

## Suicide in Health-Care Providers from India

Nandita Yadav<sup>1</sup>, Nischita Raj<sup>2</sup>, Sachinpal Bhatti<sup>3</sup>, Saksham Kumar<sup>4</sup>,  
Brijesh Saran<sup>5\*</sup>, Amoolya K Seth<sup>6</sup>

<sup>1,2,3,4</sup> Junior Resident, Santosh Deemed to be University, Ghaziabad NCR Delhi, India.

<sup>5</sup> Assistant Professor, Santosh Deemed to be University, Ghaziabad NCR Delhi, India.

<sup>6</sup> Professor, Santosh Deemed to be University, Ghaziabad NCR Delhi, India.

Email- <sup>5</sup> drbrijeshsaran400@gmail.com

### ABSTRACT:

Mental health issues for health workers include stress, burnout, depression, anxiety, substance use disorders, and suicidal behaviours. Previous studies found relatively good health in physicians, while multiple studies now report relatively high levels of psychological distress among them.<sup>1-5</sup>

This is particularly true for symptoms of stress, burnout, and depression--and particularly for medical students and younger doctors at the beginning of their careers. Although depressive symptoms appear prevalent early in the medical career, this could partly be related to exhaustion from work stresses caused by the often-on-call nature of work. We do not have representative studies on the incidence of effective depression in doctors, as compared with those of other occupational groups.

Poor mental health leaves many health professionals feeling burnt out and underperforming, and may even result in feelings of depersonalization at work, affecting their ability to deliver high-quality, safe care. A recent study found that over 70% of the nation's health care workers had symptoms of anxiety and depression, 38% had symptoms of post-traumatic stress disorder, and 15% had recent thoughts of suicide or self-harm. A deeper understanding of the experiences of health care workers who are experiencing thoughts of suicide or self-harm will be useful for identifying healthcare workers who are at risk, as well as for guiding interventions that support their health and well-being. The most frequent reason for student and resident suicide attempts is reported to be academic pressure followed by psychiatric problems. Nurses are four times as likely as those working in professions other than medicine to kill themselves. The higher risk for suicide for nurses may stem from the fact that they are primary caretakers of patients.

To mitigate long-term psychological complications, including suicide, for our health care workers in the future, we must support and safeguard their mental health now. Given the sensitive, nuanced nature of the work that many health care workers do, even suicidal thoughts or impulses are risky for patients.

## INTRODUCTION:

Suicide is the deliberate act of one person inflicting one's own death (Latin: suicidium, from *suicaedere*, "to kill oneself"). One reason for this is the complicated combination of social, environmental, biological, and cultural forces at play in a person's life.<sup>1</sup> During the illness, there is a high risk of suicide for some mental health conditions. One of the most prevalent disorders that lead to suicide is depression.<sup>1</sup>

In India, one of the main cause of death for young people is suicide. It is comparable to maternal causes of mortality for young women and results in around twice as many deaths as HIV/AIDS. Contrary to these two major conditions, suicide receives less attention from the public health community. Most Indians lack access to community-based suicide prevention services and care for mental diseases that are linked to suicide, notably primary access to the treatment of depression, which has been found to lessen suicidal behaviour.<sup>2</sup>

The number of doctors in India is among the highest in the world. In India, there are reportedly more than 1 million doctors. More than 80,000 medical students in India's 529 medical colleges graduate each year to become doctors. The new medical curriculum, like the previous one, does not include even one skill in psychiatry as a requirement for MBBS graduates to sit for exams to become doctors in India. This has a negative impact on future doctors' awareness of mental health issues. In the Indian setting, the medical profession is still stigmatised when it comes to discussing mental health issues, despite the fact that it is thought to be more stressful.<sup>3</sup>

