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Artikel Asli/*Original Article*

Incidence of Suicide by Hanging in Klang Valley from 2007 to 2016
(Insiden Bunuh Diri secara Gantung Diri di Lembah Klang dari tahun 2007 hingga 2016)

SITI RAHMAH ABD KARIM, SRI PAWITA ALBAKRI AMIR HAMZAH & NOOR HAZFALINDA HAMZAH

ABSTRACT

Malaysia was ranked at 148 by World Health Organization (WHO) in suicide statistic for 2012, where males had a higher tendency to commit suicide, recording a 4.7 per 100,000 in comparison to female (1.5 per 100,000). As hanging is one of the most common methods to commit suicide, this retrospective study was conducted to observe the incidence of suicide by hanging in Klang Valley from four different hospitals. The current study is conducted to provide local database of suicide occurrence by hanging in Klang Valley. A total of 893 suicide cases by hanging from 2007 to 2016 were recorded from post mortem records and analysed. Suicide rates in Klang Valley showed a rising trend from 2007 to 2016. Males from age group 30 to 34 years old and females from 20 to 24 years old have the highest number of suicide fatalities compared to other age groups. Meanwhile, fatalities from the age group of 10 to 14 years old and 80 years old and above showed similar result which is only 7%. 78% of the fatalities were recognized as Malaysian and half of them were Indian. Majority of the victims/cases (45%) who committed suicide by hanging are of Hindu religious denomination. Non-citizen in Malaysia that have the highest suicide rates were from Nepal, Indonesia and Myanmar. Victims also committed suicide more during the day and the peak hours being at 12.00 pm to 5.59 pm.

Keywords: Forensic science; forensic pathology; suicide; hanging; Klang Valley

ABSTRAK

Malaysia berada di kedudukan 148 dalam statistik bunuh diri yang telah dikeluarkan oleh Pertubuhan Kesihatan Sedunia (WHO) pada tahun 2012 di mana lelaki mempunyai kecenderungan yang lebih tinggi untuk bunuh diri dengan kadar 4.7 per 100,000 berbanding dengan wanita (1.5 per 100,000). Oleh kerana kejadian gantung diri adalah salah satu cara yang sering digunakan untuk membunuh diri, kajian retrospektif ini dijalankan untuk mencerap kadar kejadian bunuh diri dengan cara menggantung diri di Lembah Klang daripada empat hospital berbeza. Kajian ini dijalankan untuk menambah data di pangkalan data tempatan berkenaan kejadian gantung diri. Sebanyak 893 kes bunuh diri dengan cara menggantung diri dari tahun 2007 hingga 2016 telah direkodkan dan dianalisis. Kadar bunuh diri di Lembah Klang menunjukkan peningkatan dari tahun 2007 hingga 2016. Lelaki berumur 30 hingga 34 tahun dan wanita berumur 20 hingga 24 tahun adalah kumpulan umur yang mempunyai kadar kematian bunuh diri tertinggi berbanding dengan kumpulan umur yang lain. Manakala, kematian bagi kumpulan umur 10 hingga 14 tahun dan 80 tahun ke atas menunjukkan kadar peratusan yang sama iaitu 7%. 78% daripada kematian bunuh diri adalah warganegara Malaysia dan separuh daripada mereka adalah berbangsa India. Kebanyakan kes gantung diri (45%) adalah terdiri dari mangsa beragama Hindu. Warga asing di Malaysia yang mempunyai kadar bunuh diri tertinggi adalah daripada Nepal, Indonesia dan Myanmar. Mangsa juga lebih ramai menggantung diri pada waktu siang dan waktu kemuncak adalah pada 12.00 tengahari hingga 5.59 petang.

