## Project Title

Prevalence and Correlates of Suicide Planning and Suicide Attempt Among Individuals with Suicidal Ideation: Results from A Nationwide Cross-Sectional Survey

## Project Lead and Members

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## Organisation(s) Involved

Institute of Mental Health, Ministry of Health, Nanyang Technological University

## Healthcare Family Group(s) Involved in this Project

Medical, Allied Health

## Applicable Specialty or Discipline

Public Health, Psychology, Mental Health

## Project Period

Start date: August 2016

Completed date: March 2018

## Aims

This study aims to:

i.   track the mental health status of the Singapore population by establishing changes in prevalence rates of key mental disorders that were estimated in the earlier SMHS conducted in 2010, as well as estimate the magnitude of the treatment gap for these disorders, the pattern of help seeking and the time taken to seek help. The data will be used to trend the changes following the implementation of the first and second National Mental Health Blueprint and Policies and to evaluate the impact of the key initiatives.

ii. conduct a population-based study to establish the lifetime and 12-month prevalence of select mental disorders in the adult Singaporean population (See Document -

'Disorders included in SMHS 2016' for details on disorders). In addition to some of the disorders that were covered in the SMHS 2010, other relevant disorders like schizophrenia and related psychoses, suicidality, and hoarding will also be included.

iii. describe the current use of mental health services (including traditional services), level of unmet needs, as well as to identify facilitators and barriers to mental health treatment.

iv. establish the health related quality of life (HRQoL) among those with mental illness.

v. establish the prevalence of sleep problems and its correlates

vi. establish the positive mental health (PMH) of the Singapore population and to study its association with mental illnesses.

vii. investigate the role of significant events during childhood and their relation to development of adult illnesses.

viii. estimate the economic cost (direct and indirect medical costs, as well as the loss of productivity cost) associated with mental illnesses.

## Background

Although not all individuals with suicidal ideation, plan or attempt suicide, they experience high psychiatric morbidity. Hence, the study aimed to examine the prevalence of suicide planning (SP) and suicide attempt (SA) among individuals with suicidal ideation. Moreover, we investigated the relationships of SP and SA with sociodemographic characteristics, mental disorders, adverse childhood events (ACE) and prior SP.

## Methods

Our cross-sectional analysis used a dataset from the nationwide Singapore Mental Health Study 2016 and included only individuals with suicidal ideation. Due to missing data, the sample sizes for analyzing SP (n=411) and SA (n=365) were different. We assessed for mental disorders and suicidality using the World Health Organization Composite International Diagnostic Interview version 3.0 and ACE using the Adverse Childhood Experiences – International Questionnaire. Multivariable logistic regressions were performed to investigate associations.

*Curated by CHI Faculty: Sr Tan Yew Hiang, Nurse Manager, TTSH*

## Results

Among individuals with suicidal ideation, the prevalence of SP and SA were 17.7% and 10.6%, respectively. SP was more likely among those who had mood disorders (depression and bipolar disorder) (Odds Ratio (OR): 2.60). SA was less likely among those who were currently married (vs never married; OR: 0.12) and with university education (vs secondary level and below; OR: 0.15). Moreover, SA was more likely among those with prior SP (OR: 38.14), history of anxiety disorder (OR: 10.25), emotional neglect (OR: 9.19) and parental separation (OR: 28.22).

## Lessons Learnt

- Suicide attempts can be prevented with timely and appropriate intervention, especially since those with prior suicide planning were more likely to attempt suicide
- Efforts to identify and support children who have experienced ACEs can be helpful in preventing suicide later in life
- High-risk individuals can be identified by assessing pre-existing mental disorders, background of dysfunctional family, history of emotional abuse and prior suicidal behaviour.

## Conclusion

Our findings support the inclusion of prior SP, history of parental separation and emotional neglect in assessing suicide risk and preventing suicide.