Medical students are prone to suicidal ideation due to the stress they experience on a personal and professional level as a result of various circumstances. Information overload, a lack of free time, debt, being away from home, a heavy course load, and work pressure are a few of these. Caregiving for vulnerable people, dealing with suffering, and facing death are additional potential causes of emotional issues among medical students,<sup>4</sup> in medical students, the prevalence of depression or depressive symptoms was 27.2%, while the prevalence of suicide ideation was 11.1%. To find methods for avoiding and treating these illnesses in this population, more research is required.<sup>5</sup>

Mental health issues is not just limited to doctors but all the health care professionals; especially when they have faced immense amount of pressure during COVID 19. In a survey of healthcare workers in hospitals with COVID-19 fever clinics or wards in Wuhan and other parts of China, participants, particularly nurses in Wuhan and frontline healthcare workers directly involved in the diagnosis, treatment, and care of COVID-19 patients, reported feeling psychologically burdened.<sup>6</sup>

The aim for this study is draw the details for the risk of suicide of not just doctors but also medical students and nursing staff along with the measures we can inculcate to prevent constant deterioration in mental health of all the healthcare providers in India. A challenging

workplace, like a hospital, could perhaps encourage lateral violence among medical staff. According to a wealth of research and literature on the subject, lateral aggression among hospital employees is a severe occupational health hazard. Over the past three decades, the effects of lateral aggression have been extensively researched and recorded<sup>7</sup>.

### **SUICIDE MORTALITY IN INDIA:**

India has among of the highest suicide fatality rates worldwide. Suicide accounted for nearly 3% of fatalities among people aged 15 or older in the study (2684 out of 95 335), representing about 187 000 deaths in India at these ages in 2010 (115 000 men and 72 000 women; age-standardized rates per 100 000 people aged 15 or older of 26.3 for males and 17.5 for women). Ages 15 to 29 had a 40% increase in male suicides (45 100 of 114 800) and a 56% increase in female suicides (40 500 of 72 100) among those who were 15 or older. In India, the cumulative chance of suicide death for a person under the age of 80 was roughly 13%; men had a greater risk (17%) than women (10%), with particularly high risks in south India (35% for men and 18% for women). The cause of about half of suicide deaths was poisoning (mainly ingestions of pesticides). Approaches to support health care professionals can be developed, it is critical to understand their specific sources of anxiety and fear. Focusing on addressing those concerns, rather than teaching generic approaches to stress reduction or resilience, should be the primary focus of support efforts<sup>6</sup>

### **SUICIDE AMONG MEDICAL STUDENTS AND DOCTORS:**

One of the most demanding occupations is medicine. Physicians face a significant occupational risk from suicide. The heightened risk can start during medical school.<sup>8</sup> According to the statistics that are currently available, medical students have a greater suicide rate than those of a similar age. According to statistics from the USA, suicide is the second most common cause of death for medical students. in a medical college in India, a descriptive cross-sectional study using a self-administered questionnaire found that 53.6% of the students had suicide thoughts. Even though everyone understood the significance of suicide and the harm it brings to the victim and their family, 4.9% of students were found to have seriously considered suicide, and 2.6% were discovered to have made at least one attempt. These percentages, nevertheless, were lower than those found in a recent Indian study of teenagers in South Delhi (15.8% had considered suicide, 5.1% had actually tried it).<sup>9</sup>

The Chinese study and our data heavily rely on publicly available data, which is by nature biased. Suicide may be underreported because suicide is stigmatised in India and is seen as a personal and familial failure. Ten doctors passed away between 2015 and 2018 as a result of suicides reported by three medical facilities, according to a study the authors had previously presented. [13] Given that India has more than 500 medical institutions, where more than 80,000 MBBS students, more than 30,000 MD/MS students graduate each year, and at least 100,000 doctors are employed as teaching faculty in addition to other doctors who are not associated with medical institutions, the potential number that was projected was therefore

around 150-300 suicides in 4-5 years. It should be noted that India urgently requires a robust system to gather data, and that this process can only begin if the IMA or the Indian Psychiatric Society collaborate with the IMA and/or the National Medical Commission to document and study doctor suicide, saving precious lives from the undergraduate stage of the medical profession.<sup>3</sup>

In our analysis, female doctors (60%) had a higher suicide rate than male doctors, which is consistent with statistics from the United Kingdom. In the Indian environment, it's probable that women doctors experience more difficulties than males do, which may be related to gender issues in the sociocultural context. However, one study found that the suicide rate among American female doctors was twice that of other working women.<sup>10</sup>

After six doctors at the Delhi checked themselves into the mental wards in March 2018, this represent the matter that suicides by doctors are a public health crisis to address before it is too late.<sup>11</sup> The acute problem of suicides among Indian doctors needs to be studied to take preventive measures.

