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# PUBLIC HEALTH RESEARCH

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## Rapid Rural Appraisal of a Rural Village in Sabah

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### ABSTRACT

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<b>Accepted</b>	19 December 2012
<b>Introduction</b>	Rapid Rural Appraisal (RRA) is a systematic, semi-structured activity carried out in the field by a multidisciplinary team that is designed to obtain new information and hypotheses about rural life. This article reports the results of an RRA conducted in Kampung Paris 1 (KGP1), Kinabatangan, Sabah under the Annual Health Promotion Program of the School of Medicine, Universiti Malaysia Sabah.
<b>Methods</b>	A systematic random sampling was used to recruit the villagers and data was obtained through compilation of pre-existing data, field observation, structured interviews with key informants and villagers.
<b>Results</b>	Cardiorespiratory diseases were prevalent in KGP1. Common water sources such as rain water collected in dug wells in KGP1 were unhygienic. Dangerous toxic fumes were produced by the burning of municipal wastes nearby village houses. The villagers of KGP1 were exposed to various farm animals, which may harbor zoonoses. Health care services are limited in KGP1. Villagers who were not poor (>RM897) represented 48% of the population, followed by the poor (RM503-897), 20% and the hardcore poor (<RM503), 32%. 87.9% of the population in KGP1 experienced overcrowding in homes, which was defined as >1.00 person per bedroom.
<b>Conclusions</b>	Poor water hygiene, polluted air from open burning, exposure to farm animals, poverty, poor education, overcrowding and inadequate health care services were among the few possible factors affecting the health of villagers in KGP1. Formal rigorous research should be conducted in the future to facilitate specific health interventions in areas of need such as KGP1.
<b>Keywords</b>	Rapid Rural Appraisal - Sabah

### INTRODUCTION

Rapid Rural Appraisal (RRA) is a systematic, semi-structured activity carried out in the field by a multidisciplinary team and is designed to obtain new information and to formulate new hypotheses about rural life<sup>1</sup>. The modern RRA originated in the late 1970s, which was developed due to dissatisfaction with biases in rural development tourism, the shortcomings of conventional questionnaire surveys and the search for cost effective research methods<sup>2</sup>. In rural development tourism, urban based professionals make brief rural visits to assess rural development. Various types of biases have been recognized. For example, by visiting local elites more than the poor and visiting only project sites and cities, these biases could all combine to hide the worst poverty and deprivation<sup>2</sup>.

RRA involves the use a number of methods-such as preexisting information, structured interviews of selected key informants and villagers and field observations to understand rural conditions in a quick and cost effective manner<sup>3</sup>. RRA facilitates rapid public health interventions, which is not easily achieved by conventional research methods<sup>4</sup>. RRA is different from Participatory Rural Appraisal (PRA). In RRA, outsiders aim to gain qualitative insight into the daily life of inhabitants in a rural setting. In PRA, outsiders aim to facilitate the local inhabitants in evaluating their own situation and plan activities to improve it<sup>5</sup>.

This article reports the findings of an RRA done in Kampung Paris 1 (KGP1), Kinabatangan, Sabah, in 2011, under the Annual Health Promotion Program conducted by the School of Medicine, Universiti Malaysia Sabah (UMS). The name Kampung Paris (KGP) is an abbreviation of 'Perkampungan Anak Rakyat Islam Sabah', which means 'The Villages of the Muslim Children of Sabah'. KGP1 is one of the seven villages of the KGP Township, lying alongside the highway connecting Lahad Datu to the Kinabatangan Town. It has a total population of 1008 in an area of more than 2000 acres divided into 135 lots, consisting mostly of oil palm plantations.

The aim of this research was to attain health related information from KGP1 so that future research and health interventions could be planned. RRA will be the most appropriate method to gain the most amount of health related information under the financial and time restrictions implicated in our project.

