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STRESS AMONG MEDICOS' STUDENTS

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ABSTRACT:

Stress is common among dental students during their academic education. Stress influences physical health, relationships, studies, and daily functioning. The present study aimed to compare stress among male and female undergraduate dental students. To assess stress, the Student Stress Inventory (SSI) developed by Arip et al. (2015) administered to 60 undergraduate dental students using purposive sampling. The sample was selected from various students from Nashik city. The age range of the participants was 18 to 24 years. The average age of the participants was 20.8 years. The findings revealed a significant difference in overall stress levels between male and female undergraduate dental students, $t(58) = 3.02$, $p < .01$. Female students ($M = 103.43$, $SD = 12.18$) reported higher overall stress than male students ($M = 94.27$, $SD = 11.36$). The findings revealed a significant difference in Physical Stress between male and female undergraduate dental students, $t(58) = 3.18$, $p < .01$. Female students reported higher Physical Stress than male students. The findings revealed a significant difference in Academic Stress between male and female undergraduate dental students, $t(58) = 3.25$, $p < .01$. Female students reported higher Academic Stress than male students. The findings revealed a significant difference in Interpersonal Stress between male and female undergraduate dental students, $t(58) = 2.11$, $p < .05$. Female students reported higher Interpersonal Stress than male students. The findings revealed no significant difference in Environmental Stress between male and female undergraduate dental students, $t(58) = 1.41$, $p > .05$. The findings indicate that female dental students experience greater stress than male students. The study highlights the need for stress management and counselling programs to promote students' psychological well-being and academic adjustment.

***Keywords**: Stress, Dental Students, Student Stress Inventory, Gender Differences, Undergraduate Students.*

INTRODUCTION

Stress has become one of the most common psychological concerns among students pursuing higher education. Professional courses such as dentistry require students to cope with extensive academic workloads, clinical responsibilities, examinations, and interpersonal demands. These challenges often contribute to increased stress levels and may affect students' physical health, emotional well-being, and academic performance. According to Lazarus and Folkman (1984), stress occurs when individuals perceive that environmental demands exceed their coping resources. Students in health-related professions are particularly vulnerable to stress because of the competitive nature of their educational environment.

Dental education is recognized as a demanding field that requires the acquisition of theoretical knowledge, practical skills, and clinical competencies within a limited period. Consequently, dental students frequently experience stress arising from academic pressures, personal relationships, and environmental factors. Persistent stress may lead to fatigue, reduced concentration, anxiety, poor academic achievement, and decreased quality of life. Research has indicated that female students often report higher levels of stress than male students due to differences in emotional responses and coping strategies (Misra & McKean, 2000).

Concept of Stress

Stress is a psychological and physiological response that occurs when individuals perceive demands as exceeding their ability to cope. Lazarus and Folkman (1984) defined stress as “a particular relationship between the person and the environment that is appraised by the person as taxing or exceeding his or her resources and endangering his or her well-being.” Stress is a natural and unavoidable aspect of human life that arises when individuals encounter situations requiring adjustment or adaptation. Such situations may include academic pressures,

interpersonal conflicts, financial difficulties, health concerns, occupational demands, and environmental challenges.

Stress can have both positive and negative effects on an individual. Moderate levels of stress may enhance motivation, alertness, and performance by encouraging individuals to achieve goals and respond effectively to challenges. However, excessive or prolonged stress can adversely affect physical health, emotional stability, cognitive functioning, and social relationships. Common manifestations of stress include headaches, fatigue, sleep disturbances, anxiety, irritability, difficulty concentrating, and reduced productivity (Misra & McKean, 2000).

Students are particularly vulnerable to stress because they are required to manage academic workload, examinations, deadlines, competition, and social expectations simultaneously. According to Arip et al. (2015), stress among students may be reflected through physical, interpersonal, academic, and environmental difficulties. If not managed effectively, stress may negatively influence academic achievement, psychological well-being, and overall quality of life. Therefore, understanding stress is essential for promoting mental health, resilience, and successful adjustment among students.

SIGNIFICANCE OF THE STUDY

Stress among undergraduate dental students has become an important area of psychological and educational research because it influences students' overall well-being, academic functioning, and professional development. Dental education involves rigorous academic requirements, continuous assessments, practical training, and clinical responsibilities that may create considerable psychological pressure. Understanding the level of stress experienced by students is therefore essential for identifying factors that may hinder their educational progress and personal adjustment.

The present study contributes to the existing literature by examining stress among undergraduate dental students and comparing stress levels between male and female students. Such an investigation provides valuable information regarding gender-related differences in stress experiences and helps educators understand the specific needs of students within

professional educational settings. The findings may assist college administrators, psychologists, and counselors in developing effective intervention programs to support students' mental health and enhance their coping abilities.

Furthermore, knowledge gained from this study can be useful in designing preventive mental health strategies and counseling services within dental institutions. Early identification of stress can help reduce its negative consequences, such as emotional distress, poor academic performance, reduced motivation, and health-related problems. The study also highlights the importance of promoting a supportive educational environment that encourages student well-being and resilience.

From a research perspective, the findings may serve as a reference for future investigations related to student mental health, academic adjustment, and psychological well-being among healthcare students. The study may also contribute to the development of evidence-based policies aimed at improving student support systems within higher education institutions. Overall, the research enhances understanding of stress among dental students and provides practical implications for fostering healthier and more productive academic environments.

REVIEW OF LITERATURE:

Stress and Gender among Dental Students

Halboub et al. (2018) studied "Perceived stress among undergraduate dental students in relation to gender, clinical training and academic performance." The aim was to assess perceived stress among dental students and examine gender differences. A cross-sectional survey was conducted among undergraduate dental students using a structured stress questionnaire. Statistical comparisons were used for gender analysis. Results revealed that stress was common among dental students, but gender differences were not significant in most areas. The study implied that stress-management support should be provided to all dental students.

Rajab (2001) studied "Perceived sources of stress among dental students at the University of Jordan." The aim was to identify common stress sources among dental students and examine differences by gender. The study used a questionnaire method with undergraduate dental students. Dental Environment Stress items were used to assess stressors. Statistical tests

compared male and female responses. Results revealed that females reported higher stress on several items. The study implied that gender-sensitive counseling may be useful in dental colleges.

Babar et al. (2015) studied "Perceived sources of stress among Malaysian dental students." The aim was to determine stress levels and perceived stressors among dental students. The study used a cross-sectional design with Malaysian dental students. A modified Dental Environment Stress questionnaire was administered. Mann–Whitney U and related statistical tests were used. Results revealed that academic and clinical demands were important stressors. The study implied that curriculum planning should reduce unnecessary student pressure.

Alhajj et al. (2018) studied "Perceived sources of stress amongst dental students: A multicountry study." The aim was to compare stressors among dental students across countries. The study used a cross-sectional questionnaire method with undergraduate dental students from several institutions. Dental Environment Stress items were used. Comparative statistical methods were applied. Results revealed that stress was high among dental students, while gender differences were not always consistent. The study implied that institutional stress-reduction strategies are needed.

Pau and Croucher (2003) studied "Emotional intelligence and perceived stress in dental undergraduates." The aim was to examine perceived stress among dental students and its association with emotional intelligence. Undergraduate dental students completed questionnaires including perceived stress measures. Statistical correlation and comparison methods were used. Results revealed that higher emotional intelligence was related to lower perceived stress. The study implied that emotional-skill training may help reduce student stress.

Pau et al. (2007) studied "Emotional intelligence and perceived stress in dental undergraduates: A multinational survey." The aim was to compare perceived stress and emotional intelligence among dental students in different countries. A questionnaire survey was administered to undergraduate dental students. Perceived Stress Scale and emotional intelligence measures were used. Statistical comparisons and correlations were applied. Results revealed differences in stress across settings. The study implied that cultural and educational environments influence student stress.

Saddki et al. (2017) studied "Association between emotional intelligence and perceived stress in undergraduate dental students." The aim was to examine the relationship between emotional intelligence and perceived stress. The study used a cross-sectional design among undergraduate dental students in Malaysia. Perceived Stress Scale and emotional intelligence scale were administered. Correlation and regression analyses were used. Results revealed that emotional intelligence was negatively related to stress. The study implied that psychological skills training may benefit dental students.

Veeraboina et al. (2022) studied "Perceived stress and coping strategies among undergraduate dental students." The aim was to assess perceived stress and coping strategies among dental students. The study included undergraduate dental students using questionnaire-based data collection. Perceived stress and coping measures were administered. Statistical tests examined group differences. Results revealed that dental students experienced notable stress, but coping strategies did not show significant gender differences. The study implied that coping training should be encouraged.

Botelho et al. (2018) studied "An analysis of clinical transition stresses experienced by dental students." The aim was to explore stress during transition from preclinical to clinical training. The study used qualitative methods with dental students. Interviews and thematic analysis were used to identify stress experiences. Results revealed that patient management, clinical confidence, supervisor expectations, and treatment uncertainty created stress. The study implied that students need better clinical preparation and mentoring.

Peker et al. (2009) studied "The evaluation of perceived sources of stress and stress levels among Turkish dental students." The aim was to assess sources and levels of stress among dental students. A questionnaire survey was conducted among undergraduate dental students. Stress sources related to academic, clinical, and environmental areas were assessed. Statistical analysis compared stress by academic stage. Results revealed that clinical students had higher stress. The study implied that clinical training support is essential.

Astill et al. (2016) studied "Environmental and perceived stress in Australian dental undergraduates." The aim was to examine environmental and perceived stress among dental undergraduates. The study used a questionnaire-based design among Bachelor of Dental Surgery

students. Environmental stress and perceived stress tools were administered. Statistical analysis examined relationships between stress measures. Results revealed that dental educational environment contributed to student stress. The study implied that learning environments should be made more supportive.

Myint et al. (2016) studied "Dental students' educational environment and perceived stress: The University of Malaya experience." The aim was to assess educational environment and stress among dental students. The study used undergraduate dental students as participants. Educational environment and perceived stress questionnaires were administered. Statistical analyses examined associations. Results revealed that negative perceptions of educational environment were associated with higher stress. The study implied that improving institutional climate may reduce stress.

Ersan et al. (2018) studied "Perceived sources and levels of stress, general self-efficacy and coping strategies in preclinical dental students." The aim was to assess stress sources, stress levels, and coping among preclinical dental students. A questionnaire survey was used with first- and second-year students. Stress source and self-efficacy measures were administered. Statistical analyses were conducted. Results revealed moderate stress levels among students. The study implied that early support should begin before clinical training.

George et al. (2022) studied "Prevalence of symptoms of depression, anxiety, and stress among undergraduate dental students in Malaysia." The aim was to assess psychological symptoms among dental students. The study used a questionnaire survey among undergraduate dental students. DASS-related measures were used to assess depression, anxiety, and stress. Statistical tests compared gender and academic phases. Results revealed stress symptoms among students. The study implied that regular mental-health screening is needed.

AlSarhan et al. (2024) studied "Relationship of self-perceived stress and expression of salivary cortisol in relation to gender and academic levels among dental students." The aim was to examine stress and biological response among dental students. The study used questionnaire responses and salivary cortisol assessment. Gender and academic-level comparisons were conducted using statistical tests. Results revealed relationships between perceived stress, gender,

and academic level. The study implied that stress should be assessed using both psychological and biological indicators.

STATEMENT OF THE PROBLEM

A comparative study of stress among male and female undergraduate dental students.

OBJECTIVES OF THE STUDY

1. To compare overall stress levels between male and female undergraduate dental students.
2. To compare Physical Stress, Academic Stress, Interpersonal Stress, and Environmental Stress between male and female undergraduate dental students.

HYPOTHESES

1. There is a significant difference in overall stress levels between male and female undergraduate dental students.
2. There is a significant difference in Physical Stress, Academic Stress, Interpersonal Stress, and Environmental Stress between male and female undergraduate dental students.

RESEARCH METHODOLOGY

SAMPLING

The sample consisted of 60 undergraduate dental students, including 30 male students and 30 female students, selected from various dental colleges in Nashik City by using the purposive sampling method. The age range of the participants was 18 to 24 years, and the average age of the participants was 20.8 years. The participants were administered the Student Stress Inventory (SSI) individually and were requested to read each statement carefully and mark the response that best described their experiences. Adequate instructions were provided before administration, and the completed questionnaires were collected for scoring and analysis.

RESEARCH DESIGN

The present study employed a comparative research design to examine differences in stress among male and female undergraduate dental students. The study focused on assessing overall stress and its dimensions, namely Physical Stress, Academic Stress, Interpersonal Stress, and Environmental Stress. Data were collected using a standardized stress inventory. The obtained scores were analyzed quantitatively to determine gender differences in stress levels. The design was appropriate because it facilitated the comparison of stress between two independent groups of undergraduate dental students under naturally occurring conditions.

VARIABLES OF THE STUDY

Independent Variable- Gender- Male and Female Undergraduate Dental Students

Dependent Variable - Stress

1. Overall Stress
2. Physical Stress
3. Academic Stress
4. Interpersonal Stress
5. Environmental Stress

OPERATIONAL DEFINITIONS OF VARIABLES

1. Stress

Stress is the score obtained by the participants on the Student Stress Inventory (SSI) developed by Arip, Kamaruzaman, Roslan, and Ahmad (2015), Edition 2020. Higher scores on the scale indicate higher levels of stress, whereas lower scores indicate lower levels of stress among undergraduate dental students.

2. Physical Stress

Physical Stress is the score obtained by the participants on the Physical Stress Subscale of the Student Stress Inventory (SSI) developed by Arip et al. (2015). Higher scores on the

subscale indicate higher levels of physical stress, whereas lower scores indicate lower levels of physical stress among undergraduate dental students.

3. Academic Stress

Academic Stress is the score obtained by the participants on the Academic Stress Subscale of the Student Stress Inventory (SSI) developed by Arip et al. (2015). Higher scores on the subscale indicate higher levels of academic stress, whereas lower scores indicate lower levels of academic stress among undergraduate dental students.

4. Interpersonal Stress

Interpersonal Stress is the score obtained by the participants on the Interpersonal Relationship Stress Subscale of the Student Stress Inventory (SSI) developed by Arip et al. (2015). Higher scores on the subscale indicate higher levels of interpersonal stress, whereas lower scores indicate lower levels of interpersonal stress among undergraduate dental students.

5. Environmental Stress

Environmental Stress is the score obtained by the participants on the Environmental Stress Subscale of the Student Stress Inventory (SSI) developed by Arip et al. (2015). Higher scores on the subscale indicate higher levels of environmental stress, whereas lower scores indicate lower levels of environmental stress among undergraduate dental students.

TOOLS

Student Stress Inventory (SSI)

Student Stress Inventory (SSI) developed by Arip, Kamaruzaman, Roslan, and Ahmad (2015). The Student Stress Inventory (SSI) consists of 40 items designed to assess stress among students of higher education institutions. The inventory includes four dimensions, namely Physical Stress, Interpersonal Relationship Stress, Academic Stress, and Environmental Stress. Each item has four response alternatives, namely Never (1), Somewhat Frequent (2), Frequent (3), and Always (4). The score range of the inventory is 40 to 160. A score of 40–80 indicates

Low Stress, 81–121 indicates Moderate Stress, and 122–160 indicates Severe Stress. The subscale score range is 10 to 40 for each dimension. Higher scores indicate higher levels of stress, whereas lower scores indicate lower levels of stress among students.

STATISTICAL TREATMENT

Mean (M), Standard Deviation (SD), Independent Samples t-test was used to analysed data.

RESULTS AND INTERPRETATION

Gender Difference in Overall Stress

Table 1Comparison of Overall Stress between Male and Female Undergraduate Dental Students

Gender	N	Mean	SD	t-value	p-value
Male	30	94.27	11.36	3.02	< .01
Female	30	103.43	12.18		

The above table shows the comparison of overall stress between male and female undergraduate dental students. The mean score of female students (M = 103.43, SD = 12.18) was higher than that of male students (M = 94.27, SD = 11.36). The obtained t-value of 3.02 shows that the difference between the two groups was statistically significant ($p < .01$). It indicates that female undergraduate dental students experienced higher overall stress than male undergraduate dental students. Our 1st hypothesis stating that "There is a significant difference in overall stress levels between male and female undergraduate dental students" is accepted. Previous studies conducted by Misra and McKean (2000) also reported higher stress among female students, which supports the present finding.

Gender Difference in Physical, Academic, Interpersonal, and Environmental Stress

Table 2:Comparison of Physical, Academic, Interpersonal, and Environmental Stress between Male and Female Undergraduate Dental Students

Dimension	Gender	N	Mean	SD	t-value	p-value
Physical Stress	Male	30	21.83	4.01	3.18	< .01
	Female	30	25.10	3.94		
Academic Stress	Male	30	25.47	4.61	3.25	< .01
	Female	30	29.20	4.28		
Interpersonal Stress	Male	30	22.17	3.82	2.11	< .05
	Female	30	24.33	4.10		
Environmental Stress	Male	30	24.80	4.32	1.41	Not significant
	Female	30	26.00	4.15		

The above table shows the comparison of Physical, Academic, Interpersonal, and Environmental Stress between male and female undergraduate dental students.

The mean score of female students on Physical Stress (M = 25.10, SD = 3.94) was higher than male students (M = 21.83, SD = 4.01). The obtained t-value of 3.18 shows a significant difference (**p < .01**). It indicates that female students experienced higher Physical Stress than male students.

The mean score of female students on Academic Stress (M = 29.20, SD = 4.28) was higher than male students (M = 25.47, SD = 4.61). The obtained t-value of 3.25 shows a significant difference (**p < .01**). It indicates that female students experienced higher Academic Stress than male students.

The mean score of female students on Interpersonal Stress (M = 24.33, SD = 4.10) was higher than male students (M = 22.17, SD = 3.82). The obtained t-value of 2.11 shows a significant difference (**p < .05**). It indicates that female students experienced higher Interpersonal Stress than male students.

The mean score of female students on Environmental Stress (M = 26.00, SD = 4.15) was slightly higher than male students (M = 24.80, SD = 4.32). However, the obtained t-value of 1.41

was not statistically significant (**p > .05**). It indicates that both groups experienced similar levels of Environmental Stress.

Our 2nd hypothesis stating that "There is a significant difference in Physical, Academic, Interpersonal, and Environmental Stress between male and female undergraduate dental students" is partially accepted, as significant differences were found in Physical, Academic, and Interpersonal Stress, whereas no significant difference was observed in Environmental Stress. Previous studies conducted by Misra and McKean (2000) also reported higher stress among female students, which supports the present finding.

CONCLUSION

1. Female undergraduate dental students reported significantly higher overall stress than male undergraduate dental students.
2. Female undergraduate dental students experienced significantly higher Physical, Academic, and Interpersonal Stress than male undergraduate dental students, whereas no significant gender difference was found in Environmental Stress.

LIMITATIONS

1. The study was limited to only 60 undergraduate dental students.
2. The sample was restricted to dental colleges in Nashik City.
3. Data were collected through a self-report questionnaire, which may involve response bias.
4. The study considered only gender differences and did not examine other demographic variables.

SUGGESTIONS

1. Future studies may include a larger sample from different geographical regions.
2. Similar studies may be conducted among students from other healthcare disciplines.

3. Additional variables such as coping strategies, anxiety, and academic performance may be included.
4. Longitudinal studies may be conducted to examine changes in stress over time.

IMPLICATIONS

1. The findings highlight the importance of identifying stress among undergraduate dental students.
2. Educational institutions may organize stress management and counseling programs for students.
3. Mental health professionals can use the findings to design preventive interventions for student well-being.
4. The study may help administrators develop supportive academic environments that reduce student stress.

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Buddhism: From Limbic Autopilot to Prefrontal Mastery

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ABSTRACT

This Study examines the relationship between Buddhism and modern neuroscience from a neuropsychological perspective. It explores how Buddhist teachings on mindfulness, the Middle Path, Right View, and dependent origination relate to attention, emotional regulation, and decision-making. The study highlights how mindfulness helps individuals become aware of automatic reactions and develop thoughtful responses. It also discusses the role of neuroplasticity in shaping habits and behaviour through repeated actions. The paper suggests that Buddhist philosophy and modern neuroscience offer complementary perspectives on understanding the human mind, reducing suffering, and promoting psychological well-being.

Keywords: Buddhism, neuroscience, mindfulness, psychological well-being, emotional regulation, neuroplasticity, prefrontal cortex, Middle Path, awareness, human behaviour.

INTRODUCTION

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Have you ever reached home after driving for several kilometres and realised you remember very little about the journey? You stopped at traffic lights, changed lanes, and avoided obstacles, yet your mind was somewhere else. Psychologists describe this as automatic processing, where familiar tasks are carried out with little conscious attention (Diamond, 2013).

Many aspects of everyday life operate in the same way. We often react before we have time to think. A critical remark immediately provokes anger, praise creates attachment, and uncertainty gives rise to anxiety. These responses happen so quickly that they can feel almost inevitable. Neuroscience explains that rapid emotional reactions are supported by brain networks involved in emotion and motivation, while the prefrontal cortex enables us to think ahead, regulate our emotions, solve problems, and make thoughtful decisions (Diamond, 2013).

From this perspective, Buddhism can be seen as a practical system for training the mind. More than 2,500 years ago, the Buddha taught methods that help people become aware of their thoughts, understand their emotions, and respond more wisely to life's challenges. Although Buddhism and neuroscience come from different traditions, both are concerned with understanding the human mind and reducing suffering. Modern research increasingly shows that many Buddhist meditation practices improve attention, emotional regulation, and psychological well-being (Tang et al., 2015).

The Buddha's Invitation to Investigate

Many people assume that Buddhism asks its followers to accept teachings without question. The earliest Buddhist texts suggest exactly the opposite.

In the Kalama Sutta, the Buddha advises the Kalamas not to believe something simply because it has been passed down through tradition, written in scripture, or taught by respected teachers. Instead, he encourages them to investigate carefully and judge a teaching by its results. If it reduces greed, hatred, and delusion while promoting wisdom and well-being, it is worth practising (Thanissaro Bhikkhu, 1994).

This emphasis on inquiry makes Buddhism unique among many religious traditions. The Buddha described his teaching as ehipassiko, meaning "come and see." Rather than demanding blind faith, he invited people to examine the Dhamma through their own experience (Bodhi, 2012).

This approach also reflects what psychologists describe as executive functioning. Critical thinking, sustained attention, cognitive flexibility, and reflective judgment allow us to evaluate evidence before reaching conclusions. These mental abilities are closely linked to the prefrontal cortex, the area of the brain responsible for thoughtful decision-making (Diamond, 2013).

In a world where information spreads instantly and emotional reactions often replace careful analysis, the Buddha's advice remains remarkably relevant. Before believing a claim, examine it. Before accepting an opinion, ask whether it is supported by evidence and whether it leads to greater understanding.

Mindfulness: Breaking the Autopilot Loop

The brain is constantly making predictions and responding to events around us. This ability allows us to function efficiently, but it also strengthens habits that can contribute to stress and suffering. A single criticism may trigger anger within seconds. Praise may strengthen attachment. An unexpected setback may quickly produce frustration or fear. These reactions often occur before we become fully aware of them.

Mindfulness changes this process by creating a space between an event and our response. Instead of reacting automatically, we become aware of what is happening in the present moment. That brief pause gives us the opportunity to choose how we respond rather than allowing emotions to make the decision for us.

A mindful person still experiences anger, fear, sadness, and desire. The difference is that these emotions are recognised instead of immediately acted upon. Anger can be observed without becoming aggression. Fear can be acknowledged without becoming panic. Desire can be noticed without controlling behaviour. Mindfulness does not remove emotions; it changes our relationship with them.

Research supports these observations. Studies have found that mindfulness meditation improves attention, emotional regulation, and executive control. Brain imaging has also shown changes in regions involved in attention, self-awareness, and emotional processing following regular meditation practice (Hölzel et al., 2011; Tang et al., 2015).

The goal of mindfulness is not to become emotionally detached. Instead, it helps us understand our thoughts and feelings with greater clarity. Each moment of awareness weakens the grip of automatic habits and strengthens our ability to respond with wisdom rather than impulse. In this way, mindfulness becomes the first step in moving from unconscious reactivity toward conscious and intentional living.

The Middle Path: A Psychology of Balance

The Buddha's first sermon introduced one of the central principles of Buddhism, the Middle Path. He rejected two extremes: a life devoted to the pursuit of pleasure and a life of harsh self-denial. According to the Dhammacakkappavattana Sutta, neither approach leads to wisdom or lasting freedom. Instead, the Buddha taught a balanced way of living that cultivates insight, ethical conduct, mindfulness, and concentration (Bodhi, 2000; Sujato, n.d.).

Although expressed in spiritual language, the Middle Path has profound psychological significance. Human beings often move between emotional extremes. We become excited when life goes our way and discouraged when it does not. We cling to pleasant experiences and resist uncomfortable ones. These constant swings can cloud judgment and lead to decisions driven by impulse rather than understanding.

The Middle Path is often misunderstood as choosing the halfway position in every situation. In reality, it is about responding wisely rather than reacting automatically. A balanced mind does not avoid difficult decisions; it evaluates each situation carefully before acting. Sometimes wisdom requires patience, flexibility, and compromise. At other times, it calls for a firm stand against dishonesty, injustice, or harmful behaviour. The Middle Path is therefore not about avoiding strong decisions but about ensuring that decisions arise from clear understanding instead of anger, fear, attachment, or prejudice.

Modern psychology describes a similar process through critical thinking and cognitive flexibility. Effective decision-making involves examining evidence, considering multiple perspectives, anticipating consequences, and adapting behaviour to the demands of the situation. These abilities are supported by executive functions associated with the prefrontal cortex (Diamond, 2013). Rather than being controlled by immediate emotional impulses, individuals learn to weigh alternatives and choose actions that are both ethical and practical.

In this sense, the Middle Path cultivates wisdom. It encourages people to pause, reflect, and judge each situation on its own merits instead of relying on rigid rules or emotional reactions. Emotional balance is therefore not the absence of strong feelings but the ability to make thoughtful decisions even in emotionally challenging situations. This capacity to respond with clarity rather than impulse lies at the heart of both Buddhist practice and psychological resilience.

Right View: Learning to See Clearly

The Noble Eightfold Path begins with Right View (Sammā Diṭṭhi), highlighting an important principle: lasting change begins with understanding. In the Sammādiṭṭhi Sutta, Right View is described as understanding the nature of suffering, its causes, its cessation, and the path leading beyond it (Ñāṇamoli & Bodhi, 1995). It is not blind belief but the willingness to see reality as clearly and accurately as possible.

In contemporary terms, Right View encourages what may be called a scientific outlook. It asks us to observe carefully, question our assumptions, examine evidence, and remain open to revising our understanding when new evidence or experience emerges. Rather than accepting claims solely because they are popular, traditional, or supported by authority, Right View encourages thoughtful investigation and critical reflection. This approach closely resembles the attitude of scientific inquiry, even though Buddhism and modern science differ in their methods and aims.

This teaching is especially relevant today. Information spreads instantly, opinions are formed within seconds, and emotional reactions often replace careful thinking. Social media frequently rewards certainty and outrage rather than patience and evidence-based reasoning.

Right View encourages a different habit of mind. Before accepting a claim, it asks us to examine the evidence. Before reacting, it asks us to understand the situation. Before judging others, it asks us to consider the conditions that shaped their actions. These habits closely resemble the executive functions identified by modern psychology, including reasoning, planning, cognitive flexibility, and perspective-taking (Diamond, 2013).

Right View reminds us that wisdom does not begin with having all the answers. It begins with careful observation, critical thinking, intellectual humility, and a willingness to learn. The clearer our understanding becomes, the wiser our decisions are likely to be.

Dependent Origination: Understanding Causes Instead of Blame

One of Buddhism's deepest philosophical teachings is Dependent Origination (Paṭicca-samuppāda). According to this principle, nothing arises independently. Every event, thought, and experience depends upon multiple conditions and causes (Bodhi, 2000).

This insight changes the way we understand human behaviour. Instead of searching for a single cause or someone to blame, Buddhism encourages us to examine the wider network of conditions that shape our lives. Thoughts arise from memories. Habits develop through repeated actions. Emotions are influenced by biology, personal experience, relationships, and the social environment.

Modern psychology reaches a similar conclusion. Human behaviour is rarely explained by one factor alone. It emerges through the interaction of brain function, learning, cognition, personality, and environmental influences (Tang et al., 2015). Recognising these influences does not remove personal responsibility; rather, it helps us understand why change is possible.

