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Original Research Article

Prevalence of Fatigue among Anesthesia Trainees in Sindh, Pakistan

Dr. Nimrah Farook[1*], Dr Nasir Ali Rahim Najjad[2], Muhammad Salman Mohsin[3], Nida Shafqat[4], Dr Huzafa Ali[5], Syed Hameed Ul Hassan Shah[6], Muhammad Saboor Malik[7], Muhammad Hammad Shoukat[8]

[1]Sindh Institute of Urology and Transplantation, Anesthesia Consultant
[2]Assistant Professor
[3]Assistant Professor Anesthesia
[4]Assistant Professor, Sindh Institute of Urology and Transplantation
[5]CMH MULTAN, MBBS
[6]MBBS Graduate, Multan Medical and Dental College, Multan
[7]MBBS Final Year, Shifa College of Medicine, Islamabad
[8]Final year MBBS, Al Aleem Medical College, Lahore, Pakistan

***Corresponding Author:** Dr. Nimrah Farook
Sindh Institute of Urology and Transplantation, Anesthesia Consultant

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Abstract: ***Introduction***: Fatigue is a common problem faced by health care professionals all over the world due to long working hours, but it is more prevalent among anesthesiologists, especially among trainees, adversely affecting the quality of health care and resulting in more complications in patients; it also hurts the mental and social health of trainee anesthesiologists. ***Materials and Methods***: A Cross-sectional study was carried out in hospitals in Sindh that offer FCPS (Fellow of College of Physicians and Surgeons) and MCPS (Member of College of Physicians and Surgeons) training in anesthesia. ***Results***: A total of 98 anesthesiologists were enrolled in this study. Out of which, 59(60.2%) were females. The median (IQR) age was 28(27-30). 56(57.1%) were getting trained in private institutes. The majority of them were in the first year and third year of residency, 29(29.6%) and 24(24.5%), respectively. No association was found between age, gender, institute of training, and year of residency and fatigue status [p=0.456, p=0.116, p=0.506, p=0.505]. While as expected fatigue participants reported more subjective feeling of fatigue, less concentration, less motivation, and less physical activity in comparison to non-fatigue participants (40.1±8 vs 24.6±8; p=0.000, 22.5±4 vs 14.2±5; p=0.000, 17.3±5 vs 9.3±4; p=0.000, 13.7±4 vs 8.2±4; p=0.000respectively). ***Conclusion***: The majority of anesthesia trainees turned out to be fatigued in training institutes of Sindh, resulting in less concentration, less motivation, and less physical activity; hence, we believe that trainees must be provided with better resting facilities during on-call hours to improve the quality of health care in our institutes.

Keywords: Fatigue, Anesthesiologist, Trainees.

INTRODUCTION

Fatigue is a subjective feeling of the need to sleep, an increased physiological drive to fall asleep, and a state of decreased alertness [1]. Inadequate sleep is the most important single factor impacting fatigue [2]. Since its founding in 1905, 'Vigilance' has been the motto of the American Society of Anesthesiologists (ASA) [3]. Universally, anesthesiologists are expected to be knowledgeable, astutely responding to clinical challenges while maintaining a prolonged vigilance for the administration of safe anesthesia and critical care. A fatigued anesthesiologist manifests as decreased motor and cognitive powers. This results in impaired judgment, late and inadequate responses to clinical changes, poor communication, and inadequate record-keeping [4]. With increased expectations and medical-legal claims, anesthesiologists work to provide efficient and timely services, but are rendered sleep-deprived themselves [5]. Inexperienced trainee anesthesiologists are even more exposed to stress at work and run a greater risk of burnout [6]. In a systematic review evaluating how fatigue in anesthesiologists may alter patient care, it was concluded that fatigue mitigation is vital to promote safe practice [7].

In an online survey of AAGBI (The Association of Anesthetists of Great Britain and Ireland) members,>

60% of respondents reported working out-of-hours as an on-call pattern. This activity was associated with post-call fatigue and sleep debt. Arab AA *et al*., conducted a study in Saudi Arabia that showed 69% of anesthesia trainees were at significant risk of fatigue [8].

