

From Health Situation to Health Education and Health Service Reforms for Thai Society

Charnchai Panthongviriyakul MD*,
Pattapong Kessomboon PhD**, Sumittr Sutra MD*

*Department of Pediatrics, Faculty of Medicine, Khon Kaen University, Khon Kaen, Thailand

** Department of Community Medicine, Faculty of Medicine & Research and Training Center for Enhancing Quality of Life of Working-Age People, Khon Kaen University, Thailand

Background: Health problems and service utilization patterns among Thai populations have changed significantly over the past three decades. It is imperative to scrutinize the changes so that the health service and human resource development systems can appropriately respond to the changing health needs.

Objective: To synthesize critical issues for future planning of health service reforms, medical education reforms and health research for Thai society.

Material and Method: The authors analyzed data on health service utilization, types of illnesses and hospital deaths among Thais in the fiscal year 2010. Information on the illnesses of in-/out-patients and hospital deaths was extracted from the three main health insurance schemes providing coverage to 96% of the population. The authors then synthesized the key issues for reforming medical education and health services.

Results: In summary, Thai patients have better access to health services. The total number of out-patient visits was 326,230,155 times or 5.23 visits per population. The total number of in-patient admissions was 6,880,815 times or 0.11 admissions per population. The most frequent users were between 40 – 59 years of age. The most common conditions seen at OPD and IPD and the causes of in-hospital mortality varied between age-groups. The key health issues identified were: psychosocial conditions, health behaviour problems, perinatal complications, congenital malformations, teenage pregnancy, injury, infectious diseases, cardiovascular diseases and neoplasms. Medical education reforms need to be designed in terms of both undergraduate and post-graduate education and/or specialty clinical needs. Health service reforms should be designed in terms of patient care systems, roles of multidisciplinary teams and community involvement.

Conclusion: The government and other responsible organizations need to actively respond by designing the health service systems and human resource development systems that are relevant, appropriate and integrated. Different levels of care need to work collaboratively in order to achieve the greatest quality and efficiency.

Keywords: Health situation, Health education reforms, Health service reforms

J Med Assoc Thai 2012; 95 (Suppl. 7): S282-S291

Full text, e-Journal: <http://jmat.mat.or.th>

Health problems and service utilization among the Thai population have undergone significant change over the last three decades due to improving lifestyle choices and better access to healthcare. It is time therefore to carefully evaluate the changes so that the health service and human resource development systems can most appropriately respond.

Life expectancy in Thailand has increased dramatically over the last 30 years (e.g., from 63.8 years in 1975 to 77.6 years in 2005 for females)⁽¹⁾. In 1970, Thailand had an infant mortality rate of 68/1,000 live

births, whereas today it is ~13/1,000 live births⁽²⁾. The maternal mortality ratio has also shown a similar decreasing trend⁽³⁾. It is apparent that socio-economic development has played a large role in the improved health outcomes; as between 1969 and 2009, the Thai gross national income (GNI) grew 17 times from US\$210 to \$3,760⁽⁴⁾. Moreover, infrastructure projects have been a priority which has brought greater connectivity, wider access to electricity and safe drinking water and clean sanitation, primary and secondary schools, and primary health centers in rural areas across the country. In 2002, Thailand achieved universal health coverage (UHC) through the creation of three healthcare programs: the Civil Servant Medical Benefits (CSMB), Social Security (SS) and the Universal Coverage (UC) (formerly referred to as the “30-baht” scheme) achieving

Correspondence to:

Panthongviriyakul C, Department of Pediatrics, Faculty of Medicine, Khon Kaen University 40002, Thailand.

Phone: 081-799-9526

E-mail: chapana@kku.ac.th

a coverage rate of 96% of the population⁽⁵⁾. Almost all of the Thai population is now covered through a comprehensive healthcare package that includes disease prevention and primary care, hospitalization, high technology treatments (*e.g.*, renal replacement therapy).

Despite improvements in the quality of life, healthcare (quality and access), Thailand faces a numbers of health service challenges including: (1) How to align and perhaps at some point merge the three schemes in order to reduce inequities in benefit packages; (2) How to re-design health service systems to better respond to the health and disease transitions (*i.e.*, more chronic, old-age and lifestyle diseases); (3) How to create a better financial mechanism that serves the population well; and, (4) How to ensure sufficient and highly-trained health human resources to meet current shortages and expected growth in demand and the populations both grows and ages.

The Faculties of Medicine and the Health Science Consortia of Thailand are expected to continuously supply healthcare personnel to meet the health needs of Thai society. The “Health Situation Analysis of the Thai Population 2010: Implications for Health Education and Health Service Reform” was therefore initiated by the consortia and the results published in this issue of the Journal of Thai Medical Association⁽⁶⁾. The current situation of Thailand health service utilization patterns, types of illnesses and hospital deaths representing approximately 96% of the Thai population were analyzed. A comparison with the National Death Registration of the Registry Administration, Ministry of Interior Affairs, was also performed⁽⁷⁾. These resources provided the basis for synthesizing critical issues for future planning of health service reforms, medical education reforms and health research.