When we understand that harmful behaviour develops through conditions, we can begin changing those conditions. This perspective replaces blame with curiosity and punishment with understanding. It encourages compassion without abandoning accountability.

Seen in this way, Dependent Origination is more than a philosophical doctrine. It is a practical framework for understanding ourselves and others. By recognising the causes behind our thoughts, emotions, and actions, we become better equipped to create conditions that promote wisdom, resilience, and psychological well-being.

Karma and Neuroplasticity: How Repeated Actions Shape the Mind

Karma is often understood as a supernatural system of reward and punishment. In the earliest Buddhist teachings, however, karma refers more simply to intentional actions and the consequences that follow from them. The Buddha taught that we inherit the results of what we

repeatedly think, say, and do (Bodhi, 2012). Every action leaves an imprint that influences future behaviour.

Modern neuroscience offers an interesting parallel through the concept of neuroplasticity. The brain is constantly changing in response to experience. Repeated thoughts, emotions, and behaviours strengthen particular neural pathways, making those patterns easier to repeat in the future (Hölzel et al., 2011; Tang et al., 2015).

Seen from this perspective, karma can be understood as the ethical dimension of learning. Repeated acts of kindness strengthen compassion. Honest behaviour reinforces integrity. Practising patience makes patience easier. Likewise, repeated anger, dishonesty, and resentment gradually become habitual because the brain becomes more efficient at producing those responses.

Although Buddhism and neuroscience explain these processes in different ways, both recognise that lasting change comes through consistent practice. Character is not formed in a single moment but through countless small choices repeated over time.

The Dhamma Without Ownership

One of the most remarkable aspects of the Buddha's final teachings appears in the Mahāparinibbāna Sutta. As his life drew to a close, he did not appoint a single successor to lead his disciples. Instead, he taught that the Dhamma (the Buddha's teachings) and the Vinaya (the code of monastic discipline) would guide his followers after his passing (Walshe, 1995).

This decision reflected the Buddha's confidence in the Dhamma rather than in any individual leader. He recognised that genuine understanding does not depend on a single person but on timeless principles that can be realised through practice. The universality of the Dhamma lies in the fact that it is open to everyone, regardless of background or belief. It belongs to no individual and invites every person to cultivate wisdom, compassion, and mindfulness through their own effort.

This vision has an interesting resemblance to scientific inquiry. Scientific knowledge is valued because it can be examined, tested, and verified rather than accepted solely on authority. Although Buddhism and science have different aims and methods, both encourage careful

observation, intellectual honesty, and a willingness to understand reality as it is. This shared spirit of inquiry continues to make Buddhism relevant to psychologists, neuroscientists, and philosophers today.

Ancient Wisdom and Modern Science

Buddhism and neuroscience approach the mind from different directions. Neuroscience studies the brain through observation, experimentation, and imaging technologies. Buddhism explores the mind through meditation, ethical living, and careful self-observation.

One discipline explains biological mechanisms, while the other offers practical methods for transforming human experience. Rather than competing with one another, they can be viewed as complementary approaches to understanding the mind.

Over the past few decades, scientific research has increasingly examined mindfulness and meditation. Many studies suggest that regular practice improves attention, emotional regulation, stress management, and psychological well-being (Hölzel et al., 2011; Tang et al., 2015). While neuroscience cannot confirm every philosophical aspect of Buddhism, it has begun to explain why many contemplative practices produce measurable psychological benefits.

The dialogue between these two traditions continues to grow, creating opportunities for deeper understanding of consciousness, behaviour, and human flourishing.

CONCLUSION

More than twenty-five centuries ago, the Buddha encouraged people to observe the mind with honesty, question their assumptions, and cultivate wisdom through experience. Modern neuroscience, using entirely different methods, has arrived at many compatible insights about attention, emotional regulation, learning, and the brain's capacity for change.

Viewed together, these perspectives suggest that human freedom is not achieved by eliminating emotion but by understanding it. We cannot always control what happens around us, but we can gradually change how we respond.

Perhaps this is the enduring relevance of Buddhism in the modern world. It invites us to move from unconscious habit to conscious awareness, from impulsive reaction to thoughtful response,

and from confusion to clarity. Every moment of mindfulness strengthens our ability to choose wisely.

The journey from limbic autopilot to prefrontal mastery is not completed in a single meditation session or a single insight. It is shaped by countless moments of awareness repeated throughout daily life. Each pause before reacting, each thoughtful decision, and each act of compassion gradually transforms both the mind and the person we become.

The Buddha's invitation remains as relevant today as it was over 2,500 years ago: observe carefully, understand deeply, and act wisely.

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A Study of Emotional Intelligence Among State Reserve Police Force Personnel

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ABSTRACT

Emotional intelligence (EI) has become an important area of psychological research because of its relationship with emotional regulation, interpersonal relationships, decision-making, motivation, adjustment, and occupational effectiveness. Police personnel work in highly demanding environments in which they are frequently exposed to stress, conflict, emergencies, public pressure, and situations requiring immediate decisions. Therefore, emotional intelligence is particularly relevant to police organizations. The present study examined emotional intelligence among State Reserve Police Force (SRPF) personnel working in Jalna. The study focused on personnel between 20 and 40 years of age and examined differences in emotional intelligence between male and female police personnel. A sample of 100 SRPF personnel, consisting of 50 male and 50 female personnel, was selected for the study. Emotional intelligence was assessed using the Emotional Intelligence Scale developed and standardized by

Hyde and Pethe. The scale consists of 34 statements covering ten dimensions: self-awareness, empathy, self-motivation, emotional stability, value orientation, commitment, altruistic behaviour, managing relationships, integrity, and self-development. Mean, standard deviation, and the t test were used for statistical analysis. The findings indicated a difference in emotional intelligence between male and female SRPF personnel. The results highlight the importance of emotional-intelligence training for police personnel to strengthen emotional regulation, interpersonal effectiveness, occupational adjustment, and responsible decision-making.

Keywords: emotional intelligence, police personnel, State Reserve Police Force, SRPF, emotional stability, self-awareness, empathy, police psychology

INTRODUCTION

The police force occupies a crucial position in maintaining law and order, public safety, internal security, and social stability. Police personnel are expected to perform their duties under demanding and sometimes unpredictable circumstances. Their professional responsibilities may involve crowd control, conflict management, emergency response, protection of public property, maintenance of peace, and dealing with individuals experiencing intense emotional states. Such occupational demands require not only physical fitness and professional knowledge but also psychological preparedness and emotional competence.

The State Reserve Police Force (SRPF) is an important component of the police organization responsible for supporting law-and-order and security operations in Maharashtra. The force was established on March 6, 1948, and has subsequently developed into an important reserve force. Its personnel may be deployed during situations requiring additional police strength, including serious law-and-order situations, emergencies, major public events, and other demanding assignments.The nature of police work makes emotional intelligence particularly important. Police officers and personnel frequently have to regulate their own emotions while simultaneously understanding the emotions of other people. They may encounter anger, fear, aggression, grief, frustration, and anxiety in the course of their duties. An emotionally competent police employee should therefore be capable of recognizing personal emotional reactions, controlling inappropriate responses, understanding other people's feelings, and selecting an appropriate course of action.

Emotional intelligence refers broadly to the ability to recognize, understand, regulate, and appropriately use emotions in oneself and in interpersonal situations. Mayer and colleagues conceptualized emotional intelligence as involving abilities associated with perceiving, understanding, and managing emotions. Goleman (1995, 1998) popularized the concept by emphasizing its relevance to personal and professional functioning.The importance of emotional intelligence becomes particularly apparent in occupations involving continuous interpersonal interaction. Police personnel do not work in emotionally neutral environments. They interact with victims, accused persons, colleagues, senior officers, members of the public, and other agencies. Their reactions can influence the outcome of an incident. Appropriate emotional regulation may prevent unnecessary escalation, whereas poor emotional control can contribute to conflict.Aristotle's classical observation regarding appropriate anger also illustrates the importance of emotional regulation: experiencing anger is easy, whereas expressing it appropriately with regard to the right person, reason, degree, time, and manner is much more difficult. This principle is highly relevant to police work, where emotional reactions must be controlled without compromising professional responsibility.

The present study therefore attempts to examine emotional intelligence among SRPF personnel working in Jalna. Particular attention is given to the emotional intelligence of male and female personnel between 20 and 40 years of age.

Background of the State Reserve Police Force

The State Reserve Police Force was established in Maharashtra on March 6, 1948, initially with the purpose of providing a trained reserve force capable of assisting the regular police during serious law-and-order situations and emergencies. Over the years, the organization has developed into an important component of Maharashtra's internal security and policing structure.The SRPF performs duties that can require personnel to work under considerable psychological pressure. Depending upon operational requirements, personnel may be deployed for crowd management, protection duties, major events, emergency situations, communal disturbances, disaster-related responsibilities, and other assignments requiring additional police manpower.The occupational environment of reserve police personnel can therefore involve irregular working hours, separation from family, uncertainty about deployment, physical demands, exposure to stressful situations, and interaction with people experiencing conflict or

distress. These factors make psychological characteristics such as emotional stability, self-control, resilience, empathy, motivation, and interpersonal competence important components of occupational functioning.The history of SRPF also reflects its participation in important operations. For example, SRPF Group II, Pune, was recognized for its contribution during the Goa operation, and the personnel were honoured in 1961 by Prime Minister Jawaharlal Nehru. Such historical examples illustrate the operational significance of the force and the responsibilities placed upon its personnel.

Concept of Emotional Intelligence

Human behaviour is influenced by cognition, emotion, motivation, personality, and social circumstances. For many years, intelligence was primarily discussed in terms of cognitive abilities such as reasoning, memory, problem-solving, and verbal or numerical abilities. However, successful functioning also depends upon an individual's ability to understand and regulate emotions.Emotional intelligence can be understood as the capacity to identify emotional states, understand their causes and consequences, regulate emotional responses, and use emotional information appropriately in decision-making and interpersonal relationships.Mayer and Salovey's ability model emphasizes emotional perception, emotional understanding, and emotional regulation. Goleman (1995) further popularized emotional intelligence as a set of competencies associated with self-awareness, self-regulation, motivation, empathy, and social skills.Emotional intelligence is especially relevant to police personnel because police work involves frequent emotional challenges. A police employee may need to remain calm when confronted by aggression, communicate with distressed individuals, respond sensitively to victims, and make decisions under pressure.The development of emotional intelligence does not imply suppressing emotions. Rather, it involves recognizing emotions and responding to them in an adaptive manner. For example, anger can provide information that a situation requires attention, but uncontrolled anger may result in inappropriate behaviour. Emotional intelligence enables an individual to recognize anger and choose a professionally appropriate response.

Dimensions of Emotional Intelligence

The Emotional Intelligence Scale developed by Hyde and Pethe includes ten dimensions relevant to the assessment of emotional intelligence.

1. **Self-Awareness-** Self-awareness refers to the ability to recognize one's own emotions, strengths, weaknesses, thoughts, and behavioural tendencies. For police personnel, awareness of one's emotional state is important because emotional reactions can influence judgment and communication.
2. **Empathy-** Empathy is the ability to understand and appreciate the emotional experiences of other people. Police personnel may need empathy when dealing with victims, families, distressed citizens, or individuals involved in conflict.
3. **Self-Motivation-** Self-motivation refers to the ability to maintain effort and commitment toward goals despite difficulties. Police work frequently involves physical and psychological challenges, making internal motivation an important occupational resource.
4. **Emotional Stability-** Emotional stability refers to the ability to remain relatively balanced and controlled in emotionally demanding situations. It is particularly important in occupations involving emergencies and confrontation.
5. **Value Orientation-** Value orientation involves the extent to which an individual is guided by appropriate ethical and personal values. In police work, integrity, responsibility, fairness, and respect for professional duties are essential.
6. **Commitment-** Commitment refers to dedication toward responsibilities, organizational objectives, and professional duties. Police personnel often have to continue performing their responsibilities despite difficult circumstances.
7. **Altruistic Behaviour-** Altruistic behaviour involves concern for and willingness to help others without focusing exclusively on personal benefit. Public service requires a degree of social responsibility and concern for community welfare.
8. **Managing Relationships-** Managing relationships refers to the ability to establish, maintain, and appropriately regulate interpersonal relationships. Effective relationships with colleagues, senior officers, subordinates, and members of the public are essential for effective policing.

9. **Integrity-** Integrity involves consistency between values, principles, and behaviour. It is particularly important in police organizations because public confidence depends significantly upon ethical conduct.
10. **Self-Development-** Self-development refers to an individual's willingness and ability to improve personal and professional competencies. Continuous learning can help police personnel improve their psychological preparedness and occupational effectiveness.

REVIEW OF RELEVANT LITERATURE

Salovey, and Caruso (2004) examined emotional intelligence as an ability involving emotional perception, understanding, and management. Their work helped establish emotional intelligence as a significant area within psychological inquiry.

Goleman (1995) argued that emotional competencies can influence personal effectiveness and interpersonal functioning. His later work (Goleman, 1998) extended the discussion to the workplace, emphasizing competencies such as self-awareness, self-regulation, motivation, empathy, and social skills.

Research on occupational populations has suggested that emotional competencies may be relevant to work adjustment, interpersonal relationships, leadership, stress management, and organizational effectiveness. For employees working in high-pressure occupations, the capacity to regulate emotions may be particularly valuable.

Police personnel represent a particularly important occupational group for studying emotional intelligence. Police work combines authority, public interaction, uncertainty, physical risk, and emotional demands. Consequently, emotional intelligence may contribute to more appropriate responses during conflict and stressful circumstances.

Hyde and Pethe developed an Emotional Intelligence Scale intended to measure several dimensions of emotional functioning. The present study uses this standardized instrument to examine emotional intelligence among SRPF personnel.

RATIONALE OF THE STUDY

The psychological well-being and occupational effectiveness of police personnel are important for both individual employees and the community. Studying emotional intelligence among SRPF personnel is relevant because police officers regularly face emotionally demanding and stressful situations that may influence their professional behaviour. Emotional regulation can support appropriate decision-making during challenging circumstances, while empathy can promote respectful and effective interactions with citizens. Emotional stability may help personnel manage stress and remain focused during operational duties. Self-awareness enables officers to recognize and control inappropriate emotional reactions. Furthermore, strong interpersonal skills can improve communication, cooperation, and teamwork among personnel, ultimately contributing to better performance, professional relationships, and effective policing.

OBJECTIVES OF THE STUDY

1. To examine the emotional intelligence of male and female SRPF personnel.

HYPOTHESES

- **H_1:** There will be a significant difference in emotional intelligence between male and female SRPF personnel.
- **H_0:** There will be no significant difference in emotional intelligence between male and female SRPF personnel.

RESEARCH METHOD

PARTICIPANTS

This Study included 100 SRPF personnel working in Jalna. The sample consisted of 50 male and 50 female SRPF personnel. All participants belonged to the age group of 20–40 years. The selected participants represented both genders and were included to examine emotional intelligence among SRPF personnel within the specified age range.

RESEARCH DESIGN

The study employed a quantitative, comparative research design. Emotional intelligence was treated as the principal psychological variable, and male and female SRPF personnel were compared on their emotional-intelligence scores.

VARIABLES

- **Independent Variable-** Gender/sex of SRPF personnel: - 1) Male 2) Female
- **Dependent Variable-** Emotional intelligence

RESEARCH INSTRUMENT

Emotional Intelligence Scale

The study employed the Emotional Intelligence Scale developed by Hyde and Pethe. The scale consists of 34 statements measuring ten dimensions of emotional intelligence: self-awareness, empathy, self-motivation, emotional stability, value orientation, commitment, altruistic behaviour, managing relationships, integrity, and self-development. Participants responded using a five-point response format ranging from strong agreement to strong disagreement. Scores of 5, 4, 3, 2, and 1 were assigned according to the scale manual. The instrument demonstrates satisfactory reliability, with a split-half reliability coefficient of approximately .88 and a test-retest coefficient of approximately .93. These reliability coefficients indicate that the scale provides consistent and dependable measurement of emotional intelligence for psychological research.

DATA COLLECTION PROCEDURE

Prior permission was obtained from the concerned authorities before data collection. The researcher personally visited the SRPF quarters and explained the purpose and procedure of the study to the participants. Necessary instructions were provided for completing the Emotional Intelligence Scale, and participants were informed that their responses would be used only for research purposes. The questionnaire was administered individually or in suitable groups according to operational circumstances. After completion, the questionnaires were collected and scored according to the prescribed scoring procedure. The obtained scores were then systematically organized and prepared for further statistical analysis.

STATISTICAL ANALYSIS

The obtained data were analyzed using descriptive and inferential statistical techniques. The mean (M) was calculated to determine the average emotional intelligence scores of male and female SRPF personnel. Standard deviation (SD) was used to assess the variability and dispersion of scores within the groups. An independent-samples t test was employed to determine whether the difference in emotional intelligence scores between male and female participants was statistically significant. These statistical techniques helped in systematically analyzing the collected data and interpreting the findings of the study.

RESULTS

Table No. 01

Gender	Mean	SD	N	't' value	sign
Male SRPF personnel	2.33	1.61	50	0.57	NS
Female SRPF personnel	2.44	1.60	50		

The results of the present study showed that the mean emotional-intelligence score of female SRPF personnel was **2.44 (SD = 1.60)**, whereas the mean score of male SRPF personnel was **2.33 (SD = 1.61)**. Thus, female participants obtained a slightly higher mean score than male participants. The difference between the two means was relatively small, suggesting that the emotional-intelligence levels of the male and female groups were broadly comparable within the present sample. The reported comparative t value was **0.57**. This value should be interpreted carefully. On the basis of the information available, the obtained t value does not ordinarily indicate a statistically significant difference between the two independent groups at either the .01 or .001 level. Therefore, the finding should be described as a **descriptive difference**, rather than as evidence of a statistically significant gender difference. The original statistical table, degrees of freedom, critical value, and/or raw data should be rechecked before making any definitive claim regarding statistical significance. This distinction is important because a difference between two sample means does not, by itself, establish that the difference is statistically meaningful.

The present study was conducted to examine emotional intelligence among State Reserve Police Force (SRPF) personnel working in Jalna and to compare the emotional-intelligence scores of male and female personnel. Emotional intelligence refers broadly to the ability to perceive, understand, regulate, and appropriately use emotions in oneself and in interactions with others (Mayer & Salovey, 1997). These abilities are particularly relevant in occupations such as policing, where personnel are frequently required to manage stressful situations, communicate with members of the public, regulate their own emotional responses, and make decisions under pressure. Research involving police personnel has also highlighted the relevance of emotional intelligence to occupational stress, job satisfaction, well-being, and job performance (Al Ali et al., 2012; Brunetto et al., 2012).

The present finding can nevertheless be discussed in relation to previous research. Studies of police personnel have suggested that emotional intelligence is associated with important occupational outcomes. For example, Al Ali et al. (2012) reported a significant relationship between emotional intelligence and police job performance and found that emotional intelligence contributed additional variance in predicting performance after controlling for general mental abilities and personality characteristics. Similarly, research involving Indian Border Security Force personnel found a negative relationship between emotional intelligence and occupational stress, suggesting that emotional-intelligence competencies may help personnel manage stressful occupational conditions more effectively.

The slightly higher mean obtained by female SRPF personnel in the present study may indicate differences in emotional processing or interpersonal competencies; however, such an interpretation should remain tentative because the statistical comparison did not demonstrate a significant group difference based on the reported t value. Research on police personnel has produced varied findings concerning gender and emotional intelligence, indicating that gender differences may depend on the particular dimensions of emotional intelligence being assessed, the characteristics of the sample, and the measurement instrument used. Therefore, the present finding should not be generalized beyond the study sample without further evidence.

The findings also have practical significance for police organizations. Emotional intelligence may be strengthened through appropriate psychological and organizational interventions. A

study involving police officers found that an integrative group intervention focusing on emotional intelligence, empathy, resilience, and stress management produced significant improvements in these areas, with benefits remaining evident three months after the intervention (Romosiou et al., 2019). emotional-intelligence development may be considered as a useful component of professional development and psychological training for police personnel.

For SRPF personnel in particular, emotional-intelligence competencies may be valuable because operational duties can involve uncertainty, conflict, public interaction, emergencies, and psychological pressure. Training in self-awareness, emotional regulation, empathy, communication, conflict management, stress management, and decision-making may help personnel respond to difficult situations in a balanced and professional manner.

CONCLUSION

The present study examined emotional intelligence among State Reserve Police Force personnel working in Jalna. A sample of 100 personnel, comprising 50 male and 50 female participants in the 20–40 years age group, was assessed using the Emotional Intelligence Scale developed by Hyde and Pethe.

The study demonstrates the relevance of emotional intelligence to police personnel. Police work involves continuous interaction with people, exposure to conflict and stressful situations, rapid decision-making, and the need for emotional control. Consequently, psychological characteristics such as self-awareness, empathy, emotional stability, self-motivation, commitment, integrity, relationship management, and self-development are highly relevant to effective police functioning.

The reported descriptive statistics showed a mean of 2.33 for male personnel and 2.44 for female personnel, with standard deviations of 1.61 and 1.60, respectively. Therefore, the female group had a slightly higher descriptive mean in the supplied data.

However, the reported t value of 0.57 does not appear consistent with a claim of statistical significance at the .01 or .001 level. The original statistical calculation should consequently be verified before the finding is presented as statistically significant.

Regardless of the statistical significance of the gender difference, the study supports the practical importance of developing emotional intelligence among SRPF personnel. Structured training in emotional regulation, empathy, self-awareness, stress management, interpersonal communication, and conflict management may contribute to better occupational adjustment and professional effectiveness.

emotional intelligence should be regarded as an important psychological dimension in police personnel. Strengthening emotional competencies may benefit individual personnel, police organizations, and the communities they serve.

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Electroconvulsive Therapy, Psychotherapy, and Clinical Outcomes in Severe Inpatient Depression: A Descriptive Multiple-Case Study from Mumbai, India

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ABSTRACT

Background: Severe depressive episodes may present with suicidality, profound functional impairment, trauma-related symptoms, or psychotic features, requiring intensive and coordinated treatment. Electroconvulsive therapy (ECT) is an established intervention for selected severe depressive presentations, particularly when rapid clinical improvement is clinically necessary. Psychotherapy may complement acute psychiatric treatment by addressing maladaptive cognitions, emotional regulation, trauma-related difficulties, family functioning, and relapse prevention. **Aim:** This descriptive multiple-case study examines the clinical presentation, treatment approaches, and outcomes of three patients admitted with severe depressive presentations to an inpatient psychiatric department in Mumbai, India. **Methods:** Three clinical

cases involving a 24-year-old postgraduate student with suicidal depression, a 32-year-old woman with depressive symptoms and a history of childhood trauma, and a 45-year-old male professional with psychotic depression were reviewed descriptively. Treatment involved ECT, medication management where indicated, psychological interventions, family involvement, and discharge planning. Pre- and post-treatment scores on the Hamilton Depression Rating Scale (HAM-D-17), Clinical Global Impression–Severity scale (CGI-S), and Global Assessment of Functioning (GAF) are provided. **Results:** The clinical narratives describe improvement in suicidal ideation, biological symptoms, emotional regulation, psychotic symptoms, and functional engagement following integrated treatment. The quantitative dataset demonstrates how changes in symptom severity and functioning may be presented. **Conclusion:** These cases illustrate the potential clinical value of coordinated psychiatric and psychological care in severe inpatient depression.

Keywords: Electroconvulsive therapy, severe depression, psychotherapy, inpatient psychiatry,

psychotic depression, cognitive behavioural therapy, clinical outcomes, India.

INTRODUCTION

Major depressive disorder is associated with substantial psychological distress, functional impairment, and increased risk of suicide. Severe depressive episodes may involve pervasive low mood, anhedonia, hopelessness, guilt, impaired concentration, psychomotor changes, sleep disturbance, appetite loss, and withdrawal from academic, occupational, and interpersonal activities. In some patients, depression is accompanied by psychotic symptoms or a history of trauma, complicating assessment and treatment.

Electroconvulsive therapy is an established treatment option for selected patients with severe depression, including presentations involving psychotic features, significant suicidality, marked physical deterioration, or a clinical need for rapid improvement. Treatment decisions require individual assessment, consideration of benefits and risks, informed consent or the applicable legal process, anaesthetic evaluation, and appropriate monitoring [1,2]. Clinical guidance also emphasises that treatment should be individualised according to symptom severity, patient preferences, previous treatment response, and the overall clinical situation [3].Although ECT

may be used to address the acute phase of severe illness, recovery also involves attention to psychological, interpersonal, and functional difficulties. Cognitive behavioural therapy (CBT) targets unhelpful thought patterns, behavioural withdrawal, and maladaptive coping strategies [4]. Trauma-informed interventions may additionally address emotional dysregulation, intrusive memories, avoidance, and difficulties with interpersonal boundaries. Family psychoeducation and structured discharge planning may support continuity of care and recognition of relapse warning signs.

The present article describes three clinical presentations managed in a Mumbai inpatient psychiatric setting. It explores how ECT, pharmacological management where indicated, psychotherapy, and family involvement were incorporated into treatment. The cases are presented as descriptive clinical observations rather than as evidence from a controlled treatment study.

AIM AND OBJECTIVES

The primary aim was to describe the clinical course and reported outcomes of three patients admitted with severe depressive presentations and treated through coordinated psychiatric and psychological care.

THE OBJECTIVES WERE:

1. To describe the presenting symptoms, clinical risks, and functional impairments in the three cases.
2. To document the reported role of ECT and associated psychiatric treatment during acute stabilisation.
3. To describe the psychological interventions introduced as patients became able to engage.
4. To demonstrate a framework for reporting symptom severity and functional changes quantitatively.
5. To identify implications for interdisciplinary inpatient care and future clinical research.

METHODOLOGY

Study design

This article uses a descriptive multiple-case study approach. Three clinical narratives from an inpatient psychiatric department in Mumbai were reviewed to describe treatment processes and reported clinical outcomes. Clinical case reporting should provide a transparent account of patient presentation, interventions, outcomes, and limitations, consistent with principles outlined in the CARE reporting guidelines [5].

Clinical setting and cases

The cases concerned three adults with severe depressive presentations:

1. Case 1: A 24-year-old postgraduate student presenting after a suicide attempt.
2. Case 2: A 32-year-old woman presenting with depressive symptoms, emotional numbness, and a history of childhood trauma.
3. Case 3: A 45-year-old male professional presenting with psychotic depression, severe hopelessness, nutritional decline, and suicidal intent.

Treatment approach

Treatment was individualised and included ECT, psychiatric medication management where indicated, psychological intervention, risk monitoring, and family involvement. Psychological treatment was adapted to each patient's clinical state and capacity to participate.

Quantitative outcome measures

The following instruments were used:

1. **Hamilton Depression Rating Scale**—17 items (HAM-D-17): A clinician-rated measure of depressive symptom severity [6].
2. **Clinical Global Impression**—Severity (CGI-S): A clinician-rated measure of overall illness severity, described in the ECDEU assessment manual [7].
3. **Global Assessment of Functioning (GAF):** A global rating of psychological, social, and occupational functioning.

Treatment duration

The treatment indicates 14 ECT sessions and a hospitalisation duration of approximately two months along with psychopharmacology and psychotherapy.

DATA ANALYSIS

The cases were compared descriptively according to presenting symptoms, treatment components, reported clinical changes, and functional outcomes. No inferential statistical analysis was conducted.

CLINICAL CASE PRESENTATIONS

Case 1: Suicidal Depression Treated with ECT and Cognitive Behavioural Therapy

A 24-year-old postgraduate student presented following a suicide attempt after approximately six months of progressive depressive deterioration. The clinical presentation included intense guilt, academic stress, insomnia, reduced appetite, psychomotor retardation, and persistent suicidal thinking. The severity of symptoms and recent suicidal behaviour indicated the need for intensive assessment, safety monitoring, and acute psychiatric treatment.Bitemporal ECT was administered under the care of the treating psychiatrist. The clinical presentation describes a reduction in suicidal ideation and improvement in biological symptoms by the fourth ECT session.

As the patient's mental clarity and ability to engage improved, psychotherapy was introduced. Early sessions focused on crisis management, behavioural activation, emotional stabilisation, and the development of a manageable daily routine. CBT strategies were subsequently used to address maladaptive beliefs, catastrophising, excessive self-blame, and repetitive negative thinking. Activity monitoring, cognitive reframing, grounding exercises, and sleep–wake regulation were incorporated.

