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Research paper

Traditional Knowledge Management and Usage of Medicinal Plants as Daily Medication in Healing Rituals Among the Batek of Kuala Koh, Gua Musang, Kelantan :an Exploratory Evidence

Amran Alias[1]*, Hood Salleh[2], Shaharuddin Mohamad Ismail[3], Sarah Aziz Abdul Ghani Aziz[4], Mohd Suhaidi Salleh[5], Khairol Anuar Kamri[6], Asmawi Noor Saarani[7], Mohamad Daud Druis[8]

[1,2,3,4]Universiti Kebangsaan Malaysia
[5]Universiti Malaysia Sarawak
[6]Universiti Tun Hussein Onn Malaysia
[7]Kementerian Perdagangan Antarabangsa Dan Industri
[8]Polis Diraja Malaysia
**Corresponding Author E-Mail: Amranalias2005@Yahoo.Com.Au*

Abstract

Traditional knowledge related to medicinal plants of the indigenous people are indeed a useful asset for the community. The knowledge that had been traditionally inherited from their ancestors is an integral part of their survival as they live symbiotically with the forests. While many researches and literatures are focusing on documenting and recording these knowledge, not much has been researched in understanding the holistic process of the knowledge management particularly at the indigenous community level. This paper provides an attempt to reveal empirical findings about the management and use of medicinal plants in ailment healing rituals. In order to enable a holistic view of the management of knowledge at the study site, the main question asked was what happened during the four processes of knowledge management namely knowledge generation, knowledge codification, knowledge utilization and knowledge transfer. Using the Batek community of Kuala Koh, Gua Musang, in the state of Kelantan as a case study, ethnographic methods of individual and group interviews, observations and participants observations as well as document analysis, were employed to gather the data from the study site and the grounded theory approach was used for data analysis to enable the emergence of the themes to understand the phenomena at the study site. The study, conducted from 2014-2016, involved prolonged stays with the community. The findings revealed that there was an 'undocumented means of knowledge generation with potential loss of traditional knowledge', while there was a non-codified knowledge being practiced in the community and widespread inability of basic reading and writing skills among younger generation. In addition, there was a high level of traditional knowledge utilisation in the community but some procedures such as ritual practices have been simplified while there was a complete absence of documentation of traditional knowledge by members of the community that might weaken knowledge transfer.

Keywords: *Bateks; Indigenous People; Knowledge Management; Medicinal Plants; Traditional Knowledge*

1 Introduction

This paper is an attempt to reveal an empirical finding about the medicinal plants that have been used by Orang Asli in Malaysia as an alternative to modern medicinal practice to heal sickness. These findings provide an explanation towards the existing state of the management of traditional knowledge related to medicinal plants of Orang Asli particularly the Bateks. In order to discuss this broad question, this paper concentrated on the four processes of knowledge management i.e. knowledge generation, knowledge codification, knowledge management and knowledge transfer. In particular, this study aims to provide empirical evidences to answer the question of what happened to the knowledge i.e. how it is being practiced during each process of knowledge management.

2 The Bateks

The Bateks are one of 18 sub-ethnics of indigenous people or Orang Asli in Peninsular Malaysia. The 18 sub-ethnics were divided into 3 groups namely the Proto-Malays, Senoi and Negritos. According to the most recent census conducted by the Department of Statistics (DOS), in 2010, there were more than 178,000 'Orang Asli' in Peninsular Malaysia, compared to only 53,000 in 1967. Table 1 and 2 below indicate the distribution of Orang Asli by ethnics groups and states in Peninsular Malaysia in 1967 and 2011 respectively:

The latest census by the DOS has indicated that there was a healthy increase in the population of 'Orang Asli' from 53,000 in 1969 to 178,197 (236%) in 2010, more than double the increase over the period. Of all three ethnic divisions, the Proto Malays recorded the biggest jump in numbers from 20,830 in 1969 to

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75,332 (261%) in 2010, an increase of almost 3 folds, followed by the Senoi which increased by more than double from 30,370 in 1969 to 97,856 (222%) in 2010. The Negritos meanwhile, recorded a jump in numbers from 1,820 in 1969 to 5,009 in 2010, an increase of 175% which is less than double the number in 1969.

Interestingly, analysing from the difference in the number population of the 'Orang Asli' across the states in Peninsular Malaysia based on the ethnic division (comparing 1969 and 2010 figures), observation can be made that there were or 'could be' some 'movements' of tribes across the states over the these two periods. For example, while there were no Senoi in Kedah, Negeri Sembilan, Melaka and Johor in 1969, the Senoi can now be found in these states although the number was not so substantial (Kedah: 19, Negeri Sembilan: 96, Melaka: 28 and Johor: 55 respectively). Similarly, the Proto Malays can now be found in the states of Kelantan (29) and Terengganu (41) while the Negritos can now be found in Selangor (only 3) and Johor (only 1) respectively. In short, although the population of 'Orang Asli' is relatively small compared to the other ethnic populations in Malaysia (which is only 0.5% of the total population) they can be found in all states of Peninsular Malaysia except Penang and Perlis. Specifically, all three ethnic divisions of 'Orang Asli' can be found in all these states except Melaka (no Negrito) and Kedah and Perak (both have no Proto Malays) and of course Penang and Perlis which have none of these 'Orang Asli' ethnics.

Table 1: The Distribution of Orang Asli by Ethnics Groups and States (1967)

State	Negritos	Senoi	Proto-Malays	Total
Kedah	100	-	-	100
Perak	900	15,800	-	16,700
Kelantan	650	4,100	-	4,750
Terengganu	20	180	-	200
Pahang	150	9,000	10,350	19,500
Selangor	-	1,270	3,290	4,560
Negeri Sembilan	-	-	3,120	3,120
Melaka	-	-	400	400
Johor	-	-	3,670	3,670
Total	**1,820**	**30,370**	**20,830**	**53,000**
Percentage (%)	34.3	57.4	39.3	100

Source: (Carey, 1976)

Table 2: The Distribution of Orang Asli by Ethnics Groups and States (2011)

State	Negritos	Senoi	Proto-Malays	Total
Kedah	251	19	-	270
Perak	2,413	50,281	605	53,299
Kelantan	1,381	12,047	29	13,457
Terengganu	34	818	41	893
Pahang	925	29,439	37,142	67,506
Selangor	3	5,073	12,511	17,587
Negeri Sembilan	-	96	10,435	10,531
Melaka	1	28	1,486	1,515
Johor	1	55	13,083	13,139
Total	**5,009**	**97,856**	**75,332**	**178,197**
Percentage (%)	2.81	54.91	42.27	100

Source: Department of Statistics, Malaysia, 2011

Table 3: The Distribution of The Sub-Ethnics Under the Negrito Group and By States (1969)