Health situation

Information on health service utilization patterns, *i.e.*, out-patient, in-patient, types of illnesses and hospital deaths follow.

Out-patient department (OPD) visits by age-groups

In 2010, the UC and SS schemes recorded 326,230,155 OPD visits or 5.23 visits per population (or 523 per 1,000). The rate of OPD visits in 2010 was much higher than that in 2009 (2.98 visits per population)⁽⁸⁾, suggesting better accessibility due to the universal coverage policy.

The rank of rates of OPD visits per 1,000

population were highest among those between 0–1, 70–79, 60–69, 80+ and 2–5 years of age, respectively. If ranked according to the actual number of visits, it was found that the most frequent users were those between 40–59, 25–39, 60–69, 2–5 and 6–12 years, respectively (Fig. 1). These data should be used to accurately calculate the workload faced by service providers.

Five most common conditions presenting at OPD visits among 0–1, 1–5, 6–12 and 13–18 year-olds

The age-groups (0–1, 1–5, 6–12 and 13–18 years) represent newborns, children, adolescents and teenagers. The most common medical condition presented during OPD visits by these age-groups were ICD-10 Z00–Z99 (factors influencing health), which covers a wide range of conditions including persons encountering health services for examination and investigation, receiving immunizations, antenatal care, family planning services, persons with problems related to psychosocial circumstances, and medical conditions that need follow-up. These needs indicate the need to extend primary care systems and settings where provision of such services is more efficient than at a secondary or tertiary hospital setting⁽⁹⁾. Other common conditions included respiratory infection, diseases of the digestive system, intestinal infection, diseases of the skin and subcutaneous, and injury and poisoning (Fig. 2).

Five most common conditions presenting at OPD visits among 19–25, 26–39 and 40–59 year-olds

These age-groups (*i.e.*, 19–25, 26–39 and 40–59 year-olds) represent early adulthood, young adults and middle age. The most common conditions among 19–25 year-olds were “Factors influencing health” (ICD-10: Z00–Z99), similar to adolescents and teenagers. For 26–39 year-olds, the most common condition was pregnancy. It is of note that for 40–59 year-olds, the first three common conditions have similar proportions (*i.e.*, diseases of the digestive system, certain infectious and parasitic diseases and neoplasm). Other common conditions among these adult groups were: injury and poisoning, diseases of the respiratory system and diseases of the genitourinary system (Fig. 3).

Five most common conditions presenting at OPD visits among 60–69, 70–79 and 80+ year-olds

These age-groups (60–69, 70–79 and 80+ year-olds) represent elderly persons. The most common conditions among these groups include diseases of

the circulatory system, diseases of the respiratory system, diseases of the digestive system, neoplasm, certain infectious and parasitic diseases and diseases of the genitourinary system (Fig 4).

In-patient Department (IPD) admissions by age-groups

In 2010, there were 6,880,815 in-patient admissions or 0.11 admissions per population (or 110/1,000) for all three insurance schemes. The rate of IPD admissions in 2010 was lower than that in 2009 rate (112/1,000)⁽⁷⁾. Again, this implies better access to primary care services including OPD services provided by hospitals as shown in the previous section since secondary prevention services were efficiently provided. Unnecessary hospitalizations can be avoided through effective primary care services (Fig. 2).

The rank of rates of IPD admissions per 1,000 population were high among those between 0–1, 80+, 70–79, 60–69 and 2–5 years of age. If ranked according to the actual number of admissions, it was found that the most frequent users were those between 40–59, 25–39, 0–1, 60–69 and 70–79 years of age (Fig. 5). These trends reflect the actual workload of services better than the rate of admissions in each age-group.

Five most common conditions presenting for IPD admission among 0–1, 2–5, 6–12 and 13–18 year-olds

The most common conditions presenting for

IPD admission among 0-1 year-olds (infants) were ICD-10 Z00–Z99, factors influencing health including: live-born infants, outcomes of delivery, birth trauma, birth asphyxia and bacterial sepsis (Fig. 6). Other conditions included respiratory infection, intestinal infection and congenital malformations: the latter being impacts of genetic as well as toxicological factors during the first trimester of pregnancy. Studies to identify the major specific causations of these are essential.

The most common conditions resulting in IPD admission among 2–5 and 6–12 year-olds (children and pre-/adolescents) were: respiratory infection, intestinal infection, arthropod-borne viral fevers, injury and poisoning, intestinal infection and disease of the digestive systems. Admissions due to pneumonia and asthma are preventable if appropriately cared for at the primary care setting or OPD. Effective community health interventions are needed to prevent admissions due to arthropod-borne viral fevers and injury and poisoning.

Importantly, pregnancy was the most common condition among IPD admissions among 13-18 year-olds (teenagers). Consequently, concerted policy and public health programming are needed to reduce the rate of teenage pregnancy by education on the risks and on prevention through safe-sex. Interventions at schools and families on this issue should be strengthened.

Five most common conditions presenting for IPD admission among 19–25, 25–39 and 40–59 year-olds.

