



MINISTRY OF HEALTH MALAYSIA

# National Suicide Registry Malaysia (NSRM)

## Annual Report **2008**



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Copies can also be downloaded from the National Suicide Registry website at: [www.nsrm.gov.my](http://www.nsrm.gov.my)

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# FOREWORD

It gives me great pleasure to introduce this publication to professionals, academicians or other groups who would be interested in the study of suicide.

Suicide is an action; it is not an illness. However, identifying the chain of causal and triggering factors and deriving from this an overall prevention strategy is one of the most challenging problems facing professionals in the health sciences. Apart from the mental anguish and suffering experienced by families due to the sudden death to their loved ones, the healthcare costs needed to handle these cases may be tremendous. Thus, it is about time that a more concerted effort is to be made to explore this phenomenon.

Due to the complexity of suicide, the Ministry of Health had deployed a unique multi-disciplinary team to develop this project. Apart from the Forensic Services, which is the main anchor of this project, the Psychiatry and Mental Health Services was also involved in providing the framework and organisational support. Meanwhile two agencies within the National Institutes of Health had also lent their expertise: the Clinical Epidemiology Unit of the Clinical Research Centre for the technical expertise in clinical registries management; and the Institute of Health Behaviour Research for its input on human behaviour research and data analysis.

This report is the first full calendar-year data collected by all forensic units under purview of the Ministry of Health Malaysia; and there may be limitations to the information obtained. However, with capacity building of forensic services and progress in information technology-assisted health documentation, it is hoped that the National Suicide Registry of Malaysia would be able to report the prevalence with increasing accuracy; identify high-risk groups; and illustrate trends in suicidal behaviour over time in Malaysia. It can also provide baseline data to test the outcomes associated with specific intervention and prevention programs. From a health-systems view, this exercise can also provide an insight into the efficiency of healthcare services in managing dead bodies and the documentation of the cause of death.

I have been made to understand that the Forensic Services is in the process of developing a system to capture data on death due to external causes, and that database may supersede the need of this registry in the future. Nevertheless, while that is in the pipeline, may I invite you to reflect on the data presented in this report and hopefully inspire some of you to do more research in the area of death investigation. As medical services in Malaysia become brainier, it would also be good for us to become more mindful of the population we are treating – and I believe that studies in suicidology provide a lot of opportunities for this.

**MS SITI SA'ADIAH HASSAN NUDIN**

Director

Institute of Health Behaviour Research

Ministry of Health Malaysia

December 2009

## ACKNOWLEDGEMENTS

The National Suicide Registry Malaysia would like to express our gratitude to the Director General of Health Malaysia, Tan Sri Datuk Seri Dr Hj Mohd Ismail Merican for allowing us to publish and disseminate the findings of this study.

We also like to thank the following for their contributions to this report:

- The Institute of Health Behaviour Research, in particular its Director Ms Siti Sa'adiyah Hassan Nudin and her assistant Ms Kalai Vaaniy Balakrishnan who gave us immense support in data analysis and logistics.
- The NSRM committee members for their leadership, as well as for their academic and operational inputs.
- The Forensic Physicians and staff members of the Forensic Departments and Units of the respective hospitals for their continued participation and commitment to data quality.
- The Department of Psychiatry and Mental Health of Hospital Kuala Lumpur for housing the Suicide Registry Unit; Psychiatrists and staff members of the Psychiatric and Mental Health Departments who provided information on the past psychiatric history of the relevant individuals.
- The Clinical Research Centre for its unwavering vision and technical support to sustain the relevance and output standards of this registry.
- The Information Technology Division of the Ministry of Health Malaysia for technical guidance and governance during the development of the web-based registration system.
- The Department of Psychiatry and Mental Health, Hospital Kuala Lumpur for the infrastructure facilities which allowed us to operate and coordinate data collection process.
- The Ministry of Health Malaysia which provided the funding and support for this project.
- The Director General of Health Malaysia, Tan Sri Datuk Seri Dr Hj Mohd Ismail Merican for allowing us to publish the findings.

And all who have in one way or another supported and / or contributed to the success of the NSRM and the preparation of this report.

Thank you.

**DR MOHD SHAH MAHMOOD**

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Mr Kamarul Hafiz Abdul Khadir (until 30 October 2008)

Ms Suhailey Mohd. Noor

# INTRODUCTION

## ABOUT THE NSRM

The National Suicide Registry Malaysia (NSRM) was officiated in 2007 to compile the census of suicidal deaths that occur in Malaysia via a nationwide system of medical forensics units and departments. The NSRM also aspires to provide detailed statistics on suicide in Malaysia i.e. the rates, methods, geographic and temporal trends and the population at high risk of suicide. This is important for health prioritising and identifying areas which health providers should focus on.

For this report, data was mined from the first full-calendar year cohort obtained via the web-based registration system. There may be some teething problems with regards to information technology system specifications and staff's level of familiarity with the system. Nevertheless, during the time span, the NSRM managed to collect data on 290 suicidal deaths nationwide.

## PROJECT STRUCTURE OF THE NSRM

Due the complex nature of suicide, development of the NSRM had required inputs and continued commitment from several agencies within the Ministry of Health Malaysia, as depicted in Figure 1. This is a rather unique arrangement, because clinical registries in Malaysia are usually supported by clinicians or administrators within the same discipline. The components of the project structure are as follows:

**Sponsors** refer to the agencies which developed and advocated for the National Suicide Registry Malaysia (NSRM). The registry is co-sponsored by the Psychiatric and Mental Health Services (via its National Mental Health Registry officers) and Forensic Medicine Services of the Ministry of Health Malaysia - this collaboration started as early as 2005 but had difficulties to go nationwide due to limited funds. The Ministry of Health provided NSRM with a major opportunity when it awarded the registry with a grant under the "special funding for registries" in 2007. During this phase, NSRM was tremendously supported and closely supervised by the Clinical Research Centre via its Clinical Epidemiology Unit in terms of clinical epidemiology expertise, biostatistics and technical aspects of the project. In view of this, the NSRM continues to be affiliated with the Clinical Research Centre (CRC) Network of Registries.

The registry started to produce data by the end of 2007, and began to collaborate with the Institute of Health Behaviour Research (IHBR) to promote more research based on its data.

The NSRM is governed by an **Advisory Committee**, which consist of officers from Ministry of Health Malaysia agencies: the Medical Development Division, Non-Communicable Disease Department, CRC, IHBR, Forensic Medicine Services, Psychiatry and Mental Health Services, Accident and Emergency Services; academicians; the Royal Malaysian Police and members of the NSRM Executive Committee. The committee's role in providing governance is to ensure that the NSRM stay focused on its objectives and to assure its continuing relevance and justification.

The **Executive Committee** combines the functions of the Expert Panel and the Steering Committee of the NSRM. It provides scientific and clinical input to the project; ensures the registry has good technical and scientific basis; executes tasks; interprets results and report writing as well as ensures that the registry is run according to its stated aims, objectives and protocols. The committee also ensures that rights of patients are respected; oversees the progress of the project; and provides leadership and decision-making in the registry. The Executive Committee holds twice-yearly meetings, but also may communicate with the Principal Investigator for organisational or administrative matters; and

with the Surveillance Manager for issues pertaining to data collection and quality.

**The Suicide Registry Unit (SRU)** is the central coordinating centre for collection and analysis of data. A large amount of their communication is with SDPs to monitor staff turnover and technical support; and also with the information technology vendor regarding issues on data collection. This unit will also handle the documentation and administrative needs of the NSRM.

**Source Data Producers** are the individuals or institutions that collect the required data i.e. the Forensic Units or Departments in Malaysian hospitals. It is the costliest and most difficult element of the system. NSRM had prepared materials and held trainings to ensure that it is systematic and uniform, and sustain regular communication and motivation to ensure high data quality.

**Users** are the individuals or institutions to which the regular registry reports are for. They are the public health practitioners, health care providers, health service planners and decision makers, researchers, and at times include the press and public. Their need for information to assist in planning and implementing disease control and prevention activities justify the establishment of this registry.

