

Prevalence, characteristics and risk factors of suicides in Denpasar from 2014-2016

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ABSTRACT

Suicide is an important health issue worldwide which is generally on the rise from annually. It has no known pathophysiology; it interlinks psychological, biological, societal and environmental factors.

Aim: This study was conducted to identify the prevalence and various variables, such as characteristics, methods and risk factors of attempted and completed suicides.

Methods: This is a cross-sectional descriptive study which was conducted in Denpasar from 2014-2016 and the subjects of study are those attempted and died from suicides. Data were collected from resident's log book and medical records from Psychiatric and Forensic departments in RSUP Sanglah and police reports from Polresta Denpasar. Data collected from Polresta has also included those from Forensic.

Results: Age group 15-29 years (121), females (118), married people (82), private sector employees (109), and Balinese (108) have highest numbers of suicide attempts in their respective character groups. Poisoning (145) and problems with a partner (99) are the most typical methods of choice and risk factor respectively among the 176 cases of attempted suicides. Age group 30-49 years (11), males (17), married people (16), private sector employees (16), and Balinese (13) have highest numbers of completed suicides. Hanging (22) and economy crisis (13) are the most prevalent method and risk factor among the 23 cases of completed suicides.

Conclusion: Findings of this study show that there were 176 suicide attempts and 23 suicide deaths in Denpasar from 2014-2016.

Keyword: Suicide, age, sex, marital status, occupation, race

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INTRODUCTION

Suicide is one of the critical health issues worldwide. It is one's act of intentionally ending his/her life. In the vast field of medical, it is considered as a public health issue. It does not include a single factor but interlinks psychological, biological and societal factors.¹ Before further deliberating on the issues surrounding suicide, it is essential first to look into history to get a glimpse of it. As far back in time as the 17th century, suicide widely considered morally wrong even if the person is ending his/her own life. In contrast to it, some saw it as free will where a person has the right to end his/her life. However, assisted suicide where a person helps in any way for another person to commit suicide was strongly viewed as wrong and immoral. In the 19th century, it was looked as determinism vs. free will.²

A French writer named Voltaire stated in Philosophical Dictionary some scientific conclusions regarding suicides based on the pattern or repeated facts over 200 years (from history). Voltaire stated that 1) it happen more in cities than in rural areas, 2) people in cities undergo more depression, 3) it can be inherited as moral character is inherited, 4) some suicides happen as a way of people taking revenge against someone. These conclusions from Voltaire had a significant influence on studies on it later on as especially in

20th century. Voltaire's scientific findings are similar to Emile Durkheim's, a French sociologist, ideas who stated the links between urban work, neurasthenia and egoistic suicide. Durkheim also noted the relationship between depression and suicide mainly from social isolation. Both Voltaire and Durkheim stated that it is a form of social deviance.²

In recent years, Thomas Joiner, an American psychologist brought an interpersonal theory of suicide. In this approach, he states three main factors for people committing suicide, such as the perception that they are alone and no one cares for them, feeling that they are a burden to others and it's better if they are dead, and fearless toward death & pain.³ The final factor, fearlessness can be learned over time according to him. He explains the strong association between self-harming behavior and suicide. Moreover, constant exposure to the suffering and pain of others also leads someone to develop this fearlessness over time.

Although suicide is a health issue, there is no known pathophysiology for itself (and also depression). As stated above, suicide interlinks behavioral, socio-environmental and psychiatric factors. Although there is no direct evidence for the pathophysiology, post-mortem of people died by committing suicide show low levels of

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brain-derived neurotrophic factor (BDNF) in hippocampus and prefrontal cortex. Moreover, deceased have also shown reduced serotonin levels. These are also related to the unhealthy mental state of humans like immense stress or major depression.⁴ However, there are recommendations and suggestions for larger scale studies to learn more about this association.

Over the past decades, the suicidal problem has shifted from Western Europe to Eastern Europe to Asia.⁵ According to World Health Organization (WHO), in 2015 worldwide suicidal rate is 10.7 per 100,000 population.⁶ South-East Asia has the highest age-standardized suicide rate compare to other regions.⁷ The age-standardized suicide rate in South-East Asia in 2015 is 13.27 per 100,000 population.⁸ A recent review of suicide also shows that Asia has higher average rate compared to higher-income countries. However, this might not be the accurate number as many low- to middle-income countries have no available national suicide data or has no very reliable data.⁵ As for South Asia, most reviews and databases mainly included India and Sri Lanka. It has shown that in South-East Asia, the highest suicidal rate is in Sri Lanka, 35.3 per 100,000 population.⁹

In 66th World Health Assembly, first ever Mental Health Action Plan of WHO was declared. One major criterion is suicide prevention and also the aim to reduce the suicide rate in countries by 10% by 2020.¹⁰ It is also evident that the stigma for mental health and suicide is high in many countries worldwide which makes it hard for people to seek help.¹¹ Thus, this study hopes to contribute to the knowledge of readers regarding suicide. This study deliberates and discusses the issues surrounding them.

