

Characteristics and Burden of Hospitalization Because of Intentional Self-Harm: Thai National, Hospital-Based Data for 2010

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Background: There is a paucity of data on intentional self-harm and suicide in Thailand. It is crucial to re-evaluate the burden and health outcomes.

Objective: To measure the character and burden of acts of intentional self-harm in the Thai hospitalized population.

Material and Method: Acts of intentional-self harm were categorized using ICD 10 classification. All of inpatient-related data were analyzed using SPSS 17.

Results: Overall intentional self-harm in 2010 led to 24,924 hospitalizations and 854 deaths; an incidence of 35.6/100,000 people with the highest level in two age groups: 18-25 and 26-40 year-olds. Self-poisoning (89%) was the most common method and pesticide was the leading used chemical agents. The total cost of treatment was 149,672,190 baht and the mean length of stay was 2.9 ± 6.7 days. The mortality rate increased as the population got older with the highest rate being 10.6% for 70-79 year-olds. In 33.8% of cases, psychiatric co-diagnosis were found with anxiety disorders was the leading comorbidity.

Conclusion: The incidence of intentional self-harm was medium to high, compared to other East Asians countries. Self-poisoning by exposure to pesticides was the most common self-harm method. Age over 60 had the highest mortality rate. Having a psychiatric co-diagnosis was common.

Keywords: Intentional self-harm, Intentional self-poisoning, Self-harm behaviors, Suicide

J Med Assoc Thai 2012; 95 (Suppl. 7): S156-S162

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

Suicide and acts of intentional self-harm are major mental health issues causing almost one million people deaths worldwide each year. This represents an annual global suicide mortality of 16/100,000—an increase of 60% over the past 45 years. Acts of intentional-self harm and suicide together constitute the sixth leading cause of ill-health and disability worldwide⁽¹⁾. There is a broad spectrum of self-harm acts ranging from poisoning to highly lethal attempts. Many studies from both developed and developing countries indicated that these behaviors are most common among adolescents (12-18 year-olds) and young adults (19-40 year-olds)⁽²⁾.

In a recent study from Australia, based on the 15- to 18-year-old age group, the authors found that around 10% of the sample claimed that they had at

least one episode of self-harm⁽³⁾. In Canada, the rate of serious self-injury leading to medical hospitalization was 140/100,000 with poisoning being the leading cause followed by self-cutting⁽⁴⁾. In Turkey, the annual rate was 38.14/100,000 with poisoning being the leading cause⁽⁵⁾. Among East Asians, the reported incidences ranged between 7.8 and 31.2/100,000 with Korea having the highest suicide rate⁽⁶⁻⁹⁾. Although national variation affects prevalence⁽¹⁰⁾, most of the studies found that the risk factors associated with acts of self-harm and suicide included the following: female sex, adolescent age, depression, heavy alcohol consumption and antisocial behaviors^(11,12). In Thailand, there are three main public health financing schemes covering 96 percent of the population, namely: Universal Coverage (UC), the Civil Servant Medical Benefit Schemes (CSMDS) and the Social Security Scheme. Data from the Bureau of Epidemiology, Ministry of Public Health, Thailand, revealed that the annual suicide rate has been decreasing from 8.40/100,000 to 5.90/100,000 in the past 10 years (2000 to 2010). There is, however, a paucity of

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data on the rate of self-harm since 2004 when the rate was 52/100,000. It is, therefore, timely that a re-evaluation is underway for gaining greater understanding of these dangerous behaviors. Thus, based on national level hospital-based data, the authors studied prevalence, age, demographic factors, lengths of stay, cost of treatment and discharge status to provide a comprehensive survey of the character and burden of acts of intentional self-harm and suicide in the Thai population.

Material and Method

The present study is a part of the “Health Situation Analysis of Thai People 2010: Implications for Health Education and Health Service Reform” described elsewhere. The authors analyzed both in-patient (IPD) and out-patient data (OPD) from the three national insurance schemes in 2010. The authors retrieved data of the cases from the secondary diagnoses on intentional self-harm acts, using the International Classification of Disease 10th revision (ICD-10) diagnosis codes X60-X84, from the database of IPD admissions from all insurance schemes. The authors could not perform data analysis on OPD patients, because the available data did not contain self-harm related information. The data the authors collected included patient profile, length of hospital stay, hospital charge, region of the hospital and the treatment outcomes. Data analysis was performed by using SPSS version 17.

