Thailand's Adolescent Health Situation: Prevention is the Key

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Background: *Adolescence is generally a period of good physical health, but future health problems may begin at this age due to exposure to risk factors for diseases.*
Objective: *To analyze the health situation of adolescents (age 13-18 years) in Thailand in order to derive guidance for the refinement and calibration of the medical curriculum and enhance health service provision to adolescents.*
Material and Method: *National data from Thailand's 3 major health care systems, regarding; the causes of out-patient visits, in-patient admissions and deaths in the fiscal year 2010 were analyzed.*
Results: *The leading causes of out-patient visits were (1) factors influencing health (2) respiratory infections (3) diseases of the digestive system (4) injury and poisoning and (5) external causes of morbidity and mortality. The leading causes of admissions were (1) pregnancy (2) injury and poisoning and (3) arthropod-borne viral fevers. The leading causes of hospital deaths were (1) injury and poisoning (2) neoplasms and (3) other infections.*
Conclusion: *The majority of the causes of morbidity and mortality were related to psychosocial factors and engagement in high risk behaviors.*

Keywords: *Adolescent, Thai, Health situation, Injury, Pregnancy*

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Adolescence is generally a period of physical health, but it can also be the years for development of health problems and risk factors for diseases in the future. A majority of health outcomes during this time of life are influenced by behavioral and psychosocial origins. Thus, adolescence provides a unique opportunity for healthcare professionals to prevent behaviors that impair health, which might continue into the second decade of life and beyond.

Objective

To analyze the health data for the fiscal year 2010 for trends in mortality and morbidity from which suggestions for recalibrating the medical curriculum for Thai medical schools and for enhancing the provision of health services to adolescents.

Material and Method

This is a retrospective descriptive study. National data, collected between October 1, 2009 and September 30, 2010 were retrieved from the 3 main health systems; the Universal Health Insurance Coverage, the Civil Servant Medical Benefit Scheme and the Social Security Scheme, which covered 96% of the population. Details are as described in the present study concept and protocol article "Health Situation Analysis of Thai People 2010: Implications for Health Education and Health service Reform" previously published in the same issue. The authors analyzed the data to determine the leading causes of out-patient visits, in-patient admissions and deaths, length of stay and medical expenses per visit among adolescents (13-18 years of age). Diagnoses were categorized into groups in relation to the ICD-10 codes (Table 1) and ranked by frequency to demonstrate the relative magnitude of disease groups. Primary diagnoses by ICD-10 code were also ranked by frequency to show the causes of medical visits and deaths in more detail. For further clarification, the secondary diagnoses related to accidents and injuries were obtained. Basic descriptive statistics including: means and percentages were used to analyze the data. Approval for the present study was obtained from the Research Ethics Committee, Khon Kaen

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Table 1. ICD-10 codes of disease groups

Diagnosis	ICD-10
Intestinal infection	A00-A09
Other infections	A15-A74, B00-B99
Arthropod-borne viral fevers	A75-A79, A90-A99
Neoplasms	C00-C97, D00-D48
Disease of the blood	D50-D89, R70-R79
Endocrine nutritional and metabolic	E00-E90
Mental and behavior	F00-F99, R40-R46
Disease of the nervous system	G00-G99, I60-I69, R25-R29, A80-A89
Disease of the eye	H00-H65
Disease of the ear	H60-H95
Disease of the circulatory system	I00-I52, I70-I99, R00-R09
Respiratory infections	J00-J22, J40-J47, J85-J86
Disease of the respiratory system	J30-J39, J60-J84, J90-J99
Disease of the digestive system	K00-K93, R10-R19
Disease of the skin and subcutaneous	L00-L99, R20-R23
Disease of the musculoskeletal system	M00-M99
Disease of genitourinary system	N00-N99, R30-R39, R80-R82
Pregnancy	O00-O99
Certain condition originating in the perinatal period	P00-P96
Congenital malformations	Q00-Q99
Injury and poisoning	S00-T98
External causes of morbidity & mortality	V01-V99, X00-X84, Y10-Y98
Factors influencing health	Z00-Z99

University.