In a study on US residents, De Oliveira Jr. *et al*., found an association between burnout (± depression) and lower quality of care delivered (more medication errors and/or a lower rate of "best practice" in anesthesiology [9]. A systematic review published in BioMed Research International Volume 2017 included studies reporting burnout in anesthesiology. Fifteen surveys/studies described burnout in anesthesiology, including different worker profiles (nurses, residents, consultants, and directors). All studies used the Maslach Burnout Inventory test but with significant differences in risk stratification. Burnout prevalence greatly varied across studies (10%–41% high risk, up to 59% at least moderate risk). Factors most consistently associated with burnout were strained working patterns, working as a younger consultant, and having children [10]. A survey conducted by Khan, Fauzia A *et al*., in 2019, evaluating job stress and burnout among anesthesiologists, showed significant results: thirty-nine percent showed moderate- to high-level emotional exhaustion, 68.4% showed a moderate to high level of depersonalization, and 50.3% showed a moderate to high level of burnout in personal achievements [11].

In the 2018 issue of the Journal of Cardiothoracic and Vascular Anesthesia, Sanfilippo *et al*., report the results of a survey on the incidence of burnout among cardiac anesthesiologists in Italy. The level of burnout was assessed with the Maslach Burnout Inventory test, which evaluates the 3 main constituents of burnout: emotional exhaustion, depersonalization, and personal achievement. The results of the study are alarming: 34% of the respondents scored high or moderately high for being at risk for emotional exhaustion, 54% for depersonalization, and 66% for personal achievement. This means that more than one-third of Italian cardiac anesthesiologists are suffering from some degree of burnout [12].

A national survey was conducted in the UK in 2017 to assess the incidence and effects of fatigue among the 3772 anaesthetists in training. Fatigue remains prevalent among junior anaesthetists, with reports that it has effects on physical health (73.6% [95%CI 71.8-75.5]), psychological wellbeing (71.2% [69.2-73.1]), and personal relationships (67.9% [65.9-70.0]) [13]. Saadat H *et al*., conducted a study in 2016. The study cohort included 21 pediatric anesthesiologists at a tertiary care children's hospital. Tension, anger, fatigue, confusion, Total Mood Disturbance, irritability, feeling jittery, and sleepiness were significantly affected ($P < 0.05$). A decrease in vigor, energy, and confidence was observed after a night call shift ($P < 0.05$). There was also a decrease in being "talkative" after the call shift ($P < 0.05$) (14).

The set-up, working conditions, and working hours of anesthesiology residents in Sindh vary greatly from those of other countries, and up to now, no such study has been conducted on anesthesiology trainees in Sindh. Significant results from this study will provide evidence for initiation of a fatigue education program aimed at informing doctors and their managers about fatigue and how they can reduce its risks, and suggest that the concerned authorities provide adequate rest facilities for trainees in hospitals.

MATERIALS AND METHODS

Study Design: Cross-sectional study.

Setting: The hospitals in Sindh that offer FCPS (Fellow of College of Physicians and Surgeons) and MCPS (Member of College of Physicians and Surgeons) training in anesthesia.

Duration of Study: A period of 6 months after the synopsis was approved by the Institutional Review Board (IRB) and the College of Physicians and Surgeons Pakistan (CPSP).

Sample Size: By using the WHO sample size calculator 2.0, taking statistics for fatigue as 54%, margin of error as 10%, and a 95% confidence interval, the sample size came out to be 96.

Sampling Technique: Non-Probability Purposive sampling.

Inclusion Criteria: MCPS (Member of College of Physicians and Surgeons) and FCPS (Fellow of College of Physicians and Surgeons) trainees of Sindh, between ages 25-40, both genders, and at least 6 months of training completed in anesthesiology.