Family involvement aimed to establish a more supportive environment and reduce excessive academic pressure. The clinical narrative reports significant improvement at discharge, resumption of academic functioning, and maintenance of improvement during follow-up. The duration and method of follow-up should be specified in the final manuscript.

Case 2: ECT as a Bridge to Trauma-Informed Psychotherapy

A 32-year-old woman with a history of childhood trauma experienced approximately six months of worsening psychological functioning. Her symptoms included emotional numbness, intrusive memories, insomnia, appetite loss, episodes of heightened anxiety, and passive suicidal ideation. Emotional overwhelm and functional deterioration initially limited her capacity to engage consistently in psychotherapy.

ECT was administered by the treating psychiatrist. Symptoms improvement in sleep and appetite and a reduction in agitation were observed. These changes facilitated subsequent engagement in psychological treatment.

Psychotherapy initially focused on stabilisation, including grounding, sensory orientation, controlled breathing, and emotional regulation. As the patient's distress tolerance improved, therapy progressed towards trauma-informed interventions. These included gradual exploration of traumatic memories, examination of trauma-related meanings, coping with triggers, and development of interpersonal boundaries. The pace of trauma-related work was intended to remain responsive to the patient's stability and tolerance. Further sessions addressed routine building, interpersonal skills, and vocational reengagement. The clinical narrative reports improved functioning and greater autonomy.

Case 3: Psychotic Depression Managed with ECT, Medication, and Family

Intervention

A 45-year-old male professional presented with a severe depressive episode accompanied by psychotic symptoms, including nihilistic delusions, profound hopelessness, nutritional decline, and suicidal intent. His condition had deteriorated over approximately six months despite previous outpatient treatment.

ECT was administered alongside antidepressant and antipsychotic medication management. The clinical account describes reduced delusional conviction, improvement in appetite, and more

regulated sleep during the acute treatment phase. Safety monitoring was maintained because of the severity of depressive symptoms, psychotic experiences, and suicidal risk. The supplied treatment information indicates 14 ECT sessions and approximately two months of hospitalisation, subject to case-by-case verification.

Psychological intervention initially consisted of supportive work, reassurance, grounding, present-moment orientation, and gradual reality testing as clinically appropriate. More cognitively demanding interventions were introduced cautiously as the patient's mental state improved. Cognitive restructuring was used to address hopelessness and distorted interpretations when the patient could participate meaningfully.

Family psychoeducation was an important component of the treatment plan. It addressed the nature of psychotic depression, supportive communication, recognition of early warning signs, medication supervision, sleep regulation, and the value of predictable routines. Discharge planning focused on continuity of psychiatric care, safety, and gradual return to occupational responsibilities.

The patient was in remission of symptoms, return to occupational functioning, and stable mood during follow-up.

Quantitative Outcome Reporting

Table1.Pre-andpost-treatmentscores

Case	HAM-D-17 pretreatment*	HAM-D-17 post-treatment*	Reduction	CGI-S pre/post*	GAF pre/post*
Case1:Suicidal depression	30	8	22 points (73.3%)	6 / 2	30 / 75
Case 2: Depression with trauma history	27	9	18 points (66.7%)	5 / 2	35 / 70
Case3:Psychotic depression	32	7	25 points (78.1%)	7 / 2	25 / 80

Table2.Treatment exposureandhospitalisation

Case	ECT sessions reported	Hospitalisation duration reported for planning*
Case1	14	2 months
Case2	14	2 months
Case3	14	2 months

Descriptive calculations

Using the HAM-D-17 values in Table 1:

• Mean pre-treatment score: 29.7.

• Mean post-treatment score: 8.0.

• Mean absolute reduction: 21.7 points.

• Mean percentage reduction across the three cases: approximately 72.7%.

Cross-Case Comparison

Across the three narratives, several clinical themes emerge.

First, all three patients experienced substantial deterioration in functioning alongside severe depressive symptoms. Suicidal thinking or behaviour was prominent, while biological symptoms such as sleep disturbance and appetite reduction were reported across the cases. The third case additionally involved psychotic symptoms, while the second involved trauma-related distress and emotional dysregulation.

Second, ECT was described as part of acute treatment when symptom severity, suicidal risk, or psychotic features warranted intensive intervention. The narratives describe improvement in selected symptoms during treatment, but the absence of verified standardised ratings and detailed treatment records limits objective comparison.

Third, psychotherapy was tailored to the patient's presentation and capacity to participate. CBT and behavioural activation were emphasised in the first case; stabilisation and trauma-informed work were central to the second; and supportive, reality-oriented, and family-based interventions were prioritised in the third.

Finally, each narrative emphasised functional recovery, including return to academic or occupational roles, greater autonomy, and improved daily structure.

DISCUSSION

These three cases illustrate how ECT and psychological treatment may be incorporated into an integrated treatment plan for severe inpatient depressive presentations. Existing evidence supports the role of ECT in depressive disorders, while clinical guidelines emphasise careful patient selection, informed decision-making, monitoring, and appropriate follow-up [1–3]. The cases are consistent with the clinical rationale for considering ECT when rapid improvement is needed, but they do not independently establish treatment efficacy.

A key theme is the sequencing of care. In the first case, acute stabilisation was followed by CBT and behavioural activation. In the second, the reported improvement in biological symptoms was followed by stabilisation and trauma-informed psychological work. In the third, supportive intervention and family psychoeducation accompanied psychiatric treatment, with more cognitively demanding work introduced as the patient's condition permitted. This case based description supports the clinical importance of adapting psychotherapy to current symptom severity and the patient's ability to engage.

CBT offers structured strategies for examining maladaptive cognitions and addressing behavioural withdrawal [4]. In severe depression, however, psychological intervention should be individualised and coordinated with the wider treatment plan. Trauma-focused work similarly requires careful pacing, assessment of stability, and attention to distress tolerance. In psychotic depression, psychological interventions should complement, rather than replace,

APPROPRIATE PSYCHIATRIC TREATMENT AND SAFETY MONITORING.

Family involvement was described as relevant to reducing environmental stress, supporting treatment adherence, recognising relapse warning signs, and rebuilding daily routines. The cases also underline the importance of discharge planning and continuity of care, especially when patients are transitioning from a highly structured inpatient environment to home, academic, or occupational settings.

Despite these clinically relevant observations, the study design has substantial limitations. The cases were selected descriptively, there was no comparison group, and ECT was delivered alongside other treatment components. Consequently, the contribution of ECT cannot be separated from medication, psychotherapy, family support, the inpatient environment, or the natural course of illness.

CLINICAL IMPLICATIONS

The cases suggest several practical considerations for inpatient care:

1. Individualised risk management: Suicidal behaviour, psychotic symptoms, nutritional compromise, and severe functional decline require careful assessment and a documented safety plan.
2. Coordinated treatment: Psychiatric and psychological interventions should be planned collaboratively, with clear communication regarding the patient's clinical status and treatment goals.
3. Flexible psychotherapy: The type, pace, and complexity of psychological intervention should be adapted to symptom severity and the patient's capacity to participate.
4. Family psychoeducation: Where appropriate and acceptable to the patient, family involvement can support communication, treatment continuity, and recognition of relapse warning signs.
5. Outcome monitoring: Standardised symptom ratings, functional measures, adverse effect monitoring, and defined follow-up assessments would strengthen clinical documentation and future research.
6. Continuity of care: Discharge planning should include medication follow-up, safety considerations, daily routines, and plans for returning to academic, occupational, and social roles.

These implications should be interpreted as practice considerations informed by the case narratives and existing guidance, not as causal conclusions established by this case series [1–5].

STRENGTHS AND LIMITATIONS

1. The article describes three clinically distinct presentations of severe depression.

2. It details the sequencing of acute psychiatric treatment and psychological intervention.
3. It highlights family involvement, functional recovery, and discharge planning.
4. It identifies potential domains for prospective quantitative outcome monitoring.

LIMITATIONS

1. The study includes only three cases from a single clinical setting.
2. There is no control or comparison group.
3. The contribution of ECT cannot be isolated from medication, psychotherapy, family involvement, or other aspects of inpatient care.

ETHICAL CONSIDERATIONS

Before publication, appropriate consent for publication has been obtained and that identifying details have been removed or sufficiently altered to protect patient confidentiality.

RECOMMENDATIONS FOR FUTURE RESEARCH

Future work could use a prospective observational design involving a larger sample of patients receiving ECT and concurrent psychiatric care. Standardised measures should be collected at baseline, during treatment where feasible, at discharge, and at predefined follow-up intervals. Relevant outcomes could include depressive symptom severity, global clinical improvement, functional recovery, suicidal ideation, adverse effects, and relapse. Future studies should document ECT parameters, medication exposure, psychotherapy type and frequency, length of hospitalisation, and relevant clinical or demographic factors. Where feasible, independent outcome ratings and transparent procedures for handling missing data would improve methodological rigour.

CONCLUSION

The three clinical narratives illustrate the potential role of integrated psychiatric and psychological care in severe inpatient depressive presentations. ECT was described as part of acute treatment for patients with significant suicidal risk, severe functional impairment, or

psychotic symptoms. Psychotherapy and family involvement were used to address cognitive, emotional, trauma-related, interpersonal, and functional difficulties as clinical stability permitted.

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"A Comparative Analysis of Pre- and Post-Merger EBITDA Margins in the Indian Manufacturing Sector"

CA. Shailesh Prajapati

ABSTRACT

Introduction- Mergers and acquisitions now become techniques and a resource for the Indian manufacturing companies for fostering development, competitive positioning, and operational efficiency. In the under section 230-234 of the Companies Act 2013, a transformation has occurred in the M&As landscape. And it is important to explore the company's financials as well as non-financial synergies in post-merger outcomes. **Purpose-** The study analyses the mergers and acquisitions important to improve EBITDA margins in Indian manufacturing firms. It is enhanced the operational efficiency, cost management, and income generation post-merger. **Design/methodology/approach-** Secondary financial data from Capital line and Bloomberg databases analysed 32 manufacturing M&As (2015-2022), comparing three-year pre- and post-

merger EBITDA margins. A paired t-test assessed statistical significance, enhanced by descriptive statistics and correlation analysis to evaluate performance stability. Primary data were collected from 50 respondents through a questionnaire, with graphical analysis and PLS-SEM used to support and validate the findings from the secondary financial data. **Finding-** Post-merger EBITDA margins improved significantly, with 65.6% of companies showing favourable improvements and a statistically significant increase ($p = 0.049$). Primary data from 50 respondents supported this, and PLS-SEM findings identified human capital ($\beta = 0.472$) and market share ($\beta = 0.317$) as the key drivers, which is consistent with synergy realisation through operational efficiencies and cost synergies. Post-merger margins were also more stable, as the variation across companies narrowed. **Originality/Value-** This study provides the data of M&A synergy realisation in Indian manufacturing through EBITDA analysis, highlighting operational efficiency gains while identifying integration challenges in 34% unfavourable cases.

Keywords: Mergers & Acquisitions, EBITDA Margin, Indian Manufacturing, Post-merger Performance, Operational Efficiency, Synergy Realisation.

INTRODUCTION

Indian companies always believe in Organic and Inorganic growth. There are many models of Inorganic growth, and one of them is the restructuring of companies. Restructuring can be done internally as well as externally. It includes Mergers and acquisitions (M&As), Demergers, Slump sales, spin-offs, split-ups up etc. Indian companies have given more weightage to demergers and hived off the unit that is not core, and another one is mergers and acquisitions. This has provided new opportunities for Indian companies to grow faster and build synergy through mergers. This leads Indian companies to search for more and more companies that are either growing very fast or are sinking, so that they can revive and have a tax advantage till it is revived. From 2014 to 2025, M&A has increased, pushed by technological progress, the opening of new Markets, globalisation, regulatory reforms, and dynamic change in consumer behaviour **(Ansari, 2025)**. This change was founded in the 1990s economic liberalisation, with the belief that combined performance is better than Individual performance most of the time **(Economic Times, June 30, 2025)**. Even the regulators are also skewed towards simplifying merger processes, reducing legal

barriers, and creating a more favourable environment for deals **(India Briefing, 2025)**. Minority shareholders are also protected by way of compliance, and certain disclosures have further supported good governance and further motivated them to go for Mergers and acquisitions. **(EY M&A H1 2025 Report)**.

The regulatory landscape is changing in a way that supports and encourages the growing wave of merger and acquisition activity. Recent changes in laws and regulations have simplified the process, removing barriers, reducing approval timelines, and easing compliance, thereby minimising transaction costs and uncertainties. Simplification of the National Company Law Tribunal (NCLT) process and revised merger control thresholds have led to smoother deal closures (India Briefing, 2025). Sections 230-233 of the Companies Act, 2013, simplify mergers, with Section 233 enabling fast-track mergers for small companies or holding company combinations. In the merger and acquisition, the independent valuation reports on shares, assets and liabilities, with full disclosure of financial information, exchange ratios, and merger rationale, are mandated before approval of the deal. The role of NCLT in mergers and acquisitions is important. They oversee most mergers, ensuring rules, regulations, compliance and fairness. The NCLT check the approvals, disclosures and valuation before sanctioning the deals. (India Briefing, 2025).

In mergers and acquisitions in India, sections 230 and 234 of the Companies Act, 2013, have simplified mergers, reduced costs, and fostered investor confidence. The companies are adapting the merger and acquisition strategy for growth, diversification and a technology perspective, supported by reforms and foreign equity. (Corum Group,2025)

Remarkable deals include Sun Pharma Ranbaxy's R&D expansion, Kotak Mahindra ING Vysya's efficiency gains, and acquisitions by Tesla, Adani, Reliance, and Tata Consumer that modernised and diversified operations **(Motilal Oswal, 2025)**. The mergers and acquisitions deals are successful when the cultural alignment, tech integration, stakeholder trust and the financial metrics are proper. **(Poorvi Agrawal et al., 2025)**.

The study will explore how a comprehensive approach leads to measurable performance improvement and how mergers and acquisitions are favourable in the context of Indian manufacturing. (Toppenberg, 2013). This study aims to examine EBITDA margin to determine

whether the merger and acquisition are favourable to the manufacturing industries. And also assess whether the manufacturing sector mergers and acquisitions in India create long-term value or not, and it is essential to adopt the exact standard and the performance indicators. And for that, the EBITDA margin is specifically suitable for this purpose. And the EBITDA specifically separates the operational profit from the revenue, and it is easier to identify that there is an improvement in efficiency or cost management resulting from the merger.

LITERATURE REVIEW

Post-merger performance differs across dimensions, for example, financial stability, organisational adaptation, and core team strategy. In the Long term, the ROS, ROI will improve, but in the short term, it compensates with the Increase in cost of Acquisition and integration costs. Performance of the firms largely depends on firm size, governance, management, and integration quality **(Arindam Das, 2021).** Aditya Birla Group's (Grasim's) acquisition of L&T Cement (now UltraTech Cement) is examined through the Real Options theory, a financial options theory applied to corporate strategy. It suggests that initial investments may show negative NPV but hold long-term "strategic option" value under conditions of uncertainty, volatility, and flexible timing. Grasim's excess payment for L&T's cement business, though a complementary asset, provides an advantage because Aditya Birla's existing cement operations, given market flexibility, government infrastructure policies, and competitive landscape. In the paper, the researcher discusses the methods for identifying and valuing such options, which emphasise that they are favourably qualified and a takeover is a strategic bet on volatility and synergy through expansion and timing as a real option **(N. R. Parasuraman 's, 2016)**. The paper emphasises transformations in India's pharmaceutical sector after TRIPS implementation in 2005. Pharmaceutical companies are going for M&A to develop global reach, improve research capabilities, and strengthen the generic sectors after the post-TRIPS. Before TRIPS, the company mainly focused on market share and economic scale. But now they shifted to securing the intellectual property, innovation, and entering regulated markets. Post-TRIPS, M&A have shown excellent performance in ROA, profit margins, and R&D concentration, in the special case of cross-border mergers or acquisitions. Long-term success depends on successfully integrating intellectual property, aligning Research and Development, and adapting to global

patent and regulatory requirements. **(Indrani Chakraborty et al., 2023)**. The Sun Pharma Ranbaxy merger study emphasises human resource and integration challenges, featuring the importance of the "human side" of M&As, training, communication, and cultural alignment in ensuring success. While traditional models rank financial gains, "soft skills" like culture, employee morale and integration strongly stimulate outcomes. Unless addressing this, mergers risk low morale, reduced productivity, and high attrition issues often overlooked in M&A research. The authors conclude that post-merger integration needs more HR focus and good strategies to support successful cohesion **(Anjali Daisy et al., 2016)**. The paper highlights that mergers and acquisitions occur across developed and developing economies due to the faster changes in capital and technologies. But as per the research, 83% of all M&As fail to deliver the shareholder values, and this failure has an impact on the two merger companies during the integration. And this research also studies the stages of the integration process in relation to strategic and organisational fit **(Al Bustami, 2020).**

The paper highlights whether the mergers and acquisitions in the Indian manufacturing sector led to anti-competitive outcomes. As the given policy encouraged the flexibilities, while domestic firms took the route of merger and restructuring the business and grow, but the foreign firms prefer to enter into specific market acquisitions and raise the monopoly power. For this context, the present paper is research on the post-reform period using the panel dataset of 34 major industries from 2001 through 2009. The article finds that M&As do not necessarily cause any appreciable adverse impact on market control (Mishra, 2018). This study investigates the impact of mergers and acquisitions (M&As) on shareholder value in India's Fast-Moving Consumer Goods (FMCG) sector. The data is from 2010 to 2023 by analysing the financial performance before and after mergers and acquisitions, and the stock market reaction. Analysis of financial performance metrics shows that acquiring firms generally experience improvements in ROA, ROE, EBITDA margin, and revenue growth in the post-acquisition period, supporting the hypothesis that M&As create shareholder value**(Irene Marie Dove and Mustari, 2024).** The paper discusses about how mergers and acquisitions arise from different types of synergy between the acquiring and the target firm. They have been talking about the three forms of synergy typology, life cycle, and value in that their s various types. This typology uncovers three novel synergies that are relational, network, and non-market in that the external cooperative environment is classified in two ways: internal and market power. Second, they introduce the life

cycle, explore how the timing of initial realisation and the duration of gains vary across the five synergies based on differences in the post-merger integration required and in the control the acquirer has over the assets and activities combined by the merger. And third is value, which examines interactions between synergies, highlighting situations where they reinforce each other (co-synergies) or reduce effectiveness (dis-synergies) **(Feldman and Hernandez, 2022).** The study investigates mergers and acquisitions on the financial performance based on Acquiring firms in India, focusing on profitability, Liquidity and solvency. The researcher uses the secondary data, which includes 68 mergers between 2007-08 and 2011-2012 and compares the firms' performance in the short and medium terms before and after the merger. The researcher finds that in the five years, there has been profitability and liquidity, but no improvement in solvency, with service sector firms performing better than manufacturing firms **(Aggarwal and Garg, 2019).** The Paper investigates the merger and acquisition of India Infoline Limited (IIFL) and analyses its financial impact. After analysing the financial performance, they found out that the company's earnings per share (EPS) increased by 71%, and sales turnover increased by 8% this indicates that financial performance and shareholder benefit are improved. The reason behind the merger is to create shareholder value. The researcher observes that the two companies are creating more value than the two separate companies. **(Anusha and S. Malla Reddy 2024).**

THEORETICAL FRAMEWORK

Independent Variables	Dependant Variables	Moderating Variables
Pre-merger Due Diligence	Post-Merger Performance (EBITDA)	Economic Conditions
Integration Speed		Regulatory Environment
HR & Cultural Alignment		
Economies of Scale & Scope		
Digital Transformation		

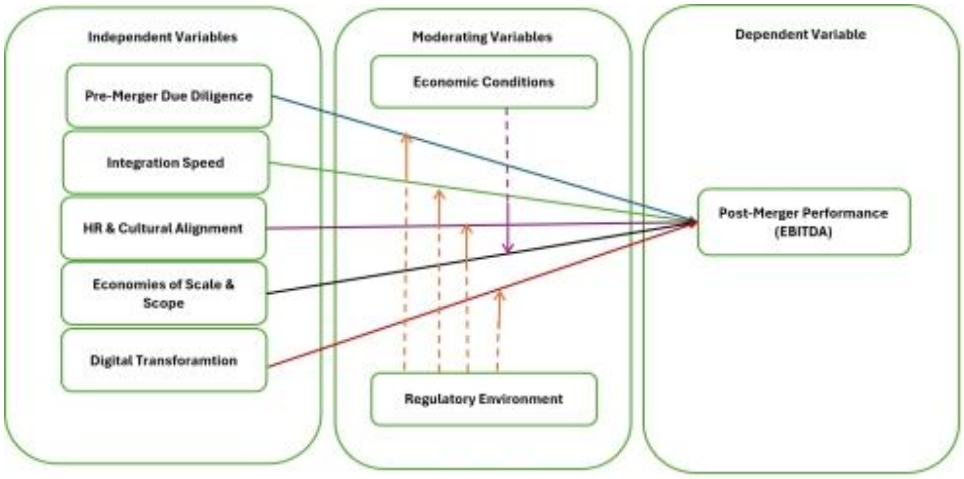


Figure 1: Theoretical Framework

This theoretical framework investigates the key factors that determine Post-Merger Performance, measured through EBITDA. The independent variables are five factors such as Pre-Merger Due Diligence, Integration Speed, Human Resources and Culture Alignment, Economies of Scale and Scope, and Digital Transformation, which have a direct effect on post-merger financial performance as due diligence, fast integration, people alignment, economies, and technology are crucial factors that determine whether a merger is successful or not. In addition to it, these variables can be affected by two moderating variables Economic Conditions and Regulatory Environment, that may amplify or dampen the effect of independent variables on performance depending on the economic and regulatory environment in which the merger takes place. In the PLS-SEM analysis, HR and cultural alignment is represented by the Human Capital & HR Operation construct and economies of scale and scope by the Economic Scale construct, while Market Share is added based on the literature reviewed above.

STATEMENT OF PROBLEM

Mergers and acquisitions (M&As) are highly important for the growth of corporations, market development, and optimisation in India (PwC India, 2022; Deloitte India, 2021). Still, in spite of the anticipation of realising large synergies, especially in terms of cost savings and innovation,

many M&As fail to achieve positive results in both financial and non-financial terms. Indian manufacturing companies face large challenges, such as cultural incompatibility, technological disparities, and human resource issues (Ghosh, 2016), in addition to regulatory complexities, governance problems, leadership conflicts, poor communication, and stakeholder alignment (Khan, 2023). These internal and external issues often result in the decline of value created through M&As, especially in the form of the continued recession of EBITDA margins, which is a highly important metric of operational profitability and synergy creation. In the absence of effective change management, such value breakdown often calls into question the strategic logic of M&As, thus indicating a research gap in understanding how these issues specifically affect EBITDA margin performance in the Indian scenario.

OBJECTIVE OF THE STUDY

To compare the EBITDA Margin before and after mergers.

HYPOTHESIS OF THE STUDY

H1: In the manufacturing companies, there is a significant improvement in EBITDA, which translates into generating more Income post-merger. (Objective 1)

SCOPE

This research focuses on how the Indian manufacturing sector's M&As are working when the EBITDA margin changes. So, in the research, the study will be about how the EBITDA is affected in companies' operations and their financial performance. And it also studies that these changes improve income, when EBITDA changes, and this determines whether the company generate more income or not. The study examines 32 manufacturing M&As from 2015 to 2022 (listed in the data analysis section) and refers to three significant post-2010 M&A cases from the cement and pharmaceutical sectors as illustrations. The research analyses JSW Cement's acquisition of Shiva Cement in 2017, Pidilite Industries' acquisition of Huntsman Advanced Materials Solutions Pvt. Ltd. in 2020, and Sun Pharma's purchase of Ranbaxy Laboratories from

Daiichi Sankyo between 2014 and 2015. The research uses secondary data from annual reports and investor presentations, and credible business news to establish a functional framework for assessing Indian M&A synergy results through actual corporate cases.

RESEARCH METHODOLOGY

The research is based on secondary data and Primary data. Secondary data collected from the capital line database, the Bloomberg database, financial reports and the company's audited report and the primary data collected through survey from circulate the questionnaire through the google forms. The study focuses on pre-and post-merger of the data of the selected manufacturing companies to evaluate the company performance and the changes in EBITDA margin of Pre- and Post-merger that generate into the income after the post-merger.

The data is used quantitatively in a quantitative nature and analysis using the tools and the software. To analyse the hypothesis testing using the t-test. The analysis involves comparison analysis, descriptive analysis and correlation analysis of 3 years prior to the merger and the 3 years after the merger. For the primary data purpose use the graphs for the analysis. The primary data from the 50 respondents were analysed with graphs and with PLS-SEM (SmartPLS 4), because the sample is small and the responses are ordinal, to support the secondary data results and to identify the factors linked to the change in EBITDA margin.

DATA ANALYSIS

The data for the present analysis were obtained from Capitaline and the Bloomberg database for the period from 2015 to 2022, specifically for the year of the merger. For this, take the three years pre- and three years post-period to analyse the Indian manufacturing company's EBITDA margin pre- and post-merger, which translates into more income after the merger.

Summary of the average parameters in the pre-merger and post-merger periods of the company.

Merged company name	Target Company	Year	Pre	Post	Change	Status
TVS Motor Company	Swiss E-Mobility Group (SEMG)	2022	8.28	11.50	3.22	Favourable
Welspun Group	Sintex BAPL Ltd.	2022	16.03	10.07	-5.96	Unfavourable
Mangalam Cement Ltd	Mangalam Timber Products Ltd	2022	15.28	12.24	-3.04	Unfavourable
Torrent Pharmaceuticals	Curatio Healthcare	2022	35.12	35.01	-0.10	Unfavourable
JSW Steel	Bhushan Power & Steel Ltd. (BPSL)	2021	21.75	19.40	-2.35	Unfavourable
Uno Minda Ltd	Harita Seating Systems Ltd	2021	11.06	11.20	0.15	Favourable
TVS Motor Company	Norton Motorcycle Co.	2020	7.98	9.54	1.57	Favourable
Sandur Manganese & Iron Ores Ltd.	Star Metallics & Power Pvt Ltd	2020	28.82	34.96	6.15	Favourable
Endurance Technologies Ltd	Adler SpA	2020	12.44	13.28	0.83	Favourable
Hindalco Industries	Aleris Corporation	2020	13.11	12.43	-0.67	Unfavourable
Hindustan Unilever Ltd. (HUL)	GlaxoSmithKline Consumer Healthcare	2020	21.87	24.80	2.93	Favourable
ITC Ltd.	Sunrise Foods Private Ltd.	2020	38.01	37.49	-0.52	Unfavourable
L&T (Larsen & Toubro)	Mindtree Ltd.	2019	12.88	12.83	-0.05	Unfavourable
Piramal Enterprises Ltd.	Piramal Phytocare Ltd	2019	55.95	93.23	37.28	Favourable
Pharmaids Pharmaceuticals Ltd.	Emergent Bio Naturals Ltd	2019	-42.53	1.78	44.30	Favourable
Rama Paper Mills Ltd	Nath Industrial Chemicals Ltd	2019	-8.29	3.91	12.20	Favourable
Rama Paper Mills Ltd	Nath Pulp & Paper Mills Ltd	2019	-8.29	3.91	12.20	Favourable
DIL Ltd (Fermenta Biotech Ltd)	Fermenta Biotech Ltd	2019	-102.20	25.49	127.69	Favourable
Bayer CropScience Ltd	Monsanto India Ltd	2019	16.86	20.64	3.78	Favourable

Sumitomo Chemical India Pvt Ltd	Excel Crop Care Ltd	2019	13.00	18.08	5.08	Favourable
Welspun Enterprises Ltd	Anjar Road Pvt Ltd	2019	11.42	14.22	2.80	Favourable
Pennar Industries Ltd	Pennar Enviro Ltd	2019	9.41	8.23	-1.18	Unfavourable
Pennar Industries Ltd	Pennar Engineered Building Systems Ltd	2019	9.41	8.23	-1.18	Unfavourable
Welspun Corp. Ltd	Welspun Pipes Ltd	2019	10.40	19.32	8.93	Favourable
Texmaco Rail & Engineering Limited	Bright Power Projects India Pvt Ltd	2019	8.00	9.43	1.43	Favourable
JTEKT India Ltd	JTEKT Sona Automotive India Ltd	2019	11.00	23.39	12.39	favourable
Godrej Industries Ltd	Vora Soaps Ltd	2019	9.68	13.81	4.13	Favourable
UPL Ltd.	Arysta LifeScience Inc.	2019	18.82	16.36	-2.46	Unfavourable
Odisha Cement Ltd (Dalmia Bharat Ltd)	Dalmia Bharat Ltd	2018	32.20	62.19	29.99	Favourable
UltraTech Cement Ltd	Jaypee Cement Corp. Assets	2017	18.97	20.07	1.10	Favourable
JK Tyre & Industries Ltd	Cavendish Industries Ltd	2016	11.41	11.71	0.30	Favourable
Mahindra & Mahindra Ltd	Pininfarina SpA	2015	11.76	10.32	-1.44	Unfavourable

Table 1 (Source: Capital Line Database)

The table presents a comparative analysis of the EBITDA margin of selected Indian companies before (pre-merger) and after (post-merger) mergers and acquisitions across multiple years. EBITDA margin is an indicator of operational efficiency, and changes in this margin reflect how effectively companies have managed costs, synergies, and integration challenges post-merger.