METHODS

This research is a descriptive study of the prevalence, characteristics and risk factors of suicides in Denpasar from 2014-2016. The target population is all people who committed suicide in Denpasar. All suicide cases recorded in medical records in Psychiatric and Forensic departments in Sanglah General Hospital and police reports in Polresta Denpasar.

Age of samples and gender are determined from medical records and police reports. Samples are divided into age groups as stated in WHO's report on preventing suicide, titled Preventing Suicide: A Global Imperative published in 2014. The age groups are 5-14, 15-29, 30-49, 50-69 and 70+ years old.¹⁰ In reports published by WHO and other

studies, genders in suicidal cases are only divided into males and females. But transgender is stated as a high-risk group in suicidality in Kaplan Sadock 11th Edition published in 2015. Thus, samples in this study were divided into three gender groups, such as males, females, and transgender. Data on gender as transgender could easily be obtained from psychiatric medical records. However, it could be challenging in obtaining such precise gender data on transgender samples from forensic records and police reports as the detailed investigation would have needed to achieve it. The race is obtained from medical records and police reports. Data were analyzed for races and thus it can be categorized into different racial groups such as Balinese, or other Indonesian (such as Javanese, Chinese, etc.), whites, blacks, Indians, etc. They will make it possible to look at the differences in suicidal rates among different races in Denpasar. Occupational status is obtained from medical records and police reports. Samples mainly will be divided into employed and unemployed. Employed group can further be classified into the public sector and private sector workers. Marital status of the victim will be obtained from the available reports if it is stated there. Victim's marital status such as single, married, widowed or divorced also has a certain level of influence in suicidal rates across the world according to studies.

Methods used in attempted or completed suicide is obtained from medical records and police reports. It can mainly be classified into both lethal (violent) and non-lethal (non-violent). Lethal is such as firearms, hanging, jumping (falls) and cutting wrist. Non-lethal methods are such as poisoning and drowning. Risk factors for the suicides are determined from medical records and police reports. Risk factors can be divided into biopsychosocial, environmental and sociocultural. These can further be classified according to each category such as psychiatric illness, chronic illness, unemployment, sexual orientation, bullying, etc.

RESULTS

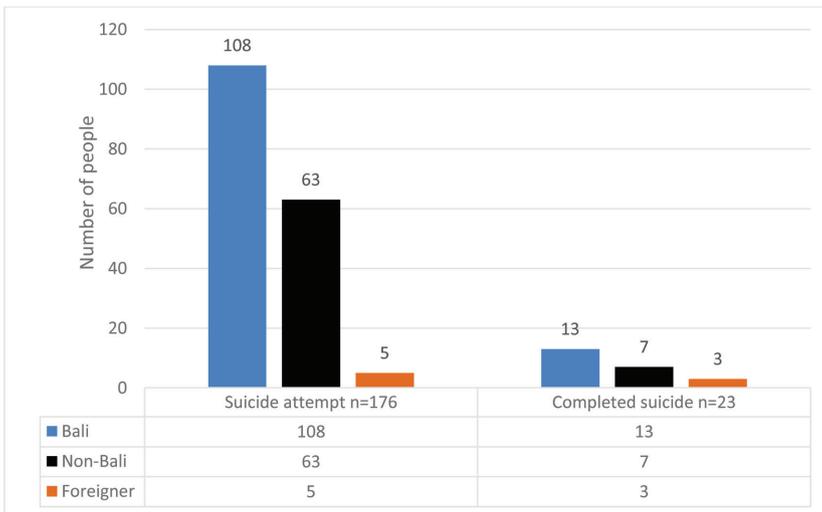
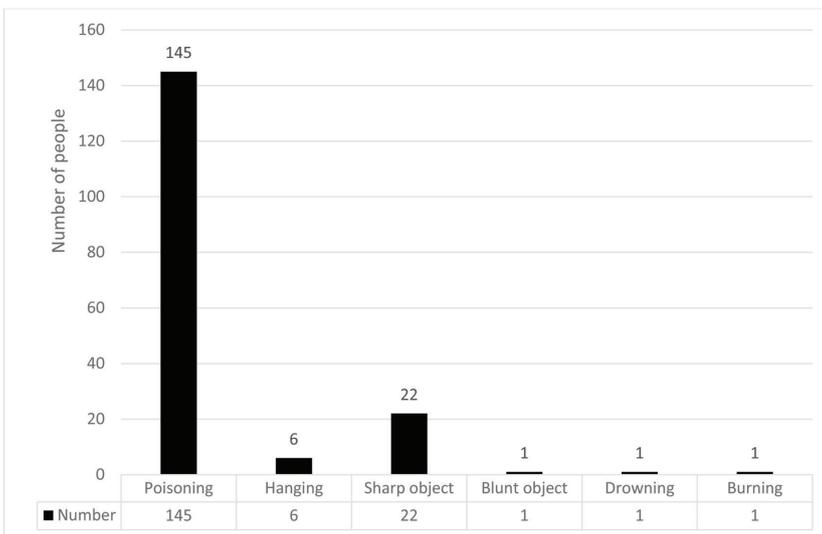
Table 1 shows that number of attempted suicide in the age group of 15-29 years is 121 people, in the age group 30-49 years is 44 people and in the age group 50-69 years is 11 people. In case of some suicides in the 15-29 age group is 7 people, 11 people (30-49 years) and in the age group 50-69 years is 5 people. Based on them, it might confirm that most suicide attempts were in the age group of 15-29 years, and the highest number of