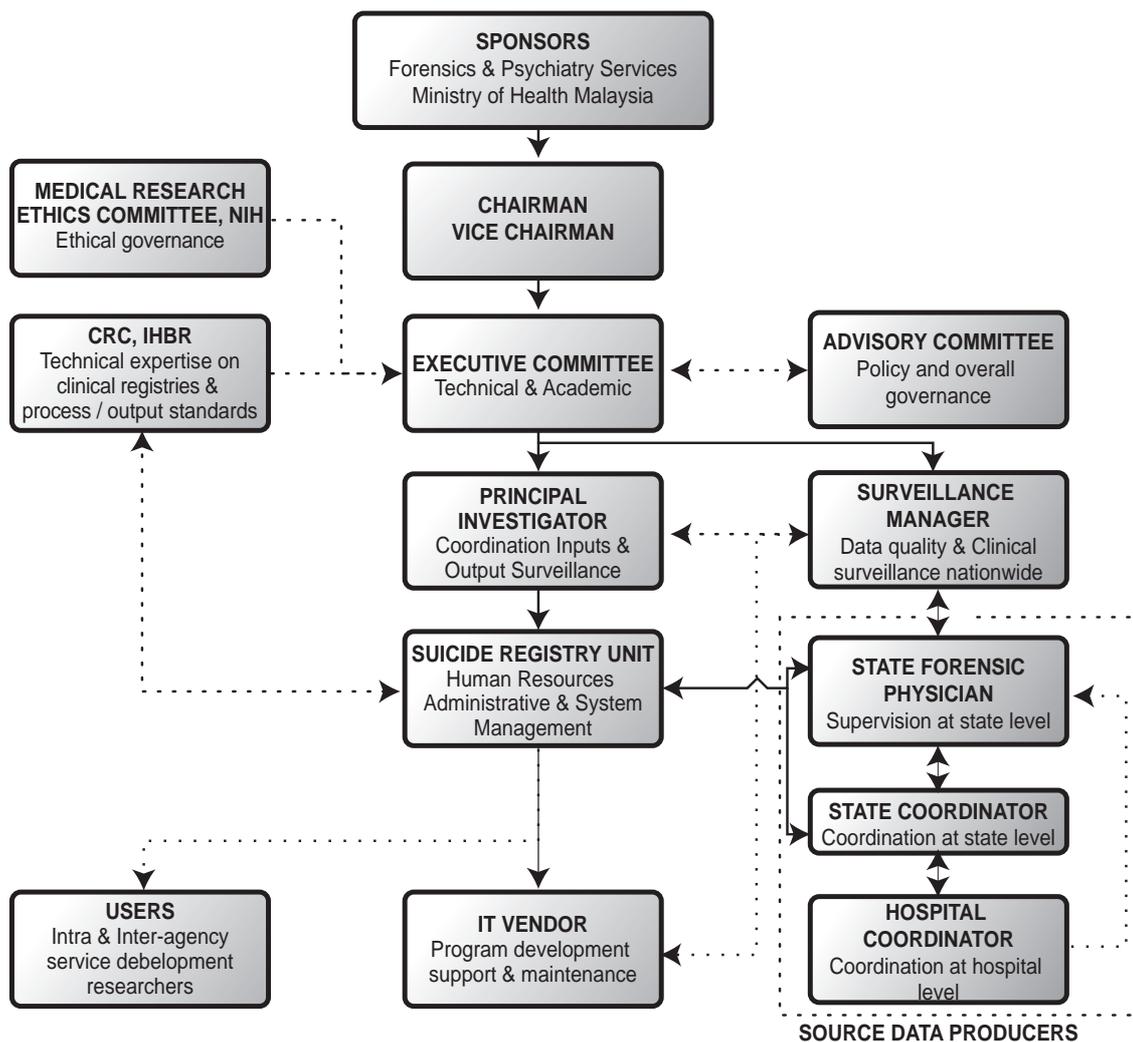


Figure 1: Project Structure for NSRM

## METHODOLOGY

In describing suicide, the World Report on Violence and Health quoted a well-known definition by Encyclopaedia Britannica (1973) and quoted by Schneidman (1981), i.e.: “the human act of self-inflicting one’s own life cessation” (World Health Organization 2002). It is obvious that in any definition of suicide, the intention to die is a key element. However, unless the deceased have made clear statements before their death about their intentions, it is extremely difficult to reconstruct the thoughts of people who had already died. To complicate matters, not all those who survive a suicidal act intended to live, nor are all suicidal deaths planned. It can be problematic to make a correlation between intent and outcome. In many legal systems, a death is certified as suicide if the circumstances are consistent with suicide and if murder, accidental death and natural causes can all be ruled out. Thus, there has been a lot of disagreement about the most suitable terminology to describe suicidal behaviour.

The World Report on Violence and Health had commended the proposal to use the outcome-based term “fatal suicidal behaviour” for suicidal acts that result in death – and similarly “non-fatal suicidal behaviour ” for suicidal actions that do not result in death (WHO 2002). The NSRM had adapted this stance and are registering cases which are classified as fatal intentional self-harm. These codes are covered in Chapter XX of ICD-10 i.e. External Causes of Mortality and Morbidity (codes X 60-X 84) (World Health Organization 2007). The diagnosis will be based on a post-mortem examination of the dead body and other supporting evidence that shows a preponderance of evidence indicating the intention to die.

## INSTRUMENT

Data is collected via a structured Case Report Forms (CRF). The executive committee had reviewed the literature and collected the views of prospective participants before determining the final design of the CRF. The committee had also prepared an instruction manual (hard and soft copies) alongside the CRF to ensure systematic and efficient data collection. With due regard to the sensitive nature of data acquisition (Reiget 2001), a specific chapter had been dedicated to the techniques of interviewing grieving family members. The instruction manual is available in the NSRM’s website at [www.nsr.gov.my](http://www.nsr.gov.my)

Regional and national-level training had been carried out periodically to enhance the competence and capability of officers involved in this project. Training sessions included sessions on recognition of cases, developing standard operating procedures to capture the data, interview techniques and practical sessions in filling out the CRF.

## DATA FLOW PROCESS

The data flow process of the NSRM is represented in Figure 2. The registry will be coordinated at the central data management unit i.e. the Suicide Registry Unit (SRU). At the state level, there is a parallel data collection effort coordinated by the State Forensic Physician’s office. The officer in charge for each state is known as the “State Coordinator”. The State Coordinator shall appoint staffs from the forensic unit of other hospitals in their state to handle data collection at the district level. All hospital that carries out data collection will be categorised as a Source Data Producer (SDP).

The SDPs are responsible to develop alert systems to identify cases. Data was collected via interviews with the family members, significant others or the police; as well as from the review of medical records or other official documents. The relevant variables were recorded in the paper-based CRF. The Registry Manager based in the SRU tracked data returns and prompted State Coordinators to submit data whenever they fall behind schedule in reporting data. Data protection procedure had been put in place, following standard disease registration practice, and in compliance with applicable regulatory guidelines.

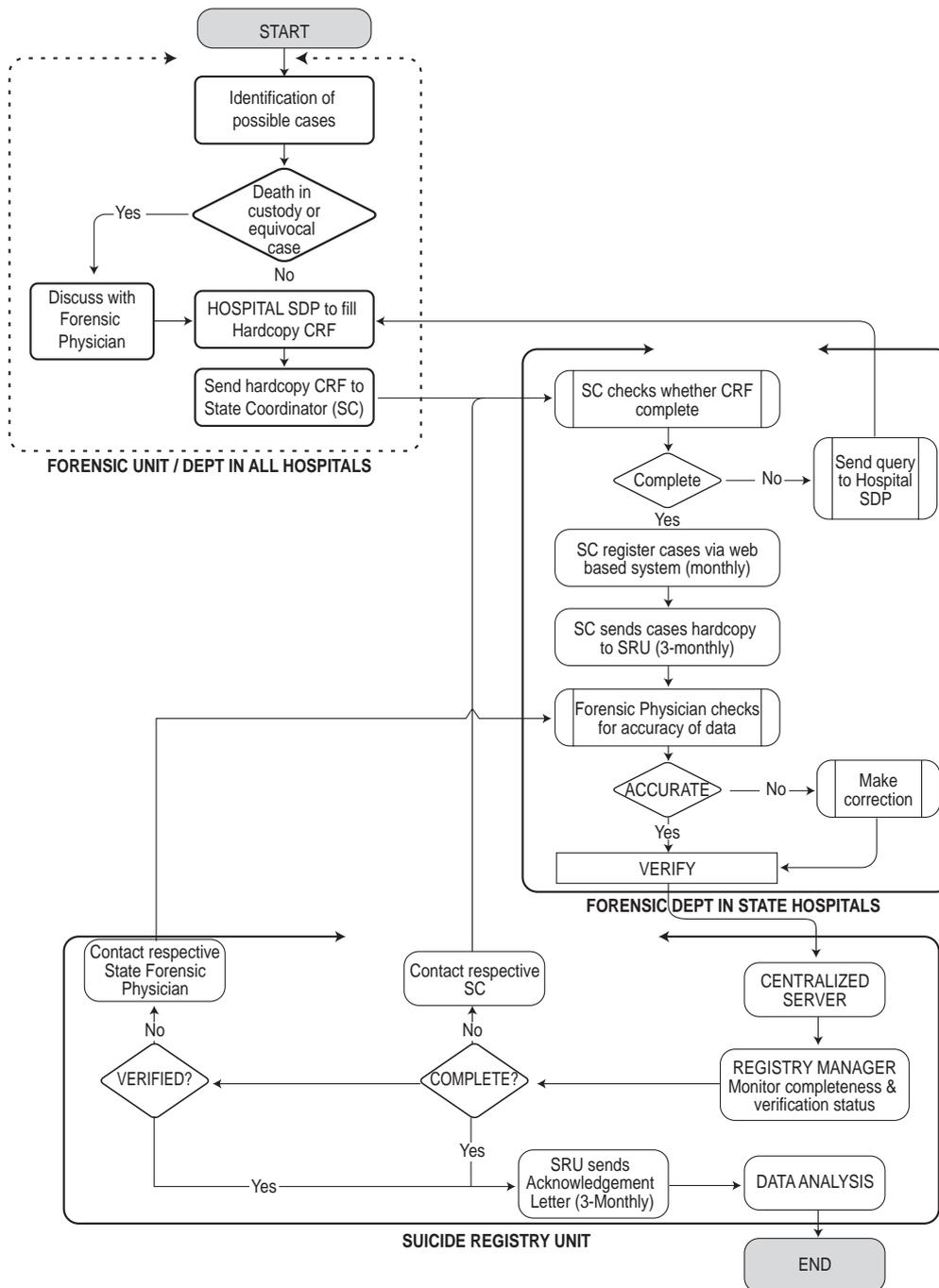


Figure 2: Data Flow Process for NSRM

## PROGRESS

Since the online system is newly-developed, there were several technical glitches identified in the first version. Across-state registration initially posed a problem because the system had provided a drop-down box to document the referring police stations for each state; and was unable to register police stations from outside that state. This presented a problem for cases which originated from areas such as the Cameron Highlands – because the police officers there faced logistical problems in sending bodies to hospitals in its own state (Pahang), and instead had to send them to hospitals in Perak. Because of this, and a few other log-in issues, the system needed some modifications in the 2nd quarter of 2008.

There were some logistical changes towards the 3rd quarter of 2008 – when the Suicide Registry Unit moved out from the temporary office in the Clinical Epidemiology Unit of the CRC to establish a more permanent location in the Department of Psychiatry of Hospital Kuala Lumpur. These have caused difficulties in compiling the hardcopy CRFs, which was compounded by the frequent staff turnover, both at the state and central levels.

Data cleaning and analysis began in April till June 2009, and the Executive Committee had identified certain variables which were difficult to code e.g. the place of death; and variables which were difficult to obtain – usually life events prior to death because families themselves were usually at loss as to why the person committed suicide. The NSRM advises caution in making inferences for variables which consisted of a lot of missing data. Furthermore, data collection in 2008 was also limited to hospitals under the purview of the Ministry of Health. The NSRM will continue to negotiate with forensic departments in hospitals under the Ministry of Education to participate in this project.

