

A study of gender differences in psychiatric patients with attempted suicide

Hemendra Singh^{1,*}, Prabha S. Chandra², V. Senthil Kumar Reddi³

¹Assistant Professor, MS Ramaiah Medical College, ²Professor & HOD, ³Associate Professor, Dept. of Psychiatry, NIMHANS, Bengaluru

***Corresponding Author:**

Email: hemendradoc2010@gmail.com

Abstract

Background: Various studies have attributed gender based differences of suicidal behaviour to various socio-demographic factors; however there is need to study of the various clinical factors associated with gender based differences in psychiatric patients with suicide attempt.

Methods: One hundred eleven patients with current suicide attempt were evaluated for depression severity, hopelessness, suicide ideations, suicide intent, past attempts, both suicidal and non-suicidal self-injury (NSSI), and psychotic symptoms.

Results: The diagnostic breakup was - 30.6% schizophrenia spectrum disorders (SSD), 63.1% affective disorders (AD), and 6.3% other disorders. Over 60% of the suicide attempters were females. The most frequent reason given for attempting suicide was psychiatric illness in case of females, 36.02%, and psychotic symptoms, 28.6% in case of males. The number of suicide attempts and frequency of NSSI were in a higher range for females as compared with males. No significant differences were found in Beck Depression severity, hopelessness, suicide ideation, and suicide intent between males and females. Females used non-lethal methods as compared to males in patients with SSD ($p = 0.24$) and AD ($p = 0.04$).

Conclusion: Female suicide attempters were more than male suicide attempters, and the number of suicide attempts and the frequency of NSSI too were in a higher range for females. The most frequent reason for attempting suicide was different between females and males. Because attempted suicide is a risk factor for suicide at a later date, the implications of these gender-specific differences for clinical practice must be taken into consideration while framing measures for suicide prevention.

Key words: Gender, Suicide Attempt, Psychiatric Patients

Introduction

Major mental illnesses are a major contributory factor in suicide in both men and women. The most common psychiatric illnesses in the background of suicide are the affective disorder of unipolar major depression and the non-affective disorder of schizophrenia.^[1] Women are more prone for depression and other mental illnesses as compared to men. In most Western countries, suicide rates are relatively higher in men as compared to women whereas attempted suicide rates were higher in women.^[2,3,4,5,6,7,8] The male: female suicide ratio is more than three times in developed countries like Australia, Canada, the United States, and the United Kingdom,^[9] while it is narrower in Asian countries including India.^[10,11,12] There have been various explanations for gender differences in suicide. The reasons for more female suicide rate in India may be due to social and family stressors such as staying in abusive relationship and dowry demands.^[13,14]

In case of men low social and family support and depersonalization is associated with suicide, whereas in case of women depressive mood and anxiety are more strongly associated with suicide.^[15]

Although suicide is one of the major causes for mortality among psychiatric patients, in the Indian context research efforts in this area have been sparse. In India, suicide is a second leading cause of death in both men and women in the 15–29 age groups.^[16] Only very few studies have looked the gender differences in suicidal patients in India. Most of these studies have

been done in general population or patients attending a general hospital.^[17,18,19,20,21] It is unclear whether clinical and behavioral risk factors identified among men with psychiatric illnesses can be extended to women with attempted suicide. There is, therefore, a need for research in the Indian context that is based on a sample of psychiatric patients (with suicidal risk and who have been admitted to a tertiary psychiatric care centre) that examines the comparative gender differences in the clinical correlates of suicide attempt between the significantly important mental illnesses. This study aims to bridge this research gap in the Indian context.

Materials and Methods

Aims: To examine the comparative differences in the clinical correlates of suicide among male and female patients with attempted suicide.

To study the patient's self-report of the reasons for their current suicide attempt.

Inclusions and Exclusions Criteria: The study is based on a sample of 111 psychiatric patients with current suicide attempt who were admitted to the Emergency Psychiatry and Acute Care (EPAC) Service at the NIMHANS (National Institute of Mental Health and Neuro Sciences), Bengaluru, India. All psychiatric patients presenting to the EPAC Service of NIMHANS from June 2011 to May 2012, with current suicide attempt, and who were aged 17-60 years, were approached to participate in the study. Approval from

the Institute Ethics Committee of NIMHANS was obtained before initiating the study. Written informed consent was obtained from the patients. Patients with dementia, mental retardation, and organic mental disorders such as head injury, tumors, CNS infections, catatonia, and those with acute psychotic symptoms, which interfere with the understanding of procedures and/or tools, were excluded from the study.

