Original Article

MBBS Student Wellbeing During and After COVID-19: A Longitudinal Study

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Abstract

Background: The COVID-19 pandemic disrupted medical education worldwide, placing additional strain on medical students' health and well-being. Assessing its impact is vital for shaping support systems that address their evolving needs. This study explored the dimensions of wellness among MBBS students at Era's Lucknow Medical College during and beyond the pandemic, with the goal of identifying priority areas for intervention. **Settings and Design**- a longitudinal study was carried out among undergraduate students from four batches (2016–2019). **Material and Methods:** A total of 186 students voluntarily completed a validated questionnaire assessing seven domains of well-being: physical, emotional, intellectual, social, spiritual, occupational, and environmental. Data were examined descriptive statistics along with chi-square tests, t-tests, and ANOVA for inferential analysis. **Results:** Physical health concerns were prominent, with 84.41% of students reporting eyestrain from prolonged screen exposure. Emotional isolation was noted by 59.14%. While 95.70% valued virtual learning during lockdown, only 4.30% preferred it after restrictions eased. Social connectedness was supported by informal teacher-student interactions (65.05%) and dedicated online platforms (62.37%). Spiritual and environmental awareness were strong, with 88.17% engaging in introspection and community responsibility. Occupational well-being reflected mixed views on career satisfaction. **Conclusion:** The findings reveal that while the pandemic strained physical and emotional health, social support and spiritual practices offered resilience. Tailored institutional strategies are needed to promote balanced student wellness in the post-pandemic context.

Keywords: Wellbeing, physical health, emotional health, intellectual development, social connections, spiritual awareness, environmental factors, occupational satisfaction.

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Introduction

The concept of wellness in medical students is both complex and challenging to quantify, it is often linked to stress and burnout. The key to wellness originated in the 19th century, it was associated with moral character.[1]. The World Health Organization however defines wellness as "a state of complete physical, mental, and social well-being and not merely the absence of disease".[2] Kirkland emphasized that individuals are responsible for their own well-being, promoting it through self-awareness and disease prevention.[1] Common factors in wellness definitions therefore include overall health and absence of disease.

The COVID-19 pandemic impacted medical education, increasing student stress and diminishing wellness. This crisis highlighted the need to support medical students' well-being, given their frontline role and academic pressures.

Dimensions of wellbeing include: Physical: It relates to fitness and activity, enabling daily tasks and reducing morbidity and mortality.[3] Intellectual: Involves mental growth, knowledge, and skills leading to behavioural change.[3] Emotional: Pertains to emotions, values, and attitudes, with emotionally healthy individuals often being optimistic and confident.[4] Social: Focuses on healthy relationships and empathy, contributing to societal health.[5] Spiritual: Involves finding purpose and meaning through practices like meditation and introspection.[6] Occupational: Engaging in satisfying work that aligns with personal values and contributes meaningfully.[7] Environmental: Emphasizes a healthy relationship with the Earth and one's surroundings, where a harmonious environment benefits both body and mind.[8,9]

This study aims to explore wellness perceptions among MBBS students at Era's Lucknow Medical College, identify areas needing support, and develop strategies to enhance well-being post-COVID-19 pandemic.

Materials and Methods

Study Design: Longitudinal study

Time frame- 2020-24

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Inclusion Criteria

186 MBBS students of Era's Lucknow Medical College.

Exclusion Criteria

Students not willing to participate in this study.

Ethical Considerations

The study was approved by the Ethics Committee of Era's Lucknow Medical College. ELMC&H/R Cell, EC/2020/123 Informed consent was obtained from all participants online.

Questionnaire Development

The questionnaire was pre-validated for appropriate vocabulary, question order, timing, and overall respondent interest, attention, and well-being. Questions were designed to assess the following dimensions of well-being:[10,11]

Physical: Questions related to physical fitness, activity levels, and overall health.

Spiritual: Questions aimed at understanding the students' stress levels and coping mechanisms through spiritual practices.

Intellectual: Questions on mental growth, knowledge, and skills development.

Emotional: Questions focused on emotional health, self-identity, and self-esteem.

Social: Questions about the ability to give and receive support and maintain relationships.

Environmental: Questions regarding the students' surroundings and their impact on well-being.

Occupational: Questions on life satisfaction, engagement in meaningful activities, and contentment with the current situation.

Data Collection and Handling- Students were sent the questionnaire online (ensuring confidentiality), and their responses were uploaded back to their mentors. The responses were collated in an Excel spreadsheet, data was then imported into SPSS software for analysis.