Results

In the fiscal year 2010, adolescents constituted 9.4% of the Thai population. Out-patient and in-patient visits for this group numbered 16,453,476 and 357,604, respectively. There were 1,494 hospital deaths. According to the 2010 vital statistics data from the Ministry of Public Health, there were 4,834 adolescent deaths; as a result the out-of-hospital to in-hospital death ratio was 2.2 to 1. The mortality rate-calculated as deaths per 1,000 adolescents 13-18 years of age in the population of the same age group-was 0.83 and the hospital mortality rate was 0.4% per admission. On average, each adolescent had 2.83 out-patient visits; every 1 out of 16 was admitted to the hospital and of every 250 admissions 1 resulted in a hospital death.

Out-Patient visits

The leading causes of out-patient visits in this age group are presented in Table 2. The leading causes for out-patient visits were (1) factors influencing status and contact with health services (49.6%) (2) respiratory infections (12.4%) (3) diseases of the digestive system (8.5%) (4) injury and poisoning (5.4%) and (5) external causes of morbidity & mortality (3.9%). Mental health and behavior and pregnancy ranked 11th and 17th, comprising 1.0% and 0.5% of the visits, respectively.

In-Patient visits

Most adolescents were admitted to primary care (50.6%) hospitals, while 23.8% were admitted to tertiary care, 22.3% to secondary care and 3.3% to private hospitals. More than half of the adolescents diagnosed with neoplasm, congenital malformation, disease of the eye and disease of the musculoskeletal system were admitted to tertiary care hospitals.

The leading causes of admissions by disease group are shown in Table 3. Pregnancy (20.5%), injury and poisoning (16.2), arthropod borne viral fevers (15.0%), diseases of the digestive system (10.5%) and respiratory infections (7.0%) were the five leading causes of admissions.

The ranks of leading primary diagnostic causes of admission (Table 4) were: (1) single spontaneous delivery (8.8%) (2) dengue hemorrhagic fever (8.8%) (3) dengue fever (5.6%) (4) acute appendicitis (5.1%) and (5) diarrhea and gastroenteritis of presumed infectious origin (4.1%). Among hospital

Table 2. Percentage of leading causes of out-patient visits in adolescents by disease group

Diagnosis	Out patient visits (%) (n = 16,453,476)
Factors influencing health	49.6
Respiratory infections	12.4
Disease of the digestive system	8.5
Injury and poisoning	5.4
External causes of morbidity & mortality	3.9
Disease of the skin and subcutaneous	3.2
Disease of the musculoskeletal system	1.9
Other infections	1.8
Disease of the eye	1.5
Disease of the circulatory system	1.2
Mental and behavior	1.0
Disease of genitourinary system	1.0
Intestinal infections	0.9
Disease of the nervous system	0.8
Disease of the blood	0.5
Disease of the ear	0.5
Pregnancy	0.5
Endocrine nutritional and metabolic	0.5
Disease of the respiratory system	0.5
Arthropod-borne viral fevers	0.4
Neoplasms	0.2
Congenital malformations	0.1
Certain condition originating in the perinatal period	0.0
Others	3.8

admissions, 10.3% were related to accidents (V01-V99, W20-W49), assault (X85-Y09) (2.0%) and intentional self harm (X60-X84) (1.2%).

The male to female ratio of admission was 1 to 1.33. This ratio would be 1.18 to 1 if pregnancy were excluded, leaving injury and poisoning as the leading causes for admission.

Pregnancy was the leading cause for admission among females and the whole adolescent age group; comprising 35.9% of all female admissions. Approximately 43.9% of the pregnancy-related admissions resulted in delivery (O80-84), or there were 88 infants born to adolescent mothers per day.