According to Thai geographic location, the authors stratified the locations of hospitals for each admission into 4 regions (North, Northeast, Central and South) in order to search for correlation between cultural effects and behaviors. The authors also tried to investigate correlation between self-harm behaviors and psychiatric disorders by categorizing psychiatric comorbidities into 9 major groups (F1-F9), according to ICD-10 classification.

Results

Burden of Illness for Intentional Acts of Self-harm X60-X84 (ICD 10)

Of a total 24,924 admissions by all means of acts of intentional self-harm in 2010, 13,959 (60%) were females and 14,866 admissions (59.6%) were predominantly patients from two age groups, 18-25 and 26-39 years of age (Table 1). The leading cause of acts of intentional self-harm was intentional self-poisoning (categories X60-X69), which accounted for 22,175 hospitalizations (89%). The respective number of

admissions for the North, Northeast, Central and South were 6,220 (25%), 5,631 (22.6%), 9,800 (39.3%) and 3,273 (13.1%) cases.

The overall number of deaths from acts of intentional self-harm in 2010 was 789 (3.2%): 516 (65.4%) males and 273 (34.5%) females. The major causes of death were as follows: exposure to pesticides (X68), hanging or strangulation (X70) and unspecified chemicals including corrosive agents (X69), accounting for 69.3%, 10% and 8.2% of total deaths, respectively. Mortality rates, categorized by age group, are detailed in Table 1. The rates increased from 0.78% for 13-18-year-olds to 10.6% for 70-79-year-olds.

The total cost of treatment for acts of self-harm and suicide was 149,672,190 baht (4,989,072 USD; based on an exchange rate of 1 USD = 30 baht). The mean hospital charge for each admission was 6,005 baht or 200 USD (SD \pm 17,703 baht) and a mean duration of stay of 2.9 days (SD \pm 18.4).

Intentional self-poisoning (X60-X69)

Females were hospitalized 13,959 times because of acts of self-poisoning, compared to 8,216 admissions among males. The five leading methods of self-poisoning behaviors were (1) exposure to pesticides (X68) 6,010 cases (2) non-specified chemical including corrosive agents (X69) 4,850 cases (3) non-opioid analgesics and antipyretics (X60) 4,178 cases (4) unspecified drugs (X64) 3,781 cases and (5) anti-epileptics (X61) 2,798 cases, which accounted for 24.1%, 19.5%, 16.8%, 15.2% and 11.2% of total admissions, respectively.

The number of hospitalizations for each act of self-poisoning within each region of Thailand showed that the leading cause of hospitalizations in the North and Northeast was exposure to pesticides, while exposure to the other non-specified chemicals including corrosive agents was the major cause in the Central region and the South.

Details of three underlying behaviors, which resulted in the highest mean hospital charges and longest lengths of stay were presented in Table 3. These causes included (a) exposure to pesticides (b) non-specified chemical including corrosive agents and (c) non-opioid analgesics and antipyretics. The mean length of stay in this group ranged between 1.8 ± 1.7 and 2.9 ± 4.5 days. Although more than 98% of total admissions from self-poisoning required a hospital stay of less than 1 week, very long hospital stays (more than 6 months) occurred in 1% of this group (unpublished data). Death rates among males and

Table 1. Numbers of admissions and death stratified by age group for all acts of self-harm (X60 X84)

Age group (years)	Admissions (n)	Death (n)	Mortality rate
0-1	33	0	0
1-5	191	0	0
6-12	86	0	0
13-18	4,386	31	0.7%
19-24	5,614	78	1.4%
25-39	8,312	269	3.2%
40-59	4,911	331	6.7%
60-69	778	80	10.3%
70-79	613	0	10.6%
80+	0	0	-
Total	24,924	789	3.2%

Table 2. Numbers of admissions, gender distribution, age and death resulted from intentional self-harm