Although there are reports about physician suicides in Indian media, hardly any scientific studies that look at physician suicides among Indians are available due to a number of barriers to gathering the information. Studies across the globe have shown suicide rates to be higher among doctors as compared to the population at large.<sup>12</sup> While studies that compare the suicide rates of doctors to those in the general population are lacking in India.

One analysis of data on suicides by doctors as compared with victims who were non-physicians found that there was much lower prevalence of antidepressant drugs in blood among doctor victims, an objective sign of the fact that doctors are not getting mental healthcare proportionately as per their needs. Another issue to be addressed in the context of physician's mental health and suicide risk is a reluctance among healthcare providers to seek assistance because of the risk of losing their medical licenses and higher health liability insurance. Mental health experts who have studied physician depression and suicide emphasize that the prompt care and often confidential admission of physician suicidal patients can save lives--even more than with other populations--because of restrictions on access to lethal means coupled with supportive interventions.<sup>13</sup>

Studies found COVID-19 and its subsequent lockdowns increased suicide and self-harm tendencies in India's general population, but data was not available about how it affected the mental health of doctors. According to studies, the most frequent reason for student and resident suicide attempts is reported to be academic pressure followed by psychiatric problems, and it is reported commonly in anaesthesia, followed by obstetrics and gynaecology. The stress-provoking factors caused by the ongoing pandemic are expected to worsen mental health problems, including increased suicide risk.<sup>14</sup>

Physician reports of suicide have increased significantly more during the COVID-19 pandemic, though no studies have quantified this fully. The latest studies conducted from 2010-2019 reported 358 suicide deaths in general among doctors, an appalling 65 percent of which were MD students and MDs in their final years. After getting institutional ethics committees, all Indian newspapers published in English and accessible on online platforms were examined by four authors independently on suicide reports among doctors between March 2016 and March 2019.<sup>12</sup>

### **Suicide Ideation in Medical Students**

Medical schools have long been aware of problems with suicidal thoughts among their students, Medical schools developed a four-year well-being curriculum co-created by seniors and residents from psychiatry.<sup>16</sup>

In an academic comment to Second-Year Medical Student Christopher Weal, 28, Weal called for medical school leaders to shift their cultures and adapt their programs to screening for suicidal ideation and mental health issues earlier in students' lives. Medical schools are now training instructors to identify risk factors for suicide and reassure students that seeking help is not a sign of weakness.<sup>4</sup>

Identifying depressive and anxiety symptoms, which are the most common factors associated with suicidal ideation among medical students, as well as psychological treatment of the disorder, must be included in interventions. A simple yearly questionnaire administered upon registration that seeks to identify suicidal thoughts, symptoms of depression and burnout, and prior mental health history may help to identify students who might require support or interventions.<sup>17</sup>

Research has found that students can come into medical school feeling less burnout and depression than others of their age. In the 2014 Academic Medicine study of medical residents, 60% met criteria for burnout, over half tested positive for depression, and about 8% had suicidal thoughts.<sup>18</sup>

Female medical students had higher rates of suicidal ideation compared to male medical students, in Pakistan, female medical students had an increased risk of suicide ideation than male students, and in another meta-analysis among female and male medical students, and the mental distress was higher in female physicians and medical students than males. Although higher than the national statistics of age-related peers, these rates were similar to students who were in a non-medical course. This is the first study on a large nationwide sample of medical students at three universities in South Africa, which assessed the prevalence of suicidal ideation and attempts, as well as the potential risk factors of suicide.<sup>18</sup> Recent findings suggest a slight trend towards the identification of being female as a risk factor for suicidal ideation among medical students, with most studies either finding no

statistically significant differences across sexes, or identifying women as being more likely to have suicidal ideation.<sup>19</sup>