Adolescent males were admitted due to injury and poisoning, 2.5 times more frequently than females. The most common injuries and poisonings among adolescents was (1) injury to the head (S00-S09) (26.5%) (2) injury to the elbow and forearm (S50-59) (10.6%) and (3) toxic effects of substances chiefly non medicinal as to source (T51-T65) (8.3%).

Pregnancy, injury and poisoning, arthropod-borne viral fevers and respiratory infections are discussed further in subsequent articles published in the same issue. Most of the diseases of the digestive system were (1) acute appendicitis (K35) (48.4%) (2) dyspepsia (K30) (12.9%) and (3) gastritis and duodenitis (K29) (10.5%).

Considering all child and adolescent admissions, diagnoses that emerge and increase with age during adolescence were (1) pregnancy (100%) (2) musculoskeletal diseases (46.9%) (3) mental and behavioral diseases (46.5%) and (4) injury and poisoning (46.0%). Musculoskeletal diseases were mainly (1) systemic connective tissue disorders (2) soft tissue disorders and (3) arthropathies. Mental and behavioral diseases were mainly (1) neuroses, stress-related and somatoform disorders (F40-F48) (25.6%) (2) mental retardation (F270-F79) (16.4%) (3) symptoms and signs involving cognition (R40-R46) (13.9%) and (4) mental and behavioral disorders due to psychoactive substance use (F10-F19) (13.0%).

The average length of stay was 3.4 days per admission. Mental behavior, neoplasms and disease of the musculoskeletal system were the diagnoses associated with the longest stays (8.49, 8.16 and 6.13 days, respectively). Although the respective average length

Table 3. Percentage of leading causes of admissions and in-hospital deaths in adolescents by disease group and gender

Diagnosis	Admissions (%)		In-hospital deaths (%)	
	Male (n = 153,288)	Female (n = 204,316)	Male (n = 975)	Female (n = 517)
Injury and poisoning	11.53	4.64	34.40	9.92
Neoplasms	0.87	0.80	7.03	3.89
Other infections	1.82	1.91	5.09	5.63
Respiratory infections	3.48	3.47	3.95	2.88
Disease of the nervous system	0.91	0.75	3.41	1.74
Disease of the circulatory system	0.44	0.46	3.21	1.88
Disease of the respiratory system	0.29	0.22	1.67	1.21
Arthropod-borne viral fevers	8.28	6.70	1.41	1.07
Disease of the digestive system	4.63	5.85	1.14	0.94
Disease of genitourinary system	1.25	2.63	1.20	0.87
Disease of the musculoskeletal system	0.65	0.72	0.54	1.41
Congenital malformations	0.26	0.28	0.74	0.47
Disease of the blood	0.97	1.91	0.27	0.80
Endocrine nutritional and metabolic	0.22	0.28	0.33	0.27
Pregnancy	0.00	20.49	0.00	0.47
Intestinal infections	2.17	2.86	0.20	0.27
Disease of the skin and subcutaneous	1.08	0.61	0.13	0.20
Factors influencing health	0.54	0.36	0.20	0.07
Mental and behavior	0.77	0.88	0.00	0.07
Disease of the eye	0.22	0.14	0.00	0.00
Disease of the ear	0.09	0.11	0.00	0.00

Table 4. Leading causes of in-patient visits by primary diagnosis

Rank	ICD-10	Diagnosis	%
1	O80	Single spontaneous delivery	8.8
2	A91	Dengue hemorrhagic fever	8.8
3	A90	Dengue fever	5.6
4	K35	Acute appendicitis	5.1
5	A09	Diarrhea and gastroenteritis of presumed infectious origin	4.1
6	D56	Thalassemia	3.0
7	B34	Viral infection of unspecified site	2.0
8	S06	Intracranial injury	2.0
9	S52	Fracture of forearm	1.4
10	J02	Acute pharyngitis	0.8

of stays for injury and poisoning and pregnancy were shorter than other causes (2.61 and 4.11 days), the respective cumulative length of stays for both groups was the longest (237,852 and 191,384 days, 19.7%, 15.8%).

