

## Community health status of Banpa Population: the increasing burden of health risks

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**Background** : *Population health survey is an important tool to better our understand about health situation in community. It allows us to have comprehensive picture of the risks and health outcomes of the population. With good design, it can provide a good representation of community health including some additional dimensions not commonly measured such as social capital.*

**Objective** : *To understand health outcomes and health risks in the population of Tambon Banpa, Kaeng Khoi district, Saraburi Province.*

**Methods** : *Cross-sectional survey using cluster two-stage sampling method. Three of 11 villages were randomly selected. In each village, proportionate samples of households with head of household or representative of the household age 18 or over at the time survey were included in the study. A questionnaire was developed. Direct interview of survey respondents was done on June 8, 2016 by fourth year Chulalongkorn University medical students.*

**Results** : *Overall 235 households were included in the survey. There were 910 people residing in these households: mean age was 40.3 (SD = 22.4), 52.1% were female, 56.7% single family, 61.0% were under the universal healthcare coverage. Top health problems were hypertension with no major mental health issues. Smoking and drinking were less than that of the Thai general population. Overweight and obese were over 60.0% of the respondents. Over 90.0% coverage on EPI and 96% breast feeding and 82.0% were given till 6 months. Majority reported good quality of life score. Happiness index and quality of life (QOL) were correlated.*

**Conclusion** : *Demographic characteristics in Tambon Banpa revealed a trend towards ageing community with similar prevalence of chronic disease with Thai population. Happiness Index and QOL were relatively good. However, overweight and obese patterns were higher in this population.*

**Keywords** : *Community health, chronic diseases, health risks.*

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**ภรณ์ เหล่าอิทธิ. การสำรวจอนามัยชุมชน ตำบลบ้านป่า อำเภอแก่งคอย จังหวัดสระบุรี:  
การเพิ่มของปัจจัยกำหนดสุขภาพ. จุฬาลงกรณ์เวชสาร 2560 ก.ค. - ส.ค.;61(4):465 - 76**

**เหตุผลของการทำวิจัย** : การสำรวจอนามัยชุมชนเป็นเครื่องมือที่สำคัญในการเข้าใจสถานะของชุมชน ช่วยให้เข้าใจถึงความเสี่ยงทางสุขภาพ ปัญหาสิ่งแวดล้อม การเข้าถึงบริการและสภาวะโรคของชุมชน การสำรวจนี้ยังเป็นตัวแทนของการศึกษาอนามัยชุมชนที่มีการศึกษาถึงปัจจัยที่ยากต่อการสำรวจทั่ว ๆ ไป เช่น ต้นทุนทางสังคมอีกด้วย

**วัตถุประสงค์** : ศึกษาและเข้าใจปัจจัยเสี่ยงและภาวะโรคในประชากรตำบลบ้านป่า อำเภอแก่งคอย จังหวัดสระบุรี

**วิธีการทำวิจัย** : การศึกษาภาคตัดขวางโดยการสุ่มเลือก 3 หมู่จาก 11 หมู่ และมีการสุ่มเลือกตัวอย่าง โดยตัวแทนเป็นหัวหน้าครัวเรือนหรือสมาชิกในครัวเรือนที่มีอายุมากกว่า 18 ปี โดยมีการสร้างแบบสอบถาม และใช้การสัมภาษณ์เป็นรายบุคคลโดยนิตินิเทศแพทย์ชั้นปีที่ 4 ในวันที่ 8 มิถุนายน พ.ศ. 2559

**ผลการศึกษา** : การสำรวจได้ทั้งสิ้น 235 ครัวเรือน ขนาดกลุ่มตัวอย่าง 910 คน อายุเฉลี่ย 40.3 ปี (SD = 22.43) ประกอบด้วยเพศหญิงร้อยละ 52.1 ส่วนใหญ่ของกลุ่มตัวอย่างอาศัยเป็นครอบครัวเดี่ยวร้อยละ 56.7 ใช้สิทธิการรักษาเป็นหลักประกันสุขภาพถ้วนหน้าร้อยละ 61.0 สำหรับข้อมูลการเจ็บป่วยพบว่าโรคที่มีความชุกมากที่สุด คือ ความดันโลหิตสูง (ร้อยละ 21.0) ไม่พบปัญหาด้านสุขภาพจิต อัตราการสูบบุหรี่และการดื่มเครื่องดื่มแอลกอฮอล์ต่ำกว่าค่าเฉลี่ยของประเทศ การได้รับวัคซีนตามเกณฑ์มีมากกว่าร้อยละ 90.0 และมีแม่ที่เลี้ยงลูกด้วยนมแม่มากถึงร้อยละ 96.0 โดยมีมารดาที่สามารถเลี้ยงด้วยนมแม่ถึง 6 เดือนถึงร้อยละ 82.0 คุณภาพชีวิตของประชากร ส่วนใหญ่พบอยู่ในเกณฑ์ที่ดี ดัชนีความสุขสัมพันธ์กับคุณภาพชีวิตในชุมชน