Kata kunci: Sains forensik; patologi forensik; bunuh diri; gantung; Lembah Klang

INTRODUCTION

Suicide statistic published by WHO in 2012 showed that Malaysia was placed at 148 with 3 suicide cases per 100,000 people per year, which showed males had a higher tendency to commit suicide, recording a 4.7 per 100,000 in comparison to female (1.5 per 100,000). The National Suicide Registry Malaysia (NSRM) reported a gender ratio of 2.9:1 skewing towards male and findings are similar to Singapore in 2006 (National Suicide Registry Malaysia 2009). Whilst the statistic revealed that Malaysia was placed lower than other Asian countries, Thailand and Indonesia were ranked 56th and 135th, respectively, an alarming report indicated that Malaysia has experienced a whopping 60% increase in the suicide rate for the past 45 years (Sinniah et al. 2014). Unsurprisingly, the top three major causes of deaths reported in United States was suicide. Most of the victims were youths and young adults between 10 to 24 years old (Centers for Disease Control and Prevention 2007; Kok et al. 2011). The same

trend was observed in suicide rates among youths under 30 years old in Malaysia indicating Malaysia was catching up with Japan, which has a terrifying suicide rate of above 30 per 100,000 populations (Kok et al. 2011; Maniam et al. 2014).The definition of suicide becomes complicated when it comes to the terminology because terminologies related to suicide such as suicide attempt and suicide intent do not have any specific definition and often misclassified. According to De Leo et al. (2004) and American Psychiatric Association (2013), three important criteria in defining the act of suicide are listed from Centers of Disease Control back in 1980s. First, an act of suicide must consist of behavior with fatal outcomes. Second, a suicide act must either be active or passive self-harm and finally a suicide victim must have the intent or an expectation to die (Andriessen 2006; Rosenberg et al. 1988). Meanwhile, Carroll et al. (1996) defined suicide attempt as deliberate acts by the victims that would cause self-harm at some level but not resulting to death. This act may or may not result in injuries to the victims. These two terminologies, which is suicide and suicide attempt need to have a comprehensible definition as these two terms seems to overlap, resulting in misclassification. According to Perdekamp et al. (2010) and Fathelrahman et al. (2006), a person who attempted suicide has high risk of committing suicide. However, this trigger factor may differ for long and short-term period before the victims kill themselves (Suokas et al. 2001).

Suicide methods vary according to geographical factors, which are classified into either Western or Asian countries. For instance, the most common method used to commit suicide in western countries is firearms (Ajdacic-gross et al. 2008). On the other hand, Asian countries such as Singapore and Hong Kong prefer falls from height, while victims from Malaysia and Japan favored hanging to commit suicide (Wu et al. 2012). This also correlates to the findings of NSRM 2009 where 328 cases of suicide in that year, the main method used was hanging, suffocation and strangulation (176 cases, 53.7%) (National Suicide Registry Malaysia 2009).

Death by hanging is due to asphyxia in which the victim's body is suspended by a ligature encircling and compressing the neck, hence blocking the passage of air into the lungs (Ahmad & Hossain 2010). The weight of the body is enough to cause death to the victim (Reddy & Lowenstein 2011). Hanging has been observed to be the most favored method used as it has less or no cost involvement, except for the ligature material, as well as one of the fastest method to cause death (Ahmad & Hossain 2010). According to Knight (2004), a thin rope used as ligature material would cause unconsciousness in 15 seconds. The ligature material can be made from anything such as wire, bed sheet, scarf and many other possibilities. Biddle et al. (2010) conducted a study in the United Kingdom involving 22 respondents who was saved from near suicide attempts. Eight of them had decided to use hanging to commit suicide. Respondents chose hanging because hanging was easily executed and they can hang themselves without proper planning or knowledge. Besides that, they thought that hanging would leave their bodies without any terrifying or disturbing images as this method did not cause bloody or messy scene.

Therefore, as hanging is one of the most common method to commit suicide observed by Murty et al. (2008) and National Suicide Registry Malaysia (2009), the current study is focusing on suicide by hanging by observing the trends from 2007 to 2016 and demographics data among the victims in Klang Valley.