Data is reported in collapsed figures or trends, and will not have details of the individual. State forensic physicians and senior MOH officials would be able to view real-time brief reports via the NSRM's website [www.nsr.gov.my](http://www.nsr.gov.my), while more detailed queries will have to go through the advisory committee. Meanwhile, such annual reports will be produced to give a clearer picture of national trends.

## CHAPTER 1 : EPIDEMIOLOGY OF SUICIDES IN MALAYSIA

Contributors: Prof Madya Dr Marhani Midin, Dr Yushada Budiman, Dr Nor Hayati Arif and Datin Dr Fauziah Mohamed

### 1. THE PREVALENCE OF SUICIDE

The prevalence of suicide is reported as suicide rates per year of a given population. The suicide rate per year is the number of residents' suicidal deaths recorded during the calendar year divided by the resident population (Centers for Disease Control and Prevention 2002), as reported in the official Malaysian National Statistics Department census figures, and multiplied by 100,000 (Centers for Disease Control and Prevention 2002).

This is the first time the registry has completed a full calendar year of case notification. The number of cases registered during this period was 290. Given the population of Malaysia is estimated at 27.73 million for 2008 (Department of Statistics 2009), the registry captured 1.05 suicides per 100 000 population of certified death for the year, which is an underestimation of national suicide levels. However, when we exclude the three states that did not send data (Kelantan, Negeri Sembilan and Sarawak) the corrected prevalence is 1.28 suicide per 100 000 population.

NSRM captures only suicide cases which are medically certified. At least about 40-60% of all deaths are not medically certified in this country (Department of Statistics 2009, Maniam 1995) and it is beyond the boundary of the registry to capture suicide data among this group. In addition, events with indeterminate intent were not captured in this registry (adhering to the inclusion criteria which required evidence showing a preponderance of evidence for 'intention to die'). These may explain, at least in part, the low rate of suicide.

Maniam in 1995 (Maniam 1995), discussed the difficulties in obtaining an accurate prevalence of suicide in Malaysia. He presented an apparent decline of suicide rates in West Malaysia as captured by the Malaysian Statistics Department, from 7.1 per 100 000 between 1966 and 1969 to 3.7 per 100 000 between 1970 and 1979 and 1.5 between 1980 and 1990. He found evidence for misclassification of suicide statistics in that suicide was being misclassified as undetermined violent deaths. He proposed a more accurate estimation of suicide rate for Malaysia after correcting the misclassification; between 8 and 13 per 100 000 since 1982. This proposed rate is still comparatively low when compared to those in Thailand (7.8 per 100 000) and Singapore (10.3 per 100 000) (WHO 2009a).

# CHAPTER 2: DEMOGRAPHICS

Contributors: Prof Madya Dr Marhani Midin, Dr Yushada Budiman, Dr Nor Hayati Arif and Datin Dr Fauziah Mohamed

## 2.1 GENDER DISTRIBUTION

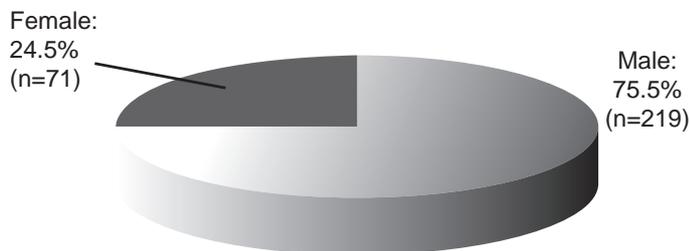


Figure 3: Suicide cases by gender

The gender distribution as shown in Figure 3 shows a preponderance of males, with a male to female ratio of approximately 3:1. This is consistent with our finding in 2007 (National Suicide Registry 2007) and figures quoted in international literature (WHO, 2009b).

## 2.2 AGE DISTRIBUTION

The age distribution is as shown in Figure 4. Data on age was obtained for 275 cases. The youngest case was 12 years of age and the oldest 83 years. Suicide is found to be occurring most frequently in the age group of between 20 and 29 years (n=75, 27.2%).

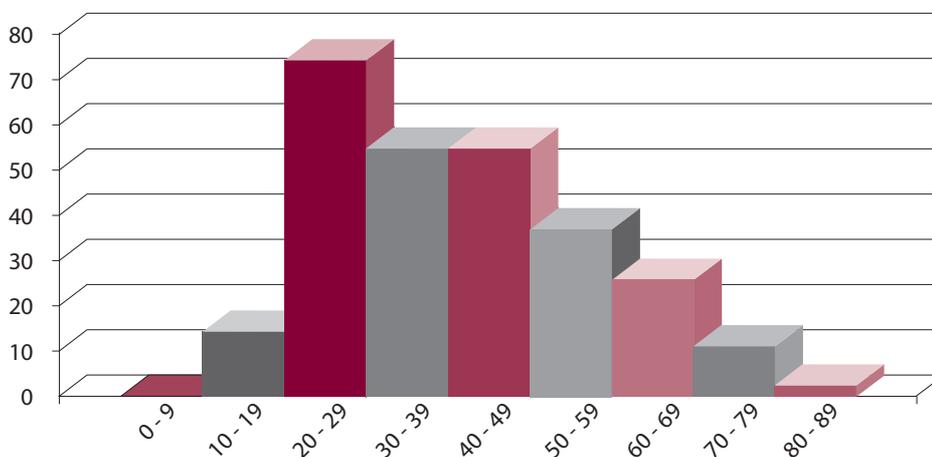


Figure 4: Suicide cases by age in years

However, when these figures were translated into population suicide rates in the different age groups, it was found that the rate is highest in the 60 and above groups as shown in Figure 5. The World Health Organization reported different patterns of age-specific suicide rates in different Asian countries: young people having the highest rates in Australia, Pakistan, Sri Lanka, and Thailand; older people having higher rates in China, Hong Kong, Japan Malaysia, the Republic of Korea and Singapore; both the young and the old having highest rates in China and New Zealand; and middle-aged people having the highest rates in India (WHO 2009b). Age-specific suicide rates appear to be changing over time in both developing and developed countries (WHO 2009c). It is interesting to follow the trend in Malaysia.

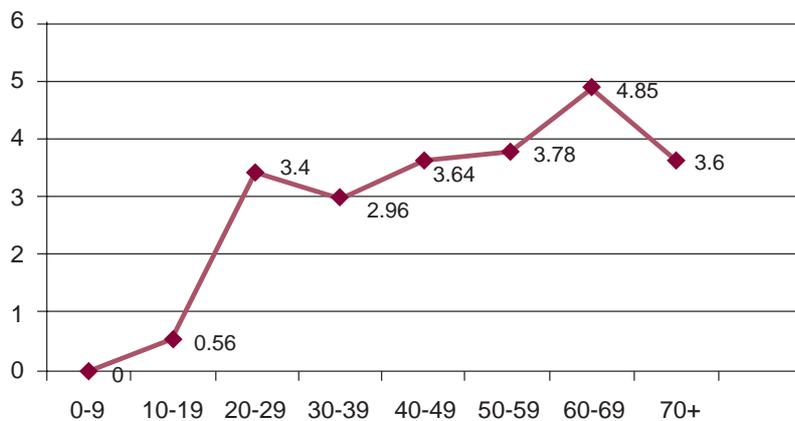


Figure 5 : Suicide Rates (per 100 000) According to Age

### 2.3 ETHNIC GROUP OF MALAYSIAN CITIZENS

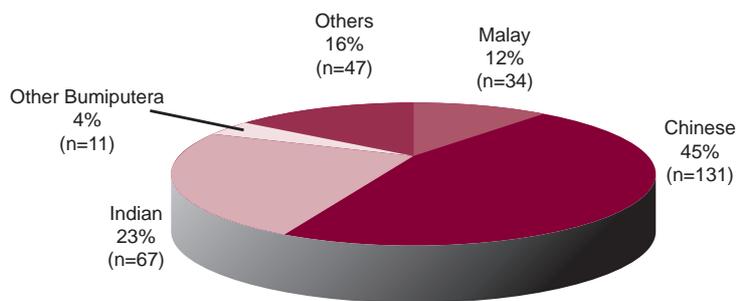


Figure 6: Distribution of Ethnic Groups of Suicide Cases

The population of Malaysia for 2008 showed that Malays made up 14.10 million (50.8%), Chinese 6.40 million (23.1%), Indian 1.91 million (6.9%), other Bumiputera 3.06 million (11.0%) and others 0.33 million (1.2%) (Department of Statistics, 2009). In this registry, data on ethnicity was obtained for 245 cases. The Chinese contributed 53.5% of cases. This was followed by Indians (27.3%) and Malays (13.9%). This is consistent with our finding in the 2007 population: Chinese 26%, Indians 8% and others 1% (National Suicide Registry 2007).

Table 1: Proportion of Suicide Cases to Population According to Ethnicity

Ethnic group	Population, n million (%)	Suicide cases, n (%)	Suicide risk
Malay	14.10 (50.8)	34 (13.9)	1/4
Chinese	6.40 (23.1)	131 (53.5)	2 X
Indian	1.91 (6.9)	67 (27.3)	4 X
Other Bumiputera	3.06 (4.0)	11 (4.5)	1 X
Others	0.33 (1.2)	2 (0.8)	2 X
<b>TOTAL</b>	<b>27.73 (100)</b>	<b>245 (100)</b>	

Table 1 show that the proportion of suicide is highest in the Indian group, as reported in the literature (Maniam 1995, Morris & Maniam 2001).