State	Kintak	Kensiu	Jahai	Mendrik	Batek	Lanoh	Total
Kedah	-	100	-	-	-	-	100
Perak	120	-	500	-	-	260	880
Kelantan	-	-	200	120	330	-	650
Terengganu	-	-	-	-	20	-	20
Pahang	-	-	-	-	150	-	150
Total	**120**	**100**	**700**	**120**	**500**	**-**	**1540**

Source: Carey (1976)

Table4: The Distribution of The Sub-Ethnics Under the Negrito Group and By States (2011)

State	Kintak	Kensiu	Jahai	Mendrik	Batek	Lanoh	Total
Johor	-	-	1	-	-	-	1
Kedah	208	30	3	-	-	10	251
Kelantan	-	1	530	344	504	2	1,381
Melaka	1	-	-	-	-	-	1
Negeri Sembilan	-	-	-	-	-	-	-
Pahang	-	-	15	3	906	1	925
Perak	28	163	1,838	12	3	369	2,413
Selangor	-	-	-	3	-	-	3
Terengganu	-	-	-	-	34	-	34
Total	**237**	**194**	**2,387**	**362**	**1,447**	**382**	**5,009**

Source: Department of Statistics of Malaysia, 2011

According to the DOS latest census, among the 3 ethnic divisions of 'Orang Asli', in 2010, the Senoi has the largest population among all ethnic group which was 97,856 people representing approximately 55% of the total Orang Asli's population, followed by the Melayu Proto (75,332, 42%) and the Negrito (5,009, 2.8%) respectively. Specifically, analysis on 'Orang Asli's presence by states found that Pahang and Perak have the most number of 'Orang Asli' (67,506) and (53,299) respectively while Kedah and Terengganu have the least with only 270 and 893 respectively. The Bateks are in the Negrito Group of Orang Asli – the smallest ethnic division of Orang Asli. The distribution of the Orang Asli in the Negrito Group by sub-ethnics and states in 1969 and 2011 are in Tables 3 and 4 respectively below:

In the Negrito ethnic group (as described by the population tables above), the sub ethnic of Batek was consistently recorded as the second largest population after Jahai sub ethnic. The number of Jahai rose from approximately 700 people in 1969 census to 2,387 recorded in the 2010 census, an increase of 241%, or more than double compared to the earlier figure. Whereas for the Batek, the number has grown from 500 people in 1969 to 1,447 in 2010, jumped by 189% or nearly doubled the 1969 figure. Figuratively, it can be concluded that the Jahai has actually outgrown the Batek in terms of population growth from 1969 to 2010. The other smaller sub-ethnics in the group, the Lanoh, Mendrik, Kintak and Kensiu recorded almost similar number of population in 1969 which were 260, 120, 120 and 100 respectively but they have now grown a little bit more to 382, 362, 237 and 197 respectively. In the 2010 census of the Negrito ethnic group, the Jahai, being the largest sub ethnic, made up 47.6% of the Negrito's population while the Batek, made up 29% of the group's population leaving the rest that is 23.3% made up by other 4 sub ethnics of Lanoh, Mendrik, Kintak and Kensiu.

In essence, according to the above figures from the DOS, in 2010, there were 13,457 'Orang Asli' found in the state of Kelantan, 1,381 of them were the Negritos and out of these, 504 were the Bateks. Although the Bateks, as part of the indigenous people of the world, only made up a small proportion of the global population, Galloway McLean (1) pointed out that they do play an important role, albeit in their own way, in maintaining and managing the planet's land particularly the forests and the eco-system. According Galloway McLean (1):

The indigenous people form approximately 5% of the world's population (between 250 to 300 million people). They manage 11% of the world's forest lands and customarily own, occupy or use 22% of the world's land surface. It has been estimated that within their lands and territories, they maintain an overwhelming 80% of the planet's biodiversity and are located in or adjacent to 85% of the world's protected areas...

Through the interdependence between the indigenous people and the forest land and its eco-system, the former had gained and developed knowledge on the uses of the natural resources to their advantage – the knowledge that they had traditionally inherited from their ancestors for many generations. This traditional knowledge has ever since benefited the indigenous people in many ways and has been an essential element in their continued survival but due to its existence in a form of mostly oral, this valuable asset however, is faced with many forces of erosion and is in danger of being lost forever from human's system.

3. The Study

This study is about traditional knowledge related to medicinal plants owned by Batek community of Kuala Koh, Gua Musang, in Kelantan, Malaysia. As described earlier, this community which can be found mostly in the Northeastern part of Peninsular Malaysia (Pahang, Kelantan and Terengganu), is among the smallest sub-ethnics of Orang Asli in Peninsular Malaysia)(2-5). The Bateks of Kuala Koh stayed in a deeper part of forested areas in Gua Musang District (approximately 77km from Gua Musang city) and the group, like the other groups of Bateks in Pasir Lenggi and Felda Aring, in Gua Musang District is still demonstrating the uses of medicinal plants for healing rituals in their daily lives, and hence has easily become the choice subject of for the study.

In the Malaysian context, there have been many studies in the literatures on the traditional knowledge of the Orang Asli particularly on the documentation of their traditional knowledge (6, 7). In fact, the Malaysian Government, through the Forest Research Institute of Malaysia (FRIM) had also undertaken an initiative under the 9th and 10th Malaysia Plan *The Documentation of Traditional Knowledge on Aromatic and Medicinal Plants of the Indigenous People in Peninsular Malaysia* which aimed at documenting the knowledge on medicinal plants covering all 18 sub-tribes of Orang Asli in Peninsular Malaysia (FRIM, 2016). Despite this, however, information is mostly scarce and in terms of how this knowledge is being practiced and managed at the Orang Asli community level. This study therefore is aimed at providing a greater understanding on this aspect.

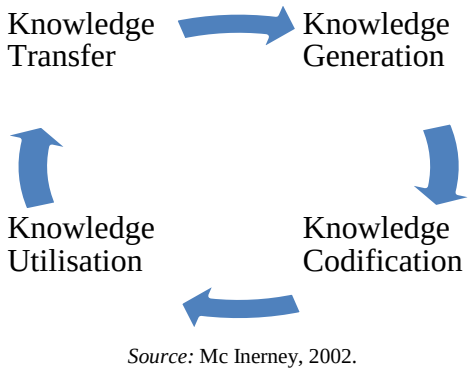
4. Methodology

This qualitative study incorporates ethnographic research instruments as data collection methods and the principles of grounded theory approach for data analysis. The main enquiry of the study was to understand what happened during each processes of knowledge management i.e. during knowledge generation, knowledge coding, knowledge utilisation and knowledge transfer. This study was undertaken within the period of 2013-2016 and involved multiple prolonged stays with the Bateks community in Kuala Koh whereby the researcher(s) had engaged in various daily activities of the community including in their journey into the forest while obtaining medicinal plants. Series of individual and group interviews with the relevant members of the community and various observation and participant observations were also carried out to gather the relevant data and this was further 'triangulated' with constant reference on existing literatures about the traditional knowledge of the indigenous people. The collected data was analysed using the principles of grounded theory where all responses that were recorded in verbatim was organised and analysed in stages of coding such as 'initial coding' , 'selective coding' and theme which upon further analysis, had enabled the emergence of 'substantial theory' and finally the identification of a 'formal theory' that is then used to explain the phenomena being studied.