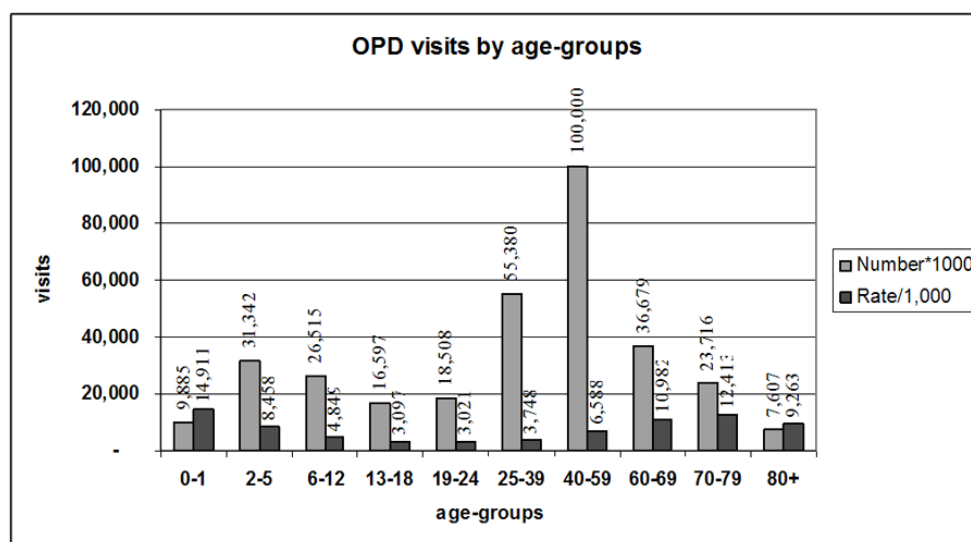
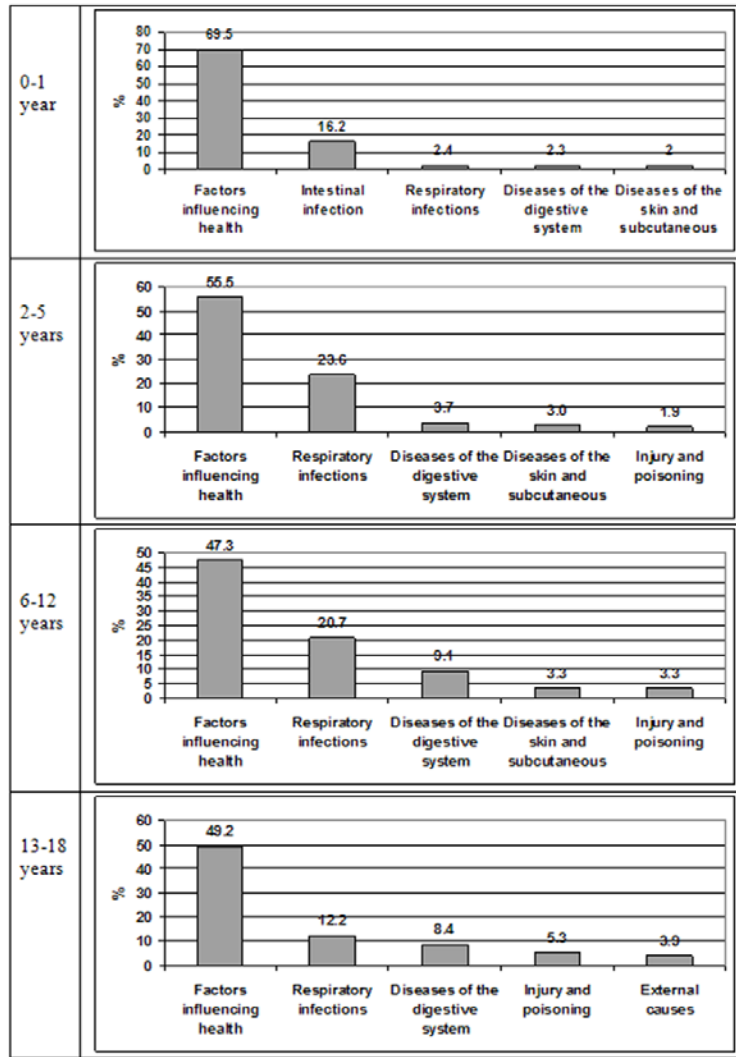


Fig 1. OPD visits by age-groups Source: Reference 6



Source: Reference 6.

Fig. 2 Five most common conditions presenting at OPD among 0–1, 2–5, 6–12 and 13–18 year-olds

The most common condition presenting for IPD admissions among the 19–25 and 26–39 year-olds (early and young adults) was pregnancy which is considered appropriate for these age groups (Fig. 7). Almost all Thai pregnant women gave birth in a hospital setting with trained attendants, resulting in a significant reduction in maternal mortality rates over the past 30 years⁽³⁾. Other common conditions among these age-groups included: injury and poisoning, infectious and parasitic diseases, diseases of the digestive system and diseases of the respiratory system. Traffic injury was also a major cause of morbidity and mortality.

The five most common conditions presenting for IPD admission among 40–59 year-olds had similar

proportions (*i.e.*, 10–12%) including diseases of digestive system, infectious and parasitic diseases, neoplasms, injury and poisoning and diseases of genitourinary system. Neoplasms trended to occur among the younger age-group than in previous research.