### METHODS

The RRA in KGP1 lasted for 6 days. Ethical approval and financial sponsorship from UMS was obtained for this research. We used 4 methods in this RRA, namely, compilation of preexisting data, field observations, structured interviews with key informants and villagers

#### *Compilation of Preexisting Data*

We compiled preexisting data of KGP1 from the Community Broadband Center database<sup>6</sup> of KGP1, which included information on the demography of KGP1, the village history and village facilities. We inquired on the number of births and deaths in 2010 for KGP1 from the Kinabatangan health office.

#### *Field Observations*

During field observations, we documented various aspects of the village, such as the architecture of houses, shops, health related facilities, educational facilities, religious facilities, agricultural facilities, transportation, water and electric supply, communications technology and waste disposal practices. A map of the village was drawn.

#### *Structured Interviews of Key Informants*

Key informants were interviewed, who included the head of the village, the president and secretary of the village managing committee and the assistant headmistresses of the local primary and secondary schools. During the key informant interviews, aspects that were asked included the village history, village size, village facilities, education, health issues/common illness, security, annual birth rate, annual death rate, smoking, alcohol, maternal health, geriatric health, contraception, village organizations, local cultures, festivals, beliefs and religion.

#### *Structured Interviews of Villagers*

A systematic random sampling was used to recruit the villagers for structured interviews. The village houses lay alongside the main road. We selected every third household to be recruited in our interviews. The first house was randomly selected. All the members within the selected households were interviewed. Written informed consents were obtained from the villagers. The minimum calculated sample size required was 217 villagers. Descriptive analysis was conducted using SPSS 17.0. Aspects asked during the interviews included age, gender, race, occupation, religion, years of formal education, literacy, mode of transport, household income, stove type, refrigerator use, water source, days of water shortage during droughts, latrine type, smoker status, alcohol use, waste disposal method, number of members per room, usage of alternative or western medicine, contraception use, presence of any known diseases, dietary composition and presence of various animals in or around the house.

### RESULTS

#### *Results from Preexisting Data, Field Observations, and Interviews with Key Informants*

KGP1 lay alongside the highway connecting Lahad Datu to the Kinabatangan Town. Most of the houses were made of wood, with many openings

and good aeration. According to the Kinabatangan health office, the number of births in 2010 for the whole Paris Township was 398 persons, with 20 births in KGP1 for 2010, and the number of deaths for children in 2010 for KGP1 was 11 persons.

KGP1 was founded in 1976<sup>6</sup>. In the beginning, this area was a class I forest reserve. Forest reserves in Sabah are classified into classes I to VII. Class I Forest Reserves are conserved for the protection of watersheds and maintenance of stability of soil, water conservation, and other environmental factors. Logging is not permitted in these areas. In that year, 10 locals created the first village managing committee (JKK) to request the Sabah Government to establish the village. With an area of 3000 acres in phase 1, and a total population of 145 people, the JKK acquired permission from the government to establish the village. It was thus formed officially on 15<sup>th</sup> June 1977. In KGP1, the distance from the first house to the last house was approximately 18km, making it one of the largest villages in Sabah. The land behind and between the houses were filled with oil palm trees.

The development in KGP1 was rapid as it obtained aids from various parties especially the government. Electricity was provided by Sabah Electricity Sdn. Bhd. The phone line was provided by Telekom Malaysia. Local law enforcement groups such as Platoon 0155 complimented the efforts of the local police. Piped water was not available in the village. The villagers used rain water as the main source of water supply. The rain water was collected in dug wells. Very few villagers filter water upon usage but almost all of the villagers would boil their water before consumption.

There was a primary school in KGP1 named SK Paris. Secondary school students from KGP1 receive their education at SMK Paris 3 in KGP3. There were also a few pre-schools in the village, which were mostly Islamic. Informal education which emphasized Islamic teachings was taught by religious leaders and the elderly. KGP1 also had mosques. There was a church in KGP3. There was a computer centre known as the Community Broadband Center (CBC) to allow the villagers to access computers and internet services. CBC provided wireless internet service to users within a 300m radius.

