* still live in rural and remote areas. Until recently, they lived by a combination of hunting, fishing, gathering, swidden farming, arboriculture, and trading forest products.⁶ For the *Orang Asli*, the forest is the source of their livelihood, shapes their customs and culture, defines their identity, and constitutes their local environment.

According to UNESCO, “Traditional knowledge is a cumulative body of knowledge, know-how,

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practices and representations maintained and developed by peoples with extended histories of interaction with the natural environment. These sophisticated sets of understandings, interpretations and meanings are part and parcel of a cultural complex that encompasses language, naming and classification systems, resource use practices, ritual, spirituality and worldviews".⁷ "Various definitions, terms or understandings of traditional knowledge used by academia and intergovernmental bodies show the complex nature of the issue which is part of the complexity of human societies and the diversity of worldviews. While different terms or working definitions coexist, what appears less debatable is that understanding of traditional knowledge and approaches on traditional knowledge require being holistic and comprehensive".⁸

It should be noted that traditional knowledge is a form of knowledge that is inherited from generation to generation irrespective of background. Thus, in the context of this study, the indigenous community is deemed to have practiced traditional knowledge, especially knowledge of the forest, the components, ecology and wildlife. The indigenous knowledge, or sometimes interchangeable with traditional ecological/environmental knowledge (TEK), is arguably one of the most important aspects that distinguishes indigenous management systems from the dominant Western 'scientific' resource management models.⁹

As a consequence of the rapid change in the natural environment followed by economic, political, and cultural change on a global scale, many indigenous knowledge systems are in danger of vanishing.¹⁰

Since the indigenous people in Peninsular Malaysia (Orang Asli) are not immune to this threat, there is a need to identify and document such knowledge as the basis for scientific research and enhance the understanding concerning the ecology of the forest system. Considering this necessity, the objective of the study in hand is to assess the level of traditional knowledge about the forest of the *Orang Asli*. In this study, an attempt has been made to document the commonly used traditional knowledge of the *Orang Asli* about the forest.

The *Orang Asli*, historical background

There are over 90 different groups of indigenous people in Malaysia, each with their own distinct language and culture, with the majority being found in the states of Sabah and Sarawak on the island of

Borneo.¹² They are usually divided into three main groups: *Senoi* (54.9%), *Proto-Malay* (42.3%) and *Negrito* (2.8%).¹³ There are 18 ethnic subgroups of the *Orang Asli*, which are then classified under the *Negrito*, *Senoi* and the *Aboriginal Malay* (or *Proto Malay*). Archaeological evidence links most *Orang Asli* to the *Hoabinhians*, who lived between 8,000 and 1000 BC during the Middle Stone Age. The largely nomadic foraging *Negritos* are direct descendants of these early people. The *Senoi* are descendants of both the *Hoabinhians* and *Neolithic* cultivators who entered the Malay Peninsula from the North around 2000 BC. To this day, the *Negrito* and *Senoi* people speak *Austroasiatic* languages of the *Mon-Khamer* sub-group, manifesting their ancient connection with mainland Southeast Asia.¹⁴

Evidence suggests that in the first millennium AD, the *Orang Asli* were the primary suppliers of forest products, such as rattan, bamboo, resins, ivory, and other animal parts in the maritime trade that linked South East Asia to the markets in China, India and the Middle East.¹⁵ Due to the settlement and encroachment onto their territories of other people and interests, the *Orang Asli* are losing control of the forests. In the contest for resources, they are often on the losing side.¹⁶ During the 'opening up' of the country in the late nineteenth and early twentieth centuries, the forests were treated as if they were weeds to be cleared, and transformed into plantations and tin mines. After the Second World War, the *Orang Asli* and their forest abodes became strategically important in the fight against communist insurgents, who mostly operated from jungle camps. The push for economic development accelerated the conversion of forests into plantations, mines and land development. The construction of roads and dams destroyed large tracts of forest land, as well as the livelihoods of the *Orang Asli*. Timber became an important export bankrolling Malaysia's development.¹⁷ The *Orang Asli* are not a homogeneous race, which means they have diverse cultures, traditions, ways of living, beliefs, and languages, all of which depend on their ethnicity and location. However, issues that are not differentiated according to the *Orang Asli* ethnic sub-groups include their holistic relationship, life dependency and identity, which are very related to and dependent on land and nature.¹⁸ Traditionally, the *Orang Asli* lived in and subsisted in the forests, however, their traditional knowledge and culture have deteriorated due to the increase in the loss of the