All over, 32 companies are analysed, and 21 company mergers show a favourable change in EBITDA margins, and that indicating the improved operational efficiency and profitability. However, a significant number of cases also exhibit unfavourable outcomes, highlighting that maximising merger performance requires strategic integration and careful planning.

Descriptive Analysis			
PRE		POST	
Mean	30.89988	Mean	57.5149
Standard Error	13.79987	Standard Error	9.591613
Median	36.3031	Median	39.165
Mode	-24.86	Mode	11.74
Standard Deviation	78.06384	Standard Deviation	54.25836
Sample Variance	6093.964	Sample Variance	2943.969
Kurtosis	11.53891	Kurtosis	9.141561
Skewness	-2.79382	Skewness	2.77865
Range	474.44	Range	274.35
Minimum	-306.6	Minimum	5.33
Maximum	167.84	Maximum	279.68
Sum	988.7963	Sum	1840.477
Count	32	Count	32
Largest (1)	167.84	Largest (1)	279.68
Smallest (1)	-306.6	Smallest (1)	5.33
Confidence Level (95.0%)	28.14502	Confidence Level (95.0%)	19.56222

Table 2 (Source: Capital line database)

The descriptive statistics summarise the behaviour of EBITDA margins for 32 manufacturing companies in the pre-merger and post-merger periods.

The mean EBITDA margin increased from 30.90 in the pre-merger period to 57.51 post-merger, indicating a substantial rise in average operating profitability. Similarly, the median EBITDA margin rose from 36.30 to 39.17, suggesting that more than half of the companies experienced improved performance after the merger. The mode also shifted from a negative value of –24.86 in the pre-merger period to a positive value of 11.74 post-merger, reflecting a transition from losses to profitability for many firms.

Post-merger periods show the immense stability in EBITDA margin in the variance. And the standard deviation reduced significantly from 78.06 pre-merger to 54.26 post-merger. Because of the variance also reduced from 6093.96 to 2943.97, respectively. These changes indicate that EBITDA performance became more consistent after mergers.

Pre-merger EBITDA margin shows strong negative skewness that is (-2.79), and it indicates the existence of significant losses among the several firms. But in the case of post-merger, margins

are positively skewed (2.78), recommending that a large number of firms have achieved higher EBITDA margins after the merger. Kurtosis values are high in both periods, indicating leptokurtic distributions; on the other hand, the post-merger kurtosis is comparatively lower, implying a reduction in extreme values. The analysis of the minimum and maximum values enhances this conclusion. Minimum EBITDA margin improved drastically from -306.6 Pre-merger to a positive 5.33 post-merger, and that indication to eliminate the drastic operational losses after mergers. Simultaneously, the maximum EBITDA margin enhanced from 167.84 to 279.68, showing increased profit potential for high-performing firms. The 95 per cent confidence level narrowed from ±28.15 in the pre-merger period to ±19.56 post-merge. It is proven that the EBITDA margin is more reliable and predictable EBITDA performance for the mergers.

The descriptive analysis clearly shows that mergers have had a positive impact on the EBITDA margins of manufacturing companies. The improvement in EBITDA margins leads to enhancing the income-generating capacity in the post-merger period, because of the increase in the central tendency measures, which reduced the variance, cut off the extreme losses and improved the consistency of earnings, collectively supporting the hypothesis

t-Test: Paired Two Sample for Means		
	pre	Post
Mean	30.89988	57.5149
Variance	6093.964	2943.969
Observations	32	32
Pearson Correlation	0.428897	
Hypothesised Mean Difference	0	
df	31	
t Stat	-2.04794	
P(T<=t) one-tail	0.024558	
t Critical one-tail	1.695519	
P(T<=t) two-tail	0.049117	
t Critical two-tail	2.039513	

Table 3 (Source: Capital line database)

The study aims to compare the EBITDA margin of manufacturing companies before and after mergers to assess whether the mergers lead to improved operating performance and income generation. To achieve the objective, a paired two-sample t-test for the mean was applied. For

that sample set of 32 manufacturing companies, was observed in both pre-merger and post-merger periods. As per the descriptive statistics, it is an outstanding improvement in EBITDA margins after mergers. The mean EBITDA margin is increased from 30.90 to 57,.51 and it indicates the rise in operational profitability. The variance declined from 6093.96 to 2943.97, and that suggests that the EBITDA margin became more consistent and stable and consistent. This positive Pearson correlation coefficient of 0.4289 indicated a steady relationship between pre- and post-merger EBITDA margins, justifying the use of a paired comparison. The outcome of the paired t-test provides strong statistical proof of improvement in EBITDA margins post-merger. T-statistic is -2.0479, which is above the critical t-value at the 5 per cent significance level for a two-tailed test, which is 2.0395 in absolute terms. Moreover, the two-tailed p-value is 0.0491, which is less than the significance level of 0.05. This indicates the difference between the EBITDA margin of pre and post is statistically significant. And the one-tailed p-value is also less than 0.05, which is 0.0246, so it proves that EBITDA margin is highly significant of pre-merger to post-merger.

So, based on the result, it says that the null hypothesis of no significant difference in EBITDA margins before and after mergers is rejected. And the alternative hypothesis is accepted. This improvement reflects enhanced operational efficiency, better cost management, and the realisation of synergies arising from mergers, which ultimately translate into increased income generation.

Correlation Analysis						
	PRE-1	PRE-2	PRE-3	POST-1	POST-2	POST-3
PRE-1	1					
PRE-2	0.758833	1				
PRE-3	0.799692	0.947897	1			
POST-1	0.522329	0.32148	0.493642	1		
POST-2	0.584442	0.20683	0.366696	0.823516	1	
POST-3	0.539046	0.266459	0.425247	0.918666	0.917954	1

Table 4 (Source: Capital line database)

The correlation matrix shows strong positive correlations between the pre-merger EBITDA margin. Pre-merger years 2 and 3 show a very high correlation (0.9479), and the pre-merger year 1 is also strongly correlated with years 2 (0.7588) and 3 (0.7997). And this result indicates that

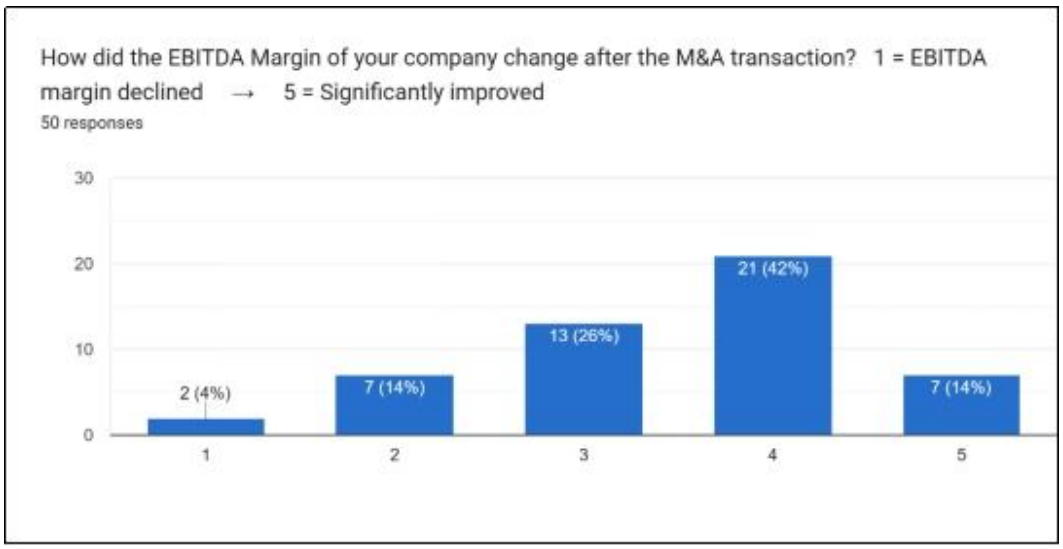
EBITDA margins in the pre-merger period were consistent and observed a stable performance trend.

Similar to post-merger EBITDA margins, shows even stronger correlations between the post-merger 1, 2, and 3, and this is highly correlated with each other, as prove that values exceeding 0.82 and reaching as high as 0.9187 between the post year 1 and 3. And this result says that this strong correlation achieved the greater stability and sustained improvement in EBITDA margins, reflecting better operational efficiency and income-generating capacity.

As a result, the test includes correlation, t-test, descriptive analysis and comparative analysis, which proves that there is a significant improvement in EBITDA margin. And the relationship between the pre- and post-merger EBITDA margin is significantly true, and it translates to generating income after the merger. So, as per the alternative hypothesis is accepted.

Primary Data

The following analysis is based on primary data collected through questionnaire responses from 50 respondents. The primary data sample is relatively small and has been used mainly to support and validate the findings obtained from the secondary data analysis. Therefore, the conclusions of the study rely primarily on secondary data, while the primary responses provide supplementary insights regarding the impact of mergers and acquisitions on EBITDA margins in manufacturing companies.



Graph No: 1 (Source: Primary data)

The analysis is based on primary data collected from 50 respondents to understand how EBITDA margins changed after mergers and acquisitions (M&A). Respondents were asked to rate the change on a scale from 1 to 5, where 1 represented a decline in EBITDA margin and 5 represented a significant improvement. The findings show that the respondents found a positive impact on EBITDA margins after mergers and acquisitions. Around 56% of the respondents selected ratings 4 or 5, indicating that M&A supported improvements in profitability and operational efficiency. Around 26% of respondents selected option 3, indicating that they experienced moderate or neutral changes in EBITDA margin performance. Only 4% of respondents selected option 1, indicating a decline in EBITDA margin, while 14% selected option 2, indicating a slight decline or limited improvement in EBITDA margin performance.

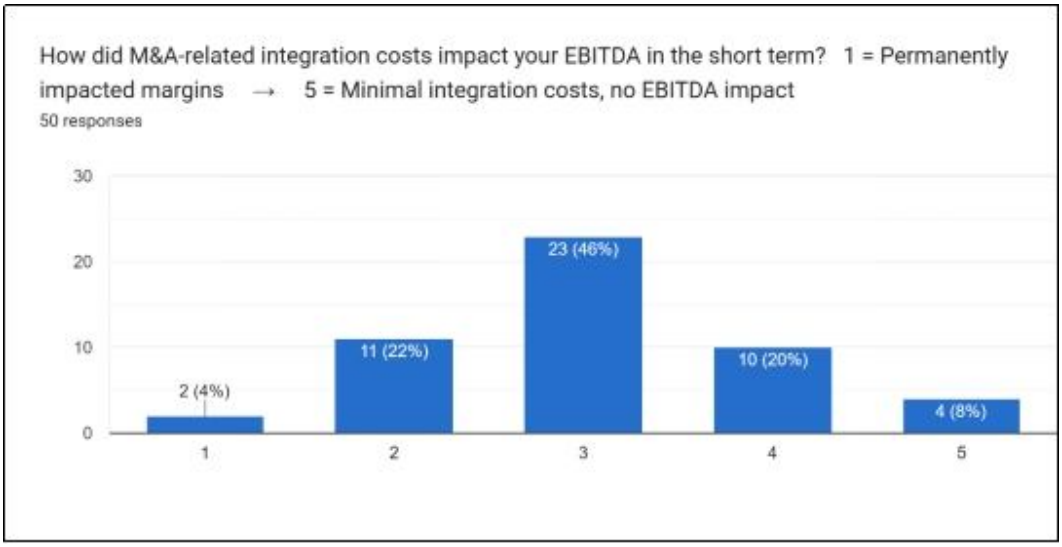
Overall, the results suggest that mergers and acquisitions had a favourable effect on the financial performance of manufacturing companies, specifically in improving EBITDA margins. These findings support the hypothesis that mergers and acquisitions contribute to better income generation and enhance EBITDA performance in manufacturing companies after the merger.



Graph No.2 (Source: Primary data)

The analysis is based on responses collected from 50 respondents regarding the extent to which the merger and acquisition improved the EBITDA margin in the company. The respondents rated improvement on a scale of 1 to 5, where 1 represented no improvement and 5 represented

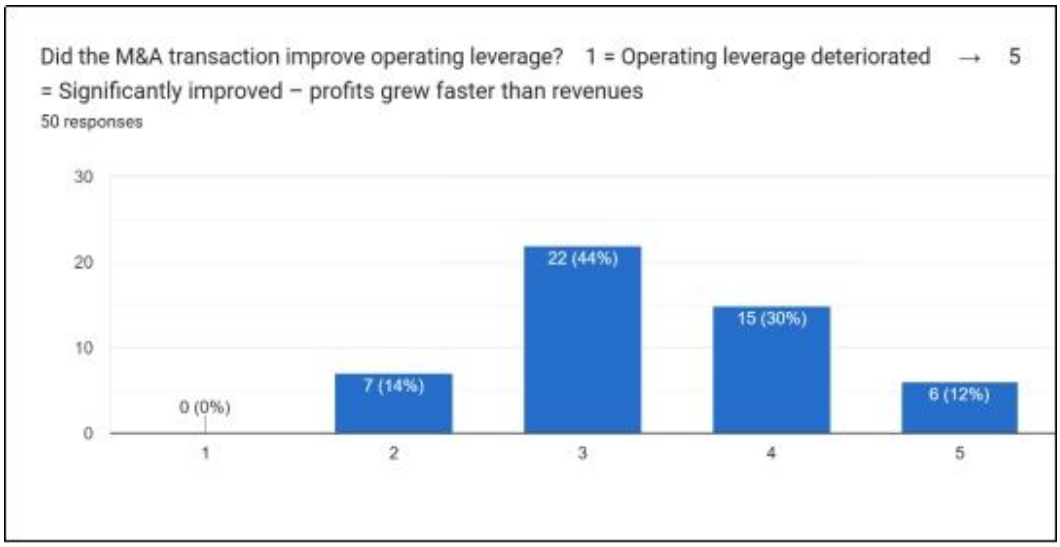
transformational improvement. The data suggested that the majority of respondents experienced an improvement in EBITDA margins after the merger and acquisitions took place. Approximately 52% of respondents selected ratings 4 and 5, showing that mergers and acquisitions significantly enhanced operational profitability and financial performance. For rating 4, 40% of respondents indicated that there was an improvement in EBITDA margins after the merger and acquisition. At the same time, 30% of respondents selected rating 3, which indicates a neutral or moderate improvement in EBITDA margins after the merger and acquisitions, suggesting a stable outcome in the post-merger period. A smaller percentage of respondents, 18% in total, selected ratings 1 and 2, indicating that some companies experienced no improvement or limited improvement in EBITDA margins. Overall, the analysis indicates that there was an improvement in EBITDA margins after the merger and acquisition, with many respondents reporting a positive outcome in the post-merger period.



Graph No.3 (Source: Primary data)

The analysis is based on the 50 responses regarding the impact of M&A-related integration costs on EBITDA margins in the short term. Respondents rated the impact on a scale of 1 to 5, where 1 indicates permanently impacted margins and 5 represents minimal integration costs with no impact on EBITDA. The findings suggested that integration costs had a moderate effect on EBITDA margins for most of the companies. The largest rating given by respondents was 3, which accounted for 46%, indicating that the companies experienced a moderate and manageable impact on EBITDA margins.

However, 26% of respondents selected ratings 1 or 2, suggesting that some firms faced noticeable short-term challenges in maintaining EBITDA margins due to integration-related expenses. At the same time, 28% of respondents selected ratings 4 or 5, indicating that some companies experienced minimal integration costs and less impact on EBITDA margins. Overall, the results indicate that although integration costs created temporary financial pressure after mergers and acquisitions, the impact was generally moderate and manageable for most manufacturing companies.



Graph No.4 (Source: Primary data)

The analysis is based on responses collected from 50 respondents regarding whether the M&A transaction improved operating leverage. Respondents rated the improvement on a scale of 1 to 5, where 1 represented deteriorated operating leverage and 5 represented significant improvement, meaning profits grew faster than revenues. The findings show that the majority of respondents experienced a moderate to positive impact on operating leverage after the merger and acquisition. The highest number of respondents, 44%, selected rating 3, indicating a moderate or neutral change in operating leverage after the M&A transaction.

At the same time, 42% of respondents selected ratings 4 and 5, indicating that operating leverage improved and that some companies experienced faster profit growth compared to revenue growth. However, 14% of respondents selected rating 2, suggesting that some companies experienced a

slight deterioration in operating leverage. No respondents selected rating 1, indicating that none reported a significant deterioration in operating leverage.

Overall, the results suggest that mergers and acquisitions had a moderately positive effect on operating leverage in manufacturing companies. While many companies experienced improvements in operating leverage, a considerable proportion reported moderate changes, indicating that the benefits of M&A transactions may vary across companies during the post-merger period.

The secondary data analysis tests whether EBITDA margins changed after mergers. The survey responses support this from the respondents' point of view, and PLS-SEM uses the same 50 responses to explain which factors are linked to the improvement. The four EBITDA items in the PLS-SEM model (EM1 to EM4) are the same four questions shown in Graph No. 1 to Graph No. 4.

Partial Least Squares Structural Equation Modelling (PLS-SEM) Analysis

The data were collected from 50 senior finance, accounting and advisory professionals (68% with more than 10 years of experience) on 16 indicators rated on a five-point Likert scale. The model has three exogenous constructs (Market Share, Economic Scale, Human Capital & HR Operation) and one endogenous construct (EBITDA Margin). It was analysed with SmartPLS 4 (v4.1.1.8) in two stages: the measurement model was evaluated first, and the structural model afterwards through bootstrapping (5,000 subsamples, bias-corrected and accelerated intervals, one-tailed test, 0.05 significance).

Measurement Model

In the initial model, Market Share, Human Capital & HR Operation and EBITDA Margin met all reliability and validity criteria, but Economic Scale failed (composite reliability 0.547, AVE 0.270) because E2 (0.386), E4 (0.033) and E5 (0.246) had very weak loadings. These items were deleted one at a time (E4, then E5, then E2), re-running the algorithm after each deletion. The final construct (E1 and E3) reached CR = 0.719 and AVE = 0.585. Indicators with loadings between 0.40 and 0.70 (E3, H1, H2 and EM3) were retained because their constructs satisfy the CR and AVE thresholds. Cronbach's alpha for the two-item Economic Scale construct is low (0.388); decisions were therefore based on CR and AVE.

Table 1: Final measurement model

Construct	Items retained	Loadings	Alpha	rho_a	CR (rho_c)	AVE
Market Share	M1, M2, M3	0.780 - 0.906	0.794	0.809	0.880	0.710
Economic Scale	E1, E3	0.494 - 0.963	0.388	0.748	0.719	0.585
Human Capital & HR Operation	H1 - H4	0.633 - 0.890	0.739	0.817	0.835	0.564
EBITDA Margin	EM1 - EM4	0.640 - 0.930	0.829	0.866	0.889	0.671

Discriminant validity is established: all HTMT values lie between 0.169 and 0.695, below the 0.85 threshold. Collinearity is not a problem: inner-model VIFs are 1.111 to 1.296 (below 3.3), and outer-model VIFs are below 5 (highest: EM1 = 4.710, EM2 = 3.866)

Structural Model and Hypothesis Testing

The three synergy factors explain 44.5% of the variance in EBITDA Margin (R-square = 0.445, adjusted R-square = 0.409), a weak-to-moderate level of explanatory power.

Table 2: Hypothesis testing (bootstrapping, one-tailed, alpha = 0.05)

Hypothesis/path	Beta	t-value	p-value	90% BCa CI	f-square	Decision
H1a: Market Share → EBITDA Margin	0.317	2.790	0.003	[0.118, 0.486]	0.163	Supported
H1b: Economic Scale → EBITDA Margin	0.131	0.989	0.161	[-0.110, 0.328]	0.024	Not supported
H1c: Human Capital & HR → EBITDA Margin	0.472	4.060	0.000	[0.247, 0.633]	0.340	Supported

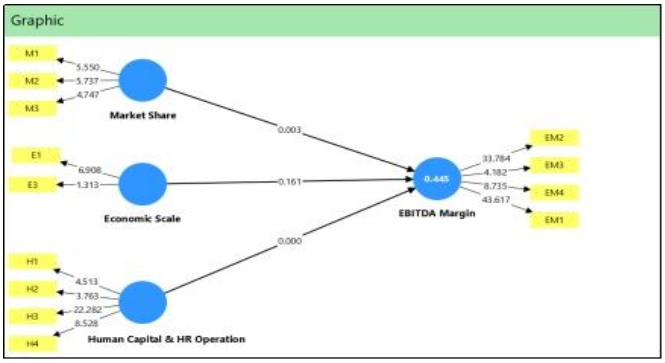


Figure 2: Bootstrapped model (p-values on paths, t-values on loadings; R-square = 0.445)

Supplementary Test of H1

A one-sample test of the EBITDA Margin score (mean of EM1 to EM4) against the neutral value of 3 shows a significant perceived improvement after the merger: mean = 3.34, t(49) = 3.03, p = 0.002 (Wilcoxon p = 0.002), with a small-to-moderate effect size (Cohen's d = 0.43).

Human Capital & HR Operation is the strongest driver of EBITDA Margin (β = 0.472, medium-to-large effect), followed by Market Share (β = 0.317, medium effect). Both are significant.

Economic Scale has no significant effect (β = 0.131, p = 0.161, small effect).

H1 is partially supported. Respondents perceive a significant EBITDA improvement post-merger, and this improvement is explained significantly by human capital and market share, but not by economic scale. This partial support refers only to the three factors tested in the PLS-SEM model (H1a and H1c are supported and H1b is not). The main comparison of EBITDA margins before and after the mergers is tested with the paired t-test on the secondary data.

Limitations of the PLS SEM study: perception-based data (the actual pre- and post-merger margins are covered by the secondary data analysis), n = 50, a two-item Economic Scale construct, and eight respondents outside manufacturing.

FINDINGS

The findings of the research indicate that mergers and acquisitions (M&A) generally have a favourable impact on EBITDA margins and operating performance in manufacturing companies,

although the extent of improvement varies across firms. By integrating secondary financial data for the period 2015–2022 with primary data collected from 50 respondents and the results of PLS-SEM analysis, the study provides a comprehensive understanding of the relationship between M&A transactions and post-merger financial performance. The findings demonstrate that successful post-merger performance depends not only on financial synergies and cost efficiencies but also on effective human capital management, market expansion, and integration practices.

The sample of 32 manufacturing companies involved in the research for the years 2015 to 2022, and it proves that a mainly positive impact on EBITDA margins post- merger, with the selection of 32 companies out of 21 cases, which is (65.6%), as they are showing the favourable improvements in companies. The example of DIL Ltd has a drastic change +127.69% gain and Odisha Cements' +29.99% rise, indicating the successful synergy realisation in operational efficiency and cost management.

Descriptive statistics reveal a major increase in the mean EBITDA margin from 30.90% pre-merger to 57.51% post-merger, and a median rise from 36.30% to 39.17%, reduced variance (standard deviation decreasing from 78.06% to 54.26%), and elimination of extreme losses (minimum improving from -306.6% to +5.33%). The paired t-test confirms statistical significance with a t-statistic of -2.048 and a two-tailed p-value of 0.049 (<0.05), rejecting the null hypothesis and validating H1 that mergers lead to significantly higher EBITDA margins and income generation.

Correlation analysis further supports sustained post-merger stability, with strong inter-year correlations (e.g., POST-1 and POST-3 at 0.919), though 34.4% unfavourable cases like Welspun Group's 5.96% decline highlight integration challenges. Overall findings suggest that it supports the hypothesis and objective as per the research.

The primary data were collected from 50 respondents and used to support the secondary data analysis. The findings suggested that, from the primary data analysis, most respondents observed an improvement in EBITDA margins after the merger and acquisition. However, a few respondents experienced limited or no improvement. Regarding the impact of M&A-related integration costs on EBITDA margins, the responses were overall moderate. Respondents

observed that there was moderate short-term pressure on EBITDA margins for companies, but it was generally manageable. The findings also indicated that operating leverage showed a moderate to positive impact after the M&A transaction, with some respondents observing improvements in profitability compared to revenue growth. Overall, the primary data supports the hypotheses and the secondary data, suggesting that mergers and acquisitions generally have a favourable impact on EBITDA margins and operating performance in manufacturing companies.

Further insights from the PLS-SEM analysis helped explain the factors contributing to post-merger performance. The PLS-SEM analysis showed that the model explained 44.5% of the variance in EBITDA Margin. Human Capital and HR Operation ($\beta = 0.472$). and Market Share ($\beta = 0.317$) had a significant positive effect, while Economic Scale had no significant effect. The supplementary test also indicated a significant perceived improvement in EBITDA Margin after M&A. Overall, the hypothesis is partially supported, highlighting the importance of human capital management and market share in improving post-merger financial performance.

CONCLUSION

In India, merger and acquisition transactions is done. From the overall analysis, it is concluded that there is an improvement in the EBITDA margin on average, translating to higher income generation and operational efficiency for most of the companies. The data validates the hypothesis; it shows that post-merger synergies driven by regulatory reform and strategic integration enhance long-term value, though success depends on managing cultural, stakeholder, and consumer-driven risks. Policymakers and firms should priories robust integration to enhance long-term value, though success depends on managing culture, stakeholder and consumer-driven risks. It would be wise for policymakers and companies to focus on the development of strong integration systems that will yield more positive results based on the 65.6 percent success ratio. This will enhance the use of inorganic growth approaches in the changing India M&A environment. The PLS-SEM results add that human capital and market share are the factors most clearly linked to higher EBITDA margins after a merger, while economic scale did not show a significant effect in this sample.

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A Study of the Relationship between Career Awareness and Academic Achievement among Secondary School Students

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ABSTRACT

The present study aims to examine the relationship between career awareness and academic achievement among secondary school students. The study also investigates differences in career awareness and academic achievement between boys and girls. A sample of 100 students, consisting of 50 boys and 50 girls, was selected from secondary schools. The descriptive survey and correlational methods were used. Data were collected through a career awareness questionnaire and students' previous examination records. Mean, standard deviation, independent samples t-test and correlation techniques were used for analysis. The findings

indicate significant gender differences and a positive relationship between career awareness and academic achievement.

Keywords: Career Awareness, Academic Achievement, Secondary School Students, Gender Differences.

INTRODUCTION

Education is one of the most important instruments for the development of an individual and society. It helps students acquire knowledge, develop skills, build confidence, and prepare themselves for future responsibilities. The main purpose of education is not only to provide academic knowledge but also to help students understand their interests, abilities, values, and aspirations. During the school years, students gradually develop an understanding of different professions and begin to think about the type of work they would like to pursue in the future. Therefore, education and career development are closely connected. The secondary school stage is particularly important because students begin making decisions regarding subject selection, higher education, professional courses, and future career opportunities.

Career awareness

Career awareness is an essential part of the educational development of students. It refers to the knowledge and understanding of different career opportunities, occupational fields, educational qualifications, professional requirements, and skills needed to enter various occupations. It also includes awareness of one's own interests, abilities, talents, and preferences. Career awareness helps students understand the relationship between their present education and future employment opportunities. It enables them to explore different career options and make informed decisions about their educational and professional goals. Students who have adequate career awareness may be better prepared to identify suitable career pathways and develop a clear direction for their future. According to Super (1990), career development is a lifelong process that involves different stages of growth, exploration, establishment, maintenance, and disengagement. The exploration stage is particularly relevant to adolescents because they begin examining their interests, abilities, and possible occupational choices. Secondary school students are generally at a stage when they start thinking seriously about their future careers. Therefore,

providing appropriate career information and guidance during this period can help them develop realistic aspirations and make suitable educational decisions.