MATERIALS AND METHODS

Demographic data of suicide by hanging from January 2007 to December 2016 was collected retrospectively from Forensic Departments of four different hospitals in Klang Valley; Pusat Perubatan Universiti Kebangsaan Malaysia, Hospital Tuanku Ampuan Rahimah, Hospital Sungai Buloh and Hospital Serdang. Klang Valley is located at the center of Kuala Lumpur and consists of combination of several districts such as Kuala Lumpur, Petaling, Hulu Langat, Klang and Gombak. Based on Department of Statistics Malaysia (2011), the estimated population in Klang Valley is 7.2 million. Major ethnic and races in Klang Valley are made up of Malay (45.9%), Chinese (43.2%), Indian (10.3%) and others (1.6%). Demographic data such as age, gender, nationality and ethnic group, religion and time of death were collected and recorded for analysis. The age groups were divided into 15 age band groups (10-14, 15-19, 20-24, 25-29, 30-34, 35-39, 40-44, 45-49, 50-54, 55-59, 60-64, 65-69, 70-74, 75-79, >80) according to World Health Organization (2014). The time of death for the fatalities was divided into six hours period. Data was analysed to observe the incidence of suicide by hanging for the past ten consecutive years. A few ethical considerations have been taken to ensure the confidentiality of the data and patients' information such as name, identification card number and address of the deceased were not recorded. All data recorded was for the purpose of this study only and not shared with non-authorized personnel (who is not related to this study).

RESULTS AND DISCUSSION

A total of 893 suicide cases were collected in this study. Figure 1 showed the fluctuation of suicide rates from 2007 to 2016. 2013 has the highest percentage of suicide cases with 14% (n = 138). In contrast, the lowest percentage of suicide cases was in 2007 with 8% (n = 77). Meanwhile, suicide cases in 2008, 2009 and 2011 show similar percentage of 9%.

Based on Table 1, 703 males and 190 females are in this study and the number of males is almost four times of females. This shows that males (79%) were more prone to commit suicide by hanging compared to females

(21%). Based on Armitage et al. (2015) and Hayati et al. (2014), males have a higher tendency to commit suicide as compared to females who have suicidal ideation and suicide attempts which rarely lead to death.

In addition, Klang Valley is made up of many races and ethnicity; therefore this study classified these cases into citizen and non-citizen. Table 1 showed majority of suicide case by hanging was among citizen, with ratio 4:1 to non-citizen. Fatalities among non-citizen consist of 19 countries. Nepal had the highest number of cases (n = 74), followed by Indonesia (n = 42), Myanmar (n = 31) and Bangladesh (n = 23). Next is Thailand with 4 cases, while Pakistan, Sri Lanka and Vietnam had the same number of suicide cases (n = 3) for each. Cambodia and Germany had 2 cases reported respectively. The rest of the non-citizen victims from Botswana, Maghribi, Poland, Korea, New Zealand, Uzbekistan, Sudan, Romania and Iran had the same number of suicide case (n = 1).