forest areas and rapid urbanization.¹⁹ Although the *Orang Asli* possess over 1,38,862.2 hectares of land, they are not recognized as the lawful owners of their lands. The Malaysian Government set up the Department of *Orang Asli* Affairs in 1954 to administer, develop and act as a caretaker of the *Orang Asli* in Peninsular Malaysia. In Asia, only a few Governments have set up a Ministry, Department or Cabinet level Committee to deal with the affairs of the indigenous people ethnic minorities in their respective countries. The Ministry of Chittagong Hill Tracts Affairs (MoCHTA) of Bangladesh, the Department of *Orang Asli* Affairs of Malaysia, JAKOA (previously known as *JHEOA*) and the Committee for Ethnic Minorities (CEM) of Vietnam are among the few. One of the reasons for the single agency approach in Malaysia was that over 60% of the *Orang Asli* still lived in isolated areas, far from normal government services like education and medical care.²⁰ The goal of the Government of Malaysia (GoM) is the ultimate integration of *Orang Asli* with the mainstream community to the extent that they would cease to exist as a separate ethnic community.²¹ The 9th Malaysia Plan (2006-2010) addressed the poverty issues of the *Orang Asli*. According to this Plan, a specific programme was implemented to address the poverty among the *Orang Asli* community. It was also mentioned that although the overall emphasis of the anti-poverty policies and programmes was to promote self-help and enhance income generation among poor households, groups such as the elderly, disabled and destitute, who are unable to participate in gainful economic activities, will continue to receive direct financial assistance. In the 9th Malaysia Plan, the Government was committed to improving the quality of life of the *Orang Asli*. The Government allocated RM170 million to the *JHEOA* to carry out numerous programmes and projects. A sum of RM50 million was provided for the Housing Assistance Programme and social amenities in the *Orang Asli* settlements.²² The notion was followed in the 10th Malaysia Plan (2011-2015). Under this Plan the target of the Government is to reduce the incidence of poverty among *Orang Asli* communities from 50% in 2009 to 25% by 2015. In doing so, the main issues for the *Orang Asli* under the 10th Malaysia Plan are as follows:

1 ethnic minorities and *Orang Asli* communities in Peninsular Malaysia will be eligible for support and resources, based on their specific needs;

- 2 support will be provided in order to build capabilities and increase their income generation potential through education and entrepreneurship;
- 3 their immediate living standards will be addressed by strengthening access to basic amenities;
- 4 tailored programmes will be implemented for target groups with specific needs, such as the *Bumiputera* in Sabah and Sarawak, particularly ethnic minorities; *Orang Asli* communities in Peninsular Malaysia; residents of Chinese new villages; and estate workers, where Indians represent a significant number;
- 5 mobile clinics, including flying doctor services will be expanded for groups with lower accessibility, such as the *Orang Asli* and ethnic minorities in remote parts of Sabah and Sarawak;
- 6 assistance will be provided to *Orang Asli* communities to establish businesses, such as home stay and eco-tourism services.²³

Study area and methodology

The study area covers Peninsular Malaysia. Peninsular Malaysia (formerly, West Malaysia), protrudes southward from the mainland of Asia, comprising an area of 131,587 square kilometres (50,806 square miles), extending 748 kilometres (465 miles) SSE-NNW and 322 kilometres (200 miles) ENE-WSW. It is bordered to the North by Thailand, to the East by the South China Sea, to the South by the Straits of Johore, and to the West by the Straits of Malacca and the Andaman Sea, with a total boundary length of 2,068 kilometres (1,285 miles). Fig. 1 shows the location of *Orang Asli* groups.