Career awareness is also related to students' motivation and interest in learning. When students understand why a particular subject or educational qualification is important for their desired profession, they may develop a greater sense of responsibility towards their studies. For example, a student who wishes to become an engineer may understand the importance of mathematics and science, while a student interested in teaching may recognise the value of communication skills and subject knowledge. In this way, career awareness can provide students with a meaningful purpose for their academic activities.

Academic achievement

Academic achievement is another important aspect of students' educational development. It refers to the extent to which students successfully acquire knowledge, understanding, and skills through the teaching-learning process. It is generally measured through examination marks, grades, classroom assessments, and overall academic performance. Academic achievement indicates the progress students make towards their educational goals. It is influenced by several factors, such as intelligence, motivation, study habits, family background, school environment, teaching methods, peer relationships, and personal interests. Bandura (1997) explained that self-efficacy, or an individual's belief in their ability to perform a particular task successfully, plays an important role in motivation and achievement. Students who have confidence in their abilities are more likely to put effort into their studies, overcome difficulties, and remain committed to their educational goals. Similarly, students who have clear career aspirations may develop greater interest in their academic activities because they can understand the importance of education in achieving their future ambitions.

Relationship between career awareness and academic achievement

The relationship between career awareness and academic achievement can also be explained through the Social Cognitive Career Theory developed by Lent, Brown, and Hackett (1994). This theory explains how personal beliefs, career interests, expected outcomes, and individual goals influence educational and career choices. The authors highlighted the importance of self-efficacy,

outcome expectations, and personal goals in career development. They also explained that gender, social support, environmental conditions, and learning experiences may influence students' academic and career-related decisions. This theory provides a useful foundation for understanding how career awareness and future aspirations may be associated with students' academic performance.

gender differences in career awareness

Gender is an important variable in the present study because boys and girls may differ in their experiences, interests, career aspirations, exposure to career information, and opportunities for educational development. During adolescence, students begin forming their individual identities and considering different professional possibilities. Their career choices may be influenced by family expectations, social attitudes, cultural practices, peer groups, school experiences, and the availability of guidance. In some situations, boys and girls may receive different types of encouragement or face different expectations regarding their future occupations. Therefore, it is important to understand the career awareness of both boys and girls and examine whether any significant differences exist between them.The study of gender differences in career awareness is important because boys and girls should have equal opportunities to explore different professions according to their interests, abilities, and qualifications. Career opportunities should not be limited by traditional assumptions about occupations suitable for males or females. Lent, Brown, and Hackett (1994) recognised gender as one of the personal factors that may interact with environmental conditions and learning experiences in shaping career interests and choices. Their theory suggests that students' career development is influenced not only by individual abilities but also by the support and opportunities available to them. Thus, examining career awareness among boys and girls can help identify whether both groups have similar knowledge and understanding of available career opportunities.

gender differences in Academic achievement

Academic achievement is also an important area in which gender differences may be examined. Boys and girls may demonstrate different academic interests, learning experiences, study habits, and educational aspirations. However, gender alone cannot determine a student's academic performance. Factors such as family support, socioeconomic background, school facilities,

teaching quality, learning motivation, and access to educational resources also contribute to academic achievement. Gupta and Mehtani (2017) examined academic achievement among senior secondary school students in relation to self-regulated learning and demographic variables, including gender. Their work highlights the importance of considering demographic characteristics when studying students' academic performance.

Career awareness and academic achievement are two important aspects of students' overall development. A student who is aware of different career opportunities may become more interested in education and more conscious of the qualifications required for a particular profession. Such awareness may encourage students to set academic goals, improve their study habits, and make better use of educational opportunities. On the other hand, students with limited career awareness may find it difficult to identify suitable educational pathways or understand the importance of particular subjects for their future careers. However, career awareness does not automatically guarantee high academic achievement, because academic performance depends on several other personal, family, and school-related factors. Recent research also provides support for examining the connection between career-related beliefs and academic performance. Malik and Behera (2025) conducted a study among 130 secondary school students in Cuttack district of Odisha, India. Their findings indicated a significant but weak positive relationship between career self-efficacy and academic performance. They also reported no significant gender difference in career self-efficacy among the students studied. Although career self-efficacy is different from career awareness, this research provides useful evidence that career-related factors deserve attention when examining students' academic development.

In the Indian educational context, secondary school students face several important decisions regarding their future. After completing secondary education, students may choose different streams, such as science, commerce, and humanities, depending on their interests, abilities, and future aspirations. They may also consider professional courses, technical education, vocational training, and other higher education opportunities. However, all students may not have equal access to information about these options. Some students receive career guidance from parents, teachers, and counsellors, while others depend mainly on friends, relatives, or information available through the internet and social media. Therefore, schools have an important responsibility to provide proper career information and guidance to students. Career guidance

can help students understand their strengths and weaknesses, identify suitable career opportunities, and develop realistic educational goals. Teachers, parents, and school counsellors can support students by organising career awareness programmes, counselling sessions, career exhibitions, discussions with professionals, and information sessions about higher education. Such activities can help boys and girls understand the wide range of opportunities available to them and encourage them to make career decisions based on their abilities and interests rather than gender stereotypes. In this study focuses on three major aspects: career awareness, academic achievement, and gender differences among secondary school students. It aims to examine the level of career awareness among students and compare the career awareness of boys and girls. It also seeks to examine their academic achievement and identify whether significant differences exist between boys and girls. Furthermore, the study intends to investigate the relationship between career awareness and academic achievement among secondary school students, including boys and girls separately.

This study the Relationship Between Career Awareness and Academic Achievement Among Secondary School Students" is undertaken to understand the importance of career awareness in students' educational development. It may provide useful information to teachers, parents, school administrators, and guidance counsellors about the role of career awareness in shaping students' academic interests and future aspirations. The findings may also help schools understand the career-related needs of boys and girls and encourage the development of effective career guidance programmes. Ultimately, the study aims to emphasise that proper career awareness, combined with educational support and guidance, can help secondary school students make informed decisions, develop meaningful academic goals, and prepare themselves for their future careers.

REVIEW OF RELATED LITERATURE

Abdul Gafoor and Sarabi (2017) conducted a study entitled Effects of Private Tuition, Time Allocation and Perceived Difficulty on Achievement in Mathematics of Secondary School Boys and Girls in Kerala. The study included 988 Class IX students from government and government-aided schools in Malappuram district, Kerala. The findings showed that mathematics achievement did not vary significantly by gender. The study also highlighted the

importance of time allocation, perceived difficulty, and private tuition in students' academic performance.

Amit Ahuja (2016) this study conducted a study entitled "A Study of Self-Efficacy among Secondary School Students in Relation to Educational Aspiration and Academic Achievement." The study included 210 students, consisting of 106 boys and 104 girls, from two government senior secondary schools in Delhi. The researcher examined self-efficacy, educational aspiration and academic achievement. The findings revealed that girls had significantly higher scores in self-efficacy, educational aspiration and academic achievement than boys. A significant positive relationship was also found between self-efficacy and academic achievement, and between educational aspiration and academic achievement. This study is closely related to the present research because it explains how students' confidence and educational goals are associated with their academic performance.

Gottfredson (1981), through the theory of circumscription and compromise, explained how children and adolescents gradually develop occupational preferences based on their understanding of different professions and social expectations. The theory also explains how gender-related beliefs and social influences may affect the range of occupations that students consider suitable for themselves. This theoretical perspective is useful in understanding possible differences in career awareness between boys and girls.

Hyde (2005), in the study entitled The Gender Similarities Hypothesis, explained that males and females are similar in most psychological characteristics, although differences may occur in certain areas. The study challenged the assumption that boys and girls are fundamentally different in their abilities. This perspective suggests that academic achievement should be understood by considering individual abilities, educational experiences, and environmental conditions rather than gender alone.

Kaur (2024), in a study entitled Exploring Career Maturity of Senior Secondary Adolescents, examined the career maturity of 200 male and female students studying in senior secondary schools in Chandigarh. The study used a descriptive survey method and an Indian version of the Career Maturity Inventory. The findings revealed that girls had higher career maturity than boys. The study highlighted the importance of career development during adolescence and suggested

that students, teachers, parents, and counsellors should provide appropriate support for career planning. This study is relevant to the present investigation because it indicates that girls may demonstrate higher career-related development than boys.

Lent, Brown, and Hackett (1994), in their study entitled Toward a Unifying Social Cognitive Theory of Career and Academic Interest, Choice, and Performance, developed the Social Cognitive Career Theory. The theory explains how self-efficacy beliefs, outcome expectations, and personal goals influence students' educational interests, academic choices, and career development. According to the theory, students' confidence in their abilities and expectations about future career outcomes may influence their academic motivation and performance. This theory provides a strong theoretical foundation for the present study because it explains the connection between career-related beliefs and academic development.

Madhu Gupta and Dimple Mehtani (2017) conducted a study entitled Academic Achievement of Senior Secondary School Students: An Analysis on the Basis of Self-Regulated Learning and Some Demographic Variables. The study examined academic achievement in relation to self-regulated learning, type of school, and gender. The researchers considered gender an important demographic variable in understanding students' academic performance. The study highlighted the importance of self-regulated learning in educational achievement.

Malik and Behera (2025), in a study entitled Career Self-Efficacy and Academic Performance of Secondary School Students: An Empirical Analysis, examined the relationship between career self-efficacy and academic performance among 130 secondary school students in Cuttack district, Odisha. The researchers used a descriptive survey method and Pearson's product-moment correlation to analyse the collected data. The findings revealed a significant but weak positive relationship between career self-efficacy and academic performance ($r = 0.248$, $p = 0.004$). The study also found no significant gender difference in career self-efficacy. These findings suggest that students who have greater confidence in their career-related abilities may also demonstrate better academic performance. The study is particularly relevant to the present research because it examines the association between career-related factors and academic achievement among secondary school students. However, career self-efficacy and career awareness are different constructs.

Mohd Hasan and Salahuddin Khan (2015) conducted a study entitled Academic Achievement Test in English and Mathematics of Secondary School Students in Relation to Gender Differences. The study included 100 male and female students studying in Class IX in Aligarh district, Uttar Pradesh. It examined gender differences in academic achievement in English and Mathematics. The study is directly relevant to the present research because it focused on the academic performance of boys and girls at the secondary school level.

Mohd Hasan and Salahuddin Khan (2015) this study conducted a study entitled "Academic Achievement Test in English and Mathematics of Secondary School Students in Relation to Gender Differences." The study was conducted among 100 male and female students studying in Class IX in Aligarh district, Uttar Pradesh. The researchers examined gender differences in academic achievement in English and Mathematics. The findings revealed a significant difference between male and female students in English achievement. The study also examined the relationship between achievement in English and Mathematics. It is relevant to the present research because it focuses on gender differences in the academic performance of secondary school students.

Rajesh K. Jha and Ashwini K. Jha (2024) conducted a study entitled A Study of Academic Achievement in Relation to Gender and Schooling. The study included 200 students, comprising 100 male and 100 female students, from government and private schools in Varanasi. It examined academic achievement in relation to gender and type of school. The findings highlighted the importance of school-related factors in understanding students' academic performance.

Umender Malik (2017) conducted a study entitled A Study of Career Maturity among Secondary School Students in Relation to Their Emotional Maturity. The study was conducted among 200 secondary school students from CBSE-affiliated schools in Rohtak district, Haryana. The study examined the relationship between career maturity and emotional maturity. The findings indicated differences in career maturity in relation to emotional stability among male and female students.

Voyer and Voyer (2014), in their research entitled Gender Differences in Scholastic Achievement: A Meta-Analysis, examined 502 effect sizes from 369 samples. The researchers found a small but statistically significant overall advantage for females in school marks. Their findings showed that girls performed better than boys in overall school grades, although the size of the difference varied across academic subjects. The advantage was greater in language subjects and smaller in mathematics. This study provides important support for examining gender differences in academic achievement among secondary school students.

STATEMENT OF THE PROBLEM

This study the Relationship Between Career Awareness and Academic Achievement Among Secondary School Students.Career awareness plays an important role in helping students identify their interests, abilities, aspirations, and future career opportunities. However, many secondary school students may lack adequate knowledge about different professions and educational pathways. This may influence their academic interests and future planning. Gender may also be an important factor in understanding differences in career awareness and academic achievement. Therefore, the present study aims to examine career awareness among boys and girls, compare their academic achievement, and investigate the relationship between career awareness and academic achievement among secondary school students.

OBJECTIVES OF THE STUDY

1. To study the level of career awareness among secondary school students.
2. To study the academic achievement of secondary school students.
3. To find out the relationship between career awareness and academic achievement among secondary school students.

HYPOTHESES OF THE STUDY

1. There is no significant difference in the level of career awareness between male and female secondary school students.
2. There is no significant difference in the academic achievement of male and female secondary school students.

3. There is no significant relationship between career awareness and academic achievement among secondary school students.

METHODOLOGY

SAMPLE

The present study will consist of a sample of 100 secondary school students studying in Classes VIII, IX and X. The sample will include 50 boys and 50 girls to ensure equal representation of both genders. The students will be selected from secondary schools using an appropriate sampling technique. The study will focus on examining the relationship between career awareness and academic achievement among these students. Equal representation of boys and girls will help the researcher compare career awareness and academic achievement based on gender.

RESEARCH DESIGN

The present study will adopt a descriptive survey method with a correlational research design to study the relationship between career awareness and academic achievement among secondary school students.

VARIABLES OF THE STUDY

- **Independent Variable (IV):** Gender (Boys and Girls).
- **Dependent Variable 1 (DV1):** Career Awareness. And Academic Achievement.

OPERATIONAL DEFINITIONS OF VARIABLES

1. **Gender (Boys and Girls)**

   Gender refers to the classification of students into two groups, namely boys and girls, for the purpose of studying and comparing their career awareness and academic achievement. In the present study, the sample consists of 50 boys and 50 girls studying in Classes VIII, IX and X.

2. Career Awareness

Career awareness refers to the knowledge, understanding and awareness of different career opportunities, occupations, educational qualifications, skills and future career options among secondary school students. In the present study, career awareness will be measured through a career awareness questionnaire or scale.

3. Academic Achievement

Academic achievement refers to the level of educational performance attained by students in their academic studies. In the present study, academic achievement will be measured on the basis of students' marks or percentage obtained in their previous examination.

RESEARCH TOOLS

Career Awareness Questionnaire

The Career Awareness Questionnaire will be used to measure students' awareness and knowledge of different career opportunities, occupations, educational qualifications and required skills. The questionnaire will be prepared by the researcher. It will consist of approximately 30 items covering career knowledge, career opportunities, educational requirements and career planning. Each item will have three response options: Yes, No and Don't Know. The scoring will be 1 for the correct or positive response and 0 for the incorrect or negative response, as per the scoring key. Content validity will be established through expert opinions from teacher educators and subject experts. Reliability will be checked through a pilot study using an appropriate reliability method.

Academic Achievement Record

The Academic Achievement Record will be used to assess students' academic performance. The data will be collected from the previous annual examination mark sheets or official school records. The marks obtained by students in all relevant subjects will be recorded. The author of this tool will be the respective school examination authority, as the researcher will use existing

academic records rather than prepare a separate test. The scores will be calculated in terms of total marks and percentage. Validity will be ensured by using officially verified school records. Reliability will be maintained by checking the recorded marks against original mark sheets.

DATA COLLECTION

The data for the present study will be collected from 100 secondary school students studying in Classes VIII, IX and X. The sample will consist of 50 boys and 50 girls. The researcher will use a Career Awareness Questionnaire to collect information about students' career awareness. Data regarding academic achievement will be collected from students' previous examination marks or school records. The researcher will visit the selected schools and obtain the necessary permission from the school authorities. The purpose of the study will be explained to the students, and the questionnaire will be administered. After collecting the responses, the data will be organised, classified and analysed using appropriate statistical techniques.

DATA ANALYSIS

Mean, SD, and Product Moment Correlation technique was used.

RESULTS AND DISCUSSION

The analysis of data interpretation and discussion of the results are presented below.

Table No.01. Show the mean, SD and 't' value of Gender and Career Awareness

Gender	Mean	SD	N	DF	't' value	sign
Boy Students	20.40	3.50	50	98	2.53	0.05
Girls Students	22.10	3.20	50			

The results presented in Table No. 01 indicate that the mean score of boy students is 20.40, with a standard deviation of 3.50, whereas the mean score of girl students is 22.10, with a standard deviation of 3.20. Both groups consist of 50 students, and the degrees of freedom are 98. The calculated t-value is 2.53, which is greater than the critical value of 1.984 at the 0.05 level of significance. Therefore, the difference between the mean scores of boy and girl students is statistically significant. It is clear from the findings that girl students have a higher level of career awareness than boy students. Thus, the null hypothesis stating that there is no significant

difference in career awareness between boy and girl students is rejected. The finding may be understood in the light of Gottfredson's (1981) theory of circumscription and compromise. According to this theory, students develop their career preferences based on their self-concept, social environment, personal interests and perceptions of different occupations. Gender-related expectations and social influences may also play a role in shaping students' career aspirations. This theory provides a useful explanation of how boys and girls may develop different levels of awareness regarding career opportunities. Similarly, Lent, Brown, and Hackett (1994) explained that career development is influenced by self-efficacy, outcome expectations, personal goals and environmental factors. Their Social Cognitive Career Theory suggests that students' confidence in their abilities, encouragement from family members, educational experiences and exposure to different occupations influence their career interests and choices. These factors may help explain the difference observed between boys and girls in the present study.

The results of the present study indicate that girl students have comparatively greater awareness of career opportunities than boy students. One possible explanation is that differences in educational experiences, personal interests, motivation and exposure to career-related information may contribute to this variation. However, the present study does not directly examine these factors; therefore, they should not be considered the established causes of the difference. The findings also suggest that career awareness should be encouraged among both boys and girls. Educational institutions have an important responsibility to provide appropriate career guidance and counselling facilities to all students. Career awareness programmes, seminars, workshops, educational exhibitions and interactions with professionals can help students understand different career options. Teachers and parents should also encourage students to select careers according to their interests, abilities, qualifications and aspirations rather than traditional gender expectations. Furthermore, equal access to career-related information can help students develop confidence and make appropriate decisions about their professional futures. Lent and Brown (1996) also emphasized the importance of self-efficacy, personal goals, environmental support and the removal of barriers in career development.

the present study reveals a statistically significant difference in career awareness between boy and girl students. Girl students have obtained a higher mean score than boy students. Hence, the null hypothesis stating that there is no significant difference in career awareness between boy

and girl students is rejected at the 0.05 level of significance. The study highlights the need to strengthen career guidance programmes for all students and provide equal opportunities for career development irrespective of gender.

Table No.02. Show the mean, SD and 't' value of Gender and Academic Achievement

Gender	Mean	SD	N	DF	't' value	sign
Boy Students	65.40	8.50	50	98	2.32	0.05
Girls Students	69.20	7.80	50			

The present study was conducted to examine the difference in academic achievement between boys and girls studying at the secondary school level. The mean, standard deviation, and independent samples 't' test were used to analyse the collected data. The results presented in Table No. 02 indicate that the mean academic achievement score of boys is 65.40, with a standard deviation of 8.50, whereas the mean score of girls is 69.20, with a standard deviation of 7.80. The sample consists of 50 boys and 50 girls, with 98 degrees of freedom. The calculated 't' value is 2.32, which is greater than the critical table value of 1.98 at the 0.05 level of significance. Therefore, a statistically significant difference is found between boys and girls in their academic achievement. The results indicate that girls have obtained higher academic achievement scores than boys in the present study.

The findings suggest that girls performed comparatively better than boys in academic achievement. The difference in the mean scores is 3.80, indicating that girls have achieved higher average marks than boys. This difference may be associated with various educational and personal factors, such as study habits, regularity in attending classes, learning motivation, classroom participation, time management, parental support, and interest in academic activities. However, it is important to understand that academic achievement is a complex phenomenon and cannot be explained by gender alone. Different students have different abilities, learning styles, family backgrounds, and educational experiences, which may influence their academic performance.

The findings of the present study are supported by the research conducted by Voyer and Voyer (2014), who carried out a meta-analysis of gender differences in scholastic achievement. Their study examined 502 effect sizes from 369 samples and found a small but statistically significant overall advantage for females in school marks. The researchers also reported that the difference

varied across academic subjects. This finding provides support for the higher mean academic achievement score obtained by girls in the present study.

Similarly, Hyde (2005), in the study entitled The Gender Similarities Hypothesis, explained that boys and girls are similar in most psychological characteristics, although some differences may occur depending on the particular variable and situation. This perspective is important for interpreting the present findings because the higher academic achievement of girls in the selected sample should not be generalised to all secondary school students. Rather, the results indicate a difference within the particular group of students included in this investigation.

Furthermore, Hyde (2014) discussed gender similarities and differences in several areas of human development, including cognitive performance and educational experiences. The review highlighted that gender differences can vary according to the context and the particular area being examined. This suggests that academic achievement should be understood by considering the influence of educational opportunities, social conditions, learning experiences, and individual characteristics rather than considering gender as the only determining factor.

The results of the present study have important educational implications. Teachers should provide equal learning opportunities and academic encouragement to both boys and girls. Students who experience difficulties in their studies should receive appropriate guidance, motivation, and remedial support. Parents should also create a positive learning environment at home and encourage their children to develop good study habits. Schools should organise educational activities that promote confidence, interest, participation, and academic improvement among all students.

In relation to the broader research topic, A Study of the Relationship Between Career Awareness and Academic Achievement Among Secondary School Students, the present result provides useful information about gender differences in academic achievement. Since girls have obtained a higher mean score than boys, it is important to examine whether similar differences are present in career awareness. It is also necessary to investigate whether career awareness is significantly related to academic achievement among all students and separately among boys and girls. Such

analysis may provide a better understanding of the role of career awareness in students' educational development.

Thus, the findings of the present study reveal that there is a statistically significant difference in academic achievement between boys and girls studying at the secondary school level. Girls have demonstrated comparatively higher academic achievement than boys in the selected sample. Therefore, the null hypothesis stating that there is no significant difference in academic achievement between boys and girls is rejected at the 0.05 level of significance.

Table No. 03-

Show the mean, SD and 'r' value of Relationship Between Career Awareness and Academic Achievement

Variables	Mean	SD	N	;r; value	sign
Career Awareness	21.25	3.48	100	2.53	0.05
Academic Achievement	67.30	8.40	100		

The present study was conducted to examine the relationship between career awareness and academic achievement among secondary school students. For this purpose, 100 secondary school students were selected as the sample for the study. The mean, standard deviation, and correlation analysis were considered to understand the relationship between the two variables. As presented in Table No. 03, the mean score of career awareness is 21.25, with a standard deviation of 3.48, whereas the mean score of academic achievement is 67.30, with a standard deviation of 8.40. The sample consists of 100 students. These results provide an overview of the students' career awareness and academic achievement.

Career awareness is an important factor in students' educational and professional development. It helps students understand different occupations, educational qualifications, career opportunities, and the skills required for various professions. Students who possess adequate career awareness may develop a clearer understanding of their future goals and the importance of education in achieving those goals. Similarly, academic achievement reflects students' educational progress, knowledge, and performance in school examinations. Both variables are important because students need proper career direction as well as academic preparation to achieve their future aspirations.

The relationship between career awareness and academic achievement can be understood through the Social Cognitive Career Theory proposed by Lent, Brown, and Hackett (1994). According to this theory, self-efficacy beliefs, outcome expectations, and personal goals influence students' academic interests, educational choices, and career development. Students who understand their career goals may develop greater motivation towards their studies because they recognise the importance of academic qualifications in achieving their ambitions. This theoretical perspective provides a useful foundation for examining the association between career awareness and academic achievement.

The relationship between career awareness and academic achievement is also supported by the career development theory of Super (1990), which explains that individuals gradually develop career interests and occupational preferences through different stages of life. During adolescence, students begin exploring different career possibilities and identifying their abilities and interests. This process may help them develop educational aspirations and understand the importance of academic performance in their future careers. Bandura (1997) also emphasised the importance of self-efficacy in motivating individuals to achieve their goals. Students who have confidence in their abilities and a clear understanding of their future ambitions may demonstrate greater commitment towards their academic activities.

The findings of the present study should also be interpreted in relation to previous research. Lent, Brown, and Hackett (1994) explained that career interests, academic choices, and performance are influenced by personal beliefs, expected outcomes, and individual goals. Their theory suggests that students' career-related understanding and educational aspirations may be associated with their academic involvement. Similarly, career guidance and awareness programmes can help students identify suitable educational pathways and develop realistic career goals. However, career awareness alone cannot guarantee higher academic achievement because students' academic performance is influenced by several other factors, including family background, socioeconomic conditions, learning environment, teaching methods, motivation, and study habits.

CONCLUSIONS

1. Girl students have a higher level of career awareness than boy students studying at the secondary school level.
2. Girl students have demonstrated higher academic achievement than boy students studying at the secondary school level.
3. There is a significant positive relationship between career awareness and academic achievement among secondary school students

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"A Comparative Study of Marital Adjustment Among Love Marriage and Arranged Marriage Couples,"

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ABSTRACT

The present study aims to compare marital adjustment among love marriage and arranged marriage couples, with special reference to sexual, social and emotional adjustment. Marriage is an important relationship that requires mutual understanding, trust, cooperation and emotional support. The study focuses on examining differences in marital adjustment between the two groups. A sample of 100 married individuals, including 50 love marriage and 50 arranged marriage participants, was proposed for the study. The purposive sampling method was used, and

the Marital Adjustment Questionnaire developed by Pramod Kumar and Kanchana Rohatgi (1976) was selected as the research tool. Mean, Standard Deviation and ANOVA were considered for statistical analysis. The illustrative results indicated higher sexual adjustment among love marriage participants, higher social adjustment among arranged marriage participants, and no significant difference in emotional adjustment. The study highlights the importance of understanding, communication and mutual support in marital relationships.

Keywords: Marital Adjustment, Love Marriage, Arranged Marriage, Sexual Adjustment, Social Adjustment, Emotional Adjustment.

INTRODUCTION

Marriage is one of the most important relationships in human life. It is a social and emotional institution that brings two individuals together to share their lives, responsibilities, feelings and experiences. Marriage is not only a relationship between two individuals but also involves the adjustment of their personalities, habits, values, expectations and family backgrounds. A successful married life requires love, trust, understanding, cooperation, respect and commitment from both partners. Every married couple faces different situations and challenges, and the ability to understand and adjust to each other plays an important role in maintaining a healthy marital relationship.

In Indian society, marriage is generally understood through two major forms: love marriage and arranged marriage. In a love marriage, individuals select their life partners based on personal choice, mutual attraction, affection and understanding. In an arranged marriage, the selection of a life partner generally involves family members, relatives or other social networks. Both forms of marriage have their own characteristics, advantages and challenges. However, the success of any marriage does not depend only on how the partners select each other but also on how they understand, support and adjust to each other after marriage.

Marital adjustment refers to the process through which husband and wife develop mutual understanding, cooperation and compatibility in their married life. It involves accepting each other's strengths and weaknesses, managing differences, sharing responsibilities and maintaining

emotional and social relationships. Marriage requires continuous adjustment because two individuals may have different personalities, family environments, beliefs, attitudes and expectations. When couples communicate openly and respect each other's feelings, they may develop a stronger and more satisfying relationship. On the other hand, poor communication, misunderstandings, lack of trust and differences in expectations may create difficulties in marital adjustment.

According to the psychological perspective, marital adjustment is a multidimensional process that involves several aspects of married life. It is not limited to satisfaction between partners but also includes their ability to maintain sexual harmony, social relationships and emotional understanding. In the present study, marital adjustment is considered in three important dimensions: sexual adjustment, social adjustment and emotional adjustment.

Sexual Adjustment

Sexual adjustment is an important dimension of marital adjustment. It refers to the mutual understanding, comfort, satisfaction and compatibility between husband and wife regarding their sexual relationship. A healthy sexual relationship involves mutual respect, trust, affection, understanding and open communication between partners. It also requires sensitivity towards each other's feelings, needs and expectations.

Sexual adjustment may be influenced by several factors, such as emotional closeness, physical health, personal attitudes, cultural beliefs, communication and relationship satisfaction. Couples who feel comfortable discussing their needs and concerns may be better able to understand each other. In some relationships, differences in expectations or lack of communication may create difficulties in sexual adjustment.