## Additional Information

Singapore Health & Biomedical Congress (SHBC) 2022: Singapore Young Investigator Award (Health Services Research) (Oral category) – (Silver Award)

## Project Category

Applied/ Translational Research

Quantitative research

**Keywords**

Suicide Behaviour, Suicide Planning, Suicide Attempt, Suicide Ideation, Suicidality, Adverse Childhood Event (ACE)

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# Prevalence and correlates of suicide planning and suicide attempt among individuals with suicidal ideation: Results from a nationwide cross-sectional survey

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## I. BACKGROUND

- A known precursor to suicide is suicidality, which includes suicidal ideation, planning and attempt.
- Not all individuals with suicidal ideation will eventually plan or attempt suicide.
- Risk factors for the transition from suicidal ideation to suicide planning and attempts vary from country to country.
- **Our study aims to examine the prevalence of suicide planning (SP) and suicide attempt (SA) among individuals with suicidal ideation in Singapore. Moreover, we investigated the association of SP and SA with sociodemographic characteristics, prior mental disorders, adverse childhood experiences (ACEs) and prior SP.**

Sociodemographic
Prior mental disorders
Adverse childhood experiences
Prior Suicide Planning
→ Suicide planning
→ Suicide attempt

## II. METHODS

- This cross-sectional study utilised data from Singapore Mental Health Study 2016, and included only individuals with suicidal ideation.
- The sample sizes for analysing SP and SA were 411 and 365, respectively.
- The variables were assessed using the following instruments:

| Variable | Instrument |
|---|---|
| Suicidality and prior mental disorders | WHO Composite International Diagnostic Interview version 3.0 |
| ACEs | ACE – International Questionnaire |
| Sociodemographic | Questionnaire asking age, gender, ethnicity, marital status, employment status and education |

- Analysis was weighted to adjust for disproportionate stratified sampling, non-response and post-stratification by ethnicity and age.
- Multivariable logistic regression were performed to determine the correlates of SP and SA among individuals with suicidal ideation.

## III. RESULTS

- For both groups (SP and SA), most respondents were aged 18-34, female, of Chinese ethnicity, never married, employed and had Pre-University/ JC/ Vocational Institute/ITE/Diploma.
- Among those with suicidal ideation, 17.7% had SP and 10.6% had SA.
- Respondents with suicidal ideation had the highest risk of SP in their mid-40s and SA in their 20s (Figure 1).
- Individuals with mood disorders had 2.60 times higher odds (95% CI: 1.08-6.22) of SP than those without mood disorders.
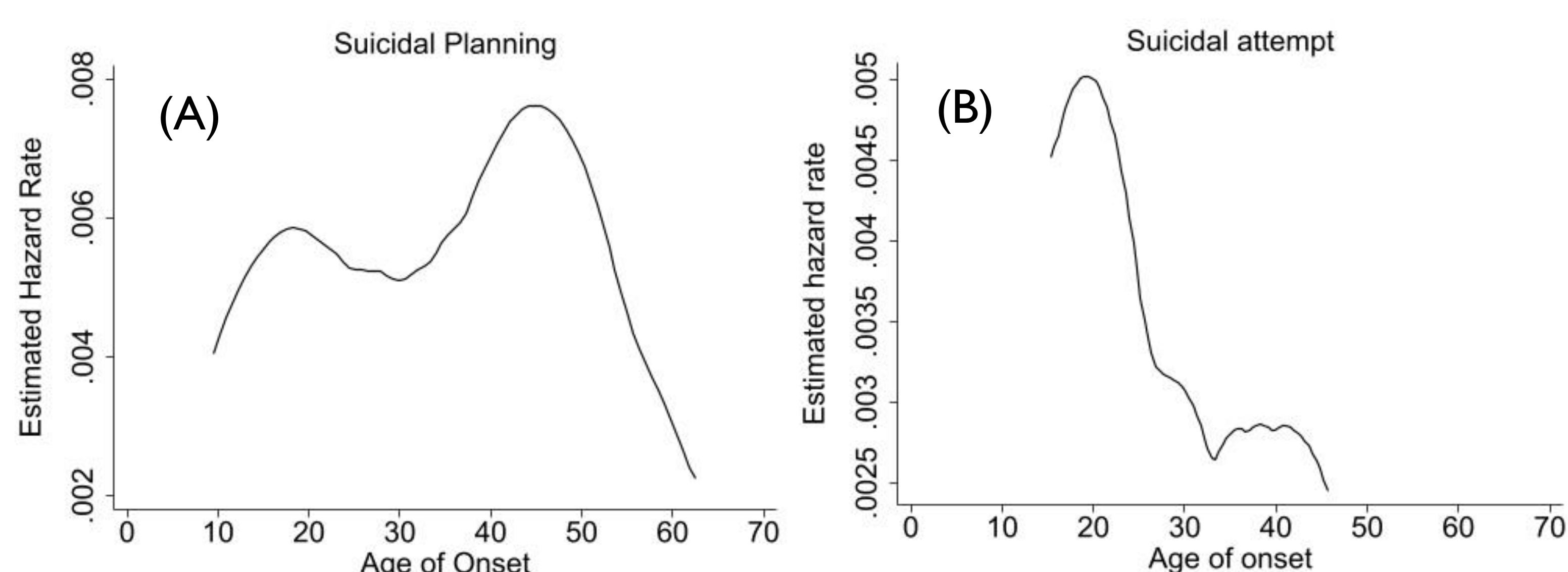


