

Original Research Article

Exploring mental well-being and resilience factors among medical resident doctors in a tertiary care institute in Mumbai

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ABSTRACT

Background: Resident doctors face significant professional pressures, shifting research focus toward positive mental health and resilience. This study utilizes the Warwick-Edinburgh mental well-being scale (WEMWBS) to assess psychological health, examining its relationship with resilience and demographic factors. By identifying protective coping mechanisms within a community medicine framework, the findings aim to support resident welfare and enhance patient care quality.

Methods: This cross-sectional observational study, conducted from December 2024 to March 2025, included 135 Resident Medical Officers from 18 departments in Mumbai using proportional stratified random sampling. Data were collected through Google Forms using WEMWBS and BRS tools, after IRB approval, and analysed using statistical package for the social sciences (SPSS) version 25 with appropriate statistical tests.

Results: Among 135 residents (66.7% female), the mean mental well-being score was 45.04 ± 11.03 , with 28.9% reporting very low well-being. The mean resilience score was 19.23 ± 3.43 , where 72.6% displayed normal to high resilience. While gender and training year showed no significant associations, specialization significantly influenced both well-being ($p=0.014$) and resilience ($p<0.001$). Participants worked an average of 69.29 hours weekly, reporting a mean stress score of 5.87. Social support from friends and family (66.7%) was the most prevalent coping strategy.

Conclusions: Among 135 Mumbai residents, average mental well-being (mean 45.04) and high resilience were reported. Specialization significantly influenced outcomes, favoring pre/paraclinical roles. Social support remains a key protective factor, highlighting the importance of institutional resilience-building initiatives.

Keywords: Mental well-being, Resilience, Resident medical officers, Warwick-Edinburgh mental well-being scale, Brief resilience scale, Coping strategies

INTRODUCTION

The mental well-being and resilience of resident doctors have gained increasing attention in recent years due to the demanding nature of medical training.^{1,2} Residency involves long working hours, shift duties, high clinical responsibility, academic pressures, and continuous exposure to emotionally challenging situations.^{3,4} These professional demands are often accompanied by personal and social adjustments, making resident doctors a unique

group in whom mental well-being deserves careful study.^{2,4}

Traditionally, research in medical training has focused on adverse outcomes such as stress, burnout, anxiety, and psychological distress.⁵ While these remain important concerns, there is growing recognition that positive mental health is more than the absence of illness.^{3,6} Understanding the factors that help resident doctors remain psychologically healthy, resilient, and professionally engaged is equally important.^{5,7}

Mental well-being refers to a positive state in which individuals are able to realise their abilities, cope effectively with the normal stresses of life, work productively, and contribute meaningfully to society.^{6,8} Resilience refers to the ability to adapt successfully and recover from adversity, challenges, or stressful life events.^{3,5} Together, these concepts provide a broader understanding of psychological health and professional functioning among resident doctors.^{2,9}

From a community medicine perspective, the emphasis extends beyond identifying problems to understanding factors that promote health and well-being.⁶ Identifying protective factors and positive coping mechanisms among resident doctors can provide valuable evidence for developing health-promoting and resilience-building strategies within medical training institutions.^{3,10} Such information may contribute not only to the well-being of doctors but also to the quality of patient care delivered by them.^{4,6}

Relationship between mental well-being and resilience

Mental well-being and resilience share a close and mutually reinforcing relationship.^{3,9} Resilience enables individuals to cope effectively with stress, adversity, and professional challenges, thereby supporting better mental well-being.^{3,5} Conversely, positive mental well-being enhances optimism, emotional regulation, self-efficacy, and adaptive functioning, which strengthen resilience.^{3,9}

Resilience is influenced by multiple factors, including positive coping strategies, social support, self-esteem, emotional regulation, and a sense of purpose in life.^{3,7,10} These factors help individuals adapt to difficult circumstances and maintain psychological well-being despite ongoing challenges.^{6,7} Understanding this relationship is particularly important among resident doctors, who routinely encounter demanding clinical and academic environments.^{2,4}

Objectives

The present study aims to assess mental well-being using the Warwick-Edinburgh mental well-being scale, a validated instrument that focuses on positive aspects of mental health.^{8,11} In addition, the study explores resilience, adaptive coping strategies, and other protective factors that may contribute to better psychological well-being among resident doctors.^{3,10} The study also examines the association of mental well-being with demographic and training-related factors such as gender, year of residency, nativity, and medical specialisation.^{5,9,12,13}

METHODS

Study design and setting

A cross-sectional observational study was conducted among resident medical officers (RMOs) at a Metropolitan

Tertiary Care Institute in Mumbai, India. The study period extended from 01 December 2024 to 31 March 2025.

Study population

The study group comprised RMOs from clinical, paraclinical, and preclinical departments across the institute.

Inclusion criteria

RMOs currently employed at the study site during the study period, voluntary provision of written informed consent, and availability to complete the questionnaire during the data collection phase were included.

Exclusion criteria

RMOs with acute medical or surgical illness, and RMOs with a diagnosed neurological or psychiatric illness were excluded.