The majority of adolescents had medical insurance from the Universal Coverage scheme (94.0%), followed by 5.4% from the Civil Servant Medical Benefits and 0.6% from Social Security. The government spent approximately 3,223 million Baht on hospital charges for adolescents. The average hospital charge was 9,586.6 Baht per adolescent admission. Injury and poisoning and pregnancy were the diagnoses with the highest, respective, cumulative charges (842 million Baht (26.1%) and 430 million Baht (13.4%)). Neoplasms, congenital malformations and musculoskeletal diseases were the diagnoses associated with the highest charges (40,774, 35,952 and 24,351 Baht) per admission.

Table 5. Leading causes of hospital deaths by primary diagnosis

Rank	ICD 10	Diagnosis	%
1	S06	Intracranial injury	24.0
2	A41	Other septicemia	5.6
3	S36	Injury of intra-abdominal organs	5.6
4	J18	A Pneumonia organism unspecified acute appendicitis	4.8
5	B20	HIV disease	2.9
6	C91	Lymphoid leukemia	2.6
7	A91	Dengue hemorrhagic fever	2.2
8	T75	Effects of other external causes	2.2
9	S02	Fracture of skull and facial bones	2.0
10	S27	Injury of other and unspecified intrathoracic organs	1.9

Hospital Deaths

Adolescents represented 1.13% of total hospital deaths with the leading causes presented in Table 3. The five leading cause were (1) injury and poisoning (34.4%) (2) neoplasms (7.0%) (3) other infections (5.0%) (4) respiratory infections (3.9%) and (5) diseases of the nervous system (3.4%).

The majority of injury and poisoning were (1) intracranial (S06) (53.8%) (2) intra-abdominal organ (S36) (12.6%) and (3) injury of other unspecified intrathoracic organs (S27) (4.2%). The majority of other infections were (1) bacterial septicemia (A41) (52.8%) and (2) HIV disease (B20-B24) (30.8%). The majority of neoplasms were leukemia (C91-C92) (38.3%).

The primary diagnoses that were the leading causes of deaths are presented in Table 5. The five leading causes were (1) intracranial injury (S06) (24.0%) (2) other septicemia (A41) (5.6%) (3) injury of intra-abdominal organs (S36) (5.6%) (4) pneumonia (J18) (4.8%) and (5) HIV (B20) (2.9%). Among hospital deaths, 30.2% were related to accidents (V01-V99, W20-W49), 5.0% to assault (X85-Y09) and 2.0% intentional self harm (X60-X84).

The male to female ratio for deaths was 1.9 to 1. Male adolescents died from injury and poisoning and neoplasms 3.5 and 1.8 times more than females, respectively. Female adolescents died from diseases of the blood (especially aplastic anemia D61) and diseases of the musculoskeletal system (especially systemic lupus erythematosus M32) 3.0 and 2.6 more times than males, respectively.

Discussion

In spite of the general impression that adolescence is a period of physical health, there are significant causes of morbidity and mortality which are increasingly related to psychosocial factors and engagement in high risk behaviors. Though experimentation may be a part of normal development, it can lead to premature mortality, morbidity and permanent disability. Factors that contribute to these behaviors have been identified[1]. Mental health problems, poor self-esteem, substance use and difficulty talking to parents are examples of factors related to smoking, alcohol and drug abuse and sexually transmitted infections. Connectedness to family and school and religious affiliation have been found to be protective factors.

Related to these factors is the development of the adolescent brain. The regions of the brain that evaluate risk and reward usually develop earlier than those that regulate behavior and emotion, which results in a vulnerability to the regulation of behavior and is one of the reasons underlying the decision to engage in such behaviors[2,3]. Alcohol consumption, unprotected sex, lack of contraception, an iron deficient diet and substance misuse/abuse have been found to be the risk factors with the most impact on adolescent health outcomes[4].

