



OCCUPATIONAL STRESS OF LOCO PILOTS OF INDIAN RAILWAYS AND THEIR PERCEPTION OF THEIR WELLBEING

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Abstract: The Indian Railways, known for its extensive network, transports millions of passengers daily, emphasizing importance of passenger safety (Martis & Daniel, 2023). Loco pilots play a crucial role in ensuring the safe and timely operation of trains, facing long hours, irregular schedules, and heavy workloads that contribute to occupational stress. This study focuses on loco pilots' perceptions of occupational stress, job satisfaction, and their well-being, gaining an understanding of the causes, symptoms, challenges, and coping strategies associated with occupational stress. The objectives of the present study were: 1) To ascertain from loco pilots (both male and female) their: (a) perception of their wellbeing (b) meaning of the term occupational stress (c) causes of occupational stress at workplace (d) emotional symptoms of occupational stress; 2) To elicit from loco pilots (both male and female) the occupational stress related challenges or difficulties faced by them: (a) in maintaining family relationships (b) while operating locomotive; 3) To identify from loco pilots (both male and female): (a) actions that a loco pilot or individual should take in order to minimize or avoid occupational stress at the workplace (b) the respondent's perception of action taken by Railways to reduce or avoid occupational stress at workplace (c) factors influencing job satisfaction at workplace; 4) To develop guidelines to promote the wellbeing of loco pilots based on the review of literature and the data obtained from the objectives. Descriptive method of research design was used. The total sample consisted of 65 loco pilots. When asked about the meaning of the term "occupational stress" as loco pilots working in Indian Railways, a large majority of them mentioned it as a heavy responsibility for operating the train (78%), while little more than half of them mentioned poor employment conditions (55%). Regarding actions Railways should take to reduce occupational stress, majority of loco pilots reported regular assessment of workload distribution (61%), while little more than half suggested granting approval for leave requests (54%). Additionally, little less than half mentioned conducting regular stress management workshops (48%). Little more than one third of the loco pilots reported having slightly low wellbeing (35%) while little more than quarter reported moderate (32%). However, only a few of the loco pilots reported high wellbeing (11%). This study therefore provides us with the wellbeing and job satisfaction of loco pilots working for Indian Railways and contributes by providing guidelines to promote the wellbeing of loco pilots

Keywords – Occupational stress, wellbeing, job satisfaction, loco pilots, railways.

I. INTRODUCTION

Indian Railways, the premier transport organization of the country is the largest rail network in Asia and the world's second largest under one management (Ministry of Railways (Railway Board), n.d.). Loco pilots are one of the most significant posts in the railroad staff (Joy & Krishna, 2020). The driver is in charge of safety and punctuality, a job which requires a high level of concentration and alertness when it comes to signals, information, the tracks and their immediate environment (Srinivas & Reddy, 2015). Railway drivers struggle to fulfil work and family responsibilities due to long hours, irregular and inflexible work schedules, and heavy workloads. Thus, considering the well-being of loco pilots is an important factor that contributes to the safety, reliability, and sustainability of Indian Railways. It is therefore imperative for the Indian Railways to develop strategies for stress management that are capable of providing the human resource with effective coping strategies (Kumar et al., 2011).

NEED OF THE STUDY: (RATIONALE)

Indian Railways are the lifeline of the nation and the backbone of Indian economic development. Loco pilots play an important role in Indian railways for safe and in time running of trains. Through this research, the proposed guidelines aim to make loco pilots aware of how they can effectively balance satisfaction and performance both at home and in their professional roles. The goal is to implement comprehensive policies and programs to improve the well-being of loco pilots, acting as an additional resource to complement and strengthen these efforts.

