## Editorial:

## Sleep, Sleep Disturbances among Medical Students and their Academic Performance and Health: A Global Issue

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**Keywords:** Sleep disorders, medical students, ICSD-3 classification, advanced sleep phase syndrome, excessive daytime sleepiness, burnout, sleep debt, non-refreshing sleep, and academic performance.

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## **Editorial**

Sleep, Sleep Disturbances among Medical Students and their Academic Performance and Health: A Global Issue

Physiology Medical defined sleep "unconsciousness from which the person can be aroused by sensory or other stimuli." All advance forms of life, as well as humans, have absolute need of sleep<sup>2</sup>. Most of us pass nearly one-third of our lifetime sleeping, yet not much is known about this phenomenon<sup>3</sup>. Furthermore, sleep deprivation is quite common in modern life, which ultimately has grave pathophysiological burdens. 4 Medical students are exposed to a substantial level of pressure due to academic demands. Throughout the globe, medical students must go through intensive academic and clinical activity and training before becoming a full-fledged doctor<sup>5, 6</sup>.

This has been suggested in many medical kinds of literature that medical students' academic performance and overall health is impacted by their sleep patterns<sup>7-9</sup>. Their sleep pattern is characterized by an insufficient amount of sleep, delayed sleep onset, excessive daytime sleepiness, feeling fatigued, lack of concentration, depression, resulting in medical and mental health issues

including the use of different substances and medications and poor academic performance<sup>10-12</sup>. Study revealed that a statistically significant (p<0.001) correlation between stress and poor sleep quality. Moreover, logistic regression showed that those medical undergraduates were stress-free had the less possibility to suffer from disturbed sleep pattern (OR=0.28, p<0.001). Additionally, low-quality sleepers had a fourfold higher incidence opportunity of obtaining cumulative grade point average (GPA) lower than 4.25 (OR=3.83, p=0.01)  $^{13}$ .

Sleep plays as a key element in promoting and protecting "physical and mental health, quality of life, and safety" one's entire lifetime. Additionally, among pediatric population, sleep support growth and development. <sup>14</sup> Unsurprising, sleep deprivation has major short- and long-term consequences<sup>15, 16</sup>. One of the top causes of motor vehicle accident is identified as sleep deprivation of automobile drivers. Chronic sleep deprivation can lead to a wide variety of harmful health significances, which include heightened risk of hypertension, diabetes, obesity, depression, cardiovascular diseases, and stroke<sup>10</sup>. Chronic sleep deprivation has a negative impact on several

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physiological and biochemical system that include "cardiovascular autonomic control, inflammation, immune responses, and metabolism." Another study reported medical doctors while performing just one busy night shift have an adverse influence on the cardiovascular autonomic system and immune intonation, individualistically by the initiation of the hypothalamic-pituitary axis<sup>17</sup>. Multiple studies similarly reported that just onenight sleep deprivation in otherwise healthy human being had amplified sympathetic and diminished parasympathetic cardiovascular intonation, reduced baroreflex sensitivity, the upsurge of fatigue, exhaustion with decrease workability<sup>16, 18-20</sup>.

Medical students usually sleep not as much of ordinary people around the community. At many occasion, medical students sleep pattern mimic with sleep-related difficulties<sup>21,22</sup>. Multiple epidemiological studies revealed that medical students around the globe suffer from sleep deprivation <sup>23-33</sup>. Medical students of China<sup>23</sup>, Hong Kong<sup>25</sup>, Malaysia<sup>26</sup>, Iran<sup>27</sup>, Brazil<sup>30, 32</sup>, and Mexico<sup>33</sup> suffer from poor quality sleep and sleep deprivation around 19%, 70%, 16%, 40.6%, 28.2-38.9%, and 24%, respectively. Chronic sleep deprivation adversely affects the cognitive and psychomotor performance of medical students<sup>34, 35</sup>. One more study reported that sleep difficulties and deprivations among medical students were much more serious than law and economics students. This study defended their study comparison as law, and economics, the academic program almost similarly has an enormous study load<sup>36</sup>. Another study revealed that medical students' sleep deprivation just for single day affects the decision capability more than the reaction time or swiftness of response<sup>37</sup>. Additionally, multiple studies similarly revealed that sleep deprivation had a harmful effect on specific facets of profession related recall

skill, as for example filtering competence, at the same time as Stroop test scores had declining trend. Furthermore, it has been reported that sleep deprivation mainly affects the swiftness of response rather than the act of preparing or dealing<sup>38-45</sup>. Sleep improves and augments cognitive processes procedures and performance<sup>46,</sup> <sup>47</sup>. Almost all higher education demand cognitive capabilities that include association and encrypting of recalls<sup>48-51</sup>. These abilities are much important for medical education since medical students and doctors require to remember a huge amount of multilayered precise knowledge within a brief time and need recall instantly<sup>52, 53</sup>. Thereafter, multiple studies revealed that poor sleep quality and deprivation often correlated with medical students' poor learning ability and academic performance<sup>54-58</sup>. The issue of sleep deprivation and poor sleep quality among medical students has been generalized all over the planet<sup>7</sup>.

Medical educationist and policymakers need to address the sleep issue in the earliest possible time by promoting sleep hygiene to improve sleeping habits and improving both physical and psychological health among future medical doctors<sup>59</sup>. This effort will lead to more robust sleep curricula and sleep behavior interventions. Education regarding proper sleep habits and the significant role of sleep quantity and quality in sustaining healthy sleep and for avoiding critical error is especially important. Increased awareness regarding sleep health is required beyond sleep education also, as medical students need help in translating their knowledge into practical strategies to improve their own and others sleep and well-being.

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