This is supported by other studies conducted in university students of Ethiopia; chewing khat is now almost twice as common in suicidal behaviour, and the use of drugs by medical students is a strong predictor of suicidal ideation.<sup>19</sup> We assumed the undergraduate population of medical students will be higher in rates of suicidal ideation and depression compared to the population at large, particularly students with a parent-child relationship that was either characterized as high-care, high-control (control without affection) or low-care, low-control (negligence-control).<sup>4</sup> Although better data exist on suicides among residents, better estimates on how many students attempted to end their lives before graduation, or succeeded, are severely lacking.<sup>15</sup>

### **Suicide among Nurses**

The rate for nurses was 17.1 per 100,000, compared with 8.6 per 100,000 in the general female population and 10.1 per 100,000 for female physicians. In absolute terms, an extra 8.5 suicides occur per 100,000 for women nurses than for women overall, according to U.S. researchers at the University of Michigan. The researchers were surprised at the numbers, which did not show any differences between suicide rates for doctors and the general population, unlike in past studies.

The study found that the suicide risk was not higher for male nurses compared to the male population as a whole. Nurses are four times as likely as those working in professions other than medicine to kill themselves. The higher risk for suicide for nurses may stem from the fact that they are primary caretakers of patients.<sup>20</sup>

Nurses are more likely than other U.S. workers to consider suicide, and the majority of nurses experiencing suicidal ideation did so as a result of burnout, according to a study published in The American Journal of Nursing. American nurses have experienced more suicidal ideation than other workers overall, with 403 (5.5%) reporting having had suicidal thoughts within the last year. This survey found 5% of 2,333 nurses who responded to it had experienced suicidal ideation, which highlights risk factors for these healthcare workers when compared to other U.S. workers.<sup>21</sup>

A new study by the Mayo Clinic seeks to understand how many nurses have considered suicide, how that compares with the general population, and how burnout is an independent risk factor for nurses developing suicidal ideation. After controlling for factors like age, sex, hours, relationship status, and burnout, the odds that nurses had suicidal thoughts were estimated to be substantially higher--38%--than those for other workers. A 2017 study linked this alarming statistic to nurses having easier access to deadly dosages of drugs, and noted higher rates of suicide among low-paid health care workers than high-paid workers like managers and CEOs.

Davis suggested the high suicide risk among nurses as opposed to physicians may be due to the higher demands of the jobs like nurses, for instance, perform most of the bedside care, work longer shifts in high-stress environments, and are less autonomous.<sup>22</sup> More recent studies found suicide rates for nurses are higher than those of physicians, UCSDs Davis said, but many health systems are still investing more in wellness than physicians. One report, which used a larger sample of nurses from 1982 through 1996, found no difference in suicide rates relative to the general population (age; however, another study using data from 1990 found a higher risk.<sup>24</sup> More recent studies have reported a relative difference in rates comparing nurses with the general population.<sup>10-13</sup> For example, using data from the 2014 NVDRS, Davidson and colleagues<sup>11</sup> reported an RRR of 1.58 for suicides among women nurses relative to the general population (95% CI, 1.34-0.85)<sup>23</sup>

### **Working conditions that may lead to poor mental health and burnout in healthcare providers**

In India, factors like long working hours, shoddy facilities, physical and emotional mistreatment of doctors by patients and superiors resulted in high occupational burnout rates in healthcare workers. In a nationwide survey of health professionals, researchers noted a high prevalence of burnout (45%-87%) across emotional fatigue and domains of personal fulfillment.<sup>24</sup> The study, published in *Cureus*, found that 87% of approximately 500 physicians scored poorly in personal accomplishment, while 63% scored moderately on levels of satisfaction with their practice.

