

Peeling the onion ; a root cause analysis of increasing suicide rate

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Abstract: Suicide is the act of intentionally causing one's own death. Mental disorders—including depression, bipolar disorder, autism, schizophrenia, personality disorders, anxiety disorders, physical disorders such as chronic fatigue syndrome, and substance abuse—including alcoholism and the use of and withdrawal from benzodiazepines—are risk factors.^{[2][3]} Some suicides are impulsive acts due to stress (such as from financial or academic difficulties), relationship problems (such as breakups or deaths of close ones), or harassment/bullying.^[2] Those who have previously attempted suicide are at a higher risk for future attempts.^[2] Effective suicide prevention efforts include limiting access to methods of suicide—such as firearms, drugs, and poisons; treating mental disorders and substance misuse; careful media reporting about suicide; and improving economic conditions. Even though crisis hotlines are common, they have not been well studied. The most commonly used method of suicide varies between countries, and is partly related to the availability of effective means. Common methods of suicide include hanging, pesticide poisoning, and firearms.^[2] Suicides resulted in 828,000 global deaths in 2015, an increase from 712,000 deaths in 1990.^[inconsistent] This makes suicide the 10th leading cause of death worldwide.^{[3][6]}

Suicidal thoughts have many causes. Most often, suicidal thoughts are the result of feeling like you can't cope when you're faced with what seems to be an overwhelming life situation. If you don't have hope for the future, you may mistakenly think suicide is a solution. You may experience a sort of tunnel vision, where in the middle of a crisis you believe suicide is the only way out. There also may be a genetic link to suicide. People who complete suicide or who have suicidal thoughts or behavior are more likely to have a family history of suicide.

Keywords Suicide, India, epidemiology, prevention

Introduction

Suicide[†] is among the top three causes of death among youth worldwide. According to the WHO, every year, almost one million people die from suicide and 20 times more people attempt suicide; a global mortality rate of 16 per 100,000, or one death every 40 seconds and one attempt every 3 seconds, on average. Suicide worldwide was estimated to represent 1.8% of the total global burden of disease in 1998; in 2020, this figure is projected to be 2.4% in countries with market and former socialist economies. According to the most recent World Health Organization (WHO) data that was available as of 2011,[1] the rates of suicide range from 0.7/100,000 in the Maldives to 63.3/100,000 in Belarus. India ranks 43rd in descending order of rates of suicide with a rate of 10.6/100,000 reported in 2009 (WHO suicide rates).[1] The rates of suicide have greatly increased among youth, and youth are now the group at highest risk in one-third of the developed and developing countries. The emerging phenomenon of “cyber-suicide” in the internet era is a further cause for concern;[2,3] also because the use of new methods of suicide are associated with epidemic increases in overall suicide rates.[4] Suicide is nevertheless a private and personal act and a wide disparity exists in the rates of suicide across different countries. A greater understanding of region-specific factors related to suicide would enable prevention strategies to be more culturally sensitive. This focus is also highlighted in the September 10, 2012 World Suicide Prevention Day theme “Suicide Prevention across the Globe: Strengthening Protective Factors and Instilling Hope”. [5] This qualitative review explores the historical and epidemiological aspects of suicide in with a special focus on India. We hope that exposure of the problem will facilitate primary prevention planning.

Risk factors

Factors that affect the risk of suicide include mental disorders, drug misuse, psychological states, cultural, family and social situations, genetics, experiences of trauma or loss, and nihilism. Mental disorders and substance misuse frequently co-exist Other risk factors include having previously attempted suicid the ready availability of a means to take

one's life, a family history of suicide, or the presence of traumatic brain injury For example, suicide rates have been found to be greater in households with firearms than those without them.^[54]

Socio-economic problems such as unemployment, poverty, homelessness, and discrimination may trigger suicidal thoughts. Suicide might be rarer in societies with high social cohesion and moral objections against suicide About 15–40% of people leave a suicide note. War veterans have a higher risk of suicide due in part to higher rates of mental illness, such as post traumatic stress disorder, and physical health problems related to war Genetics appears to account for between 38% and 55% of suicidal behaviors. Suicides may also occur as a local cluster of cases.

Most research does not distinguish between risk factors that lead to thinking about suicide and risk factors that lead to suicide attempts. Risks for suicide attempt rather than just thoughts of suicide include a high pain tolerance and a reduced fear of death.

Mental illness

Mental illness is present at the time of suicide 27% to more than 90% of the time. Of those who have been hospitalized for suicidal behavior, the lifetime risk of completed suicide is 8.6%. Comparatively, non-suicidal people hospitalized for affective disorders have a 4% lifetime risk of suicide. Half of all people who die by suicide may have major depressive disorder; having this or one of the other mood disorders such as bipolar disorder increases the risk of suicide 20-fold Other conditions implicated include schizophrenia (14%), personality disorders (8%), obsessive compulsive disorder, and posttraumatic stress disorder. Those with autism spectrum disorders also attempt and consider suicide more frequently.