Data Analysis: Descriptive statistics was used to summarize the demographic data and overall well-being scores.

Inferential statistics- including t-tests and ANOVA, to identify significant differences in well-being dimensions among different groups.

Results

Through Covid

Table 1: Overall Impact During COVID-19 Lockdown

Item	Overall	
	No.	Yes %
Physical impact		
Eyes feel strained after long computer session	157	84.41
Working on the computer adversely affected the health	92	49.46
Emotional impact		
Distance affecting the relationship with teacher	110	59.14
Virtual classroom setting moving towards isolation	105	56.45
Benefitted from social media interactions	119	63.98
Dedicated virtual platform must be established	116	62.37
Like the teacher to have informal discussions	121	65.05
Intellectual impact		
Virtual classroom setting gradually take over the traditional method	63	33.87
Virtual instruction method better than the traditional	8	4.30
We like the teaching material to be mailed	177	95.16
Appreciate the concept of a virtual classroom setting in the period of lockdown	178	95.70
E care app for assessment helpful for reinforcement of knowledge	148	79.57
Appreciate the various components of the e-care app	141	75.81
have an access to online progress/ feedback	110	59.14
Social impact		
Have any disability/ inhibitions using this virtual setup	57	30.65
Has the distance affected the concept of group study?	165	88.71
Use if a social media platform is established by the institute?	144	77.42
Spiritual impact		
Current situation made you to introspect about career, family and friends	164	88.17
You gained from the foundation course	147	79.03
Are you doing yoga	64	34.41
Environmental impact		
Become more responsible towards neighbors and community	164	88.17
Taken the initiative to help the elderly in your community	159	85.48
Switch off apps that distract from studying	148	79.57
Set up a space in house designated as a special study space	167	89.78
Friends before the lockdown, remained in touch for studies	117	62.90
Trying to do too many things at a time, leading to confusion	106	56.99
Occupational impact		
Able to effectively use the virtual platform resources	107	57.53
Virtual classroom settings been helpful to remove shyness	92	49.46
Able to answer the assessments in a timely manner	167	89.78
Made a daily schedule for yourself	137	73.66

Inference: The highest affirmative responses were for appreciating the concept of a virtual classroom during

lockdown (95.70%) and the preference for having teaching material mailed (95.16%).

Physical impact showed significant strain on eyes (84.41%) and adverse health effects (49.46%).

Emotional impacts included feeling distanced from teachers (59.14%) and moving towards isolation (56.45%).

Intellectual impacts were mixed; while virtual settings were appreciated during lockdown (95.70%), only a small fraction preferred virtual instruction over traditional methods (4.30%).

Social impacts indicated a high preference for a dedicated virtual platform (62.37%) and informal discussions with teachers (65.05%).

Spiritual and environmental impacts showed high levels of introspection (88.17%) and community responsibility (88.17%).