Sample size

Sample size was calculated using the finite population correction formula, based on a prevalence of 58% derived from Ruitenburg et al, with a 95% confidence level ($Z=1.96$), margin of error of 7%, and a total RMO population of 458.¹⁴ The calculated sample size was 135.

Sampling method

Proportional stratified random sampling was employed. The total sample of 135 was allocated across eighteen departments in proportion to their respective RMO strength.

Within each department, participants were selected using a random number table applied to the serial numbers on RMO identification cards.

A pre-prepared alternate list, similarly, randomised, was used to replace non-consenting or unavailable participants. The department-wise allocation (RMOs enrolled/total RMOs) was: Anaesthesia 24/78, General Medicine 17/54, Paediatric 13/42, Surgery 13/42, Pathology 11/33, Radiology 10/30, Community Medicine 9/29, OBGY 7/24, Ophthalmology 5/18, ENT 5/18, Pharmacology 4/14, Microbiology 3/10, Dermatology 3/9, Pulmonary Medicine 3/9, Orthopaedics 3/9, Anatomy 2/6, Physiology 2/6, and FMT 1/3.

Data collection

Data were collected through an anonymous 50-item structured Google Form covering sociodemographic, work, coping, lifestyle and mental health awareness domains, completed privately within the institute, with referral to Psychiatry OPD if support was required.

Study instruments

Mental well-being was assessed using the Warwick-Edinburgh mental well-being scale, a 14-item, positively worded scale with scores ranging from 14 to 70.^{8,11} A lower score indicates poorer mental well-being.

Resilience was assessed using the brief resilience scale (BRS), developed by Smith et al.¹⁵ The BRS is a 6-item scale designed to measure an individual's ability to recover or bounce back from stress. Each item is rated on a 5-point Likert scale, with items 2, 4, and 6 reverse scored. Total scores range from 6 to 30, with higher scores indicating greater resilience. For interpretation, item mean scores were categorised as low resilience (1.00–2.99), normal resilience (3.00–4.30), and high resilience (4.31–5.00).

Statistical analysis

Data were analysed using statistical package for the social sciences (SPSS) version 25 and Microsoft Excel, with $p < 0.05$ considered statistically significant; qualitative variables were expressed as frequencies and percentages and analysed using Chi-square test, Fisher's Exact test, or pooled categories as appropriate. Ordinal and quantitative variables were expressed as mean $\pm$ SD and Median with IQR, and compared using Mann-Whitney U test or unpaired t-test based on group type and normality, with graphical representation wherever appropriate.

RESULTS

The majority of participants were aged 27 to 29 years (51.9%), followed by 24 to 26 years (24.4%), 30 to 32 years (20.0%), and 33 years or above (3.7%). Females constituted 66.7% of the study population and males 33.3%; 78.5% were single and 21.5% married. Participants were distributed across all training years: JR1 17.0%, JR2 27.4%, JR3 28.9%, and SR 26.7%. Clinical specialization was reported by 71.9%, paraclinical by 25.9%, and preclinical by 2.2%; 65.2% were native to Maharashtra and 34.8% from other states. Substance use was reported by 22.2%, and 34.8% exercised less than 2 hours per week.

Twenty-one specialties were represented. Anaesthesia and General Medicine were the largest groups, each comprising 14.8% ($n=20$), followed by Pathology (10.4%, $n=14$), Paediatrics (8.9%, $n=12$), Community Medicine (8.1%, $n=11$), and General Surgery (7.4%, $n=10$). Non-surgical departments accounted for 59.3% ($n=80$) of participants and surgical departments for 40.7% ($n=55$). A personal or family history of psychiatric conditions was reported by 13.3% ($n=18$).

Most participants perceived their workload as manageable (79.3%). Personal health was rated as good or excellent by 38.5%, while 61.5% rated it as fair or poor. Sleep quality was rated as fair, good, or excellent by 72.6% of participants. Work-life balance was rated as good or

excellent by 35.5%. Recent significant mood changes were reported by 36.3% of participants.

Item-wise mean WEMWBS scores ranged from 2.91 to 3.41 across the 14 items, with an overall mean of means of 3.22. Higher mean scores were observed for "interested in new things" (3.41), "feeling loved" (3.40), "feeling good about myself" (3.33), "making own decisions" (3.32), and "thinking clearly" (3.31). The modal response across all items was "some of the time," accounting for 28% to 47% of responses per item.

Talking with friends or family was the most reported coping strategy (66.7%), followed by hobbies (10.4%), exercise (9.6%), and professional help (6.7%). Social support networks were perceived as supportive or very supportive by 58.5% of participants. More than half of the Resident Medical Officers reported moderate to high levels of optimism (91.9%), and 62.2% rated their problem-solving abilities as good or excellent.