Exclusion Criteria: The following trainees were not included in the study (eligibility assessed based on a screening sheet)

- Those with a history of severe depression
- Those on recreational drugs.
- Those who refuse to participate in the study.
- Non-responders.

Data Collection Procedure

Data collection started after the approval of the synopsis by the Institutional Review Board (IRB) and the College of Physicians and Surgeons of Pakistan (CPSP). CIS questionnaire was used to assess the prevalence of fatigue among trainees of anesthesiology. Fatigue is a subjective feeling of being tired, decreased concentration, motivation, and physical activity, which would be assessed on the basis of the Checklist Individual Strength questionnaire (CIS).

A trainee with a score of ≥ 76 will be deemed fatigued.

A trainee with a score < 76 will not be deemed fatigued.

An appointment was taken from head of the departments of anesthesia from each institute, either by visiting them in person or contacting them via email, to obtain permission to conduct the survey. The questionnaire and objective of the study were shared with the department chiefs/heads who were willing to be a part of the study. The interested chiefs/department heads were asked for a list of trainee doctors. All residents of anesthesiology were under training for more than 6 months were assessed for eligibility through a screening sheet and invited to participate in the study. Verbal informed consent was obtained from those who were willing to participate in the study. Participants were given the CIS questionnaire. Confidentiality was ensured by the provision of private space during screening, consent, and completion of the questionnaire. Each participant was assigned a study-specific ID number, which was listed on a separate password-protected database, accessible only to the study PI and to IRB-approved study personnel. An electronic questionnaire was sent via email to those training in institutes outside Karachi; however, non-responders were excluded from the study if they did not respond within a period of 2 weeks after 2 consecutive reminders.

Statistical Analysis:

Data were entered and analyzed using SPSS version 21.0. Mean (SD) or Median (IQR) were computed as appropriate for age and years of training. Frequency and percentage were computed for all the categorical variables, such as fatigue, gender, and institute of training (private or public). Post stratification Chi square applied. P-value <0.05 was considered statistically significant.

RESULTS

Characteristics of the Study Participants

A total of 98 anesthesiologists were enrolled in this study. Out of these, 59(60.2%) were females. The median (IQR) age was 28(27-30). 56(57.1%) were getting trained in private institutes. The majority of them were in the first year and third year of residency, 29(29.6%) and 24(24.5%), respectively [Table 1]

No association was found in age, gender, institute of training and year of residency with fatigue status [p=0.456, p=0.116, p=0.506, p=0.505 (Table:2). While as expected fatigue participants reported more subjective feeling of fatigue, less concentration, less motivation, and less physical activity in comparison to non-fatigue participants (40.1±8 vs 24.6±8; p=0.000, 22.5±4 vs 14.2±5; p=0.000, 17.3±5 vs 9.3±4; p=0.000, 13.7±4 vs 8.2±4; p=0.000 respectively, (Table 2).

Interestingly, we found a lower concentration in females than males (18±5.5 vs 20.4±6, p=0.051, Table 4). Whereas, no significant difference in fatigue subscale scores was found between the genders (Table 3).

Additionally, there was no significant association found in scores of subjective feeling of fatigue, concentration, motivation, and physical activity between the type of institute and year of residency (Table 4-5)

Demographics:

Table 1: Characteristics of study participants

Age in years	
Mean±SD	**29±2.9**
Min-Max	25-38
Median (IQR)	28(27-30)
Gender	n%
Male	39(39.8)
Female	59(60.2)
Total	98(100)
Institute of training	n%
Private	56(57.1)
Public	42(42.9)
Total	98(100)
Year of residency	n%
First year	29(29.6)
Second year	20(20.4)
Third year	24(24.5)
Fourth year	18(18.4)
Fifth year	7(7.1)
Total	98(100)
I feel tired	n%