Table 1 Characteristics of the secondary data as the findings of an observational study

| Type of Case | Age group (years) | | | Sex | | Marital Status | | | Occupation | | | |
|-------------------|-------------------|-------|-------|------|--------|----------------|--------|----------|------------|-----|---------|-------|
| | 15-29 | 30-49 | 50-69 | Male | Female | Married | Single | Divorced | Student | UE* | Private | PNS** |
| Suicide Attempt | 121 | 44 | 11 | 58 | 118 | 82 | 77 | 17 | 14 | 49 | 109 | 4 |
| Completed Suicide | 7 | 11 | 5 | 17 | 6 | 16 | 7 | 0 | 2 | 5 | 16 | 0 |

*UE = Unemployed;

**PNS = "Pegawai Negeri Sipil" or civil servants

**Graphic 1** Race among the subjects**Graphic 2** Methods of suicide attempts among the subjects

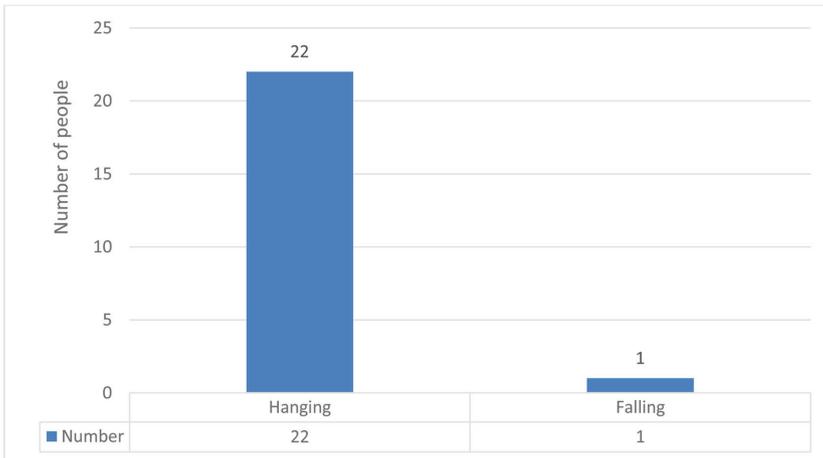
successful suicides was recorded in the age group of 30-49 years.

Of the 176 suicide attempts, 118 were females and 58 were males, while in the group of succeeded suicides, 17 were males and 16 were females. Based on those findings, it might ensure that the suicide attempts were highest in females while completed suicides were highest in males. Of the 176 people who attempted suicide, 82 were married, 77 were