Study procedures and tools: All assessments were done within 48 hours of inpatient care to avoid factors which would have reduced the patients' symptomatic severity. A structured proforma was designed to assess the socio-demographic details of the patients, their premorbid, personal, past, and family history. Questions related to clinical variables such as age of onset of illness, duration of illness, and the reason for wanting to commit suicide attempt were included. The psychiatric diagnosis of these 111 patients was made by using the Mini-International Neuropsychiatric Interview (M.I.N.I.). M.I.N.I. is a short structured clinical interview which enables researchers to make diagnoses of psychiatric disorders according to DSM-IV or ICD-10.^[22] For this study, Schizophrenia Spectrum Disorder (SSD) was defined as schizophrenia, delusional disorder, psychotic disorder not otherwise specified, schizoaffective disorder, and schizotypal personality disorder,^[23,24] while Affective Disorders (AD) was defined as major depressive disorders, bipolar affective disorders, and dysthymia.

The patients were systematically evaluated for depression severity, hopelessness, suicide ideations, suicide intent, past attempts, both suicidal and non-suicidal self-injury (NSSI), distress due to auditory hallucinations and delusions by using the Beck Depression Inventory (BDI),^[25] Beck Hopelessness Scale (BHS),^[26] Scale for Suicide Ideation (SSI),^[27] Suicide Intent Scale (SIS),^[28] Suicide Behavior Questionnaire (SBQ),^[29] and, PSYRATS (Psychotic Symptoms Rating Scales),^[30] respectively. A qualitative semi-structured interview was used to get the patient's own narrative about the reasons for wanting to commit suicide.

PSYRATS comprises interviewer administered scales designed to allow ratings of the severity of dimensions of auditory hallucinations and delusions. It consist of a 6-items structured interview designed to elicit the different dimensions of delusions and an 11-items structured interview designed to elicit specific details regarding different dimensions of auditory hallucinations. The scales have been found to demonstrate excellent inter-rater reliability and good validity against similar instruments in people with acute as well as chronic psychosis.^[31]

In our study, suicide attempters were divided into two groups: 1) Non-violent suicide attempters: Those who used non-violent methods for suicide attempt i.e. drug over dosage, superficial wrist cuts and

strangulation. b) Violent suicide attempters: Those who used violent methods for suicide attempt e.g. jumping from height, burn, stab injury, shooting and deep cuts. Similar classification of suicide methods has also been done in previous studies.^[31,32]

Data analysis: Results were analyzed using Statistical Package for the Social Sciences 16.0 version (Chicago, SPSS Inc., 2007). Chi-square test was used to find out the relation of categorical variables. Kolmogorov-Smirnov test was used to test for normality of the all variables. Mann-Whitney test and the Independent Sample t-test were applied to compare the mean values of BDI, BHS, SSI, and SIS scores across the gender and in the patients with SSD and AD. Multiple logistic regression was carried out to find out the independent factors such as duration of illness, age of onset, number of suicide attempts, frequency of NSSI, mean total scores of BDI, BHS, SIS, and SSI influence the suicide attempt across the gender.

Results

The diagnostic breakup was – 34(30.6%) schizophrenia spectrum disorders (SSD), 70(63.1%) affective disorders (AD), and 7(6.3%) other disorders. Around 60% of the respondents were females. Around 68% of the respondents were married. Further, the proportion of married suicide attempters was significantly high in both male and female patients as compared to unmarried patients ($p = 0.025$). More the 65% of females suicide attempters were studied upto secondary education while, nearly 55% of male suicide attempters educated above secondary education ($p = 0.039$). Similarly 75% of female suicide attempters were unemployed and more than 61% male suicide attempters were employed ($p = 0.00$). We have not found any statistically significant gender differences in other various socio-demographic variables. (Table 1)

The number of suicide attempts and frequency of NSSI were in a higher range for females as compared with males. No significant differences were found in Beck Depression severity, hopelessness, suicide ideation, and suicide intent between males and females. (Table 2)

The most frequent reason given for attempting suicide was psychiatric illness in case of females, 36.02%, and psychotic symptoms, 28.6% in case of males.

