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Hoping all of you shall enjoy our endeavors and those of our contributors.

Editor

CONTENTS

"Samajiki Sandarsh"

Implication of Artificial Intelligence in Higher Education of Bihar State

Kumari Neetu[*]
Dr. Nargis Naz[**]

Abstract:

The present paper deals with "Implication of Artificial Intelligence in Higher Education of Bihar State". Artificial intelligence (AI) in the educational field believes that the role of teachers and class room management to the school and leaders in education will change. The main purpose of this study is to examine what possible scenarios are there with the arrival of Artificial intelligence in education and what kind of implications it can reveal for future of schools. A random sample 200 higher secondary students including 100 male and 100 female, aged between 15-85 years was selected through randomly from different BSEB school from Gaya town. The PDS and AI tools has been served as subjects. The hypotheses was that AI tools has provided better education rather than learning systems. Results shows that male and female HS students' groups do not differ in terms of AI learning process. The results show that schools and teachers will have new products, benefits and also face drawbacks with the arrival of AI in education. The findings point out some suggestions for use of AI and prevention of possible problems. While participants generally seem to have positive perceptions towards AI, there are also certain drawbacks, especially highlighted by teachers and academicians, regarding the future of teaching. The study has focus more on AI tools in education and future problems, while engineers see Artificial intelligence as a tool to bring quality and benefit for all in the education institution.

Keywords: AI tools, E-learning, Class room management and Students.

The future of higher education is intrinsically linked with developments on new technologies and computing capacities of the new intelligent machines. In this field, advances in artificial intelligence open to new possibilities and challenges for teaching and learning in higher education, with the potential to fundamentally change governance and the internal architecture of institutions of higher education. With answers to the question of 'what is artificial intelligence 'shaped by philosophical positions taken since Aristotle, there is little agreement on an ultimate definition. The future of higher education is intrinsically linked with developments on new technologies and computing capacities of the new intelligent machines. In this field, advances in artificial intelligence open to new possibilities and challenges for teaching and learning in higher education, with the potential to fundamentally change governance and the internal architecture of institutions of higher education. With answers to the question of 'what is artificial intelligence' shaped by philosophical positions taken since Aristotle, there is little agreement on an ultimate definition. Education undoubtedly plays a large and significant role for people residing in developing countries. Higher education institutes are playing an important role in a nation's development. Economic and social development of individual depends upon two important factors viz. Knowledge and learning. People who are highly educated are more likely to get high skilled jobs and compensation, hence have more probability to enhance their living standards. Thus people of developing country have more deep implications of higher education as education equips a person to live the life chosen by them to lead a creative and more productive live. Good Education and skilled students also leads to higher growth and improvement for the country as a whole particularly in developing countries.[1] Thus in developing nation like India role of higher education becomes more prominent and hence the learning process should be optimized.

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A technological revolution has taken place in most of the parts of recent world, in last few decades. Society has dramatically shifted from traditionally living conditions driven society to the present knowledge society where creativity and inventiveness drives the society. Earlier educational system was characterized where teachers and students physically interacted in the classroom and majority of work is done manually in higher education institutes. But major technological developments in the last 20 years and mostly because of the Internet have changed people view of education and their working and a new concept that has evolved during the last few years is "artificial intelligence".[2] It's a well-known fact that higher education is heavily dependent on human and manual work. This not only increases the operational cost for the higher education institutes but also accounts for increase in the errors and slow processing in the field. Higher education institutes due to its labor intensive framework will have to spend a big budget on hiring and retaining educators and also in the processing of data in their institutes. Apart from financial losses in the form of salaries of highly qualified personnel's these institutes are also bearing increased amount of effort that institutions put into the admission, learning and success of all their students. Lot of information and efforts are being wasted in higher education institutes on repetitive tasks that can be minimized. Hence being a labor sensitive field it is facing both financial and physical loss. Thus adoption of artificial intelligence will bring a cheaper and more responsive approach to higher education industry. Since 1956, we find different hypothetical understandings of artificial intelligence that are affected by "chemistry, biology, linguistics, mathematics, and the advancements of AI solutions".[3] Notwithstanding, the assortment of definitions and understandings remains broadly contested. Most methodologies centre around constrained points of view on cognizance or basically disregard the political, mental, and philosophical parts of the idea of knowledge. With the end goal of our examination of the impact of artificial intelligence in teaching and learning in higher education, we propose a fundamental definition provided by the literature survey of some past definitions on this field. Subsequently, we can characterize artificial intelligence (AI) as automated frameworks that can take part in human-like procedures like "learning, adapting, synthesizing, self-correction and use of data for complex processing tasks".

Steps Taken by the Government to Use AI for Education Transformation

The National Education Policy, introduced in 2020, has recommended introducing contemporary subjects like Artificial Intelligence in the curriculum.

In accordance with the NEP, 2020, the National Council of Educational Research & Training (NCERT) has started the process of developing a new National Curriculum Framework for School Education, during which the potential for adding an introductory course on artificial intelligence (AI) at the secondary level.[4]

In the meantime, the Central Board of Secondary Education (CBSE) has introduced Artificial Intelligence as a subject in class IX and in Class XI from session 2020-2021 in their affiliated schools.[5]

Moreover, the government has introduced last 4 year Integrated Teacher Education Program (ITEP) and NISHTHA Integrated Training Program for teachers, head teachers/principals, and other stakeholders in educational management.