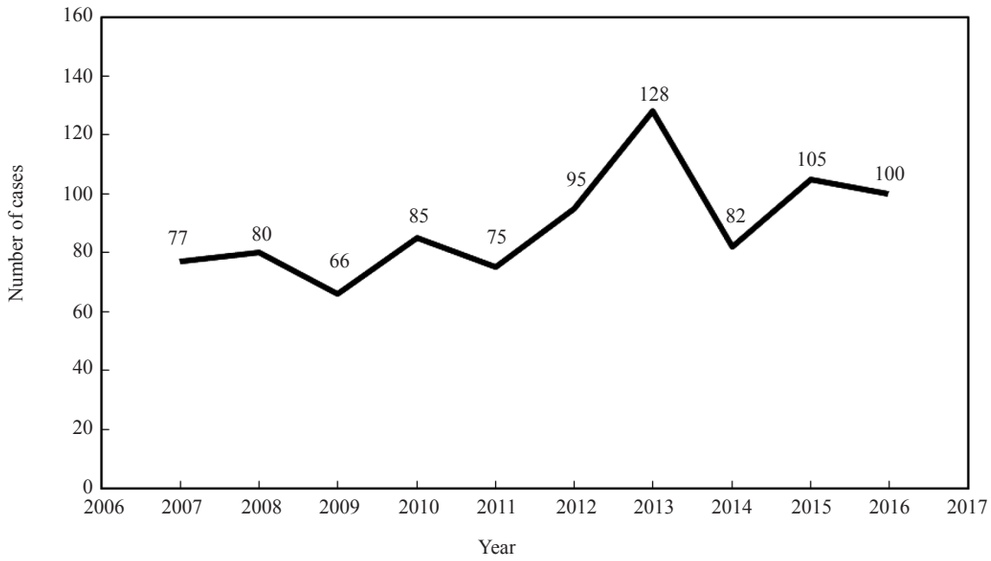

FIGURE 1. Total number of suicide cases in Klang Valley from 2007 to 2016

On top of that, half of the cases among Malaysian was dominated by Indian with total of 50.50% (n = 352). Even though Malay is the largest population in Klang Valley, only 6.17% of suicide cases involved Malay. The other ethnic groups such as Bidayuh and Orang Asli have the lowest percentage of suicide by hanging with only 0.43%. As such, Hindu religious denomination has the highest percentage in suicide by hanging (45%), as compared to Buddha and Islam with 40% and 13% respectively. Other religion such as Christian made up 3% in suicide cases.

A percentage of the victims (30.23%) committed suicide during the day, from 1200 to 1759. There are slightly differences in number of victims that committed suicide during the day, the hours between 0600 to 1159 (250 cases) and 1800 to 2359 (255 cases). Number of victims who committed suicide during early morning is the lowest, with 115 cases. Three cases are classified as unknown as there was no data on time of death.

Race, religion and cultural norms did have a significant influence for those who decided to commit suicide (Oquendo et al. 2005). Muslims made up the least percentage of committing suicide by hanging even though the Malay is the largest population in Klang Valley. Other studies also showed similar results (Maniam 1988; Murty et al. 2008; Murugesan & Hock 1978). Islam indeed strictly prohibits their believers from committing suicide and Malays have negative thoughts towards people who committed suicide (Hussain & Hyman 1994). This principle was comparable with Buddhist beliefs where any kind of action that either hurt oneself or other people was regarded as disrespectful to their religion, thus could be a reason behind the lower suicide rates among Chinese in comparison to the Indian population (Yip 1996). However, Kok (1992) stated that in certain situations, Chinese would commit suicide for honor and integrity.

An over representation of the suicides (45%) were among the Indian population and by extension of Hindu religious denomination for the past ten years. Few studies which had been conducted showed that Indian had higher suicide rates in Malaysia as well as other countries, with hanging as the most common method to commit suicide (Adityanjee 1986; Maniam 1988; Maniam 1994).

The National Crime Record Bureau in India reported that seven of 100,000 suicide victims per year attempted to kill themselves by hanging, ingestion of insecticides or barbiturates, for every five minutes (Baby et al. 2006). In addition, Vijayakumari (2011) reported that 95% of suicide deaths were by hanging. Hindus religious denomination may have less number of suicide cases if Indian has a less ascetic way of life, in which they believe that individual

souls advance through various spiritual levels by a laborious process of pain and suffering. However, based on Venkoba (1975) and Radhakrishnan & Andrade (2012), the act of suicide was allowed for those who devoted their lives to their God which contribute to higher number of fatalities among Indian.

TABLE 1. Socio-demographic data of suicide by hanging in Klang Valley from 2007 to 2016

Categories	Number of fatalities	%
Gender		
Male	703	79
Female	190	21
Nationality		
Citizen	697	78
Non-citizen	196	22
Race		
Malay	43	6.17
Chinese	299	42.90
Indian	352	50.50
Others	3	0.43
Religion		
Islam	119	13
Buddha	353	40
Hindu	399	45
Others	22	3
Time of death		
0000-0559	115	12.88
0600-1159	250	28.00
1200-1759	270	30.23
1800-2359	255	28.55
Unknown	3	0.34