The objectives of the present study were as follows:

1. To ascertain from loco pilots (both male and female) their: a) perception of their wellbeing b) meaning of the term occupational stress at workplace c) causes of occupational stress at workplace d) emotional symptoms of occupational stress
2. To elicit from loco pilots (both male and female) the occupational stress related challenges or difficulties faced by them:
a) in maintaining family relationships b) while operating locomotive
3. To identify from loco pilots (both male and female): a) actions that a loco pilot or individual should take in order to minimize or avoid occupational stress at the workplace b) the respondent's perception of action taken by Railways to reduce or avoid occupational stress at workplace c) factors influencing job satisfaction at workplace
4. To develop guidelines to promote the wellbeing of loco pilots based on the review of literature and the data obtained from the objectives.

II. RESEARCH METHODOLOGY

Research design: The research design applied to the current study was Descriptive Research, commonly employed by researchers to gather comprehensive information about a specific group or phenomenon.

Sampling Technique, Sample Size and Sample Characteristics: Purposive sampling technique was involved in the study. The total sample size consisted of 65 loco pilots (both male and female). Almost all of them were male (95%), with only three of the loco pilots being female. A large majority of the loco pilots operated Electric locomotives (81%), while few of them operated Diesel locomotives (15%). Little more than one third of them had the functional category LP (Mail/Express) (34%), while little more than a quarter of them were LP (Goods) (29%), and a quarter of them were LP (Passenger) (25%).

Inclusion & Exclusion criteria:

1. Participants from Western Railway were included in the study.
 2. Participants from Mumbai Central Division were included in the study.
 3. Participants were not discriminated on the basis of marital status, family type and religion.
- Motormen and shunters, along with participants who were unable to comprehend English, were excluded from the study.

Research process and Developing the Tool: Loco pilots were the researchers' area of interest from the very beginning. Several journals and articles were reviewed by the researcher. Taking into account all the information collected, a broad research category was defined. Based on this, the researcher then deduced a more specific area of research, which allowed the researchers to conduct research in the area of Occupational Stress of Loco Pilots of Indian Railways and Their Perception of Their Wellbeing. The tool was partly self-constructed and partly a standardized tool. The proforma was based on the inclusion as well as exclusion criteria of the study. There were 15 questions in the Proforma. The questionnaire was tailored to the study's objectives. Various modifications were made to both the self-constructed and standardized tools, such as the addition or removal of terms, the inclusion of probes, and the substitution of words to align with the terminology used in the loco pilots' profession.

2.1 List of Tests

Sr.no.	Name of the Tool	References
1.	Self-constructed questionnaire	--
2.	Occupational Stress Indicator (OSI)	Cooper, C. L., Sloan, S., & Williams, S. (1988). <i>Occupational Stress Indicator (OSI)</i> . ASE Psychometric Tests
3.	Job Training and Job Satisfaction Survey	Schmidt. (2004). <i>The Job Training and Job Satisfaction Survey</i> . Retrieved November 1, 2023, from https://files.eric.ed.gov/fulltext/ED494451.pdf
4.	Psychological Wellbeing Scale	Ryff, C. D., & Keyes, C. L. M. (1995). The structure of psychological well-being revisited. <i>Journal of Personality and Social Psychology</i> , 69(4), 719–727.

Data Analysis: The study employed both qualitative and quantitative methods to accomplish its objectives. The responses of participants were qualitatively analysed using theme extraction and quantitatively analysed using frequencies and percentages.

III. RESULTS AND DISCUSSION

The findings of the study are reported objective wise.

Objective 1: To ascertain from loco pilots (both male and female) their: a) perception of their wellbeing b) meaning of the term occupational stress at workplace c) causes of occupational stress at workplace d) emotional symptoms of occupational stress (Refer to Table No. 3.1, 3.2, 3.3 and 3.4)

Table No. 3.1

Perception of their well-being, according to loco pilots (n=65).

Perception of loco pilots' wellbeing	Loco Pilots (n=65)	
	f	%
High	7	11
Slightly high	4	6
Moderate	21	32
Slightly low	23	35
Low	10	15

Little more than one third of the loco pilots reported having slightly low wellbeing (35%) while little more than quarter reported moderate (32%). However, only a few of the loco pilots reported high wellbeing (11%). [Refer to Table No. 3.1]

Table No. 3.2

The meaning of the term “occupational stress” while working in Indian Railways, according to loco pilots (n=65).