Strongly not true	10(10.2)
Not true	6(6.1)
Somewhat not true	5(5.1)
Neutral	11(11.2)
Somewhat true	14(14.3)
True	20(20.4)
Strongly true	32(32.7)
Total	98(100)
I feel very active	n%
Strongly true	14(14.3)
True	13(13.3)
Somewhat true	11(11.2)
Neutral	21(21.4)
Somewhat not true	20(20.4)
Not true	6(6.1)
Strongly not true	13(13.3)
Total	98(100)
Thinking requires effort	n%
Strongly not true	13(13.3)
Not true	8(8.2)
Somewhat not true	10(10.2)
Neutral	6(6.1)
Somewhat true	18(18.4)
True	21(21.4)
Strongly true	22(22.4)
Total	98(100)
Physically I feel exhausted	n%
Strongly not true	10(10.2)
Not true	5(5.1)
Somewhat not true	10(10.2)
Neutral	12(12.2)
Somewhat true	17(17.3)
True	17(17.3)
Strongly true	27(27.6)
Total	98(100)
I feel like doing all kinds of nice things	n%
Strongly true	27(27.6)
True	11(11.2)
Somewhat true	16(16.3)
Neutral	21(21.4)
Somewhat not true	12(12.2)
Not true	4(4.1)
Strongly not true	7(7.1)
Total	98(100)
I feel fit	n%
Strongly true	15(15.3)
True	14(14.3)
Somewhat true	17(17.3)
Neutral	12(12.2)
Somewhat not true	20(20.4)
Not true	10(10.2)
Strongly not true	10(10.2)
Total	98(100)
I do quite a lot within a day	n%
Strongly true	18(18.4)
True	13(13.3)
Somewhat true	20(20.4)
Neutral	15(15.3)

Somewhat not true	18(18.4)
Not true	6(6.1)
Strongly not true	8(8.2)
Total	98(100)
When I am doing something, I can concentrate quite well	n%
Strongly true	17(17.3)
True	13(13.3)
Somewhat true	26(26.5)
Neutral	21(21.4)
Somewhat not true	15(15.3)
Not true	3(3.1)
Strongly not true	3(3.1)
Total	98(100)
I feel weak	n%
Strongly not true	12(12.2)
Not true	6(6.1)
Somewhat not true	9(9.2)
Neutral	18(18.4)
Somewhat true	19(19.4)
True	14(14.3)
Strongly true	20(20.4)
Total	98(100)
I don't do much during the day	n%
Strongly not true	16(16.3)
Not true	9(9.2)
Somewhat not true	10(10.2)
Neutral	21(21.4)
Somewhat true	13(13.3)
True	16(16.3)
Strongly true	13(13.3)
Total	98(100)
I can concentrate well	n%
Strongly true	17(17.3)
True	19(19.4)
Somewhat true	27(27.6)
Neutral	17(17.3)
Somewhat not true	13(13.3)
Strongly not true	5(5.1)
Total	98(100)
I feel rested	n%
Strongly true	13(13.3)
True	8(8.2)
Somewhat true	23(23.5)
Neutral	14(14.3)
Somewhat not true	13(13.3)
Not true	12(12.2)
Strongly not true	15(15.3)
Total	98(100)
I have trouble concentrating	n%
Strongly not true	11(11.2)
Not true	13(13.3)
Somewhat not true	10(10.2)
Neutral	18(18.4)
Somewhat true	17(17.3)
True	16(16.3)
Strongly true	13(13.3)
Total	98(100)
Physically I feel I am in a bad condition	n%