Acts of self-harm	Admissions	Female (%)	Mean age (SD)(years)	Death (%)
X60 non-opioid	4,178	3,304 (79.1)	24.2 (10.5)	7 (0.2)
X61 anti-epileptics	2,798	2,063 (73.7)	33.5 (14.4)	24 (0.9)
X62 narcotics and hallucinogen	103	34 (33)	28.8 (13.4)	1 (1)
X63 other drugs acting on ANS	156	101 (64.7)	29 (12.8)	3 (1.9)
X64 unspecified drugs	3,781	2,858 (75.6)	28.5 (13.9)	20 (0.5)
X65 alcohol	134	53 (39.6)	30.8 (17)	3 (2.2)
X66 organic solvent	147	57 (38.8)	34.1 (19.5)	1 (0.7)
X67 other gases and vapors	18	7 (38.9)	29.1 (16.5)	1 (5.6)
X68 pesticides	6,010	2,515 (41.8)	37.4 (15.8)	592 (9.9)
X69 others	4,850	2,967 (61.2)	27.8 (13.8)	70 (1.4)
X70 hanging, strangulation	877	319 (36.4)	36 (16.1)	85 (9.7)
X71 drowning and submersion	59	34 (57.6)	32.3 (15)	3 (5.1)
X72 handgun discharge	22	3 (13.6)	39.3 (16.7)	4 (18.2)
X73 rifle, shotgun and larger firearm	20	0 (0)	29.7 (15.3)	1 (5)
X74 other firearm	38	4 (10.5)	35.7 (17.2)	13 (34.2)
X75 explosive	1	0 (0)	51.3 (0)	0 (0)
X76 smoke fire and flames	31	7 (22.6)	31.5 (11)	5 (16.1)
X77 steam, hot vapors and hot object	14	4 (28.6)	30 (13.8)	0 (0)
X78 sharp object	1,249	411 (32.9)	30.7 (12.1)	8 (0.6)
X79 blunt object	106	15 (14.2)	30 (12.7)	1 (0.9)
X80 jumping from a high place	116	45 (38.8)	33.9 (13)	10 (8.6)
X81 jumping or lying before moving object	5	2 (40)	34.3 (14.9)	0 (0)
X82 crashing or motor vehicle	5	2 (40)	38 (19.9)	0 (0)
X83 other specified means	150	37 (24.7)	35.8 (17.5)	2 (1.3)
X84 unspecific means	56	24 (42.9)	35.2 (15.4)	0 (0)

females were 2% and 5.5%, respectively. Overall, mortality in the group was 728 (3.3%) deaths from among 22,175 admissions. If the authors consider each self-poisoning method separately, the three leading causes of death were (1) self-poisoning by exposure to pesticides (9.9%) (2) other gases and vapors (5.6%) and (3) alcohol (2.2%).

Intentional self-harm behaviors (X70-X84)

Of the total admissions, all methods of intentional self-harm behaviors accounted for 2,749 (11%) hospitalizations. Among this group, self-cutting or using sharp objects (X78) and hanging or strangulation (X70) were the two most common methods; comprising 1,249 (45.4%) and 877 (31.9%) cases,

Table 3. Hospital charges and length of stay from intentional self-harm

Acts of self-harm	Hospital charges Mean \pm SD (Baht)	Hospital stay Mean \pm SD (Days)
X60 non-opioid	5,135 \pm 5,047	2.5 \pm 5.7
X61 anti-epileptics	4,261 \pm 12,302	2.4 \pm 4.9
X62 narcotics and hallucinogen	4,471 \pm 8,346	2.3 \pm 2.7
X63 other drugs acting on ANS	4,272 \pm 9,383	2.5 \pm 5.5
X64 unspecified drugs	3,132 \pm 6,667	1.9 \pm 2.2
X65 alcohol	3,228 \pm 3,637	1.8 \pm 1.7
X66 organic solvent	4,129 \pm 7,385	2.2 \pm 2.2
X67 other gases and vapors	6,465 \pm 14,016	2.1 \pm 1.4
X68 pesticides	6,249 \pm 16,489	2.9 \pm 4.5
X70 hanging, strangulation	9,439 \pm 3,5477	4.2 \pm 13.5
X71 drowning and submersion	3,979 \pm 5,656	2.8 \pm 4.1
X72 handgun discharge	26,169 \pm 34,854	6.7 \pm 8.8
X73 rifle, shotgun and larger firearm	27,219 \pm 41,416	7.8 \pm 13.8
X74 other firearm	21,687 \pm 21,223	5.9 \pm 6.1
X75 explosive	10,598 \pm 0	8.0 \pm 0.0
X76 smoke fire and flames	72,851 \pm 91,587	24.9 \pm 37.0
X77 steam, hot vapors and hot object	12,395 \pm 9,546	4.3 \pm 5.8
X78 sharp object	11,289 \pm 17,471	4.7 \pm 12.6
X79 blunt object	12,762 \pm 30,732	3.8 \pm 10.0
X80 jumping from a high place	30,829 \pm 46,047	12.0 \pm 17.6
X81 jumping or lying before moving object	4,686 \pm 3,464	5.6 \pm 4.6
X82 crashing or motor vehicle	7,277 \pm 11,371	1.6 \pm 0.5
X83 other specified means	15,448 \pm 28,017	9.2 \pm 20.0
X84 unspecific means	12,079 \pm 37,312	6.8 \pm 18.4

respectively. Males were admitted 1,842 times with death ensuing in 102 cases. By comparison, the number of admissions and deaths among females was 907 and 30, respectively. The respective mortality rate among males and females was 5.5% and 3.3%; overall mortality was 4.8%. In calculating the mortality rate for each method of self-harm separately, the rates were: (1) intentional self-harm by firearm (34.2%) (2) handgun discharge (18.2%) (3) smoke fire and flames (16.1%) (4) hanging and strangulation (9.7%) (5) and jumping from a high place (8.6%).