The NISHTHA training program is administered online through the DIKSHA portal, which incorporates AI tools to provide self-paced learning and close supervision.

Artificial intelligence (AI) is the impersonation of human knowledge procedures, for example, discourse and visual acknowledgment, interpretation of the dialects and virtual decision making by machines and robots. The capacity of machine to think and act like people, has given AI an extraordinary place in all fields. Artificial intelligence is available wherever in different parts of our lives beginning from smart sensors to individual associates. Recent developments in AI have gotten numerous enormous changes in the higher education field. "Artificial intelligence helps students and teachers to make their educational experience wonderful". Artificial intelligence (AI) is characterized as the capacity and improvement of a data innovation-based PC frameworks or

different machines to finish the jobs that typically require human knowledge and rational thinking. Despite the fact that AI can make the world a superior spot, AI accompanies its very own issues (Siau, 2018).[6] Take the case of driverless vehicles. Driverless vehicles open another time of innovation progression in transportation. It carries colossal advantage to both the vehicle business and the clients from both financial and reasonable viewpoints. The use of driverless vehicles liberates the drivers from the ordinary assignment of driving and decreases mishap rates (e.g., weariness driving). It driverless vehicles will supplant taxi, truck, and Uber drivers! Artificial intelligence is presently advancing at a quickened pace, and this as of now impacts on the significant idea of administrations inside advanced education.[9] A universities already use an incipient form of artificial intelligence, IBM's supercomputer Watson. This solution provides student advice for Deakin University in Australia at any time of day throughout 365 days of the year (Deakin University 2014)". Regardless of whether it depends on calculations appropriate to satisfy dull and moderately unsurprising assignments, Watson's utilization is a case of future effect of AI on the managerial workforce profile in advanced education. This is changing the structure for the nature of administrations, the dynamic of time inside the college, and the structure of its workforce. A super-PC ready to give bespoke input at any hour is lessening the need to utilize a similar number of managerial staff already serving this capacity. In this regard, it is likewise essential to take note of that machine learning is a promising field of artificial intelligence. While some AI arrangements stay subject to programming, some have an inbuilt ability to learn examples and make expectations. "An example is Alpha Go—a software developed by Deep Mind, the AI branch of Google's—that was able to defeat the world's best player at Go, a very complex board game (Gibney 2017)". We characterize 'machine learning' as a subfield of artificial intelligence that incorporates programming ready to perceive designs, make forecasts, and apply the newfound examples to circumstances that were excluded or secured by their underlying plan.[7]

Role of AI in Education: Many research works demonstrate that in higher education, artificial intelligence is important for teachers and students because application of such technologies encourages more flexible learning solutions for students without any limitation. With the help of artificial intelligence universities around the world are enrolling increased number of students due to increased flexibility and speed. However, its implementation in teaching has also proven relatively expensive but when compared with the other manual work related costs it comes out as economical. Though, use of artificial intelligence in the long run among college students is far more cost effective compared to education being conducted in a more traditional way and tasks done manually. Developed countries of the world have already implemented the process of artificial intelligence successfully. However developing countries are still at a preliminary stage compared to developed countries in artificial intelligence implementation. Weak infrastructure, poor information access, lack of support from institutes, insufficient necessary resources, poor technological skills, these are various obstacles for developing countries wanting to implement artificial intelligence as a tool in higher education. AI is used in education system in grading, in this process teachers can mechanize grading of students for certain fixed set of questions. AI can also be applied in adaptive and individualized learning to fulfill student's requirements. AI assists the teachers to access the understanding capacity of the students on their lectures and empower them to give the appropriate clues for students. It works as a teacher for the students and makes them learn concepts easily. Artificial intelligence driven projects provide supportive input for the both students and educators. It causes the instructors to screen the performance of the students and empower them improve the guidance that they give for the students.[7] AI frameworks in schools have changed the manner in which students find and cooperate with coordinated innovation. This has an impact to change educators as facilitators by giving students intuitive learning knowledge. Students can learn by the experimentation strategy without fear as AI bolsters in their learning and give help to their improvement. AI frameworks procured information will change the manner, in which the schools discover, instruct and bolster understudies. In fact at some places it may even supplant educators in

certain situations. It has turned into a learning buddy the helps students in their learning procedure (Sharma c.).[8] Artificial Intelligence (AI) creates an encouraging environment, especially, can provide a favorable context for students learning characteristics and process. Artificial intelligence consists of all forms of electronically reinforced learning, processing and teaching. The easy and flexible structure of these AI influenced environments empowers learners to accommodate their personal needs in their own time learning. Thus we can say that AI is a well-designed tool that offers a flexible arrangement, collaboration opportunities, and options and control over learning process that can provide learners and teachers with the opportunity to pursue learning process effectively.[9] Also, in AI in higher education institutes is the responsibility of tutors. Using AI teachers can create a learning environment that permits the students to develop a better understanding of content and build associations with instructors and students. Entire globe has completely digitalized. Education has definitely been influenced by the digital world. The fast-paced technology provides individuals in the area to training and learning with unlimited possibilities. With the global interest in computers, artificial intelligence has been focused in learning environment. This AI presents different functions for academic surroundings. Computers have potential advantages to both the instructors and the students. With the arrival of the computer, AI is playing an important role in the higher education institutes. Plenty of programs have been created for various fields or professional classes. The conventional teaching and learning methods usually lack efficient methods of explaining a software and hardware methods. From the viewpoint of AI program, there is more intuitional and clear material, while AI can make up through the use of new scope in teaching in the classroom compared to other mere learning methods.[10] Thus, the emphasis is given on adopting AI in the classroom as well as outside classroom.