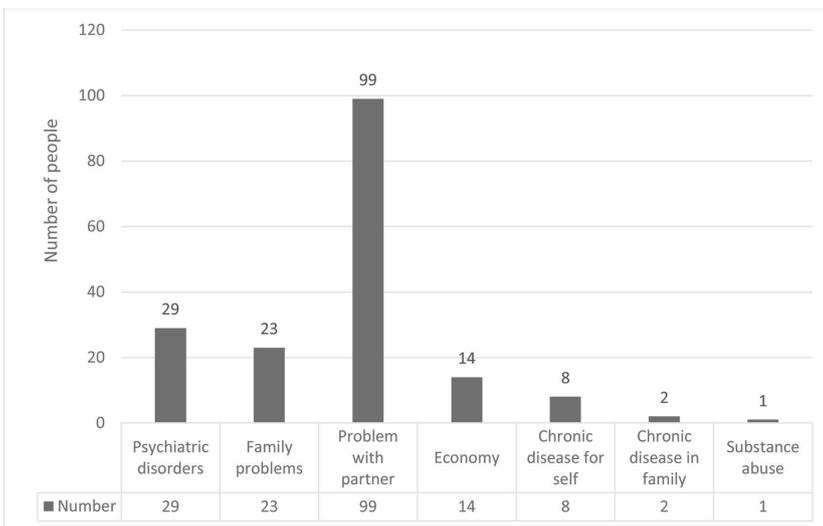
singles, and 17 were divorced. 16 were married, and 7 were singles among the 23 cases of completed suicide. Based on the data, most of the subjects who attempted suicide and committed suicide were married. Occupation of the subjects is categorized into students, civil servants (PNS), private sector employees and unemployed. Among those who attempted suicide, 14 were students (3 senior high school and 11 university students), 49 were unemployed, 109 were private sector employees, and 4 were civil servants. In case of suicides, 2 were students (both were university students), 5 were unemployed, and 16 were private sector employees. Based on the findings, most of the subjects who attempted suicide and committed suicide were private sector employees. All of those are shown in the [Table 1](#).

Among the subjects that attempted suicide, 108 were from Bali, 63 were from outside Bali, and 5 were foreigners. In case of completed suicides, 13 were from Bali, 7 were from outside Bali, and 3 were foreigners ([Graphic 1](#)). Methods used by the samples in attempted suicides and completed suicides are presented in [Graphic 2](#) and [3](#). It seems that the method used in suicide attempts are drinking poison (145), hanging (6), self-harming with sharp objects (22), self-harming with blunt objects (1), drowning (1) and burning themselves (1). 22 subjects were committed suicide by hanging themselves, while 1 by falling (jumped off a cliff). Based on those results, most of the subjects attempted suicide by drinking poison, while most committed suicide by hanging themselves.

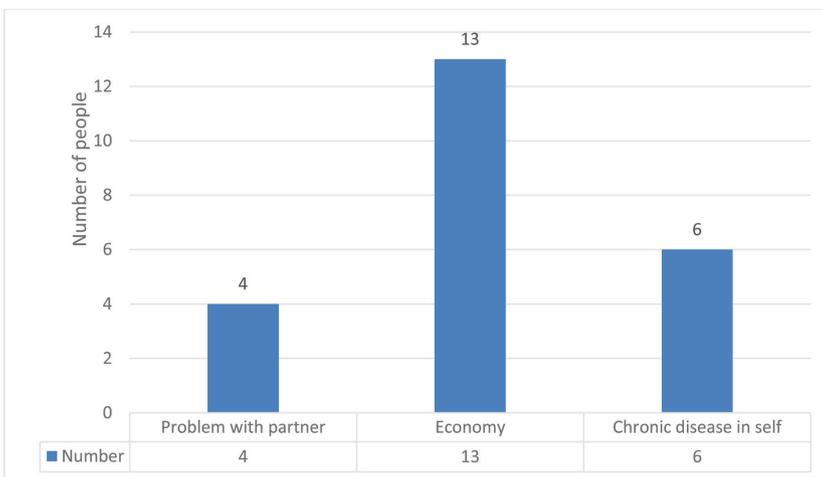
Among 176 subjects who attempted suicide, 29 had psychiatric disorders, 23 had family problems, 99 had relationship problems with their partners, 14 had financial issues, 8 had a chronic illness, 2 had family members with chronic disease, and 1 had been involved in substance abuse. On the other hand, among 23 people who committed suicide, 4 had relationship problems with their partners, 13 had financial issues (economy), and 6 had a chronic illness. Based on the data, most of the people who committed suicide had financial problems whereas most of the subjects who attempted it had relationship problems with their partner ([Graphic 4](#) and [5](#)).