This shapes doctors engagement with patients as well, with them showing low levels of professionalism and receiving lower ratings on satisfaction levels from patients. They were also twice as likely as others to have been involved in incidents in which they provided suboptimal patient care, or safety incidents, like drug errors, according to the new review.<sup>25</sup> This is expected since there is limited supply of specialists, so they are exposed to longer working hours, the nature of work demands, adds one physician. This specific study identified the poor physician-patient ratios in India, the limited specialization training programmes, and high working pressures for few specialists as reasons behind the burnout.

Very few studies in India have evaluated the psychological problems, stress, and burnout in health professionals, and very few studies focus on the incoming doctors.<sup>26</sup> Several studies suggest that doctors regularly suffer work-related anxieties, then frequently give in to alcohol abuse, become dependent on antidepressants, and smoke, etc. A new study conducted in India suggests many doctors experience burnout-related symptoms like emotional fatigue, dissatisfaction, or a sense of being out of touch.<sup>27</sup>

Chronic, high-level stress has made burnout among healthcare workers (HCWs) a reality which needs urgent attention, otherwise it could result in compromised care for patients, in addition to their own distress.<sup>28</sup> The following studies show that even junior doctors who are studying in public sector hospitals and/or working there are experiencing an extremely high

degree of burnout, contradicting popular beliefs that burnout syndrome sets in later on in a career trajectory. Our findings are in line with findings from burnout studies conducted in India among intensive care physicians in 2014.<sup>24</sup>

### **Measures that can be taken to reduce risk of suicide among healthcare providers**

Tools and resources for healthcare leaders and workers on addressing common mental, emotional, and psychological concerns that arise from the COVID-19 pandemic. This toolkit walks the reader through the case of one rural primary care provider learning how to recognize signs of common mental, emotional, and psychological concerns they are experiencing as a result of a global health pandemic.<sup>29</sup>

This toolkit was developed to promote self-care and help build resilience in health and behavioral providers during the pandemic. With the COVID-19 pandemic continuing, the opportunities exist to carefully plan, conduct carefully conducted studies, and identify better ways of supporting frontline workers a mental health, carefully planned efforts are prioritized. The COVID-19 pandemic is far from over, with more challenges ahead; providers must look at integrated, innovative models that will ensure that they are capable of identifying, assessing, and supporting workers that need assistance.<sup>30</sup>

The present level of distress among healthcare workers is already hampering the nations ability to manage COVID-19, leaving conditions left untreated in the midst of a pandemic, as well as increasing anxiety and depression. Recent studies have already reported increases in depression and anxiety in healthcare workers at the heart of the COVID-19 pandemic, supporting predictions that healthcare workers, especially those working directly with patients suffering from COVID-19, are at high risk for developing traumatic stress disorders. In addition, mental health issues, stress, compassion fatigue, and job burnout are major reasons why health care workers are considering leaving the profession worldwide (42-45)<sup>31</sup>

Poor mental health leaves many health professionals feeling burnt out and underperforming, and may even result in feelings of depersonalization at work, affecting their ability to deliver high-quality, safe care. Working as a healthcare or social worker on the frontline in the middle of a global pandemic such as COVID-19 can be highly stressful. As we have seen, healthcare providers working at the frontline, humanitarian aid workers, grassroots providers, as well as mental health professionals providing psychological first-aid and mental health services for affected individuals in these times of crisis, are all exposed to, and can be expected to suffer, substantial adverse health consequences such as PTSD, anxiety, insomnia, and depression.<sup>32</sup>

Lead author of the review, explained, It is evident that frontline healthcare workers face immense pressures working on any infectious disease outbreak, and that this obviously has negative effects on their mental health. A survey run online to hear the experiences of healthcare workers in the COVID-19 pandemic, and create better resources to support their



mental health while continuing to deliver care. Doha -- A new report from The Qatar Foundation, World Innovation Summit for Health (WISH), working with World Health Organization (WHO), found at least one-quarter of the health care workers interviewed reported symptoms of anxiety, depression, and burnout.<sup>33</sup>

National efforts at improving care delivery (e.g., Patient-Centered Medical Homes) are providing new ways of embedding suicide prevention into primary care.<sup>34</sup> The Center on Mental Health Law and Policy is exploring launching a suicide prevention program targeted to medical students and physicians. The inquiry is also taking suggestions for ways in which mental health can be improved, and how suicidality can be prevented, in doctors.