## 2.4 CITIZENSHIP

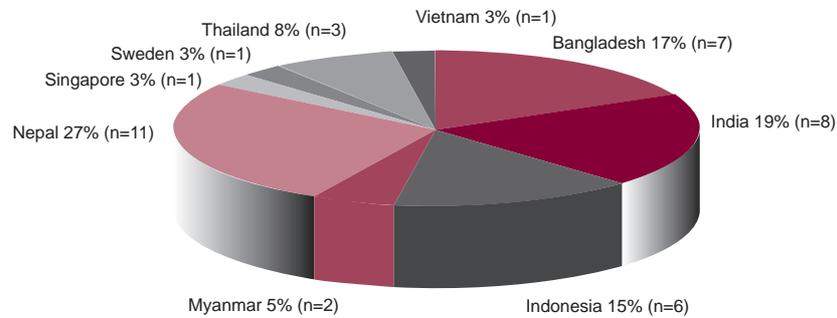


Figure 7: Non-Malaysian suicides by country of origin

Most of the suicide victims were Malaysians (85.9%, n=249), while foreigners contributed 13.8% (n=40) of suicides in Malaysia. Among the non-Malaysian, the highest percentage was contributed by the Nepalese (3.8%, n=11) as shown in Figure 7. This is in contrast to last year's finding, where Indonesian was reported to be the highest. It would be interesting to further observe this trend to make a conclusion.

## 2.5 MARITAL STATUS

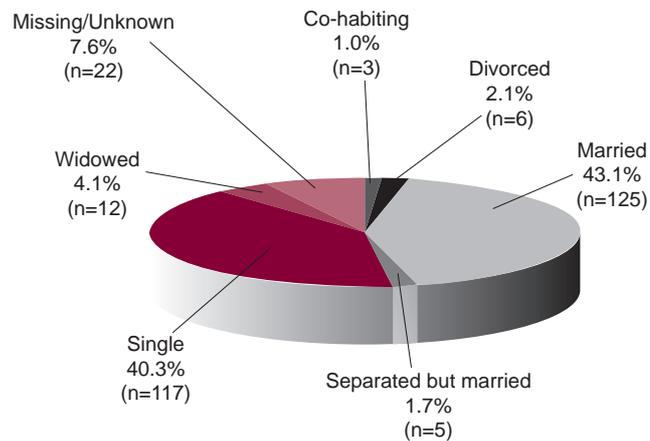


Figure 8 : Suicide cases by marital status

The distribution of marital status is shown in Figure 8. Interestingly, there is not much difference in the frequency of suicide between the married (43.1%, n=125) and the single (40.3%, n=117) groups with the figure showing slightly more suicides among the married group. The same pattern was also observed in 2007.

There is no available statistics on the marital status of the whole Malaysian population. However, among the working population, most Malaysians are actually married (6.7 million vs. 3.6 million) (Department of Statistics 2009). This may explain the high frequency of suicides among the married group, which may not indicate higher rate of suicide. Australia and New Zealand have the typical male: female ratio of that in most European countries and the United States of America (around 4:1) (World Health Organization 2009b). The ratio is much lower in other Asian countries except in mainland China where suicide rate is greater among the female group (World Health Organization 2009b).

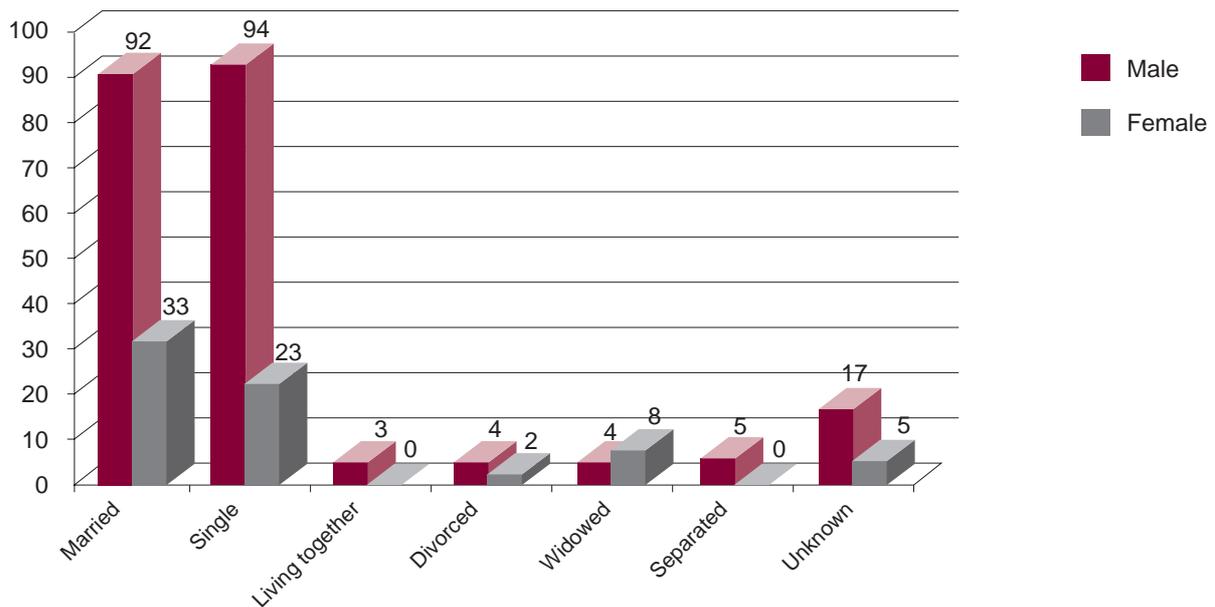


Figure 9: Distribution of Marital Status Between Genders for Suicide Cases

An interesting difference in suicide between genders was observed in Figure 9. Among the males, suicide is similarly high in the married and single groups (42% and 42.9%) in contrast to last year's finding (50.0% and 37.8%). Meanwhile for females, a higher number were married (46.5%, n=33) as compared to those who are single (32.4%, n=23). This is again, in contrast to last year's finding (29% and 51% respectively). The pattern of higher suicide rate in single group appears to be changing for the female gender. However when analysed statistically the difference is not significant ( $p > 0.05$ ). This trend needs to be observed on a longer term before any conclusions can be made and again this may not reflect the actual rates of suicide among the married and single population of Malaysia in both genders as the actual numbers of married and single population is not known.

## 2.6 EDUCATION LEVEL

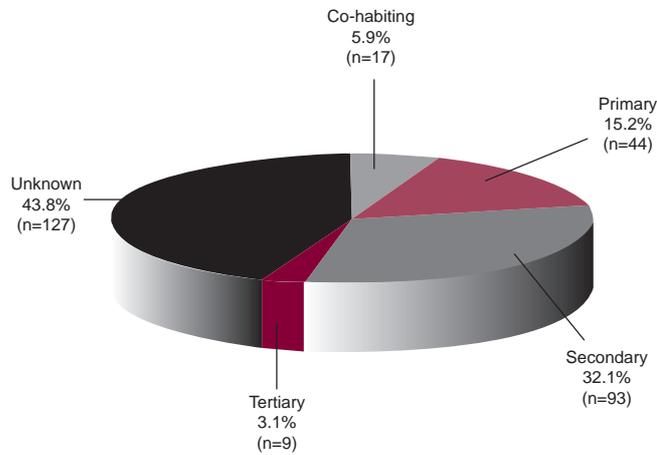


Figure 10: Distribution of Educational Level for Suicide Cases

The education level was not known for 43.8% [n=127] of cases. For those whose education level was known, the majority had studied until secondary level [32.1%, n=93], as shown in Figure 10. There appears to be a decreasing trend in suicide as the educational level increases.

## 2.7 EMPLOYMENT STATUS

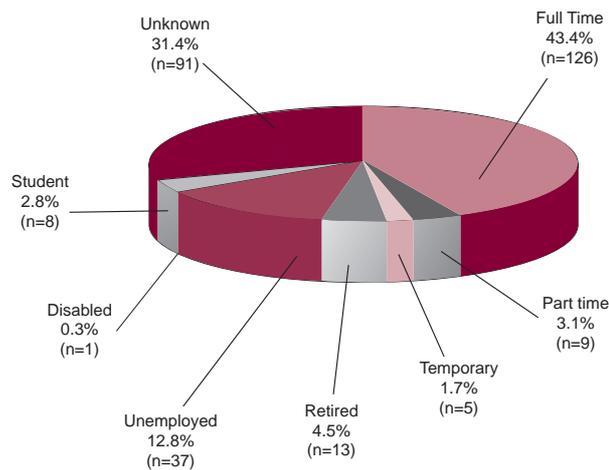


Figure 11: Employment Status of Suicide Victims

Data on employment were available for 199 cases (Figure 11). The majority of suicide victims [43.4%] were fully employed followed by those in the unemployed group [12.8%]. The other categories of employment made up much smaller proportions; retired [4.5%], part-time employment [3.1%], student [2.8%], temporary job [1.7%] and disabled [0.3%].

## CHAPTER 3 : CHARACTERISTICS OF THE SUICIDAL ACT

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### 3.1 PRESENTATION TO THE HOSPITAL

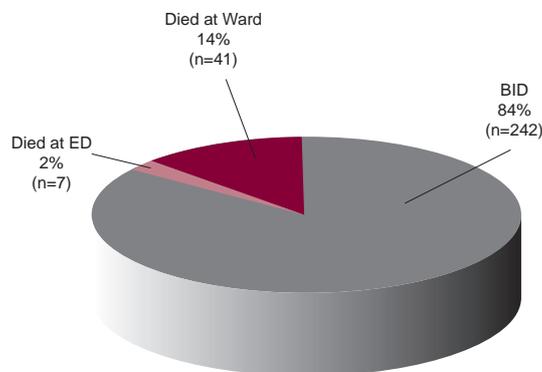


Figure 12: Presentation to the Hospital

There are 290 registered suicide cases for the year 2008. From these 290 cases, 83.4% (n=242) were classified as "Brought in dead" (BID), that is the body was brought to the hospital dead, and the police requested for post-mortem examination. There are 14.1% (n=41) deaths in hospital or classified as "Died at Ward", while the number of the suicide cases classified as died at "Emergency Department" (ED) are 2.4% (n= 7).

However, our data catchment may not be comprehensive, and there is a possibility that a few suicide cases may not be reported. There are two reasons for this; firstly the death investigation system in Malaysia is carried out by the police, thus may be buried without being brought to the Mortuary or Forensic Unit. Secondly there are some cases who died in the hospitals, such as from poisoning, that were not reported to the police, may remain as unreported upon death. These cases may be passed off as non medico-legal cases, thus will not be recorded as possible or probable suicide.