Five most common conditions presenting for IPD admission among 60–69, 70–79 and 80+ year-olds

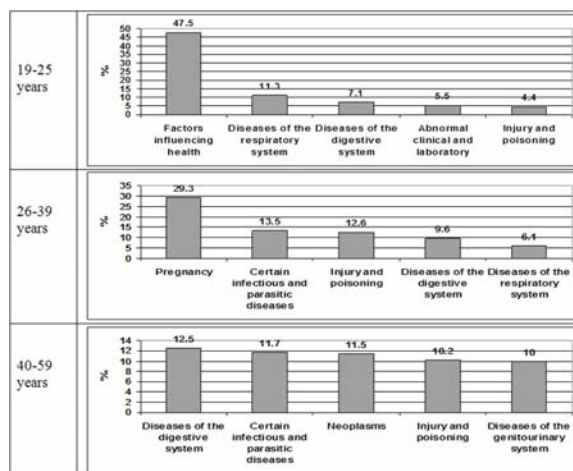
The most common conditions presenting for IPD admission among the 60–80+ year-olds (the elderly) were diseases of the circulatory system, diseases of the respiratory system, diseases of the digestive system, neoplasms, infectious and parasitic diseases,

and diseases of the genitourinary system. Most of the elderly had multiple illnesses, as a result of degenerative processes. Care of these age-group needs to be designed with an in-depth, holistic understanding of the biomedical as well as psychosocial dimensions of illnesses endured by the elderly.

Causes of in-hospital mortality

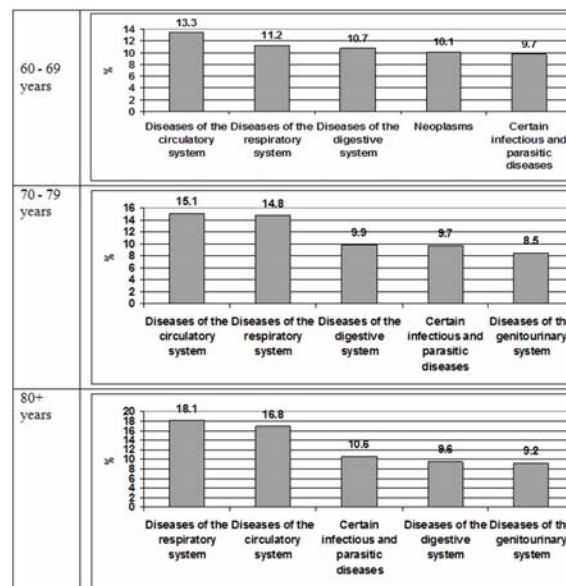
The most common causes of in-hospital mortality among 0-18 year-olds were certain conditions originating in the perinatal period (ICD-10: P00-P96) (Fig. 9); indicating the need for better care during and after delivery. Unsatisfactory healthcare outcomes

during these periods frequently led to litigations⁽¹⁰⁾. The most common causes of in-hospital mortality among 19-59 year-olds were certain infectious and parasitic diseases (ICD-10: A00-B99). Old and new emerging infectious diseases—including bacterial, viral, fungal, parasitic and other infections of all organ systems—are influenced by immunological, hygienic, environmental, behavioral, and social factors^(11,12). Primary prevention of these diseases can lead to lower morbidity while secondary prevention can lead to lower



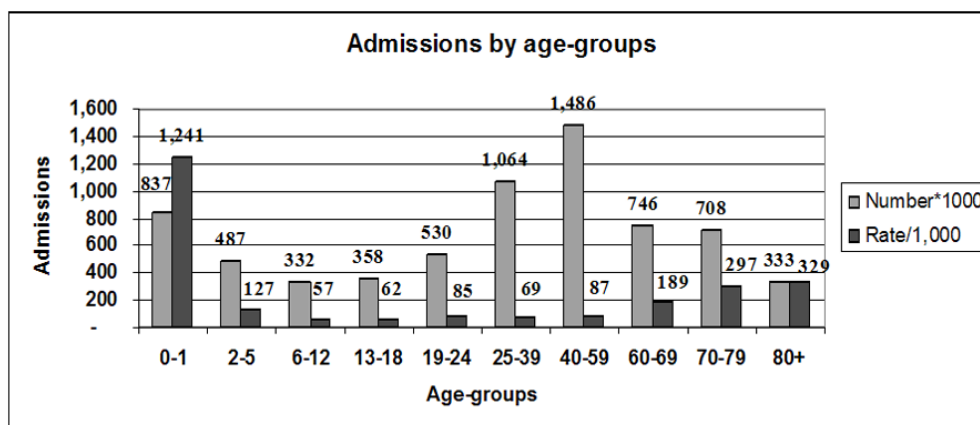
Source: Reference 6.