Meaning of the term “occupational stress” as a loco pilot working in Indian Railways	Loco Pilots (n=65)	
	f	%
A heavy responsibility for operating the train (eg. in terms of both safety and following fixed timetable)	50	78
Poor employment condition (eg. poor layout of driver’s cab)	36	55
Demands in terms of difficulty and complexity (eg. consistently updating skills of train operation.)	28	43
Work–family conflict (eg. Struggle fulfilling work and family responsibilities)	27	41
A demanding psychosocial work environment (eg. working without assistance)	20	31
Poor work environment (eg. heavy noise, vibration, dust pollution, excess heat)	20	31
Any other (Unavailability of toilet in engine, irregular working hours, inadequate facilities in running room, long journey duty during adverse weather)	15	23

***Note:** Multiple responses were obtained

When asked about the meaning of the term "occupational stress" as loco pilots working in Indian Railways, a large majority of them mentioned it as a heavy responsibility for operating the train (78%), while little more than half of them mentioned poor employment conditions (55%). [Refer to Table No. 3.2]

Table No. 3.3

Causes that induce occupational stress while working in Indian Railways, according to loco pilots (n=65).

Causes inducing occupational stress among loco pilots working in Indian Railways	Loco Pilots (n=65)	
	f	%
Strenuous work (eg. Repeating every signal between loco pilot and Asst. Loco Pilot)	25	38
Time pressures	23	35
Insufficient facilities in running room	21	32
Irregular working hours	21	32
Poor layout of driver’s cab	20	31
Responsibility for people	20	31
Processing a large number of signals in a brief period	12	18
Exchange of signals between Guard/Train Manager and Station Master	9	14
Family problems	7	11
Fear of accidents	6	9

***Note:** Multiple responses were obtained

A little more than one third of the loco pilots stated that strenuous work (38%) and time pressures (35%) are the causes that induce occupational stress while working in Indian Railways. While only 6 of the loco pilots mentioned fear of accidents as a cause. [Refer to Table No. 3.3]

Table No. 3.4

Emotional symptoms of occupational stress experienced while working in Indian Railways, according to loco pilots (n=65).

Emotional symptoms of occupational stress experienced by a loco pilot working in Indian Railways	Loco Pilots (n=65)	
	f	%
Anger	23	35
Dissatisfaction	23	35
Sadness	20	31
Confusion	19	29
Regret	17	26
Worry	16	25
Fear	15	23
Guilt	13	20
Jealousy	10	15

***Note:** Multiple responses were obtained

Objective 2: To elicit from loco pilots (both male and female) the occupational stress related challenges or difficulties faced by them: a) in maintaining family relationships b) while operating locomotive (Refer to Table No. 3.5 and 3.6)

Table No. 3.5

Challenges or difficulties faced in maintaining family relationships due to occupational stress while working in Indian Railways, according to loco pilots (n=65).

Challenges or difficulties faced by a loco pilot in maintaining family relationships due to occupational stress while working in Indian Railways	Loco Pilots (n=65)	
	f	%
Attending social gatherings	21	32
Emotional availability in the relationship	20	31
Challenging to plan outings	17	26
Difficult to express desire and need for intimacy from spouse	17	26
Difficult to maintain regular routines for bonding	18	28
Difficult to celebrate special occasions	18	28
Feeling of loneliness and disconnection	12	18

***Note:** Multiple responses were obtained

Challenges or difficulties encountered by loco pilots due to occupational stress while working for Indian Railways include attending social gatherings (32%) and emotional availability in relationships (31%). Additionally, experiencing feelings of loneliness and disconnection (18%) was reported as less prevalent. [Refer to Table No. 3.5]

Table No. 3.6

Challenges or difficulties faced while operating locomotives due to occupational stress while working in Indian Railways, according to loco pilots (n=65).