This study covered 53 villages in six states of Peninsular Malaysia and involved primary data collection from the fieldwork and information obtained from the government policy documents. The e-Damak data set from the Department of *Orang Asli* Affairs (also known as *JAKOA* after 2011) was used as a framework to derive the targeted sample size. The e-Damak data set



Fig. 1—Map of *Orang Asli* groups

contains the information of the *Orang Asli* in Peninsular Malaysia. Stratified random sampling was utilized to draw the sample from the overall total population of *Orang Asli*. However, this study utilized the data from the highest population states of *Orang Asli* according to the e-Damak data; that is, Pahang, Kelantan, Perak, Johor, Selangor and Negeri Sembilan.

The sample was then taken from the selected villages in five states including: Johor, Kelantan, Negeri Sembilan, Pahang, Perak, and Selangor. A total of 2,136 respondents were interviewed using a set of structured questionnaires designed to achieve the research objectives. Table 1 shows the sample size of the households according to state. The samples from these states were selected based on their residential locations (urban, rural and peripheral areas). This method was used in order to provide a good representation from the residential locations.

The sampling unit of this study is the head of the household of the *Orang Asli*. This selection is more appropriate since the researchers can obtain more information about the *Orang Asli*, especially concerning the status of their socio-economic background. The head of the household is determined by identifying those who the family members are relying on the most as their main source of income. In most nuclear families, the head of the household will usually be the husband or a male person in the family. The head of the household is a person who usually works in order to support his family, provide them with shelter and other necessities. However, there are also female heads of households, especially when their partner has died or they have been separated from their marriage partner. In this study, the selection of the head of the household was made prior to the questionnaire interview. With the help from JAKOA officers and *Tok Batin* (village heads) we were able to verify that the sample drawn from the sampling frame is the head of the household and qualified to participate in the study.

Two sections in the questionnaire are used for this paper. The first section in the questionnaire concerns the demographic background of the head of the household. This includes their gender, age, number of family members, employment status, monthly income and education background. The second section are those relating to the traditional knowledge of the *Orang Asli* and involves 15 questions. However, only eight variables are selected for further discussion in this paper. This selection was made since these variables represent the traditional knowledge about the forest among the *Orang Asli* while the rest represent non-forest knowledge.

The eight variables discussed in this paper are knowledge relating to forest/lake/river, knowledge of farming/ gardening/hunting/collecting forest products, knowledge of jungle life (forest survival), knowledge about wildlife, knowledge concerning forest resources and conservation, knowledge about the forest ecosystem, knowledge about forest/mountain guide, and knowledge of traditional medicine. The level of *Orang Asli* traditional knowledge relating to the forest is measured by taking the overall percentage of having such knowledge. Further analysis provides a comparison of traditional knowledge between gender and age groups. The chi-square test is used to examine the differences in these categorical variables. A 95 per cent level of confidence is used as the benchmark for the p-value level of acceptance.

Results and discussion

Socioeconomic data

A total of 2,136 *Orang Asli* participants were interviewed in this study. The highest number of respondents was from Pahang (765), followed by Perak (578), Selangor (366), Kelantan (148), Johor (145), and N. Sembilan (134) (Fig. 2). Males and females constituted 72.1% and 27.9%, respectively. Table 2 shows the number of respondents according

Table 1— Household and Sample Distribution by States

| State | No. of households | % Distribution of Household Heads | No. of Household Sample | % of Sample Distribution of Household Heads |
|-----------------|-------------------|-----------------------------------|-------------------------|---|
| Pahang | 13,772 | 38.3 | 765 | 35.6 |
| Perak | 10,604 | 29.5 | 589 | 27.4 |
| Selangor | 3,917 | 10.9 | 366 | 17.0 |
| Johor | 2,673 | 7.4 | 146 | 6.8 |
| Kelantan | 2,635 | 7.3 | 148 | 6.9 |
| Negeri Sembilan | 2,413 | 6.7 | 134 | 6.2 |
| Total | 36,014 | 100 | 2148 | 100 |

to the age group. The largest number of respondents (15%) was from the age group of 30 to 34 years, followed by the 40 to 44 years age group (14.4%) and 35-39 years age group (12.2%), respectively. The lowest number of participants came from the 15 to 19 years age group.