Fig. 3 Five most common conditions presenting at OPD visits among 19–25, 26–39 and 40–59 year-olds



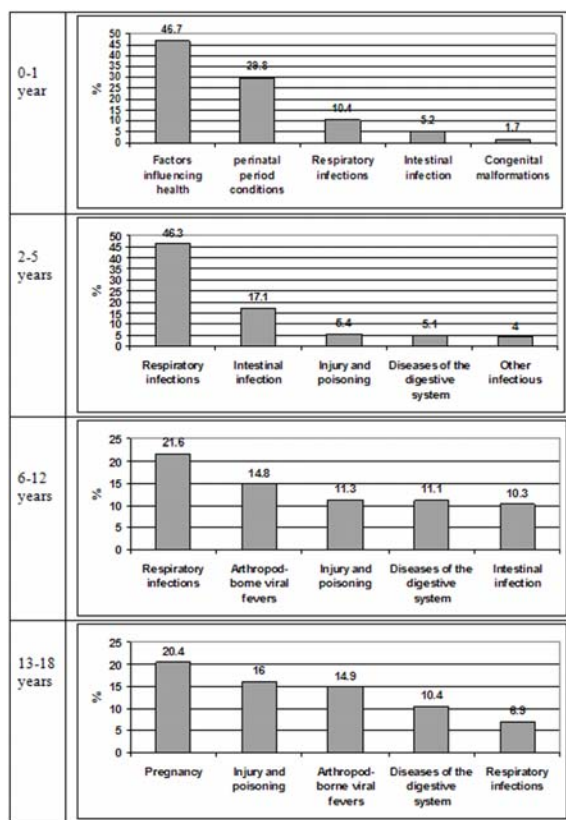
Source: Reference 6.

Fig. 4 Five most common conditions presenting at OPD visits among 60–69, 70–79 and 80+ year-olds



Source: Reference 6.

Fig. 5 IPD Admissions by age group



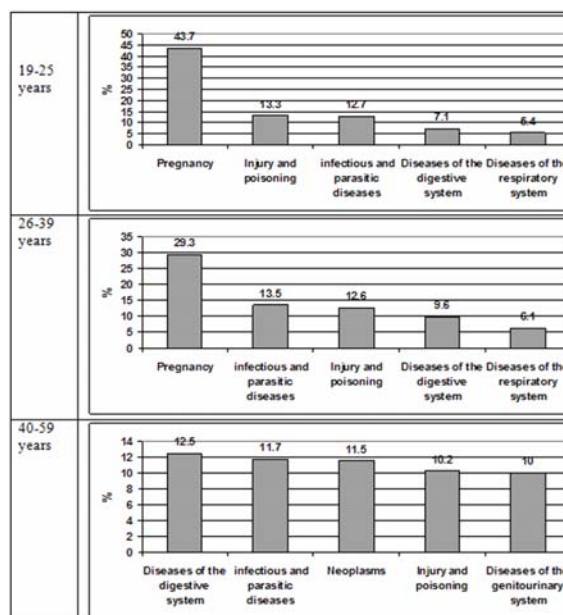
Source: Reference 6.

Fig. 6 Five most common conditions presenting for IPD admission among 0–1, 2–5, 6–12 and 13–18 year-olds

admissions and higher quality hospital care can lead to lower mortality. Multi-stakeholder approaches at all levels are therefore urged.

The most common causes of in-hospital mortality among 60+ year-olds were diseases of the circulatory system (ICD-10: I00-I99) including hypertension, ischemic heart diseases, heart failure, cardiac arrest and cerebrovascular diseases. These can be primary or secondary conditions leading to death. The most common underlying conditions that can lead to diseases of the circulatory system include end-stage diabetes, dyslipidemia, senility and related behavioral factors such as smoking and sedentary lifestyles⁽¹³⁾. Many in-hospital deaths might be due to unexpected adverse events from medical treatments and quality of care problems; thus, prevention of in-hospital deaths is targetable by concerted efforts.

A caution needs to be applied when interpreting the above data since the in-hospital mortality data represent only 32.2% of the total



Source: Reference 6.

Fig. 7 Five most common conditions presenting for IPD admission among 19–25, 26–39 and 40–59 year-olds

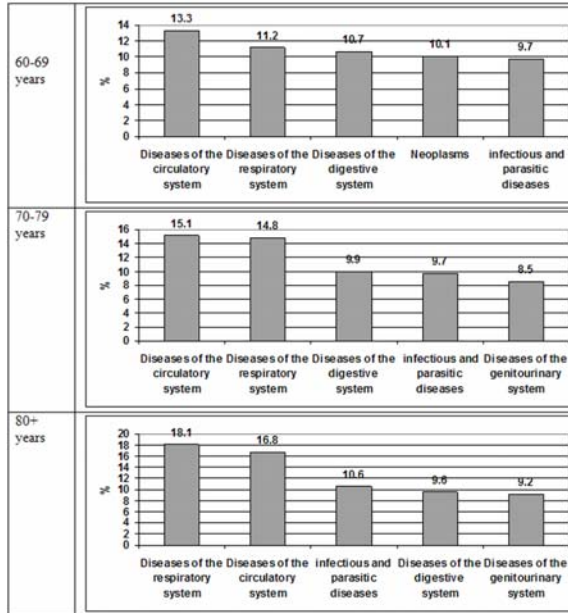
population mortality; meaning that 67.8% died outside a hospital⁽¹⁴⁾.