Others estimate that about half of people who complete suicide could be diagnosed with a personality disorder, with borderline personality disorder being the most common. About 5% of people with schizophrenia die of suicide. Eating disorders are another high risk condition.

Among approximately 80% of completed suicides, the individual has seen a physician within the year before their death including 45% within the prior month. Approximately 25–40% of those who completed suicide had contact with mental health services in the prior year. Antidepressants of the SSRI class appear to increase the frequency of suicide among children but do not change the risk among adults. An unwillingness to get help for mental health problems also increases the risk.

Psychosocial factors

A number of psychological factors increase the risk of suicide including: hopelessness, loss of pleasure in life, depression, anxiousness, agitation, rigid thinking, rumination, thought suppression, and poor coping skills. A poor ability to solve problems, the loss of abilities one used to have, and poor impulse control also play a role. In older adults, the perception of being a burden to others is important. Those who have never married are also at greater risk. Recent life stresses, such as a loss of a family member or friend or the loss of a job, might be a contributing factor.

Certain personality factors, especially high levels of neuroticism and introvertedness, have been associated with suicide. This might lead to people who are isolated and sensitive to distress to be more likely to attempt suicide. On the other hand, optimism has been shown to have a protective effect. Other psychological risk factors include having few reasons for living and feeling trapped in a stressful situation. Changes to the stress response system in the brain might be altered during suicidal states. Specifically, changes in the polyamine system and hypothalamic–pituitary–adrenal axis.

Social isolation and the lack of social support has been associated with an increased risk of suicide. Poverty is also a factor, with heightened relative poverty compared to those around a person increasing suicide risk. Over 200,000 farmers in India have died by suicide since 1997, partly due to issues of debt. In China, suicide is three times as likely in rural regions as urban ones, partly, it is believed, due to financial difficulties in this area of the country.

The time of year may also affect suicide rates. There appears to be a decrease around Christmas, but an increase in rates during spring and summer, which might be related to exposure to sunshine. Another study found that the risk may be greater for males on their birthday.

Being religious may reduce one's risk of suicide while beliefs that suicide is noble may increase it. This has been attributed to the negative stance many religions take against suicide and to the greater connectedness religion may give. Muslims, among religious people, appear to have a lower rate of suicide; however the data supporting this is not strong. There does not appear to be a difference in rates of attempted suicide. Young women in the Middle East may have higher rates.

Substance misuse

Substance misuse is the second most common risk factor for suicide after major depression and bipolar disorder. Both chronic substance misuse as well as acute intoxication are associated. When combined with personal grief, such as bereavement, the risk is further increased. Substance misuse is also associated with mental health disorders.

Most people are under the influence of sedative-hypnotic drugs (such as alcohol or benzodiazepines) when they die by suicide, with alcoholism present in between 15% and 61% of cases. Use of prescribed benzodiazepines is associated with an increased rate of attempted and completed suicide. The pro-suicidal effects of benzodiazepines are suspected to be due to a psychiatric disturbance caused by side effects, such as disinhibition, or withdrawal symptoms. Countries that have higher rates of alcohol use and a greater density of bars generally also have higher rates of suicide. About 2.2–3.4% of those who have been treated for alcoholism at some point in their life die by suicide. Alcoholics who attempt suicide are usually male, older, and have tried to take their own lives in the past. Between 3 and 35% of deaths among those who use heroin are due to suicide (approximately fourteenfold greater than those who do not use). In adolescents who misuse alcohol, neurological and psychological dysfunctions may contribute to the increased risk of suicide.

The misuse of cocaine and methamphetamine has a high correlation with suicide. In those who use cocaine, the risk is greatest during the withdrawal phase. Those who used inhalants are also at significant risk with around 20% attempting suicide at some point and more than 65% considering it. Smoking cigarettes is associated with risk of suicide. There is little evidence as to why this association exists; however, it has been hypothesized that those who are predisposed to smoking are also predisposed to suicide, that smoking causes health problems which subsequently make people want to end their life, and that smoking affects brain chemistry causing a propensity for suicide. Cannabis, however, does not appear to independently increase the risk.

Medical conditions

There is an association between suicidality and physical health problems such as chronic pain, traumatic brain injury, cancer, chronic fatigue syndrome, kidney failure (requiring hemodialysis), HIV, and systemic lupus erythematosus. The diagnosis of cancer approximately doubles the subsequent frequency of suicide. The prevalence of increased suicidality persisted after adjusting for depressive illness and alcohol abuse. Among people with more than one medical condition the frequency was particularly high. In Japan, health problems are listed as the primary justification for suicide.