5. The Four Processes of Knowledge Management

There are various definitions of knowledge management in the literatures (8, 9). Essentially, for this study, knowledge management of traditional knowledge involves the management of the traditional knowledge across all four general processes namely knowledge generation, codification, utilization and transfer as illustrated below. The main question asked in this study is 'what happened' to the knowledge during all these processes:

Illustration1: Processes of Knowledge Management



Source: Mc Inerney, 2002.

6 Findings

6.1. The Four Processes of Knowledge Management for Traditional Knowledge on Medicinal Plants of the Bateks

Based on the gathered data from the exploratory study and the analysis on the four processes of knowledge management (knowledge generation, knowledge codification, knowledge management and knowledge transfer), the management of the traditional knowledge of the Bateks of Kuala Koh according to the four processes of knowledge management are describe as follows:

Knowledge generation

Traditional knowledge on medicinal plants has been 'generated' in the Batek community through the medium of 'spiritual transfer of idea or knowledge' such as dreams which was supported by the following interview:

...Dulu masa mak saya sakit, dia batuk-batuk teruk… saya tidur malam, dalam tidur tu mimpi… dia suruh ambik pokok tu, daun pokok tu, rebus ambik airnya minum.. bila kita minum muntah-muntah habis keluar sampai kuning.. baru elok.. tapi bukan nak mati.. tapi yelah bagi semua kuman tu mati...

(Pak Abu, 65, Interview, March, 2015)

Translation:

...There was once when my mother was sick, she coughed heavily… during my sleep (at night).. I dreamt.. I was asked to get a particular plant.. the leaves (of the plants).. I had to bring it to the boil and (she has to) drink from the boiled water.. after drinking it, she vomited a lot until her vomit turned yellow… then only she was ok.. she had to vomit severely (not the point that she would die).. but (I think) to ensure that all the germs/bacteria had died…

(Pak Abu, 65, Interview, March, 2015)

Observation on the community members had also supported this as Pak Abu is seen as the 'bomoh' for the community and is highly regarded and sought after for healing rituals. The transfer of ideas' or knowledge through 'spiritual mean' or 'a direct acquiring of knowledge by an individual' was not the only way of how knowledge was genereted in the community. The second medium of generating knowledge among the Batek community members was through the sharing of the knowledge from one individual to another which was mainly connected to 'familial lineage'. In an interview session with Rahman, he described that one way in which the knowledge related to the use of medicinal plants was 'generated' was through 'inheritance' of the knowledge by an individual from another individual of the previous generation through 'teaching' or sharing of the knowledge by 'older family member(s)' who had the said knowledge:

...Macam mak saya dia ada ajar-ajar laa... Pak Abu dia boleh la sikit-sikit... Macam jampi ni... kelebihan dia laa.. satu dua.... Itu hari.. keturunan dia.. Pakcik Kacang.. abang dia (dia laa yang ajar)... tapi dah meninggal.. Kita tengok atas kesihatan.. kalau tak sehat, kita tak pergi lagi lah kat dia.. Tapi ada jugak benda-benda (yang kita pegi dekat dia) yang (kita jadi) sehat.. Kalau tak sehat (kita) pegi ubat moden..

(Rahman, 49, Interview, 13 May 2014)

Translation

...Like my mom.. she did teach some things. . Pak Abu can have some knowledge... Like a mantra... That is what is good at.. one or two (things).... That day.. his ancestor.. Pakcik Kacang.. his brother (actually he was the one who had thought (Pak Abu))... But he passed away.. We will have to see our health.. if we are not healthy, we don't have to go to him (his place is a bit a distance away .. but there are also things (that we had to go near him) that made us healthy again.. but if we are still not recovering (from the ailment) we would go and use modern medicines..

(Rahman, 49, Interview, 13 May 2014)

This statement contained a number of observations from which interpretation could be made. Firstly, in addition to a 'spiritual transfer of idea or knowledge' as a mean of knowledge generation, another medium of 'knowledge generation' of the traditional knowledge related to medicinal plants among the Batek community members was through 'teaching' or sharing of knowledge from a family member to another. Secondly, as explained earlier, other members of the community placed 'high regards and belief' on the knowledge acquired by another member which was critical in ensuring the continuous practice of the knowledge in the community. In another interview, this statement was further supported by a response from Batin Hamdan:

...Mula-mula bapak dia...Langsat.. (dia) dah mati.. Tanjong mak dia... mati jugak daa.. Anak dia Gelas, Sungai, Dusun, Lesong.. (semua tu la) Dia duduk Pahang.. Pak Abu... Pikas tu adik Abu.... Pak Abu pandai jugak.....Kalau sakit perot dia jampi....Dia datang sini.. kadang2 kita pegi sana....

(Batin Hamdan, 55, Interview, 12 May 2014)

Translation:

...At first it was his father...Langsat.. (he) has died.. and then Tanjong his mother... she has also died.. His son, Gelas, Sungai, Dusun, Lesong.. (all of them) He stays in Pahang.. Pak Abu... Pikas is Abu's brother.... Pak Abu is also good (and knowledgeable)..... if it is with regards to stomach ache he would have his mantra....He will come here (if one of us is sick).. but sometimes we will have to go there....

(Batin Hamdan, 55, Interview, 12 May 2014)

This statement further illustrated how 'familial lineage' has been an important way of knowledge generation among the Bateks which was further reiterated by a response from the wife of Batin during an interview session with Tok Batin on 12 May 2015 as follows:

…Gelas, adik dia (adik Pak Abu) ada belajar jugak... Kalau adik beradik dia buat... boleh laa jugak kita percaya.. kalau Abu.. mmg jadi laaa....Ilmu-ilmu ni selalunya kongsi dengan adik-beradik dia.. anak2 dia.. Kebanyakannya ahli keluarga dia..

(Raha, the wife of Tok Batin, 50, Interview, 12 May 2014)

Translation:

…Gelas, is his brother (Pak Abu's) he has also learned... if the knowledge is owned by or known to the bothers... we can still believe.. if it is Pak Abu.. it will be good ... these knowledge are normally shared among the brothers…his children.. mostly his family members..