In Thailand, 26.9 to 41.8% of adolescents do not live with their parents[5]. Previous research revealed an increase in high risk behaviors[5-9], leading to traffic accidents (*viz.*, not wearing a seat belt (14-45%), not wearing a helmet (37-80%), riding with drivers under the influence of alcohol (18-32%) and themselves driving under the influence of alcohol (12.1%)[9]. The prevalence of carrying weapons was 8.5%, 31.5% were involved in a violent event and 16.8-23.9% had been assaulted. Depression was reported in 5.3-19% of adolescents[6]. The rate of attempted suicide was 17.5/100,000. The prevalence of substance misuse/abuse was 7.7-22.6% for tobacco smoking, 16.4-50.1% for

alcohol consumption and 37.8% for amphetamine[5]. Though premarital sexual intercourse is not generally socially acceptable, 6.5-39.2% of adolescents have had sexual intercourse and only 15% used contraception. Seven percent have never used a condom[6]. The percentage of female adolescents who have a comprehensive knowledge about HIV was 46%[8]. The prevalence of HIV infection among high school students and college students who donated blood has increased from 0.1% and 0.24% in 2010 to 0.16% and 0.4% in 2011[10].

Over the past two decades, global trends in adolescent morbidity and mortality have shifted from infectious to social etiologies. Unintentional injury is the leading cause of death among young people around the world followed by AIDS, other infectious causes, homicide and interpersonal violence[8,11,12]. The main causes of worldwide disability among adolescents and youth are neuropsychiatric disorders, unintentional injuries and infectious and parasitic diseases[4].

Thailand is a developing nation in transition from a primarily agrarian society to an urban, industrial, mixed economy. Already, as with global trends, injury and poisoning are the leading causes of death among adolescents. These are followed by neoplasms, other infections, respiratory infections and disease of the nervous system. In contrast to other age groups, pregnancy was the leading cause of admissions followed by injury and poisoning, arthropod-borne viral fevers, diseases of the digestive system and respiratory infections. Accidents and injuries remain on the top five causes for out-patient visits.

Mental health problems (such as mood and eating disorders) have become increasingly prevalent among Thai adolescents, albeit the data confirmed that 1.0% of the outpatient visits were due to mental and behavioral causes. It is speculated that adolescents may not come to the hospital for mental health care unless severely ill because (a) mental illnesses are often stigmatized (b) patients may be under-identified and/or (c) the access to care may be limited.

Both leading causes of deaths and admissions (*viz.*, injury & poisoning and pregnancy) are preventable. They comprised a respective 36.7% and 45.0% of the adolescent admissions and deaths. The cumulative length of stay and hospital charges for both diagnoses was the highest in the adolescent age group. Early unwanted pregnancy can have a major psychosocioeconomic impact on the adolescent mother and father, their child and the grandparents (potentially the caregivers), while injuries & poisonings are a major source of disability and disease burden. Since the majority of diseases in adolescents are preventable, measures should be intensified and implemented to (a) reduce risk factors (b) increase preventative life habits (c) prevent accidents & injuries and (d) provide comprehensive sex education.

Many healthcare providers find communicating with adolescents a challenge[13]. Beyond history taking, physical examination and medical knowledge of specific diseases, the approach to an adolescent and the psychosocial assessment is crucial[14]. The HEADSS examination (Home, Education/employment, peer group Activities, Drugs, Sexuality and Suicide/depression) is a tool that enables the healthcare provider to assess adolescent risk-taking behaviors. Therefore, health care providers can suggest developmentally-appropriate strategies for prevention, early detection, intervention and rehabilitation of physical and mental illnesses. Such an appropriate approach to the adolescents and their families could help to establish rapport and facilitate communication potentially yielding a reliable psychosocial assessment. Specific techniques used include (but are not limited to) (a) approaching styles (b) making it possible for the adolescent to have a private consultation and (c) assuring privacy and confidentiality. Involving adolescents in their health care can prevent a lifetime of bad habits and they can learn a set of skills which enable them to take incrementally increasing respon-sibility for their own health[15].