**สรุป** : การศึกษานี้พบว่าลักษณะทางประชากรของชุมชนบ้านป่าเป็นลักษณะของประชากรที่กำลังก้าวไปสู่สังคมผู้สูงอายุ มีอัตราความชุกของโรคเรื้อรังที่เหมือนกับของประเทศไทย มีดัชนีความสุขและคุณภาพชีวิตในเกณฑ์ดี อย่างไรก็ตาม พบว่ามีประชากรที่มีภาวะน้ำหนักเกินและอ้วนมากกว่าค่าเฉลี่ยของประเทศ

**คำสำคัญ** : สถานะสุขภาพชุมชน, โรคเรื้อรัง, ปัจจัยเสี่ยงสุขภาพ.

Health is inevitably known as the essential resource of life. According to the definition of health given by the World Health Organization: health is a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity.<sup>(1)</sup> In many countries, there are strong interest in quality of life and well-being of their populations. In order to further improve health and quality of life, it is important to measure health situation and related risks of the population.<sup>(2,3)</sup>

Community health survey is an important tool to better understand health situation in a community. It allows us to have comprehensive picture of the risks and health outcomes of the population. With good design, it provides a good representation of community health that can lead to health planning and problem solving.<sup>(4)</sup>

One approach to evaluate population health status and health risks at the community level as proposed in a framework by Dahlgren and Whitehead's "Determinants of Health".<sup>(5,6)</sup> This study adapted the framework to evaluate community health in one district in Thailand. The survey comprises of nine key domains for assessment of household and individual levels including sociodemographic and clinical characteristics, individual lifestyle factors such as dietary behaviors, physical activity behaviors and smoking and drinking behaviors, socioeconomic situation, cultural and environmental conditions, healthcare services, environmental health, maternal and child health, and mental health.<sup>(7)</sup> This study is aimed to understand health outcomes and health risks in the population of Tambon Banpa, District of Kaeng Khoi, Saraburi Province.

## Materials and Methods

Cross-sectional descriptive study was conducted in Tambon Banpa, District of Kaeng Khoi, Saraburi Province. The district is chosen purposively as part of a collaborating field site under Chulalongkorn University outreach programs. With household as sampling unit, two-stage random sampling was done. The first stage involves a random sampling of three out of 11 villages. In each selected village, households were randomly proportionate selected for data collection with the help of local village health volunteers to prepare the households for the interview. Total household in three villages were 480 and population of 1,617.

Questionnaire design was done as part of Community Medicine I curriculum for 4<sup>th</sup> year students of the Faculty of Medicine, Chulalongkorn University. Based on the framework mentioned above, the objectives of the survey of each domain were defined, and the draft questionnaire was created. Definitions of tobacco and alcohol consumption were based on that of the Center for Diseases Control.<sup>(8,9)</sup> Dietary pattern was modified from food frequency questionnaires,<sup>(10)</sup> while physical activity was adapted from Global Physical Activity Questionnaire (GPAQ) created by the World Health Organization.<sup>(11)</sup> The mental health section was based on Thai Happiness Indicator. (TMHI-15) questionnaire<sup>(12)</sup> developed by the Department of Mental Health, Ministry of Public Health. The happiness index was calculated from the answers and the respondents which were classified namely into: low, medium and high; based on the score of 43 and below, between 44 and 50, and 51 to 60 points, respectively. Quality of Life (QOL) Index was holistically assessed by the physical

domain, psychological domain, social relations, environment, and overall using WHOQOL-BREF-THAI. <sup>(13)</sup> The answers were classified into low, moderate and high QOL, using the cutoff points from 26 - 60, 61 - 95 and 96 – 130, respectively.