### 3.2 PLACE OF SUICIDE ACT

Table 2: Place where the deceased carried out the suicidal act

Place of Suicide Act	Frequency	Percent
Farm / Plantation	14	4.8
Home	195	67.2
Industrial/ Construction Area	5	1.7
Deserted Mining Pool	2	0.7
Hotel/ Hotel Car Park	4	1.4
Motorcar	1	0.3
Hospital	2	0.7
Prison	1	0.3
Sea Side	1	0.3
Police Station	1	0.3
Workplace	2	0.7
Residential	18	6.2
School/ Other institution/ Public Administrative Areas	6	2.1
Street/ Highway	1	0.3
Trade Service areas	1	0.3
Other Unspecified Place	36	12.4
<b>Total</b>	<b>290</b>	<b>100.0</b>

The data obtained showed that, majority of suicides took place at home of the deceased 67.2% (n=95), followed by death in a residential place (6.2%; n=18) and suicide at a Farm/plantation (4.8%; n=14). It will be interesting to further analyse the data, to see whether those who committed suicide at home, hanged themselves, although this is most likely to be the choice of suicide at home. Similarly, whether those who took poisons, do so at a farm/plantation, looking at the accessibility of poisons such as herbicides at a farm/plantation.

### 3.3 CHOICE OF SUICIDE METHODS

All the suicidal methods for this registry are reported according to the ICD-10 classification. This study shows that the most favoured suicide method amongst Malaysians is classified as X70 (ISH by hanging, strangulation and suffocation). By referring to Table 3, there 56.6% (n=164) of the 290 cases were within the X70 classification. Similarly, according to the National Suicide Statistic at a Glance, Percentage of Self Harm Injuries, 2002-2006, suffocation was the second highest method of suicide in the United States. A suicide study in the northern part of Thailand shows similar results as our study where the most common method of suicide was hanging, followed by pesticide ingestion. (ManoteLotrakul, 2005). The second most widely chosen method was X68 (exposure to pesticide) with 13.4% (n=39) and followed closely by X80 (jumping from high places) which makes up 11.4% (n=33) of the suicide cases. These three most common methods of suicide contribute 81.4% of total suicide cases. These may be attributed to the availability of hanging appliances, as well as accessibility to high-rise buildings and pesticides in Malaysia. This study also confirms the reported trend published in the NSRM Preliminary Report 2007.

Table 3: Choice of suicide methods

Suicide methods		N	%
X60	ISP by and exposure to nonopioid analgesic, antipyretics and anti rheumatics	1	0.3
X61	ISP by and exposure to to antiepileptics, sedative-hypnotic, antiparkinsonism and psychotropic drugs, not elsewhere classified	1	0.3
X63	ISP by and exposure to other drugs acting on the automatic nervous system	2	0.7
X64	ISP by and exposure to other and unspecified drugs, medicaments and biological substances	1	0.3
X66	ISP by and exposure to organic solvents and halogenated hydrocarbons and their vapours	2	0.7
X67	ISP by and exposure to other gases and vapours (e.g.carbon monoxide)	13	4.5
X68	ISP by and exposure to pesticides	39	13.4
X69	ISP by and exposure to other and unspecified chemicals and noxious substances	8	2.8
X70	ISH by hanging, strangulation, and suffocation	164	56.6
X71	ISH by drowning and submersion	7	2.4
X73	ISH by rifle, shotgun and larger firearm discharge	1	0.3
X76	ISH by smoke, fire and flames	6	2.1
X78	ISH by sharp object	9	3.1
X80	ISH by jumping from a high place	33	11.4
X81	ISH by jumping or lying before moving object	1	0.3
X83	ISH by other specified means	1	0.3
Combination			
X65	ISP by and exposure to alcohol and X67 ISP by and exposure to other gases and vapours (e.g. carbon monoxide)	1	0.3
<b>TOTAL</b>		<b>290</b>	<b>100.0</b>

\*Intentional self-poisoning (ISP), Intentional self-harm (ISH)

The other suicide methods found in this study were exposure to X67 (gases and other vapours), X76 (smoke, fire and flames), X71 (drowning), X69 (exposure to unspecified chemicals & other noxious substance), X81 (jump/lying before moving object), X78 (sharp objects), X73 (rifle, shotgun or other larger firearm) and X61 (exposure to antiepileptics, sedative, hypnotics, psychotropics).

### 3.3.1 SUICIDE METHOD VS. GENDER

With reference to Table 4, it was shown that both male and female had opted for hanging, strangulation and suffocation (X70) as the favoured method of suicide. Out of 71 female cases, 54.9% chose hanging to end their life while 125 male (57.1%) also chose this method. The study also showed that both genders chose exposure to pesticides and jumping from a high place as their second and third chosen methods of suicide respectively. These observations further confirmed that the choices of suicide methods are based on ease of access.

Suicide by exposure to other gases and vapour (eg: carbon monoxide) was more favoured by male than female. For suicide by X76 (smoke, fire and flames), the victims in Malaysia were mainly males whereas in India, Sri Lanka and Iran, majority were females. (Ahmadi A. et al, self immolation in Iran, Journal Burn Care & Research. 2008 May-Jun; 29(3):451-60), Laloe V all, Ganesan M., Self-immolation a common suicidal behavioural in eastern Sri Lanka, Burns,2002 aug; 28(5):475-80), [Kanchan T et al., Methods of choice in completed suicides: gender differences and review of literature. J Forensic Sci, 2009 Jul; 54 (40):938-42.Epub 2009 Apr 17).

Table 4: Choice of suicide methods by gender

	Suicide method	Female		Male		TOTAL
		N	%	N	N	%
X60	ISP by and exposure to non opioid analgesic, antipyretics and anti rheumatics	1	1.4	1		0.0
X61	ISP by and exposure to to antiepileptics, sedative-hypnotic, antiparkinsonism and psychotropic drugs, not elsewhere classified	1	1.4	1		0.0
X63	ISP by and exposure to other drugs acting on the automatic nervous system	1	1.4	2	1	0.5
X64	ISP by and exposure to other and unspecified drugs, medicaments and biological substances	1	1.4	1		0.0
X66	ISP by and exposure to organic solvents and halogenated hydrocarbons and their vapours		0.0	2	2	0.9
X67	ISP by and exposure to other gases and vapours (e.g.carbon monoxide)	2	2.8	13	11	5.0
X68	ISP by and exposure to pesticides	8	11.3	39	31	14.2
X69	ISP by and exposure to other and unspecified chemicals and noxious substances	3	4.2	8	5	2.3
X70	ISH by hanging, strangulation, and suffocation	39	54.9	164	125	57.1
X71	ISH by drowning and submersion	2	2.8	7	5	2.3
X73	ISH by rifle, shotgun and larger firearm discharge		0.0	1	1	0.5
X76	ISH by smoke, fire and flames	1	1.4	6	5	2.3
X78	ISH by sharp object	3	4.2	9	6	2.7
X80	ISH by jumping from a high place	9	12.7	33	24	11.0
X81	ISH by jumping or lying before moving object		0.0	1	1	0.5
X83	ISH by other specified means		0.0	1	1	0.5
Combination						
X65	ISP by and exposure to alcohol and X67 ISP by and exposure to other gases and vapours (e.g.carbon monoxide)		0.0	1	1	0.5
<b>TOTAL</b>		<b>71</b>	<b>100.0</b>	<b>290</b>	<b>219</b>	<b>100.0</b>

\*Intentional self-poisoning (ISP), Intentional self-harm (ISH)

### 3.3.2 SUICIDE METHOD VS. ETHNICITY

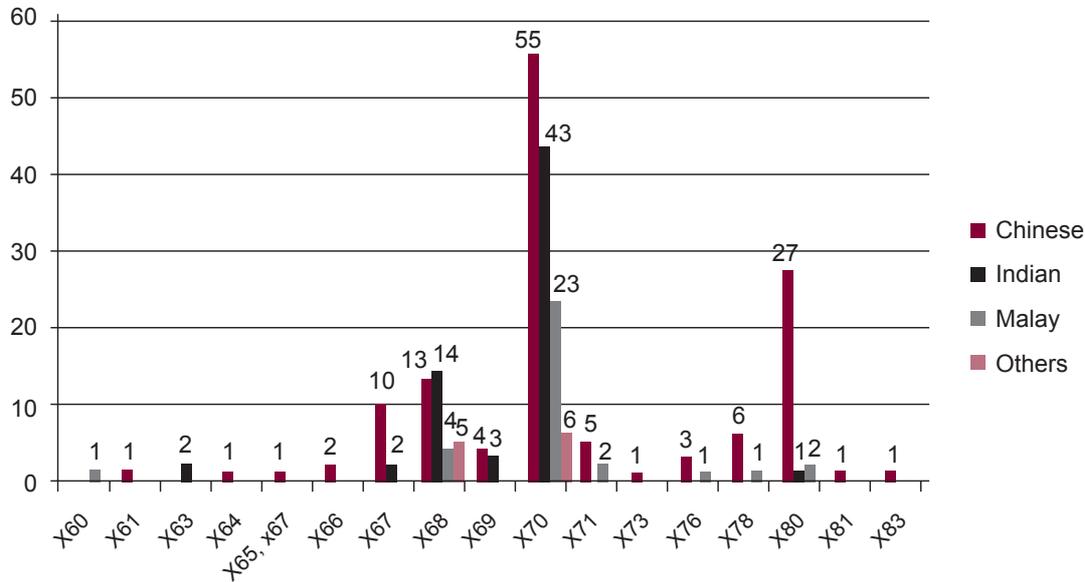


Figure 13: Choice of suicide methods by ethnicity (n = 242 \*missing data = 48)

According to Figure 13, the highest number of suicides is among the Chinese, followed by the Indians and Malays. The most preferred method of suicide amongst these major ethnic groups is hanging. The second most preferred method among these major ethnic groups is X68 [exposure to pesticides]. Similarly, these ethnic groups also chose X80 [jumping from a high place] as the third common method of committing suicide. The method of committing suicide by X67 [carbon monoxide poisoning] is most common among the Chinese. In our study, suicide by firearm is rare (0.8%,n=1). In contrast, it is the most common method in the United States of America. It is also noted that, there are 48 non-Malaysians which have been identified as 'missing'. Among non-Malaysians, the suicide method of choice is hanging.