In terms of marital status, 1,769 of the respondents were married, while the rest were either widows, widowers, divorced, single or separated. The details of the breakdown in percentage form are shown in Fig. 3.

Education is the main agenda in the *Orang Asli*'s development programme and a key mechanism towards the campaign for quality of life.²⁴ Data analysis showed that 869 of the participants had attended primary school, while 856 had not received any formal education through school. Ten respondents had post-secondary education and only seven respondents had attained a college diploma. A detailed percentage breakdown of the educational status of the *Orang Asli* is shown in Fig. 4.

The percentage of *Orang Asli* who did not attain any schooling in 1980 was 66%, as compared to 40.4% who had received schooling (Fig. 4). This was due to the fact that the Government had embarked on a diverse and complex range of educational programmes in an effort to improve the life of the *Orang Asli*, the indigenous community in Peninsular

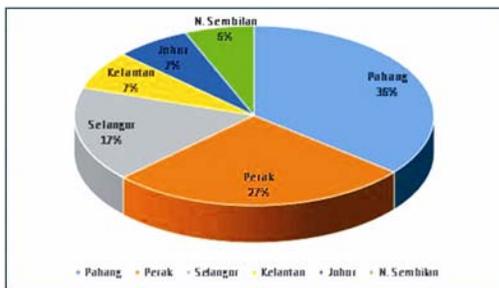


Fig. 2—Respondents surveyed (%)

Table 2—The number of respondents according to age groups

| Age group | Frequency | % |
|-----------|-----------|------|
| 15-19 | 12 | 0.6 |
| 20-24 | 113 | 5.3 |
| 25-29 | 224 | 10.6 |
| 30-34 | 318 | 15.0 |
| 35-39 | 259 | 12.2 |
| 40-44 | 307 | 14.4 |
| 45-49 | 225 | 10.6 |
| 50-54 | 199 | 9.4 |
| 55-59 | 136 | 6.4 |
| 60-64 | 134 | 6.3 |
| 65+ | 196 | 9.2 |

Malaysia. According to *JHEOA* (2000),²⁵ the Department implemented a three tiered educational programme that aimed to prepare the *Orang Asli* children to enter the national educational system:

- i. in the first 3 years, *Orang Asli* children went to village schools taught by *JHEOA* field staff (some Malay staff and some *Orang Asli*),
- ii. Students who continued after 3 years went to central primary schools in larger *Orang Asli* communities, where they could continue until primary six. Most of the teachers were Malays and provided by the Ministry of Education, Malaysia.
- iii. Students who passed their examination at the end of sixth grade could proceed to normal government secondary schools in the nearby rural or urban areas.

The results of this study showed the *Orang Asli* as being involved in various types of employment. However, the majority of male and female *Orang Asli* workers were engaged in agriculture, forestry and fishing work, as shown in Table 3. Approximately 50% of the respondents were involved in these categories. The present findings seem to be consistent with other research findings that reported a similar

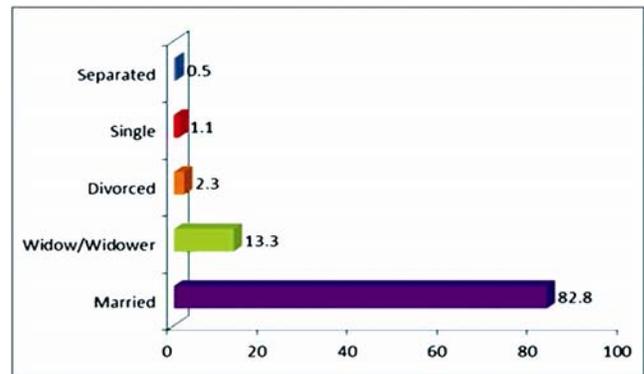


Fig. 3—Marital status (%)