Figure 1: Hazard rate of (A) suicide planning based on age of onset and (B) suicide attempt based on age of onset

- SA was less likely among those who were never married (vs currently married; OR: 0.12, 95% CI: 0.02-0.64) and with university education (vs secondary level and below; OR: 0.15, 95% CI: 0.03-0.67) (Table 1).
- SA was more likely among those with prior SP (OR: 38.14, 95% CI: 8.93-162.79), history of anxiety disorders (OR: 10.25, 95% CI: 2.24-46.92), 2 ACEs (vs no ACEs; OR: 35.01, 95% CI: 1.11-1102.13), history of emotional neglect (OR: 9.19, 95% CI: 1.33-63.46) and parental separation, divorce or death of a parent (OR: 28.22, 95% CI: 5.29-150.45) (Table 1 and 2).

| | OR (95% CI) | p-value |
|---|---|---|
| **Marital Status** | | |
| Currently married (Ref.) | | |
| Never married | 0.12 (0.02 - 0.64) | **0.014** |
| Separated | 2.07 (0.17 - 25.36) | 0.568 |
| Widowed | - | - |
| **Education** | | |
| Secondary education and below (Ref.) | | |
| Pre-University/JC/Vocational Institute/ITE/Diploma | 0.80 (0.11 - 6.02) | 0.824 |
| University | 0.15 (0.03 - 0.67) | **0.013** |
| **Prior suicide planning** | 38.14 (8.93 - 162.79) | **< 0.001** |
| **Anxiety Disorders** | 10.25 (2.24 - 46.92) | **0.003** |
| **Number of ACEs** | | |
| 0 ACE | | |
| 1 ACE | 20.94 (0.51 - 856.25) | 0.108 |
| 2 ACEs | 35.01 (1.11 - 1102.13) | **0.043** |
| 3 or more ACEs | 21.46 (0.49 - 941.69) | 0.112 |

The model also included other variables (age of onset for suicide ideation, age, gender, ethnicity, employment status, prior mental disorders)

Table 1: Significant correlates for SA among those with suicidal ideation

| | OR (95% CI) | p-value |
|---|---|---|
| **Emotional Neglect** | 9.19 (1.33 - 63.46) | **0.025** |
| **Parental separation, divorce or death of a parent** | 28.22 (5.29 - 150.45) | **< 0.001** |

The model also included other variables (age, gender, ethnicity, marital status, employment status, education, prior mental disorders and other components of ACEs)

Table 2: Significant ACEs for SA among those with suicidal ideation

## IV. DISCUSSION AND CONCLUSION

- Our findings suggest that suicide attempts can be prevented with timely and appropriate intervention, especially since those with prior suicide planning were more likely to attempt suicide.
- Efforts to identify and support children who have experienced ACEs can be effective in preventing suicide later in life.
- High-risk individuals can be identified by assessing pre-existing mental disorders, background of dysfunctional family, history of emotional abuse and prior suicidal behaviour.

## V. LIMITATIONS

- The prevalence of suicidal behaviour may be underestimated due to criminalization of suicidal behaviour when the survey was conducted.
- Recall bias may be present as respondents may have problems recalling the age of onset for the various mental disorders and suicide behaviours.

### References

Nock MK, Borges G, Bromet EJ, Alonso J, Angermeyer M, Beautrais A, et al. Cross-national prevalence and risk factors for suicidal ideation, plans and attempts. Br J Psychiatry. 2008 Feb;192(2):98–105

### Acknowledgement