Synthesis of key issues for medical education and health service reforms

The data analyzed were extracted from all of the Thai healthcare delivery systems and the three main health financing schemes and included both in- and out-patients. The hospital-based data reflected the actual service utilization; representing coverage to ~96% of the total population. When combined with data from other sources, the data provide a comprehensive snapshot of the current health situation. These data on morbidity and mortality are relevant inputs for medical education and health service reforms; therefore, the key areas for reforms can be synthesized as follows.

Medical education reform

The analysis of health situation provided an in-depth understanding of the health needs of the population. Medical education reform needs to address these needs so that medical graduates are better trained to identify, diagnose and treat. Medical education reforms need to be designed in terms of both undergraduate and post-graduate education and/or



Source: reference 6.

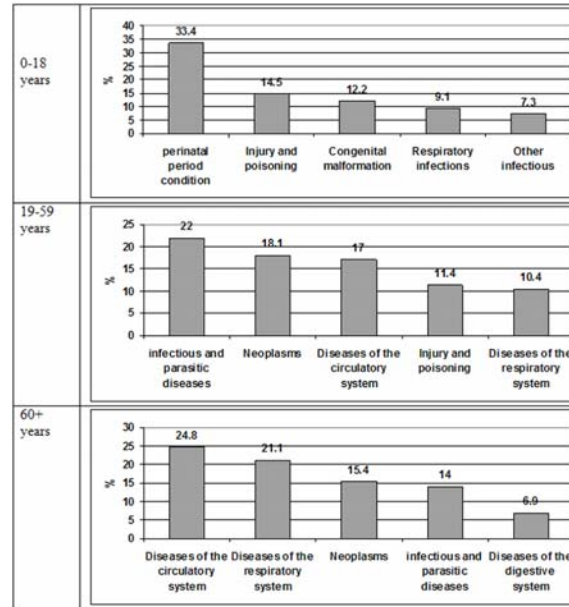
Fig. 8 Five most common conditions presenting for IPD admission among 60–69, 70–79 and 80+ year-olds

specialty clinical needs.

Undergraduate education

Evidence from the situation analysis suggests that future medical graduates should be prepared to acquire certain identified essential competences so that they will be able to provide adequate services for the most common health problems facing Thais nowadays. Knowledge and skills related to the common current and expected health problems should therefore be a key focus of the medical curriculum rather than the solely knowledge and skills as set out in standard textbooks. The following are the common diseases and their trends:

- Perinatal diseases, especially premature babies, low birth weight infants, congenital and genetic diseases;
- Problems of teenagers related to unwanted pregnancy, inappropriate sexual behaviors, life skills and risky behaviors;
- Accident and injury, affecting both children and adults—among children, deaths due to drowning were of the most concern;
- Obesity, metabolic syndrome, diabetes, hypertension, stroke and other cardiovascular diseases; particularly as related to diet, eating behaviors and life styles⁽¹⁵⁾.



Source: Reference 6.

Fig. 9 Causes of in-hospital mortality

- Neoplasms, particularly those commonly found in Thailand such as cholangiocarcinoma, lung cancer, colonorectal cancer and breast cancer;
- Geriatric conditions since the proportion of the elderly in the population is increasing; and,
- New and re-emerging diseases (including SARS, Avian flu, TB and STDs).

Postgraduate education

The needs of educational reform at the post-graduate level are necessary in order to better train future specialists. Data from this health situation review should therefore be used to guide reforms in both the theoretical and practical domains.

There is a need to re-calculate the demands for specialists in each field to reflect the health needs of the populations such as the needed numbers of neonatologists, specialists in adolescent health, geriatricians, oncologists, family/community/public health physicians etc.

Health service reform

Health service reform will be relevant if the currently identified health needs of the population are to be adequately addressed. Health and medical interventions that are cost-effective should be adequately invested and promoted through policy. Health service reforms should be designed in terms of patient care systems, roles of multidisciplinary teams

and community involvement.

Patient care systems

The current healthcare utilization situation and current trends in health needs of the Thai population necessitates a re-jigging the structure of patient care systems. Efficiency and effectiveness of service delivery are the ultimate goals of any system design. Effectiveness means that the services are addressing relevant health needs and are of a high quality; while efficiency means the maximal health outcomes are being achieved vis-a-vis the investment. Important health service focuses are evident from the situation analysis, namely:

- Services for 25–59 year-olds, who are the most frequent users of health services;
- Services for premature birth infants and low birth weight babies;
- Facilities for prenatal diagnosis to detect congenital and genetic diseases;
- Special clinics for adolescents both in hospitals and in communities, which should also be able to provide school-based services to help strengthen adolescent life skills and adjust health behaviors. The engaged health personnel should work closely with families, school teachers and community leaders.
- Interventions for accident prevention (safety campaigns, law enforcement and control of risky behaviors): the success of which requires concerted action on the part of stakeholders including local government, police, teachers and community leaders.
- Primary prevention measures to cope with the increasing numbers of diseases related to lifestyle choices (*i.e.*, obesity, metabolic syndrome, diabetes, hypertension, stroke, coronary artery diseases). Screening, early detection and secondary prevention activities also need to be expanded to reduce sequelae (*i.e.*, organ damage and reduced capacity for self-care).
- Special clinics and in-patient wards for the elderly need to be established across the nation to serve with the increasing numbers of persons reaching old-age. Moreover, the design of healthcare facilities should take into account the fact that the elderly need different kinds of care, medical equipment and assistive devices.