Challenges or difficulties faced by a loco pilot while operating locomotives due to occupational stress while working in Indian Railways	Loco Pilots (n=65)	
	f	%
Occurrence of SPADs (Signal Passing at Danger)	26	40
Quick decision-making	25	38
Ensuring the safety of passengers, crew and cargo	23	35
Social isolation	18	28
Reducing alertness and concentration	15	23
Taking immediate decisions/action during emergencies	15	23
Effective communication with Guard, Station Master or control office	12	18

***Note:** Multiple responses were obtained

Among the responses provided by loco pilots, one-third of them reported occurrences of SPAD's (40%) and quick decision-making (38%) as challenges or difficulties faced by them while ensuring the safety of passengers, crew, and cargo (35%) while operating locomotives due to occupational stress. [Refer to Table No. 3.6]

Objective 3: To identify from loco pilots (both male and female): a) actions that a loco pilot or individual should take in order to minimize or avoid occupational stress at the workplace b) the respondent's perception of action taken by Railways to reduce or avoid occupational stress at workplace c) factors influencing job satisfaction at workplace (Refer to Table No. 3.7, 3.8 and 3.9)

Table No. 3.7

Actions that a loco pilot or an individual should take in order to minimize or avoid occupational stress while working in Indian Railways, according to loco pilots (n=65).

Actions that a loco pilot or an individual should take in order to minimize or avoid occupational stress while working in Indian Railways	Loco Pilots (n=65)	
	f	%
Spending time with family	50	77
Indulging in hobbies	40	61
Eating a nutritious diet	36	55
Regular exercise	25	38
Connect with colleagues	23	35
Engage with labour unions	23	35
Open and honest communication with family members	20	31
Prioritize tasks to reduce last-minute pressure	15	23
Include excessive coffee or tea	14	21
Listening to music	14	21
Smoking	4	6

*Note: Multiple responses were obtained

When asked about actions that loco pilots can take to minimize occupational stress while working in Indian Railways, large majority of loco pilots suggested spending time with family (77%), while the majority also indicated engaging in hobbies (61%). A little more than half indicated eating a nutritious diet (55%). Surprisingly, four of them reported smoking as an action. [Refer to Table No. 3.7]

Table No. 3.8

Actions that Railways as an organization should take to avoid occupational stress among loco pilots while working in Indian Railways, according to loco pilots (n=65).

Actions that Railways as an organization should take to avoid occupational stress among loco pilots while working in Indian Railways	Loco Pilots (n=65)	
	f	%
Regular assessment of workload distribution	40	61
Grant approval for leave requests	35	54
Conduct regular stress management workshops	31	48
Encourage team-building activities	21	32
Offer confidential counselling service	18	28
Conduct regular health check-ups and screenings for loco pilots/running staff	17	26
Invest in and regularly update safety protocols, equipment, and technologies	13	20
Any other (Individual cabins for female loco pilots instead of common cabin in running room, assigning female guardian for female loco pilots in running room)	3	5

*Note: Multiple responses were obtained

The majority of loco pilots reported regular assessment of workload distribution (61%), while little more than half suggested granting approval for leave requests (54%). Additionally, little less than half mentioned conducting regular stress management workshops (48%) as actions that Railways, as an organization, can take to reduce occupational stress. [Refer to Table No. 3.8]

Table No. 3.9

Factors that prevent a loco pilot from withdrawing from their job while working in Indian Railways, according to loco pilots (n=65).

