

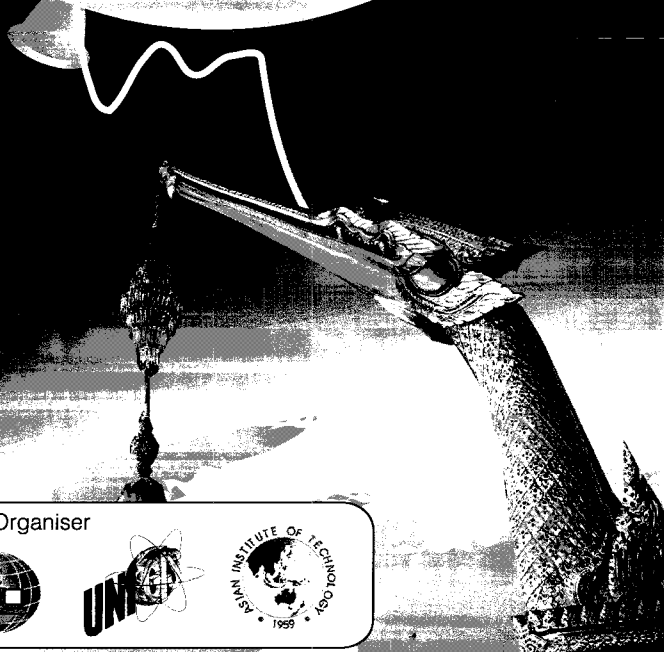
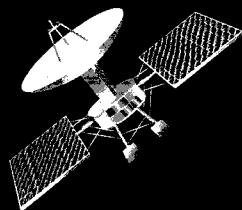
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Health Problems in the Rural Area is Suitable for Medical Student Learning

Supakrit Aui-wattanakul¹, Pratoomtong Yatum² and Vanich Vanapruks³

Institute of Medicine, Suranaree University of Technology, Nakornratchasima Province, Thailand

E-mail: s.aui@sut.ac.th¹, pratoomtong-ya@hotmail.com², vanich@sut.ac.th³

Abstract

To determine if the health Geographic Information Systems (GIS) about health problems in the community hospitals where the medical students study during preclinical year at Suranaree University of Technology (SUT) would be beneficial of planning a well-resourced and well-designed medical students rural curriculum to be up to the standard of the Medical Councils of Thailand (MCT). Patients who visited six community hospitals at Nakornratchasima province and from two general hospitals at Surin and Buriram provinces, about 6.5 & 3.8 million peoples, respectively. The data lists of diagnosis of patients were drawn from Nakornratchasima, Surin and Buriram provincial public health center started from January 2007 to October 2007, and were analyzed and compared to the standard criteria of the MCT. The common health problems were found to be diseases of respiratory system, the digestive system, the musculoskeletal system and connective tissue and circulatory system.

The community hospitals group had more common in infectious and parasitic diseases and endocrine, nutritional and metabolic diseases. The over all diagnosis covers the criterias of the MCT. Hence, the health problems of people in the rural areas determined by the database is a useful source for planning the medical students learning to provide the knowledge skills up to the standard requirement. However, improving data collection process is needed.

Keywords:

Rural Health, Rural Health Problems, Common Disorders, Medical Student, Health GIS

1. BACKGROUND

Thailand has been encountering a deficit of doctor in both at national and local level outside of Bangkok. In rural areas, community hospitals, which mostly comprise sixty beds, would have maximum three doctors and thus each doctor would have to serve at least 20,000 peoples in each district. This heavy burdens of services discouraged most doctors to work in community hospitals. Also, the difficulty of adjusting themselves to the community lifestyle or culture and atmosphere at the workplaces which may have been improved but, still inadequate.