The suicide trend among non-citizens seemed to be increased, whereby National Suicide Registry Malaysia (2009) reported that only 10.7% of migrants ended their lives in Malaysia. In the current study, Nepal over passed Indonesians and Bangladeshis with 70 cases, as compared to findings from Ali et al. (2014) where 11 suicide cases was Nepalis (from 290 cases) back in 2008. This suggested that they might still struggle to cope in a new environment and felt socially isolated (Vijayakumar et al. 2004). In contrast, the number of Indonesians and Bangladeshis less committing suicide than Nepalis because they had adapted well living in Malaysia. They arrived at Malaysia in late 80's, earlier than Nepalis thus reducing the risk of being suicidal (Abdul-Aziz 2001). The higher number of suicide cases among non-citizen were influenced by social environments, financial problems, unemployment, language barrier and any psychiatric disorders thus lead to suicidal behaviors (Hovey 2000; Ponizovsky & Ritsner 1999). This shows that non-citizen was not strongly affected by religious matters even though Islam and Buddhist prohibit suicide among their believers. However, the similarities of culture and language between Indonesian and Malaysian causes the suicide rates among Indonesians lower as compared to Nepalis (Abdul-Aziz 2001). Coupled with the fact that Nepalis speak a different language, most practice a different faith and migrated later than the Indonesians; makes it more difficult for them to interact with local populace (Abdul-Aziz 2001; Carballo & Nerukar 2001).

Few studies showed the relationship between suicide occurrence and the time of death as conducted by Barraclough (1976) and Galleranl et al. (1996). However, there was no deeper study regarding the relationship between suicide occurrence and time of death. The peak hours to commit suicide were during the day, from 1200 to 1759 which contributed to 30.23% of the total cases. This result was supported by Pokorny (1960) and Durkheim (1897). Surprisingly, people who committed suicide had similar daily activities as other normal people and were not quiet and isolated (Morselli 1897; Williams & Tansella 1987). On top of that, Durkheim (1897) also explained that social life was most intense during the day. In contrast, other authors reported that almost 70% of suicide cases by hanging occurred at midnight because there was less likelihood for other people to realize and prevent them from committing suicide (Ahmad & Hossain 2010).

Figure 2 showed the age of fatalities in suicide by hanging ranging from 13 to 90 years old. The highest total fatalities (138 cases) were from the age group 25-29 years old. The second highest (133 cases) was from the age group 30-34 years old and the third was from the age group 20-24 years old. This findings were similar to Nadesan (1999). Langhinrichsen-Rohling et al. (2009) also stated that economic crisis could be one of the trigger factor that led adults to commit suicide in Klang Valley since Klang Valley is an urban area with a high cost of living. In contrast, many authors reported that suicide rates were highest in young adults between the age 15-24 years old (Fischer et al. 1993; Hawton et al. 1993; Kok & Goh 2011). Risk factors that could lead them into committing suicide included unemployment, alcohol or drugs misuse, personal illness and the most significant trigger factor was poor relationship with their partner (Appleby et al. 1999).

Not only that, suicidal behavior in Malaysia is associated with interpersonal conflict and this is further accentuated in urban setting. Numerous societal changes as the country push towards being a developed country by year 2020, increased urbanization and led the population into a state of 'anomie', where the accustomed relationship of an individual and their society is suddenly shattered, heightening interpersonal conflict (Armitage et al. 2015).

Mental illness was also one of the common trigger factors in suicide among adults and 19% of them showed characteristics of schizophrenia (Appleby et al. 1999). National Suicide Registry Malaysia (2009) reported that 7.1% of suicide victims in Malaysia had family history of suicide or psychiatric illness. This findings was small as compared to other psychological autopsy (PA) studies because not all suicide cases are captured, especially for non-medically certified death cases (Maniam 1995).