More than half of the participants reported above average or excellent academic performance (54.8%), with positive psychological attributes such as happiness (59.2%), peace (57.0%), hopefulness (66.7%), clear life purpose (71.8%), and good or very good stress coping ability (47.4%). Supportive family and peer relationships were reported by 86.0% and 77.8% respectively, while spiritual practices (65.9%), music (95.6%), peer support (59.3%), regular breaks (38.5%), time-management techniques (36.3%), and future aspirations (74.8%) contributed to their mental well-being.

The mean self-rated stress score was 5.87 on a 10-point scale (median 6.00). The mean WEMWBS score was 45.04 ± 11.03 , with 51.1% of participants demonstrating average or above-average mental well-being scores. The mean BRS score was 19.23 ± 3.43 , and 72.6% of participants demonstrated normal to high resilience levels.

Based on WEMWBS categorisation, 10.4% of participants were in the above-average category, 40.7% in the average category, 20.0% in the below-average category, and 28.9% in the very low category. BRS categorisation showed high resilience in 3.7%, normal resilience in 68.9%, and low resilience in 27.4% of participants.

Among female RMOs, WEMWBS categories were distributed as above average 7.8%, average 44.4%, below average 17.8%, and very low 30.0%. Among male RMOs, the corresponding proportions were 15.6%, 33.3%, 24.4%, and 26.7%. There was no statistically significant association between WEMWBS category and gender ($\chi^2=3.441$, $df=3$, $p=0.328$).

Descriptive analysis showed variation in WEMWBS categories across specialties. Community Medicine demonstrated the highest proportion of above-average well-being scores (54.5%), while General Surgery and

Radiology showed higher proportions in the very low category.

Among surgical residents, WEMWBS categories were above average 3.6%, average 36.4%, below average 23.6%, and very low 36.4%. Among non-surgical residents, the corresponding proportions were 15.0%, 43.8%, 17.5%, and 23.8%. The association was not statistically significant ($\chi^2=6.156$, $df=3$, $p=0.104$).

The proportion of participants in the average and above-average WEMWBS categories increased across successive years of training, from 34.7% among JR1 residents to 66.7% among Senior Residents. However, the association between WEMWBS category and year of residency was not statistically significant in either the original or pooled analysis ($p>0.05$).

Among RMOs from Maharashtra, WEMWBS categories were above average 12.5%, average 39.8%, below average 20.5%, and very low 27.3%. Among RMOs from other states, the corresponding proportions were 6.4%, 40.4%, 21.3%, and 31.9%. The association was not statistically significant ($\chi^2=1.929$, $df=3$, $p=0.587$).

There was statistically significant association between WEMWBS category and specialization ($\chi^2=10.654$, $df=3$, $p=0.014$).

Among clinical residents, WEMWBS categories were above average 5.2%, average 41.2%, below average 21.6%, and very low 32.0%. Among pre/paraclinical residents, the corresponding proportions were 23.7%, 39.5%, 15.8%, and 21.1%.

Among female RMOs, BRS categories were high resilience 4.4%, normal 68.9%, and low 26.7%. Among

male RMOs, the corresponding proportions were 2.2%, 68.9%, and 28.9%. Following pooling of high and normal resilience categories, no statistically significant association was found between BRS category and gender ($\chi^2=0.005$, $df=1$, $p=0.946$).

BRS low resilience proportions by training year were JR1 21.7%, JR2 24.3%, JR3 33.3%, and SR 27.8%. Following pooling of high and normal resilience categories, no statistically significant association was found between BRS category and year of residency ($\chi^2=1.234$, $df=3$, $p=0.745$).

Among RMOs from Maharashtra, BRS categories were high resilience 3.4%, normal 64.8%, and low 31.8%. Among RMOs from other states, the corresponding proportions were 4.3%, 76.6%, and 19.1%. Following pooling of high and normal resilience categories, no statistically significant association was found between BRS category and native state ($\chi^2=1.876$, $df=1$, $p=0.171$).

There was a statistically significant association between BRS category and specialization status ($\chi^2=15.404$, $df=2$, $p<0.001$).

Among clinical residents, BRS categories were high resilience 0.0%, normal 68.0%, and low 32.0%. Among pre/paraclinical residents, the corresponding proportions were 13.2%, 71.1%, and 15.8%.

The mean age of participants was 28.05 ± 2.20 years. Participants reported working a mean of 69.29 ± 32.69 hours per week and exercising for 3.44 ± 3.75 hours per week. The mean self-rated stress score was 5.87 ± 2.20 . The mean WEMWBS score was 45.04 ± 11.03 . The mean BRS total score was 19.23 ± 3.43 , corresponding to a mean item score of 3.21 ± 0.57 .

Table 1: Sociodemographic, residency, work environment and lifestyle characteristics of resident medical officers (n=135).

Variables	N	Percentage (n=135)
Age (years)		
24 to 26	33	24.4
27 to 29	70	51.9
30 to 32	27	20.0
≥ 33	5	3.7
Gender		
Female	90	66.7
Male	45	33.3
Marital status		
Single	106	78.5
Married	29	21.5
Year of residency		
JR1	23	17.0
JR2	37	27.4
JR3	39	28.9
SR	36	26.7

Continued.