Study limitations

The data in the present study have limitations, as stated in the concept and protocol article; therefore caution should be exercised when extrapolating the results.

Suggestions

Along with an understanding of adolescent growth, psychosocial development and the special sensitive techniques for conducting a psychosocial assessment, a comprehensive understanding of the leading causes of morbidity and mortality among adolescents (*i.e.*, injuries and teenage pregnancy) should be included in the curriculum for medical students.

Health supervision guidelines and an adolescent medicine rotation should be mandatory for residents in pediatrics, internal medicine, gynecology and family medicine. Among adolescents (*i.e.*, persons with a growing awareness of self, independence and

nearing their legal majority), issues of consent and confidentiality are more challenging than for children. Healthcare providers should therefore make themselves familiar with interviewing and counseling techniques relevant to adolescents together with the legal aspects of adolescent healthcare[16].

Adolescent health statistics and youth risk behavioral data need to be collected continuously, in order to monitor changing trends and improve the care being provided.

In order to promote adolescent health, regular health supervision visits should be required at least once in each stage of adolescence; early, middle and late[17]. Such visits should include assessment of physical growth, social and academic competence, emotional well-being and immunizations. Risk reduction, comprehensive sex education, violence and injury prevention and anticipatory guidance should be provided for both the adolescents and their parents[17].

Difficult access can be a major barrier to adolescent healthcare; adolescent friendly clinics for out-patient care and in-patient units, specifically designed for adolescents with multidisciplinary staff, would be ideal. Adolescent-friendly clinics must have policies and procedures that deliver equity, accessibility, acceptability, appropriateness and efficient healthcare[18]. Adolescent in-patient units should provide developmentally-appropriate medical and psychosocial care[19]. Community strengths and resources should be identified and integrated into the recreation and health services provided to adolescents.

With the age of consent for medical intervention, depending on the issue or procedure, currently at 18 years of age, policies about consent and confidentiality will need clarification and revision to suit Thai adolescent healthcare needs.

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Potential conflicts of interest

None.

References

1. Viner R, Macfarlane A. Health promotion. BMJ 2005; 330: 527-9.
2. Gogtay N, Giedd JN, Lusk L, Hayashi KM, Greenstein D, Vaituzis AC, et al. Dynamic mapping of human cortical development during childhood through early adulthood. Proc Natl Acad Sci U S A 2004; 101: 8174-9.
3. Steinberg L. Cognitive and affective development in adolescence. Trends Cogn Sci 2005; 9: 69-74.
4. Gore FM, Bloem PJ, Patton GC, Ferguson J, Joseph V, Coffey C, et al. Global burden of disease in young people aged 10-24 years: a systematic analysis. Lancet 2011; 377: 2093-102.
5. Ramajitti Institute. Child watch project data 2007-2008, 2009-2010 [Internet]. Bangkok: Ramajitti Institute; 2012 [cited 2012 Apr 30]. Available from: http://www.childwatchthai.org/projects.php
6. Ruangkanchanasetr S, Plitponkarnpim A, Hetrakul P, Kongsakon R. Youth risk behavior survey: Bangkok, Thailand. J Adolesc Health 2005; 36: 227-35.
7. National Statistical Office, Thailand. The 2009 reproductive health survey. Bangkok: National Statistical Office; 2009.
8. United Nations Children's Fund (UNICEF). The state of the world's children 2011: adolescence an age of opportunity. New York: UNICEF; 2011.
9. Child and Adolescent Health Situation Consortia, Royal Collage of Pediatricians Thailand. Child and adolescenct health situation 2009. Bangkok: Beyond Enterprise; 2010.
10. Pongpan S, Namwat Ch, Pliplat T. HIV infection situation in Thailand [Internet]. Nonthaburi: Bureau of Epidemiology; 2011 [cited 2012 May 05]. Available from: http://www.boe.moph.go.th/files/report/20110526_81040484.pdf
11. Blum RW, Nelson-Mmari K. The health of young people in a global context. J Adolesc Health 2004; 35: 402-18.
12. Murphy SL, Xu J, Kochanek KD. Deaths: preliminary data for 2010. Natl Vital Stat Rep 2012; 60: 1-68.
13. Payne D, Martin C, Viner R, Skinner R. Adolescent medicine in paediatric practice. Arch Dis Child 2005; 90: 1133-7.
14. Goldenring JM, Rosen DS. Getting into adolescent heads: an essential update. Contemp Pediatr 2004; 21: 64-92.
15. Viner RM, Barker M. Young people's health: the need for action. BMJ 2005; 330: 901-3.
16. Woods ER, Neinstein LS. Office visit, interview techniques and recommendations to parents. In: Neinstein LS, Gordon CM, Katzman DK, Rosen