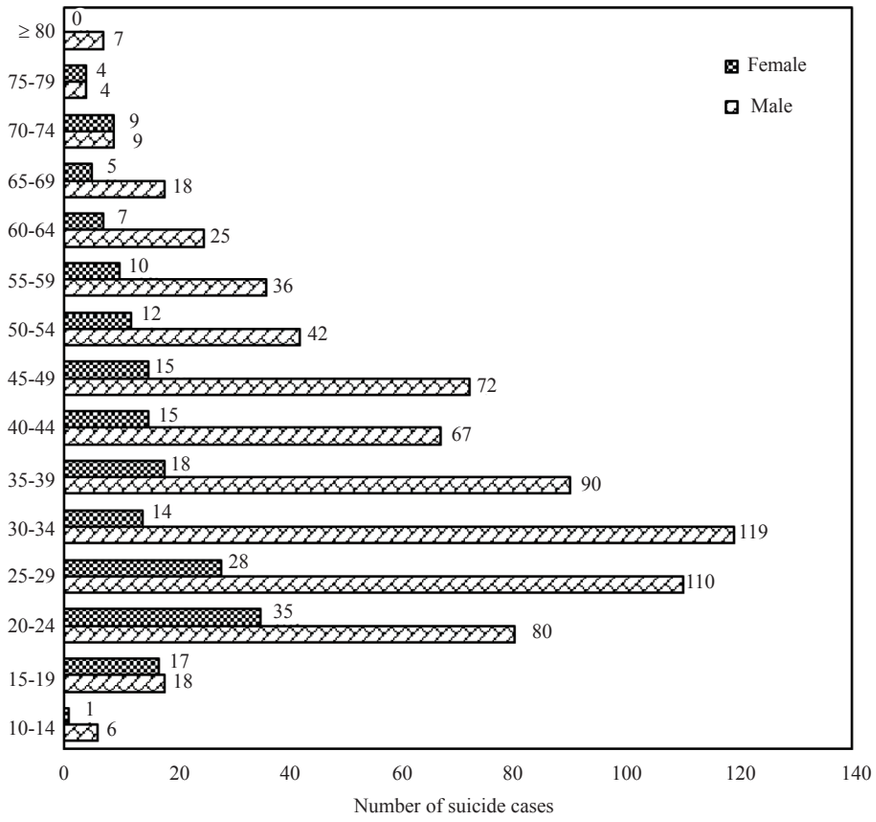

FIGURE 2. Distribution of suicide cases in Klang Valley from 2007 to 2016 according to range of age

INSERM Collective Expertise Centre (2005) reported that Canada, Great Britain and Finland practiced PA to identify various risk factors to predict suicidal action, a meticulous collection of data, in order to understand the circumstances of the death of the suicide victims. Even though PA is a useful tool for suicide prevention, there is a debatable standardisation in gathering the information, especially in data collection (Pouliot & Leo 2006). Difficulties to contact family members and friends, time elapsed between suicide and first interview with contacts and bias information during the interviews are among methodological limitations in performing PA, not to mention that PA is a time consuming study. Hence, a better standardisation, or at least a guide is needed before implementing the PA study (INSERM Collective Expertise Centre 2005).

For gender comparison, males in the age group 30-34 years old have the highest number of cases (119 cases) while for females, the 20-24 years old show the highest number with 35 cases. This age group shows a higher rate in males as this is the most active phase of life, physically, socially and emotionally. The phase also brings about tremendous stress, strain and financial burden, all of which if not handled appropriately, can lead to crisis and suicidal behavior, seen in similar studies worldwide. Females on the other hand, have a higher rate in the 2nd decade, as they are more likely to face stress from marital conflict during and following marriage (Kanchan & Menezes 2008).

The data also showed that males have a higher tendency to commit suicide by hanging as compared to females, as noted by previous studies (Armitage et al. 2015; Hayati et al. 2004). However, females had higher rates of suicidal ideation and suicide attempts which rarely lead to death, thus explaining why they had lower number of fatalities in suicide (Canetto 2008; Schmidtke et al. 1996). In addition, Denning & Cox (2000) stated that the method used in committing suicide was influenced by gender. Females preferred a less aggressive method compared to male in committing suicide, such as using drug overdose or carbon monoxide poisoning. In contrast, males tended to commit suicide by means of hanging or firearms which were more aggressive and assured to cause fatality (Callanan & Davis 2012).

Figure 2 also showed that elderly people from 65 years old and above had lower number of fatalities with only 56 cases. National Suicide Registry Malaysia (2009) stated that family members are caring for their elders, who supported them medically, ensuring prolonged lifespan and lowering the suicide tendency. In addition, Ahmad & Hossain (2010) believed that elders have lower suicide rates since they were more focused on religious matters and enjoyed their life with their family. In contrast, the elderly age group have the highest risk to commit suicide in many western countries (Conwell & Duberstein 2001; Leenaars 1995). Bennett & Collins (2001) noted that only 11.5% of

elders were accounted in suicide cases and hanging were in the top three suicide methods besides using firearms and drug overdose. Various studies conducted on suicide rates among elders seem to have different findings in different Asian countries. One study in Singapore showed a similar result where elders had lower suicide rates (Kua et al. 2003), while in Hong Kong, elders had the highest suicide rates as compared to other age groups (Yip et al. 1998).