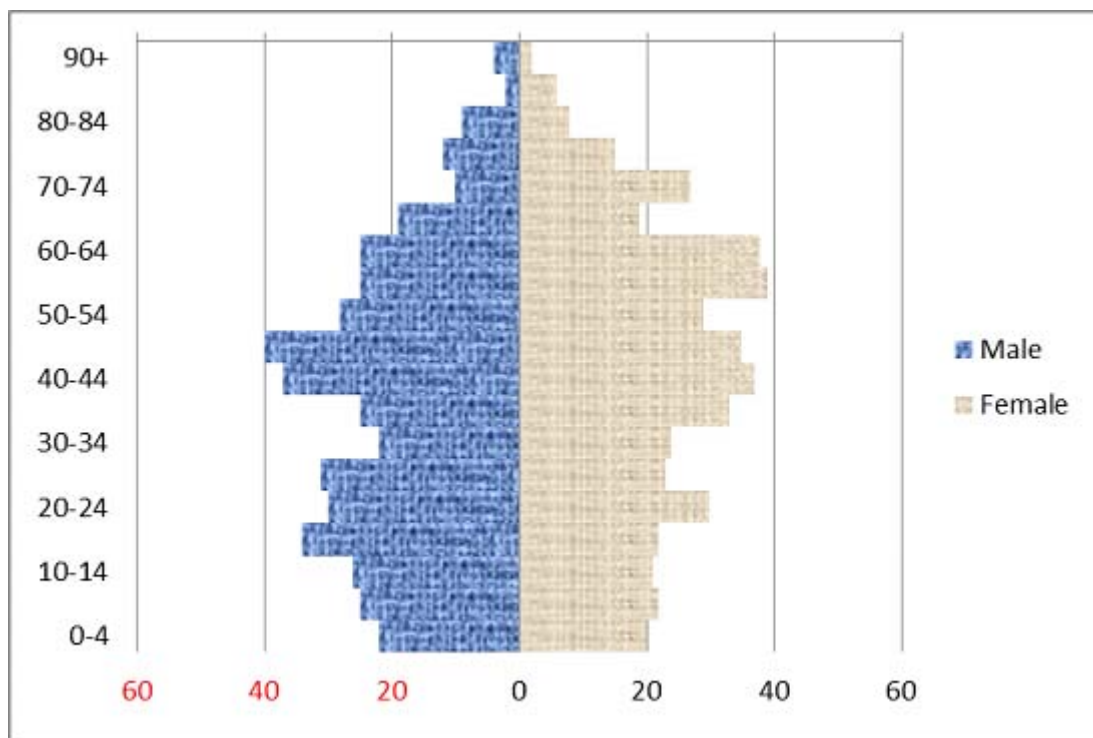
The questionnaire was pre-tested with the patients and their relatives at a pre-selected ward at King Chulalongkorn Memorial Hospital on June 6, 2016. The interviewers were medical students who took the course and were properly trained on interview techniques to minimize inter-observer mistakes.

As for each household, its head or a representative aged over 18 years were interviewed during the field survey on June 8, 2016. Data completeness was checked at the site. Descriptive statistical analyses were done using SPSS version 17.0.

## Results

Tambon Banpa is a subdistrict with 9,164 population. The survey was conducted in three villages comprising 238 households with 910 respondents interviewed. This is equivalent to 49.6% of all the three-village households and 56.3% of their population. This is equivalent to 6.6% of the total Banpa households and 9.9% of Banpa population.

Among the sample population (all members of the survey households), there are slightly more female (52%) in the group. The population age structure comprises mostly of working age population as shown in Figure 1. Mean age was 40.3 years (SD = 22.4). Dependency ratio was 65.6%



**Figure 1.** Population pyramid of sampled population: Tambon Banpa, Kaeng Khoi District, Saraburi Province on June 8, 2016.

Nearly all of the sample households are Thai. Around 99.0% of the household members declared Buddhism as their religion. Around one-third finished primary school level; nearly one-sixth had secondary school graduated level and higher. There are over 52.0% were married with 38.7% single and almost 10.0% divorced/ widows or separated. Most of the

sample population were above 18 years of age and worked as un-regular jobs (19.2%), students (17.7%) and employees with regular salary (15.1%). Around 27% of the respondents were unemployed. The majority of the households (57.0%) are single family households. The remaining 43.0% are extended family as shown in Table 1.

**Table 1.** Basic characteristics of all household members in the samples: Tambon Banpa, Kaeng Khoi District, Saraburi Province on June 8, 2016.