Factors that prevent a loco pilot from withdrawing from their job while working in Indian Railways	Loco Pilots (n=65)	
	f	%
Sense of accomplishment	42	65
Offers job security	38	58
Sense of duty and the importance of the role	25	38
Salary	21	32
Healthcare facilities	18	28
Opportunities for career advancement within the railway	16	25
Dearness Allowance (DA)	15	23
Transport Allowance i.e. railway passes for the employee and their family	10	15
Night Duty Allowance	10	15
Running Allowance	9	14
House Rent Allowance (HRA)	6	9

***Note:** Multiple responses were obtained

Sense of accomplishment (65%) and job security (58%) were mentioned as factors that prevent loco pilots from withdrawing from their job while working in Indian Railways. Additionally, six loco pilots mentioned House Rent Allowance (HRA) as a factor as well. [Refer to Table No. 3.9]

Objective 4: To develop guidelines to promote the wellbeing of loco pilots based on the review of literature and the data obtained from the objectives.

Guidelines were developed based on th comprehensive review of the literature and the findings from the study.

GUIDE TO ENHANCING THE WELLBEING OF LOCO PILOTS

Outcome of study conducted by Divecha & James (2024)

While guidelines can be provided to loco pilots, individual differences in requirements must be taken into account during implementation to reduce occupational stress.

ROLE OF LOCO PILOTS THEMSELVES

1. Maintain a Balanced and Nutritious diet

Provides energy to the body which is needed to cope with stressful events.



2. Incorporate Exercise into Hobbies

Provides rejuvenation for the body, e.g. gardening or playing sports like badminton and tennis



3. Spend Quality time with Family

Provides emotional support, a sense of belonging, and helps prevent loneliness and isolation.



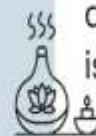
4. Engaging with Labour Unions

Empowers a loco pilot to collectively address employment issues, advocate for their rights, and support systems



5. Choosing Alternative Health Strategies

Helps to enhance mental clarity and emotional resilience. E.g. pet therapy, sound healing therapy, or aromatherapy, whichever is available.