Sleep disturbances, such as insomnia and sleep apnea, are risk factors for depression and suicide. In some instances, the sleep disturbances may be a risk factor independent of depression. A number of other medical conditions may present with symptoms similar to mood disorders, including hypothyroidism, Alzheimer's, brain tumors, systemic lupus erythematosus, and adverse effects from a number of medications (such as beta blockers and steroids).

The media, including the Internet, plays an important role. Certain depictions of suicide may increase its occurrence, with high-volume, prominent, repetitive coverage glorifying or romanticizing suicide having the most impact. When detailed descriptions of how to kill oneself by a specific means are portrayed, this method of suicide can be imitated in

vulnerable people. This phenomenon has been observed in several cases after press coverage. In a bid to reduce the adverse effect of media portrayals concerning suicide report, one of the effective methods is to educate journalists on how to report suicide news in a manner that might reduce that possibility of imitation and encourage those at risk to seek for help. When journalists follow certain reporting guidelines the risk of suicides can be decreased. Getting buy-in from the media industry, however, can be difficult, especially in the long term.

This trigger of suicide contagion or copycat suicide is known as the "Werther effect", named after the protagonist in Goethe's *The Sorrows of Young Werther* who killed himself and then was emulated by many admirers of the book. This risk is greater in adolescents who may romanticize death. It appears that while news media has a significant effect; that of the entertainment media is equivocal. It is unclear if searching for information about suicide on the Internet relates to the risk of suicide. The opposite of the Werther effect is the proposed "Papageno effect", in which coverage of effective coping mechanisms may have a protective effect. The term is based upon a character in Mozart's opera *The Magic Flute*—fearing the loss of a loved one, he had planned to kill himself until his friends helped him out. As a consequence, fictional portrayals of suicide, showing alternative consequences or negative consequences, might have a preventive effect, for instance fiction might normalize mental health problems and encourage help-seeking.

Other factors

Trauma is a risk factor for suicidality in both children and adults. Some may take their own lives to escape bullying or prejudice. A history of childhood sexual abuse and time spent in foster care are also risk factors. Sexual abuse is believed to contribute to approximately 20% of the overall risk. Significant adversity early in life has a negative effect on problem-solving skills and memory, both of which are implicated in suicidality.

Problem gambling is associated with increased suicidal ideation and attempts compared to the general population. Between 12 and 24% pathological gamblers attempt suicide. The rate of suicide among their spouses is three times greater than that of the general population. Other

factors that increase the risk in problem gamblers include concomitant mental illness, alcohol, and drug misuse.

Genetics might influence rates of completed suicides. A family history of suicide, especially in the mother, affects children more than adolescents or adults. Adoption studies have shown that this is the case for biological relatives, but not adopted relatives. This makes familial risk factors unlikely to be due to imitation. Once mental disorders are accounted for, the estimated heritability rate is 36% for suicidal ideation and 17% for suicide attempts. An evolutionary explanation for suicide is that it may improve inclusive fitness. This may occur if the person dying by suicide cannot have more children and takes resources away from relatives by staying alive. An objection is that deaths by healthy adolescents likely does not increase inclusive fitness. Adaptation to a very different ancestral environment may be maladaptive in the current one.

Infection by the parasite *Toxoplasma gondii*, more commonly known as toxoplasmosis, has been linked with suicide risk. One explanation states that this is caused by altered neurotransmitter activity due to the immunological response.

There appears to be a link between air pollution and depression and suicide.

Conclusion

The traditional approach has been to identify the risk factors that increase suicide or self-harm, though meta-analysis studies suggest that suicide risk assessment might not be useful and recommend immediate hospitalization of the person with suicidal feelings as the healthy choice. In 2001, the U.S. Department of Health and Human Services, published the National Strategy for Suicide Prevention, establishing a framework for suicide prevention in the U.S. The document, and its 2012 revision, calls for a public health approach to suicide prevention, focusing on identifying patterns of suicide and suicidal ideation throughout a group or population (as opposed to exploring the history and health conditions that could lead to suicide in a single individual). The ability to recognize warning signs of suicide allows individuals who may be concerned about someone they know to direct them to help.

Suicide gesture and suicidal desire (a vague wish for death without any actual intent to kill oneself) are potentially self-injurious behaviors that a person may use to attain some other ends, like to seek help, punish others, or to receive attention. This behavior has the potential to aid an individual's capability for suicide and can be considered as a suicide warning, when the person shows intent through verbal and behavioral signs.

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