(Raha, the wife of Tok Batin, 50, Interview, 12 May 2014)

In addition to these two means of 'knowledge generation', knowledge was also generated by (and between) members of the Batek community through the 'sharing of this knowledge' between a knowledgeable member and a non-knowledgeable member. An interview with Batin Hamdan on 12 May 2014 further revealed this:

...Mat (seorang lagi ahli komuniti Batek) pon tau gak.. pokok2 mana buat ubat.. Maknanya (Pak) Abu laa yang bagitau... Penting (Pak) Abu tu...

(Batin Hamdan, 55, Interview, 12 May 2014)

Translation

...Mat (another member of the Batek community) also knew (some of the knowledge).. which kinds of trees are good for medicinal purposes.. That means (Pak) Abu is the one who thought (him)... He (Pak Abu) is important actually...

(Batin Hamdan, 55, Interview, 12 May 2014)

This revealed the importance of the knowledgeable person(s) in the community in sharing their traditional knowledge with other members which assisted in the knowledge being practiced not only by a certain individuals but also others in the community. The sharing of knowledge did not only involve 'knowledge sharing among the adults' in the community but has also been passed on across generations to the younger segment of the community. This interpretation was based on observation at the study site which 'inferred' that the knowledge on traditional knowledge related to medicinal plants had 'effectively been shared' with the younger generations of the Bateks. In one of the research team's engagements with the younger generation of the Bateks, the following was described, observed and interpreted:

..that morning, more than 20 Bateks children and young adults playing soccer in a Jabatan Perlindungan Hidupan Liar (PERHILITAN) field which was located around 2km away from their settlement area. Our car could not start this morning. We did not manage to start it either last night. We were still waiting for the mechanic to come by and help 'rectify' the situation. We were informed by a PERHILITAN staff (whom we have requested assistance from to contact the mechanic) that the mechanic could only come by tonight as he was still working till the end of the day in a workshop located more than 50km away from this village. We wanted to meet up with the Batin at his house in the settlement area. Thus, we began walking towards the settlement area. As we were walking away from the field, two of the kids had wanted to go back to their homes at the settlement area. So, we walked back (to their home) together passing through a 'tarred road' connecting

PERHILITAN office and their settlement homes. As we were walking along, we asked them some questions on their knowledge related to medicinal plants. One of them, Zaidi, had just informed that he knew what plant 'was to be used' when they had 'headache'. Their parents had told him. Minutes later, he suddenly ran towards the side of the road and pointed his finger and later 'shook a tree' and shouted 'Haa.. Ni pokok untuk pening'.. the following was the **Fig.** of Zaidi, 6, and his tree that he said to be useful for headache:



Fig. 1: Nak Zaidi, Showing A Medicinal Plant Used by The Bateks to Cure Headache
Source: Fieldworks, 13 April 2014

...As we continued walking towards the Batek settlement area, I kept thinking about this as a continuous 'circle of knowledge' of the community particularly on how the knowledge related to medicinal plants were continuously shared from one generation to another. Five minutes later, the other kid (around his age whom we have forgotten to obtain his name), ran towards the side of the road and showed his finger to another tree and shouted (albeit louder and with greater excitement than that of Zaidi's).. 'Haa.. yang ni pulak untuk demam'.. The following was a ***Fig.*** *of Zaidi's friend and a tree used for 'fever':*



Fig. 2: Nak Zaidi's Friend Showing a Medicinal Tree Used to Cure 'Fever'
Source: Fieldworks, April 2016
(Research team personal observation, 13April 2014)

In making sense of this observation as part of the findings of this study, the saying that 'kids dont lie' is recalled. In a sense, an interpretation can be made in that those two kids had shown and told were things that came out 'directly from their heart' and the 'things that they truly knew as was told to them by other people'. This demonstrated that the transfer of knowledge from one generation to another that was being practiced in the community where the elder generation were willing and able to share their knowledge with the younger generation and in turn, the younger generation were willing to embrace it. This would then positively and effectively enable the knowledge to 'survive' over time. In contradictory to the finding of many literatures including a research in South America by Swiderska (10) who found that one of the reasons why the traditional knowledge is lost is the reluctance or the lack of willingness of the younger generations to learn the traditional knowledge from the elder generation, this finding reiterated that as far as the Bateks is concerned 'all is not lost yet'. But however, it also underscored the importance of further strengthening the need to ensure that the traditional knowledge related to medicinal plants of the Bateks did not receive the same 'fate' as those of the likes of the South Americans.

This 'event' has provided a 'real evidence' on the existence of 'transfer of knowledge' through learning from the more knowledgeable members of the community especially by the younger generation. Based on these evidences, in summary, the means for generation of TK related to medicinal plants of the Bateks can be described as follows:

i) that the knowledge was generated (transferred or inherited) by individuals through spiritual mean as one way of knowledge generation;
ii) that the knowledge was also generated (transferred or inherited to individuals without knowledge) through 'teaching' by the elderly, particularly the family member (familial lineage) whom the originator of the knowledge are no longer in existence; and
iii) that the knowledge was also shared with other individuals in the community through learning from the more knowledgeable members including by the younger generation.

These findings on the ways of how knowledge on medicinal plants were generated are depicted and summarised in the following diagram:

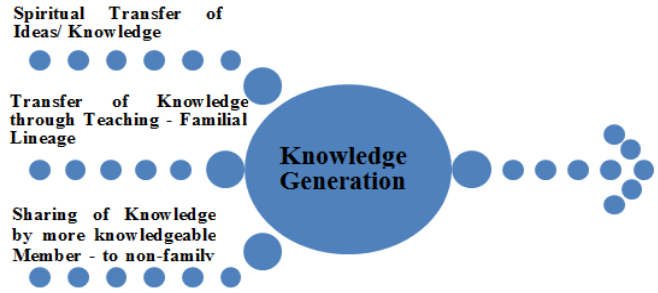


Fig. 3: The 3 Means of Knowledge Generation Practiced by The Bateks of Kuala Koh
Source: Fieldworks, 2014-2016

6.2. Knowledge Codification

According to Nonaka, Takeuchi (11) knowledge codification involves converting 'tacit knowledge' into explicit 'usable form' of converting 'undocumented information' into 'documented information'. In undertaking this study, one of the most important questions being asked was whether the Bateks did write or record in any form, their knowledge particularly the TK related to medicinal plants. Knowledge codification in the context of this study refers to how the TK related to medicinal plants of the Bateks were converted, if any, from its 'tacit form' (that is a form of knowledge that is 'visibly seen' and 'intangible') to 'an explicit' form (that is form that is 'seen' and 'tangible').

Batin Hamdan in an interview on 24 March, 2014 revealed that:

..Ada dulu tu sorang budak Melayu, Bon ada datang sini.. dia adalah tulis-tulis.. macam pokok ni bagus untuk apa.. akar ni bagus untuk apa.. budak-budak kita takde la tulis (pasal pokok-pokok ni)...