From Table 3, the three respective leading causes of hospital charges and longest hospital stay were intentional self-harm by (a) smoke fire and flames (X76) (b) intentional self-harm by jumping from a high place (X80) and (c) intentional self-harm by rifle, shotgun and larger firearms (X73). The mean length of stay in this group varied widely between 1.6 ± 0.5 and 24.9 ± 37 days with 7% of admissions being longer than 2 weeks (unpublished data).

Psychiatric comorbidity

Of 8,426 hospitalizations (33.8% of total

admissions), 9,420 had diagnoses of psychiatric comorbidities; each admission might have more than one co-diagnosis. The majority of underlying psychiatric disorders comprised (a) 4,440 (47.1%) diagnoses of anxiety disorders (b) 2,378 (25.2%) mood disorders (c) 1,238 (13.1%) psychotic disorders and (d) 949 (10.1%) substance-use disorders. The comorbidities increased most of the mean hospital stays (data not shown). The overall mortality rate in the group with psychiatric comorbidities was 139/8,426 (1.6%), compared to 715/16,498 (4.3%) in the group without psychiatric comorbidities.

Discussion

The authors collected data for each admission from all three national health insurance schemes for 2010 in order to study the character and estimate the burden of intentional self-harm behaviors. The present study showed that the incidence of hospitalizations from acts of intentional self-harm in 2010 was 35.6 per 100,000 people. This incidence was much lower than in 2004 (52/100,000)⁽¹³⁾; but it still ranked as a medium to high rate of suicide and self-harm for the nation as a

whole. Although the authors could not calculate the incidence of suicide because a lack of information on secondary diagnoses from the OPD data, the number of admissions and mortalities during hospitalization likely reflect the real burden of these behaviors. This is because OPD cases with minor self-harm consequences rarely need medical attention and hospitalization and they accounted for only a minor part of total hospital charges.

Age constitutes an important factor in the incidence of acts of self-harm, which peaks between 18-40 years of age (accounting for more than a half the total incidence). Adolescents (13-18 years) and middle age adults (40-59 years) together accounted for around one-third of the overall incidence. These findings about age groups at risk are in accord with previous studies around the world, which resulted in the promotion of mental health and prevention of acts of self-harm in these populations⁽¹⁴⁻¹⁶⁾. The mortality rate increased through the teen years and was at the highest level in an elderly age group (70-79 years of age). This observation warrants further cross-sectional research, with standardized psychometric measures, detecting psychiatric comorbidity, in order to gain an understanding about self-injury in the elderly population.

The authors found that female patients were admitted more often, but the number of hospitalizations was not significantly different from males as a group. Even though women performed more acts of self-harm, the male death rate (5.5%) was 2.7 times higher than females (2%). Self-poisoning behaviors (X60-X69) were performed more commonly by women; while men tended to perform self-harming behaviors (X70-X84). It is noteworthy that most of the self-harm behaviors related to firearms and explosives (X72-X76) were committed by men, requiring longer hospital stays with a slightly higher mortality rate than acts of self-poisoning (4.8% vs. 3.3%). These findings suggest that women may attempt to harm themselves with hesitation or indecision (a call for help or even temerity) more frequently than men who choose more devastating and definitive methods. These findings are similar to research elsewhere, which argued the aggressive suicide behaviors of men might be an effect of testosterone^(5,7,12,17).

The results regarding psychiatric comorbidities in the present study are very interesting with anxiety disorders presenting as the most common psychiatric co-diagnosis followed by mood disorders, psychotic disorder and substance use disorders. Surprisingly, the mortality rate of the patients with a

psychiatric comorbidity was lower than of those without a psychiatric comorbidity. This differs from the argument that comorbidities are likely to increase mortality and that substance use disorders and mood disorders would be potential factors for suicide acts^(11,12,16). The discrepancy might be explained by the influences of Thai culture and an underestimation or a misdiagnosis of psychiatric disorders in our community because of a lack of use of psychiatric measures in regional hospitals. Thai culture (overwhelmingly Buddhist) tends to subvert ones mood and displace it with an expression of anxiety; however, to prove either of these suggestions, further studies about the relationship between psychiatric disorders and self-harm behaviors in the Thai context are needed.