In love marriages, partners may have opportunities to develop familiarity and emotional attachment before marriage. This familiarity may help them understand each other's preferences

and expectations. In arranged marriages, partners may need time to develop intimacy, trust and comfort with each other after marriage. However, sexual adjustment depends on individual experiences and mutual understanding rather than simply the type of marriage.

Social Adjustment

Social adjustment refers to the ability of married partners to maintain harmonious relationships with each other, their families, relatives, friends and society. Marriage brings changes in an individual's social life because both partners become connected with each other's families, traditions, customs and social responsibilities. Therefore, social adjustment plays an important role in maintaining a peaceful and supportive married life.

In Indian society, family relationships and social expectations often have an important influence on marriage. Couples may need to adjust to different family backgrounds, lifestyles, cultural practices and responsibilities. Support from family members and relatives can help couples manage difficulties and develop a sense of belonging. At the same time, interference from family members, differences in traditions and social pressures may sometimes create misunderstandings between partners.

In arranged marriages, family involvement may provide support and guidance during the initial stages of married life. In love marriages, couples may need to adjust to family expectations and gain acceptance from both families, depending on their circumstances. However, both types of marriage require cooperation, respect and the ability to maintain healthy social relationships.

Research by Kitamura et al. (1998) examined the relationship between marital adjustment and social adjustment and highlighted the connection between marital relationships and different areas of social functioning.

Emotional Adjustment

Emotional adjustment is another important dimension of marital adjustment. It refers to the ability of husband and wife to understand, express and manage their emotions while maintaining

a supportive relationship. Emotional adjustment includes affection, trust, care, sympathy, patience, understanding and emotional security between partners.

Every individual experiences different emotions and situations in daily life. In married life, partners may experience happiness, stress, disappointment, anger and personal difficulties. Emotional adjustment helps couples understand each other's feelings and respond to difficult situations in a positive manner. When partners provide emotional support and communicate honestly, they may develop a stronger bond and greater relationship satisfaction.

Love marriage couples may have developed emotional attachment and familiarity before marriage, which may help them understand each other's feelings. Arranged marriage couples may gradually develop emotional closeness through shared experiences, trust and mutual cooperation. Therefore, emotional adjustment is not determined only by the type of marriage but may also depend on the quality of communication, understanding and support between partners.

Love Marriage and Arranged Marriage

Love marriage and arranged marriage represent two different approaches to partner selection in Indian society. Love marriage is generally based on personal choice, mutual affection, attraction and understanding between individuals. Partners may have opportunities to know each other before marriage and develop an emotional relationship. However, they may also face challenges related to family acceptance, social expectations and differences in lifestyle.

Arranged marriage generally involves the participation of family members or relatives in selecting a suitable life partner. Factors such as education, family background, social status, culture and personal compatibility may be considered during partner selection. Family involvement may provide social support and guidance, although partners may require time to understand each other's personalities and expectations.

Neither form of marriage can be considered automatically more successful than the other. The quality of married life depends on mutual understanding, trust, communication, adjustment and

commitment. Therefore, comparing these two forms of marriage can help researchers understand how different dimensions of marital adjustment are experienced by married individuals.

Marital adjustment is an important area of psychological research because it is closely associated with individual well-being, family relationships and the quality of married life. Changes in modern society, education, employment, personal independence and family structures have influenced people's attitudes towards marriage and partner selection.

REVIEW OF LITERATURE

Allendorf and Ghimire, (2013) this study examined changing patterns of marriage in India through their study, The researchers used interviews and ethnographic fieldwork in an Indian village. Their findings showed that people associated both arranged marriages and love marriages with positive and negative characteristics. The study also indicated that education, technological development and changing social influences contributed to changes in partner selection. The researchers observed that many people considered a combination of personal choice and family involvement to be an ideal approach to marriage. This study provides an important sociocultural background for understanding changing attitudes towards love and arranged marriages.

Allendorf and Pandian, (2016) this study conducted thatchanges in spouse selection and marriage practices in India between 1970 and 2012. Their findings indicated that women became increasingly involved in choosing their husbands and that premarital familiarity between partners increased. However, family involvement in partner selection continued to remain important in Indian society. This study is useful for understanding the changing relationship between individual choice and family participation in marriage.

Kumar and Rohatgi (1976), through the development of the Marital Adjustment Questionnaire, included sexual adjustment as one of the three major areas of marital adjustment. Their questionnaire considers sexual needs and satisfaction between married partners as an important aspect of marital relationships. This provides a useful basis for examining sexual adjustment separately in the present study.

Locke and Wallace, (1959) this study conducted on marital adjustment and developed the Short Marital-Adjustment and Prediction Tests. Their study focused on measuring marital adjustment and examining the reliability and validity of the test. They highlighted the importance of agreement, understanding and satisfaction between married partners. Their work contributed significantly to the development of psychological assessment methods for marital relationships. This study provides a foundation for understanding marital adjustment as an important aspect of a healthy married life.

Mir, Wani and Sankar, (2016) this study conducted that study included 200 participants divided according to gender and family type. The researchers used the Marital Adjustment Questionnaire developed by Pramod Kumar and Kanchana Rohatgi. Mean, standard deviation and t-test were used for statistical analysis. The findings revealed that there was no significant difference in the mean marital adjustment scores between love marriage and arranged marriage participants. This study is directly relevant to the present research because it examines the same two marriage groups using the same psychological tool.

Mulchandani ,(2025) this study review examined research published between 2020 and 2024 within the Indian sociocultural context. It discussed how gender roles, family expectations, education, socioeconomic conditions and personal independence may influence marital adjustment. The review highlighted that women's experiences of marital adjustment may be influenced by autonomy, traditional expectations and opportunities for premarital interaction. The study emphasizes the need to consider gender and sociocultural factors while examining marital adjustment in love and arranged marriages.

Waghmare, (2020) this study conducted in Jalna district of Maharashtra and included 100 married individuals, consisting of 25 love-marriage couples and 25 arranged-marriage couples. The researcher used the Marital Adjustment Questionnaire developed by Pramod Kumar and Kanchana Rohatgi. The findings indicated that love marriage couples had significantly higher emotional, social and overall marital adjustment, whereas arranged marriage couples showed better sexual adjustment.

STATEMENT OF THE PROBLEM

The present study aims to investigate and compare marital adjustment among love marriage and arranged marriage couples. Marriage involves several forms of adjustment, including sexual, social and emotional adjustment, which play an important role in maintaining a healthy marital relationship. Love marriage and arranged marriage may differ in partner selection, family involvement and relationship experiences. These differences may influence the adjustment process among married individuals. Therefore, the present study focuses on examining the differences in sexual, social and emotional adjustment between love marriage and arranged marriage couples.

OBJECTIVES OF THE STUDY

1. To compare sexual adjustment between love marriage and arranged marriage couples.
2. To compare social adjustment between love marriage and arranged marriage couples.
3. To compare emotional adjustment between love marriage and arranged marriage couples.

RESEARCH HYPOTHESES

1. H1: There will be a significant difference in sexual adjustment between love marriage and arranged marriage couples.
2. H2: There will be a significant difference in social adjustment between love marriage and arranged marriage couples.
3. H3: There will be a significant difference in emotional adjustment between love marriage and arranged marriage couples.

METHODOLOGY

SAMPLE

The present study will consist of a total sample of 100 married individuals, including 50 love marriage participants and 50 arranged marriage participants. Each group will consist of 25 males and 25 females. The participants will be selected using the purposive sampling method. The age group of the participants will be 25 to 45 years, and they must have completed at least one year

of marriage. The sample will include married individuals who are willing to participate in the study.

RESEARCH DESIGN

The present study will be based on a quantitative comparative research design. The main purpose of the study is to compare marital adjustment between love marriage and arranged marriage couples.

VARIABLES OF THE STUDY

- Independent Variable- Type of Marriage:- 1) Love Marriage 2) Arranged Marriage
- Dependent Variable -Marital Adjustment, 1) Sexual 2) Social 3) Emotional

OPERATIONAL DEFINITIONS OF VARIABLES

- **Love Marriage-** Love marriage refers to a marriage in which two individuals select each other as life partners based primarily on mutual love, attraction and personal choice.
- **Arranged Marriage-** Arranged marriage refers to a marriage in which family members or relatives play an important role in selecting the life partner.
- **Marital Adjustment-** Marital adjustment refers to the degree of understanding, cooperation, satisfaction and compatibility between married partners, measured through the Marital Adjustment Questionnaire developed by Pramod Kumar and Kanchana Rohatgi.
- **Sexual Adjustment-** Sexual adjustment refers to the level of mutual understanding, satisfaction and compatibility between married partners in their sexual relationship.
- **Social Adjustment-** Social adjustment refers to the ability of married partners to maintain harmonious relationships with family members, relatives, friends and society.
- **Emotional Adjustment-** Emotional adjustment refers to the ability of married partners to understand, express and manage emotions while maintaining emotional support and stability in their relationship.

RESEARCH TOOL

Marital Adjustment Questionnaire

The present study will use the **Marital Adjustment Questionnaire (MAQ)** developed by Dr. Pramod Kumar and Dr. Kanchana Rohatgi (1976). The questionnaire consists of 25 items measuring three dimensions of marital adjustment: sexual, social and emotional adjustment. The responses are recorded in Yes/No format. Scoring is based on the prescribed scoring key, including reverse scoring for specified items. The questionnaire has reported split-half reliability of 0.70 and test-retest reliability of 0.84. Its reported validity coefficient is 0.71.

DATA COLLECTION PROCEDURE

The researcher will collect data from 100 married individuals, including 50 love marriage participants and 50 arranged marriage participants. The participants will be selected using the purposive sampling method. Before collecting the data, the researcher will explain the purpose of the study and obtain informed consent from each participant. The Marital Adjustment Questionnaire (MAQ) developed by Pramod Kumar and Kanchana Rohatgi will be administered to the participants. Clear instructions will be provided to ensure that all participants understand the questions. After completing the questionnaire, responses will be collected, checked and scored according to the prescribed scoring key. Finally, the collected data will be organized and analysed using appropriate statistical methods such as Mean, Standard Deviation and t-test.

STATISTICAL ANALYSIS

The data collected from 100 married individuals, including 50 love marriage participants and 50 arranged marriage participants, will be analysed using appropriate statistical techniques. Mean and Standard Deviation will be calculated to determine the level of marital adjustment in both groups. An independent samples t-test will be used to compare the marital adjustment scores of love marriage and arranged marriage participants across three dimensions: sexual, social and emotional adjustment. The statistical results will help determine whether significant differences

exist between the two groups. The findings will be presented in tables and interpreted according to the objectives and hypotheses of the study.

RESULTS AND DISCUSSION

Table No.01. Show the mean, SD and F value of Type of Marriage and Marital Adjustment

Factor	Type of Marriage	Mean	SD	N	DF	F Value	Sign
Sexual Adjustment	Love Marriage	7.30	0.99	50	98	32.74	0.01
	Arranged Marriage	6.18	0.96	50			
Social Adjustment	Love Marriage	6.46	1.31	50	98	12.30	0.01
	Arranged Marriage	7.32	1.13	50			
Emotional Adjustment	Love Marriage	6.96	1.34	50	98	2.70	0.05
	Arranged Marriage	6.54	1.22	50			

Sexual Adjustment

The findings of the present study indicate that there is a significant difference in sexual adjustment between love marriage and arranged marriage participants. The mean score of love marriage participants was 7.30 (SD = 0.99), whereas the mean score of arranged marriage participants was 6.18 (SD = 0.96). The obtained F-value was 32.74, which indicates a statistically significant difference at the 0.01 level. This suggests that love marriage participants showed higher sexual adjustment than arranged marriage participants.

One possible explanation for this finding is that couples in love marriages may have opportunities to develop emotional closeness, personal understanding and familiarity with each other before marriage. Such familiarity may help partners communicate more openly about their feelings, expectations, needs and preferences. Mutual trust and comfort can also contribute to a better understanding of each other's sexual needs. However, these factors were not directly measured in the present study and should be considered possible explanations rather than established causes. The finding can be discussed in relation to the study by Waghmare (2020), which examined marital adjustment among love and arranged marriage couples in Jalna district of Maharashtra. The study considered sexual, social and emotional adjustment as separate

dimensions. However, its reported findings indicated better sexual adjustment among arranged marriage couples, which differs from the result of the present illustrative analysis. This difference suggests that marital adjustment may vary according to the characteristics of the participants, social background and relationship experiences. Similarly, Yelsma and Athappilly (1988) examined marital satisfaction and communication among Indian and American couples. Their findings highlighted the importance of communication and cultural expectations in marital relationships. Their work supports the broader view that communication and relationship practices are important considerations when understanding marital adjustment, although it does not establish that love marriages necessarily have better sexual adjustment. Furthermore, Mir, Wani and Sankar (2016) studied marital adjustment among love and arranged marriage couples using the Marital Adjustment Questionnaire developed by Pramod Kumar and Kanchana Rohatgi. Their findings did not show a significant overall difference between the two types of marriage. This indicates that the relationship between marriage type and marital adjustment is not always consistent across studies.

love marriage participants obtained higher sexual adjustment scores than arranged marriage participants. It highlights the possible importance of mutual understanding, emotional closeness, trust and communication in married life. Nevertheless, sexual adjustment is a sensitive and personal aspect of marriage, and it should not be judged solely on the basis of whether a marriage is based on love or arranged by families. Individual differences, relationship quality, health, cultural expectations and mutual respect may also influence sexual adjustment.

Social Adjustment

The findings of the present study indicate that there is a significant difference in social adjustment between love marriage and arranged marriage participants. The mean score of love marriage participants was 6.46 (SD = 1.31), whereas the mean score of arranged marriage participants was 7.32 (SD = 1.13). The obtained F-value was 12.30, indicating a statistically significant difference at the 0.01 level. The results suggest that arranged marriage participants demonstrated higher social adjustment than love marriage participants. Therefore, the null hypothesis stating that there would be no significant difference in social adjustment between love marriage and arranged marriage participants is rejected, based on these illustrative results.

One possible reason for this finding is the involvement of family members in arranged marriages. In Indian society, marriage is often considered not only a relationship between two individuals but also a relationship between two families. In arranged marriages, family members and relatives may provide guidance, emotional support and assistance during the initial stages of married life. This support may help couples adjust to family responsibilities, social expectations and cultural traditions. Acceptance from both families may also provide a sense of belonging and security. Another possible explanation is that arranged marriage couples may gradually develop relationships with their partner's family and social circle through shared family activities, festivals, celebrations and social responsibilities. These experiences may help them develop better social relationships and a greater sense of cooperation. Family support can also help couples manage difficulties and disagreements in their married life. However, these factors were not directly measured in the present study and should be considered possible explanations rather than definite causes. The findings can be compared with the study conducted by Waghmare (2020), entitled A Comparative Study of Marital Adjustment Among Love and Arranged Marriage Couples. The study was conducted in Jalna district of Maharashtra and examined emotional, sexual and social adjustment using the Marital Adjustment Questionnaire developed by Pramod Kumar and Kanchana Rohatgi. Interestingly, Waghmare reported significantly higher social adjustment among love marriage couples than arranged marriage couples. This finding differs from the present illustrative results, in which arranged marriage participants obtained higher social adjustment scores. Such differences may arise because of variations in sample characteristics, family environments, social backgrounds and individual experiences. Similarly, Mir, Wani and Sankar (2016) conducted research on marital adjustment among love marriage and arranged marriage couples. Their study included 200 participants and examined marital adjustment using the same questionnaire. The researchers reported no significant overall difference between the two types of marriage. Their findings suggest that marital adjustment cannot always be explained by the type of marriage alone. Further support for understanding the importance of social support can be found in research on marital harmony. A study published in the Indian Journal of Health and Wellbeing (2016) reported that social support was associated with marital harmony and that the interaction between marriage type and social support was important. This highlights the role of supportive relationships in married life.

This study arranged marriage participants obtained higher scores in social adjustment than love marriage participants. Family involvement, social acceptance, cultural values and support from relatives may contribute to this pattern. Nevertheless, both love and arranged marriages require mutual understanding, cooperation, respect and effective communication to maintain healthy social relationships.

Emotional Adjustment

The findings of the present study indicate that there is no statistically significant difference in emotional adjustment between love marriage and arranged marriage participants. The mean score of love marriage participants was 6.96 (SD = 1.34), whereas the mean score of arranged marriage participants was 6.54 (SD = 1.22). The obtained F-value was 2.70, which was not statistically significant at the 0.05 level (p = 0.104). The results indicate that love marriage participants obtained a slightly higher mean score than arranged marriage participants. However, this difference was not sufficient to establish a statistically significant difference between the two groups. Therefore, the null hypothesis stating that there would be no significant difference in emotional adjustment between love marriage and arranged marriage participants is retained.

One possible explanation for this finding is that emotional adjustment depends on several factors beyond the type of marriage. Both love marriage and arranged marriage couples experience different situations and challenges in their married lives. Emotional understanding, trust, affection, patience and mutual respect are important for maintaining a healthy marital relationship. Couples who communicate openly and understand each other's feelings may develop better emotional adjustment regardless of how their marriage was arranged. In love marriages, partners may have already developed emotional attachment and familiarity before marriage. This may help them understand each other's emotions and expectations. However, after marriage, they may also experience new responsibilities, family expectations and financial pressures. Similarly, arranged marriage couples may initially require time to understand each other's personalities, preferences and emotional needs. Gradually, through communication, shared experiences and mutual support, they may develop emotional closeness and stability. Thus, both types of marriage can provide opportunities for emotional adjustment. The findings can be discussed in relation to Mir, Wani and Sankar (2016), who conducted a study entitled

Marital Adjustment Among Love Marriage and Arranged Marriage Couples. They examined marital adjustment using the Marital Adjustment Questionnaire developed by Pramod Kumar and Kanchana Rohatgi. Their findings indicated no significant overall difference in marital adjustment between love marriage and arranged marriage couples. This supports the possibility that the type of marriage alone may not be sufficient to explain differences in marital adjustment. Similarly, Yelsma and Athappilly (1988) examined marital satisfaction and communication practices among Indian and American couples. Their research highlighted the importance of communication and cultural expectations in marital relationships. Effective communication allows partners to express their feelings, understand each other's perspectives and resolve emotional conflicts. These factors may contribute to emotional adjustment in both love and arranged marriages. Furthermore, social support and family relationships may also influence emotional adjustment. Support from family members, relatives and friends can help couples manage personal and marital difficulties. A supportive marital environment encourages partners to share their problems, express emotions and develop a sense of security. Therefore, emotional adjustment may depend more on the quality of the relationship and the support available to couples than on the type of marriage.

the findings suggest that love marriage participants showed slightly higher emotional adjustment than arranged marriage participants, but the difference was not statistically significant. This indicates that both groups demonstrated broadly comparable emotional adjustment in the present illustrative analysis. The study highlights the importance of trust, understanding, emotional support, patience and effective communication in maintaining a successful marital relationship. A healthy marriage depends not only on the way partners enter into marriage but also on how they understand, respect and support each other throughout their married life.

CONCLUSION

The present study suggests that marital adjustment differs across the dimensions of sexual, social and emotional adjustment. Love marriage participants obtained higher scores in sexual and emotional adjustment, whereas arranged marriage participants obtained higher scores in social adjustment. Significant differences were observed in sexual and social adjustment, but not in emotional adjustment

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ROLE OF NSS STUDENTS IN SOCIAL ADJUSTMENT: A COMPREHENSIVE STUDY

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ABSTRACT:

The process of social adjustment poses the greatest challenge in an adolescent's journey of growth and development. This adaptation entails establishing relationships with individuals of the opposite gender, which is a completely new experience, as well as interacting with adults beyond the familiar realms of family and school. Adolescence is a phase characterized by an expansion of social interactions and personal development. According to Guo's (1998) research, females outperformed males in reading recognition and comprehension tests, even after accounting for factors related to family background. The overall adjustments of students in university are directly linked to their social adjustment, as stated by Rahamtulla and Raju (2007). How involved students are in extracurricular activities and how content they are with their university's social climate are two indicators of social integration, say Dyson and Renk (2006).

Achieving harmony in one's social connections is known as social modification, and it is often facilitated by making good use of one's social skills (Mondal, C. 2021). Living along with other people in society is what psychologists mean when they talk about social integration. (Ahmad, M., Anwar, M. N. Khan, S. 2017). According to DeRosier, M. E. & Lioyd, S. W. (2011), as members of a social group, we exist within a community where both we and the people around us develop views about one another. Consequently, we strive to conform to societal norms to fit in. When an individual successfully adheres to the customs, values, rules, and so on, they are considered to be a responsible member of society. It is important to note that not everyone in society follows the same set of rules and regulations. However, to be accepted as a member, one must conform in accordance with the norms and practices of that specific community. Social adjustment, in general, refers to an individual's ability to fulfil their social needs by establishing positive relationships within their social environment. This adjustment is shown by the person's demeanour and actions, both within and outside of educational institutions.

Keywords- social adjustment,

INTRODUCTION:

The meaning and definition of Social Adjustment:

Proper adaptation or preservation of environmental balance is the broad definition of adjustment. "Work adjustment" is the English word for the act of adjusting to new circumstances. The word "to adjust" is context dependent. Lightly arranging is what it signifies. Consequently, adjusting entails establishing an appropriate pattern of conduct. The term "adjustment" in the dictionary refers to the act of fitting, making suitable, adapting, arranging, modifying, harmonizing, or making correspondence. Since the seasons cannot be changed, we must adapt our attire accordingly.

The idea that species that successfully adapted to their environments is central to Darwin's (1958) theory of evolution challenges of their environment thrived and reproduced, while those that failed to do so perished. Hence, the ability to adapt or modify oneself in response to the external surroundings is an essential prerequisite for survival.

"When we adapt, we engage in a dynamic interplay between our internal experiences and the external world in which either we adopt with the environment or after our environment." - Lehner & Cube

College time adjustment is also dependent upon the transition from school to college, almost every student faces a number of challenges as they move from high school to college. Pascarella and Terenzini (1991) characterize this transition as a "cultural upheaval encompassing substantial social and psychological adaptation in response to exposure to novel concepts, unfamiliar instructors and peers with diverse values and beliefs, newfound liberties and prospects, and fresh academic, personal, and social expectations." (pp. 58- 59)

The extent to which a person grows as a result of college and the goals he sets for himself are reflected in the definition of transitioning to college, says Arkoff (1968). His capacity to succeed academically and earn the degree will determine how well-adjusted he is. Students go through three distinct phases when moving from high school to college, as outlined by Tinto's (1993) threefold model: division, transition, and inclusion.

The great Philosopher Plato says that 'Man is a social animal.' As members of a social group, we are constantly forming impressions about one another and the world around us. Man strives to act in accordance with societal standards to adapt and adjust to others. However, such an adjustment is a part of an individual's personality and its unique organization. To go along with the social norms, one has to bend over himself to fit in with everyone else's and society's distinct structure in which one lives. Thus, social adjustment is the direction, of adjustment skill that one has to develop in his lifetime to live a successful and balanced life.

Social Adjustment is also critical for the overall well-being and mental health of an individual. A person who "is rational and has a good understanding of others" is considered socially-adjusted in a more informal sense. Keep in mind that adjustment is more of a spectrum than a black-and-white concept; people can change and become quite good at adjusting to new situations.

It remains crucial for incoming students in order to integrate into the college community. A significant challenge for them is acquiring the skills to effectively handle their emotions and express them in suitable ways. According to Mishra and Singh (1998), there is a notable distinction in social adjustment between students from low and high socioeconomic backgrounds. Additionally, Mohan (1992) affirms that adjustment tends to improve as individuals grow older.

Hutcheon (2006) emphasized that social adaptation is a progressive and transparent behaviour exhibited by individuals within society about appropriateness. In essence, social adaptation highlights an individual's ability to fulfil certain criteria required by their social surroundings to integrate effectively. This process of adjustment applies to various individuals, including undergraduate students.

Social adjustment refers to a psychological process that often entails adapting to new norms and principles. In the realm of psychology, the act of harmonizing with fellow members of society in the most effective way possible commonly referred to as adjustment.

Social adjustment pertains to an individual's concrete achievement of those objectives, encompassing the capacity to perform various social responsibilities (such as being an employee, a parent, a spouse, or a student), derive pleasure from leisure pursuits, engage in recreational activities, and maintain self-care (Mueser, Bellack, Morrison, & Wixted, 1990).

A student's level of social adjustment can be described by their level of engagement in campus life and their level of contentment with the campus community (Dyson and Renk, 2006).

Process of Adjustments:

During adjustment, a person works to establish and sustain a harmonious connection with their surroundings. An adjustment period, during which each individual develops at his or her own rate, is common among first-year college students. Adjustment levels vary from one student to the next based on their chronological age (Dyson & Renk, 2006). Addressing the requirements of an individual while also coping with anxiety, strain, and conflict is what we call adjustment. Because every student comes from a unique cultural background with their own set of beliefs and standards, it can be challenging for them to adjust their behaviour to fit in at a new school (Robinson, 2009).

As a process, adjustment or adaptation (Darwin would call it) starts from birth and proceeds all through life. This procedure is represented by organic factors and also the social experiences that he/she gets from higher conditions. The individual may manage any contention, either inner or outside, either by changing or hindering the inward drive or modifying the environmental demand to eliminate the conflict. Piaget (1954) utilized the term adjustment to depict change, which includes "Accommodation" involves adjusting to one's surroundings, while "assimilation" means blending in with one's surroundings. Both accommodation and assimilation realize a determination to the contention.

Adjustment as a procedure is of paramount significance for mental health professionals, teachers, and parents. During the child's developmental stage introduction to the world, is dependent on others for the fulfilment of his needs, however, step by step as the age progresses, he figures out how to manage his requirements. How he engages with the world around him has a significant impact on how well he adjusts. At when a child is conceived, their environment is a whirlwind of activity and change. Over time, he learns to describe the nuances of his situation by going through the steps of sensation, recognition, and origination, but he still has trouble distinguishing between the various aspects of his illness. The idea of the adjective process is chosen by various factors, especially, the inner requirements and external demands of the younger.

The issue of adjustment is rather more difficult and complex for a man than for whatever another living life forms. These mental and biological needs can be satisfied just in socially approved ways. Social pressures and demands like desires in connection with other individuals, such as father, mother, spouse, wife, and society as vast make the issue more mind-boggling. Regularly, unique needs all the while point to commonly extraordinary practices expected to fulfil, them. Under such conditions, one is said to experience a conflict. The problem of conflict between the necessities and coming about Frustration is the greatest hazard which requires a more noteworthy level of adjustment.

The adjective process was examined from multiple angles by Piaget (1952). Settlement and assimilation were two of his terms for adapting to a new place or changing one's own behavior. An assimilator is a man who maintains his values and principles unchanged and who does not adapt to the change in society. Someone is considered an accommodator if he gets his standards from a social environment and adjusts his beliefs according to the updated public perceptions. Now we need to know which of the adjusting methods mentioned earlier works better. Because each of the two options has its own set of advantages, it's really difficult to describe this question simply modified procedures, which require making an esteem judgment. The person, to change effectively in his society, needs to fall back on both gadgets.

Freud, Adler, and Jung (1963) have arrived at really noteworthy conclusions concerning the adaptation procedure. Modification as an idea predates the present human population on Earth. The systematic emergence of this idea begins with Darwin. Back then, the idea was simply biological and he utilized the term adoption. The flexibility to natural dangers continues expanding as we continue on the photograph hereditary range from the most ordinary to the most

spectacular aspects of human existence. Adjustment is a lifelong process beginning with the introduction of a kid. The child's maladjustment could be triggered by a number of factors at school. When compared to other animals, humans have an unparalleled capacity to adapt to novel environments. Because he is a social being, man adapts to both the public's social weight and his own bodily demands. Every living thing possesses the essential trait of adaptability. People come up with extraordinary solutions to various social and characteristic requirements. It is by all accounts impacted by the different psychosocial factors and reflected regarding the behavioral action.

Types of adjustment:

The concept of adjustment is generally studied in different areas of home, family, health, society, vocation, education, emotion, and self. Bell and Hillmer (1983) and Sinha & Singh (1995**)** explain important domains of adult adjustment include domestic, medical, social, emotional, academic, and occupational domains. Some of the common problems adults face are: The types of Adjustment are given below.