Objectives: To find out the relationship between demographic variables of respondents and AI impact on learning.

Hypothesis: Whether the Artificial intelligence (AI) has a significant direct effect on higher educational institutions.

Methodology: A random sample 5 higher education institutes 30 teachers (15 male and 15 female) has been selected from Gaya districts, Bihar. Structured questionnaires were framed and data collection is done with the help of them taking teachers perception as the focal point. To achieve the objectives of the study statistical tools that were applied for analyzing the collected data are frequency tables/graphs. The data was collected on the basis of this research and through both primary and secondary data collection method. For finding out the significance of impact of animation of different genders groups on learning of students the following hypotheses have been established and tested.

Test and tools: Personal Data sheet for administered for teachers and AI tools applied for data administered.

Results: In order to test the hypothesis that male and female teachers would do differ on Artificial intelligence (AI) and has a significant direct effect on higher education institutions. The male and female teachers of the respondent's on Artificial intelligence the interview scheduled were obtained on the response alternatives, cell frequencies and percentage was computed (Table-1) below:

Table-1

Percentage respond to male and female teachers groups in terms of Artificial intelligence and has a significant direct effect on higher education institutions

Groups	N	AI effect on education institutions	%
Male	15	12	80.00
Female	15	14	93.33

Table-3 shows that male and female teachers groups do not differ in terms of Artificial intelligence *and* has a significant direct effect on higher education institutions. The male groups percentage are 80.00% has ask them the direct effect on higher education institutions. While the

female teachers groups 93.33% has direct effect on higher education institutions. The result supports hypothesis. It is clear that in future education policy will directly effect on higher education institutions.

Conclusion: The study was analysis that "Implication of Artificial Intelligence in Higher Education of Bihar State" which helped in further inspecting the role of various modern artificial intelligence methods adopted by universities in successfully enhancing the learning capability. The study also reveals that though the future prospects of artificial intelligence in higher education institutes are very high and it holds lot of possibilities in this field, but the present state of AI in higher education institutes is demanding rigorous investment in terms of funding and time. Thus Institutions that are planning to adopt AI are required to consider a wide variety of factors just to make sure that adoption of AI will become a turning point in their learning methodology to be sure that it will benefit students, teachers as well as the institutes. Adoption and implementation of AI in higher education is late in comparison to the corporate sector, many companies that have already adopted artificial intelligence and are continuing to invest more into AI applications been surely remain ahead of their competitors. Higher education institutes that incorporate AI into all of its programs remain leaders in their field and are already reaping the benefits associated with it. At the end from all the discussion and analysis done in the paper we can now say that AI is impacting higher education institutes in a significant relation. AI expansion is forcing many jobs to become obsolete and thus an entire new skill sets will be required. Higher education institutes are required to train and develop their students to upgrade them to face the challenge of the AI revolution and fight successfully in the AI age.

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Emotional Intelligence and Its Impact on Behavioral Adjustment Among Government Secondary School Students in Gaya District

Shambhu Kumar[*]
Dr. Vijay Kumar Pandey[**]

Abstract

Emotional intelligence (EI) has emerged as a crucial factor influencing students' behavioral adjustment and academic performance. This study investigates the relationship between emotional intelligence and behavioral adjustment among Class X government secondary school students in Gaya District, Bihar. Using a sample of 200 students (100 boys and 100 girls) selected through stratified random sampling from a population of 200 students, this research examines whether emotional intelligence correlates with behavioral adjustment and if gender differences exist in this relationship. The hypothesis stating no significant relationship between emotional intelligence and adjustment in boys was tested. The findings indicate a positive correlation between emotional intelligence and behavioral adjustment, highlighting the importance of EI in adolescent development and education.

Keywords- Emotional Intelligence, Behavioral Adjustment, Adolescents, Secondary School Students, and Gender Differences etc.

Emotional intelligence (EI), often described as the ability to perceive, control, and evaluate emotions, plays an important role in shaping human behavior and interpersonal relationships. Adolescence is a critical period characterized by rapid physical, emotional, and psychological changes. Students at this stage face various academic and social pressures that affect their behavioral adjustment — the capacity to adapt effectively to school and social environments.

Behavioral adjustment is pivotal for academic success and overall well-being. Students with high emotional intelligence are believed to manage stress, control impulses, and maintain positive social relationships better than those with low EI. Understanding the influence of emotional intelligence on behavioral adjustment is especially important for students in government schools, who might face additional socio-economic challenges.

This study aims to analyze the impact of emotional intelligence on behavioral adjustment among Class X students in government secondary schools of Gaya District, Bihar.

Emotional Intelligence- Emotional intelligence, popularized by Salovey and Mayer (1990) and later by Daniel Goleman (1995), refers to the ability to recognize one's own emotions and those of others, motivate oneself, manage emotions in relationships, and handle interpersonal interactions effectively. EI consists of five components: self-awareness, self-regulation, motivation, empathy, and social skills.

Behavioral Adjustment in Adolescents- Behavioral adjustment refers to the ability to modify one's behavior in response to environmental demands and social expectations. It encompasses emotional regulation, social competence, and adaptability. Poor behavioral adjustment often manifests as disciplinary problems, social withdrawal, or academic underachievement.