Table 2: Impact Across Different Batches

Item	Batch 2016 (N=75)		Batch 2017 (N=43)		Batch 2018 (N=25)		Batch 2019 (N=43)		chi sq	p-value
	No.	%	No.	%	No.	%	No.	%		
Physical impact										
Eyes feel strained after long computer session	65	86.7	34	79.1	23	92.0	35	81.4	2.61	0.455
Working on the computer adversely affected the health	39	52.0	21	48.8	8	32.0	24	55.8	3.94	0.268
Emotional impact										
Distance affecting the relationship with teacher	42	56.0	27	62.8	14	56.0	27	62.8	0.88	0.830
Virtual classroom setting moving towards isolation	42	56.0	24	55.8	10	40.0	29	67.4	4.88	0.181
Benefitted from social media interactions	45	60.0	25	58.1	20	80.0	29	67.4	4.16	0.245
Dedicated virtual platform must be established	42	56.0	17	39.5	19	76.0	38	88.4	25.20	<0.001
Like the teacher to have informal discussions	45	60.0	22	51.2	19	76.0	35	81.4	10.90	0.013
Intellectual impact										
Virtual classroom setting gradually take over the traditional method	26	34.7	14	32.6	9	36.0	14	32.6	0.14	0.987
Virtual instruction method better than the traditional	5	6.7	2	4.7	0	0.0	1	2.3	2.56	0.464
We like the teaching material to be mailed	70	93.3	43	100.0	24	96.0	40	93.0	3.20	0.362
Appreciate the concept of a virtual classroom setting in the period of lockdown	71	94.7	41	95.3	23	92.0	43	100.0	2.97	0.396
E care app for assessment helpful for reinforcement of knowledge	61	81.3	31	72.1	20	80.0	36	83.7	2.08	0.556
Appreciate the various components of the e-care app	58	77.3	29	67.4	19	76.0	35	81.4	2.47	0.481
have an access to online progress/ feedback	44	58.7	17	39.5	13	52.0	36	83.7	18.10	<0.001
Social impact										
Have any disability/ inhibitions using this virtual setup	21	28.0	16	37.2	8	32.0	12	27.9	1.29	0.731
Has the distance affected the concept of group study?	62	82.7	38	88.4	23	92.0	42	97.7	6.46	0.091
Use if a social media platform is established by the institute?	54	72.0	29	67.4	21	84.0	40	93.0	10.30	0.016
Spiritual impact										
Current situation made you to introspect about career, family and friends	70	93.3	31	72.1	25	100.0	38	88.4	15.90	0.001
You gained from the foundation course	55	73.3	32	74.4	17	68.0	43	100.0	15.30	0.002
Are you doing yoga	24	32.0	17	39.5	14	56.0	9	20.9	9.32	0.025
Environmental impact										
Become more responsible towards neighbors and community	69	92.0	35	81.4	23	92.0	37	86.0	3.48	0.323
Taken the initiative to help the elderly in your community	65	86.7	33	76.7	23	92.0	38	88.4	3.88	0.275
Switch off apps that distract from studying	60	80.0	40	93.0	10	40.0	38	88.4	30.90	<0.001
Set up a space in house designated as a special study space	67	89.3	38	88.4	23	92.0	39	90.7	0.71	0.872
Friends before the lockdown, remained in touch for studies	41	54.7	19	44.2	20	80.0	37	86.0	21.60	<0.001
Trying to do too many things at a time, leading to confusion	45	60.0	24	55.8	11	44.0	26	60.5	2.23	0.525
Occupational impact										
Able to effectively use the virtual platform resources	41	54.7	23	53.5	14	56.0	29	67.4	2.29	0.514
Virtual classroom settings been helpful to remove shyness	32	42.7	21	48.8	8	32.0	31	72.1	13.30	0.004
Able to answer the assessments in a timely manner	66	88.0	39	90.7	22	88.0	40	93.0	0.88	0.831
Made a daily schedule for yourself	55	73.3	35	81.4	15	60.0	32	74.4	3.75	0.290

Inference

No significant difference in physical impact among different

batches.
Significant differences were noted in emotional, social, spiritual, and occupational impacts.
Emotional impact differences were significant for the establishment of a dedicated virtual platform and the preference for informal discussions with teachers.
Intellectual impact differences were significant regarding access to online progress/feedback.
Social impact differences were noted for the use of a social media platform and the continuation of group study practices.
Spiritual impacts varied significantly across all items.
Environmental impacts were significant for switching off distracting apps and maintaining study contact with friends.
Occupational impacts differed significantly for the reduction of shyness in virtual settings.

The variation in emotional and social impacts suggests different coping mechanisms and preferences among batches, possibly influenced by their stage in the academic program.
The intellectual impact differences highlight the varying degrees of importance placed on feedback and assessment tools by different cohorts.
Social and spiritual impact differences could be attributed to personal growth stages, social maturity, and the ability to adapt to remote learning environments.
The occupational impact differences, particularly in overcoming shyness, suggest that younger batches or those less familiar with virtual platforms might benefit from additional support and training.

Table 3: Kruskal Wallis test

Batch	Mean (% Yes Responses)	SD	95% Confidence Interval for Mean		Kruskal-Wallis Test	
			Lower Bound	Upper Bound	chi sq	p=value
2016	19.68	3.32	18.90	20.46	19.80	<0.001
2017	19.07	3.76	17.95	20.18		
2018	18.81	5.21	16.44	21.18		
2019	21.61	4.06	20.38	22.85		
Total	19.89	3.96	19.31	20.47		

Inference

Batch 2019 had the highest mean % of yes responses (21.61%) indicating a higher affirmative response across the survey items, while Batch 2018 had the lowest (18.81%).
Significant differences were observed in the mean % yes responses across batches ($p < 0.001$).
The higher affirmative responses from Batch 2019 might reflect a greater adaptability or satisfaction with the virtual setup, possibly due to their recent transition into the program or exposure to digital tools.
The lower affirmative responses from Batch 2018 could indicate challenges specific to this cohort, necessitating targeted interventions to address their unique concerns.

