

## ORIGINAL ARTICLE

# Rates and Profiles of Self-Harm Presenting to Malaysian General Hospitals: Data from the Ministry of Health in 2011

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## ABSTRACT

**Introduction:** Self-harm is an important global health concern as it is a strong predictor and risk factor for completed suicide. This paper is aimed to estimate the incidence rate of self-harm and to describe the profiles of people who self-harmed in 2011. **Methods:** This is a descriptive study based on secondary data retrieved from the Ministry of Health (MOH) of Malaysia hospitals' discharge records from the 1<sup>st</sup> of January to 31<sup>st</sup> of December 2011. **Results:** The overall self-harm rate was 16.6 per 100 000 population ( $n = 4\ 815$ ). Adults in the state of Johor had the highest rate of self-harm. There were more female self-harmers within the peak age group of 20-29 years. Indians, Muslims and those who were unmarried had the highest rates of self-harm. Male mostly used unspecified chemical (45.89%) while female used non-opioid analgesics (24.79%). **Conclusions:** In 2011, the rate of self-harm was 16.6 per 100 000 population with slightly higher rate observed among adult females compared to males and twice as high among girls than boys. Less lethal methods of self-harm were employed.

**Keywords:** Self-harm, Parasuicide, Self-injury, Self-poisoning, Malaysia

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## INTRODUCTION

Suicide is the second leading cause of death globally among people within 15-29 years of age (1). Individuals who engaged in self-harm had more suicidal ideation, suicide attempt and a significant risk of completed suicide (2,3). Yohimasu, Kiyohara, Miyashita *et al.* also demonstrated a strong association between self-harm and suicidal risk with OR 16.33 (CI=7.51-35.52) (4). As a result, self-harm becomes a strong predictor of suicide (5-7) and has been a global health and social concern. The burden of suicide calls for a suicide prevention plan, particularly in reducing the risk of suicide following a self-harm episode. The Malaysian government has launched a five-year National Suicide Prevention Strategic Action Plan that commenced in 2012, in which key efforts were to shift mental health treatment to community mental health centers and target a three-fold increase in the ratio of psychiatrists

to the population. A community mental health centre may provide counselling or organize activities to reduce the impact of social isolation, encourage treatment and provide psychosocial rehabilitation or supported accommodation, which all contribute to suicide prevention. In another example to reduce suicide risk, the acute care service offered by these centres also aims to stabilize patients acutely till the patients' symptoms improve. On the international ground, the World Health Organization (WHO) has recently produced its first global report on suicide prevention (1). In the literature, self-harm, self-injury or parasuicide has frequently been grouped together with suicide as they usually co-occur (8). In fact, both self-harm and suicide may have similar diatheses whereby psychosocial crises like poverty and unemployment, in addition to having psychiatric illness contribute to depression and suicidal behaviour (9). However, suicide and self-harm are different from neurobiology view; the alteration in the central serotonergic transmission occurs in suicide whereas self-harm has been associated with lower levels of cerebrospinal fluid opioids and a greater number of  $\mu$ -opioid receptors, which may explain the decrease in pain sensitivity and the reinforcing properties of the act of self-injury (10).

This study has employed a shorter but broader definition by the National Institute for Health and Clinical Excellence (NICE) Clinical Guideline on Self-harm which stated self-harm as 'self-poisoning or self-injury, irrespective of the apparent purpose of the act' (11). Using data mined from the Malaysian MOH records, this study aimed to estimate the incidence rate of self-harm and to describe the profiles of people who self-harmed in 2011. Although there have been a number of studies done on the rate and correlates of self harm and suicide in this country, the findings here could be compared with those past studies and may also be utilised to improve further research on suicide particularly through its methodology.

## MATERIALS AND METHODS

This is a descriptive study based on secondary data from the MOH 130 hospitals' discharge diagnoses records. A request with a list of X and Y codes was sent to the Health Informatics Centre (HIC), a unit within the Planning and Development Section of the MOH. HIC receives data from all the hospital medical record officers via their respective State Health Departments. For this study, two subsets of the data; self-harm presentations to the emergency department (ED) of the hospitals and hospital discharge records by the medical record office of government hospitals all over Malaysia were obtained for the 12-month period; 1<sup>st</sup> of January to 31<sup>st</sup> of December 2011. Subjects were cases seen in all the MOH hospitals in 2011, either at the emergency department (ED) or the wards. Cases with discharge diagnoses of "self-harm" or other approximate diagnoses like "parasuicide", "suicide attempt" or "deliberate self-harm" were included. The diagnoses followed the Tenth International Code of Diseases (ICD-10) Chapter XX: External causes of morbidity and mortality (V01-Y98) i.e. X60-X84: Intentional self-harm and Y10-Y34: Event of undetermined intent. Patients who were brought in dead, died upon arrival or died while in the ward were excluded. The outcome variables were total number and incidence rate of new and repeated cases of self-harm. New case of self-harm is defined as those with one episode of self-harm that ended up with a hospital encounter, in that one year. 'Methods' is defined as the technique, procedure or means employed by the individuals to harm themselves. Socio-demographic variables included were gender, age, race, religion, marital status and method used.