### 3.4 EXPRESSION OF INTENT – SPECIFY MODE

Table 5: Distribution of expression of intent by suicide victims

Expression of Intent	N	%
No	103	35.5
*Yes	93	32.1
Unknown/ Missing	94	32.4
<b>TOTAL</b>	<b>290</b>	<b>100.0</b>
<b>Mode of Expression of Intent</b>	<b>N</b>	<b>%</b>
Those with 'Yes' in Table 6	93	100
Effort to learn about means of death	9	9.7
Verbal expression of farewell or desire to die	46	49.5
Preparation for death e.g.: suicidal method preparation	19	20.4
Suicide note-written expression of farewell or desire to die	14	15.1
Rehearsing fatal behaviour	8	8.6
<b>Unknown/ Missing</b>	<b>5</b>	<b>5.4</b>

Among the 290 total suicide cases, 32.1% had expressed their intention to commit suicide (Table 5). Out of the 93 victims who expressed their intention to commit suicide 49.5% (n=46) had done so verbally. The other more common modes of expression of intent to commit suicide include suicidal method preparation (20.4%;n=19), writing suicide notes (15.1%;n=14), making efforts to learn about the means of death (9.7%;n=9) and rehearsing fatal behaviour (8.6%;n=8). However, it is possible that the same individual could express multiple modes of intention to commit suicide as shown in Table 6.

Table 6: Mode of expression of intent

<b>Mode of expression of intent</b>	<b>N</b>	<b>%</b>
Effort to learn	8	8.6
Preparation for death	17	18.3
Rehearsing fatal behaviour	7	7.5
Suicide note	9	9.7
Verbal expression	39	41.9
Missing	5	5.4
<i>Combination</i>		
Effort to learn and verbal expression	1	1.1
Preparation for death and suicide note	1	1.1
Preparation for death and verbal expression	1	1.1
Verbal expression and rehearsing fatal behaviour	1	1.1
Verbal expression and suicide note	4	4.3

## CHAPTER 4 : FACTORS ASSOCIATED WITH SUICIDE

Contributors: Dr Umi Adzlin, Dr Uma Visvalingam, Dr Azlin Baharuddin, Dr Badi'ah Yahya

Suicidal acts are complex human behaviours that involve many aspects of an individual's state of health, life event and even personality. Many epidemiological studies discovered common risk factors that are statistically associated with rate of suicide. Risk factors may be bio-psycho-social, environmental or socio-cultural in nature. Understanding the relationship between risk factors and suicidal behaviour and how it can be modified is very important for suicide prevention. While the impact of certain risk factors can be clearly reduced by established interventions, risk factors that cannot be changed can alert others on the heightened risk of suicide in some circumstances.

The risk factors of suicide include:

- 4.1 Previous suicide attempts
- 4.2 Family history of suicide or psychiatric illness
- 4.3 Substance use
- 4.4 Physical illness
- 4.5 Life events prior to suicide
- 4.6 Mental illness
- 4.7 History of psychiatric admission.

### 4.1 PREVIOUS SUICIDE ATTEMPTS

The most powerful predictor of suicide is a history of previous suicide attempts. A meta-analysis study estimated the standardised mortality ratio (SMR) for completed suicide of subjects who had attempted suicide by any method to be about 38, which is higher than the risk related to any specific psychiatric diagnosis (Harris & Barraclough 1997). In a recent study, it was found that 24% of the 114 suicides from various parts of China in 1995-2000 had history of past suicide attempts (Li et al 2008). A prospective cohort study found that there was approximately 30-fold increase in the risk of suicide after a history of deliberate self-harm as compared to the general population (Cooper et al 2005). Meanwhile from studies done in India, the author reports the odds ratio (OR) for previous suicide attempts as 42.62 (CI 5.78-313.88) in Bangalore and 5.2 (CI 1.96-17.34) in Chennai (Vijayakumar 2008).

Table 7: History of previous suicide attempts among suicide victims

Previous suicide attempts	N	%
No	149	51.4
Yes	47	16.2
Unknown	87	30
Missing	7	2.4
<b>TOTAL</b>	<b>290</b>	<b>100.0</b>

In contrast with the literature, our findings revealed that majority of the subjects (51.4%) did not have any history of previous suicide attempt. Only 16.2% of the subjects have positive history of previous suicide attempt (Table 7). The possible explanation for our findings is that there are high numbers of unknown status (30%) as the informants of the suicide were unaware of the victims' past suicidal behaviours and attempts as the subjects may not have revealed the past suicidal behaviours. The informants may also not have regular contacts with the victim. Moreover, majority of self-harmers did not seek medical attention. These problems are more obvious among the subjects who are foreigners.

## 4.2 FAMILY HISTORY OF SUICIDE OR PSYCHIATRIC ILLNESS

Suicide risks run in families. A person is more likely to commit suicide if a family member has a history of taking his or her own life. Suicidal behaviour is highly familial and is genetically transmitted independent of psychiatric disorders (Brent & Mann, 2005). The completion rates are elevated in the family members of the attempter and the rates of suicide attempt are elevated in the family members of suicide completers. It is reported that the offspring of a person who attempts suicide has six times the average risk of committing suicide (Sethi & Bhargava 2003). In China, of the 114 suicide cases 15.2% had blood relative with suicidal behaviour (Li et al 2008). Meanwhile in a case control study in Taiwan, 14% of the persons who committed suicide had a family history of suicide (Cheng 1995). The Chennai study reported that approximately 12% had a family history of suicide (OR 1.33; CI 0.6-3.09) in the first degree relatives and 18% in second degree relatives (Vijayakumar 2008).

A recent prospective study of early-onset suicidal behaviour found a higher relative risk (RR = 4.4) of incident suicide attempts in offspring of parents with mood disorders who made suicide attempts, compared with offspring of parents with mood disorders who had not made attempts (Melhem 2007). A family history of psychiatric illness not only inherit genetic vulnerability but also increase discord at home, decrease social support and indirectly will increase the risk of suicide. A study in India revealed that 60% of the cases with suicidal behaviour had family history of psychopathology (Vijayakumar 2003).

Table 8: Family history of suicide or psychiatric illness

Family history of suicide or psychiatric illness	N	%
No	173	59.6
Yes	15	5.2
Unknown	89	30.7
Missing	13	4.5
<b>TOTAL</b>	<b>290</b>	<b>100.0</b>

In contrast to findings in previous studies, findings from the registry showed that most of the subjects did not have any family history, as shown in Table 8. Only a small percentage (5.2%) revealed a positive family history of suicide or psychiatric illness. Some family members are not aware of the family history or they may hide the information due to stigma. Other informants, especially for the foreigners, may not know subjects' family background. These factors contributed to the high percentage in 'no' or 'unknown' family history.

## 4.3 HISTORY OF SUBSTANCE USE

Our findings have shown that 30% (Table 9) of our subjects have given a positive history of substance use. This domain included use of tobacco, alcohol, stimulants, opiates, cannabis and sedatives. As information is only obtained from informants who may not be aware of the extent of consumption in the victims, we are unable to differentiate between social smoker and drinker, abusers and dependents of nicotine and alcohol. However, the 'use of illicit substances' other than tobacco and alcohol can be considered at least to the level of abuse in this study.

Table 9: History of substance use

History of substance use (including illicit substances, tobacco and alcohol)	N	%
No	106	36.6
Yes	87	30.0
Unknown	91	31.4
Missing	6	2.0
<b>TOTAL</b>	<b>290</b>	<b>100.0</b>

Current substance use, even in the absence of abuse or dependence, is a significant risk factor for unplanned suicide attempts among ideators (Borges, 2000). Substance use such as alcohol and drugs predict subsequent suicide attempts even after controlling for socio-demographics and co-morbid mental disorders. The number of substances used is more important than the types of substances used in predicting suicidal behaviour (Borges, 2000).

Table 10: Types of substance used

Substance used	N	%
Tobacco products (cigarettes, cigars)	60	50.4
Alcoholic beverages (beer, samsu)	36	30.3
Heroin, Morphine, Methadone or Pain Medication (codein, tramadol)	8	6.7
Stimulants/ Amphetamine	5	4.2
Sedative or sleeping pills (valium, dormicum)	5	4.2
Marijuana	3	2.5
Inhalants (glue, paint thinner)	2	1.7
<b>TOTAL</b>	<b>119</b>	<b>100</b>

#### 4.3.1 TOBACCO

From the data, it was found that majority of the victims had a positive history of tobacco use. The use of tobacco outweighs the use of alcohol (50.4% vs 30.3%). This is in contrast with previous international studies, which found that comorbid alcohol dependence or misuse has been associated with higher incidence of suicides (Fawcett et al, 1990; Duggan et al, 1991; Bronisch & Hecht, 1992). The possible explanation for our findings is that it may reflect a higher prevalence of tobacco use rather than alcohol use in this country. Moreover, alcohol abuse could be overlooked in women that would result in loss of vital information.

However, it is still interesting to review the association between tobacco use and suicide in the literature. Studies done at the Max Planck Institute of Psychiatry in Munich showed that adolescents and young adults exhibited an increased suicidal tendency if they have a higher consumption of tobacco whereby the risk for a suicide attempt increases by the fourfold if somebody smokes regularly (Bronisch, 2007). Moreover, in a previous study, daily smoking, but not past smoking, predicted the subsequent occurrence of suicidal thoughts or attempt, independent of prior depression and substance use disorders (Breslau et al, 2005).

