ISSN- 0301-1216
Indian J. Prev. Soc. Med. Vol. 54, No.4, 2023

EDITORIAL:

Statistical Vanguard to the Methodological Limitations of Studies on Suicide in India

Chandra Bhushan Tripathi[1], Amit Khanna[2], Rachna Agarwal[3]

According to the WHO health estimates[1], 0.7 million people died by suicide in 2019 which amounts to approximately one person every 45 seconds. Globally, suicide rates range from 0.2 per million in developed countries to 8 per million in developing countries and the rate in South East Asia is a glaring 1 per million populations. What is even more worrisome is that suicide is the fourth leading cause of death after road injuries, tuberculosis and interpersonal violence in young persons between 15-29 years for both sexes with higher rates for males 1.2 per million than females 0.5 per million.

Even in the older adult population, suicide has become one of the top ten causes of death in the elderly and the rates are expected to rise, given the increase in life expectancy and projected numbers in the near future in India. A total of 0.17 million suicides happened in 2020 in India and approximately 8% of these were in the elderly age group[2].The epidemic of Suicide seems to be sweeping not just across all age groups but across varied professions as well. Suicide rates have been consistently reported to be higher in the farmer population in India but were recorded to be the highest amongst businessmen during the pandemic year with a significant jump of 29% from previous years.

India accounts for 26.6% of the total suicides that happen globally. This is significantly high given that the total population of India is 18% of the world census [3].Post Pandemic, the suicide rate in India was recorded to be 1.2 per million of population in 2021, 6.2% higher than the rate in the previous year. More than half of all suicides in the country were reported from Maharashtra, Tamil Nadu, Madhya Pradesh, West Bengal and Karnataka. The highest rate was recorded in Andaman and Nicobar Islands with 4.5 per million, followed by Sikkim 4.2 per million and lowest rates in Lakshadweep Islands in the country 0.29 per million. Amongst States, Bihar recorded the lowest rate of 0.5 per million of population[4, 5]. Interestingly, the methods used for suicide in India have not changed over the last century with poisoning being the commonest cause of suicide in India followed by hanging [6].

Ironically, even though the stated numbers are significantly high, there is not an element of doubt that these numbers are much higher. Significant heterogeneity exists in the sampling procedures of studies documenting suicide rates in India narrowing the reliance on suicide statistics to that recorded by the Police officials into the National crime records data, even though suicide no longer is a crime as per the current legal framework of Mental Healthcare Act, 2017.[5]

---

1. Head, Department of Biostatistics, Computer Center, Room No.-117, Academic Block, Institute of Human Behaviour and Allied Sciences IHBAS, Dilshad Garden, Delhi-110095; **E-mail:** cbt.vns69@gmail.com, cbt_vns@hotmail.com; Mobile: 09868766377, 09868396826.
2. Department of Psychiatry, Institute of Human Behaviour and Allied Sciences (IHBAS), Dilshad Garden Delhi -110095.
3. Head Department of Neurochemistry, Institute of Human Behaviour and Allied Sciences, Dilshad Garden, Delhi - 110095

Corresponding Author: Dr. Chandra Bhushan Tripathi, Head, Department of Biostatistics, Computer Center, Room No.-117, Academic Block, Institute of Human Behaviour & Allied Sciences IHBAS, Dilshad Garden, Delhi-110095

Submission	12.09..2023	Revision	21.09.2023	Accepted	28.10.2023	Printing	30.12.2023

Prior Publication*: Nil*; Source of Funding:* Nil; *Conflicts of Interest*: None, *Article #205

In India, where the civil and death registration systems are weak, especially in rural areas, where people die in the house without getting access to affordable healthcare, the reliance is on verbal autopsy conducted at community level. The community-based surveillance system reports three to four times higher suicide rates than those reported by the Registrar General [7]. This system is quite robust and evolved in the State of Tamil Nadu which has one of the highest suicide rates in the country i.e 0.22 per million[8-10].

Even though such data that emerge is useful, but less so for preventative strategies and policy implementation as it does not gauge suicidality and only suicidal deaths. For an effective development of suicide prevention strategies, it is imperative to have its socio-demographic and clinical correlates so as to develop strategies to mitigate risk factors after identifying high risk categories.

The only nationally representative analysis of suicidality[11], a broad term which not only includes suicide but attempted suicide, suicidal intent, ideations and plans; comes from the offshoot study of the National Mental Health Survey [12]which indicated that for every death by suicide there are more than 210 people exhibiting suicidal phenomenon. Across the twelve states where the study was carried out, the rates of suicidality were recorded in the range of 3-10.4 per 100 population and suicide deaths between 12.5-38.9 per 100,000 populations. Further, the study used binary logistic regression to highlight association between socio-demographic factors and suicidality and found that women were at higher risk of suicide than men, in urban setups more than rural, across ages except in the geriatric age range of 60 and above when men had higher risk of suicidal ideation[11].

Very few intervention studies on suicide exist in India. The Suicide prevention multisite study on suicidal behaviours, i.e. the SUPRE-MISS trial was a Randomized Controlled trial launched by the WHO in eight countries of which one site was in Chennai, India. It assessed the use of Brief Intervention and contact as an add on to the treatment as usual in suicide attempters and found the final outcome of death by suicide to be significantly lower in the group receiving brief intervention than the one which received treatment as usual[13]. There is significant dearth of RCT's in India involving suicidal patients, primarily because of ethical issues and exclusion of suicidal patients from the study[14]. Exclusion of suicidal patients from the experimental therapeutic studies not only reduces the sample size but also decreases the generalize ability of the purported treatment strategy, intended to reduce suicidality. Further, such patients also end up getting excluded because of questionable validity of their informed consent, fluctuations in their suicidal ideation over time. This result in difficulties in quantifying the risks associated with suicidal behaviours and further magnifies the lacuna in knowledge of treatment strategies for suicidal patients[15].