In summary, in 2010, Thailand had a decreased number of hospitalizations due to acts of self-harm, but the cost and burden of these problems were still very high. In order to gain a better understanding about these dangerous behaviors, which resulted from a complex interaction of multiple factors, further qualitative and quantitative studies are needed in these special populations. It is also crucial that the nation develops effective prevention, early detection and prediction of these self-injury behaviors in order to set up an appropriate care and supporting system for the patients and families. These represent the urgent, upcoming challenges and tasks for the psychiatrists, social workers, teachers and suicide specialists.

Study limitations

In the present study, we analyzed data from hospitals throughout the country. The reliability and validity of the results depended on correct medical diagnosis and coding; a misclassification may have occurred. Caution should therefore be exercised when extrapolating the results

Acknowledgement

The authors wish to thank the Faculty of Medicine, Khon Kaen University for its support and Mr. Bryan Roderick Hamman and Mrs. Janice Loewen-Hamman for assistance with the English-language presentation of the manuscript.

Potential conflicts of interest

None.

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ขนาดปัญหาและลักษณะของการทำร้ายตนเองที่ได้รับการรักษาในโรงพยาบาลในปี พ.ศ. 2553

พงศธร พหลภาคย์, พูนศรี รัชชิจิ, สุวรรณ อรุณพงศ์ไพศาล, นวนันท์ ปิยวัฒน์กุล, แก้วใจ เทพสุธรรมรัตน์, สุชาติ พหลภาคย์

ภูมิหลัง: ข้อมูลเกี่ยวกับพฤติกรรมทำร้ายตัวเองและการฆ่าตัวตายในประเทศไทยไม่ได้รับการศึกษาอย่างต่อเนื่อง จึงควรมีการศึกษาทบทวน

วัตถุประสงค์: เพื่อศึกษาถึงลักษณะพฤติกรรมดังกล่าวในกลุ่มประชากรไทยที่ได้รับไว้รักษาในโรงพยาบาล

วัสดุและวิธีการ: ข้อมูลต่างๆเกี่ยวกับ การรับไว้รักษาในโรงพยาบาล ได้ถูกแบ่งตามระบบการวินิจฉัยของ ICD-10 (รหัส X70-X84) และได้้นำ มาทำการศึกษา และวิเคราะห์โดยโปรแกรม SPSS รุ่นที่ 17

ผลการศึกษา: การทำร้ายตนเองและการฆ่าตัวตายในปี พ.ศ. 2553 ทำให้มีการนอนโรงพยาบาล 24,924 ครั้ง และเสียชีวิต 854 ราย อุบัติการณ์ทั้งหมดคือ 35.6 ครั้งต่อประชากร 100,000 คน ซึ่งพบได้มากที่สุดในช่วงอายุ 18-25 ปี และ 26-40 ปี ค่าใช้จ่ายในการรักษาทั้งหมดเป็นเงิน 149,672,190 บาท ระยะเวลานอนโรงพยาบาลเฉลี่ย 2.9 วัน (ส่วนเบี่ยงเบนมาตรฐาน 6.7 วัน) การทำร้ายตนเองด้วยสารพิษเป็นวิธีที่พบบ่อยที่สุด (ร้อยละ 89) การใช้ยาฆ่าแมลง เป็นวิธีที่พบบ่อยที่สุดในกลุ่มนี้ อัตราตายเพิ่มขึ้นตามอายุ โดยกลุ่มอายุ 70-79 ปี มีอัตราตายสูงสุด (ร้อยละ 10.6) โรคร่วมทางจิตเวชพบได้ในผู้ป่วยจำนวนร้อยละ 33.8 โดยส่วนมากเป็นโรควิตกกังวล

สรุป: อุบัติการณ์ของการทำร้ายตนเองและการฆ่าตัวตายในปี พ.ศ. 2553 อยู่ในระดับปานกลางถึงสูง เมื่อเทียบกับประเทศอื่นๆในกลุ่มเอเชียตะวันออก การทำร้ายตนเองด้วยสารพิษโดยการรับประทานยาฆ่าแมลงเป็นวิธีที่พบบ่อยที่สุด กลุ่มที่มีอายุมากกว่า 60 ปีมีอัตราตายสูง โรคร่วมทางจิตเวชพบได้บ่อย