Male respondent have used more violent method for suicide attempt as compared to females ($p = 0.02$). (Table 1) Similarly in both, those with SSD ($p = 0.24$) and AD ($p = 0.04$), men used more violent methods for suicide as compared to women. (Table 3)

Multiple logistic regression was carried out to find out the independent factors such as duration of illness, age of onset, number of suicide attempts, frequency of NSSI, mean total scores of BDI, BHS, SIS, and SSI influence the suicide attempt across the gender.

However, none of these factors were found to be statistically significant.

Table 1: Socio-demographic Variables of Patients with Suicide attempts across the Gender

Characteristic		Male Number (%) N = 42	Female Number (%) N = 69	Statistic
Age (years)	Mean age (S. D.)	33.48 (\pm 9.6)	31.94 (\pm 10.4)	$t = 0.06$, $p = 0.440$
Marital status	Never married	19 (45.2)	17 (24.6)	$\chi^2 = 5.056$, $p = 0.025$
	Married	23 (54.8)	52 (75.4)	
Education	Upto10th Class)	19 (45.2)	45 (65.2)	$\chi^2 = 4.269$, $p = 0.039$
	Above 10th Class	23 (54.8%)	24 (34.8)	
Residence	Urban	28 (66.7)	45 (65.2)	$\chi^2 = 0.024$, $p = 0.876$
	Rural	14 (33.3)	24 (34.8)	
Occupation	Unemployed	16 (38.1)	52 (75.4)	$\chi^2 = 15.279$, $p = 0.000$
	Employed	26 (61.9)	17 (24.6)	
	Others	6 (14.3)	11 (15.9)	
Family history of suicide	No	35 (83.3)	59 (85.5)	$\chi^2 = 0.095$, $p = 0.758$
	Yes	7 (16.7)	10 (14.5)	
Family history of psychiatric illness	No	27 (64.3)	40 (58.0)	$\chi^2 = 0.435$, $p = 0.553$
	Yes	15 (35.7)	29 (42.0)	
Method of suicide attempt	Violent	34 (81.0)	42 (60.9)	$\chi^2 = 4.877$, $p = 0.027$
	Non-violent	8 (19.0)	27 (39.1)	
Reason for suicide	Illness	8 (19.0)	25 (36.02)	$\chi^2 = 4.794$, $p = 0.442$
	Psychotic symptoms	12 (28.6)	17 (24.6)	
	Family Discord	10 (23.8)	17 (24.6)	
	Unemployment	8 (19.0)	8 (11.6)	
	Relationship Failure	3 (7.2)	4 (5.8)	
	Death of relatives	1 (2.4)	0 (0.0)	
Violent Methods	Cutting	8 (19.0)	7 (10.1)	$\chi^2 = 15.158$, $p = 0.019$
	Swallowing Poison	15 (35.7)	11 (15.9)	
	Hanging	9 (21.4)	13 (18.8)	
	Jumping from Height	1 (2.4)	0 (0.0)	
	Drowning	0 (0.0)	2 (2.9)	
	Burning	1(2.4)	7 (10.1)	
Non-violent Methods	Hitting Self	0 (0.0)	2 (2.9)	$\chi^2 = 6.615$, $p = 0.158$
	Overdose pills	4 (9.5)	15 (21.7)	
	Strangulation	3 (7.1)	10 (14.5)	

Table 2: Clinical Variables of Suicide attempts across the Gender

Variables	Male	Female	Statistics
AOOI	27.45 \pm 8.06	26.03 \pm 8.686	$t = -0.775$, $P = 0.681$
DOI	75.40 \pm 68.12	70.22 \pm 76.38	$Z = -0.679$, $P = 0.497$
Number of SA	2.29 \pm 1.13	2.41 \pm 1.217	$Z = -0.453$, $p = 0.650$
Frequency of NSSI	0.36 \pm 0.48	0.58 \pm 0.881	$Z = -.738$, $P = 0.461$
BDI	32.12 \pm 14.96	35.32 \pm 15.623	$t = 1.063$, $P = 0.441$
BHS	12.79 \pm 6.11	13.0 \pm 5.95	$Z = -0.192$, $p = 0.848$
SIS	38.95 \pm 8.92	38.17 \pm 7.05	$t = -0.509$, $P = 0.217$
SSI	16.07 \pm 8.96	15.49 \pm 8.21	$t = -0.348$, $P = 0.426$

Note. AOOI: age of onset of illness in years; DOI: duration of illness in months; SA: Suicide attempts; NSSI: Non-Suicidal Self Injury; BDI: Beck Depression Inventory; BHS: Beck Hopelessness Scale; SSI: Beck Scale for Suicidal Ideation Scale; SIS: Beck Suicide Intent Scale.