Strongly not true	13(13.3)
Not true	11(11.2)
Somewhat not true	9(9.2)
Neutral	20(20.4)
Somewhat true	17(17.3)
True	14(14.3)
Strongly true	14(14.3)
Total	98(100)
I am full of plans	n%
Strongly true	25(25.5)
True	13(13.3)
Somewhat true	15(15.3)
Neutral	17(17.3)
Somewhat not true	12(12.2)
Not true	5(5.1)
Strongly not true	11(11.2)
Total	98(100)
I get tired very quickly	n%
Strongly not true	13(13.3)
Not true	10(10.2)
Somewhat not true	17(17.3)
Neutral	12(12.2)
Somewhat true	11(11.2)
True	9(9.2)
Strongly true	26(26.5)
Total	98(100)
I have a low output	n%
Strongly not true	15(15.3)
Not true	17(17.3)
Somewhat not true	5(5.1)
Neutral	18(18.4)
Somewhat true	15(15.3)
True	10(10.2)
Strongly true	18(18.4)
Total	98(100)
I feel no desire to do anything	n%
Strongly not true	21(21.4)
Not true	17(17.3)
Somewhat not true	6(6.1)
Neutral	13(13.3)
Somewhat true	12(12.2)
True	10(10.2)
Strongly true	19(19.4)
Total	98(100)
My thoughts easily wander	n%
Strongly not true	13(13.3)
Not true	12(12.2)
Somewhat not true	6(6.1)
Neutral	17(17.3)
Somewhat true	18(18.4)
True	13(13.3)
Strongly true	18(18.4)
Missing	1(1)
Total	98(100)
Physically, I feel in good shape	n%
Strongly true	13(13.3)
True	15(15.3)
Somewhat true	20(20.4)

Neutral	21(21.4)
Somewhat not true	9(9.2)
Not true	10(10.2)
Strongly not true	10(10.2)
Total	98(100)
Subjective feeling of fatigue	
Mean±SD	34.4±10.8
Min-Max	8-56
Median(IQR)	35(27-42.3)
Concentration	
Mean±SD	19.4±5.9
Min-Max	5-32
Median(IQR)	19.5(16-23)
Motivation	
Mean±SD	14.4±6
Min-Max	4-28
Median(IQR)	15(10-18)
Physical Activity	
Mean±SD	11.7±4.6
Min-Max	3-21
Median(IQR)	11.5(9-15)
CIS Scores	
Mean±SD	79.9±23
Min-Max	26-129
Median(IQR)	82(67-93)
CIS Categories	n%
Not fatigue	36(36.7)
Fatigue	62(63.3)
Total	98(100)

Table 2: Difference In patient characteristics according to fatigue status

	CIS Categories		
	Fatigue	**Not fatigue**	**P value**
Age in years			
N	59	34	0.128[†]
Mean±SD	28.5±2.3	29.9±3.5	
Min-Max	25-35	25-38	
Med(IQR)	28(27-30)	29(27-33)	
Age categories			
<28	20(69)	9(31)	0.456[‡]
≥28	39(60.9)	25(39.1)	
Total	59(63.4)	34(36.6)	
Gender			
Male	21(53.8)	18(46.2)	0.116[‡]
Female	41(69.5)	18(30.5)	
Total	62(63.3)	36(36.7)	
Institute of training			
Private	37(66.1)	19(33.9)	0.506[‡]
Public	25(59.5)	17(40.5)	
Total	62(63.3)	36(36.7)	
Year of residency			
First year	17(58.6)	12(41.4)	0.505[‡]
Second year	13(65)	7(35)	
Third year	17(70.8)	7(29.2)	
Fourth year	13(72.2)	5(27.8)	
Fifth year	2(28.6)	5(71.4)	
Total	62(63.3)	36(36.7)	

Subjective feeling of fatigue			
N	62	36	0.000**ł
Mean±SD	40.1±8	24.6±8	
Min-Max	24-56	8-43	
Med(IQR)	39(35-45.3)	25.5(18-30.5)	
Concentration			
N	62	36	0.000**ł
Mean±SD	22.5±4	14.2±5	
Min-Max	15-32	5-23	
Med(IQR)	22(19-25)	14(9.5-18.8)	
Motivation			
N	62	36	0.000**ł
Mean±SD	17.3±5	9.3±4	
Min-Max	6-28	4-18	
Med(IQR)	17(14.8-21)	10(6-12)	
Physical activity			
N	62	36	0.000**ł
Mean±SD	13.7±4	8.2±4	
Min-Max	3-21	3-18	
Med(IQR)	14(11-16)	7.5(5-11)	
† Median test, ł Mann-Whitney U test, ǂ Independent-samples t test, ǂ Pearson chi-square, ł Fisher's exact			