Variables	N	Percentage (n=135)
Native state		
Maharashtra	88	65.2
Others	47	34.8
Specialization status		
Clinical	97	71.9
Paraclinical	35	25.9
Preclinical	3	2.2
Do you use any substances (tobacco, alcohol)?		
Yes	30	22.2
No	105	77.8
Please specify your diet type		
Non- Vegetarian	85	63.0
Vegetarian	48	35.6
Eggetarian	1	0.7
Mixed	1	0.7
Hours of exercise/week		
0 to 2	47	34.8
2 to 4	35	25.9
4 to 6	27	20.0
6 to 8	15	11.1
≥8	11	8.1
Specialization (department)		
Anaesthesia	20	14.8
General Medicine	20	14.8
Pathology	14	10.4
Paediatrics	12	8.9
Community Medicine	11	8.1
General Surgery	10	7.4
ENT	7	5.2
Radiology	7	5.2
Ophthalmology	6	4.4
Obstetrics and gynaecology	4	3.0
Psychiatry	4	3.0
Dermatology	3	2.2
Microbiology	3	2.2
Anatomy	2	1.5
Forensic medicine	2	1.5
Cardiology	1	0.7
Chest medicine	1	0.7
Orthopaedics	1	0.7
Pharmacology	5	3.7
Physiology	1	0.7
Respiratory Medicine	1	0.7
How would you rate your sleep quality?		
Excellent	8	5.9
Good	45	33.3
Fair	45	33.3
Poor	37	27.4
Do you feel your workload is manageable?		
Yes	107	79.3
No	28	20.7
How would you describe your work-life balance?		
Excellent	8	5.9
Good	40	29.6

Continued.

Variables	N	Percentage (n=135)
Fair	52	38.5
Poor	35	25.9
Have you experienced significant mood changes recently?		
Yes	49	36.3
No	86	63.7
How would you rate your personal health?		
Good	45	33.3
Excellent	7	5.2
Fair	64	47.4
Poor	19	14.1

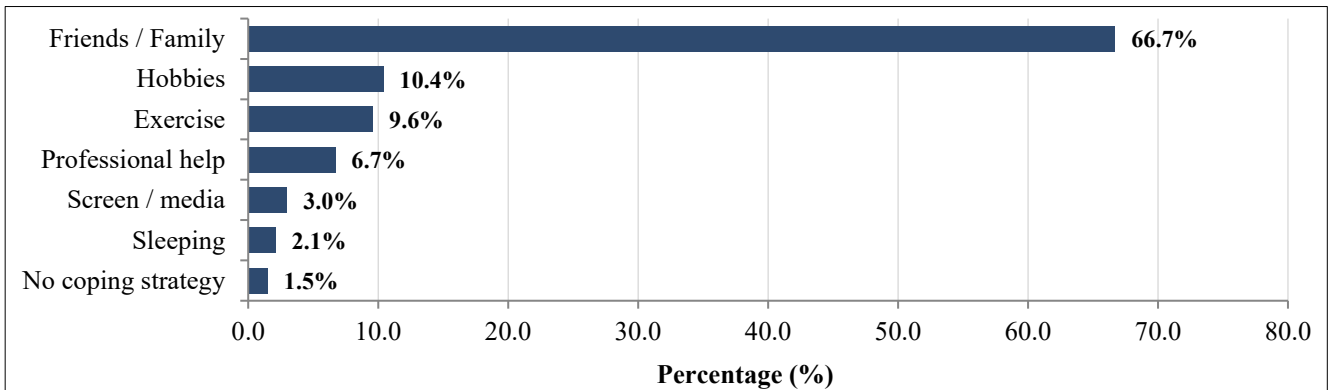


Figure 1: Coping strategies adopted by resident medical officers (n=135).

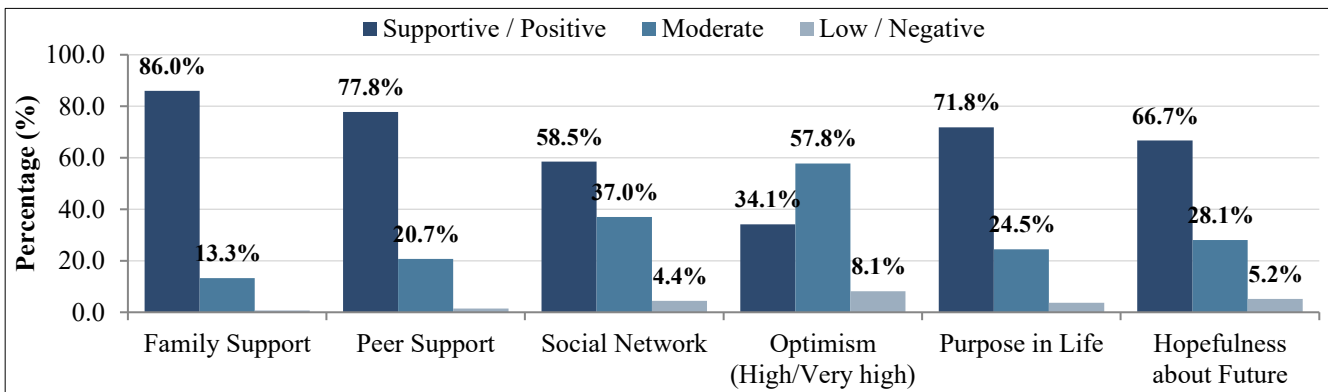


Figure 2: Social support, optimism and purpose in life among resident medical officers (n=135).