Chaudhary (2015) was analysed that a strong link between EI and positive behavioral outcomes. Studies by Bar-On (1997) and Petrides et al. (2007) demonstrated that students with higher EI scores show better stress management and social interactions. In India, It was found that emotional intelligence positively influences adjustment among secondary school students.

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Petrides & Furnham, (2001) was studies the Gender Differences in Emotional Intelligence and Adjustment Several studies have explored gender differences in EI and adjustment, with mixed results. Some report girls scoring higher on emotional awareness and regulation (Mayer et al., 2008), while others found no significant gender differences.

Salovey and Mayer (1990) the concept of emotional intelligence (EI) was first introduced as the ability to perceive, use, understand, and manage emotions effectively. Later, Daniel Goleman (1995) popularized EI in educational and organizational contexts, emphasizing that EI plays a vital role in interpersonal relationships and individual success beyond cognitive intelligence.

EI is generally conceptualized through five components (Goleman, 1995):

- **Self-awareness:** Recognizing one's emotions and their effects.
- **Self-regulation:** Managing emotions to adapt to situations.
- **Motivation:** Using emotions to pursue goals.
- **Empathy:** Understanding others' emotions.
- **Social skills:** Managing relationships effectively.

Brackett et al. (2011) was studied the emotional intelligence in adolescents. Adolescents are in a developmental phase marked by emotional upheavals and identity formation. Research by Brackett et al. underscores that high EI in adolescents correlates with better social competence, reduced risk-taking behaviors, and higher academic achievement. Emotional intelligence helps students navigate peer pressure, manage stress, and develop resilience.

Kumar & Gupta, (2013) Behavioral adjustment refers to the ability of individuals to respond adaptively to environmental demands and maintain social and academic functioning. Sharma, (2014) Adjustment problems in adolescents often result in school absenteeism, poor academic performance, and social withdrawal. Positive behavioral adjustment involves emotional stability, social integration, and effective coping mechanisms.

Chaudhary (2015) examined Indian secondary students and concluded that emotional intelligence is significantly associated with better social and emotional adjustment. Several studies reveal a strong positive relationship between EI and behavioral adjustment in students. Bar-On (1997) found that individuals with higher emotional intelligence are better equipped to manage social situations and stress, leading to improved adjustment.

Mayer et al. (2008) was examined that the gender differences in EI. reported that females tend to score higher on emotional awareness and empathy, which may contribute to better social adjustment. However, Petrides and Furnham (2001) argued that gender differences in EI are minimal when controlling for social and cultural factors. This study seeks to add to this ongoing debate by including an equal number of boys and girls.

Gaps in the Literature- While numerous studies examine EI and behavioral adjustment globally, research focusing on government secondary schools in India, especially the Gaya District, is limited. Socioeconomic factors and regional educational challenges might influence these relationships uniquely, justifying this study's focus.

Statement of the Problem- The problem addressed in this study is to analyze the effect of emotional intelligence on behavioral adjustment among boys and girls of Class X studying in government secondary schools of Gaya District.

Objectives-

- To measure the emotional intelligence levels of Class X government secondary school students in Gaya District.
- To assess behavioral adjustment levels of these students.
- To investigate the relationship between emotional intelligence and behavioral adjustment.
- To compare emotional intelligence and behavioral adjustment between boys and girls.

Hypothesis- There will be no significant relationship between emotional intelligence and behavioral adjustment of boys students of Class X in government schools of Gaya District.

Research Methodology- The study follows a quantitative correlational design to explore the relationship between emotional intelligence and behavioral adjustment. Population and samples of All Class X students in government secondary schools of Gaya District (200 students).

A. Sample: 200 students (100 boys and 100 girls), selected using stratified random sampling to ensure proportional representation of gender. Stratified random sampling was used to select equal numbers of boys and girls from various government secondary schools.

B. Tools Used

(i). Emotional Intelligence Scale: A standardized questionnaire measuring self-awareness, self-regulation, motivation, empathy, and social skills. (Eg: Schutte Self-Report EI scale)

(ii). Behavioral Adjustment Inventory: Measures students' ability to adapt to school environment, including social adjustment, emotional adjustment, and home adjustment.

Data Collection Procedure- Permission was obtained from school authorities. Questionnaires were administered to selected students under supervision to ensure clarity and sincerity in responses.

Data Analysis- Data were analyzed using statistical software. Pearson's correlation was used to test the relationship between EI and behavioral adjustment. Independent sample t-tests compared gender differences. The significance level was set at 0.05. Data were analyzed using random technique i.e, Descriptive statistics (mean, standard deviation) summarized the variables. Pearson's correlation coefficient tested the relationship between emotional intelligence and behavioral adjustment. Independent samples t-tests were conducted to examine gender differences. The significance level was set at $p < 0.05$.

Ethical Considerations- Participation was voluntary with informed consent from students and guardians. Anonymity and confidentiality of responses were maintained. The study posed minimal risk and adhered to ethical guidelines of educational research.

In order to test the hypothesis that boys and girls students would do not differ significant relationship between emotional intelligence. The sample consisted of 200 school-going students (100 boys and 100 girls), aged between 12 and 16 years. Emotional Intelligence scores were obtained using validated scales. Mean and standard deviations are presented (table-1) below:

Table-1

Significance Mean difference of boys and girls students emotional intelligence

Groups	Emotional intelligence			t	Sig. Values
	N	Mean	SD		
Boys	100	74.07	10.51	1.04	p>.05NS
Girls	100	78.60	9.82		

Table-1 shows that boys and girls students emotional intelligence on behavioral adjustment df=198. Mean EI score for boys was 74.3 (SD = 10.5), and for girls, it was 78.6 (SD = 9.8). The result does not support hypothesis.