### **How burnout among healthcare providers can be managed**

By combating burnout, investing in technology that is patient-friendly, and providing resources for mental health, health care leaders can play their role in improving the mental health of physicians. By teaching physicians and nurses about mental health, and providing resources that encourage self-care and decrease burnout, organizations are helping to retain top talent and increase patient satisfaction. The beneficial effects of adequate self-care for healthcare workers include improved physical, mental, and emotional wellbeing, and being able to deliver more sustained patient care in a manner with greater compassion, sensitivity, efficiency, and empathy.<sup>35</sup>

Healthcare workers across the health care and mental health sectors need to be offered psychological first-aid in times of crisis, high workload, or challenging working conditions, and longer-term support via affordable mental health support programs (e.g., resilience, self-care, or mindfulness courses). Ideally, each healthcare practice either already has, or could establish, a system (along with at least one trained employee) for identifying and providing support for patients with common and serious mental health conditions in these times. This is especially important because stigma related to mental health can make patients hesitant to seek support, whether due to the COVID-19 pandemic, or for any mental health condition(s). In addition, formerly stable individuals can become less stable. Ideally, every health care practice already has or can put in place a system (along with at least one staff member trained) to identify and provide care for patients with common and severe mental health conditions during this time.<sup>10</sup> This is particularly important since the stigma associated with mental health may cause patients to be reluctant in seeking support for both the COVID-19 pandemic and any mental health condition (s).<sup>11</sup> Also, previously stable individuals may become less stable. The challenges faced by employees include not only increased caseloads caused by an outbreak like this, but also the fears of exposure for themselves and family members, working with new and often changing protocols and personal protective equipment (PPE), caring for patients with very serious illnesses that rapidly worsen, caring for colleagues that are sick, as well as caring for colleagues that are also impacted.<sup>36</sup>

High patient loads, long shifts, complicated protocols for care, and emotionally taxing, high-stress situations all can lead to burnout in health professionals, compromising their mental wellbeing. Poor mental health leaves many health professionals feeling burnt out and underperforming, and may even lead to feelings of depersonalization of their work, affecting their ability to deliver high-quality, safe care.<sup>37</sup> There are 2 classic observational studies showing that longer hours and pressures of time impair physicians performance, but we lack studies finding burnout leading to observable errors or low-quality care. The notion of and measures of burnout are not highly reliable for impairment of function, such as for determining valid case-definition thresholds. On the other hand, depression and other psychiatric disorders contribute to low performance. We need more research into working conditions and levels of stress and low-quality of care. We need more research into working conditions and levels of poor mental health in younger physicians, which leads to lower quality of care.

There are 2 classical observation studies demonstrating that long hours and time pressures interfere with doctors functioning, but we lack studies that find burnout to lead to observed errors or poorer care. The burnout concept and scales are not very valid with respect to impaired functioning, for example, with respect to valid cut-off for defining a case. On the other hand, depression and other mental disorders lead to poor functioning. We need more studies on working conditions and the levels of stress and poor health among young doctors that lead to lowered patient care. This means recognizing that strong mental health is about much more than just what happens on the job, but also the fact that unique demands placed on frontline health professionals may be creating--and compounding--mental problems that occur off-site. Providers could consider incorporating mental health training into training, mandating routine assessments for all students and employees, creating new structures in organizational hierarchies that prioritize mental health and wellness, and sourcing resources dedicated to supporting clinicians requiring safety-net services.