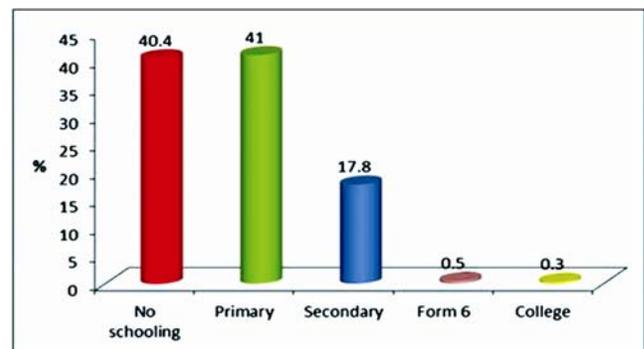


Fig. 4—Educational statuses (%)

situation among the *Orang Asli* (Nicholas, 2000¹²; Gill *et al.*, 2009²⁶). These findings highlight the importance of the forest to the *Orang Asli*. The forest is not only the source of livelihood for the Indigenous People (IP) but also defines the identity of the IP.

As reported in Table 3, about 13.1% of the respondents interviewed worked in the service sector. Although it is reported that the forest is still the main source of livelihood for the Indigenous People, the involvement of a high number of respondents in service work further supports Nagata's study (1997), which suggested that a number of *Orang Asli* had abandoned their life in the forest and are now reliant on a cash economy.

The percentage of *Orang Asli* employed in the professional, technical, dealer and manager categories is very small – less than 4% of the total respondents. This low percentage is due to the poor educational attainment among the *Orang Asli*.

Traditional knowledge on forest

In this survey eight variables were used to assess the traditional knowledge of the forests among the *Orang Asli* (OA). Generally, most of the OA have knowledge about forests. As known, most of the OA population is located in remote areas. The OA is a community that is closely related to nature and the environment. Out of the eight components, knowledge relating to forests and rivers, lakes and pools has the highest percentage (64.8%), followed by knowledge relating to farming, gardening, breeding, and hunting forest collecting (59.4%) (Table 4)

This information is relevant since 50% of the respondents work in the agricultural and forestry sectors. These findings emphasize the importance of forests in sustaining the lives of the *Orang Asli*.

Table 3— *Orang Asli* employment

| Particulars | Frequency | (%) |
|---|-----------|------|
| Agriculture workers/Fishery | 843 | 39.5 |
| Housewife | 429 | 20.1 |
| Service workers | 279 | 13.1 |
| Forest workers | 222 | 10.4 |
| Sales representative/dealer | 43 | 2.0 |
| Professional (doctor/lawyer/accountant) | 1 | .0 |
| Administrator/Manager | 16 | .7 |
| Technical | 9 | .4 |
| Clerical | 7 | .3 |
| Others (please state) | 58 | 2.7 |
| Not working | 177 | 8.3 |

Among the variables relating to the forest, approximately 26% of the respondents have knowledge about forest resources and conservation. To some extent, this finding is consistent with that of Abdullah *et al.* (2011) who reported that the participation of family members of the *Orang Asli* in forest resource harvesting is 31.5%. It should be noted that one of the important skills of the *Orang Asli* is being able to utilize the forest resources. Among these sources, honey has a potential to be marketed, not only within Malaysia, but also abroad. Skin care products are good examples of the by-products of the existing market for honey, which include soap, lip balm, and hand and foot creams. All of these products can be made from honey. It is important to note that the Asia-Pacific skincare market grew at a fairly strong rate during the period 2006-2010, and the overall market growth is expected to accelerate in the forthcoming 5 yrs.