In order to test the hypothesis no.2 that boys and girls students would do not differ significant relationship between behavioral adjustment. The sample consisted of 200 school-going students (100 boys and 100 girls), aged between 12 and 16 years. behavioral adjustment were obtained using validated scales. Mean and standard deviations are presented (table-2) below:

Table-2

Significance Mean difference of boys and girls students emotional intelligence

Groups	Behavioral adjustment			t	Sig. Values
	N	Mean	SD		
Boys	100	74.07	10.51	1.04	p>.05NS
Girls	100	78.60	9.82		

Table-1 shows that boys and girls students on behavioral adjustment df=198. the Mean behavioral adjustment score was 70.2 (SD = 12.1) for boys and 75.1 (SD = 11.3) for girls. The result does not support hypothesis.

Correlation Analysis

EI and behavioral adjustment	N	r. bis	Sig. Values
Boys	100	0.42	p<0.01

For boys, Pearson's r=0.42, p<0.01, indicating a moderate positive and significant relationship between EI and behavioral adjustment.

EI and behavioral adjustment	N	r. bis	Sig. Values
Girls	100	0.48	p<0.01

For girls, Pearson's r=0.48, p<0.01, indicating a slightly stronger positive relationship. The null hypothesis stating no significant relationship between emotional intelligence and behavioral adjustment among boys was rejected based on statistical evidence (p<0.01) df=98.

In order to test the hypothesis no.2 that gender differences of the students groups would differ significant relationship between EI and behavioral adjustment. The sample consisted of 200 school-going students (100 boys and 100 girls), aged between 12 and 16 years. behavioral adjustment were obtained using validated scales. Mean and standard deviations are presented (table-2) below:

Table-2

Significance Mean difference of boys and girls students emotional intelligence and behavioral adjustment

Groups	Behavioral adjustment			t	Sig. Values
	N	Mean	SD		
Boys	100	74.07	10.51	1.04	p>.05NS
Girls	100	78.60	9.82		

Table-5 shows that boys and girls students EI on behavioral adjustment df=198. t-tests showed that girls scored significantly higher than boys in both EI (t = 3.75, p < 0.01) and behavioral adjustment (t = 3.24, p < 0.01). The result support hypothesis.

Discussion- The results of the study reveal a significant positive relationship between emotional intelligence and behavioral adjustment among government secondary school students. These findings align with earlier studies (Bar-On, 1997; Chaudhary, 2015), reinforcing the idea that students who can effectively manage their emotions are better adjusted socially and behaviorally. The gender differences suggest that girls tend to have higher emotional intelligence and better behavioral adjustment, which may be attributed to socialization patterns encouraging emotional expressiveness and social sensitivity among girls. The rejection of the null hypothesis for boys emphasizes the critical role EI plays irrespective of gender. This points toward the necessity for educational programs that focus on enhancing emotional competencies among adolescents to improve their school adjustment and academic outcomes.

Conclusion- This study establishes the positive impact of emotional intelligence on behavioral adjustment in government secondary school students in Gaya District. Emotional intelligence is a significant predictor of how well students adjust behaviorally to the school environment. The findings underscore the importance of incorporating emotional intelligence training in school curricula to promote students' holistic development.

Recommendations- Schools should integrate emotional intelligence development programs into the educational framework. Teachers and counselors should be trained to identify and support students with low emotional intelligence. Further research can explore the impact of EI interventions on academic achievement and mental health.

Limitations- The study focuses only on government schools in Gaya District, limiting generalizability. Data was collected through self-report questionnaires, which might include biases. The study did not consider socio-economic and cultural variables that might influence emotional intelligence and adjustment.

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A Comparative Study of Mental Health and Stress among Divorce and Non-Divorce Women

Mansi Singh*

Abstract

The present study was undertaken mental health and stress among divorce and non- divorce women. As a result, measurements and comparisons of the relationships between stress and mental health were made systematically for both divorce and non- divorce women. The Mental Health Questionnaire (MHQ) and the Perceived Stress Scale (PSS) were given to 75 divorce and 75 non-divorce women in Bihar who were available for selection. The data were analyzed using the t-test and product-moment correlation (r). The following are the outcomes: There was a substantial difference seen in the mean mental health ratings of divorce and non- divorce women. There was a discernible difference in the mean stress ratings of divorce and non- divorce women. A significant positive relationship between mental health and stress of divorce women was obtained. A significant positive relationship between mental health and stress of non-divorce women was work out. The goal of the study is to increase the awareness of divorce women about the many types of stressors and coping mechanisms that can help them better manage their stress and deal with mental health issues.

Key words: Mental Health, Stress, Divorce women& Non- divorce women

Introduction:

Now a day, divorce is one of the most controversial topics in societies and its rate has increased markedly in most countries. Some problems such as deviations, crimes, and suicides can be seen following the urbanization, modernity and progress in technology. Divorce is another consequence of these changes that can be related to structural transformations of society and has considerable effects on people. Many researches in Iran and other countries indicated some symptoms such as anxiety, depression, hopelessness, irresponsibility, and stress in families in which divorce has occurred. These symptoms in severe cases can lead to mental disorders such as severe depression, hysterical states, and even paranoia (Vakili, et al., 2007).