At the mean time, even in a good set up medical school where the academic atmosphere for medical students or specialized training doctors was improved has just realized that such conventional system would not give a suitable doctor to the need of the community nowadays that inclining toward multi-discipline integration (Watson 2003) and continues learning program (Armstrong et al. 2004, 2005). The better way to produce suitable doctor would have to set up academic atmosphere that can create student-centered learning, real situation exposure, patient-centered for healthcare system and improve teaching strategy that give well rounded knowledge. The Suranaree University of Technology have developed a medical curriculum and join with six community hospitals and two general hospitals at Surin and Buriram provinces. Due to the insufficient of medical doctors, especially in the rural areas that have the ratio of doctor to people as one to 8,000 or one to 20,000 in some areas creates an inadequate providing health care. The Institute of Medicine Suranaree University of Technology are approved the curriculum from the MCT last two years and recruit high quality students from the areas and give the rural exposure as early as possible in order to build their attitude toward rural needs. The Institute of Medicine will set up its teaching according to its own context. In Thailand there were no reports of applying database of patients diagnosis in planning curriculum. It stimulates us to determine the usefulness of GIS database about health problems in the community for planning teaching and learning in medical school. The goal of Institute of Medicine Suranaree University of Technology is to produce doctors to resolve rural people health through holistic approach. These studies are integrated Social Sciences, Anthropology, Behavioral Science, and Rural Public Health in order to train the basic of attitude, morality, and consciousness. During pre-clinical years, there is a medical rural studies subject that the medical students are required to study in six community hospitals at Nakornratchasima province. For clinical year, they are required to practice in two general hospitals at Surin and Buriram provinces. The curriculum was planned to meet the minimum standard of medical school required by The MCT. The purpose of this study is to determine whether the diseases found in the GIS area covered the criterias of The MCT by using the data analysis.

2. MATERIALS AND METHODS

The diseases diagnosis data that were pulled from the medical records are from the diseases report of six community hospitals surround the university in Nakornratchasima province as shown in **Figure 2**, and two general hospitals at Surin and Burirum provinces as shown in **Figure 3**. These data had been sent to be kept at Provincial Public Health Office of Nakhonratchasima, Burirum and Surin provinces in the format of the disease report 504 and 505 from January 2007 to October 2007, and then put all the diseases into categories by using The MCT standard and **International Classification of Diseases (ICD10)** as shown in **Table1** and **Table2**. The data were analyzed using descriptive statistics to obtain frequency and ranking of each disease.

3. RESULT

The annual report during the ten months period shows 6.5 million visits record from six community hospitals and 3.8 million visits record from two general hospitals. In the community hospitals, the top ten diseases are diaorder of respiratory system, infectious - parasitic diseases, digestive system, endocrine nutritional -metabolic disease, circulatory system, neoplasm, musculoskeletal-connective disease, blood-blood forming organ-immune system,

symptom sign &abnormal clinical -lab and mental & behavioral disorder. In the two general hospitals, the top ten diseases are diaorder of respiratory system, digestive system, musculoskeletal system & connective tissue, symptom sign &abnormal clinical-lab, circulatory system, endocrine nutritional-metabolic disease, external causes of morbidity-mortality, infectious-parasitic diseases, skin-subcutaneous tissue and genitor-urinary system. The two hospital groups had similar common health problems which are the respiratory system, the digestive system, the musculoskeletal system & connective tissue and the circulatory system, respectively (**figure2** and **figure3**). The outstanding differences were more on infectious & parasitic diseases and endocrince, nutritional, and metabolic diseases in the community hospital groups.

The report in the field of infectious & parasitic disease is quite high for intestinal infectious disease. In other three group diseases; Dengue hemorrhagic fever, HIV and tuberculosis are lower. In the neoplasm group, there were liver cancer, lung cancer, cervical cancer and breast cancer. The least common groups were the conditions originating in the perinatal period and congenital malformation, deformations and chromosomal abnormalities.