The potential of the *Orang Asli* to produce honey, on the one hand, and the availability of a market for honey-based products, especially in skin care, on the other hand, can be seen as a good opportunity for the Government to invest in and support. The *Orang Asli* subscribe to three basic principles in their use and control of resources. One is the collective ownership of resources within a village, which they see as analogous to *caksamak*, the *Semai* term for 'eating together'. Sharing of the harvest – be it vegetables, hunted game or smoked fish – with one's neighbour is the norm, although individual rights apply to agricultural produce, handicrafts and reared animals. The second principle is based on the concept that all natural resources belong to the Creator and thus one has to have respect for natural resources, including the plants and animals. Ceremonies such as *cenagoh* – where permission is first sought from the friendly

Table 4—Forest Knowledge

| Knowledge | Frequency | Yes (%) |
|---|-----------|---------|
| Knowledge related to forest/lake/river | 1384 | 64.8 |
| Knowledge of farming/gardening/hunting/collecting forest products | 1268 | 59.4 |
| Knowledge of jungle life (Forest survival) | 656 | 30.7 |
| Knowledge about wild life | 572 | 26.8 |
| Knowledge on forest resources and conservation | 554 | 25.9 |
| Knowledge of the forest ecosystem | 505 | 23.6 |
| Forest/mountain guide | 402 | 18.8 |
| Knowledge of traditional medicine | 372 | 17.4 |

spirits before any land is opened for agriculture – are a form of respect. Thirdly, land and the biodiversity within it is intrinsic to the *Orang Asli*'s identity. For this reason, the elders in the community take it upon themselves to ensure that traditional conservation and management practices of the resource base are passed down through the generations.²²

Indigenous knowledge and practices pertaining to medicinal plants are of particular relevance to Malaysia because of its desire to be a global player in the natural products sector. Proponents see opportunities in the rising demand for specialty natural products, especially in the primary healthcare and cosmetics arena. These contribute to two of Malaysia's many strengths: the plants growing in its forests and the local know how about the myriad uses of medicinal plants. In Malaysia, as early as the 1960s, at least 500 local plants used by the indigenous people were documented as having economic or medicinal properties. The economic returns from such traditional discoveries are also significant. According to the Rural Advancement Foundation International (RAFI) estimates, US\$32 billion of sales of pharmaceuticals worldwide are based on traditional medicines.²⁷ In terms of traditional medication knowledge, this survey showed that around 17.4% of those surveyed reported that they have knowledge about traditional medication. This result is consistent with those of other studies that reported the existence of medicinal knowledge among the *Orang Asli* (Samuel *et al.*, 2010,²⁸ Ong *et al.*, 2012²⁹). Approximately 26% of respondents have knowledge about wildlife. The largest percentage of wildlife knowledge is among the age group between 30 and 49

years, followed by the age groups, 50 years and above, and the age group between 16 and 29 years old. Gender analysis for this variable indicates that the knowledge of males is about 5.5 times more than that of females (Table 5). The knowledge concerning wildlife being low among females might be due to the fact that they do not play an important role in harvesting forest resources and prefer to work as rubber tappers or stay home as housewives.

Table 5 highlights a huge and statistically significant difference in all eight variables between males and females with the probability, p-value less than $\alpha = 0.05$. For all eight variables, the males have an undeniable superiority of knowledge compared to the females. While the greatest gap can be seen in variables 1 and 2, the least difference is found in the knowledge of traditional medicine. The discussion about this significant difference between males and females knowledge is beyond the scope of this paper. It is worth mentioning that it is a common culture among the *Orang Asli* that the husbands must work to support the family, while the women (wives) are at home to cook and look after the children.

In terms of knowledge among the age groups, Table 8 shows that the highest percentage of traditional knowledge is seen in the age group of over 50 years old. It is interesting to note that the findings indicate a direct but not statistically significant relation between age and knowledge except the knowledge about traditional medicine (p-value is less than $\alpha = 0.05$). As reported in the table, in seven variables, the age group of 50 years and above has the highest knowledge, while for all eight variables, the age group of 15 to 29 years has the lowest