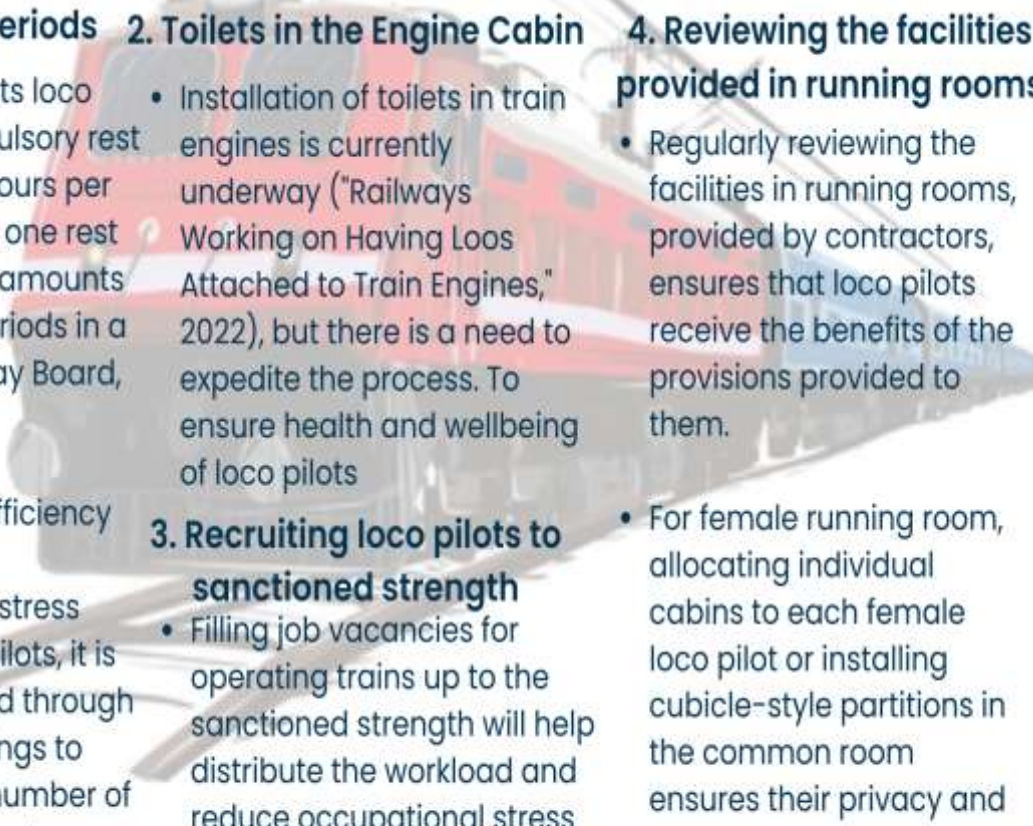


GUIDE TO ENHANCING THE WELLBEING OF LOCO PILOTS

Outcome of study conducted by Divecha & James (2024)

ROLE OF RAILWAYS AS AN ORGANISATION

There are already provisions in place by the Railways for loco pilots, however, these provisions should be examined and revised thoroughly.

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1. **Extend Rest Periods**
 - Railways grants loco pilots a compulsory rest period of 30 hours per week, totaling one rest period, which amounts to four rest periods in a month (Railway Board, 2011).
 - To enhance efficiency and reduce occupational stress among loco pilots, it is recommended through research findings to increase the number of rest periods to six per month.
 2. **Toilets in the Engine Cabin**
 - Installation of toilets in train engines is currently underway ("Railways Working on Having Loos Attached to Train Engines," 2022), but there is a need to expedite the process. To ensure health and wellbeing of loco pilots
 3. **Recruiting loco pilots to sanctioned strength**
 - Filling job vacancies for operating trains up to the sanctioned strength will help distribute the workload and reduce occupational stress among loco pilots, thereby enhancing their well-being.
 4. **Reviewing the facilities provided in running rooms**
 - Regularly reviewing the facilities in running rooms, provided by contractors, ensures that loco pilots receive the benefits of the provisions provided to them.
 - For female running room, allocating individual cabins to each female loco pilot or installing cubicle-style partitions in the common room ensures their privacy and prevents disturbances while they rest.

DISCUSSION

Meaning of occupational stress perceived by loco pilots

While the current study mentions that loco pilots perceive heavy responsibility for operating the train as occupational stress, considering the responsibility of passengers highlights different perceptions of occupational stress in different cultures, thereby emphasizing cultural differences. This differs from literature suggesting that occupational stress primarily occurs as a result of poor employment conditions (Carmona-Barrientos et al., 2020) rather than any other factor.

Causes of occupational stress perceived by loco pilots

The environmental demands placed on loco pilots, such as the repetitive task of exchanging signals between the loco pilot and Assistant Loco Pilot, and the pressure to adhere to a fixed timetable, contribute to the stress experienced by loco pilots. Similar findings are observed in the literature, suggesting that factors contributing to work-related stress include the nature of the job, working conditions, management practices, life events, and financial factors (Bhui et al., 2017). The nature of the job is identified as a significant cause of inducing occupational stress despite the reviewed literature being non-indian the perception of causes of occupational stress remains consistent across cultures.

Emotional symptoms of occupational stress in loco pilots

The current study notes that anger and dissatisfaction are the most experienced emotional symptoms, aligning with the findings of the review. These symptoms are experienced due to strenuous work, which is a reported cause of occupational stress among loco pilots. Moreover, Ranjan & Prasad (2014) identified emotional

changes including anger or hostility towards peers, shyness or withdrawal, nervousness, worry, lack of enthusiasm, and feelings of helplessness and hopelessness.

Challenges faced by loco pilots in maintaining family relationships

The current study reported attending social gatherings and emotional availability in relationships as challenges faced by loco pilots in maintaining family relationships due to the nature of their job. Loco pilots often struggle to maintain normal social and family relationships (Ranjan & Prasad, 2014), aligning with literature findings. This suggests that the occupational stress experienced by loco pilots in the workplace microsystem affects their interactions within the family microsystem, leading to increased arguments among family members. This conflict can negatively impact the loco pilot's performance at work and their relationships at home, as described by Bronfenbrenner's human ecological model.