Table 3: Gender differences in methods used for attempting suicide between those with SSD and those with AD

Type of Disorder	Method of Suicide attempt	Male	Female	Statistics
SSD	Violent methods	9 (75.0)	12 (54.5)	$\chi^2 = 1.376$, $p = 0.241$
	Non-violent methods	3 (25.0)	10 (45.5)	
AD	Violent methods	22 (84.6)	27 (61.4)	$\chi^2 = 4.207$, $p = 0.040$
	Non-violent methods	4 (15.4)	17 (38.6)	

Note: SSD: Schizophrenia Spectrum Disorders; AD: Affective Disorders

Discussion

Majority of suicide attempter were having affective disorders as reported in western studies.^[34,35] However, hospital and community based study from India have found that adjustment disorder was the common diagnosis in suicide attempter.^[21,36,37] Previous studies show that completed suicide is more in males^[35,38] while, suicide attempts are more in females.^[39,40,41] In this study we observe that though suicide attempts, history of NSSI and number of suicide attempts were higher in females, males have used more violent methods for suicide attempts. Further, the proportion of married suicide attempters was significantly high in both male and female patients as compared to unmarried patients. It appears that being a married is not a protective factor against suicide attempt in both male and female.

A previous study reports that males affected with schizophrenic disorders are less likely to attempt suicide as compared to males with affective or other disorders.^[42] In our study, we find that proportion of males among SSD and AD who attempted suicide were nearly same, 35.6% (12) and 37.1% (26) respectively. Our study suggests that compared with males affected with SSD, the risk of suicide attempt is substantially greater in females affected with SSD. Similar findings have been reported by earlier studies where risk of suicide attempt was higher in schizophrenic females.^[42,43]

We have not examined mortality due to completed suicide. Our study also supports previous observation that men used more lethal methods for suicide attempts as compared to women.^[44,45] It appears that female suicide attempters seek more help as compared to male attempters who might perceive more stigmas of psychiatric illnesses.^[3] Psychopathology also plays role in gender pattern of suicide in psychiatric patients. Studies have shown that women appear to have more affective symptoms while men talk less about their emotional distress and have greater propensity for impulsive behavior.^[3,46] In our study majority of female attempters were educated upto tenth and unemployed as

compared to male suicide attempters, who might not have access to lethal means as they probably stay majority of the time at their home. However, responsibility of children and availability of other family members near their vicinity could be protective against the more lethal suicide attempt in females.

The reasons given for suicide attempts were not significantly different between males and females. On multiple regressions, we find that age of onset of illness, number of past suicide or non-suicide injury, duration of illness, severity of hopelessness, depression or suicidal ideations scores are not significant contributing factors for suicide attempt across gender. Though majority of females were unemployed, however both males and female have attributed their suicide attempt to presence of mental illnesses, psychotic symptoms such as delusions and hallucinations, unemployment and family and personal conflicts. Even previous Indian studies also found presence of personal conflicts and family stressors are the important reason for suicide attempts.^[47,48,49]

It appears that the gender differences in reason for suicide attempts might be due to differences in psychopathology and cultural values prevailing in a specific region of the country. It is found that role of biological factors also equally important in determining the biological vulnerability for suicide attempt in psychiatric ill patients. Studies have shown that cyclical fluctuations in estrogen and progesterone may increase the susceptibility in females to mood and anxiety disorders and suicide.^[50,51,52] Another explanation for women choosing a less lethal method is probably less sensitivity of serotonin level in women to negative effects of altered dopamine levels, possibly the beneficial effects of estrogen on dopamine signaling.^[53] Female X and male Y chromosomes also responsible for somewhat different brain structure and function in the two sexes.^[54] There are other biological factors have been postulated to explain some of the gender differences in suicidal victims. The Brain-derived neurotrophic factor (BDNF), which improves adaptation to stress and adversity seems to be down-

regulated in male suicide victims, with about four times less in males compared to female suicide victims.^[55] In males, high testosterone level has also been linked to aggression and might explain some of the violence in male suicide victims.^[56]