### 4.3.2 ALCOHOL

Alcohol was the next commonly used substance in our data (30.3%). Alcohol use is frequently studied in association with suicide. In a previous meta-analysis of mortality studies, the lifetime risk of suicide was found to be 7% for alcohol dependence (Inskip et al 1998). In the Northern Ireland suicide study, which was a case-control psychological autopsy, the estimated risk of suicide in the presence of current alcohol misuse or dependence was eight times greater than in the absence of it (Foster et al 1999).

Kendall (1983) deduced that there were multiple factors, which were associated with alcohol dependence leading to a higher risk of suicide. Among them were marital break ups, loss of job and social isolation, loss of self-esteem and hence propelling them towards depression. Furthermore, alcohol intoxication could also lead to increased impulsivity and weakening of normal restraints against dangerous behaviour.

### 4.3.3 ILLICIT SUBSTANCES

Following tobacco and alcohol, opiates (6.7%), stimulants (4.2%) and sedatives (4.2%) were the next commonly used substance among our study subjects.

Opiate addiction was found to be related to suicide in previous studies. The rate of suicide attempts among opiate addicts is equivalent to that found in alcoholics, with the rate of suicide attempts in both groups substantially higher than in the general population (Murphy, 1992).

Table 11: History of illicit substance abuse

History of illicit substance abuse (excluding tobacco and alcohol use)	N	%
No	172	59.3
*Yes	21	7.2
Unknown	91	31.4
Missing	6	2.1
<b>TOTAL</b>	<b>290</b>	<b>100.0</b>

If we exclude tobacco and alcohol use to examine history of 'illicit substance abuse', only a small percentage of the study subjects were involved (7.2%) as shown in Table 11.

The small numbers obtained could be attributed again to the fact that informants may not be aware about such high risk behaviour in the study subjects. It may also be that informants underestimated the magnitude of substance use in the subjects. This also could be attributed to some subjects that could have been living away from their families.

#### 4.4 PHYSICAL ILLNESS – HISTORY AND TYPE OF ILLNESS

Table 12: Distribution of physical illness

Physical illness	N	%
No	149	51.4
*Yes	56	19.3
Unknown	75	25.9
Missing	10	3.4
<b>TOTAL</b>	<b>290</b>	<b>100.0</b>

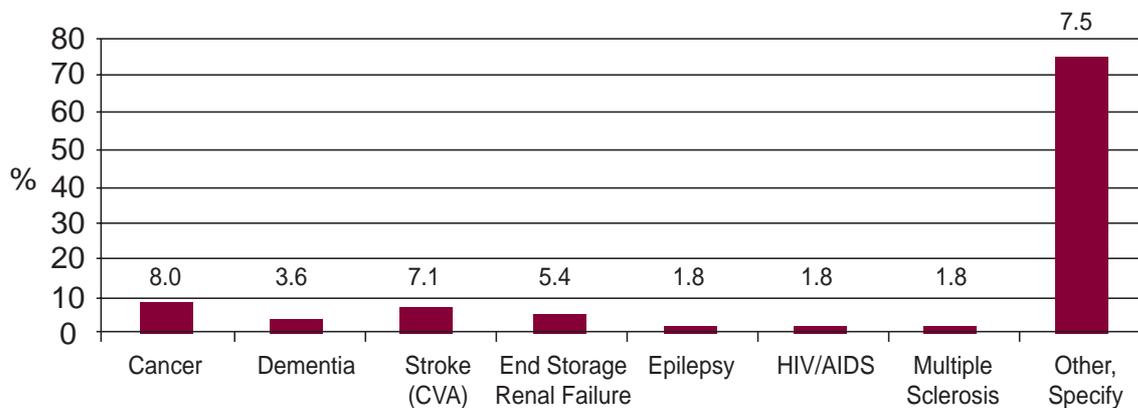


Figure 14: Distribution of physical illness

History of physical illness was found in 56 suicide deaths (19.3%) as shown in Table 12. Meanwhile, Table 14 shows that a higher proportion of the group had been diagnosed with cancer (n=5, 8.9%), cerebrovascular accident (n=4, 7.1%) and end-stage renal failure (n=3, 5.4%).

A review on suicide in Asia showed that in India, physical illness contributed to 23% of suicide (Vijayakumar, 2008) and in Singapore physical illness is a very important risk factor in older population (Chia, 2008).

Terminal illnesses, such as cancer is among the serious illnesses commonly associated with suicide. Cancer patients run at least double the risk of committing suicide compared to the general population; with male cancer patients nearly five times more likely to commit suicide than female patients. Type of cancer, stage of the disease, ethnicity and family situation all contributed to cancer patients' suicide risk (Kendal, 2006).

Pathology involving central nervous system contribute to a much higher relative risk for suicide compared with diseases of other systems. A population study revealed stroke patients to be at an approximately doubled risk for suicide compared to normal population. This risk is greater among younger patients and among patients hospitalised for a relatively shorter time. The risk appears to decline with time after a stroke, being greatest within the first five years (Teasdale, 2001). It is also important to note that 'if refusal for medication and medical intervention are viewed as acts of suicide, the figures for suicide in developing countries will rise dramatically' (Vijayakumar, 2004).

## 4.5 LIFE EVENTS PRIOR TO SUICIDE

Acute life event may play a more important role in a completed suicide in Asia than in the West (Beautrais, 2006). In Asia, those who die by suicide and who do not have depression or other mental illness tend to have acute life event at the time of their suicide attempt (Vijayakumar, 2004). These stressful life events include marital, relationship, family problems and financial stresses, all of which are common precipitants of suicide attempts in the West as well (Beautrais, 2006). Nevertheless, certain socio-cultural aspects may have contributed, causing acute life event to more often lead to suicide in Asia than in the West.

Table 13: Distribution of life events

Life events of the deceased	N	%
No	82	28.3
*Yes	101	34.8
Unknown	97	33.5
Missing	10	3.4
<b>TOTAL</b>	<b>290</b>	<b>100.0</b>

Consistent with this Asian background, a high proportion of subjects in this population (n = 101, 34.3%) were found to experience life events within three months before suicide, as shown in Table 13.

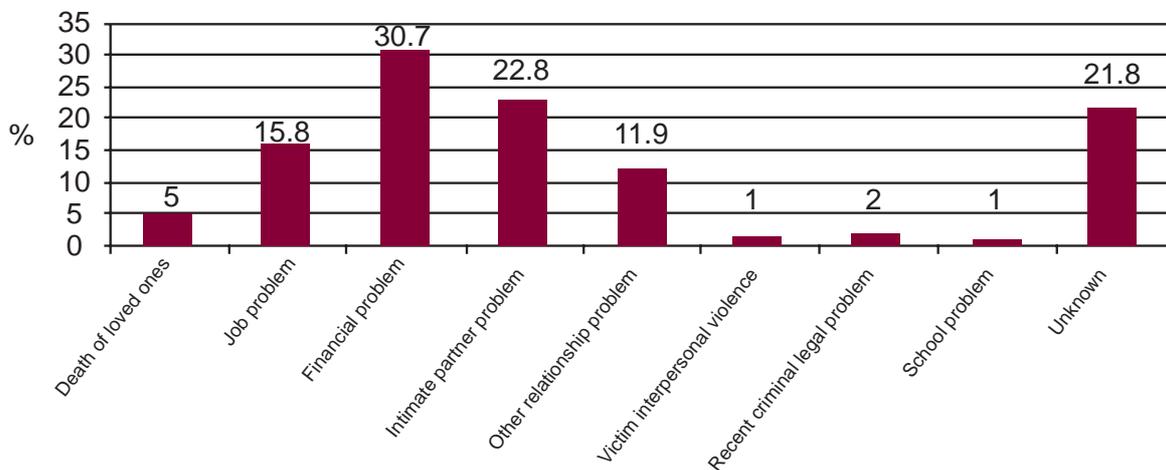


Figure 15: Types of life events experienced by suicide victims [\* = as reported by informants]

Among them, 30.7% (n = 31) had financial problems and 15.8% (n = 16) had job problems. Intimate partner problems led to suicide in 22.8% (n=23) and other relationship problems are implicated in 11.9% (n=12) as shown in Table 15. If these two categories were combined, overall relationship problems will be the main life event leading to suicide. While relationship problems is one of the major live events leading to suicide for this population based on earlier data in 2007, it is interesting to note that financial and employment problems have been implicated for year 2008, which was a year of economic recession.

We can understand this phenomenon by studying the impact of the Asian economic crisis in 1997-1998 on suicides in Asian countries. Compared to 1997, suicide mortality increased markedly in 1998 especially among the male population in all countries except Singapore.. Suicide rates increased by 39% in males in Japan, 44% in Hong Kong and 45% in Korea; however, there were less dramatic rises in female rates. These findings suggest an association between the Asian economic crisis and increase in suicide mortalities in some Asian countries (Chang 2009).

The similar review found that increases in suicide rates were not seen in Taiwan and Singapore, the two countries where the economic crisis had a smaller impact on gross domestic product (GDP) per-capita and unemployment (Chang 2009). Time-series analyses found some of the impact of the economic crisis on male suicides were attributable to increases in unemployment. Hence it is in the event of economic crisis in Asia, becoming unemployed may actually increase the risk for suicide (Chang 2009).

Similarly, studies from other developing nations such as Sri Lanka, India and China have shown that loss of a job and major financial setbacks, which often lead to debt traps, are major reasons for suicide (Vijayakumar, 2004). Among Asian males, economic and financial stresses, becoming a burden to family, coupled with the shame and humiliation surrounding these events, may be potent precipitants of suicide (Ben Park & David, 2008). This may be due to limited or nonexistent welfare and social security for individuals to fall back on (Vijayakumar, 2004).

Notable but under-researched in Malaysia, the economic crisis may have witnessed a high increase of dealings with illegal money lenders better known as 'Ah Longs'. These illegal money lenders take advantage of people desperate for financial help. They offer unsecured loans at high interest rates to individuals, often with blackmail or threats of violence. Suicide deaths in association with illegal money lenders had several times been made headlines in the local media. A research exploring characteristics of the 'financial problems' related to suicide may enlighten us further on this issue.