Table 2: Coping strategies, social support and lifestyle resilience factors among resident medical officers (n=135).

Variables	Category	N	Percentage (n=135)
Coping strategies (n=135)			
Coping strategies commonly used	Talking with friends/family	90	66.7
	Hobbies	14	10.4
	Exercise	13	9.6
	Professional help	9	6.7
	Sleeping	3	2.1
	Others (screen/media-based)	4	3.0
	Nil	2	1.5
Social support			
How supportive is your social network?	Very supportive	24	17.8
	Supportive	55	40.7

Continued.

Variables	Category	N	Percentage (n=135)
	Somewhat supportive	50	37.0
	Not supportive	6	4.4
Leisure and lifestyle			
Leisure activities engagement	Always	6	4.4
	Often	32	23.7
	Rarely	22	16.3
	Sometimes	75	55.6
Optimism level	Very high	5	3.7
	High	41	30.4
	Moderate	78	57.8
	Low	11	8.1
Problem-solving skills	Excellent	12	8.9
	Good	72	53.3
	Fair	44	32.6
	Poor	7	5.2
Exercise frequency	Regularly	11	8.1
	Frequently	45	33.3
	Rarely	50	37.0
	Never	29	21.5
Eating habits	Excellent	7	5.2
	Good	43	31.9
	Fair	58	43.0
	Poor	27	20.0

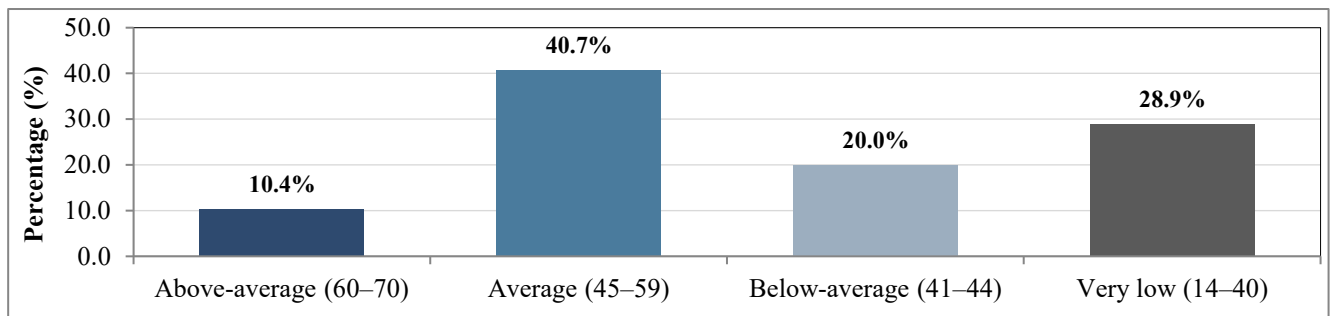


Figure 3: Distribution of mental well-being categories among resident medical officers (n=135).

Table 3: Association between WEMWBS categories and gender, year of residency, native state and specialization (n=135).

Variables	Category	Above average (60-70)	Average (45-59)	Below average (41-44)	Very low (14-40)	χ^2 (df); p value
Gender	Female (n=90)	7 (7.8)	40 (44.4)	16 (17.8)	27 (30.0)	3.441 (3); 0.328
	Male (n=45)	7 (15.6)	15 (33.3)	11 (24.4)	12 (26.7)	
Year of residency	JR1 (n=23)	1 (4.3)	7 (30.4)	6 (26.1)	9 (39.1)	9.326 (9); 0.408 Pooled: 8.926 (6); 0.178
	JR2 (n=37)	3 (8.1)	13 (35.1)	10 (27.0)	11 (29.7)	
	JR3 (n=39)	5 (12.8)	16 (41.0)	5 (12.8)	13 (33.3)	
	SR (n=36)	5 (13.9)	19 (52.8)	6 (16.7)	6 (16.7)	
Native state	Maharashtra (n=88)	12.5%	39.8%	20.5%	27.3%	1.929 (3); 0.587
	Others (n=47)	6.4%	40.4%	21.3%	31.9%	
Specialization	Clinical (n=97)	5 (5.2)	40 (41.2)	21 (21.6)	31 (32.0)	10.654 (3); 0.014*
	Pre/paraclinical (n=38)	9 (23.7)	15 (39.5)	6 (15.8)	8 (21.1)	

Continued.