In KGP1, there were no clinics or hospitals. The nearest available clinic was in Kampung Batu Putih which focused on maternal and child health. The nearest hospital was Hospital Lahad Datu, which is 42.3km from KGP1. Hospital Kinabatangan is 53.4km from KGP1. Villagers of KGP1 did not have the habit of attending regular medical checkups. Diabetes mellitus, high blood pressure and gout were claimed to be prevalent in KGP1. Villagers of KGP1 were claimed to favor

salty and oily food, such as fried salted fish. In the 1990s, dengue used to be prevalent but it had been overcome by the efforts carried out by Kinabatangan Health Department. The village head claimed that there were no cases of malaria in KGP1. The village leaders claimed that 80% of the villagers smoked cigarettes. Most of the smokers were males. The village leaders claimed that 10% of the villagers were alcoholics. Among the alcohols consumed are Tuak and Montoku.

Villagers were constantly exposed to pesticides from the oil palm plantations. Some villagers spray pesticides without wearing masks as they find it troublesome.

Regarding waste disposal, some buried their rubbish, some burned it and some emptied rubbish into the plastic bags and dumped it at places of their convenience. However, since 2006 the condition had improved because of the government rubbish collection service. Unfortunately, the rubbish collection service had become very irregular lately. We saw rubbish heaped up in front of many houses. Villagers in KGP1 did not have a modern piped sewage system. Most villagers used pit latrines whereby the sewage would flow directly into the ground.

KGP1 received much attention from the police as cases of robbery and thefts happen quite often in this area. Most of the convicts were illegal immigrants. The police increasingly patrolled KGP1. This reduced crime rates.

Maternal health of KGP1's villagers was mainly taken care by the maternal and children's clinic in Kampung Pasir Putih (KPP). Pregnant mothers were required to have a monthly checkup in the clinic at an affordable price and if the pregnant mother failed to turn up, the clinic's staff will embark on outreach counseling services and subsequent referrals. The clinic also offered postnatal care to mothers who require it. Neonates received immunization from this clinic. For obstetric emergencies, pregnant mothers were referred to the Kinabatangan Hospital to be attended by a specialist. The maternal and child's clinic in KPP is run by nurses and midwives.

Geriatric health in the village was given less attention. The elderly do not go for regular medical checkup nor do they favor any form of physical exercise. Most of them spend their time resting at home; only a handful did some farming. At the same time, they did not practice a balanced diet. Many started smoking after they retired.

The older generation did not practice any form of family planning. In the past, a family had about 7-13 children. Nowadays, the villagers only have 1 to about 4 children because they started to practice family planning by using contraceptive pills.

## Rapid Rural Appraisal

### *Results from Structured Interviews with the Villagers*

A total of 331 villagers participated in our interviews. The 19.3% were 0-9 years old, 24.5% were 10-19 year old, 32.3% were 20-39 years old and 23.9% were 40 years old and above. Fifty point eight percent (50.8%) were males and 49.2% were females. Fifty one percent (51.0%) were of the Sungai race, followed by Bugis, 33.2%, Bajau, 5.4% and other races, 10.3%, which included Pakistanis, Indonesians, and Suluk among others. No Malays, Chinese or Indians were identified in our study. The majority (96.4%) were Muslims and 3.6% were Christians. Villagers who were never formally educated consisted of 33.2%, followed by primary school level only, 26.0%, secondary school level only, 35.0%, and tertiary education, 5.7%. About 84.6 % of the population was literate and 15.4% were not. The modes of transportation employed by KGP1 villagers were private cars

(54%), motorcycles (10%), bicycles (0.3%) and public transport (36%).

The majority in KGP1 were students (28.1%), followed by housewives (22.3%), oil palm plantation workers (13.3%) and other occupations, 35.7%, which included teachers, shopkeepers, waitresses, telecommunication workers, road maintenance workers, priests, and nurses among others. 'A household is considered poor if its income is less than its own Poverty Line Income (PLI), that is, it lacks the resources to meet the basic needs of its individual members. A household is considered hardcore poor if its income is less than the food PLI<sup>7</sup>. The food PLI was RM503 for Sabah, and the PLI was RM897 for rural areas in Sabah<sup>6</sup>. In KGP1, those who were not poor (>RM897) represented 48% of the population, followed by the poor (RM503-897), 20% and hardcore poor (<RM503), 32%.