This is first Indian study that examines the gender differences of reasons for wanting to commit suicide for major mental disorders based on data obtained from self-reports of the patients themselves. Our study has a few limitations; the first one being that it is a cross-sectional study, hence does not allow us to draw definite conclusions from these findings. Another limitation of the study is that it relies on retrospective self-reports of the patients on past NSSI and suicide attempts. Given the retrospective bias of reporting, several instances might have been classified as NSSI based on the patient's subjective report rather than on the basis of the method used. Lastly, the findings of the study cannot be generalized because the study is based on a sample of psychiatric inpatients with suicidal attempts in a tertiary care psychiatry center and thus might not reflect the real clinical picture of gender differences of suicide attempters in a hospital based sample of the Indian population. We have not used any structured tool to assess personality traits and objective measures of lethality.

Conclusions

This study stresses need for deferential assessment and preventive approach for both male and female suicide attempters in psychiatric patients as reason for suicide attempts are largely attributed for psychiatric illnesses and difference in their psychopathology. There is need for specific interventions such as early detection and treatment of psychiatric illnesses and focus on family and personal conflicts. Studies are required to elucidate role of various biological markers in Indian context, so that early detection of such marker might be helpful in risk assessment. Dichotomous understanding of methods for suicide attempt and their restriction is essential in preventive strategies and policy making for suicide prevention.

References

- Gonda X, Konstantinos NF, Kaprinis G, Rihmer Z. A prediction and prevention of suicide in patients with unipolar depression and anxiety. *Ann. Gen. Psychiatry* 2007;6(23):1744-1859.
- Kpsowa A, McElvain J. Gender, place, and method of suicide. *Soc Psychiatry Psychiatr Epidemiol* 2006;41:435-443.
- Moller-Leimkuhler A. The gender gap in suicide and premature death or: Why are men so vulnerable? *Eur Arch Psychiatry Clin Neurosci* 2003;253:1-8.
- Canetto SS, Sakinofsky I. The gender paradox in suicide. *Suicide Life Threat Behav* 1998;28:1-23.
- Molnar BE, Shade SB, Kral AH, Booth RE, Watters JK. Suicidal behavior and sexual/physical abuse among street youth. *Child Abuse Negl* 1998; 22:213-22.
- Oquendo MA, Ellis SP, Greenwald S, Malone KM, Weissman MM, Mann JJ. Ethnic and sex differences in suicide rates relative to major depression in the United States. *Am J Psychiatry* 2001;158:1652-58.
- Wunderlich U, Bronisch T, Wittchen HU, Carter R. Gender differences in adolescents and young adults with suicidal behavior. *Acta Psychiatr Scand* 2001; 104:332-39.
- Dombrowski AY, Szanto K, Duberstein P, Conner KR, Houck PR, Conwell Y. Sex differences in correlates of suicide attempt lethality in late life. *Am J Geriatr Psychiatry* 2008;16:905-13.
- Desjarlais RE, Good B, Kleinman A. *Suicide. World mental health: Problems and priorities in low-income countries.* New York: Oxford University Press; 1995.
- Lester D. Suicide in an international perspective. *Suicide Life Threat Behav* 1997;27:104-11.
- Latha KS, Bhat SM, D'Souza P. Suicide attempters in a general hospital unit in India: Their socio-demographic and clinical profile-- emphasis on cross-cultural aspects. *Acta Psychiatr Scand* 1996;94:26-30.
- Vijayakumar L. Indian research on suicide. *Indian J Psychiatry* 2010;52:S291-6.
- Gururaj G, Isaac MK, Subbakrishna DK, Ranjani R. Risk factors for completed suicides: A case-control study from Bangalore, India. *Inj Control Saf Promot.* 2004;11(3):183-91.
- Kumar V. Poisoning deaths in married women. *J Clin Forensic Med* 2004;11:2-5.
- Yoshimasu K, Sugahara H, Tokunaga S, Akamine M, Kondo T, Fujisawa K, Miyashita K, Kubo C. Gender differences in psychiatric symptoms related to suicidal ideation in Japanese patients with depression. *Psychiatry Clin. Neurosci.* 2006;60(5), 563-69.
- Patel V, Ramasundarahettige C, Vijayakumar L, Thakur JS, Gajalakshmi V, Gopalkrishna Gururaj, Suicide mortality in India: a nationally representative survey, *Lancet* 2012;379(9834):2343-51.
- Sudhir Kumar CT, Mohan R, Ranjith G, Chandrasekaran R. Gender differences in medically serious suicide attempts: A study from South India. *Psychiatry Res* 2006;144:79-86.
- Soman CR, Safraj S, Kutty VR, Vijayakumar K, Ajayan K. Suicide in South India: A community-based study in Kerala. *Indian J Psychiatry* 2009;51:261-4.
- Kanchan T, Menon A, Menezes RG. Methods of choice in completed suicides: Gender differences and review of literature. *J Forensic Sci* 2009;54:938-42.
- Chowdhury AN, Banerjee S, Brahma A, Das S, Sarker P, Biswas MK, et al. A prospective study of suicidal behaviour in Sundarban Delta, West Bengal, India. *Natl Med J India* 2010;23:201-5.
- Menon V, Kattimani S, Sarkar S, Muthuramalingam A. Gender differences among suicide attempters attending a Crisis Intervention Clinic in South India. *Ind Psychiatry J* 2015;24:64-9.
- Sheehan DV, Lecrubier Y, Sheehan KH, Amorim, P, Janavs J, Weiller E, Hergueta T, Baker R, Dunbar GC. The Mini-International Neuropsychiatric Interview (M.I.N.I.): the development and validation of a structured diagnostic psychiatric interview for DSM-IV and ICD-10. *J Clin Psychiatry* 1998;59 (Suppl 20):22-33; quiz 34-57.
- Kendler KS, Neale MC, Walsh D. Evaluating the spectrum concept of schizophrenia in the Roscommon Family Study. *Am J Psychiatry* 1995; 152:749-54.
- Kendler KS, Walsh D. Schizophreniform disorder, delusional disorder, and psychotic disorder not otherwise