Variables	Category	Above average (60-70)	Average (45-59)	Below average (41-44)	Very low (14-40)	χ^2 (df); p value
Specialization type	Surgical	3.6%	36.4%	23.6%	36.4%	6.156 (3); 0.104
	Non-surgical	15.0%	43.8%	17.5%	23.8%	
Total (n=135)		14 (10.4)	55 (40.7)	27 (20.0)	39 (28.9)	

Values are No. (%) unless shown as %. *Statistically significant ($p < 0.05$). Year of residency: original analysis showed 4 cells (25.0%) with expected counts < 5 . Categories were pooled and the analysis repeated. The pooled analysis also showed no statistically significant association ($p = 0.178$)

Table 4: Association between BRS categories and gender, year of residency, native state and specialization (n=135).

Variables	Category	High (4.31-5.00)	Normal (3.00-4.30)	Low (1.00-2.99)	χ^2 (df); p value
Gender	Female (n=90)	4 (4.4)	62 (68.9)	24 (26.7)	0.454 (2); 0.797
	Male (n=45)	1 (2.2)	31 (68.9)	13 (28.9)	Pooled: 0.005 (1); 0.946
Year of residency	JR1 (n=23)	2 (8.7)	16 (69.6)	5 (21.7)	2.990 (6); 0.810
	JR2 (n=37)	1 (2.7)	27 (73.0)	9 (24.3)	Pooled: 1.234 (3); 0.745
	JR3 (n=39)	1 (2.6)	25 (64.1)	13 (33.3)	
	SR (n=36)	1 (2.8)	25 (69.4)	10 (27.8)	
Native state	Maharashtra (n=88)	3 (3.4)	57 (64.8)	28 (31.8)	2.475 (2); 0.290
	Others (n=47)	2 (4.3)	36 (76.6)	9 (19.1)	Pooled: 1.876 (1); 0.171
Specialization	Clinical (n=97)	0 (0.0)	66 (68.0)	31 (32.0)	15.404 (2); $< 0.001^*$
	Pre/paraclinical (n=38)	5 (13.2)	27 (71.1)	6 (15.8)	
Total (n=135)		5 (3.7)	93 (68.9)	37 (27.4)	

Values are no. (%). *Statistically significant ($p < 0.05$). Gender: original analysis showed 2 cells (33.3%) with expected counts < 5 . Year of residency: original analysis showed 4 cells (33.3%) with expected counts < 5 . Native state: original analysis showed 2 cells (33.3%) with expected counts < 5 . Categories were pooled and the analysis repeated; the pooled analyses also showed no statistically significant association ($p = 0.946$, $p = 0.745$ and $p = 0.171$ respectively)

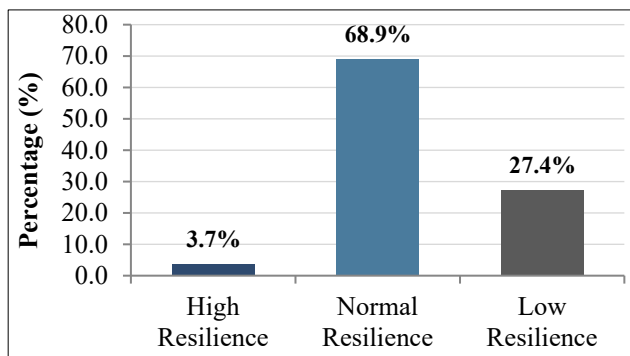


Figure 4: Distribution of resilience categories among resident medical officers (n=135).

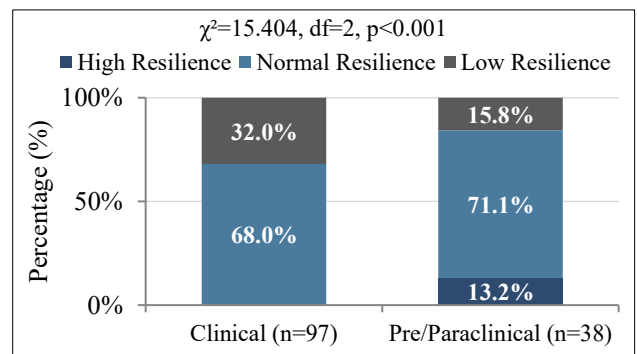


Figure 6: Association between resilience category and specialization status (n=135).

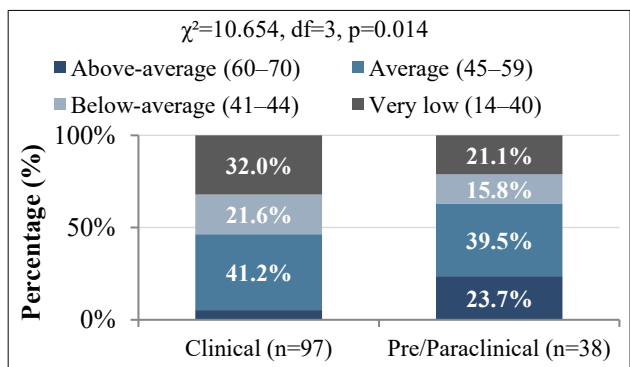


Figure 5: Association between mental well-being category and specialization status (n=135).