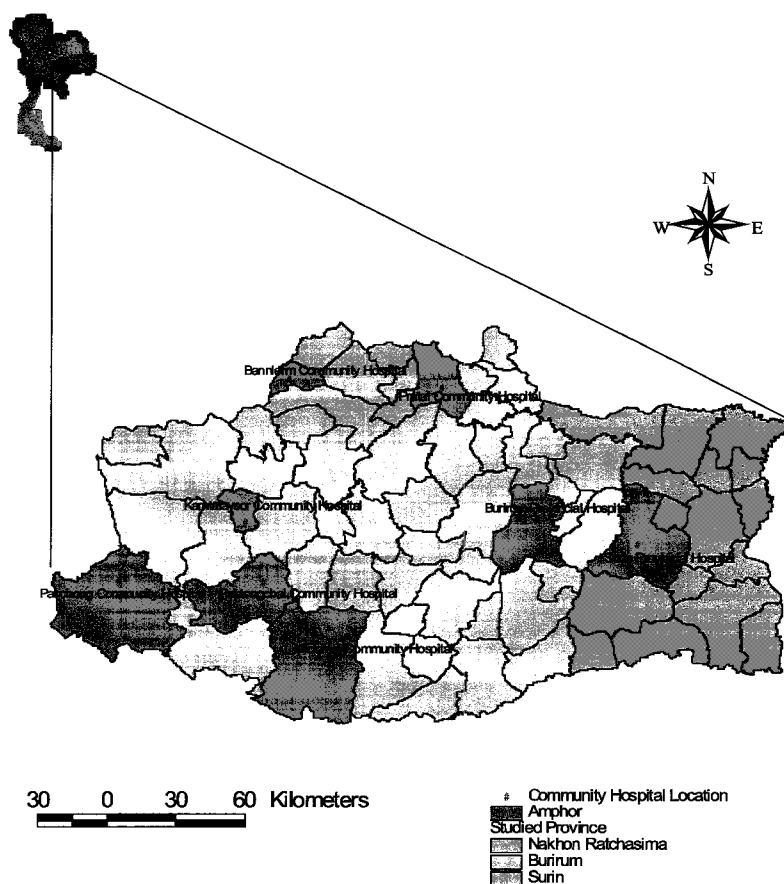


Figure 1. Map of six community hospitals and two general hospitals in Nakornratchasima, Burirum, Surin

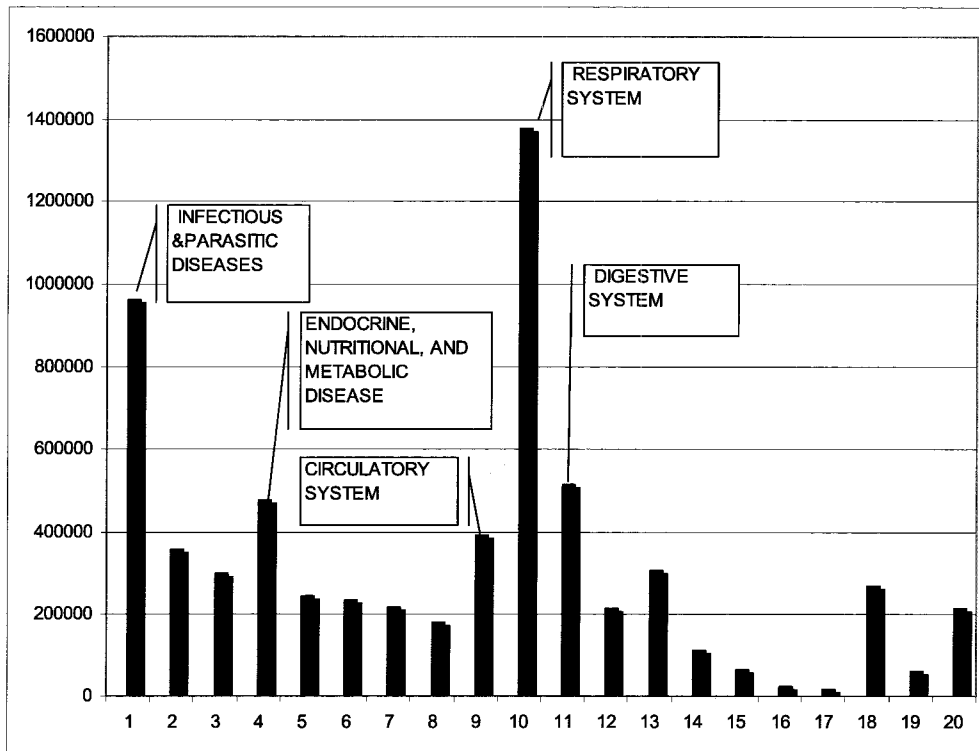


Figure 2. The frequency of visit in six community hospitals, Nakornratchsima (Jan.-Oct.2007)