## 4.6 MENTAL ILLNESS

### 4.6.1 HISTORY OF MENTAL ILLNESS

Studies have shown higher incidence of mental illness in suicide victims. (Harris and Barraclough, 1997; Bertolote et al 2004; Arsenault-Lapierre et al 2004; Bostwick and Pankratz, 2000; Yip et al, 2008). The two most common mental illnesses among completed suicides were mood disorders and substance use disorders (Isometsa 2001). Yip et al (2008) quoted that affective disorders and schizophrenia were the most common major mental illness among Asian suicide victims. The author also reported that 60% of suicide victims in Singapore were diagnosed to have mental illness, and schizophrenia (14.2%) was the most common major mental illness. Meanwhile the study conducted in India reported that majority of suicide victims suffering from affective disorders, and 20% with personality disorders.

Table 14: History of mental illness

History of mental problems	N	%
No	150	51.7
*Yes	50	17.2
Unknown	84	29.0
Missing	6	2.1
<b>TOTAL</b>	<b>290</b>	<b>100.0</b>

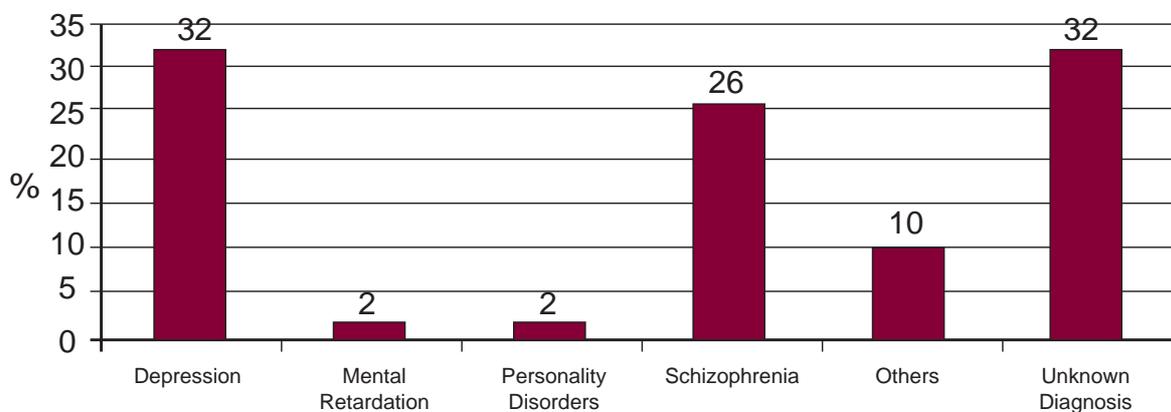


Figure 16: Types of mental illnesses suffered by suicide victims

Finding from the registry showed that 51.7% (n=150) of the victims did not have any history of mental illness. Only 17.2% (n=50) had history of mental illness, and depression (32%, n=16) was the most common followed by schizophrenia (26%, n=13). Personality disorder had been diagnosed in 2% of the victims. This could be attributed to the informants or next of kin being unaware of the victim's mental illness (29%, n=84). Our findings of the two common major mental illness associated with higher risk of suicide were similar to other Asian studies.

#### 4.6.2 HISTORY OF PSYCHIATRIC HOSPITALISATION

Studies have shown risk of suicide is higher among those with history of psychiatric hospitalization (Qin et al, 2003). Erlangsen et al (2005) found that people over the age of 50 years with previous history of psychiatric hospital admission were more likely to commit suicide and Appleby et al (2001) found 25% of suicide victims have had contact with specialist mental health services in the year before their death.

Table 15: History of psychiatric admission

Admitted to any psychiatric unit	N	%
No	177	61.0
*Yes	19	6.6
Unknown	77	26.5
Missing	17	5.9
<b>TOTAL</b>	<b>290</b>	<b>100.0</b>

In contrast with other studies, data from the registry showed that majority (61%, n=177) had no previous history of psychiatric hospitalisation (Table 15). Only 6.6% (n=19) had previous history of admission to psychiatric facilities in the country. The possible explanation for our findings could be due to high number (26.5%) of unknown status.

## CHAPTER 5 : CONSIDERATIONS FOR FUTURE STUDIES AND SERVICES

Contributors: Dr Nor Hayati Ali, Dr Uma Visvalingam

### LIMITATIONS

#### Case Identification Issues

Omission of notification is a real issue not only to this registry but also to other forms of non-natural deaths. This is because approximately 45% of deaths in Malaysia are “non-certified” (Department of Statistics Malaysia 2006), meaning that the cause of death/burial permit is issued by police officers, thus bodies might not be sent to hospitals at all. Although the law dictates that all cases of “sudden death” (non-natural) must be fully investigated - which includes an examination by a registered medical practitioner - this discretion lies largely on the attending police officer whose forensic skills may not be standardised. Furthermore, suicidal deaths are culturally sensitive and were shown to be systematically under-recorded (Morrell, 2009).

Cases might also be missed at the hospital level. At highest risk of omission are those who died due to the sequelae of the suicidal act in the wards. For example, the causes of death were documented as “respiratory failure” or “septicaemia” without mentioning the external cause of that condition - i.e. intentional paraquat ingestion or intentional self-harm using flames. This can only be overcome if medical officers are familiar with the two-tier diagnostic coding system advocated by the ICD-10, as well as ascertaining the accurate diagnostic terminology to use. Apart from that, performance of individual states may vary due to the strength of forensic services (i.e. manpower and infrastructure) that are available. However, the NSRM is looking at ways on how to support and facilitate data collection for under-performing states.

The NSRM reiterates that registration of cases is based on the preponderance of evidence showing the presence of intent. This may explain the rather low rates, because equivocal cases (undetermined intent) will not be registered. This issue will be addressed when Malaysia has a database on all causes of death, which the Forensic Services is still working on.

#### Missing data and coding issues

Another limitation is omission of data or ‘missing data’. The NSRM is fully aware that data for this registry is collected in a naturalistic setting; specifically while relatives came to collect the remains of their loved ones at the respective forensic units or departments. It might not be the ideal time for information gathering. Nevertheless, it may not be easy to track down relatives if forensic services do not use that particular opportunity. This had resulted in missing data especially in the section pertaining to life events, past illnesses and substance use; where most respondents reported “don’t know”. These kinds of variables may need to be handled by staff that are psychologically trained and may take more time to unearth. The option is to limit data collection to demographics and death history only. Furthermore, studies have revealed that the families’ preferred to be interviewed 8 - 12 weeks after the death. . Thus, investigation of risk factors may require a different approach of data collection.

There are also some data which present difficulties in coding e.g. the place of death. The NSRM had adhered to the format proposed by the ICD-10, where locations such as prisons and police lock-ups are coded as “public buildings” or “residential building”. Thus, data on suicide in custodial settings might not be accurately depicted. The NSRM is also looking at the possibility of having the CRF in the Malay language, because majority of the paramedical staff are more proficient in this language than in English. Another necessary enhancement would be adding the code X87.0 for cases who died due to the complications of suicidal act several days later, to differentiate it from the BID cases.

## **Ease of collection and recording**

Having an on-line registration system had greatly helped data recording as the system will prompt user if they had left out any of the compulsory data. Standardised synoptic coding systems also enable quick entry and retrieval of relevant information. However, internet connectivity may still be a problem and the NSRM is working with the systems vendor to explore ways to facilitate data entry.

Nevertheless, it is hoped that the NSRM would provide a platform to educate and alert healthcare workers about death documentation and management of dead bodies. There are ubiquitous challenges in public hospitals such as inadequate manpower and limited space to carry out interviews: but at least they could see how their data can be turned into information for quality initiatives and planning.

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## **RECOMMENDATIONS**

There is a need for a concerted effort in standardising death documentation in Malaysia. With the advent of information technology, there is surely a way to make ICD-10 more accessible and user-friendly to medical practitioners and record officers. Regular training and updates should be given to all relevant parties so that the cause of death can be documented accurately.

Generally, health professionals need to have some basic understanding about the different manners of death i.e. natural, accidental, suicidal, homicidal and undetermined. This will enable better history taking and examination so that all manners of death are given equal consideration; and documentation can be done systematically. This would greatly help a retrospective research in the future.

Another strategy to identify an underlying mental/physical illness among suicide victims is by doing data-merging with other registries e.g. schizophrenia or the cancer registries. The National Institute of Health via the Clinical Epidemiology Unit of CRC may be able to preside on these data processing systems with the assistance of the ministry's Information Technology Division for data security measures.

As with any study being done in suicide, the main difficulty is that the index figure had already died. Unless the deceased made explicit recordings of his intention and reasons for taking such an action, most family members were at loss as to why the deceased made that choice. Mental health professionals should consider studying the survivors of a near-fatal suicide attempt to capture these data as these patients are almost always admitted to our facilities and would be a more accurate data source.

From a human resource angle, it is hoped that more emphasis is given to enhance the forensics and mental health services. If clinical staff are not available, administrators may consider other forms of staffing e.g. a Science Officer or Research Officer to facilitate the research aspect in these services. Apart from that, there may be a need for liaison mental health staff to provide bereavement services to families of the deceased.

Prevention-wise, the NSRM had shown increasing numbers of suicide victims having a psychiatric illness. Thus, it is important for policy-makers to emphasise on early detection and treatment of mental illnesses and problems of substance use disorders with regards to suicide prevention strategies.

Systems-wise, the NSRM need to carry out feedback and system modification continuously to ensure that data quality can be maximised. This effort will need regular funding and support from the authorities.

## CONCLUSION

The WHO Expert Committee on Health Statistics defined a “registry” as a process that requires establishment of a permanent record, cases are followed up, and that basic statistical tabulations are prepared on frequencies and trends. In addition, the patients on a register should be frequently used as subjects for special studies. Even in the absence of a defined population base, useful information may be obtained from registers on the natural course of disease in different parts of the world.

The NSRM is making every effort to enhance the efficiency of all forensics units and departments to recognise and register cases of suicide. However, it may be beyond its scope to go into details of the deceased’s lifestyle, habits and past history. Thus the NSRM would like to invite health or sociological professionals to use the basic data captured by this registry to spur more health behaviour research into these areas.

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