**Table 1** Sociodemography of KGP1 Villagers

Population number	1000
Gender	
Male	50.8%
Female	49.2%
Age groups	
0-9	19.3%
10-19	24.5%
20-39	32.3%
>39	23.9%
Ethnic groups	
Sungai	51.0%
Bugis	33.2%
Bajau	5.4%
Others (Pakistanis, Suluk etc.)	10.3%
Religion	
Islam	96.4%
Christian	3.6%
Occupations	
Student	28.1%
Housewife	22.3%
Oil palm plantation worker	13.3%
Others (Teachers, shopkeepers etc.)	35.7%
Income group	
Not poor (>RM897/month)	48.0%
Poor (RM503-897/month)	20.0%
Hardcore poor (<RM503/month)	32.0%
Education	
Not formally educated	33.2%
Primary school level only	26.0%
Secondary school level only	35.0%
Tertiary education	5.7%
Literate	84.6%
Illiterate	15.4%

About 97.9% of KGP1 used gas stoves while 2% used stoves powered by combustion of

timbre. All stoves were located indoors. The majority of them (95.8%) own refrigerators, 4.2%

do not. Hundred percent (100.0%) of KGP1 used rain water as their water source, either in tanks or catchment ponds (dug wells), due to the absence of piped treated water. The percentages of the population using other types of water sources were 15% for wells, 32% for ponds and 15% for rivers. Days per month of water shortage during droughts were categorized into 0-4 (75%), 5-9 (15%), 10-14 (9%) and 15-19 (1%) days. The majority of the community used pit latrines (81.6%), followed by flush toilets (12.7%), and opened air latrines (5.7%). About 84.6% of the community claimed to be non-smokers, while 15.4% were smokers. About 97.6% of the community claimed that they never drank alcohol, whereas 2.4% do drink alcohol beverages. Waste disposal methods included open burning (87%), plant in soil (24%), disposed into river (6%) and collection by Kinabatangan town council (3%).

Overcrowding can be defined as >1 person per bedroom<sup>8</sup>. In this definition, '1 person' is equivalent to:

- a) a husband and wife (whether of the same sex or not)
- b) a person aged 21 years or more
- c) two persons of the same sex aged 10 to 20 years
- d) two persons aged less than 10 years (whether of the same sex or not)
- e) two persons of the same sex where one person is aged between 10 years and 20

years and the other is aged less than 10 years or

- f) any person aged under 21 years in any case where he or she cannot be paired with another occupier of the dwelling so as to fall within (c), (d) or (e) above.

There were 87.9% of the populations in KGP1 experienced overcrowding in homes. About 95.2% of the population relied on western medicine to treat their ailments, followed by 33.2% for traditional medicine and 7.3% for religion. The 66.8% of the population employed only western medicine. Twenty one point one percent (21.1%) of the population used both traditional and western medicine. Seven point three (7.3%) of the population used all 3 types of medicine, western, traditional and religion. The rest of 4.8% solely used traditional medicine. The prevalence of the number of times of brushing teeth per day are 0 (0.6%), 1 (6.6%), 2 (70%), 3 (21%), 4 (2%). Our study revealed that 13.0% of the population practiced some form of contraception while 87.0% do not.

We asked if the villagers had any diseases. Symptoms of upper respiratory tract infections (cough 18.1%; rhinorrhea 18.1%; sore throat 14.5%) and hypertension (7.3%) was common. The results were charted in Figure 1 and 2.