Suicide cases in Malaysia, especially by means of hanging, are on the rise (National Health and Morbidity Survey 2015). The relevant authorities should take immediate action to reduce the rates of suicide especially among young adults. This is because young adults are at the stage where they would face many unbearable difficulties and overwhelming them, leading to suicide. Spreading suicide awareness to the public should also be done more frequently, starting from teenagers at school. They should be informed that help is available to overcome difficulties, to recognize signs of depression and suicidal ideation as well as being aware of friends' or family members' suicidal tendencies. Besides that, program on protective mechanisms such as building self-confidence, interpersonal solving skills and social support should be promoted to individual of all ages. Social support should include family social support to help coping mechanism, access and involvement of faith leaders from religious bodies as high religiosity confers a protective factor against suicidal behavior (Armitage et al. 2015).

The results of this study should be regarded as a wakeup call for implementation of the psychological autopsy study in this country. Standardisation of the methodology especially in interviewing the family members and friends of the suicide victim should be revised and patented, in order to understand the reason behind all the suicidal cases and even for suicidal ideation cases, which is difficult to capture.

In 2012, the government initiated the five-year National Suicide Prevention Strategic Action Plan with aims to increase the current ratio of psychiatrists to population by three-folds from 1: 150,000 to a more ideal 1: 50,000. Under the action plan, the ministry also plans to reduce stigmatisation and increase the availability of mental health services to the public by migrating availability of treatment from hospitals to community mental health centres (National Health and Morbidity Survey 2015).

The relevant authorities should strengthen the legislative law regarding the availability of firearms, barriers on bridges and drugs prescription, to reduce the incidence of suicide using these items.

Data collection for the current study on suicide deaths was limited because authors could only refer to the post mortem registration book in the forensic department. For future research, more information can be suggested, for example family background, personal issues, mental and physical health, economic issues, location of suicide, presence of suicide notes, previous suicide attempts, and type of ligature used to hang themselves. Most suicide cases were directly reported to the police, therefore police cooperation is helpful to get the relevant information. NSRM could also provide adequate information regarding the victims. However, the number of suicide cases that had not been reported to the police might be even more due to social stigma of suicide (Pritchard & Amanullah 2006). As a result, the number of suicide case reported was lower than the actual cases. Besides that, future research should focus on why Indian has the highest suicide rates compared to Chinese and Malays. Many factors should be included such as the accessibility to the ligature material, Indian culture and tradition, biological factors and many other possibilities. Moreover, misclassification of death would confer a substantial difference in the incidence. This current study only included four general hospitals, therefore, for future research; data should be collected from other general hospitals. Finally, an inferential technique could be used to show correlation between demographic and sociological factors.

CONCLUSION

This study shows that the rate of suicide by hanging in Klang Valley is in a rising trend from 2007 to 2016, as the number increased from 2011 to 2016. The total number of cases reported on suicide by hanging was 893 cases with 703 males and 190 females. More than half of the victims were citizen; only 22% of them were non-citizen. Indian and Hindu religious dominations are the largest group to commit suicide by hanging. The age group with the highest number to commit suicide was 20-39 years old, where 30-34 years old for males and 20-24 years old for females. Most of the victims committed suicide during the day, especially from 1200 to 1759.

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Siti Rahmah Abd Karim
Sri Pawita Albakri Amir Hamzah
Noor Hazfalinda Hamzah
Forensic Science Program
School of Diagnostic & Applied Health Science
Faculty of Health Sciences
Universiti Kebangsaan Malaysia
Jalan Raja Muda Abdul Aziz
50300 Kuala Lumpur
Malaysia

Corresponding Author: Noor Hazfalinda Hamzah
E-mail: raviera@yahoo.com

Tel: +603-8921 7207
Fax: +603-2692 9032

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