Post Covid Results

Table 4: Post COVID Satisfaction

Satisfaction Item		No.	%
Overwhelmed by workload	strongly disagree	3	2.3%
	disagree	12	9.2%
	Neutral	51	39.2%
	agree	36	27.7%
	strongly agree	28	21.5%
Feel anxious about exams	strongly disagree	0	0.0%
	disagree	6	4.6%
	Neutral	24	18.5%
	agree	49	37.7%
	strongly agree	51	39.2%
Difficulty in balancing academics with other aspects of life	strongly disagree	1	.8%
	disagree	9	6.9%
	Neutral	51	39.2%
	agree	44	33.8%
	strongly agree	25	19.2%
Feel exhausted and fatigued	strongly disagree	0	0.0%
	disagree	9	6.9%
	Neutral	29	22.3%
	agree	55	42.3%
	strongly agree	37	28.5%
I have experienced symptoms of depression such as feelings of sadness or hopelessness	strongly disagree	6	4.6%
	disagree	17	13.1%
	Neutral	46	35.4%
	agree	30	23.1%
	strongly agree	31	23.8%
I feel supported by my peers and faculty members	strongly disagree	8	6.2%
	disagree	16	12.3%
	Neutral	41	31.5%

	agree	48	36.9%
	strongly agree	17	13.1%
I have difficulty sleeping due to stress and worry	strongly disagree	1	.8%
	disagree	16	12.3%
	Neutral	45	34.6%
	agree	35	26.9%
	strongly agree	33	25.4%
I have neglected my physical health due to academic demands	strongly disagree	1	.8%
	disagree	15	11.5%
	Neutral	31	23.8%
	agree	43	33.1%
	strongly agree	40	30.8%
I have considered seeking professional help for stress or mental health concerns	strongly disagree	13	10.0%
	disagree	40	30.8%
	Neutral	45	34.6%
	agree	17	13.1%
	strongly agree	15	11.5%
I feel satisfied with my progress and achievements in medical school	strongly disagree	11	8.5%
	disagree	22	16.9%
	Neutral	65	50.0%
	agree	27	20.8%
	strongly agree	5	3.8%

Inference

Responses showed significant levels of anxiety about exams (76.9% either agree or strongly agree) and feelings of exhaustion and fatigue (70.8%).

Difficulty in balancing academics with other aspects of life was notable (53% either agree or strongly agree).

Symptoms of depression were reported by a substantial portion (46.9%).

Support from peers and faculty was moderate (50% agree or strongly agree).

Physical health neglect due to academic demands was reported by 63.9%.

Satisfaction with progress and achievements was low, with only 24.6% agreeing or strongly agreeing.

The high levels of anxiety and fatigue post-COVID highlight the ongoing mental health challenges students face, suggesting a need for enhanced mental health support services.

The difficulty in balancing academics and life underscores the importance of promoting better time management and self-care practices among students.

The moderate support from peers and faculty indicates room for improvement in community building and peer support networks within the institution.

The neglect of physical health is concerning and calls for initiatives to integrate physical wellness into the academic culture.

Overall satisfaction with progress and achievements being low suggests a potential gap in meeting students' academic and career expectations, which could be addressed through curriculum adjustments and additional academic support.

Table 5: Overall Satisfaction Levels Post COVID

Satisfaction Overall	No.	%	Mean±SD of score
Very poor (<20 %)	0	0.0%	NA
Poor (20-40%)	2	1.5%	32.50±3.54
Fair (40-60%)	48	36.9%	50.94±4.74
Good (60-80%)	56	43.1%	66.34±5.68
Very Good (>=80%)	24	18.5%	84.17±4.08
Total	130	100.0%	63.42±13.48

Inference

Satisfaction levels were generally positive, with most participants rating their satisfaction as fair (36.9%) or good (43.1%).

A smaller segment rated their satisfaction as very good (18.5%), while only 1.5% rated it as poor.

The overall positive satisfaction levels post-COVID reflect a successful adaptation to the new normal in education, albeit with areas needing attention.

The fair and good ratings indicate a generally acceptable but not exceptional experience, pointing towards opportunities for enhancing student satisfaction through continuous improvements in the virtual learning environment and support systems.