- specified: clinical features, outcome, and familial psychopathology. *Acta Psychiatr Scand* 1995;91:370-8.
25. Beck AT, Steer RA, Brown GK. BDI-II manual. San Antonio, TX: Harcourt Brace & Company; 1996.
 26. Beck AT, Steer RA. Manual for the Beck Hopelessness Scale. San Antonio, TX: Psychological Corporation; 1993.
 27. Beck AT, Kovacs M, Weissman A. Assessment of suicidal intention: the Scale for Suicide Ideation. *J Consult Clin Psychol* 1979;47:343-52.
 28. Beck AT, Schuyler D, Herman I. Development of suicidal intent scales. In Beck AT, Resnik HLP, Lettieri DJ. (Eds.). *The prediction of suicide*. Bowie, MD: Charles Press; 1974.
 29. Linehan, M.M. Suicidal Behaviors Questionnaire. Unpublished Inventory. Seattle, Washington: University of Washington, 1981.
 30. Haddock G, McCarron J, Tarrier N, Faragher EB. Scales to measure dimensions of hallucinations and delusions: the psychotic symptom rating scales (PSYRATS). *Psychol Med* 1999;29(4):879-89.
 31. Drake R, Haddock G, Tarrier N, Lewis S. The Psychotic Symptom Rating Scales (PSYRATS): their usefulness and properties in first episode psychosis. *Schizophr Res* 2007;89:119-22.
 32. Weisman, AD. & wordn, JW. Riskrescue rating in suicide assessment. *Arch Gen Psychiatry* 1972;26(6):553-60.
 33. Trivedi JK, Pandey S, Dalal PK, Dubey MP, Sinha PK. CSF 5 – HIAA in violent and non-violent suicide attempters. *Indian Psychiat* 1997;39(1):41-8.
 34. Beautrais AL, Joyce PR, Mulder RT, Fergusson DM, Deavoll BJ, Nightingale SK. Prevalence and comorbidity of mental disorders in persons making serious suicide attempts: A case-control study. *Am J Psychiatry* 1996;153:1009-14.
 35. Beautrais AL. Suicides and serious suicide attempts: Two populations or one? *Psychol Med* 2001;31:837-45.
 36. Manoranjitham SD, Rajkumar AP, Thangadurai P, Prasad J, Jayakaran R, Jacob KS. Risk factors for suicide in rural South India. *Br J Psychiatry* 2010;196:26-30.
 37. Bhatia MS, Aggarwal NK, Aggarwal BB. Psychosocial profile of suicide ideators, attempters and completers in India. *Int J Soc Psychiatry* 2000;46:155-63.
 38. Mortensen PB, Juel K. Mortality and causes of death in first admitted schizophrenic patients. *Br J Psychiatry* 1993;163:183-9.
 39. Hu WH, Sun CM, Lee CT, Peng SL, Lin SK, Shen WW. A clinical study of schizophrenic suicides. 42 cases in Taiwan. *Schizophr Res* 1991;5(1):43-50.
 40. Hawton K. Sex and suicide. Gender differences in suicidal behaviour. *Br J Psychiatry* 2000;177:484-85.
 41. Grower R, Wadhawan JM, Anand A, Rao BK. A controlled study to analyze psychological aspects and psychiatric morbidity amongst people who attempt suicide. *Delhi Psychiatry Journal* 2011;14:9-18.