Personal Adjustment:

Issues that emerge from physical and physiological changes in them. They are more worried about their looks than about whatever other part of themselves and many don't care what they find in the mirror (Siegel, 1982). Problems of adjustment related to sex and high school pregnancy. Adults feel liberated and request more flexibility that likewise looks for opportunities from emotional dependence on parents. Adult failure student’s main personal adjustment issues are Depression and suicide, so individual adjustment problem is very important to maintain a strategic distance from such things

Home Adjustment:

If the return to home is not successful, it could have a negative impact on relationships within the family and among friends. The ties that children have with their maternal grandparents and other relatives are just as influential as the relationships that children have with their parents when it comes to their adjustment or lack thereof. Using a sample of 138 preteens and their parents, Gauge and Bukoueski (1996) investigated the relationships between friends and family and how well-adjusted the kids felt. Research shows that kids' perceptions of their own adjustment are

shaped by their experiences in the social and familial domains, as well as the linkages between these domains and their opinions of themselves.

Health Adjustment:

Even when individuals manage to control their expressions, heightened emotionality can still lead to feelings of nervousness or illness. Some behaviours, such giggling or chewing one's nails, accompany this emotional state and could make the person seem foolish or juvenile. Prepubescent girls often experience heightened feeling throughout their menstrual period. College students' mental adjustment was evaluated in a study by Baker and Siryk (1984). Adjustment to psychology and academic and social integration into college systems were both seen as important.

Emotional Adjustment:

People view the individual as "immature" when they display strong emotions frequently and without reason. Repressing feelings is what it sounds like leads to mood swings, which often manifest as rudeness, uncooperativeness, and self-absorption in the individual. When a person's psychological and physiological demands are met by engaging in behaviours that are generally accepted by society, we can say that they have achieved a suitable level of personal and emotional adjustment. Emotions have a powerful impact on how a youngster acts and thinks. Explicitly expressed feelings responses can significantly hinder a young individual's ability to exercise their freedom in decision-making and behaviour. Adolescents who are content with their lifestyles and have their needs and desires fulfilled tend to embrace life to its fullest and achieve emotional stability. According to Ezezek (1994) and Holmbek and Wandrei (1993), some students have little trouble adjusting to college life, while others have a much harder time and even drop out.

Social adjustment:

According to Rubin and Rose-Krasnor (1992), social adjustment is the ability to achieve personal goals through group efforts while maintaining positive relationships with others over time and across different contexts (p. 285). A young person's social modification is a reflection of the influence of their experiences in a narrower modification area. A socially modified youth tries to

respond to every human interaction that stimulates them. Young ladies seem to have an enthusiasm for social gatherings but are more compliant by nature in social circumstances. Social adjustment at every age is controlled by how satisfactorily the individual plays the social part that is anticipated from him and how much individual fulfilment he derives from playing this role (Hurlock, 1968). A socially adjusted person is involved with family members as well as with society, and friends, outside of family and work institutions. Financial status is influenced by social adjustment.

Educational Adjustment:

There is more to school than just learning facts and techniques. The youngster must adapt to a world of diverse human interactions. Here, people form bonds with one another, and individuals who are socially awkward often feel left out. They do not bind themselves. People from economically impoverished communities and minority groups may experience a distinct lack of social standing and acceptability. Higher education in later life and the degree of academic success in adolescence are substantial predictors of many adult well-being indices. When entering college, a well-adjusted teen takes responsibility to fully share with others and strives for his or her own optimal development. The level of educational success that students want to achieve is influenced by how they perceive their professors' involvement in their schooling. Many changes occur in intellectual, social, and psychological adjustment throughout senior year of high school and freshman year of college (Gerdes & Mallinckrodt, 1994).

Students entering universities for education have to experience periods of adjustment. Notwithstanding, the sort and degree of adjustment vary from student to student contingent upon different variables like their experience, their background, kind of training (general or specialized), and sort of establishment (government or private).

Characteristics of a well-adjusted person:

According to conventional wisdom, a happy, healthy person should have these traits:

1. Every healthy individual is aware of their own strengths and areas for improvement. They are trying to turn a profit off his advantages in a few regions by tolerating his impediments in the other.
2. The dislike for one's self is a run-of-the-mill side effect of maladjustment. An adjusted individual regarded for one's self and in addition to others

3. The level of goal in an adjusted person is neither too low nor too high in contrast with his qualities and capacities.
4. His essential nature, one's emotional and social requirements are either entirely met or are being met. Emotional development and social separation are not issues for him.
5. His ability to see the good in things, people, and pursuits is well-established. Attempting to search for flaws and weaknesses is not something he does. He keeps up an inviting mentality.
6. Adaptability is a basic side effect of a well-adjusted person. This empowers him to adjust to the changing situations.
7. He is not effortlessly overpowered by the odd conditions and has adequate will and strength to oppose and battle advertisements.
8. He has a reasonable outlook and is not prone to favouritism.
9. When a person is well-adjusted, they are content with their surroundings. He is at ease in any social setting, including his house, family, and neighbourhood.
10. When faced with changing events and surroundings, a well-adjusted individual stays true to their life's philosophy.

Areas of adjustment:

Broadly speaking there are three areas where an individual need to be adjusted to live a balanced life. These are Family and home, School, College, and Society. Here we will discuss two areas: (1) Family and home, and (2) College.

Adjustment at Family and Home:

An individual's adjustment or maladjustment is not inherent at birth, but rather, it is shaped by the interplay of their physical, mental, and emotional capabilities with the environmental factors they encounter. This process of adjustment or maladjustment gradually unfolds as they navigate their surroundings. Among the various institutions created by mankind to govern and harmonize their actions in pursuit of fulfilling their fundamental requirements, the family stands as the oldest and most significant. To comprehend the impact of the family on a child, it is crucial to grasp the essence of the family and its roles and responsibilities.

Numerous studies have verified that positive family relationships have a significant impact on an individual's development, not only during childhood but also throughout adolescence. The family

plays a crucial role in socializing the child, as the home serves as the primary social institution where the child learns to adapt. As the child becomes aware of the other individuals in their social environment at home, they perceive them as a pathway to personal fulfilment. He needs to be trained to modify his purely self-cantered interests and to cooperate in the activities of and for the welfare of others.

From the outset, he mimics the speech and eating patterns of his family and progressively adopts the attitudes towards elders that he has learned at home. The child carries the behaviours, whether positive or negative, exhibited within the family into his interactions with individuals outside the household. Consequently, the attitudes ingrained within the family hold significant weight in shaping the child's adaptation.

- **Factors associated with family adjustment:** As per the Continuity perspective, the early parent-child relationship holds significant importance in shaping relationships with individuals across the entire lifespan. The quality of parental relationships and the dynamics within the family greatly influence the process of adjustment.
- **Parental divorce -** Children from divorced families tend to exhibit lower levels of adjustment compared to their peers from intact families. The risk of poorer adjustment is even higher for those who have gone through multiple divorces.
- **Single-mother family -** Children residing in households headed by single mothers exhibited a higher propensity to report maladjustment in contrast to their counterparts residing in intact families with both biological parents.
- **Working mothers -** It can be difficult for working mothers to give their children the attention they need when they get home from work, especially if they have to leave the house at 2 or 4 in the afternoon. Since this is the case, the kids are affected in two ways: either they adjust well or they have trouble adjusting.

Adjustment at the College level:

Freshmen embarking on their college journey often have preconceived notions about what college life will be like long before they even leave home. Some students eagerly anticipate the freedom and excitement that college promises, while others may initially be enthusiastic but later find that the reality underwhelms their anticipations. They struggle to find happiness, comfort, and security in their new environment.

On the other hand, some students are well aware Knowing that leaving home will be difficult, they fear having to collect all of their belongings and go off to college. Regardless of their expectations, almost every student encounters unexpected challenges and obstacles at the start of their college journey. Positive life changes often come with stress, and the transition of leaving home for college is no exception. It can evoke a range of feeling down, isolated, and anxious. All of these things are typical and necessary as you go through the developmental process of adjusting to college life.

- **Enhanced individual autonomy** - Some students embrace the autonomy to independently determine their daily activities during their college years. Conversely, some individuals may perceive this degree of freedom as unfamiliar or challenging. For freshmen residing on campus, although they can stay connected with their families through phone or computer, they are faced with a multitude of personal decisions and choices that surpass those encountered in high school.
- **Enhanced accountability** - With the rise in personal autonomy comes a heightened obligation to manage one's daily agenda. First-year students are confronted with decisions regarding the timing and manner of studying, socializing with unfamiliar peers, engaging in extracurricular, managing finances, staying physically active, and allocating time for meals and rest. They are presented with the task of acquiring the skill of juggling attending classes, participating in activities, meeting academic deadlines, tending to their well-being, and enjoying themselves simultaneously. The necessity for students to take greater initiative in handling tasks is often something they encounter for the first time.
- **Managing time** - The time constraints on a freshman's life tend to fluctuate. Due to the time and effort required to manage many responsibilities, several first-year students feel they have almost no personal time.
- **Different surroundings and relationships at college** - freshmen must adapt to unfamiliar environments and interact with unfamiliar individuals. Often, other students appear quite distinct from their familiar faces and relatives in the homeland. Undergraduates from non-neighbouring their homes usually need to acquire the skills to establish connections and resolve conflicts with their new roommates.

➢ **Relationships with loved one's back home are evolving** - A student's connection with their parents and other important person's changes as they gain autonomy and accountability in college. Many first-year students and their families worry that they may grow apart. It is not uncommon for first-year students to contact their families often, particularly in the initial few months of college. Saying farewell after a vacation or academic break can prove to be quite challenging. Equally, readapting to the regulations within one's household, such as curfews, household tasks, or obligations towards younger siblings, can also pose difficulties. Bear in mind that parents to have a period of adjustment to do. They are coping with the fact that their child is growing increasingly self-reliant while simultaneously need their constant presence.

Numerous students part ways with their high school partners upon entering college. After spending time away at school, first-years may also notice changes in their relationships with their home-town mates. At home, some people feel more connected to their friends and family, and they may even maintain strong relationships with them.

Adjustment mechanisms

Adjustment problems are so common in our society that we respond unexpectedly: some effectively, others ineffectively. Most of us use effective mechanisms and are healthy and well-adjusted. Adolescents also use mechanisms to maintain the balance of their personalities and their self-esteem young people likewise utilize instruments to keep up the adjustment of their identities and their confidence in society. These mechanisms may be classified into effective and ineffective mechanisms.

Effective mechanisms:

Effective mechanisms are those ways in which either the sources of conflict/frustration are removed or help the individual to control reaction to it.

➢ **Resolving conflict/removing the source of frustration:** One successful method for improving balance in our lives is by resolving conflict, choosing the lesser, and giving up one objective to show signs of improvement. It likewise implies finding the source of frustration and disposing of it.

➢ **Changing cognitive and/or developing positive cognitions**: Our insights are personally connected to our responses to conflict/frustrations. One successful technique is to change the

way we consider or translate the deterrents blockages or conflicts in a positive way or by giving positive significance. Developing positive cognition also means improving self-esteem by decidedly considering and building up a feeling of control or mastery of the situation.

- **Managing problems/conflicts** by seeking special training from a psychologist as well as a clinician in controlling bodily reactions by learning to relax the body muscles. Likewise, by setting aside a few minutes for relaxing activities i.e. aerobic exercises, hobbies, time with friends, yoga, religious activity, etc.

Ineffective adjustment mechanisms

Unfortunately, many of us use ineffective adjustment mechanisms that may give transitory alleviation but do not provide solutions. Despite what might be expected, they may even exacerbate the situation. Two common ineffective adjustment mechanisms are as follows:

A. Aggression: is a typical adjustment mechanism used as an attempt to harm or destroy the source of frustration. It might be separated into two sorts: extra-punitive and intropunitive. Extra-punitive responses are those in which an individual aggressively attributes frustration to outer people or things. It may take different forms: a physical assault upon the source of the obstacle; retaliation or revenge in the form of verbal expression; or in the form of criticism. Sometimes, expression of aggression on the person in authority is difficult and, in such instances, aggression is displaced on inanimate objects. Intropunitive reactions are those in which the individual forcefully ascribes disappointment to himself. He considers himself to be the source of frustration and therefore inflicts physical pain upon himself or criticizes himself. The arrival of repressed emotions through animosity may offer help to young people however it can have genuine repercussions. Educators can reduce aggression in youth by sympathizing, or through reasonable treatment and by arranging positive projects for purgation.

B. Withdrawal usually results when a man turns out to be seriously scared and frustrated by a situation. Withdrawal includes getting away and expelling oneself from offensive circumstances. An adult who fears dismissal regularly maintains a strategic distance from or pulls back from social circumstances at times bringing about timidity. If utilized constantly, withdrawal can be a healthy adjustment mechanism. In any case, violating, withdrawal can bring about stopping college, occupations, or partition.

Factors affecting social adjustment:

Certain factors continuously affect the nature of social adjustment in any individual, some of these are;

Perception:

An individual's ability to adapt to their social environment is heavily influenced by their perceptions of others and their behaviour. Our own thoughts and interpretations of other people's likes and dislikes shape our responses to them. The details we gather about other people forms the basis of our social opinions of them others from various sources or direct observation. Also, the attribution we give to them interferes with their behaviour towards others. Thus, having accurate knowledge of others before interacting or responding to them is a vital step in the process of social adjustment.

Impression Formation:

When we learn about other people, our thoughts and feelings about them are formed through an impression-forming process. First impressions are formed when we encounter new people or learn about their characteristics, such as their appearance, work ethic, and speech pattern. The cognitive framework that allows one to comprehend and attempt to adapt to other people is built upon these realities.

Social Influence:

Man being a social animal, is always under the influence of a group. Man by nature confines to the appropriate and acceptable behaviour and thus confirms with the group. There are two essential components to the social influence process. These include (a) having someone step in and help, or (b) persuading other individuals to change. There is always an agent that has altered the focus person in the phenomena of impact, which encompasses imitation, adherence, and submission. Such social influences can facilitate better adjustment with others as well as on the other hand can cause hindrances in the process of adjustment.

Social Facilitation:

The presence of other people in a group setting constantly has an effect on how well an individual doe, leading to social facilitation. An individual's arousal level is raised in the presence of others, leading to an improvement in their execution of well-learned behaviours. Based to this hypothesis, which is essentially social facilitation, a skilled singer would naturally excel in an audience setting, whereas a beginner would, on the other hand, be more likely to fumble when performing in front of an audience rather than alone at home.

Imitation:

The principal character in an imitation scene changes their conduct so that it mimics that of the imitator. As an example, a student may try to gain attention by acting like a popular person.

Compliance to Others:

As a social creature, humans constantly adapt to their social surroundings by issuing directives and following established norms and laws in the workplace. Everyone in a family relies on everyone else. Everybody follows the rules, including parents. They learn to adapt to their new social surroundings in situations like these.

Conformity to Norms:

The term "conformity" describes a social phenomenon in which people alter their actions to blend in with the majority.

Obedience:

A socially equally-adjusted student is one who is at least somewhat content with their interpersonal connections and their place in society, as well as with the authority that the agent has to exert influence over them.

Hindrances to Social Adjustment:

It is not possible to make social adjustments in all situations. Sometimes, it is difficult to adjust to the needs of the society. The following are examples of obstacles:

1. Children should be educated about the elements that lead to social maladjustment since a troubled childhood leads to a troubled and unhappy adulthood.
2. While kids act out at home, it's hard for them to pick up good social habits while they're out in public.

3. As adults, those with authoritarian parenting styles often display animosity towards those in positions of power in their careers and personal lives.
4. It is common for youngsters who do not have positive role models at home to struggle in social situations.
5. During their teenage years, children whose parents abandon them or who mimic their parents' antisocial behaviour often exhibit aggressive and antisocial tendencies.
6. When kids are sad, mistreated, beaten, or bullied by their peers, they don't have the drive to improve their social skills.
7. Despite wanting to make a positive social adjustment, they don't try very hard since they don't receive the guidance and assistance they need.
8. A deficit in social adjustment is seen in individuals with personality disorders and people with emotional instability. People with imbalanced personal lives tend to show an inability in order to operate socially. A significant impact is also played by depression in reduced social functioning.

Depression and social adjustment are interrelated. Major depressive disorder, clinical depression, persistent sadness, or just a generalized lack of interest in anything is a medical illness. A person's thoughts, actions, and emotions are all impacted by depression. Problems with one's mental and physical health may result. People who are depressed often feel that life isn't worth living and struggle to carry out even the most basic of tasks. Everyone experiences low moods or what we commonly refer to as depression. On the other hand, those who suffer with this ailment often find that their condition gets in the way of their daily life. Their ability to carry out daily tasks is severely impaired, impacting not just them but also their caregivers. This in turn largely affects their pattern of social adjustment. A Socially adjusted person thus, has;the capacity to carry out adaptive activities with ease, a high level of positive affect and a low level of negative affect, overall happiness in all areas of life, and the lack of crippling mental diseases.

An adjustment problem may be present in a person who either does not exhibit these traits or who does not exhibit them consistently. If they are found to have this disorder, psychotherapy would most likely be prescribed to them so that they can cultivate those skills.

Social Adjustment Inventory:

To measure the extent to which students have adjusted socially, researchers utilized the Social Adjustment Scale developed by R. C. Deva (2005). The scale consists of 100 statements with yes

and no alternative responses. The subject taking the test has a read each statement and decide the alternative with which he or she wants to complete the statements.

Scoring of Procedure and Interpretation for (SAI)

After getting the responses of the subjects the responses are scored in this manner. Three scoring stencils are available. The answers are revealed by the pattern of holes on each stencil. Each key has a number next to its hole that indicates how much weight to give it in the event that a response comes through the hole. One such method for grading the answers is as follows:

1. If an item has been marked with both "Yes" and "No" in the responses, we can study them and draw a horizontal red line between them. Such responses that have been marked twice will not be given any credit.
2. There are various scoring stencils available in the test booklet for the scoring of 'Emotional Adjustment' and 'Social Maturity' scores.
3. 'Social Adjustment' is the sum of the 'Emotional Healing' and 'Social Maturity' scores. Feel free to enter this in the designated space as well.
4. For interpretation, Norms in the form of Scores have been given in the following Tables below:

Norms for interpretation of social adjustment inventory

Sr No	Scores range	Interpretation
1	**152 to 162**	**Extremely Poor / Low**
2	136 to 153	Very Poor / Low
3	120 to 135	Poor / Low
4	**96 to 119**	**Average / Moderate**
5	79 to 95	Above Average
6	62 to 78	High
7	**51 to 61**	**Extremely High**

There are 100 items in the Social Adjustment Inventory. You need a minimum of 51 and a maximum of 162 to pass (as manual). This scale is a total negative scale; where an obtained high score indicates difficulties in social adjustment and an obtained low score indicates less difficulties in social adjustment

Reliability and Validity:

There is no set time restriction for the inventory, although it usually takes about 45 minutes for a person to finish it. There is consumable inventory. The test booklet is the proper place to record the answers. Validity and reliability indices generated by the inventory are satisfactory. Following a two-month period, the test-retest reliability stood at 0.91. This inventory's social and psychological dimensions were corroborated with their corresponding dimensions in Saxena's 'Vyaktitva Parakh Prashnavali' MA 62 (3). The two scales' validity levels were found to be.81 and.79, correspondingly.

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Anxiety and Career Aspirations among Youth

Dipak kuma Shankar Suryawanshi

ABSTRACT

The present study aimed to examine anxiety and career aspirations among college students aged 18–25 years. Participants comprised 100 students (50 male and 50 female) drawn from various colleges. Anxiety was assessed using the Beck Anxiety Inventory (BAI), while career aspirations were assessed using the Career Aspiration Scale (CAS). The study examined the association between anxiety and career aspirations and compared career-aspiration scores between students classified into higher- and lower-anxiety groups. The supplied results report lower career-aspiration scores in the higher-anxiety group than in the lower-anxiety group, with an independent-samples t-test used for the comparison. The pattern may indicate that anxiety is relevant to young adults' career planning; however, the reported scores and statistical calculations require verification against the original data before publication. The study underscores the potential importance of career guidance and psychological support for college students.

Keywords: anxiety, career aspirations, youth, college students, career guidance.

INTRODUCTION

Anxiety and career aspirations are closely associated with the psychological and professional development of youth. Career aspirations involve future-oriented expectations, whereas anxiety may arise from uncertainty regarding the achievement of these expectations. Young individuals with high career aspirations may experience anxiety when they perceive obstacles or difficulties in achieving their desired goals.

Career-related anxiety may influence the process of career exploration, career decision-making, and goal achievement. Individuals experiencing higher anxiety may find it difficult to select an appropriate career, evaluate available opportunities, or make confident decisions. Fear of failure and uncertainty about future employment may also reduce their confidence and motivation.

On the other hand, individuals with lower levels of anxiety may be better able to explore career options, evaluate their interests and abilities, and develop realistic career plans. However, the relationship between anxiety and career aspirations may vary according to individual differences, environmental conditions, and psychological resources.

OBJECTIVES OF THE STUDY

1. To assess the level of anxiety among college students in the age group of 18 to 25 years.
2. To evaluate the current status of career aspirations among youth.
3. To examine whether there is a statistically significant negative correlation between anxiety levels and career aspirations.

HYPOTHESES OF THE STUDY

1. Higher levels of anxiety in youth aged 18 to 25 years correlate with lower levels of career aspirations.
2. There is a statistically significant difference in career aspirations between student groups with high anxiety and those with low anxiety.

METHODOLOGY

SAMPLE:

The present study was conducted among youth in the age group of 18 to 25 years, representing the stage of early adulthood, particularly college students. This age group was selected because individuals during

this developmental stage undergo a significant transition from higher education to career selection, job searching, and long-term financial planning. These important life decisions may contribute to career-related anxiety and influence their career aspirations. The total sample consisted of 100 students, including 50 male and 50 female students, selected from various colleges. The equal representation of male and female students was considered to facilitate the study of anxiety and career aspirations among youth.

RESEARCH DESIGN

Simple research design was used.

PSYCHOLOGICAL ASSESSMENT TOOLS USED:

1) Beck Anxiety Inventory (BAI),

The Beck Anxiety Inventory (BAI), developed by Dr. Aaron T. Beck, was used to measure the level of anxiety among the participants. The inventory consists of 21 items assessing various symptoms of anxiety, such as tremors or shaking hands, fear of the future, dizziness, nervousness, and other anxiety-related symptoms. The scoring is based on a four-point Likert scale, ranging from 0 to 3, where 0 indicates “Not at all,” 1 indicates “Mildly,” 2 indicates “Moderately,” and 3 indicates “Severely.” The total score ranges from 0 to 63, with higher scores indicating a greater level of anxiety. The instrument is suitable for individuals aged 17 to 80 years and is therefore appropriate for assessing anxiety among youth in the selected age group of 18 to 25 years.

2) Career Aspiration Scale (CAS)

The Career Aspiration Scale (CAS), developed by O’Brien (1996), was used to measure the career aspirations of the participants. The scale assesses individuals’ ambitions, educational goals, and leadership aspirations related to their future careers. A brief 10-item version of the scale was utilized in the present study to evaluate the educational and leadership aspirations of youth. The scoring was based on a five-point Likert scale ranging from 0 to 4, where 0 indicates “Not at all applicable” and 4 indicates “Fully applicable.” The total scores reflect the level of career aspirations among the participants, with higher scores indicating stronger career aspirations. The scale was considered suitable for assessing career-related goals and ambitions among college students in the age group of 18 to 25 years.

PROCEDURE OF THE STUDY

The present study was carried out to examine the relationship between anxiety and career spirations among college students aged 18 to 25 years. After finalizing the objectives and hypotheses, students from various colleges were approached for participation. The sample comprised 100 students, including 50

male and 50 female participants. The purpose and general nature of the study were explained to the participants, and participation was voluntary. Informed consent was obtained before the administration of the psychological assessment tools. Participants were assured that their responses would be kept confidential and used only for research purposes. They were also informed of their right to discontinue participation at any stage without penalty. The Beck Anxiety Inventory (BAI) was administered first to assess the participants' anxiety symptoms. Participants were instructed to read each item carefully and select the response that best represented their experience according to the directions provided with the inventory. Subsequently, the Career Aspiration Scale (CAS), using the 10-item version described in the methodology, was administered to assess educational and leadership-related career aspirations. The researcher provided standardized instructions and clarified procedural questions without influencing participants' responses. No training or intervention was introduced as part of the study. After administration, the completed questionnaires were collected and checked for completeness. Responses were scored in accordance with the scoring guidelines of the respective instruments. BAI scores were used to categorize participants into higher- and lower-anxiety groups as specified in the study's scoring plan. Career aspiration scores were calculated for each participant. The data were organized for statistical analysis, and descriptive statistics were used to summarize the scores. An independent-samples t-test was planned to compare career aspiration scores between the higher- and lower-anxiety groups. The study followed applicable institutional ethical requirements concerning voluntary participation, informed consent, confidentiality, and the right to withdraw. The ethics-review or approval status should be stated in the final manuscript based on the researcher's actual institutional documentation.

SCORING & STATISTICAL TABLE

The categorization of scores obtained from the 100 students and the results of the statistical t-Test analysis are detailed in the table below:

Student Group (Anxiety Level)	BAI Score Range	Sample Size (N)	Career Aspiration Mean	Standard Deviation (SD)	t-Value
High Anxiety Group	26 to 63	42	45.6	5.8	4.82*
Low Anxiety Group	0 to 21	58	62.4	6.1	

Note: *Statistically highly significant difference at $p < 0.01$ level.

STATISTICAL FINDINGS & DISCUSSION

Statistical analysis revealed that the mean career aspiration score of the high anxiety group (Mean = 45.6) was significantly lower than that of the low anxiety group (Mean = 62.4). An independent samples t-Test was conducted to evaluate the difference between these two groups. The calculated t-value of 4.82 was statistically significant at the $p < 0.01$ level. This indicates that anxiety not only compromises overall mental health but also restricts the career ambitions and growth potential of young adults. Discussion highlights that fear of examinations, future instability, and the pressure of family expectations cause youth in the 18–25 age group to hesitate when making crucial career decisions.

The manuscript should specify the ethics-review or approval status of the relevant institution, where applicable, and confirm that informed consent was obtained. The study is limited by its cross-sectional design and by the recruitment of students from various colleges; therefore, causal interpretations and broad generalizations should be avoided. The reported statistical findings must be checked against the original participant-level data, scoring rules, and analysis output before submission.

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Socioeconomic Stress and Self-Esteem Among Adults: An Empirical Study

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ABSTRACT

This study explores the relationship between socioeconomic stress and self-esteem among adults. Socioeconomic stress, arising from financial insecurity, occupational instability, and social inequality, often impacts psychological well-being. The research investigates how variations in income, education, and employment status influence self-esteem levels. A sample of 200 adults aged 25–40 years (100 males and 100 females) was surveyed using the Socioeconomic Stress Scale and Rosenberg Self-Esteem Scale from various areas in Sangli district. Statistical analysis revealed a significant negative correlation between socioeconomic stress and self-esteem ($r = -0.52$, $p < 0.01$). The findings highlight the need for socioeconomic interventions and counseling programs to promote emotional resilience among financially or socially vulnerable adults.

Keywords: *Socioeconomic Stress, Self-Esteem, Adult Mental Health, Rosenberg Self-Esteem Scale, Sangli District.*

INTRODUCTION

Socioeconomic Stress

Socioeconomic stress refers to the psychological strain and tension that individuals experience as a result of their social and economic conditions. It arises from factors such as financial instability, low income, unemployment, job insecurity, limited access to education, and social inequality. These conditions can create chronic stress, which negatively impacts mental health, emotional well-being, and overall quality of life.

Research has consistently shown that socioeconomic stress is linked to a wide range of adverse outcomes, including anxiety, depression, reduced self-esteem, and impaired cognitive functioning. Individuals from lower socioeconomic backgrounds often face compounded stressors, such as limited social support, neighborhood challenges, and discrimination, which further exacerbate the psychological burden.

Understanding socioeconomic stress is crucial because it highlights the role of social determinants in shaping mental health and well-being. It emphasizes that stress is not only a personal experience but also influenced by structural and systemic factors. Studying this form of stress helps in designing interventions, policies, and support systems aimed at mitigating its impact and promoting resilience among vulnerable populations.

Self-Esteem

Self-esteem refers to an individual's overall sense of self-worth or personal value. It reflects how people perceive and evaluate themselves, encompassing beliefs about one's abilities, qualities, and significance. High self-esteem is associated with confidence, resilience, and positive mental health, while low self-esteem can lead to feelings of inadequacy, anxiety, and vulnerability to stress.