Challenges faced by loco pilots while operating locomotive

The current study reports that the occurrence of SPADs is a prominent challenge faced by loco pilots while operating locomotives due to occupational stress in Indian Railways. This aligns with the literature review; SPAD, or "Signal Passed At Danger," refers to an event when a train passes a signal at danger (stop) without any authority (Nayak et al., 2018). Such incidents can lead to removal from service or compulsory retirement, depending on the severity (Ministry of Railways, 2018), which occurs as quick decision-making is affected by occupational stress.

Loco pilots perceived ways of coping with stress

The current study reported seeking support from both home and work environments as perceived ways of coping with stress, aligning with the idea in the literature that social contact can serve as a stress reliever, provided it offers distraction, support, and helps individuals cope with life's ups and downs (Stress Relievers: Tips to Tame Stress, 2023). As loco pilots often work long hours on duty without assistance, there is a clear need for support from both home and work environments. This perceived way of coping with stress addresses the need for relatedness, as supported by Alderfer's theory (Furnham, 2008), which identifies three classes of needs: existence, relatedness, and growth.

Loco pilots' perspectives on actions Railways should take to reduce occupational stress

Regular assessment of workload distribution and conducting regular stress management workshops are actions perceived by loco pilots that Railways, as an organization, should take to avoid occupational stress. These ideas differ from the literature, which suggests that only reducing long working hours and teaching employees to maintain work-life balance can be measures taken by organizations to combat stress (Panigrahi, 2021). Providing additional services like conducting regular stress management workshops can be factor to reduce stress. This aligns with Frederick Herzberg's notion of motivational hygiene (factor) (Hall and Williams, 1986), which concentrates on the motivational factors that are relevant to task completion.

Perception of loco pilots regarding factors influencing job satisfaction

The current study reports that the sense of accomplishment is related to the need for achievement, where individuals seek to accomplish tasks, such as operating trains successfully. This aligns with the literature's idea that intrinsic motivation involves working with excitement, a sense of pride, happiness, and personal satisfaction (Shkoler & Kimura, 2020). Loco pilots play a crucial role in the safety of passengers, aligning with McClelland's Human Motivation Theory, where achievement is a motivating factor developed through our culture and life experiences. This theory mentions three driving motivators: achievement, affiliation, and power. The need for achievement is a drive to autonomously master objects, ideas to boost one's self-esteem by using one's skill. Affiliation is the need for love, belonging, and relatedness with a want to be liked and held in high regard. Power or authority is the desire for control over one's own or others' work, driven by a strong desire to lead and succeed. (Alex Acquah et al., 2021).

CONCLUSION

The study shed light on the various aspects of occupational stress experienced by loco pilots in the context of working for Indian Railways. It revealed that loco pilots face many challenges, ranging from symptoms to difficulties in maintaining family relationships and coping with the demands of their job. Despite the unique responsibilities and environmental demands placed on them, the perception of occupational stress remains consistent across cultures, how certain stressors in the workplace are common across different contexts.

Moreover, the study identifies coping mechanisms used by loco pilots to reduce stress, such as seeking support from both home and work environments, spending time with family, and engaging in hobbies. These insights emphasize the need for Indian Railways to implement strategies aimed at supporting loco pilots and improving their well-being. This includes measures such as regular assessment of workload distribution, conducting stress management workshops, and offering counselling.

CONTRIBUTION OF THE STUDY

1. The study contributed to the development of guidelines to promote the wellbeing of loco pilots while working for Indian Railways.
2. It also contributed to development of guidelines for Indian Railways to examine and revised thoroughly the provided provision for loco pilots.
3. The study highlighted the challenges faced by loco pilots and the importance of addressing occupational stress.
4. This research is an addition to the pool of literature on Indian Railways which can serve as a foundation for future research on related topics.

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