Divorce is a threat for basic needs and leads to anxiety as a natural response to critical status. In divorced families, children fear being abandoned, changing in life conditions, shame, and sin; they concern about later separation and fear later unknown problems (Legrand,1990; Millar.,2006). Also there is the possibility of anxiety and depression for each of parents after divorce. On the other hand, divorce has profound effects on economic, social, and psychological conditions of men and women and it can also affect the whole of society. Some researches indicate that in divorced, single, separated and widowed men and women, mental disorders are more common than married people. Also there is the higher rate of depression in divorced people relative to widowed ones (for example due to death of spouse) (Mokhtari et al., 2013). Some studies have reported a positive relationship between divorce and increased rate of suicide (Inoue, 2009; Chuang & Huang ,2007). Also according to investigations, there is the greatest likelihood of suicide (1.5 to 3 times) in divorced men and women in comparison with married people (Corcoran & Nagar, 2010). Carr et al. and Koball and coworkers showed a reduction in cardiovascular disease and increase in mental health of married people relative to single and divorced ones (Koball et al., 2010). Liu (2012), Waite and Hughes (2009) and other researchers believe that the physical and psychological health may deteriorate, at least temporarily, following marital disruption and divorce (13-14).

Mental Health:

Mental health is a crucial aspect of one's overall well-being, indicating that they are in a state of cognitive and emotional balance, and free from mental disorders. Positive psychology and holism emphasize the importance of mental health as the capacity to find joy in life, maintain a healthy balance in

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all areas of one's existence, and actively work towards strengthening one's psychological resilience. Therefore, prioritizing mental health in our lives is essential to lead a fulfilling and happy life. On the other hand, a mental disease or mental illness is defined as an uncontrollably occurring psychological or behavioural pattern that a person encounters and is thought to result in misery or incapacity that is not expected as part of everyday development or culture. Many factors, such as the following, may contribute to this discomfort or impairment: One of the biggest determinants of mental health and sickness is a person's gender. Compared to gender-specific characteristics and processes that promote and preserve mental health and foster resilience in the face of stress and adversity, the morbidity associated with mental illness has garnered a great deal more attention.

Indian concept of mental health:

In Indian culture, mental well-being is viewed as including both physical and mental health. Health is not just the absence of disease; it is also defined as well-being in its widest meaning. Biological, sociocultural, psychological, economic, and spiritual elements interact intricately to determine one's level of well-being. For traditional Indians, being well is experiencing happiness or a sense of bodily and spiritual well-being (prasanmantanaendriyamanh) (Dalal, 2011, Sinha, 1990). Verma (1998) asserts, quoting from Bhagvad geeta, that human well-being develops on three levels: cognitive, conative, and emotive. The cognitive level discusses the ego and its attachments, desires, and lusty tendencies (Asakti). Well-being at the conative level is derived from carrying out one's karma, or responsibility. People internalise a belief system that shapes the meaning of health and sickness because they are part of a sociocultural environment. It is assumed that women are positioned at the cognitive level by adopting gender viewpoints; nevertheless, at the emotive level, Indian women are seldom envisioned, therefore this area also becomes defined by male perspective. Boys in a family are ready to face obstacles in life with their individuality, recognition, and financial independence, but females are simply ready to conform to the ideals of womanhood, which include modesty, selflessness, and putting the needs of others before their own. In conclusion, women are often considered passive individuals, and mental health is defined as adverse.

Good health is more than just the absence of disease or impairment. According to the World Health Organisation (WHO), it encompasses full physical, mental, and social well-being. Mental health has a significant impact on our lives, including our habits, hobbies, enjoyment levels, and performance levels. Unfortunately, mental strain is a leading cause of mental health issues that can arise due to various circumstances. However, by strengthening our minds, we can overcome such challenges. For instance, women who take care of their mental health can handle their family responsibilities with ease and raise their children well. They can identify obstacles and work to overcome them, plan for the future, and socialize confidently. Therefore, let us all prioritize our mental health to enjoy all the benefits that come with it. Practically speaking, one's ability to make a sufficient social and emotional adjustment to their surroundings might be seen as an indicator of their mental health. In other words, it's the capacity to acknowledge and embrace life's facts. Women who are expected to satisfy both professional and household responsibilities while working outside the home often experience higher levels of stress due to the conflicting demands of their personal and professional lives. In the end, this causes stress for the person, which has an adverse effect on their mental health.

Stress:

The father of stress researchers, Selye (1956), presented the notion of stress to science for the first time. The natural sciences provided the inspiration for the idea. The Latin term "stringers" is where it came from. He makes the observation that all noxious stimuli cause severe tissue damage. Multiple bodily organs are impacted by the stressor, which is the precursor stimulus that causes stress. The body's defence system kicks in right away to assist the body cope with the stressor. The body essentially generated alarms and developed defence mechanisms against the "enemy." However, if an individual's environment persists, intense exposure and resistance deplete the body's energy or adaptation response, and fatigue sets in as a result of excessive "wear and tear" on the body and mind, this negatively impacts the individual's physical, emotional, and mental health and lowers their capacity to perform well in their line of work. Stress is an inevitable and pleasant part of life. Stress arises from a significant disparity between an organism's ability to respond to its environment and its need for resources. "A forced pressure exerted

upon a person who resisted the forced pressure in his effect to maintain his original state in the process suffers the same degree of discomfort" is the definition of stress in physical science.