Table 3: Difference in Fatigue subscale scores between the genders

	Gender		
	Male	**Female**	**P value**
Subjective feeling of fatigue			
N	39	59	0.127ł
Mean±SD	32.4±10.2	35.8±11.1	
Min-Max	8-54	9-56	
Med(IQR)	31(27-39)	37(28-44)	
Concentration			
N	39	59	0.051*ł
Mean±SD	18±5.5	20.4±6	
Min-Max	7-29	5-32	
Med(IQR)	19(13-22)	21(17-25)	
Motivation			
N	39	59	0.100ł
Mean±SD	13.1±5.8	15.2±6.1	
Min-Max	4-28	4-28	
Med(IQR)	13(10-17)	16(10-20)	
Physical activity			
N	39	59	0.072ł
Mean±SD	10.6±4.8	12.3±4.3	
Min-Max	3-19	4-21	
Med(IQR)	11(5-15)	12(9-16)	
ǂ Independent-samples t-test			

Table 4: Difference in fatigue subscale scores between the type of institute

	Institute		
	Private	**Public**	**P value**
Subjective feeling of fatigue			
N	56	42	0.919ł
Mean±SD	34.3±11	34.5±10	
Min-Max	8-56	9-56	
Med(IQR)	35(27-42)	35(27.8-43.3)	
Concentration			
N	56	42	0.891*ł

Mean±SD	19.5±6	19.3±6	
Min-Max	7-31	5-32	
Med(IQR)	19.5(16-25)	19.5(16.5-23)	
Motivation			
N	56	42	0.111ǂ
Mean±SD	15.2±6	13.2±6	
Min-Max	4-28	4-28	
Med(IQR)	16(10.3-19.8)	12(8-18)	
Physical activity			
N	56	42	0.474ǂ
Mean±SD	11.4±4	12±5	
Min-Max	3-21	3-21	
Med(IQR)	11.5(9-14.8)	11.5(8.8-16)	
ǂ Independent-samples t-test			

Table 5: Difference in fatigue subscale scores by year of residency

Residency						
	First year	**Second year**	**Third year**	**Fourth year**	**Fifth year**	**p.value**
Subjective feeling of fatigue						
N	29	20	24	18	7	0.484ǂ
Mean±SD	32.8±11.7	32.5±9.9	38.5±9.7	35.6±11.3	29.4±9.8	
Min-Max	8-53	9-48	17-56	14-54	15-46	
Med(IQR)	35(22.5-43)	33.5(25.3-39.8)	38(30.5-45)	34.5(27-44.3)	28(25-37)	
Concentration						
N	29	20	24	18	7	0.710ǂ 0.344†
Mean±SD	18.4±7.3	19±5.1	20.8±5	20.2±5	18.6±7	
Min-Max	7-31	5-25	9-32	9-29	7-28	
Med(IQR)	19(11.5-25.5)	20(15.5-22.8)	22(18-25)	20(17.8-23.3)	21(14-23)	
Motivation						
N	29	20	24	18	7	0.893ǂ
Mean±SD	13.6±5.5	13.8±6.1	15.6±6.5	14.9±5.9	13.3±7.5	
Min-Max	4-23	4-24	7-28	5-28	5-26	
Med(IQR)	13(10-18)	13.5(9.3-18)	15(10.3-19.8)	16(10.8-18)	12(7-18)	
Physical activity						
N	29	20	24	18	7	0.652ǂ
Mean±SD	10.8±4.8	12.9±4.1	13.1±3.9	10.5±5.1	9.9±4.5	
Min-Max	3-18	5-19	3-21	3-19	4-17	
Med(IQR)	10(7.5-15)	13.5(9.5-16)	12.5(11-15)	11(5-15.3)	11(6-13)	