(Batin Hamdan, 60, interview, 24 March, 2014)

Translation:

..There was a Malay boy, by the name of Bon who came here (long time ago).. he did write something.. like these plants are good for what (kind of ailments) these roots are good for what.. our kids did not write (anything about the plants)...

(Batin Hamdan, 60, interview, 24 March, 2014)
The feedback from Batin Hamdan indicated that it was not the practice of the community to have the knowledge especially traditional knowledge related to medicinal plants to be recorded (written) in any form. It was also revealed that in any case, if there were any recording (writing) of the knowledge done, it was undertaken by people from outside of the community. This was further supported by an interview with Hidir, 20:
...Sekolah dulu sampai 5 tahun je.. lepas tu tak sambung... kita masuk hutan lepas tu takde la kita tulis-tulis apa yang kita belajar dulu tu.. saya boleh eja... banyak-banyak pon poleh eja...
(Nak Hidir, 20, interview, 23 March 2014)
Translation:
...(I) went to school until standard only.. after that I did not continue... we just go into the forests.. and we did not write anything about what we have learned.. I can spell.. I can spell a lot actually...
(Nak Hidir, 20, interview, 23 March 2014)
This reveal further indicated that although generally the kids (within the school age) did go to school, it was not a practice for them to write as most of their time was spent on going to the forests. They did acquire some basic skills of reading (and probably writing as well) but it was not being 'enhanced' as they did not practice practice the reading and writing at home. Thus, it validated the difficulty for any documentation of 'tacit knowledge' owned by the community to be documented into 'explicit kowledge' and hence preventing the 'codification of the knowledge' from happening. This 'phenomena' is further investigated by 'asking' the Batin and his wife as to whether there has ever been 'any instances' where any form of writing of anything was done by any member of her family particularly the younger generation. The immediate answer to the question was almost a 'decisive' no but after 'digging through' among her various other items, the research team was shown by the wife of the Batin a book which contained the following writings:

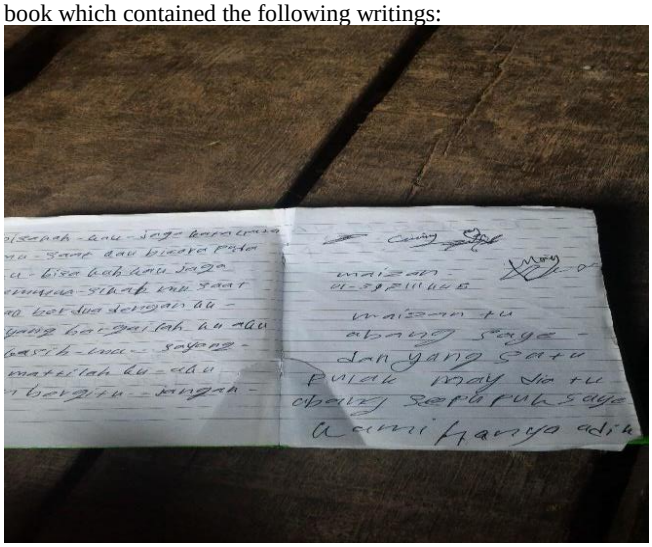


Fig. 3: Some Writings in A Book Owned by The One of The Children of Batin Hamdan
Source: Fieldworks, 9 December 2015

This little evidence has shown that there could be some potential for reading and writing activities that might have happened among the younger generation of the Bateks. The research team then undertook a 'simple' exercise where some 'schooling age kids' were randomly selected to 'test' their reading and writing abilities. **Fig.** 4 below shows some of these exercises.



Fig. 4: Some Randomly Selected Kids Were Asked to Write Basic Alphabetical Words
Source: Fieldworks, 9 December 2015

It was revealed that the majority of these selected 'schooling age' kids were not able to demonstrate a 'basic' set of reading and writing skills. This was supported by a number of **Fig.** s illustrating their inability to have basic alphabetical writing and one of them is exhibited in **Fig.** 5 below:

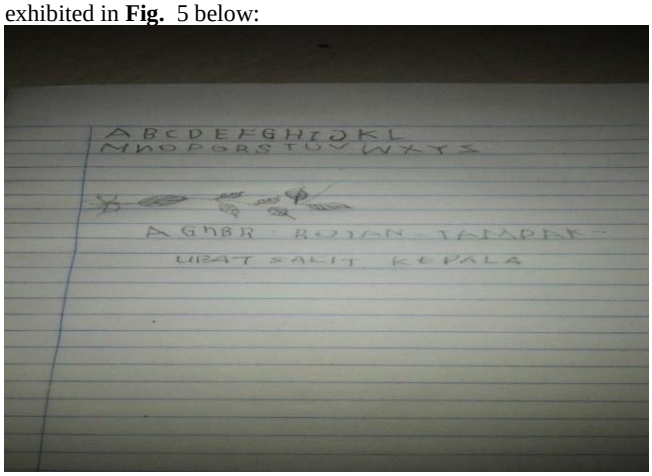


Fig. 5: Inability to Display Basic Writing Skills (Notice Letters N And Z)
Source: Fieldworks, 9 December 2015

This evidence indicated that the kids were experiencing both the 'absence' of a reading and writing habit at home and 'inability' to demonstrate proper basic reading and writing skills. The following were the responses received from personal communications with Jeff, 10 and Razak, 13 respectively:
...Saya seronok (sebenarnya) pergi sekolah, belajar, membaca, menulis. Lagipon ada ramai kawan-kawan (di sekolah). Saya nak pegi sekolah tapi van tak datang. Jadi tak dapat pegi sekolah...
(Jeff, 10, Personal Communication, 9 December 2015)
Translation:
...I like (actually) to go to school, to learn, read and write... In addition, I would have many friends (in school). I did not go to school as the van did not come (to pick us up).. That is why we did not go to school...
(Jeff, 10, Personal Communication, 9 December 2015)
..(saya) tak dapat tulis kat rumah. Sebab takde pen dan pensil. Bila balik dari ikut ayah pegi hutan, sampai rumah, buku dan pen semua dah takde. Adik koyak kan dan buang...
(Razak, 13, Personal Communication, 9 December 2015)
Translation:
..(I) could not write at home.. There was no pen or pencil (to write with)... Bila balik dari ikut ayah pegi hutan, sampai rumah, buku dan pen semua dah takde. Adik koyak kan dan buang...
(Razak, 13, Personal Communication, 9 December 2015)
While the evidence showed that currently, there were not able to display basic reading and writing ability, additional evidences also indicated (high level of interest for kids to learn) that there is a potential for the situation to improve and with the improvement of

the reading and writing ability, it could also improve the likelihood of their ability to record and 'code' their knowledge particularly the knowledge on medicinal plants and in turn would increase the likelihood of the knowledge to be appropriately recorded and codified. This process of knowledge management is closely related to how knowledge is being transferred (knowledge transfer – the last process of knowledge management) which will be deliberated in the later part of this study.