Variables	n	Percent
Gender (n = 906)		
Male	437	48.2
Female	469	51.8
Mean age 40.3 (SD 22.43)		
Age group (n = 901)		
0-14	136	15.1
15-39	274	30.4
40-59	270	30.0
>60	221	24.5
Marital status (n = 910)		
Single	352	38.7
Married	474	52.2
Divorced/ widows/ separated	83	9.2
Others	1	0.1
Religion (n = 910)		
Buddhist	906	99.6
Unknown	4	0.4
Race: Thai (n = 910)	905	99.5
Occupations (n = 901)		
Unemployed	243	27.0
Employees (un-regular jobs)	173	19.2
Students	159	17.7
Employees (regular jobs)	136	15.1
Merchants/personal business	100	11.1
Farmers	43	4.8
Government officers	42	4.7
Others	5	0.6

**Table 1.** (Con) Basic characteristics of all household members in the samples: Tambon Banpa, Kaeng Khoi District, Saraburi Province on June 8, 2016.

Variables	n	Percent
Education (n = 873)		
Primary school	332	36.5
Secondary school	141	15.5
Higher secondary school	149	16.4
Bachelor degree and higher	207	22.7
Uneducated	44	4.8

Nearly forty percent of the survey households earned the average annual household income between 100,000 and 250,000 baht. Another one-third had their income ranged from 250,001 to 750,000 baht per year. Nearly one-fifth earned less than 100,000 baht per year and only about 10% did more than 750,000 baht per year.

#### Major health conditions and health risks

Top health problems reported by the respondents were mainly non-communicable diseases (NCDs) such as hypertension and dyslipidemia. The prevalences of some common chronic diseases are reported in Table 2.

Over 60% of respondents has BMI above normal. Almost one-sixth (15.4%) was clinically

obese and over one fourth was pre-obese as shown in Table 3.

According to WHO's definition of physical activity, the prevalence of physical activity was at 77.2%. Most had physical activities during working hours (78.3%) followed by leisure (14.5%) and as part of transportation (7.28%). There was no significant difference across the genders and the prevalence of physical activity decreased with age.

The prevalence of tobacco consumption in this community was 10.6% with another 16.1% identified themselves as quit from smoking. The top reasons for smoking were to socialize, to try explore new things, to comply with social norm, and to combat stress. The top three reasons for quitting were health problems, family factors and getting tired of smoking.

**Table 2.** Chronic disease prevalences: Tambon Banpa, Kaeng Khoi District, Saraburi Province on June 8, 2016.

Chronic diseases	Prevalence rate (per 1,000 persons)
Hypertension	209.7
Dyslipidemia	126.7
Degenerative joints	94.8
Diabetes mellitus	81.8
Heart disease	46.5

**Table 3.** Body mass index of respondents (n = 221):  
Tambon Banpa, Kaeng Khoi District,  
Saraburi Province on June 8, 2016.

Body mass index (BMI)	Percent
Underweight (BMI < 18.5)	8.1
Normal (BMI 18.5 - 22.9)	31.7
Overweight (BMI 23 - 24.9)	18.6
Pre-obesity (BMI 25 - 29.9)	26.2
Obesity (BMI ≥ 30)	15.4
Total	100.0

Around 15.0% of the sample population drink alcohol according to standard drink per day's definition. A standard drink is equal to 14 gram of pure alcohol, which is found in beer (5% alc.) 360 cc., 45 cc.or shot (40% alc.) of liquor. Almost one-fifth (19.0%) had stopped drinking for more than 12 months. Top reasons for stop drinking were health problems, company policies, boredom of drinking, accidents of close relatives and financial problems. The main strategy to stop drinking was to seek help from healthcare services.

As for maternal and child health, the survey reveals very good maternal and child health performance in the community. Nearly all pregnant mothers had at least one antenatal care (ANC) visit with majority of them had their first visit before 12 weeks. Immunization coverage for age was over 90.0%. Breastfeeding happened in 96.0% of the mothers; 82.0% were still breast feeding at six months.

All respondents had public or private health insurance coverage with the majority (60 percent) of them under the Universal Health Coverage scheme (UHC). The coverage for Social Security and Civil Servant Benefit Scheme were at 24.0% and 8.0%,

respectively.