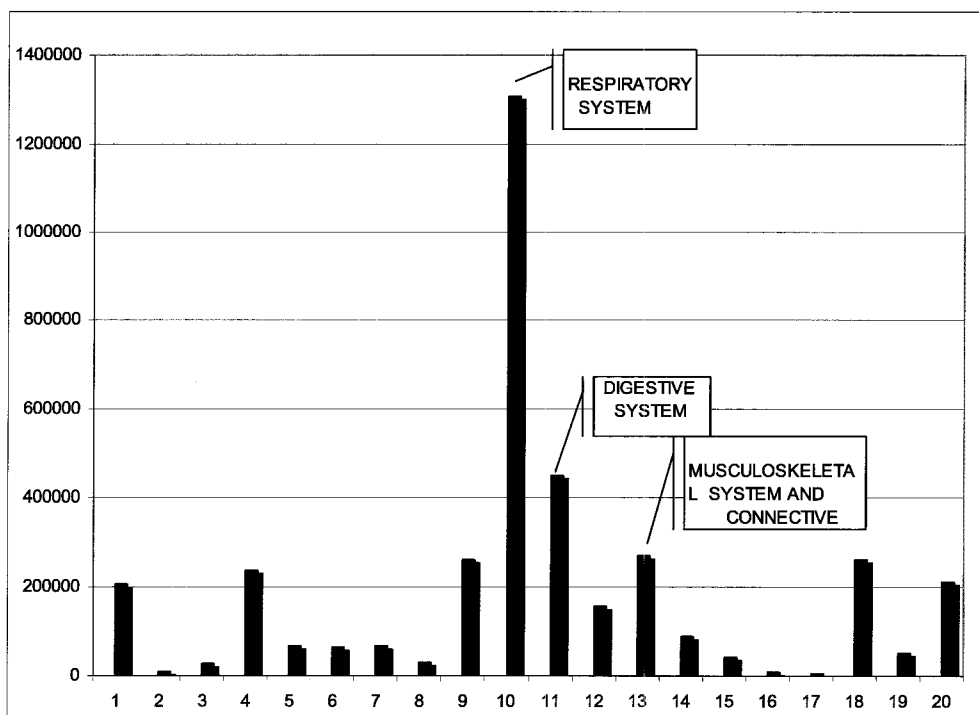


Figure 3. The frequency of visit in two general hospitals (Surin and Buriram) (Jan.-Oct.2007)

Table 1. The group of disease and number of visit in six community hospitals(Nakornratchsima) (Jan.-Oct.2007)

Group of Diseases	Number of visit
1 INFECTIOUS & PARASITIC DISEASES(A00-B99)	962064
2 NEOPLASM(C00-D48)	338935
3 DISEASES OF BLOOD & BLOOD FORMING ORGANS& DISORDERS INVOLVING THE IMM	299576
4 ENDOCRINE, NUTRITIONAL, AND METABOLIC DISEASE(E00-E90)	476491
5 MENTAL & BEHAVIORAL DISORDERS(F00-F99)	246871
6 DISORDERS OF THE NERVOUS SYSTEM(G00-G99)	234027
7 DISORDERS OF THE EYE AND ADNEXA(H00-H59)	219768
8 DISORDERS OF THE EAR & MASTOID PROCESS(H60-H95)	179219
9 DISORDERS OF THE CIRCULATORY SYSTEM(I00-I99)	392182
10 DISORDERS OF THE RESPIRATORY SYSTEM(J00-J99)	1377469
11 DISORDERS OF THE DIGESTIVE SYSTEM(K00-K93)	514619
12 DISORDERS OF SKIN & SUBCUTANEOUS TISSUE(L00-L99)	214289
13 DISORDERS OF THE MUSCULOSKELETAL SYSTEM AND CONNECTIVE TISSUE(M00-M99)	306293
14 DISORDERS OF THE GENITO-URINARY SYSTEM(N00-N99)	113399
15 PREGNANCY, CHILDBIRTH, AND THE PUERPERIUM(O00-O99)	64375
16 CERTAIN CONDITIONS ORIGINATING IN THE PERINATAL PERIOD(P00-P99)	24473
17 CONGENITAL MALFORMATIONS, DEFORMATIONS AND CHROMOSOMAL ABNORMA	17862
18 SYMPTOMS, SIGNS, AND ABNORMAL CLINICAL & LAB.(R00-R99)	270098
19 INJURY, POISONING AND CONSEQUENCES OF EXTERNAL CAUSES(S00-T98)	60925
20 EXTERNAL CAUSES OF MORBIDITY & MORTALITY(V01-V98)	215311
	6548406