6.3. Knowledge Utilisation

The third process of knowledge management involve the utilisation of the knowledge. In this study, interviews and observations made were mainly concentrated on the displaying the evidences of the medicinal plants being used by the Bateks for healing rituals. Thus, the following were some of the plants used in its local names (noticed that there were no efforts undertaken to identify the scientific names of the plants as it is not the intention of the study, partly due to the need to maintain the intellectual property (IP) rights protection owned by the Bateks communities):

Medicinal Plants Used by The Bateks of Kuala Koh

'Je el' tree

The Bateks of Kuala Koh have been using numerous medicinal plants for health reasons based on the knowledge that they have traditionally inherited from their ancestors for many generations. These medicinal plants have traditionally been their primary source for healthcare. The presence of worms in stomach especially among the younger generation has been one of the major health issues faced by the community due to their close proximity to the forests and their high dependency on forest resources both for economic returns and daily diet intake. One of the medicinal plants used by the community to treat stomach problem especially for what they 'believe' as a result of the presence of worms especially among the kids is what they called 'je el tree'. The following is the transcribed interview with Batin Hamdan:

Date: **15 November 2015**
Interviewee: **Batin Hamdan (BH), Isteri Batin (IB)**
Interviewer: **Researcher (R)**

BH: Ni daun ni bagus untuk sakit-sakit perot... untuk budak-budak laa.. (Sambil memegang daun pokok yang baru sahaja dipotong dari batang pokoknya)
(This leave is good for stomach ache.. (mostly) for kids… (while holding the leaves that he had just chopped off from the trunks)

R: Ooo. Bagus untuk sakit perot ye tok. Macam mana nak guna pokok ni tok?
(Ooo.. it is good for stomach isn't it.. how to use this tree Tok (for medicinal purpose)?

BH: Ha yelah.. kalau budak-budak ada cacing dalam perot, elok la pakai pokok ni..ambik daunnya, kita rebus, lepas tu dah mendidih tu kita kita bagi lah budak tu minum. Nanti elok la dia, tak de cacing dalam perut. (Nota: tidak ada perincian jumlah atau bilangan daun-daun yang perlu direbus untuk diminum airnya).
(Ok… it is like this.. if the kids have some worms in their stomach, it is good to use these leaves, we bring it to the boil.. after that, we give it to the kids to drink.. they will heal, there wont be any more worms in their stomach. (Note that there is no specific amount or number of leaves being prescribed to be boiled (and drunk by the kids)

R: Ada nak kena baca-baca ke Tok masa nak minum air rebusan tu?
Are there any mantras (or words) to accompany while the kids drinking the boiled water from the plants?

BH: Takde. Minum macam itu je la..
No.. Just drink it like that

R: Susah tak nak dapat daun ni Tok?
Is is difficult to obtain the leaves Tok?

BH: Pokok ni banyak lagi la.. tapi dah tak banyak macam dulu lagi.. kena masuk jauh sikit la (ke dalam hutan) untuk cari. Sekarang ni hutan-hutan pon dah banyak kena tebang kan..
These trees can be found in abundance in the forests.. although they are not as many as they used to be.. Now we had to go deeper inside the forests to find them.. The forests have not been cut down a lot..

R: Budak-budak tahu ke pasal pokok ni tok. Pasal dia boleh buat ubat semua kan
The kids, do they know about the trees (and their uses as medicinal plants?) As most of the trees can be useful as (traditional) medicines right?

BH: Tau budak-budak ni.. sebab dia ikot sekali.. kita bawak dia masuk dan kita tunjukkanlah pokok-pokok ni.
Yes, they know because they were also following us into the forests..we brought them together with us and showed them these trees..

R: Ooo.. maknanya dia belajar sendiri la kan Tok.. bila dia ikot orang-orang tua, dia tengok dan dia belajar la kan.. tapi semua simpan dalam kepala la kan. Takde tulis.
Ooo.. that means they learned this on their own right Tok.. When they followed the elderly (into the forests), they watch and learn right.. but they (the knowledge) are all in their heads (being memorized).. not written down..

BH: Takde (Tak tulis).. budak-budak ni tak tulis.
No (Not written down).. those kids.. they did not write…

The feedback from the informant revealed a number important phenomena at the study site. Firstly, the use of 'je'el' tree as a source for stomach problem (worms) treatment was still being practiced by the Batek community especially to treat the presence of worms in children. Secondly, the method of utilising the medicinal plant is mostly through direct use or consumption of the plants (usually boiling) without a clear and standardised method for consumption by the patient. Thirdly, the presence or availability of the plant as a source for ailment (stomach) treatment for the community is still there although there is a higher difficulty in obtaining these plants compared to previously as a result of among others physical change of the surrounding areas over time (particularly the clearance of the land for development purposes). Fourthly, although the children or the younger generation have had the opportunity of being shared with the knowlegde related to the use of the medicinal plants for healthcare purposes, the acquiring of the knowledge is primarily obtained in oral form. The following **Fig.** illustrates the leaves from 'je el' used by the Batek of Kuala Koh to treat ailment related to the presence of worms in stomach.



Fig. 6: 'Je'el tree'
Source: Fieldworks, 15 November 2015

'Kuang' Tree

Stomach problem remains one of the biggest challenges faced by the Bateks as far as their healthcare is concerned. Thus, another very important plant that has been customarily used by the Batek community in treating ailment or illnesses related to stomach

problem is the leave of a plant with local name of 'kuang' tree. As in the case of 'je el' tree, the leaves of 'kuang' tree is used by the Bateks to help cure purging (cirit birit) among both the adults and children.

The Bateks were still using 'kuang' tree as a source for healthcare particularly to treat stomach problem. Similar to je'el tree, the traditional use of this plant was through 'direct use' or consumption of part of the plants (by boiling the plants). As reflected in the interview with Batin, it was more difficult in obtaining the plants now compared to previously due to similar factor as in the case of 'je'el' tree. The following is the **Fig.** illustrates 'kuang' leaves:

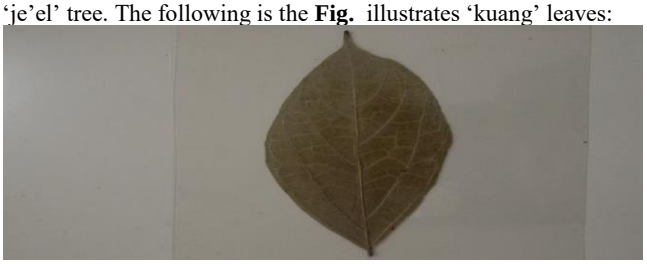


Fig. 7: 'Je'el Tree'
Source: Fieldworks, 15 November 2015

'Gelugor' Tree

In addition to stomach problem, the health of other parts of the body such as back and lower abdomen of the Bateks is another important and most commonly affected diseases faced by the Bateks as far as their healthcare is concerned. This is particularly important as the nature of their daily activities required them to be able to 'go in and out of the forests' to procure forest produce for their daily needs which required them to have a comprehensive healthy body including and particularly their back and lower abdomen of their body. Thus, another plant that is used by the Batek to help cure diseases faced by the community members is 'Gelugor' tree which has traditionally been used by the community to reduce back pain.