Inconsistent responses were corrected by interpolating the components parts to the total. For instance, the reported total number of patients would be accepted and adjusted according to age and ethnic groups by multiplying the reported responses by a constant factor so that the adjusted sum corresponds to the total of patients. Matching within the dataset to estimate the

number of repeat self-harmers was done by HIC as researchers were only allowed access to non-identifiable data.

## Statistical Analysis

Descriptive analyses were conducted. Estimation of the incidence rate of new and repeat self-harm is done using the number of new and number of repeat self-harm divided by the population at risk. The denominator used here is 2011 mid-year population estimates based on the adjusted Population and Housing Census of Malaysia 2010. The data was analyzed using the statistical software Statistical Package for Social Studies (SPSS) version 21.0® (SPSS Inc., Chicago, IL, USA).

## RESULTS

A total of 4 815 new cases of self-harm was reported in 2011, giving a rate of 17 per 100 000 population (Table 1). Majority of these cases were made up of adults, where the incidence rate is 19 per 100 000, compared to children/adolescents 12 per 100 000. Peak age group for both genders are at 20-29 years (Table 2). The highest incidence rate of self-harm were reported by hospitals in Johor for both children/adolescent and adults age groups combined, at 85 per 100 000 population while the two northern states i.e. Kelantan and Terengganu reported the least rates of self-harm (Table 1). Specifically, the highest incidence rate among the children/adolescent group was also reported by the hospitals in Johor (53 per 100 000). This is a stark contrast to those reported in the northern regions, where Kelantan recorded the rates of 1.2 and Terengganu 3.0 per 100 000.

More females than males were seen for both age groups (Table 2). However the variation in rates amongst the younger age groups were more distinct, with the girls being double the rate of boys. Males had two peaks; below 10 and age 20-29 years, whilst females had a gradual upward slope from below 10, to a single peak at 20-29 followed by a gradual downward pattern. When examining by ethnic groups, the top five rates were reported amongst Indians (48), followed by the Malays (18), Ibans (15), and there is a tie between Chinese (12.2) and Aboriginals (12.5) per 100,000 population. Based on religion, the Muslims formed the largest group with 2,200 out of the total 4,800 reported cases.

Majority of cases were referred from the ED of each hospital (68%) followed by the specialist outpatient and also the maternity unit. Using the ICD-10 criteria, the top five methods by absolute numbers were unspecified chemicals (n~1,400), non-opioid analgesics, pesticides, unspecified drugs and antiepileptics (n~300). In all ages, males seemed to use unspecified chemical the most (1021/2225) (45.89%) while female non-opioid analgesics (642/2590) (24.79%). Looking at the children

Table 1: Incidence Rate (per 100 000) of Self-harm by States and Age Groups, Malaysia 2011

State	Children/ Adolescent			Adults			Total		
	N	# Population	Rate	N	# Population	Rate	N	# Population	Rate
W. Persekutuan	47	569,500	8.3	170	1,289,800	13.2	217	1,859,300	11.7
Perlis	46	92,500	49.7	38	145,200	26.2	84	237,700	35.3
Kedah	34	768,900	4.4	75	1,204,300	6.2	109	1,973,200	5.5
Pulau Pinang	77	495,100	15.6	171	1,098,700	15.6	248	1,593,800	15.6
Perak	111	876,500	12.7	218	1,521,100	14.3	329	2,397,600	13.7
Selangor	118	1,810,700	6.5	405	3,766,800	10.8	523	5,577,500	9.4
Negeri Sembilan	18	381,900	4.7	49	661,000	7.4	67	1,042,900	6.4
Melaka	10	306,200	3.3	13	526,900	2.5	23	833,100	2.8
Johor	634	1,208,100	52.5	1,858	2,193,800	84.7	2,492	3,401,900	73.3
Pahang	68	610,300	11.1	159	914,600	17.4	227	1,524,900	14.9
Terengganu	14	472,900	3.0	22	601,200	3.7	36	1,074,100	3.4
Kelantan	9	736,700	1.2	16	878,500	1.8	25	1,615,200	1.5
Sabah	53	1,309,300	4.0	120	2,007,300	6.0	173	3,316,600	5.2
Sarawak	61	960,200	6.4	201	1,556,400	12.9	262	2,516,600	10.4
Malaysia	1,300	10,598,800	12.3	3,515	18,365,600	19.1	4,815	28,964,400	16.6