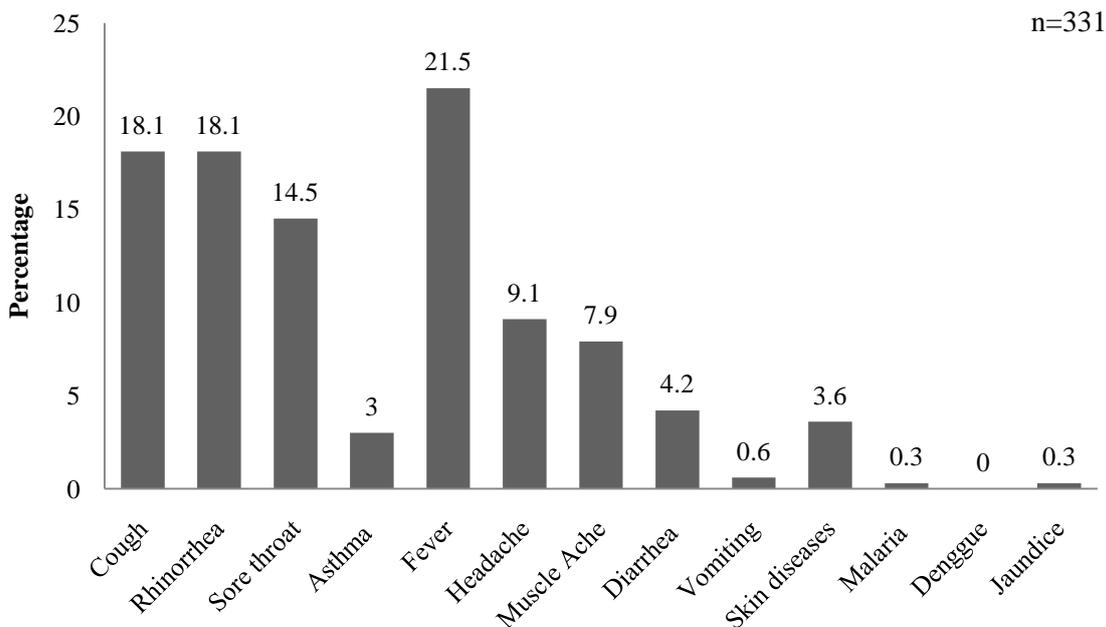
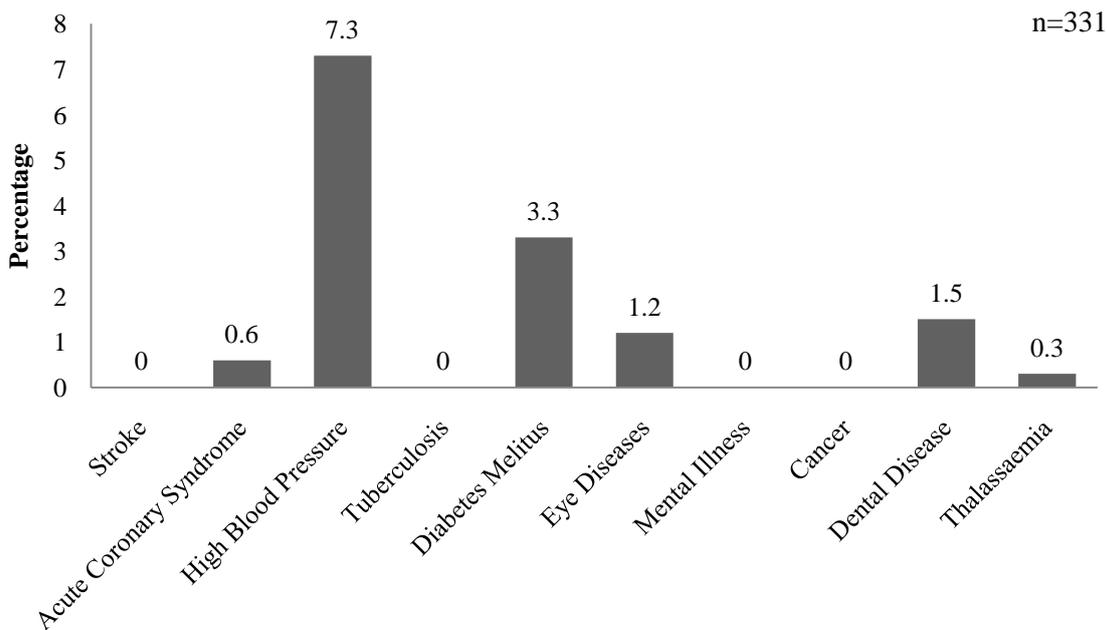