DISCUSSION

Mental well-being among resident doctors

The mean WEMWBS total score of 45.04 (SD 11.03) in the present study places the cohort at the lower boundary of the average well-being range (45 to 59), with a median of 45.00. Overall, 51.1% of participants demonstrated average or above-average mental well-being. These findings indicate that the majority of resident doctors maintained a functional level of positive mental health across the duration of their training, which is consistent with evidence from comparable postgraduate medical populations.¹⁻⁴ Lebares et al. similarly reported that most surgical residents and fellows sustained adequate

psychological functioning even within demanding training conditions, with well-being outcomes varying considerably by contextual and individual factors.¹⁶

The item-wise WEMWBS analysis provides a more granular view. Higher mean scores were observed for items reflecting engagement, purpose, and interpersonal connection, specifically "interested in new things" (3.41), "feeling loved" (3.40), and "feeling good about myself" (3.33). These findings are consistent with the broader positive psychology literature, which identifies intellectual curiosity, a sense of being valued, and self-regard as core components of psychological well-being.^{3,9} Lower mean scores on "feeling relaxed" (2.91) and "energy to spare" (2.97) reflect the occupational demands of residency, particularly the impact of mean weekly work hours of 69.29 and a mean self-rated stress score of 5.87 on a 10-point scale.^{2,5}

Positive psychological attributes were prevalent among participants. A clear sense of purpose in life was affirmed by 71.8% of participants, hopefulness about the future by 66.7%, and happiness experienced often or always by 59.2%. These findings align with the theoretical framework underpinning the WEMWBS, which captures both hedonic and eudaimonic dimensions of well-being, including positive affect, life satisfaction, and personal flourishing.^{8,11} Sattar et al identified compassion and conscientiousness as well-being-related attributes among medical professionals; the high purpose-in-life scores observed in the present study may reflect a similar motivational orientation among RMOs.¹⁷

Lifestyle-related factors demonstrated opportunities for further strengthening well-being. While 41.5% of participants reported regular physical activity, a substantial proportion reported limited exercise engagement. Sleep quality and work-life balance varied across the cohort, reflecting the diverse demands of residency training. These factors have been identified as modifiable determinants of well-being in medical professionals and may represent potential targets for future well-being promotion initiatives.¹⁸

Resilience and adaptive coping

The BRS findings indicate that 72.6% of participants demonstrated normal to high resilience, with a mean item average of 3.21 (SD 0.57).^{3,5} In the context of high weekly work hours, moderate stress levels, and a demanding clinical environment, the fact that nearly three-quarters of RMOs demonstrated normal resilience suggests an effective degree of adaptation.^{1,2} Emerson et al found that resilience directly attenuated both distress and cynicism in individuals under occupational stress, even when formal support systems were limited; the present study's resilience distribution may reflect a similar buffering mechanism.¹⁹

The dominant coping strategy across the cohort was social support-seeking: 66.7% of participants identified talking

with friends or family as their primary coping approach.¹⁰ This pattern is consistent with the literature on adaptive coping in medical populations, where social support-based coping is associated with better psychological outcomes compared to avoidance-based strategies.^{20,21} Hobbies (10.4%) and exercise (9.6%) were the next most reported strategies.⁶ Professional help-seeking was reported by only 6.7%, which is like utilisation patterns documented in other medical training settings.¹⁶ Peer support was also the most frequently used hospital-based well-being strategy (59.3%), reflecting the role of collegial relationships in day-to-day resilience maintenance.^{2,4}

Self-rated problem-solving ability was good or excellent in 62.2% of participants, and optimism was moderate to high in 91.9%. These attributes are consistent with the resilience components described by Ackerman, which include self-efficacy, optimism, and problem-focused coping as core dimensions of individual resilience.^{7,22} The role of grit, defined by Lee et al as the combination of passion and perseverance, may also be relevant here: the high purpose-in-life scores (71.8%) and predominantly positive self-acceptance ratings (45.2% high or very high) suggest a cohort with meaningful occupational commitment.^{23,24}

Mindfulness-based approaches were not formally assessed in this study, though 65.9% of participants reported engagement in spiritual or religious practices, and 43.0% rated these practices as effective or very effective for their psychological well-being. Da Silva et al demonstrated significant well-being improvements from mindfulness-based interventions in medical students; the high engagement with spiritual practices in the present cohort may represent a culturally contextualised parallel pathway to similar psychological benefits.^{25,26}

Social support and protective factors

Social support emerged as one of the most prominent protective factors in this study.^{10,20} Family relationships were rated as very supportive or supportive by 86.0% of participants, and peer and colleague relationships were similarly rated by 77.8%.¹⁰ These findings are notable given that 34.8% of participants were native to states other than Maharashtra, indicating that strong family support extends beyond geographic proximity. Mecha et al demonstrated that family support was the social support dimension most strongly associated with resilience, partly mediated through positive appraisal and effective stress coping.²¹ The present findings suggest that this protective pathway may be similarly operative among Indian RMOs.