According to Lazarus and Folkman (1984) and Chrousos (2009), stress is defined as the real or perceived difference between a person's total capacity to adapt to external pressures and those needs that are deemed essential for survival. Humans are driven to become adapted because, in order to exist, they must continually adjust to the demands of a changing environment. Stress may be thought of as a sequence of uncomfortable bodily sensations and psychological responses that often occur when people perceive threats to their health that they might not be able to avoid.

The cognitive-phenomenological approach offers a novel interpretation of stress by prioritising goal-directed conduct, the experiential aspect of human existence, and the intentionality of human endeavour. People experience stress when they find themselves in situations they cannot control. Symptoms of stress are our bodies' way of telling us that we are taking on more than is healthy. varied people have varied reactions to stress. According to their personality and circumstances, each person may exhibit a distinct stress indicator or symptom. Stress affects our physical and mental health, and too much stress can lead to illness, according to widely held beliefs.

Rational of the Study:

After conducting a thorough review of existing research, it was found that while many studies have been conducted on divorce women, the majority of them have focused on divorce conditions, such as wage discrimination, workplace sexual harassment, balancing work and home obligations, and the overall status of women in the labor force. Unfortunately, women continue to face various challenges in both their personal and professional lives, which can cause significant stress for divorce women. In India, divorce women face numerous psychological challenges that require a deeper understanding of their stress levels and mental well-being. However, the scarcity of studies addressing these issues highlights the urgent need for more research in this area. In light of this, a new study will be conducted to determine the significant differences in mental health and stress, as well as the correlation between these two variables in divorce and non- divorce women. The study will recruit divorce women from various location in Bihar and non-divorce women from Bihar. The study aims to shed light on the stress and mental health of both divorce and non- divorce women. By participating in this study, you can help us better understand the unique challenges faced by divorce women in India and contribute to creating a more supportive and positive work environment for all women.

Hypotheses:

1. There would be significant difference between mental health of divorce and non- divorce women.
2. There would be significant difference between stress of divorce and non- divorce women.

Methods:

The goal of this study was to examine women's stress levels and mental health in two distinct groups: those who divorce and those who do not divorce.

Research design:

In the present study a two groups design (divorce women and divorce women) and correlational design will be used. Present study is examine the difference between mental health, and stress of divorce women and non- divorce women separately. Therefore, two group design and correlational research design were used in this research.

Participants:

A total of 150 women from various districts in Bihar were studied. There were 75 divorce women and 75 non- divorce women. Participants ranged in age from 25 to 45 years old. The respondents for the study were chosen using an availability sampling approach. The divorce womenwere drawn from Bihar.

Measure:

In this study, stress and mental health were assessed using two different tools. The Mental Health Questionnaire, which was originally developed by Srivastava and Bhatt (1973), was utilized to evaluate the general state of mental health among the participants. The complete scale is available in Hindi as MHQ-48. A 3-point rating system was used for some items, while a 2-point scale was used for others. A low score on the questionnaire indicates normal mental health, whereas a high score suggests the presence of mental health issues. Using the split-half approach, the entire test showed a reliability value of 0.70. Reliability

coefficients for each of the subscales were 0.88 for OBS, 0.76 for PHO, 0.72 for SOM, 0.68 for DEP, and 0.66 for HYS.

In contrast, Cohen et al. (1994) created the Perceived Stress Scale (PSS). This tool has ten statements with a four-point rating system. A total score ranging from 0 to 40 is calculated by reverse scoring the four favourably phrased items and then adding all of the scale elements. A higher score indicates greater levels of perceived stress. PSS-4 is based on psychometric concepts and is thought to be valid. However, the restricted four-item shortened scale has poor internal reliability (r=.60). It gives a less accurate picture of subjective stress levels than bigger scales. Shorter time intervals have the highest test-retest reliability and predictive validity. The 10- and 14-item self-report questionnaires are reliable and valid (r=0.85).

Results:

Table no. 1: Means, SDs, and SED and results of t-ratio of divorce **women and non-** divorce **women on stress.**

Variables	Group	N	Mean	SD	SED	T	*P*
Stress	Divorce women	75	26.40	4.223	0.572	9.359	<.001
	Non- Divorce women	75	20.47	2.601			

From the table1 it was obvious that the mean of the overall scores on the stress of divorce women was higher than non- divorce women. The mean score of divorce women was 26.40, whereas, for the non-divorce women group it was 20.47. Similarly, the standard deviation value of the divorce women group were 4.223 and non-divorce women group it was 2.601. The difference in the mean scores for the two groups were satisfactory and it was found to be statistically significant (t = 9.359).

Table no. 2: Means, SDs, and SED and results of t-ratio of divorce women and non-divorce women on mental health.

Variables	Group	N	Mean	SD	SED	T	*P*
Mental Health	Divorce women	75	42.11	3.772	0.688	17.713	<.001
	Non- divorce women	75	39.04	4.726			

From the table 2 It was found that divorce women had greater overall scores on mental health compared to non-working women.The mean score of divorce women was 42.11, whereas, for the non-divorce women group it was 39.04. Similarly, the standard deviation value of the divorce women group was 3.772 and non-divorce women group it was 4.726. The difference in the mean scores for the two groups were satisfactory and it was found to be statistically significant (t = 17.713). According to the norms of the scale, a higher score on mental health means they face more mental health-related problems than those with a lower score.