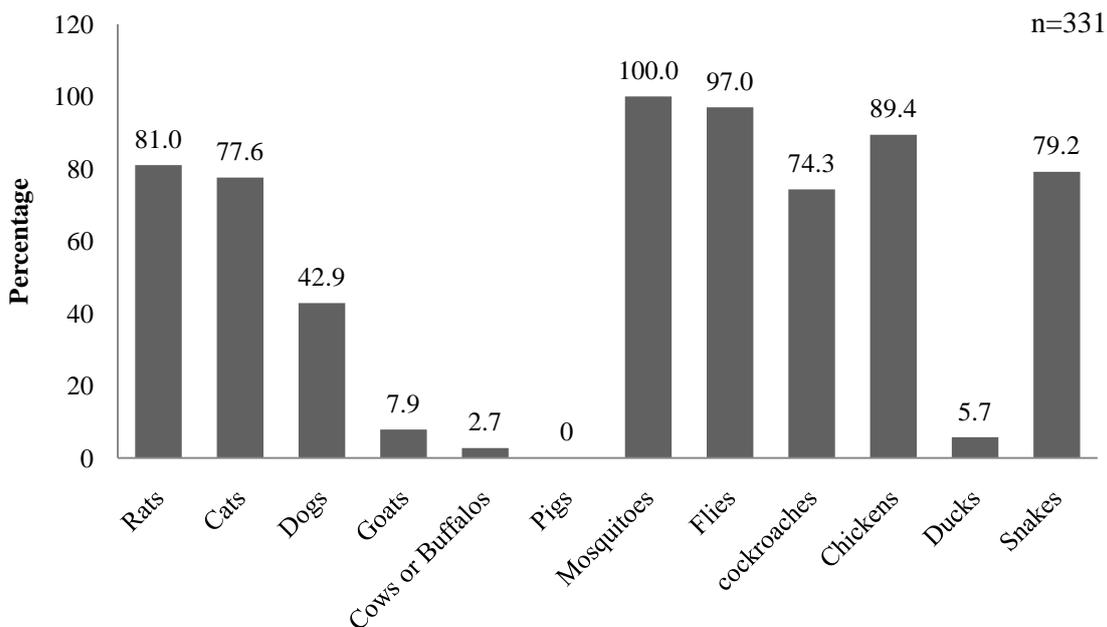
Figure 1 Acute Diseases or Symptoms lasting <1 month among KGP1 Villagers



**Figure 2** Chronic Diseases lasting >6 months among KGP1 Villagers

Various animals were present in or around households. Mosquitoes (100.0%), flies (97.0%), chickens (89.4%), rats (81.0%), snakes (79.2%), cats (77.6%), cockroaches (74.3%) and dogs (42.9%) were commonly encountered. The results