The strong peer support utilisation (59.3% as a hospital-based well-being strategy) is consistent with findings from Nituica et al who identified institutional support alongside family support and high resilience as independent predictors of better psychological outcomes in a large multi-programme resident cohort.⁵ The collegial structure of residency, while demanding, also appears to provide a meaningful source of psychological sustenance.^{2,4}

Future aspirations were rated as important or very important to current mental well-being by 74.8% of participants. This is consistent with a eudaimonic orientation to well-being, in which motivation derived from long-term goals and professional identity contributes to present psychological stability.^{3,9} Research on social connectivity by Ziv and Kiasi supports the role of purpose-oriented engagement in sustaining well-being, particularly among individuals with moderate rather than high baseline resilience.^{27,28}

Music was enjoyed by 95.6% of participants, and leisure activities were engaged in by 28.1% often or always. While these variables do not in themselves constitute formal coping strategies, they represent accessible, low-cost psychological resources that are widely used within this cohort.⁶ Their prevalence is consistent with a population that is actively, if informally, managing psychological load through everyday pleasurable activities.

Associations with residency characteristics

The only statistically significant associations in this study were between WEMWBS score category and clinical versus pre/paraclinical specialization status ($\chi^2=10.654$, $df=3$, $p=0.014$), and between BRS category and specialization status ($\chi^2=15.404$, $df=2$, $p=0.00045$). In both cases, pre/paraclinical residents demonstrated more favourable distributions: 23.7% in the above-average WEMWBS category compared to 5.2% of clinical residents, and 13.2% in the high resilience BRS category compared to 0.0% of clinical residents.^{5,12}

The observed differences between clinical and pre/paraclinical residents may reflect variations in training environments, professional responsibilities, and day-to-day work patterns.^{2,5} However, residents across all groups demonstrated evidence of mental well-being and resilience, suggesting the presence of adaptive mechanisms that support functioning within diverse specialty settings.^{1,3}

No statistically significant associations were found between WEMWBS categories and gender ($\chi^2=3.441$, $p=0.328$), year of residency ($\chi^2=9.326$, $p=0.408$), or native state ($\chi^2=1.929$, $p=0.587$). Similarly, BRS categories showed no significant association with gender ($\chi^2=0.005$, $p=0.946$), year of residency ($\chi^2=1.234$, $p=0.745$), or native state ($\chi^2=1.876$, $p=0.171$). The absence of gender differences in both well-being and resilience is noteworthy. Luna et al identified gender as a predictor of anxiety and well-being differences among Mexican medical students; however, the present cohort may reflect a more uniform occupational exposure profile across genders in the Indian tertiary care setting, or alternatively, that female residents draw equivalently on family and peer support to maintain resilience.^{29,30}

The descriptive trend of improving WEMWBS distribution across training years, with very low category

proportions declining from 39.1% in JR1 to 16.7% in SR, is consistent with the adaptation literature.⁴ Sheng et al documented that temporal, and contextual factors significantly influence the well-being trajectories of medical staff.³¹ Although the association did not reach statistical significance in this study, the directional pattern suggests that progressive occupational adaptation may contribute to improvements in psychological well-being over the course of residency.^{3,4}

Awareness and utilisation of mental health resources

Awareness of hospital mental health resources was absent in 54.1% of participants, and actual utilisation was reported by only 12.6% ($n=17$). This gap between need and help-seeking is consistent with findings from Lebares et al who identified time constraints and low awareness as barriers to well-being resource use among surgical residents.^{16,32} In the present study, 2.2% of aware participants named the Psychiatry department and 1.5% named a specific hospital programme, indicating that awareness, where it exists, is largely non-specific.

Although utilisation of formal mental health resources was relatively low, many participants reported positive coping abilities, supportive relationships, and normal resilience levels.^{3,5} These findings suggest that resident doctors draw upon multiple sources of support, both formal and informal.¹⁰ Enhancing awareness of existing support services may further strengthen the well-being support ecosystem available to resident doctors.^{16,32}

Limitations

This study has certain limitations. The cross-sectional design does not permit causal inferences, and the single-institution setting may limit the generalisability of the findings. All data were self-reported and may be subject to recall and social desirability bias. Small numbers in some subgroups required pooling of categories and limited the statistical power to detect differences. The exclusion of residents with a diagnosed psychiatric illness may have led to some overestimation of mental well-being.

CONCLUSION

Among 135 resident doctors in a tertiary care institute in Mumbai, 51.1% showed average or above-average mental well-being and 72.6% showed normal to high resilience despite working an average of 69.29 hours per week, although 28.9% had very low well-being. Specialization was the only factor significantly associated with both outcomes, favouring pre/paraclinical residents. Social support from friends and family was the most prevalent coping strategy, while awareness of hospital mental health resources was low. By focusing on protective factors rather than only on distress, this study advances understanding of how resident doctors sustain their well-being, and it identifies clinical residents and awareness of support

services as priorities for institutional resilience-building initiatives.

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