Table 2: Incidence Rate (per 100 000) of Self-harm by Gender and Age Groups, Malaysia 2011

Age Groups	Gender	N	No. of population	Incidence rate per 100,000
Children/ adolescent	Male	462	5,435,300	8.5
	Female	838	5,163,500	16.2
	Total	1,300	10,598,800	12.3
Adults	Male	1,763	9,476,800	18.6
	Female	1,752	8,888,800	19.7
	Total	3,515	18,365,600	19.1
Total	Male	2,225	14,912,100	14.9
	Female	2,590	14,052,300	18.4
	Total	4,815	28,964,400	16.6

and adolescents group, the males used non-opioid analgesics the most (93/462) (20.13%), similar with the females (208/838) (24.82%). Within the adults, the male employed the use of unspecified chemical (937/ 1763) (53.15%) the most while the female non-opioid analgesics (434/1752) (24.77%). Looking at other methods in specific, hanging was the method of

choice among 4.35% (153/3515) adults in the country. This consisted of 5.59% (98/1763) male and 3.14% (55/1752) female. Sporadic use of rifle as a method of self-harm was also recorded in one adult male while unspecified firearms was reported in one male child/adolescent group.

## DISCUSSION

This study has found that the incidence rate of self-harm in Malaysia in 2011 was 17 per 100 000 population, which was much higher than the seven-year trend reported by Armitage CJ et al (12) - 7.7 per 100,000 population per year. The latter has much lower rate as the study was confined within the population of a single general hospital and some people who harmed themselves may not seek medical attention. It was subsequently noted that Johor had the highest incidence rate of self-harm across both age groups, which was double the rate of those recorded in Perlis. Despite the possibility of variation in mental health awareness across the states, there has been no proper study done on this matter. In a study among school students in Johor, it was found that they were ignorant of mental illness and the promotion of mental health was found to be lacking (13). From one aspect, this finding may indicate the lack of help-seeking among those with mental health issues, and hence higher preponderance towards untreated or poorly treated psychiatric illnesses as well as acts of self-harm. From another aspect, the lack of awareness comes along with stigma and discrimination, leading to undiagnosed episodes of self-harm.

On the other hand, looking at the states which reported the least number of self-harm cases in 2011, Kelantan has the least self-harm cases followed by Melaka and Terengganu. This is interesting because in the National Suicide Registry of Malaysia (2009), the state of Terengganu also was reported to have the least cases suicide cases compared to other states. In relation to this fact, religiosity is an aspect found to be correlated with distress or depression, which may both predispose to self-harm. For example, the Islamic religious practice in Kelantan has been correlated with lower emotional distress in a study among HIV/AIDS patients (14), and religiosity has been found to have a positive effect on distress (15).

In Wilayah Persekutuan (which consists of Kuala Lumpur, Putrajaya and Labuan), the total incidence rate across both age groups is 12 per 100 000. This number is relatively low given more dense population in the areas mentioned. Perhaps these numbers should be compared with the degree of reporting for each state as hospital attendance or admission rates do not reflect the true scale of the problem. This is unsurprising since many acts of self-harm do not come to the attention of medical or even mental healthcare services.

Where profiles of the self-harm cases are concerned, the incidence rate of both age groups are almost similar (12.3 and 19.1 per 100 000 respectively) throughout the country. However, a distinction is observed when the two age groups are being analyzed separately. Among children and adolescents, females show higher tendency of self-harm behaviours more than their male

counterpart. This finding is consistent with worldwide report that cases of self-harm occur more frequently among females than males (16, 17) and is common among adolescents (18). It also corresponds with a systematic review on completed suicides and self-harm in Malaysia, where women were found to be more likely than men to self-harm, with young women aged 14-40 years accounting for the majority of cases (16). A previous study by Hamidin & Maniam also showed that majority of the self-harmers were younger females (19). This data helps to support the importance of identifying young people at risk and offering effective treatment, which are major concerns of mental health policies (20). There is also a distinctive pattern between female and male incidence rate. The incidence rate among males peaked at the 20-29 years age group while in females, the highest incidence rate covers wider age range; from 10-19 to 30-39 year group. This shows that self-harm among females were across wider age range compared to the males' closer age range of 20-29 years old.