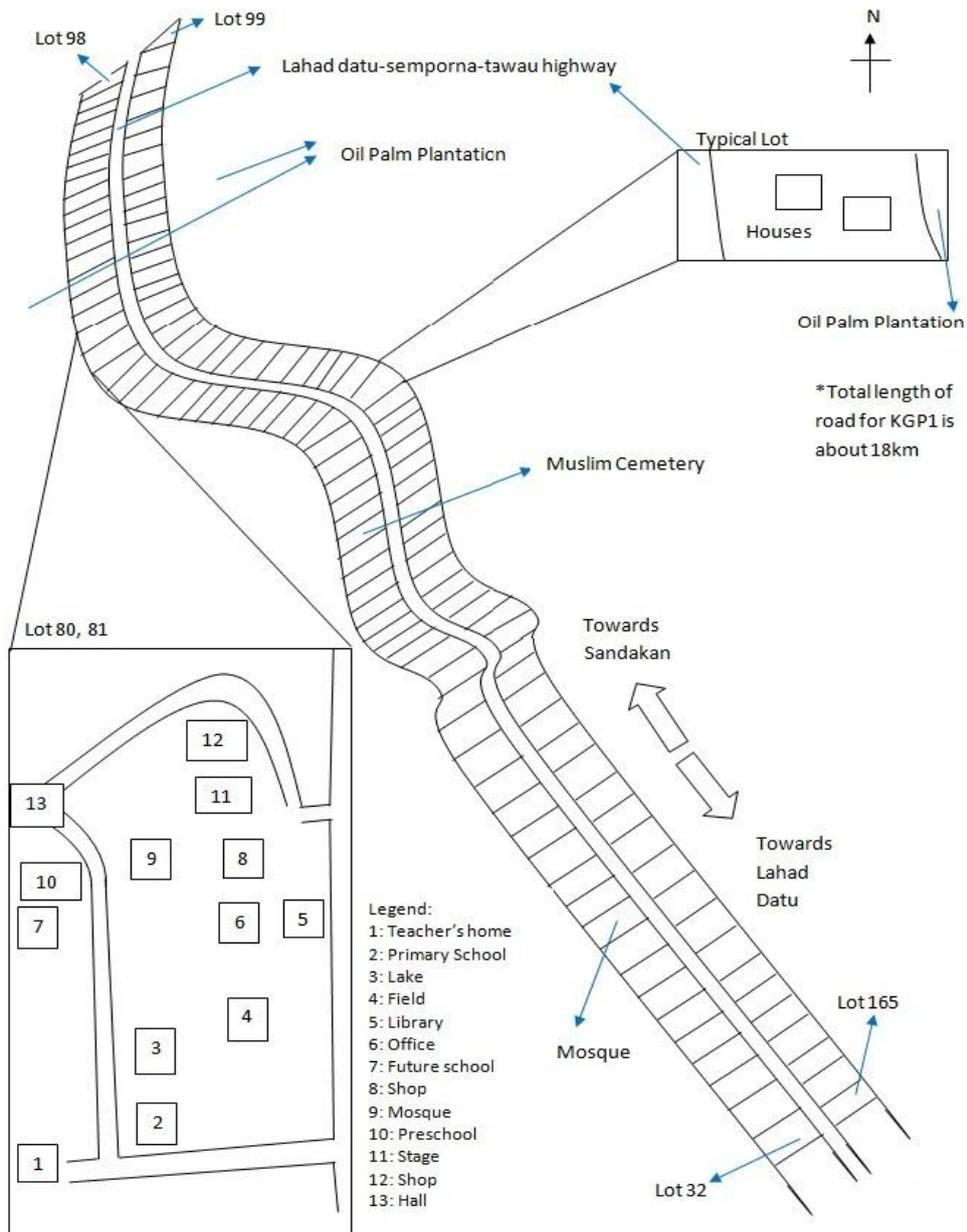
were charted in Figure 3. We inquired on the dietary patterns of the villagers and the results were recorded in Table 2.



**Figure 3** Animals In or Around KGP1 Households

**Table 2** Dietary Composition of KGP1 Villagers

Amount in Diet (% of the population)	Very Less	Less	Moderate	Much	Very Much
Vegetables and Fruits	5.4	3.0	10.0	32.3	49.2
Sweet Foods and Drinks	12.4	40.8	34.7	4.2	7.9
Salty foods	15.1	42.3	34.1	3.0	5.4
High Fat Foods	21.1	35.0	27.8	9.4	6.6



**Figure 4** Map of Kampung Paris 1

### DISCUSSION

Various health related issues are worth discussing regarding KGP1. The main water source is rain water, apart from river, well and pond water. Treated piped water supply is not available. Water shortage is very common during droughts, as rainwater is scarce. 'Diseases caused by water shortages, such as trachoma and scabies, increase during droughts. The incidence of diarrhea and waterborne diseases such as cholera may also increase because of lack of water for washing and intensive use of a small number of water supplies vulnerable to contamination<sup>9</sup>. Water from rivers, wells and ponds are vulnerable to pollution from runoffs from plantations, which may contain pesticides, and industrial wastes from the many oil palms processing factories<sup>10</sup>.

The main waste disposal method is open burning. Most municipal wastes are burnt near houses. There may be toxic fumes in the smoke, which is associated with asthma, respiratory diseases, cancer and birth defects<sup>11</sup>.