Top environmental related complaints in the community were air, noise, chemicals, water quality, and household waste, at 77.0%, 26.0%, 26.0%, 17.0% and 9.0%, respectively. Air problems were mainly on smell, dust, and smog (76.0%, 68.0% and 37.0%). More than half of the respondents identified the problems to be from industrial sources such as their nearby cement factory or electricity generating plant.

Over 90.0% of the respondents believed that the community had good relationship with no major arguments. Over 75.0% of the respondents regularly joined community social events.

Around half of the respondents are in the normal group with 14.0% and 34.0% in the low and high happiness groups, respectively. There was no significant difference across the genders or age groups.

Majority of the respondents reported good QOL in three aspects, namely, physical domain, psychological domain, and environment at 58.1%, 70.7%, and 83.3% respectively. QOL related to social relations was lower with half of the respondents reported middle level of QOL. Majority of the respondents (64.7%) reported their overall QOL scores in the good QOL range. There was no significant difference in QOL scores across the genders or age groups.

## Discussion

Demographic statistics in this community was similar to the that of the Thai population.<sup>(14)</sup> They showed a clear trend towards ageing community with lower proportion of children as a result of decreasing fertility rate similar to other areas. Single household



was expanding. Even though dependency ratio was good at the moment (65.6%), working group of 40 - 60 years was half of the working population. This community of aging population was increasing; therefore, adequate social support and social and healthcare system need to be prepared.

The community shared similar prevalence of chronic diseases as the national level. According to the national statistics, hypertension, dyslipidemia, cardiovascular and cerebrovascular diseases were among the top ten burden of diseases.<sup>(15,16)</sup> They have high maternal and child health performance as shown in slightly higher immunization coverage and breastfeeding rate than the national level.<sup>(17,18)</sup>

Prevalence of physical activity for the people in Banpa is quite similar to that of the national level<sup>(19,20)</sup> but smoking and drinking rates were lower than the national levels of 21.4% and 31.5%, respectively.<sup>(21,22)</sup> However, the prevalence rate of overweight and obese was nearly 60%.

One factor that might have contributed to high overweight prevalence and subsequently high chronic disease prevalence in the community may be linked to their dietary patterns. Dietary pattern was quite similar to the national report.<sup>(20)</sup> Over 60.0% of the respondents reported having fruit and vegetables everyday with no processed, fastfood or instant food products. This might seem like a good healthy dietary pattern, common in the community. However, over one-fifth had high-fat protein everyday with almost half had high-fat protein more than 3 - 4 days a week and over half of the respondents had high fat content food such as bakery, sweets, coconut milk-related ingredients and around one-third having sweetened beverages at least once a week.

Even though the Banpa community reported high concern over air quality problem, the official report from Ministry of Natural Resources and Environment showed the air quality resulted to be otherwise.<sup>(23)</sup> The air monitoring statistics in Khaeng Khoi was within the normal range. The discrepancy could be due to several factors. For example, the air quality monitoring system may not correct or not sensitive enough. The monitoring equipment might not be located in a location that could not capture the problem adequately. Alternatively, the concern was about the smell which might not be easily detected; hence, the test was mostly about particulate matters. Further investigation is needed to confirm the problem and its sources.

Banpa community had mental health statistics not lower than the general Thai population as shown in the relatively high Happiness Index and Quality of Life for this community.<sup>(24 - 25)</sup> Even though average income level of the majority of Banpa households was lower than that of the national average.<sup>(26)</sup> These might be due to good social network, low social problem reported and good participation rate of social activities in the community.

This study has a number of limitations: firstly, the survey timing was during the working hours of a weekday which contributed to fewer working age population as respondents. This might have limited the reliability of the survey data related to household income and personal health; secondly, the length of the questionnaire was quite long to cover all the domains. Therefore, the interview process took a long time and might have caused some respondents to be tired and less responsive at the end of the interview.

The population survey at Tambon Banpa, even though does not represent the entire population of Thailand, could provide a good information about health situation in a community. This may be indicative of community health problems that the country will face in the future. Chronic non-communicable disease will increase and the rise of the ageing population will pose a challenge to community leaders and health policy makers. Social interventions and networking support can be done for better preparation of the foreseeing future. Community health promotion can also be one of the main components.

### Conclusion

Demographic characteristics in Tambon Banpa revealed trend towards ageing community with similar prevalence of chronic disease with the Thai population. Happiness index and QOL were relatively good. However, overweight and obese patterns were higher in this population.

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### Conflict of Interest

Author hereby declares no conflict of interest.

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