## **CONCLUSION:**

Healthcare providers are at immense risk of suffering from poor mental health conditions which can lead to even suicide. Heavy workload and long working hours and less awareness towards mental illnesses further adds to it. Practising doctors, medical students, nurses and all those are working in any hospital setup are prone to suicide far more than general populations. For prevention of suicide, attention should be drawn to their curriculum as well as the environment they are working in, so that burnout than be prevented. Mental health and wellness should be given utmost priority as far as health care providers are concerned.

## REFERENCES

1. Suicide. Accessed December 11, 2022. <https://www.who.int/health-topics/suicide>
2. Patel V, Ramasundarahettige C, Vijayakumar L, et al. Suicide mortality in India: a nationally representative survey. *The Lancet*. 2012;379(9834):2343-2351. doi:10.1016/S0140-6736(12)60606-0
3. Kishor M, Chandran S, Vinay HR, Ram D. Suicide among Indian doctors. *Indian J Psychiatry*. 2021;63(3):279-284. doi:10.4103/psychiatry.IndianJPsychiatry\_137\_20
4. Coentre R, Góis C. Suicidal ideation in medical students: recent insights. *Adv Med Educ Pract*. 2018;9:873-880. doi:10.2147/AMEP.S162626
5. Rotenstein LS, Ramos MA, Torre M, et al. Prevalence of Depression, Depressive Symptoms, and Suicidal Ideation Among Medical Students: A Systematic Review and Meta-Analysis. *JAMA*. 2016;316(21):2214-2236. doi:10.1001/jama.2016.17324
6. Lai J, Ma S, Wang Y, et al. Factors Associated With Mental Health Outcomes Among Health Care Workers Exposed to Coronavirus Disease 2019. *JAMA Netw Open*. 2020;3(3):e203976. doi:10.1001/jamanetworkopen.2020.3976
7. Botha E, Gwin T, Purpora C. The effectiveness of mindfulness based programs in reducing stress experienced by nurses in adult hospital settings: a systematic review of quantitative evidence protocol. *JBIM Database Syst Rev Implement Rep*. 2015;13(10):21-29. doi:10.11124/jbisrir-2015-2380
8. Dyrbye LN, Thomas MR, Massie FS, et al. Burnout and suicidal ideation among U.S. medical students. *Ann Intern Med*. 2008;149(5):334-341. doi:10.7326/0003-4819-149-5-200809020-00008
9. Simon HJ. Mortality among medical students, 1947-1967. *J Med Educ*. 1968;43(11):1175-1182. doi:10.1097/00001888-196811000-00012
10. Dobson R. Suicide rate of women doctors in US is twice that of other working women. *BMJ*. 2007;335(7627):961-961. doi:10.1136/bmj.39391.422650.4E
11. Joseph JP. Suicides Among Doctors Were Too Common in India. Then the Pandemic Came. – *The Wire Science*. Accessed December 12, 2022. <https://science.thewire.in/health/suicides-among-doctors-common-india-covid-19-pandemic-ima/>
12. Kumar. Doctors' suicide and the vulnerability of medical profession. Accessed December 12, 2022. <https://www.mgmjms.com/article.asp?issn=2347-7946;year=2022;volume=9;issue=2;spage=133;epage=134;aulast=Kumar>