Road safety is very poor, because the vehicles, especially giant trailers, zip through roads at high speed. This is a hazard to small vehicles and villagers, as most houses lie just beside the main road. There are no street lights at night. Wooden houses are easily broken into. Oil palm plantations are remote, and may harbor illegal immigrants which are associated with illegal activities<sup>12</sup>.

About 52% of the population in KGP1 earn below the PLI<sup>7</sup>. This means that 52% of the villagers are unable to meet basic requirements, such as food, of its own family members. Poverty is associated with low health status<sup>13</sup>. It is associated with starvation, water shortage, inadequate financial capabilities to access medical healthcare, inadequate education in health knowledge among others. Increased income has been associated with decreased odds of cardiovascular disease<sup>14</sup> and better health overall<sup>15</sup>.

Fifteen percent (15%) of the villagers are illiterate. About 33% of the population did not receive formal education before, and 26% only receive formal education until the primary school level, most of which represent the older generation. Poor education is associated with low health status<sup>16</sup>.

More than 70% of the villagers are in frequent contact with rats, cats, dogs, mosquitoes, flies, cockroaches, chickens and snakes. This exposes villagers to various zoonoses. Brucellosis is associated with farm animals and dogs. Campylobacteriosis and cryptosporidiosis are associated with cats, dogs and farm animals. Cat scratch disease and toxoplasmosis are associated with cats. Hookworm infection and rabies are associated with dogs. Hantavirus pulmonary syndrome, plague and leptospirosis are associated with rats<sup>17</sup>.

About 96% of the villagers have their own refrigerator, which preserves food from spoilage and reducing food poisoning<sup>18</sup>. Indoor air pollution emitted from traditional fuels and cooking stoves is a potentially large health threat in rural regions and its use is associated with respiratory illnesses<sup>19</sup>. Fortunately, almost all of the villagers use gas stoves.

The 82% of the population uses pit latrines, reflecting the absence of human waste management by the government. Most villagers brush their teeth at least twice a day, and there is only 1.5% prevalence of dental disease, reflecting good dental care. Self reported diet composition is low in fat, salt and sugar but high in fruits and vegetables. High fat intake is associated with increased odds of obesity, cardiovascular disease and type 2 diabetes. High fibre intake is associated with decreased odds of obesity, cardiovascular disease and type 2 diabetes. High intake of free sugars is associated with higher odds of having dental disease and obesity, but not diabetes mellitus. High salt intake is associated with higher odds of having cardiovascular disease<sup>20</sup>.

Prevalence of cigarette smoking is 15.4% and prevalence of alcoholics is 2.4% according to guided interviews. This data contradicts with that obtained from key informant interviews, which claim much higher prevalences for both habits. Further confirmation is necessary in future studies.

One of the definitions of overcrowding is >1.00 person per bedroom<sup>8</sup>. 87.9% of the population in KGP1 experienced overcrowding in homes. According to WHO, 'For communities, inadequate shelter and overcrowding are major factors in the transmission of diseases with epidemic potential such as acute respiratory infections, meningitis, typhus, cholera, scabies, etc. Outbreaks of disease are more frequent and more severe when the population density is high<sup>21</sup>.

The majority of the community used pit latrines (81.6%), followed by flush toilets (12.7%), and opened air latrines (5.7%). Past research have shown that hygiene differences exist between toilet types<sup>22</sup>. Water shortage do exist during drought and a decrease in access to clean water causes unhygienic food consumption and subsequent diarrhea or vomiting<sup>9</sup>.

### CONCLUSIONS

Cardiorespiratory diseases were prevalent among KGP1 villagers. Factors that could possibly affect the health status of KGP1 villagers included overcrowding, unhygienic water sources, poverty, poor education, difficult access to health care services, exposure to various farm animals and open burning. More rigorous and formal research should be conducted in the future to facilitate targeted health interventions in areas of need so that the villagers of KGP1 will achieve a higher

health status. More RRAs should be conducted to benefit rural people in Malaysia as well.

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