 42. Moller-Leimkuhler A. The gender gap in suicide and premature death or: Why are men so vulnerable? *Eur Arch Psychiatry Clin Neurosci* 2003;253:1-8.
 43. Seeman MV. Current outcome in schizophrenia: women vs men. *Acta Psychiatr Scand* 1986;76(6):609-17.
 44. Varnik A, Kolves K, van der Feltz-Cornelis, et al. Suicide methods in Europe: A gender-specific analysis of countries participating in the "European Alliance against Depression." *J Epidemiol Community Health* 2008;62:545-51.
 45. Stack S, Wasserman I. Gender and suicide risk: The role of wound site. *Suicide Life Threat Behav* 39:13-20.
 46. Bilsker D, White J. The silent epidemic of male suicide. *B C Med J* 2011;53(10):529-34.
 47. Vishnuvardhan G, Saddichha S. Psychiatric comorbidity and gender differences among suicide attempters in Bangalore, India. *Gen Hosp Psychiatry* 2012;34:410-14.
 48. Rao KN, Kulkarni RR, Begum S. Comorbidity of psychiatric and personality disorders in first suicide attempters. *Indian J Psychol Med* 2013;35:75-9.
 49. Banerjee S, Chowdhury AN, Schelling E, Weiss MG. Household survey of pesticide practice, deliberate self-harm, and suicide in the Sundarban region of West Bengal, India. *Biomed Res Int* 2013;2013:949076.
 50. Seeman MV. Psychopathology in women and men: Focus on female hormones. *Am J Psychiat* 1997;154, 1641-47.
 51. Fourestié V, de Lignières B, Roudot-Thoraval F, Fulli-Lemaire I, Cremitter D, Nahoul K, Fournier S, Lejonc JL. Suicide attempts in hypo-oestrogenic phases of the menstrual cycle. *Lancet*. 1986;13;2(8520):1357-60.
 52. Mousavi SG, Bateni S, Maracy MR, Mardanian F, Mousavi SH. Recurrent suicide attempt and female hormones. *Adv Biomed Res*. 2014;30;3:201.
 53. Sánchez MG, Bourque M, Morissette M, Di Paolo T. Steroids-dopamine interactions in the pathophysiology and treatment of CNS disorders. *CNS Neurosci Ther* 2010;16, e43-e71.
 54. Gillies GE, McArthur S. Estrogen actions in the brain and the basis for differential action in men and women: A case for sex-specific medicines. *Pharmacol Rev* 2010;62,155-98.
 55. Kozicz T, Tilburg-Ouwens D, Faludi G, Palkovits M, Roubos E. Gender-related urocortin 1 and brain-derived neurotrophic factor expression in the adult human midbrain of suicide victims with major depression. *Neuroscience* 2008;152:1015-23.
 56. Lester D. Testosterone and suicide - an explanation of sex-differences in fatal suicidal-behavior. *Pers Individ Differ* 1993;15:347-8.

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