Roles of multidisciplinary teams at different levels of care

The changing health needs of the populations indicate the need for multidisciplinary, integrated teams

of healthcare providers at all levels. Patients present with complexes of problems related, not only to biomedical conditions, but also to the psychosocial dimensions of their lives. Designing roles for each member of the multidisciplinary team as well as of each level of care is also crucial for high quality care, as follows:

- Healthcare personnel must commit to providing high quality care by demonstrating that the care provided is comprehensive, integrative, continuous and humanized.
- Providers have an important role in ensuring the accessibility of high quality care to the population they serve.
- Healthcare facilities at the primary level must be strengthened and expanded to cover all populations.
- Seamless care within and between levels of care must be ensured.

Community involvement

Roles of individuals, family members and community members in health need to be strengthened, particularly regarding health promotion and disease prevention activities. Community members should include: groups of patients, health volunteers, community leaders, school teachers, local governments and media professional. The success of any health programme depends upon its capacity to sufficiently and efficiently involve the whole community (particularly those with leadership and wisdom), which will ultimately ensure its sustainability: “Health for All and All for Health” is the principle that guides our thinking and actions.

Health research

As the proportion of the burden of some diseases is increasing, new avenues of research for improved health promotion, disease prevention, diagnosis and treatment are needed. Essential and relevant knowledge has been the key to former successes in making the population healthy. In moving forward, research in the following areas needs to be adequately invested:

- Causes of common cancers found in Thailand such as cholangiocarcinoma, breast cancer and lung cancer.
- Community health interventions that can effectively and efficiently change health jeopardizing risky behaviors.
- Preventive interventions for traffic accident reduction and emergency responses.

- Interventions to control obesity and metabolic syndrome which are suitable to the Thai context.

- Healthcare systems re-designed to keep pace with current and future health challenges.

Conclusion

This health situation analysis has helped to identify the essential issues for medical education and health service reforms. The situation analysis suggests that our current practices may be dated and inadequate as lifestyle health problems are on the rise. Knowing more precisely the health needs of the population will assist medical graduates to provide more appropriate, equitable and cost effective health services. Health service reforms should therefore be made to reflect to the changing demographic, lifestyles and expectations of the nation. Furthermore, this body of research should help to guide the investment of our health research budgets for better diagnosis and treatment paradigms. The authors have thus identified key issues for medical education, health service reforms and health research based on the health situation analysis for further discussion.

Acknowledgement

The authors wish to thank Associate Professor Dr. John F Smith for his review and suggestions, and Mr. Bryan Roderick Hamman and Mrs. Janice Loewen-Hamman for assistance with the English-language presentation of the manuscript.

Funding

The authors gratefully acknowledge financial support for this project from the National Health Security Office (NHSO) Thailand.

Potential conflicts of interest

None.

References

1. Bureau of Policy and Strategy. Thailand health profiles 2005-2007. Bangkok: Ministry of Public Health; 2008: 163.
2. World Health Organization. World health statistics. Geneva: WHO; 2010.
3. Hogan MC, Foreman KJ, Naghavi M, Ahn SY, Wang M, Makela SM, et al. Maternal mortality for 181 countries, 1980 – 2008: a systematic analysis of progress towards Millennium Development Goal 5. *Lancet* 2010; 375(9726):1609-23.
4. World Bank. World development indicators. Washington, DC: World Bank; 2011.
5. Wibulpolprasert S, Thaiprayoon S. Thailand: “good practice” in expanding health care coverage lessons from the Thai health care reform. In: Gottret P, Schieber G, Waters H, editors. Good practices in health financing: lessons from reforms in low and middle-income countries. Washington, DC: World Bank; 2008: 355-83.
6. Sutra S, Chirawatkul A, Leelapanmetha P, Sirisuwan S, Thavornpitak Y, Thepsuthammarat K. Health situation analysis of Thai population 2010: implications for health education and health service reform. *J Med Assoc Thai*. 2012; 95: 1-16.
7. Bureau of Policy and Strategy, Ministry of Public Health, Thailand. National health statistic 2010 [Internet]. 2010 [cited 2012 Jun 22]. Available from: <http://bps.ops.moph.go.th/Healthinformation/statistic53/statistic53.html>
8. National Health Security Office. Annual universal health security report 2009. Bangkok: National Health Security Office; 2009.
9. Starfield B, Shi L, Macinko J. Contribution of primary care to health systems and health. *Milbank Q* 2005; 83: 457-502.
10. Kessomboon P, Kessomboon N, Pannarunothai S, Premgamone A. Claimants of compensation for adverse clinical events occurring in hospitals. *J Health Syst Res* 2009; 3: 567-72.
11. Eisenberg JN, Desai MA, Levy K, Bates SJ, Liang S, Naumoff K, et al. Environmental determinants of infectious disease: a framework for tracking causal links and guiding public health research. *Environ Health Perspect* 2007; 115: 1216-23.
12. Semenza JC. Strategies to intervene on social determinants of infectious diseases. *Euro Surveill* 2010; 15: 32-9.
13. Aekplakorn W, Kessomboon P, Sangthong R, Chariyalertsak S, Putwatana P, Inthawong R, et al. for The NHES IV study group. Urban and rural variation in clustering of metabolic syndrome components in the Thai population: results from the fourth National Health Examination Survey 2009. *BMC Public Health* 2011; 11: 854.
14. Sutra S, Chirawatkul A, Leelapanmetha P, Sirisuwan S, Thepsuthammarat K. Evaluation of Causes-of-death: Which statistics should we rely on, hospital deaths or vital statistics? *J Med Assoc Thai*. 2012; 95: 1-16.
15. Aekplakorn W, Chariyalertsak S, Kessomboon P, Sangthong R, Inthawong R, Putwatana P, et al.