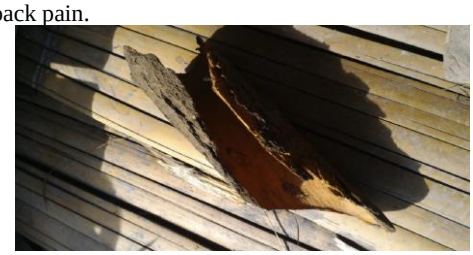


Fig. 8: 'Gelugor tree'
Source: Fieldworks, 15 November 2015

'Gelugor' tree is another medicinal plant that has been traditionally used by the Bateks of Kuala Koh for healthcare particularly to treat 'back pain'. Based on the feedback from the informants, I have made several observations on the similarities of some aspects of the uses of these plants. Firstly, as I 'was told' the medicinal plants were 'directly used' and 'consumed' by the Bateks, either through mouth intake i.e. consumption of the water from the boiled plants (je'el and kuang) or applied externally onto the ailing parts (gelugor). Secondly, the community have now faced with difficulty to obtain these plants compared to previously. The following **Fig.** illustrates part of 'gelugor' tree:

'Pokok Sakit Pinggang'

In addition to healthy 'back' part of the body, another important part that is equally important for the Bateks is the lower abdomen area – an important part of the body which is required to remain healthy to enable them to carry out heavy works such as 'hunting and gathering'. Thus, another important plant that is traditionally used by the Batek to help cure the lower back pain is 'pokok sakit pinggang' – a medicinal tree that has been used by the community members to treat this ailment.



Fig. 9: 'Pokok Sakit Pinggang'
Source: Fieldworks, 15 November 2015

Cas Kebon

Another medicinal plant used by the Bateks to treat illnesses was a plant locally called 'Cas Kebon'. This plant was used among others to 'control the level of sugar' in the body which is 'said 'to be good for diabetic patient. According to Batin Hamdan, *Cas Kebon* can be found quite easily in the forests. A typical *Cas Kebon* plant has 'quite a big' root in which parts of it would be boiled and dranked by the diabetic patient. **Fig.** 10 below shows the root of *Cas Kebon* which is used by the Bateks in addressing diabetic:



Fig. 10: 'Pokok Cas Kebon'
Source: Fieldworks, 15 November 2015

These collections of medicinal plants are some of the plants used by the Bateks health ailments and find cure for various diseases experienced by the members of the community. The names of the plants were purposely quoted as to what they were called locally (local names). The main justification is that this study did not intend to 'find' or 'match' the local names of these plants with its scientific codification or classification for reasons discussed in the literatures – i.e. 'possible' placement of these information into the 'public domain' which would reduce the 'secrecy and confidentiality' of the information. Nor is the study attempt to 'prove' the efficacy of the medicines through 'scientific validation' such as laboratory and clinical testing which should be done in another exercise if needs be.

The data obtained from the fieldworks which revealed the uses of 5 of medicinal plants (comprising wide coverage of body parts ailments or illnesses ranging from abdominal to back and head) that had been known to and might have been used by the Batek community during the study which supported the notion that TK related to medicinal plants is still 'widely known' and potentially be used by the community. These findings also exemplified the 'still rich' variety of TK related to medicinal plants known to the Bateks. These collections of samples of medicinal plants known to and used by the Bateks however, did not necessarily indicate or provide validation on the effective uses and practices of the TK related to medicinal plants for health purposes in the community. Thus, it is important to note that in this research, 'knowing the uses of the medicinal plants for healing rituals did not necessarily mean that they have actually effectively used it'.

7. Ritual Practices

Another aspect of the use of the traditional knowledge related to medicinal plants that the study intends to uncover was the manner in which the medicinal plants and the traditional knowledge related to it were used in the community. Earlier literatures (2, 12) have emphasised the importance of 'spells' or 'mantra' that ac-

companied the use of medicinal plants as part of healing process. The research's interaction, interviews and observations at the study site however revealed that the Bateks nowadays did not necessarily use 'spells' or 'mantras' to accompany the use of medicinal plants and the traditional knowledge related to it in addressing their health problems. To illustrate, in one of the interviews with Batin Hamdan to find out the uses of 'chants', 'mantras' and 'spells' in the practice and use of traditional medicines, the following response was recorded:

...Kita takde baca apa-apa. Kita ambik daun-daun atau akar-akar atau batang-batang kayu tu, kita buatlah, rebus ke, bakar ke dan minumlah air tu ke atau sapu ke bahagian-bahagian yang sakit tu ke. Tak lama lepas tu semboh la.. tak payah baca apa-apa pon'...

(Interview with Batin Hamdan, November 2015)

Translation:

..we don't have to read anything (mantra etc).. we take the leaves or the roots of the trees or even the trunks.. we will bring it to the boil, or burned them we drink from it.. or we rub it into a specific area that is ailing... It will heal eventually.. we don't have to read anything'...

(Interview with Batin Hamdan, November 2015)

This statement 'unearthed' that while in some serious cases where some 'chants', 'spells' or 'mantras' being uttered on by the expert and knowledgeable in the community (such as Pak Abu), most of the time, the community members would just consume the medicinal plants on their own without the need to accompany it with those 'chants', 'spells' and 'mantras'. This was rather interesting as many earlier literatures have emphasised the interconnectedness of medicinal plant uses with that of spiritual elements. According to Boedeker, Beta (13), an essential feature of traditional health system is that they are based on theories or cosmologies that take into account 'mental, social, spiritual, physical and ecological dimensions of health and well-being'.

In addition, the findings from the 7-day observation (5^{th} – 12^{th} Novermber 2015) on daily activities of Batin Hamdan and his family members revealed the infrequency (absence) of acquiring and using of medicinal plants in the daily life of Batin Hamdan and family. While much of Batin Hamdan's time in that week was spent in the forest (5 out of 7 days), much of the wife's time was spent at home (in their shelter). If the wife were to go out, however, it was for fishing or findings food such as tubers in the nearby area. The other family members notably the son of the Batin was mostly engaged on finishing his works on bamboo handicraft that was pre-ordered by his friend from outside.

...'Biasanya saya ambil masa dalam dua ke tiga hari untuk siapkan bekas simpan 'ubat sumpit' ni. Kalau yang macam ni, dapat lah jual dalam RM80 ke kawan saya tu'...