The concept of self-esteem has been widely studied in psychology, with Rosenberg's Self-Esteem Scale (1965) being one of the most commonly used tools to measure it. Self-esteem is influenced by various factors, including family environment, social interactions, personal achievements, and cultural context. It plays a critical role in shaping behavior, motivation, academic performance, and interpersonal relationships.

Understanding self-esteem is essential because it affects not only mental and emotional well-being but also life satisfaction and overall psychological functioning. Research suggests that fostering healthy self-esteem can enhance personal growth, social competence, and the ability to cope with challenges effectively.

REVIEW OF LITERATURE

Lazarus and Folkman's (1984) Stress and Coping Theory emphasizes how individuals perceive stress and deploy coping mechanisms to mitigate psychological strain. Within socioeconomic contexts, limited resources often reduce coping capacity, increasing vulnerability to stress and undermining self-esteem. Festinger's (1954) Social Comparison Theory states that individuals evaluate themselves relative to others. In socioeconomic environments characterized by visible disparities, individuals with lower status may experience negative self-appraisal, which diminishes self-esteem. According to Maslow (1943), basic physiological and safety needs (e.g., food, shelter, financial security) form the foundation for higher-order needs including esteem. When socioeconomic stressors threaten basic needs, self-esteem is often compromised. Paul and Moser (2009) conducted a meta-analysis showing that long-term unemployment significantly worsened psychological well-being, particularly self-esteem. McKee-Ryan et al. (2005) outlined that job insecurity also contributes to anxiety, decreased self-confidence, and lower self-esteem even among the employed. Additional empirical work by Adler & Ostrove (1999), Conger et al. (2010), McLoyd (1998), Turner & Avison (2003), Twenge & Campbell (2002), Orth et al. (2012), and Chen et al. (2010) reinforces the profound physiological and psychological impacts of enduring economic hardship across the life-span.

OBJECTIVES OF THE STUDY

1. To assess the level of socioeconomic stress among adults.
2. To measure self-esteem levels among adults of different socioeconomic backgrounds.
3. To examine the relationship between socioeconomic stress and self-esteem.

HYPOTHESES OF THE STUDY

1. There will be high socioeconomic stress among adults.
   There will be low self-esteem among adults.
   There will be a significant negative correlation between socioeconomic stress and self-esteem among adults.

METHODOLOGY

PARTICIPANTS

There were 200 samples selected using purposive sampling, consisting of 100 male and 100 female adults drawn from various areas in Sangli district, Maharashtra. The subjects belonged to the adult population with an age range of 25 to 40 years. The male and female ratio of the sample was equal (1:1).

INSTRUMENTS

1. Socioeconomic Stress Scale (Singh & Sharma, 2015): Developed by Singh & Sharma (2015), this scale consists of 40–45 items with five response options. Content and construct validity were established through expert reviews and correlations with stress and anxiety inventories.

2. Rosenberg Self-Esteem Scale (Rosenberg, 1965): Developed by Dr. Morris Rosenberg (1965), this scale consists of 10 statements. Each statement offers four response options: Strongly Disagree, Disagree, Agree, and Strongly Agree. Construct validity of the scale correlates strongly with measures of depression, anxiety, and social desirability.

PROCEDURE

For the purpose of data collection, researchers obtained necessary permission from all participants. The researchers gathered participants, discussed the significance of the research, and assured complete privacy and confidentiality. The questionnaires were administered in group settings. Participants were cordially thanked for their responses to the questionnaire and for providing their demographic details. Data was collected, scored according to defined rules, and analyzed using descriptive and inferential statistical techniques, specifically Pearson's product-moment correlation.

RESULTS AND DISCUSSION

The aim of the study was to assess Socioeconomic Stress and Self-Esteem among adults. In the present study, gender (male and female) served as demographic variables while Socioeconomic Stress and Self-Esteem were measured as dependent/primary variables. Table 1 illustrates the statistical findings.

Table 1: Descriptive Statistics and Correlation Between Socioeconomic Stress and Self-Esteem (N = 200)

Variables	Mean	Std. Deviation (SD)	Pearson Correlation (r)	Sig. Level (p)
Socioeconomic Stress	42.60	8.02	-0.52**	$p < 0.01$
Self-Esteem	28.30	6.10		

** *Statistically significant at the 0.01 level (2-tailed).*

Table 1 shows the correlation between Socioeconomic Stress and Self-Esteem among adults. The mean value for Socioeconomic Stress was found to be 42.60 with a standard deviation of 8.02. For Self-Esteem, the mean was 28.30 with an SD of 6.10. The calculated Pearson correlation value (r) is -0.52, which is statistically significant at the 0.01 level.

The significant inverse relationship confirms that higher levels of socioeconomic strain are linked with reduced personal self-esteem among adults. Financial constraints and social instability exacerbate stress, creating psychological burdens that diminish global self-worth.

CONCLUSION

1. There is high socioeconomic stress among adults.
2. There is low self-esteem among adults experiencing high economic strain.
3. There is a statistically significant negative correlation between socioeconomic stress and self-esteem among adults.

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Solar-Powered Irrigation and Groundwater Economics: Analyzing Government Subsidy Programmes (PM-KUSUM) on Energy Transition, Water-Use Efficiency, and Farm Productivity in India

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ABSTRACT

The increasing demand for irrigation water, rising agricultural energy consumption, and depletion of groundwater resources have become major challenges for sustainable agricultural development in India. Traditional irrigation systems depend heavily on subsidised electricity and diesel-powered pumps, creating economic and environmental concerns. Solar-powered irrigation has emerged as a promising alternative that can reduce farmers' dependence on conventional energy sources while improving agricultural productivity. The Government of India introduced the Pradhan Mantri Kisan Urja Suraksha evam Utthaan Mahabhiyan (PM-KUSUM) in 2019 to encourage renewable energy adoption in the agricultural sector through financial assistance for solar pumps and decentralised solar power generation. This research examines the effects of

government solar irrigation subsidies on energy transition, groundwater economics, water-use efficiency, and farm productivity. It adopts a descriptive and analytical methodology based on secondary data obtained from government reports and published academic studies. Evidence from Rajasthan indicates that solar pump adoption can reduce diesel consumption by 50%–106% in selected districts and increase annual farm profits by 3.1%–76%, depending on local conditions. However, the technology can also increase groundwater extraction where the marginal cost of pumping becomes very low. Recent evidence from Gujarat demonstrates that electricity buyback arrangements can encourage water conservation in certain aquifer conditions. The study concludes that solar irrigation subsidies can contribute to sustainable agricultural development when combined with groundwater regulation, micro-irrigation, crop diversification, and financial incentives for selling surplus electricity to the electricity grid.

Keywords: Solar-powered irrigation, PM-KUSUM, groundwater economics, agricultural subsidies, renewable energy, water-use efficiency, farm productivity, India.

INTRODUCTION

Agriculture plays a fundamental role in India's economy by providing employment, supporting rural livelihoods, and ensuring national food security. The development of Indian agriculture has historically depended on irrigation infrastructure, particularly groundwater extraction through electric and diesel-powered pumps. Groundwater has become an important source of irrigation because rainfall is seasonal and the availability of canal irrigation is uneven across different regions. However, the increasing dependence on groundwater has created serious environmental and economic challenges. Excessive extraction, inefficient irrigation practices, population growth, changing rainfall patterns, and water-intensive cropping systems have placed considerable pressure on groundwater resources.

Energy consumption is another major challenge in Indian agriculture. Farmers often depend on subsidised electricity or diesel to operate irrigation pumps. Although electricity subsidies have helped farmers maintain agricultural production, they have also created financial pressure on state electricity distribution companies and sometimes encouraged excessive groundwater pumping. In this context, renewable energy offers an alternative approach to agricultural

development. Solar-powered irrigation systems use photovoltaic panels to generate electricity for operating water pumps. Unlike diesel pumps, solar pumps do not require regular fuel purchases and can reduce dependence on conventional electricity supply. Recognising these benefits, the Government of India introduced the Pradhan Mantri Kisan Urja Suraksha evam Utthaan Mahabhiyan (PM-KUSUM) in 2019. The programme seeks to improve farmers' energy security, increase renewable energy generation, and reduce dependence on diesel-powered agricultural pumps. Nevertheless, the relationship between solar energy and groundwater management is complex. Solar energy reduces the marginal cost of pumping, which may encourage farmers to extract additional groundwater. Therefore, a policy designed to improve energy sustainability can potentially create water sustainability challenges.

This research examines the economic and environmental implications of solar-powered irrigation, with particular attention to government subsidy programmes, groundwater economics, irrigation efficiency, and agricultural productivity in India.

BACKGROUND OF SOLAR-POWERED IRRIGATION IN INDIA

India has one of the world's largest agricultural irrigation systems. Groundwater is particularly important because it allows farmers to control irrigation schedules according to crop requirements instead of depending entirely on rainfall or canal water availability. Traditional irrigation pumps generally operate using electricity or diesel. Both energy sources have limitations. Electric pumps are often dependent on subsidised agricultural electricity, which can reduce farmers' operating costs but increase the financial burden on electricity distribution companies. In several states, agricultural electricity supply is also subject to restrictions on operating hours and voltage fluctuations. Diesel pumps provide flexibility because farmers can operate them according to their requirements. However, diesel prices, transportation costs, and maintenance expenses increase the cost of irrigation. Solar-powered pumps provide an alternative by converting sunlight into electricity. Their main advantage is that sunlight is a renewable resource and does not require regular fuel purchases.

Solar irrigation can provide several benefits:

1. Reduction in diesel consumption and conventional electricity dependence.
2. Lower recurring irrigation energy expenditure.
3. Greater energy independence for rural farmers.
4. Improved opportunities for irrigation in remote agricultural regions.
5. Reduction in agricultural greenhouse gas emissions.
6. Opportunities to generate additional income through electricity sales.

Despite these advantages, solar irrigation requires substantial initial investment in photovoltaic panels, pumps, installation, and maintenance. Government subsidies therefore play an important role in encouraging farmers to adopt this technology.

RESEARCH OBJECTIVES

The specific objectives are:

1. To analyse the contribution of PM-KUSUM to renewable energy adoption in agriculture.
2. To examine how solar irrigation affects conventional energy consumption.
3. To investigate the relationship between solar pump subsidies and groundwater extraction.
4. To evaluate the influence of solar irrigation on agricultural water-use efficiency.
5. To examine changes in cropping intensity, farm income, and agricultural productivity.
6. To identify the economic and environmental challenges associated with solar irrigation.
7. To suggest policy measures for improving the sustainability and effectiveness of solar irrigation programmes.

RESEARCH METHODOLOGY

The research follows a descriptive and analytical methodology based on secondary information.

Data and supporting evidence have been collected from:

- Ministry of New and Renewable Energy publications.
- Government of India reports and parliamentary information.
- Central Ground Water Board publications.

- Published academic research articles.
- International Water Management Institute research.
- Studies examining the relationship between energy, water, and agricultural productivity.

The study focuses primarily on India, with particular reference to Rajasthan and Gujarat, where empirical studies provide useful evidence regarding solar irrigation and groundwater consumption.

The analysis considers four major dimensions:

1. **Energy economics:** Changes in diesel consumption, electricity use, and agricultural energy expenditure.
2. **Groundwater economics:** The relationship between pumping costs, groundwater extraction, and aquifer sustainability.
3. **Agricultural productivity:** Changes in cropping intensity, cultivated area, farm income, and agricultural production.
4. **Policy effectiveness:** The contribution of government subsidies, electricity buyback arrangements, and irrigation-management policies.

The research does not claim to have conducted an original farmer survey. Quantitative findings are taken from identified government and academic sources. The recommendations are based on the interpretation of this secondary evidence.

GOVERNMENT SUBSIDY PROGRAMMES AND PM-KUSUM

Government intervention is essential for encouraging the adoption of renewable energy technologies in agriculture because the initial investment in solar irrigation systems can be difficult for small and marginal farmers to afford.

The Pradhan Mantri Kisan Urja Suraksha evam Utthaan Mahabhiyan (PM-KUSUM) was introduced in 2019 by the Ministry of New and Renewable Energy. Its main objective is to promote solar energy generation in the agricultural sector while reducing farmers' dependence on conventional electricity and diesel.

The programme aims to improve energy security, increase farmers' income, reduce carbon emissions, and support sustainable agricultural development.

MAJOR COMPONENTS OF PM-KUSUM

The programme consists of three major components.

1. **Component A: Installation of decentralized solar power plants**
   Under this component, farmers, cooperatives, farmer producer organisations, and eligible institutions can establish decentralised grid-connected solar power plants. These plants generate electricity that can be supplied to local electricity distribution companies.
   This component creates opportunities for farmers to earn additional income from agricultural land by participating in renewable energy generation.
2. **Component B: Installation of standalone solar agricultural pumps**
   This component supports farmers in installing standalone solar-powered irrigation pumps, particularly in areas where grid electricity is unavailable or unreliable.
   It is especially useful for farmers who depend on diesel pumps because it reduces recurring fuel expenses and provides access to renewable electricity.
3. **Component C: Solarisation of existing agricultural pumps**
   This component supports the solarisation of existing grid-connected agricultural pumps. Farmers can use solar electricity for irrigation and, where appropriate grid arrangements exist, sell surplus electricity to electricity distribution companies.

This component is economically important because it provides an opportunity to earn additional income from unused solar electricity.

FINANCIAL ASSISTANCE UNDER PM-KUSUM

The scheme makes solar technology more affordable through financial assistance. Under the general funding pattern, central financial assistance can cover up to 30% of the benchmark cost or tender cost, whichever is lower, for eligible components in most states. State governments generally provide additional assistance, while farmers contribute the remaining amount. Special

central assistance provisions apply to specified northeastern, hilly, and island regions. The availability of subsidies reduces the initial investment required from farmers and improves the economic feasibility of solar irrigation. However, subsidy implementation depends on state-level arrangements, eligibility requirements, procurement costs, and the availability of funds.

PROGRESS OF PM-KUSUM IN INDIA

The scheme has expanded considerably since its introduction.

Table 1- PM-KUSUM implementation progress as of December 31, 2025

Component	Installed achievement
Component A: Solar power plants	720.91 MW
Component B: Standalone solar pumps	975,227
Component B: Installed capacity	4,398.57 MW
Component C: Solarised pumps	1,201,552
Component C: Installed capacity	5,829.98 MW
Total farmers benefited	2,177,369

Source: Ministry of New and Renewable Energy, Government of India, parliamentary information published March 24, 2026 (Government of India, 2026).

The figures indicate that the programme has become an important part of India's agricultural renewable energy strategy. Component B and Component C together account for more than 21 lakh installed solar pumps. This demonstrates the increasing acceptance of solar-powered irrigation among Indian farmers. Nevertheless, the number of installations should not be treated as direct evidence of water conservation. The actual impact depends on the amount of water extracted, the condition of local aquifers, crop choices, and farmers' irrigation practices.

SOLAR IRRIGATION AND INDIA'S ENERGY TRANSITION

Energy transition refers to the movement from conventional fossil-fuel-based energy systems towards renewable and cleaner energy sources. Agriculture provides an important opportunity

for this transition because irrigation pumps consume substantial quantities of electricity and diesel. Solar-powered irrigation contributes to this transformation in several ways.

1. **Reduction in Diesel Consumption**

   Diesel-powered pumps are commonly used in areas where electricity supply is unavailable or unreliable. Farmers using diesel pumps must regularly purchase fuel, maintain engines, and bear transportation expenses. These costs can increase the overall cost of agricultural production. Solar pumps reduce these recurring expenses because they use sunlight as their primary energy source. Gupta (2019), in an empirical study involving 414 rural farmers across six districts of Rajasthan, found that diesel consumption among solar pump adopters declined by approximately 50%–106% in selected diesel-using districts. This finding demonstrates the potential of solar irrigation to reduce dependence on fossil fuels.

2. **Reduction in Carbon Emissions**

   Diesel combustion produces carbon dioxide and other air pollutants. Replacing diesel pumps with solar-powered systems can therefore reduce emissions associated with irrigation. Solar irrigation also supports India's climate-related objectives by increasing the contribution of renewable energy to agricultural electricity consumption. However, the complete environmental impact should also consider the manufacturing, transportation, installation, and eventual disposal of solar panels and batteries, where batteries are used.

3. **Improvement in Rural Energy Security**

   Many agricultural areas experience irregular electricity supply, voltage fluctuations, and restricted power availability. Solar irrigation can provide greater independence from conventional electricity networks, particularly in remote areas. This improves farmers' ability to plan irrigation activities and can reduce vulnerability to energy supply disruptions.

4. **Farmers as Electricity Producers**

   One of the most important features of grid-connected solar irrigation is the possibility of selling surplus electricity to the grid. Under appropriate arrangements, farmers can earn additional income from electricity that is not required for irrigation. This creates an

opportunity to change the economic behavior of farmers. Instead of using all available electricity to extract groundwater, they can earn money by supplying unused electricity to the distribution company. Consequently, solar irrigation can transform farmers from passive electricity consumers into decentralized electricity producers.

7. GROUNDWATER ECONOMICS AND THE RISK OF OVER-EXTRACTION

Groundwater is one of the most important natural resources supporting Indian agriculture. It provides irrigation during periods of low rainfall and supports crop production in areas without sufficient canal infrastructure. However, groundwater is a limited resource that must be managed carefully. The economics of groundwater extraction depends on pumping costs, agricultural returns, water availability, and the future cost of accessing deeper groundwater reserves.

Relationship Between Energy Prices and Groundwater Extraction

The cost of pumping groundwater depends partly on the energy required to lift water from underground sources. When electricity or diesel becomes cheaper, the cost of irrigation decreases. Farmers may respond by increasing irrigation hours or expanding the cultivated area. Solar-powered pumps can create a similar situation because the marginal cost of generating electricity from sunlight is relatively low once the system has been installed. As a result, farmers may extract additional groundwater because irrigation becomes less expensive. This creates a potential conflict between two development objectives: increasing renewable energy use and conserving groundwater.

The Groundwater Externality

Groundwater extraction creates an economic externality because individual farmers do not always bear the complete cost of their pumping decisions. For example, when one farmer extracts excessive groundwater, the water table may decline. Neighbouring farmers may then need deeper pumps or incur higher energy costs to obtain the same quantity of water. The individual farmer receives immediate benefits from additional irrigation, but part of the environmental and economic cost is transferred to other groundwater users. This situation

demonstrates why private economic incentives must be combined with public groundwater-management policies.

Empirical Evidence from Rajasthan

Gupta (2019) examined the impact of solar water pumps on the energy-water-food relationship in Rajasthan. The study used a difference-in-differences approach involving 414 rural farmers across six districts. The findings revealed that solar pump adoption increased average groundwater consumption by approximately 16%–39% in Jaipur and Sikar. At the same time, the research found reductions in diesel consumption and improvements in cropping intensity and farm profits. The findings demonstrate that solar irrigation can create positive economic outcomes while increasing groundwater pressure in certain regions.

Table 2- Selected findings from the Rajasthan solar irrigation study

Indicator	Reported impact
Groundwater consumption in Jaipur and Sikar	Increased 16%–39%
Diesel consumption in selected districts	Reduced 50%–106%
Cropping intensity in Jaipur and Sikar	Increased 2%–10%
Cropping intensity in Bikaner	Increased 2%–9%
Annual farm profits in Jaipur and Sikar	Increased 3.1%–41.5%
Annual farm profits in diesel-using districts	Increased 14%–76%

These results suggest that the environmental impact of solar irrigation depends on local groundwater availability and agricultural practices.

Differences Between Regions

Groundwater conditions vary significantly across India. Regions with productive alluvial aquifers may have greater groundwater storage and different pumping opportunities compared with regions dominated by hard-rock aquifers. Similarly, rainfall patterns, soil conditions, crop selection, and irrigation requirements influence the effectiveness of solar irrigation. Therefore, government subsidy programmes should consider local groundwater conditions rather than following a uniform approach across all agricultural regions.

Water-use efficiency refers to the relationship between the quantity of agricultural output produced and the amount of water used in production. Solar-powered irrigation does not automatically improve water-use efficiency. A solar pump can reduce fossil-fuel consumption while still encouraging excessive water use. For example, a farmer may use a solar pump to operate flood irrigation for longer periods. In such a situation, renewable energy consumption increases, but water conservation may not improve. Therefore, solar irrigation should be integrated with efficient irrigation technologies.

1. **Drip Irrigation-** Drip irrigation supplies water directly to the root zone of plants through pipes and emitters. It reduces unnecessary water application and can be particularly useful for horticultural crops, vegetables, and fruit cultivation. Combining solar pumps with drip irrigation can improve water productivity by reducing avoidable irrigation losses.
2. **Sprinkler Irrigation-** Sprinkler irrigation distributes water through pressurised pipes and sprinklers. It can be suitable for several field crops and uneven agricultural land. Solar-powered sprinkler systems can reduce dependence on diesel and improve the management of irrigation schedules.
3. **Soil-Moisture Monitoring-** Soil-moisture sensors help farmers identify when irrigation is necessary. Instead of pumping water according to fixed schedules, farmers can use information about soil conditions and crop requirements. This can reduce unnecessary pumping and improve agricultural water management.
4. **Water Budgeting-** Water budgeting involves estimating the available water resources and comparing them with agricultural water requirements. Village-level water budgeting can help farmers understand the limits of local groundwater resources. It can also support decisions regarding crop selection, irrigation scheduling, and groundwater recharge.
5. **Crop Diversification-** Agricultural production in some water-stressed regions depends heavily on crops with high irrigation requirements. Encouraging suitable alternatives can reduce pressure on groundwater. However, crop diversification must also consider market

demand, procurement arrangements, profitability, soil conditions, and farmers' income security. Therefore, financial support and market access are necessary to encourage farmers to adopt less water-intensive crops.

IMPACT OF SOLAR IRRIGATION ON FARM PRODUCTIVITY AND FARMERS' INCOME

Agricultural productivity is influenced by several factors, including irrigation availability, soil fertility, agricultural technology, labour, fertilisers, and market conditions. Solar irrigation can improve agricultural productivity by providing farmers with more reliable access to irrigation water and reducing expenditure on conventional energy.

1. **Increase in Cropping Intensity-** Cropping intensity refers to the number of times agricultural land is cultivated during a year relative to its net sown area. Farmers who depend on rainfall or expensive diesel irrigation may cultivate fewer crops because of uncertainty regarding water availability. Solar irrigation can reduce these constraints by providing a relatively inexpensive source of energy for pumping water. Gupta (2019) reported that solar pump adoption increased cropping intensity by approximately 2%–10% in Jaipur and Sikar and 2%–9% in Bikaner. This suggests that solar irrigation can create opportunities for additional agricultural production.
2. **Expansion of High-Value Agriculture-** Reliable irrigation can help farmers cultivate fruits, vegetables, and other high-value crops. These crops may generate higher income than traditional crops when suitable market infrastructure and storage facilities are available. The Rajasthan study reported an increase in gross cropped area under fruits and vegetables of approximately 12%–53% in Jaipur and 10%–116% in Bikaner among solar pump adopters. This indicates that access to affordable irrigation can influence farmers' decisions regarding crop diversification. However, high-value agriculture can also increase water demand. Therefore, farmers should consider the water requirements of different crops before changing their cropping patterns.

3. **Improvement in Farm Profitability-** The profitability of agriculture depends on the relationship between total revenue and total production costs. Solar irrigation can increase profitability through two major mechanisms. First, it reduces recurring expenditure on diesel and conventional energy.Second, improved irrigation availability can increase crop production and provide opportunities for cultivating additional crops. Gupta (2019) reported that annual farm profits increased by approximately 3.1%–41.5% in Jaipur and Sikar and 14%–76% in districts where farmers previously depended on diesel irrigation. These findings demonstrate that solar irrigation can provide economic benefits, although the extent of improvement varies across locations.
4. **Employment and Rural Economic Development-** Solar irrigation can also support rural economic development. Installation and maintenance of solar pumps create opportunities for technicians, electricians, equipment suppliers, and local service providers. Improved irrigation may increase agricultural activity and generate additional employment in farming, harvesting, transportation, processing, and marketing. Furthermore, electricity generation from decentralised solar power plants can create additional income opportunities for farmers and rural landowners.

10. Economic Analysis of Solar Irrigation Subsidies

Government subsidies influence farmers' decisions by reducing the initial investment required for adopting new technology. Solar irrigation systems generally involve expenditure on:

- Solar photovoltaic panels.
- Water pumps and controllers.
- Mounting structures.
- Wiring and electrical equipment.
- Installation and transportation.
- Maintenance and repair.

Private Economic Benefits

The private economic benefits of solar irrigation include reduced fuel expenditure, lower operating costs, improved irrigation availability, and potentially higher farm income. Farmers

who previously depended on diesel pumps may experience considerable savings because they no longer need to purchase fuel regularly. Similarly, farmers with unreliable electricity connections may benefit from greater energy independence.

Public Economic Benefits

The public benefits include reduced fossil-fuel consumption, lower emissions, increased renewable electricity generation, and improved rural energy infrastructure. However, public benefits must be compared with the financial costs of government subsidies and the possible environmental costs of increased groundwater extraction.

Subsidy Effectiveness and Environmental Costs

A successful subsidy programme should generate economic benefits without creating unacceptable environmental costs. If solar irrigation leads to excessive groundwater extraction, the long-term social cost may exceed the immediate private savings received by farmers. Therefore, subsidy programmes should include incentives for efficient irrigation, groundwater monitoring, and electricity export. The government should also evaluate the performance of solar pumps after installation instead of measuring programme success only through installation targets.

DISCUSSION AND INTERPRETATION OF FINDINGS

The findings of this research reveal that solar-powered irrigation produces both positive and potentially negative outcomes. From an energy perspective, solar pumps provide an opportunity to reduce diesel consumption and increase renewable energy use. They also offer greater energy independence and can reduce farmers' recurring irrigation expenditure. The Rajasthan evidence reported by Gupta (2019) demonstrates that lower irrigation energy costs can increase groundwater consumption in certain locations. This suggests that energy subsidies and renewable energy policies must account for farmers' responses to changes in pumping costs. The Gujarat evidence from Alam et al. (2026) demonstrates that electricity buyback arrangements can encourage groundwater conservation in certain alluvial aquifer settings.

Together, these findings highlight three important conclusions.

1. First, solar irrigation can improve agricultural economic welfare by reducing irrigation energy expenditure.
2. Second, the impact on groundwater depends on the relationship between pumping costs, water availability, and farmers' economic incentives.
3. Third, renewable energy policies are more likely to support sustainable agriculture when they are integrated with effective groundwater management.

The findings also demonstrate that technology adoption alone is insufficient. Institutional arrangements, local infrastructure, crop selection, and farmer awareness influence the final outcomes. For example, providing solar pumps without supporting efficient irrigation methods may increase water consumption. In contrast, combining solar pumps with drip irrigation, water budgeting, and electricity buyback can produce better economic and environmental outcomes. Therefore, the overall effectiveness of PM-KUSUM should be evaluated through a combination of energy, water, agricultural, and financial indicators.

CONCLUSION

Solar-powered irrigation represents an important opportunity for transforming India's agricultural energy system and supporting sustainable rural development.

Government initiatives such as PM-KUSUM have encouraged farmers to adopt renewable energy by reducing the initial financial burden of solar pump installation and promoting decentralised electricity generation. The research demonstrates that solar irrigation can provide several economic and environmental benefits. It can reduce dependence on diesel, lower recurring irrigation expenditure, improve energy security, and support increased agricultural productivity. Evidence from Rajasthan indicates improvements in cropping intensity and farm profitability among solar pump adopters. However, the relationship between solar energy and groundwater sustainability remains a significant concern. Lower pumping costs can encourage additional groundwater extraction, particularly in regions where groundwater regulation is weak. The Gujarat evidence further demonstrates that appropriate electricity buyback arrangements can

encourage more efficient pumping behaviour under certain groundwater conditions. This highlights the importance of designing policies according to regional agricultural and hydrogeological characteristics. Therefore, solar irrigation should not be considered merely an alternative source of energy. It should be integrated into a broader agricultural development strategy that includes groundwater management, micro-irrigation, crop diversification, farmer education, and financial incentives for conserving electricity. The long-term success of PM-KUSUM will depend on its ability to balance three important objectives: renewable energy development, sustainable groundwater utilisation, and improved agricultural livelihoods.

Ultimately, the future of solar-powered irrigation in India should be measured not simply by the number of solar pumps installed but by the extent to which the technology improves farmers' income, reduces fossil-fuel dependence, increases water productivity, and protects groundwater resources for future generations.

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