Table 5—Traditional Knowledge by Ages and Gender

| Knowledge | Traditional knowledge by gender % | | Traditional knowledge by age groups % | | |
|--|-----------------------------------|--------------|---------------------------------------|--------------------|-----------------|
| | Male (1541) | Female (595) | 15-29 years (349) | 30-49 years (1109) | 50+ years (665) |
| Knowledge related to forest/lake/river | 70.1 | 51.1 | 62.5 | 63.5 | 68.6 |
| Knowledge of farming/gardening/hunting/collecting orest products | 63.5 | 48.6 | 58.7 | 59.2 | 60.6 |
| Knowledge of jungle life (Forest survival) | 35.7 | 17.8 | 28.7 | 30.4 | 30.7 |
| Knowledge about wild life | 31.6 | 14.3 | 24.9 | 25.2 | 27.1 |
| Knowledge on forest resources and conservation | 29.0 | 18.0 | 23.8 | 25.4 | 28.1 |
| Knowledge of the forest ecosystem | 27.3 | 14.1 | 22.3 | 23.8 | 24.2 |
| Forest/mountain guide | 22.9 | 8.2 | 16.9 | 19.3 | 18.2 |
| Knowledge of traditional medicine | 18.5 | 14.6 | 15.5 | 15.0 | 22.4 |

traditional knowledge compared with the other age groups. In addition, among each of the three age groups the highest percentage of traditional knowledge refers to the two variables – knowledge relating to forests, lakes, rivers and knowledge of farming/gardening/hunting/collecting forest products, while the lowest percentages refer to knowledge of traditional medicine in two age groups (15-29 and 30-49), and forest/mountain guides in the oldest group.

Conclusion

This study seeks to assess and document the extent of traditional knowledge concerning forests among the *Orang Asli* population in Peninsular Malaysia. The results revealed that knowledge relating to forests, lakes, rivers and knowledge of farming/gardening/hunting/collecting forest products are the aspects of knowledge with the highest percentage among the *Orang Asli*, while knowledge about traditional medicine had the lowest percentage. In all eight variables relating to traditional knowledge, males have higher involvement compared to women. This superiority could be explained by the common cultural status among *Orang Asli* in that a wife's duty is to stay at home, do domestic chores and look after the children. Comparing traditional knowledge based on age group revealed that there is a direct relationship between age and knowledge, in that the older age group have greater traditional knowledge. The *Orang Asli* utilize a wide range of forest resources for both their consumption and trade. The top most priority resources are *gahary* bamboo, rattan and honey. Among these resources, honey has potential for use in different markets, such as skin care. Hence, the Government can invest in these resources to provide an opportunity to improve the lives of the *Orang Asli*.

Increasing the knowledge of the *Orang Asli* about the forests is not only beneficial for their lives but can also be advantageous for the sustainability of natural resources. Thus, Government policy has to provide greater attention to increase the knowledge of the *Orang Asli*, especially among the younger generation. The Government also has to apply a policy for teaching the *Orang Asli* to use their traditional knowledge for sustainability and resource management.

As signatories of the UN Declaration on the Rights of Indigenous Peoples (UNDRIP), the Government of Malaysia recognizes indigenous people, including the rights of the *Orang Asli* to their land, culture, livelihood and identity. In line with UNDRIP, in

respect of the *Orang Asli* the following are suggested: abolish discrimination, respect their right to development in accordance with their own needs and interests, respect and promote the inherent rights of indigenous people and the rights of indigenous families and communities to retain shared responsibility for the upbringing, training, education and wellbeing of their children, consistent with the rights of the child as part of the government policies for indigenous people. Notwithstanding the number of programmes that have been implemented by the Ministry of Education, due to the importance of the role of education in reducing poverty and enhancing the wellbeing among the *Orang Asli*, more attempts have to be made in this area. In this respect, education policies must be in accordance with Article 14 of the UNDRIP, which recognises the rights of Indigenous peoples to establish and control their educational systems and institutions providing education in their own languages, in a manner appropriate to their cultural methods of teaching and learning. Considering the huge gap between male knowledge and female knowledge, it is recommended that the Government designs special programmes for women, such as an entrepreneurial programme so that women can help their male partners initiate and develop the supply chain for their forest products.

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