We knew that in general, more males than females die by suicide (21) but the reverse is true for self-harm cases. Reasons that young women outnumber men in terms of self-harm are possibly associated with the different genetic build-up, experiences, roles and perceptions between women and men in the society. Compared to men, women are genetically more predisposed to developing depression and are more subjected to fluctuating hormone levels particularly around childbirth and menopause. From psychology point of view, this predisposition rooted from the fact that women are more ruminative and emotionally involved in relationships. One of the common stressors leading to self-harm is relationship or interpersonal problems, issues which were found to be more prevalent in those who self-harmed (22, 23). Nonetheless, women are more likely to consult a physician or a counsellor if they are experiencing stress. Acts of self-harm are associated with a variety of motives or intentions (20). Among the motives frequently cited were intention to die, self-punishment, escape from a terrible state of mind, gain attention, reduce anger and to experience dissociative numbness (22, 24).

Half of self-harm cases across all states in Malaysia were Indians with similar result seen even when the two age groups are separated. This is actually contradicting with the findings of Muslims forming the highest group with self-harm, as the Malay would make the most number of the Muslims. However, it should be noted that there are also Muslims from other ethnics including Indian and Chinese in this multiracial country. Among Indians, females were frequently associated with higher cases of self-harm compared to other major races and minorities (23). This pattern was also reported among the respondents in various other studies (22, 25-28) although there was a study reporting otherwise (29).

The religion distribution which is generated during the 10-yearly census year (30) showed that Islam was 61% (n=17,375,794), Hinduism 6% (n=1,777,694) and Buddhism 20% (n=5,620,483) in 2010. This data corresponds with the study's findings that Muslims contributed the highest proportion (45.94%) of self-harm cases in Malaysia in 2011 followed by Hindus, Buddhists and others. Religious beliefs were actually shown to be more evident in patients who did not attempt deliberate self-harm as compared to those who attempted (31). Zuraida and Ahmad also concluded that religious salience is a protective factor against suicide ideation (32). However, there has been studies which showed otherwise. A study found that patients with high religious involvement had higher scores of depressed mood compared to those with low religious involvement (33). Based on these studies, we suggest that the influence of religion in acts of self-harm should be further researched. Aspects of religious beliefs, religious knowledge, religious practice and religious involvement are all different entities of religion which may either protect against or predispose towards self-harm and suicide.

Most of the self-harm cases that were treated as inpatient were referred from the ED, regardless of age. The nature of these cases which require immediate attention at the emergency level explains why most of them are seen there. Throughout the country, the ED is the gatekeeper of these cases, which could initially be referred from the private clinics, private hospitals or even intra-hospital i.e. from other units within the hospital itself. Most of the methods employed were the less lethal ones like the use of unspecified chemical, non-opioid analgesics, pesticides, unspecified drugs and antiepileptics, as compared with highly lethal methods like hanging and drowning. This actually corresponds to local data whereby it was shown that 99% of parasuicide were self-poisoning but hanging was the most common method implicated for suicide (23), similar to findings from the National Suicide Registry of Malaysia (34). It is important to realize that the association between self-harm, self-injury or self-poisoning and suicide may also depend on the severity of the method. Individuals who engaged in the moderate or severe forms of self-injury were more likely to attempt suicide than those who engaged in minor forms of self-injury (35).

This study bears some limitations. Although we are concluding the rate for the whole country, the data came only from a single source. The medico-legal nature of these cases means they are rarely seen in or even referred to the private hospitals. Section 309 of the Malaysia Penal Code states that anyone who attempts suicide could be jailed for up to two years or fine or both. When the legal system is involved, such individuals would customarily be brought upon the police attention and the hassle which ensues discourages the private medical centers from accepting them. Therefore, a

further research within private sector would definitely complete the study of self-harm in Malaysia. Other than this, the underlying mental illness or psychiatric symptoms was not included both in the record and in the analysis. Finally, technical issue and impenetrability of data from the primary source have hindered further analysis of the repeat cases of self-harm in this study. In addition, data on the repeat self-harm cases were not obtained and hence further analysis on this scope could not be executed. The accuracy of findings from similar future research could also be improved through completion of data reported at primary source and further elaboration of aspects of religion i.e. beliefs, knowledge and practice.

## CONCLUSIONS

The rate of self-harm was 16.6 per 100 000 population in 2011. As compared to adult males, adult females had a slightly higher rate. Throughout the country, girls carried out self-harm behaviours more than boys – a finding which is consistent with worldwide report. In one of the steps towards preventing self-harm, mental health awareness campaigns should perhaps focus at identifying emotional distress, and enhancing coping skills as well as problem solving techniques among young women in this country.

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