DS, Woods ER, editors. Adolescent health care a practical guide. 5th ed. Philadelphia: Lippincot Williams & Wilkins; 2007: 32-43.
17. Hagan JF, Shaw JS, Duncan PM. Bright futures: guidelines for health supervision of infants, children and adolescents. 3rd ed. Groove Village, IL: The American Academy of Pediatrics; 2008.
18. Tylee A, Haller DM, Graham T, Churchill R, Sanci LA. Youth-friendly primary-care services: how are we doing and what more needs to be done? Lancet 2007; 369: 1565-73.

บทวิเคราะห์สถานการณ์สุขภาพวัยรุ่นไทย กุญแจสำคัญคือการป้องกัน

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***ภูมิหลัง**: วัยรุ่นส่วนใหญ่มีสุขภาพแข็งแรง แต่วัยนี้อาจเป็นจุดเริ่มต้นของการบ่มเพาะปัจจัยที่ส่งผลต่อปัญหาสุขภาพในอนาคตได้*

***วัตถุประสงค์**: เพื่อวิเคราะห์สถานการณ์ปัญหาสุขภาพวัยรุ่นไทย เพื่อเป็นข้อมูลในการพัฒนาการเรียนการสอนในโรงเรียนแพทย์ และการให้บริการสุขภาพให้สอดคล้องกับสถานการณ์ปัจจุบันยิ่งขึ้น*

***วัสดุและวิธีการ**: ข้อมูลสาเหตุการมารับบริการที่แผนกผู้ป่วยนอก การรับไว้ในโรงพยาบาลและการเสียชีวิตในวัยรุ่นไทย อายุ 13-18 ปี ได้ถูกนำมาวิเคราะห์*

***ผลการศึกษา**: สาเหตุการมารับบริการที่แผนกผู้ป่วยนอกได้แก่ ปัจจัยที่มีผลต่อสุขภาพ การติดเชื้อระบบทางเดินหายใจ โรคของระบบทางเดินอาหาร และการบาดเจ็บหรือได้รับสารพิษ การวินิจฉัยในวัยรุ่นที่รับไว้ในโรงพยาบาลได้แก่ สาเหตุเกี่ยวกับการตั้งครรภ์ การบาดเจ็บหรือได้รับสารพิษ และไข้เลือดออก สาเหตุการเสียชีวิตได้แก่ การบาดเจ็บหรือได้รับสารพิษ มะเร็ง และการติดเชื้ออื่นๆ*

***สรุป**: สาเหตุที่ทำให้เกิดการเจ็บป่วยและเสียชีวิตในวัยรุ่นส่วนใหญ่เกี่ยวข้องกับปัญหาพฤติกรรมที่ส่งผลต่อสุขภาพ ซึ่งสามารถป้องกันได้ แพทย์และบุคลากรทางการแพทย์ควรคำนึงถึงปัจจัยทางด้านพฤติกรรม และจิตสังคมด้วยเสมอ*