Table 2. The group of disease and number of visit in two general hospitals (Burirum and Surin) (Jan.- Oct.2007)

Group of diseases	Number of visit
1 INFECTIOUS & PARASITIC DISEASES(A00-B99)	204888
2 NEOPLASM(C00-D48)	10338
3 DISEASES OF BLOOD & BLOOD FORMING ORGANS& DISORDERS INVOLVING THE IMM	26296
4 ENDOCRINE, NUTRITIONAL, AND METABOLIC DISEASE(E00-E90)	237764
5 MENTAL & BEHAVIORAL DISORDERS(F00-F99)	63096
6 DISORDERS OF THE NERVOUS SYSTEM(G00-G99)	64403
7 DISORDERS OF THE EYE AND ADNEXA(H00-H59)	69049
8 DISORDERS OF THE EAR & MASTOID PROCESS(H60-H95)	30309
9 DISORDERS OF THE CIRCULATORY SYSTEM(I00-I99)	261396
10 DISORDERS OF THE RESPIRATORY SYSTEM(J00-J99)	1309181
11 DISORDERS OF THE DIGESTIVE SYSTEM(K00-K93)	445598
12 DISORDERS OF SKIN & SUBCUTANEOUS TISSUE(L00-L99)	158366
13 DISORDERS OF THE MUSCULOSKELETAL SYSTEM AND CONNECTIVE TISSUE(M00-M99)	269102
14 DISORDERS OF THE GENITO-URINARY SYSTEM(N00-N99)	89907
15 PREGNANCY, CHILDBIRTH, AND THE PUERPERIUM(O00-O99)	44403
16 CERTAIN CONDITIONS ORIGINATING IN THE PERINATAL PERIOD(P00-P99)	10683
17 CONGENITAL MALFORMATIONS, DEFORMATIONS AND CHROMOSOMAL ABNORMA	6070
18 SYMPTOMS, SIGNS, AND ABNORMAL CLINICAL & LAB.(R00-R99)	281872
19 INJURY, POISONING AND CONSEQUENCES OF EXTERNAL CAUSES(S00-T98)	53688
20 EXTERNAL CAUSES OF MORBIDITY & MORTALITY(V01-V98)	212538
	3834929

4. DISCUSSION

As a new medical school with different context from the well established medical schools those have their own medical school hospital. Many people concern about inadequate resource for students learning. From this preliminary study in GIS, it showed that the community and general hospitals are rich in resource of common diseases suitable for undergraduate study. Even though the cases report covered all cases according to The MCT criterias, however it was categorized by ICD10 which group the disease by system. The details of disease occurrence are not well categorical, and then the requirement from the classification in detail will be useful. In order to plan efficiently for students to acquire knowledge follow all the standard criterias must to be plan carefully. Each hospitals may not have all categories, the proper management of resource will be need.

5. CONCLUSION

The database on medical record could be useful to develop a curriculum and a study design to teach medical students the disease groups that caused health problems in community, to arrange the study places or to do the case simulation in important frequently found diseases,

to design log books for medical students that can be used to evaluate and follow up their knowledge subject and finally to develop health Geographic Information System (GIS) to be more realtime and specific ,so it can be use efficiently.

6. ACKNOWLEDGMENTS

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