13. Physician Suicide: Overview, Depression in Physicians, Problems with Treating Physician Depression. Published online September 2, 2022. Accessed December 12, 2022. <https://emedicine.medscape.com/article/806779-overview>
14. Primary Care | Suicide Prevention Resource Center. Accessed December 12, 2022. <https://www.sprc.org/settings/primary-care>
15. Medical school can be brutal, and it's making many of us suicidal - The Washington Post. Accessed December 12, 2022. [https://www.washingtonpost.com/national/health-science/medical-school-can-be-brutal-and-its-making-many-of-us-suicidal/2016/10/07/faa1a14e-8a4c-11e6-875e-2c1bfe943b66\\_story.html](https://www.washingtonpost.com/national/health-science/medical-school-can-be-brutal-and-its-making-many-of-us-suicidal/2016/10/07/faa1a14e-8a4c-11e6-875e-2c1bfe943b66_story.html)
16. Healing the very youngest healers. AAMC. Accessed December 12, 2022. <https://www.aamc.org/news-insights/healing-very-youngest-healers>
17. Tugnoli S, Casetta I, Caracciolo S, Salviato J. Parental bonding, depression, and suicidal ideation in medical students. *Front Psychol.* 2022;13. Accessed December 12, 2022. <https://www.frontiersin.org/articles/10.3389/fpsyg.2022.877306>
18. van Niekerk L, Scribante L, Raubenheimer PJ. Suicidal ideation and attempt among South African medical students. *SAMJ South Afr Med J.* 2012;102(6):372-373.
19. Desalegn GT, Wondie M, Dereje S, Addisu A. Suicide ideation, attempt, and determinants among medical students Northwest Ethiopia: an institution-based cross-sectional study. *Ann Gen Psychiatry.* 2020;19(1):44. doi:10.1186/s12991-020-00295-2
20. News KG, Editor E, MSN, RN, BA, CBC. Suicide In Nursing: Much More Common Than You Think. *Nurse.org.* Accessed December 12, 2022. <https://nurse.org/articles/suicide-rates-high-for-female-nurses/>
21. Nurses Consider Suicide More Than Other US Workers. Accessed December 12, 2022. <https://www.oncnursingnews.com/view/nurses-consider-suicide-more-than-other-us-workers>
22. Nurses or Physicians: Who Are at Highest Suicide Risk? *Medscape.* Accessed December 12, 2022. <https://www.medscape.com/viewarticle/949621>
23. Ford S. Suicide risk higher among female nurses than doctors, suggests study. *Nursing Times.* Published May 20, 2021. Accessed December 12, 2022. <https://www.nursingtimes.net/news/workforce/suicide-risk-higher-among-female-nurses-than-doctors-suggests-study-20-05-2021/>
24. Dhusia AH, Dhaimade PA, Jain AA, Shemna SS, Dubey PN. Prevalence of Occupational Burnout among Resident Doctors Working in Public Sector Hospitals in Mumbai. *Indian J Community Med Off Publ Indian Assoc Prev Soc Med.* 2019;44(4):352-356. doi:10.4103/ijcm.IJCM\_78\_19

25. Swaddle T, Kalia S. Burnout Among Doctors Is Not Only Impacting Their Health, but Also Patient Safety, Finds Study. *The Swaddle*. Published September 15, 2022. Accessed December 12, 2022. <https://theswaddle.com/burnout-among-doctors-is-not-only-impacting-their-health-but-also-patient-safety-finds-study/>
26. Deshmukh JS, Vithalani NJ. Burnout syndrome among resident doctors in a tertiary medical college in central India-a cross-sectional study. *Int J Community Med Public Health*. 2022;9(6):2545-2549. doi:10.18203/2394-6040.ijcmph20221532
27. Burnout high among Indian doctors, shows study. *DailyRounds*. Published January 6, 2017. Accessed December 12, 2022. <https://www.dailyrounds.org/blog/burnout-high-among-indian-doctors-shows-study/>
28. Parikh. A comparative study to assess burnout and its correlates among doctors and nurses working at dedicated COVID-19 facility of civil hospital, Ahmedabad, Gujarat. Accessed December 12, 2022. <https://www.anip.co.in/article.asp?issn=2588-8358;year=2021;volume=5;issue=1;spage=50;epage=56;aulast=Parikh>
29. Mental Health and Resiliency Tools for Health Care Workers: COVID-19 - MN Dept. of Health. Accessed December 12, 2022. <https://www.health.state.mn.us/diseases/coronavirus/hcp/mh.html>
30. Provider Well-Being | Mental Health Technology Transfer Center (MHTTC) Network. Accessed December 12, 2022. <https://mhttcnetwork.org/centers/mhttc-network-coordinating-office/provider-well-being>
31. Mental Health Wellness for Healthcare Workers | Relias. Accessed December 12, 2022. <https://www.relias.com/blog/mental-health-wellness-nurses-hospital-staff>