จากสถานการณ์สุขภาพสู่การปฏิรูปการศึกษาแพทย์และระบบบริการสาธารณสุขสำหรับสังคมไทย

ชาญชัย พานทองวิริยะกุล, ปัดพงษ์ เกษสมบุรณ์, สุมิตร สุตรา

ภูมิหลัง: ปัญหาสุขภาพของคนไทยได้เปลี่ยนแปลงไปอย่างมาก จึงสมควรมีการวิเคราะห์แนวโน้มความเปลี่ยนแปลงดังกล่าว และใช้เป็นข้อมูลเพื่อการออกแบบระบบบริการสุขภาพและระบบการผลิตบุคลากรทางการแพทย์ ที่สามารถตอบสนองความจำเป็นด้านสุขภาพที่เปลี่ยนแปลงไปได้ได้อย่างเหมาะสม

วัตถุประสงค์: เพื่อสังเคราะห์ประเด็นสำคัญสำหรับการวางแผนในอนาคต เพื่อการปรับเปลี่ยนระบบการจัดการศึกษาและระบบบริการทางการแพทย์ที่เหมาะสมสำหรับสังคมไทย

วัสดุและวิธีการ: ผู้เขียนได้วิเคราะห์สถานการณ์การเจ็บป่วยและเสียชีวิตในโรงพยาบาลของคนไทย ในปี พ.ศ. 2553 โดยใช้ข้อมูลการเจ็บป่วยของประชากร ที่โรงพยาบาลต่างๆ ส่งข้อมูลไปเบิกจ่ายจากสามระบบประกันสุขภาพ ทั้งข้อมูลผู้ป่วยนอก ผู้ป่วยในและผู้ที่เสียชีวิตในโรงพยาบาล ซึ่งครอบคลุมประชากรร้อยละ 96 ของประชากรทั้งประเทศ หลังจากนั้นผู้เขียนได้สังเคราะห์ประเด็นสำคัญเพื่อการปฏิรูประบบบริการสุขภาพและระบบการผลิตบุคลากรทางการแพทย์

ผลการศึกษา: สถานการณ์ด้านสุขภาพที่สำคัญ ได้แก่ คนไทยเข้าถึงบริการสุขภาพมากขึ้น จำนวนผู้ป่วยนอกทั้งหมด 326,230,155 ครั้ง หรือคิดเป็น 5.23 ครั้งต่อประชากร จำนวนผู้ป่วยในทั้งหมด 6,880,815 ครั้ง หรือคิดเป็น 0.11 ครั้งต่อประชากร กลุ่มที่มาใช้บริการมากที่สุด คือ กลุ่มอายุ 40 – 59 ปี โรคที่พบบ่อยผันแปรไปตามกลุ่มอายุของผู้ป่วย ปัญหาสุขภาพที่สำคัญ ได้แก่ ปัญหาด้านจิตใจและสังคม ปัญหาที่เกิดจากพฤติกรรมสุขภาพ ภาวะแทรกซ้อน ช่วงตั้งครรภ์และการคลอด ภาวะความพิการแต่กำเนิด การตั้งครรภ์ในวัยรุ่น ภาวะการบาดเจ็บ โรคติดเชื้อ โรคระบบหัวใจและหลอดเลือด และโรคเนื้องอกและมะเร็ง การปรับเปลี่ยนระบบการจัดการศึกษาแพทยศาสตร์ จำเป็นต้องออกแบบใหม่ทั้งในระดับปริญญาและการศึกษา/การฝึกอบรมหลังปริญญา การปฏิรูประบบบริการสุขภาพ ควรออกแบบให้ครอบคลุมระบบการดูแลผู้ป่วย บทบาทของทีมีสหสาขาวิชาชีพ และการมีส่วนร่วมของชุมชน

สรุป: รัฐบาลและหน่วยงานต่างๆ ควรตอบสนองโดยการออกแบบระบบบริการสุขภาพและระบบการผลิตบุคลากรที่มีความสอดคล้องเหมาะสมกับสภาพปัญหาและให้ความสำคัญกับการเชื่อมโยงของระบบบริการระดับต่างๆ ให้สามารถรวมกันทำหน้าที่ได้อย่างมีคุณภาพ มีประสิทธิภาพและประสิทธิผล