Animal models which help in expanding the horizon of basic biological process for Human diseases are lacking in Suicide thereby limiting our knowledge on suicide [15, 16]. Overall, given the public health impact of suicide and suicidal behaviours, our knowledge to deal with this important issue is limited by far and few studies marred by under-reporting, transcription errors and reliance on suicidal behaviours as a surrogate for suicide. Most important findings are drawn from population based studies deriving socio-demographic and clinical correlates, the results of which can assist in planning an appropriate prevention strategy. Future researches which can overcome methodological issues through collaboration, digitization and data linking can perhaps assist in devising promotive and preventive strategies and assisting policy makers.

References

1. Suicide Worldwide in 2019, Global Health estimates; World Health Organization 2019 available at https://iris.who.int/bitstream/handle/10665/341728/9789240026643-eng.pdf?sequence=1, accessed on 29.09.2023.
2. Patel AB 2022 Vulnerability as determinant of suicide among older people in Northern Indian states. Front. Psychol. 13:971080. doi: 10.3389/fpsyg.2022.971080.

3. Singh OP, Startling suicide statistics in India: Time for urgent action. Indian J of Psychiatry v.645; Sep-Oct 2022
4. Accidental deaths and Suicidal Injury available at https://ncrb.gov.in/sites/default/files/ ADSI_ 2020_ Full_ Report.pdf accessed on 20.10.2023.
5. Kumar Sonali, Pathare S. Data is the new oil, but not when it comes to suicides in India- The New Indian Express accessed athttps://www.newindianexpress.com/web-only/2023/mar/01 on 10.10.2023.
6. Nandi D, Banerjee G, Boral G. Suicide in West Bengal-A Century Apart. Indian J Psychiatry. 1978; 20: 155-160.
7. Hendin H, Vijayuakumar L, Bertolote JM, Wang H, Phillips MR, Pirkis J. Epidemiology of suicides in Asia. In: Hendin H, Phillips MR, Vijayakumar L eds. Suicide and Suicide Prevention in Asia. Geneva: World Health Organization; 2008: 7-18
8. Rane A, Nandkarni A Suicide in India: A systematic review Shanghai Archives of Psychiatry 262:69-80; 2014
9. Gajalakshmi V, Peto R. Suicide rates in Tamil Nadu, South India: Verbal autopsy of 39,000 deaths in 1997-1998. *Int J Epidemiol.* 2007;36:203–7
10. Joseph A, Abraham S, Muliyil JP, George K, Prasad J, Minz S, et al. Evaluation of suicide rates in rural India using verbal autopsies, 1994-1999. *BMJ.* 2003; 326: 1121–22.
11. Amudhan S, Gururaj G, Varghese M, Benegal V, Rao GN, Sheehan DV, Kokane AM, Chavan BS, Dalal PK, Ram D, Pathak K, Lenin Singh RK, Singh LK, Sharma P, Saha PK, Ramasubramanian C, Mehta RY, Shibukumar TM. A population-based analysis of suicidality and its correlates: findings from the National Mental Health Survey of India, 2015-16. Lancet Psychiatry. 2020 Jan; 71: 41-51. doi: 10.1016/S2215-03661930404-3. Epub 2019 Dec 8. PMID: 31826821.
12. Gururaj G, Varghese M, Benegal V et al. National Mental Health survey of India, 2015-2016. Prevalence pattern and outcomes, Bangalore, India: National Institute of Mental Health and Neuro Sciences, 2016 available at https://main.mohfw.gov.in/sites/default/files/National%20Mental%20Health%20Survey%2C 202015-16%20-%20 Mental%20Health%20Systems_0.pdf accessed on 19.10.2023.
13. Fleischmann A, Bertolote JM, Wasserman D, Leo DD, Bolhari J, Effectiveness of brief intervention and contact for suicide attempters: a randomized controlled trial in five countries. Bulletin of the World Health Organization 2008; 86:703–709.
14. Vijayakumar L, Umamaheswari C, Shujaath Ali ZS, Devaraj P, Kesavan K. Intervention for suicide attempters: A randomized controlled study. Indian J Psychiatry. 2011 Jul; 533: 244-8. doi: 10.4103/0019-5545.86817. PMID: 22135444; PMCID: PMC3221182
15. Nugent AC, Ballard ED, Park LT, Zarate CA. Research on the pathophysiology, treatment, and prevention of suicide: Practical and ethical issues. BMC Psychiatry 2019 19:332 available at https://bmcpsychiatry. Biomed central.com/ articles/10.1186/s12888-019-2301-6 accessed on 18.10.2023
16. Rezaeian M. Methodological issues and their impacts on suicide studies available at https://www.researchgate.net/ publication/267757959_Methodological_issues_and_their_impacts_on_suicide_studies accessed on 19.10.2023.

Citation: Tripathi CB, Khanna A, Agarwal R. Statistical Vanguard to the methodological limitations of studies on suicide in India. Indian J Prev Soc Med, 2023; 54 (4): **142- 144.**