(Interview, Enja, Son of Batin Hamdan, November 2015)

Translation:

...'Usually, it took me two to three days to complete this (crafted) container to place these 'barbed darts for blowpipes' ... If it is this size, I would probably get around RM80 if I sell it to my friend'...

(Interview, Enja, Son of Batin Hamdan, November 2015)

The 7-day observation on activities also found that at 'no time' was any medicinal plants being 'acquired' or 'sought after' or 'used' by any of the family members of Batin. This was probably due to the absence anyone family member who were sick during the time. However, upon further inquiry, this infrequency of the use of medicinal plants was further supported by the responses in interview with Batin Hamdan as follows:

...Saya jarang masuk ke hutan untuk carik pokok-pokok buat ubat. Kadang-kadang sebulan adalah dalam 2 kali. Kalau ada sakit-sakit barulah kita masuk dalam carik. Tapi kita pon sekarang senang, dah ada ubat-ubat moden macam panadol tu kan. Orang luar pon jarang datang mintak kita carik pokok-pokok ubat. Kalau diorang mintak barulah kita masuk dalam carik. Tapi jarang lah...

(Interview, Batin Hamdan, November 2015)

Translation:

...I seldom go into the forest to find medicinal plants. Sometimes, once a month.. sometimes twice a month... If there are cases of aching or illnesses, then only we will go into the forest to find them… but it is easier now.. there are modern medicines such as Panadol.. people from outside are also seldom coming in here to ask for us to find for them the medicinal plants .. if they come and ask for it, then only we will go in to find them.. but it is seldom nowadays…

(Interview, Batin Hamdan, November 2015)

It was evidenced from the observation of daily activities the interview with a member of the community that the acquiring and use of TK related to medicinal plants was 'infrequent' as it was very much subjected to the need to acquire it whether for own use or from the requests by others (outsiders). The infrequent use and utilisation of TK and the availability of modern medicine as a convenient option for health purposes of the Bateks in Kuala Koh further illustrate the trend of 'lower level of dependence' of the community on the TK related to medicinal plants that they own.

In essence, this study has revealed that the Bateks are still highly knowledgeable on the uses of medicinal plants for healing rituals and are potentially widely practicing in when in need. While their rituals practices might have changed with less reliance on 'chants' and 'mantras' to accompany the uses of the traditional medicines for ritual healings, the evidences on the study site also indicate that they are also less utilization of those medicinal plants due to among others the availability of modern medicines as a 'convenient' option.

8. Knowledge Transfer

The last process of knowledge management is knowledge transfer whereby this study investigated how knowledge is being transferred or passed on from one person to another and from one generation to the other. As mentioned earlier, this process is closely related to the first process of knowledge management – knowledge generation and thus, the evidences described earlier are also evidences that can be used to describe and support the state of the transfer of traditional knowledge on medicinal plants of the Bateks.

Although the evidences and analysis for knowledge generation process have found the three ways of how knowledge is being generated in the community – namely through 'spiritual' transfer of ideas (knowledge), transfer of knowledge based on 'familial lineage' and sharing of knowledge with other members of the community – none of these means of knowledge generation and knowledge transfer were done in documented form. This was further supported by evidences interview sessions with Batin Hamdan:

...Macam Dong (penduduk dari luar) dia pegi masuk hutan sendiri... Dia ikot... dia cari ubat-ubat.. semua dia tulis... dia ikut orang sini tu.. kuala koh tu...dia tulis ubat kan.. dia bawak 5, 6 orang dia buat dalam tu kan...dia (orang) melayu.. dia tulis-tulis.. dia bawak balik dengan dia sekali la (tulisan dia tu)..

Ada dulu.. dekat 3 ke 4 tahun... Aya (Ayakawa – seorang pengkaji dari Jepun) tapi dia bukan belajar pasal ubat... dia buat pasal hidup... yang macam ubat ni... tapi balik dah dia...

(Interview, Batin Hamdan, 23, March, 2014)

Translation:

...For example Dong (an outsider) he did go into the forest on his own... He followed (us) sometimes... he would find plants with medicinal elements.. he would write all those... He would follow the local (people).. the kuala koh people... he would write about the medicines (plants).. he would bring 5 or 6 people inside...he (Malay) he would write…he would bring with him (whatever he has written)..

There was a lady.. 3 to 4 years ago... Aya (Ayakawa – a researcher from Japan) but she did not learn about medicinal plants... she studied on life.....just like on medicines... but she has gone back home...

(Interview, Batin Hamdan, 23, March, 2014)

These statements revealed that recording or documentation of the knowledge related to medicinal plants were not done by the people (particularly the younger generations of the Bateks themselves) as

it was never 'the practice' of any members of the community. Instead, written documentation of their traditional knowledge were carried out (if any) by individuals outside of their community such as a member of a neighboring community or outside researchers. Thus the presence of documented or written transfer of knowledge from one individual to another among the community members was virtually 'non-existence' as indicated and supported by evidences as discussed in the knowledge generation section.

However, based on interactions with and observations on the activities of the selected younger generation of the Bateks, there is a high level of potential for the level of reading and writing ability to be further improved and thus increase the likelihood of the knowledge to be transferred in documented form in the future. **Fig.** 11 and 12 below provided evidences on the high levels of interests among the younger generation of the Bateks in improving their basic reading and writing ability which would essentially improve their documenting ability and in turn would further enhance the likelihood of the traditional knowledge to be transferred in documented forms:



Fig. 11: The High Level of Interests and Engagement Shown by The Younger Generation of The Bateks in 'Learning Activities'
Source: Fieldworks, 15 May 2016

In essence, the evidences at the study site revealed that traditional knowledge of the Bateks is still being transferred completely in oral form and the existing situation of basic reading and lack of writing ability among the younger generation of the Bateks would continue to prevent the documentation of the knowledge from happening. However, evidences also showed that there is a high level of interests among the younger generation to learn and improve their ability to read and write and thus improve the likelihood of the documentation of their traditional knowledge to occur in the future.

5. Conclusion

Examination on the processes of knowledge management of TK related to medicinal plants of the Bateks in Kuala Koh found that there were themes that have emerged for all four processes. These themes were supported by empirical evidences obtained from ethnographic methods of data gathering namely interviews, participant observation and content or document analysis. In terms of knowledge generation, it was found that there was an 'undocumented means of knowledge generation with potential loss of traditional knowledge'. Meanwhile, in terms of knowledge codification, it was found that there was a non-codified knowledge being practiced in the community and widespread inability of basic reading and writing skills among younger generation. In addition, in terms of knowledge utilisation, there was a high level of traditional knowledge utilisation in the community but some of procedures of knowledge utilisation particularly the ritual practices has been simplified. Meanwhile, for knowledge transfer, there was an absence of documentation of traditional knowledge by members of the community with a potential loss of the knowledge due to its continued existence in oral form. These findings therefore, achieved the aim of this study which was to examine the processes of knowledge management among the Bateks.

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