Graphic 3 Methods of completed suicides among the subjects



Graphic 4 Risk factors of suicide attempts among the subjects



Graphic 5 Risk factors of completed suicide among the subjects

DISCUSSION

Age and Gender

Based on this study, most of the cases of attempted suicides were in the age group of 15-29 years, while in completed suicides one, most were in the age group of 30-49 years. In a study conducted by Pompili, et al. (2014) on risk factors through psychological autopsies on 245 subjects, it shows that its incidence was more common in the age group of 37-41 years, which is similar to that obtained in this study.¹² However, a study by Erlangsen, et al. (2014) on the prediction of suicides among subjects with physical illness, recorded that its incidence was highest in the age group of 65-79 years.¹³ Another study by Huang et al. (2014) regarding the five main risk factors for suicides in hospitalized patients in China, found that the average age range of patients with suicide attempts are 40-49 years. It is related to the findings of this study.¹⁴ Those studies show suicide cases (both attempted and succeeded) in Denpasar tend to be higher among the productive age groups. Various problems that potentially become stressful life events happen in those ages such as termination of employment, economic difficulty, workplace situations or problems with a spouse which causes an increased level of stress that leads to suicides.¹⁵

The incidence of suicides after the death of kin on 1,748,069 subjects over a period of 21 years found that its suicide attempts was higher among women than men, but the death by suicides were highest in men, similar to those obtained in this study.¹⁶ A study conducted by Pompili et al. (2014) on 245 subjects through psychological autopsy method concludes that female sex is a risk factor for suicide attempts compared to male.¹² Another study by Gupta et al. (2016) study on the risk factors of suicides in patients with major depression found that females often attempted suicides compared to males. These findings are similar to and thus, supporting the results obtained from this study.¹⁷ Although men have lower numbers of suicide attempts, they have higher numbers of deaths from suicides as they choose more lethal methods to commit suicide and have stronger intention to end their lives than women.^{18,19}

Marital Status

In this study, it was found that most of the subjects in the group of suicide attempts and completed suicides are married. A case-control study by Giupponi et al. (2017) on risk factors in 131 cases,

recorded that 70% of their study subjects were not married, but there was no significant correlation between marital status among the suicides.²⁰ The report was contradicts with the findings obtained by a researcher in this study. Another study by Kodaka et al. (2017) on the risk factors for suicide in individuals in Japan, involving 102 cases of suicide over 20 years, noted that almost 80% of the samples are married.²¹ The report is consistent with that obtained in this study.

Occupation and Race

Most people who attempted suicide and died were Balinese people. This finding is mainly due to the location of this study which is Denpasar located in Bali. In additional, most of the subjects in this study who attempted suicides and committed suicides were private sector employees. The case-control study by Giupponi et al. (2017) on risk factors in 131 cases found that 40% of them are unemployed, inconsistent with findings of this study.²⁰ The study conducted by Kodaka et al. (2017) on the risk factors for suicide in individuals in Japan, involving 102 cases over 20 years recorded that 60% of the subjects were unemployed as well.²¹ The report is also inconsistent with the findings of this study.

Methods of Suicide

Most of the subjects in this study attempted suicides by drinking poison and committed suicides by hanging themselves. Research by Park (2015) on sex differences and methods of suicides on 2018 cases in three countries, Korea, Japan, and Finlandia, recorded that most succeeded suicides happened through hanging with a mean of 60% of the total cases.²² That findings supports the results of this study. Another study conducted by Jamison & Bol (2016) on the effect of suicide attempts in the past to the methods of future suicide attempts found that 337 subjects chose to drink poison in their effort for the first time, supporting findings obtained in this study.²³

Risk Factors

Based on this research, most of whom attempted suicides had relationship issues with their partners whereas financial problems were the most common risk factor among those who died from suicides. Focusing on the smaller number of students with suicide attempts (14), 11 of them attempted suicide due to problems with their partners (boyfriend or girlfriend). Problems with life partners become a significant stressor for individuals which creates a sense of loneliness and eventually causes a thought of despair in a relationship. This case ultimately develops into suicide attempts.²⁴ Financial issues

were a common risk factor that leads many to suicides.^{20,25} These findings support the results obtained in this study where economic problems majorly led to suicide cases. The previous survey also shows that long-term financial problems create a greater feeling of hopelessness in life which causes individuals to end their lives through suicide.²⁵

LIMITATIONS

This study was only able to describe the characteristics and risk factors of suicides as a descriptive study. This study does not explicitly analyse the correlation between the characteristics or risk factors and the main issue, suicides.

CONFLICT OF INTERESTS

Author states that there is no conflict of interest during the study.

CONCLUSION

From 2014 to 2016 there were 176 cases of attempted suicides and 23 completed suicides. Age group of 15-29 years has highest suicide attempts, while 30-49 years have the most top incidents of completed suicide. Suicide attempts are majorly dominated by the females, while completed suicides are higher in males. Both attempted and completed suicides were found highest among private sector employees which contradicts with findings from some other studies that these rates are highest in unemployed groups. Hanging to death was the most common method of committing suicide while poisoning was the most common method of attempting suicide. The most significant risk factor that leads to suicide attempts is a problem with life partner while suicide deaths are financial issue (debt).

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