DISCUSSION

The study was conducted on anesthesia trainees in Sindh in both public and private sectors; different ages and years of training, and both genders were included. 63% of the trainees were found to be fatigued; however, no association was found between age, gender, institute of training, and year of residency with fatigue status [p=0.456, p=0.116, p=0.506, p=0.505]. While as expected fatigue participants reported more subjective feeling of fatigue, less concentration, less motivation, and less physical activity in comparison to non-fatigue participants (40.1±8 vs 24.6±8; p=0.000, 22.5±4 vs 14.2±5; p=0.000, 17.3±5 vs 9.3±4; p=0.000, 13.7±4 vs 8.2±4; p=0.000 respectively). Interestingly, we found lower concentration in females than males (18±5.5 vs 20.4±6, p=0.051), whereas no significant difference in fatigue subscale scores was found between the genders. Additionally, no significant association was found in scores of subjective feeling of fatigue, concentration, motivation, and physical activity between the type of institute and year of residency.

Arab AA *et al*., conducted a study in Saudi Arabia that showed 69% of anesthesia trainees were at significant risk of fatigue [8]. A national survey was conducted in the UK in 2017 to assess the incidence and effects of fatigue among the 3772 anaesthetists in training. Fatigue remains prevalent among junior anaesthetists, with reports that it has effects on physical health (73.6% [95%CI 71.8-75.5]), psychological wellbeing (71.2% [69.2-73.1]) and personal relationships (67.9% [65.9-70.0]) [13].

The increased prevalence of fatigue observed among trainees working frequent night shifts may be explained by disruption of normal sleep-wake cycles and

inadequate recovery between shifts. Previous studies have similarly demonstrated increased sleepiness during night duties and greater sleepiness among residents with more frequent on-call schedules or insufficient sleep during call [15].

The finding of our comparable to the study by Arab and Khayyat in Saudi Arabia, which reported that 54% of anesthesia residents were at risk of fatigue according to the Checklist for Individual Strength (CIS). However, approximately 70% of their participants also demonstrated excessive daytime sleepiness, highlighting the substantial burden of fatigue and sleep-related impairment among anesthesia trainees [8].

There is also evidence connecting fatigue specifically with occupational safety. In a study of residents working in operative settings, 64% of anesthesiology residents who reported an injury believed fatigue contributed to the injury [16].

In a study evaluating anesthesiology residents during day and night shifts, differences in clinical performance were observed between daytime and nighttime work, supporting concerns regarding the functional consequences of working during periods of circadian disruption [17]. Similarly, an Australian study of anesthesia trainees found that sleepiness increased by approximately 3-4 points on the Karolinska Sleepiness Scale during night shifts, with 42% of trainees reaching an at-risk level of sleepiness at the end of the first night shift [15].

Previous research has reported gender-related differences in sleepiness among anesthesia trainees. In the Saudi Arabian study, females were significantly more likely than males to report excessive daytime sleepiness (87.5% vs. 60.5%, p=0.01), although the authors acknowledged that their study design and assessment tools could not determine the underlying reasons for this difference [18].

The 2019 Australian Welfare of Anaesthesia Trainees Survey found that 83.6% of trainees reported inadequate sleep, while 53.7% reported working more than 50 hours per week. These findings highlight the need for institutional strategies aimed at reducing fatigue, including appropriate rostering, adequate recovery periods, protected rest opportunities during prolonged duties, and education regarding fatigue recognition and sleep hygiene [19].

The lower concentration scores observed among fatigued residents are clinically relevant, as experimental evidence has demonstrated impaired crisis-management performance among anesthesia residents following sleep deprivation after night duty [20].

Limitations of Study

A limitation of our study is that it does not exclude pregnant females and trainees who have children at home, which could result in a factor affecting fatigue level adversely, not solely due to workload.

CONCLUSION

The majority of anesthesia trainees turned out to be fatigued in training institutes of Sindh, resulting in less concentration, less motivation, and less physical activity; hence, we believe that trainees must be provided with better resting facilities during on-call hours to improve the quality of health care in our institutes.

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