Discussion

Physical Impact (Table 1)

The capacity to perform daily tasks without stress or exhaustion is crucial for physical well-being. The COVID-19 pandemic forced students to adapt to new routines, significantly impacting their physical health due to increased screen time. Our research highlights eye fatigue as a primary concern, with approximately 84.41% of students reporting strained eyes. This aligns with Agarwal et al,[12] who found that over 6 hours of computer use leads to eye fatigue, and Kim et al,[13] who noted symptoms like dryness and burning from excessive electronic device use.

Emotional Impact [Table 1,3-5]

The emotional impact of the COVID-19 pandemic was profound,

as indicated by a longitudinal study by Elmer et al.[14] Our study found that 56.45% of students felt isolated due to the pandemic, negatively affecting their mental health. This is supported by Bourion-Bédès et al,[15] who reported that 22% of students in France experienced pandemic-related stress, leading to increased alcohol and tobacco use. Additionally, 63.98% of our respondents found social media interactions beneficial, though only 62% wanted a dedicated virtual platform. Sadid-Zadeh et al,[16] found that 99% of students were satisfied with web-based lectures, highlighting the mixed responses to online learning's social aspects.

Intellectual Impact [Table 1]

Our research shows a preference for synchronous learning methods, with only 4.3% favouring virtual classrooms over traditional ones. This mirrors Abbasi et al,[17] where most participants did not favour virtual classes. Conversely, Ituma et al,[18] found a general preference for online learning, reflecting the diverse opinions on this issue.

Spiritual Impact [Table 1,4,5]

The pandemic allowed families to bond while also causing conflicts. Nearly 88.17% of students reflected on their relationships with family and friends during this period. Walsh et al,[19] and Amorin Woods et al,[20] both highlighted stress, grief, anxiety, and social stress as significant emotional impacts during COVID-19, underscoring the deep concern for familial and personal well-being.

Social Well-being [Table 1, 4,5]

Our study found that approximately 88.71% of students felt that distance learning negatively impacted group study, consistent with Aristeidou et al.[21] This reflects the challenges of collaborative learning in a virtual environment. About 30% of participants had reservations about using virtual technology, which aligns with Irvin et al,[22] who identified personal barriers like lack of training and technical support as obstacles to effective communication in distance learning.

Occupational Impact [Table 1]

In our study, 57.53% of students effectively utilized virtual platforms for learning, highlighting the adaptation to online resources. Rasheed et al,[23] noted that not all students had the resources, support, or training necessary for online education, echoing our findings. Additionally, 73.66% of students managed to make daily schedules, and 49% found that online learning helped them overcome shyness. Kulal and Nayak,[24] found online learning to be engaging and enjoyable, positively impacting both students and teachers, which aligns with our results.

Environmental Impact [Table 1, 4,5]

During the pandemic, there was a notable shift towards greater community responsibility, with 88.17% of participants feeling more responsible towards their neighbours. This resonates with Laverack and Manoncourt,[25] who emphasized community support in response to human needs. Furthermore, 85% of participants took the initiative to help the elderly in their community. About 89.78% set up designated study spaces, highlighting the environmental adjustments made to accommodate the new learning realities.

Key message

1. Virtual classroom was appreciated but health issues regarding the same suggest better ergonomics.
2. Emotional and social impacts highlight the importance of personal bonds hence virtual platforms should be colloquial.
3. Intellectual feedback supports virtual study during the lockdown but shows a trend towards conventional learning.
4. High spiritual and environmental awareness boosts student adaptability and community ties.

Conclusion

By integrating physical, emotional, intellectual, spiritual, social, occupational, and environmental aspects, we provide a holistic view of the pandemic's effects. Future research should continue to explore these dimensions, focusing on long-term outcomes and strategies to mitigate negative impacts. Our findings have several implications. First, institutions must adopt a comprehensive wellness framework, integrating physical health, emotional resilience, and social connectedness into the academic culture. Second, mental health support systems—including confidential counselling, stress management workshops, and mentorship programmes—should be institutionalised rather than offered reactively. Third, blended learning models should be promoted, combining the flexibility of digital tools with the irreplaceable benefits of in-person clinical teaching. Finally, fostering community responsibility and reflective practices can strengthen resilience, turning challenges into opportunities for growth

Strengths and Limitations

A strength of this study is its holistic framework, which assessed wellness across seven domains, capturing both challenges and adaptive strengths. Inclusion of multiple batches allowed batch-wise comparisons, adding depth to the analysis. However, the study was limited to a single institution, which may affect generalisability. Responses were self-reported, raising the possibility of bias. Despite these limitations, the findings provide valuable insights for guiding interventions in medical education.

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Conflicts of interest

There are no conflicts of interest.

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