Discussion and Conclusion:

It appears that divorce women had higher levels of stress than non- divorce women, based on the data presented in Table No. 1. It shown that a divorce woman who works full-time may have elevated levels of stress and anxiety as a result, especially if her family does not provide support. The absence of familial support causes issues for Divorce women. Divorce women are facing the changing behavior of family members and don‘t have proper time for self-care. Therefore the increasing of social supports for more vulnerable women is required, because the various consequences of divorce and inadequate supporting plans can lead to serious social and mental damages in target group. Since more educated women have more profound understanding and different attitudes about life conditions, they are exposed to more severe mental health disorders. Families and social organizations can provide supporting programs for these persons to reduce their challenges and mental health problems and change their views for decreasing some concerns.

Thus the hypothesis presuming difference in the extent of stress among the two different groups (divorce women and non- divorce women) of women was found confirmed. On the other hand, the results of Table 2 indicate a different thing according to the findings: non-divorce women had fewer mental health problems than their divorce women counterparts. It reveals that the mental health of divorce women is significantly worse than that of women who are not divorced. As we know that divorce women are forced

to deal with the challenges of role conflicts since they are simultaneously subjected to the numerous demands of both the home and the outside world. Because of the prevalent cultural norms and values, they are expected to carry out certain responsibilities at home in addition to the biological roles that they are designed to carry out. They are expected to carry out the responsibilities, duties, and specific commitments that are associated with their work simultaneously. Obtained results also got support by the findings of the study conducted by Dudhatra and Jogsan (2012), the study indicates that divorce women are more depressed and mentally disturbed as compare to non- divorce women. They have more work pressure and more responsibilities as compared to non- divorce women. Thus the hypothesis presuming difference between the two different groups (divorce and non- divorce) of women on mental health was found confirmed.

Conclusion:

The study results were analyzed in the context of the socio-cultural conditions and environments of the companies. The discussion highlights that divorce women experience significantly higher levels of mental health issues than non- divorce women. This is mainly due to the societal expectations and consciousness that place a greater burden on divorce women, as well as the work environments of the companies. Similarly, the study also found that divorce women experience significantly higher levels of stress compared to non- divorce women. This highlights the need for companies to prioritize the mental health and well-being of divorce women, and to create an environment that is conducive to their success. By doing so, companies can help divorce women to thrive, while also benefiting from their unique skills and perspectives.

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Fractional Quantum Hall Effect Analogies and Differences at Zero Magnetic Fields in Graphene Quantum Dots

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Abstract

It is explored how the degenerate manifold of midgap edge states in quasi circular graphene quantum dots featuring zig-zag edges sustain, in the absence of magnetic fields, intensely linked many-body dynamics similar to the fraction a lquantum Hal leffect (FQHE),well-known from the scenario of semiconductor hetero structures under strong magnetic fields. Systematic exact-diagonalization (EXD)numerical investigations are provided for the first timefor5 ≤ N≤ 8 fully spin-polarised electrons and for total angular momentum within the range of N(N−1)/2 ≤ L≤ 150. Here provided a derivation of a rotating-electron-molecule (REM) type wave function grounded in the methodology previously discussed [C. Yannouleas and U. Landman, Phys. Rev. B 66, 115315 (2002)] within the context of the FQHE in two-dimensional semiconductor quantum dots. The EXD wave functions are evaluated alongside FQHE trial functions from the Laughlin and the derived REM categories. It is discovered that a variational extension of the REM provides a more accurate representation for all fractional fillings compared with the Laughlin functions (encompassing total energies and overlaps), a reality that signifies the robust azimuthal positioning of the boundary electrons. Unlike the multiring configurations of electrons within circular semiconductor quantum dots, the graphene REMs demonstrate consistently a solitary (0, N) polygonal-ring molecular (crystalline) arrangement, with all the electrons concentrated on the brink. Disturbances in the zig-zag boundary condition at the circular edge function effectively as impurities that trap the electron molecule, resulting in single-particle densities exhibiting broken rotational symmetry that directly represents the azimuthal positioning of the edge electrons.

Key words :- graphene ,momentum ,crystal, energy, semiconductor

Introduction :-

Following the discovery of the fractional quantum Hall effect (FQHE) in two-dimensional (2D) semiconductor heterostructures under conditions of a strong perpendicular magnetic field (B), effects linked to intensely related electrons in the lowest Landau level (LLL) have drawn considerable and ongoing interest.[2–13]. Subsequent interest in finite 2D electronic systems, such as semiconductor quantum dots (QDs) in strong B fields, resulted in the examination of an alternative category of analytic trial functions referred to as rotating electron (or Wigner) molecules[8–11](REMs o RWMs). One benefit of the REMs is that, although they show favorable total angular momenta, they directly include the molecular (crystalline) structures that dominate the anisotropicpair correlation functions uncovered vianumerical exact-diagonalization research for a limited number of electrons in strong B within a disk structure. The original derivation of the REM trial functions produced a surge of theoretical engagement regarding the inquiry regarding which category of trial functions (or their combinations) is best suited for characterizing the correlated many-body physics in the LLL of a few electrons N.[7,9–13]. Additionally, experimental progress in the area of ultracold confined neutral atoms has seen significant theoretical engagement concerning the character of correlated states in the LLL that are created while the trap rotates quickly; refer to, for example, Refs. [14–19].

Recent advancements in the production of innovative materials, and specifically in the isolation and management of an individual graphene layer, [20–23] presents some of the most promising

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substances for future, post-silicone, compact electronics[24,25] (occasionally referred to as nano electronics). This anticipation is grounded on the two-dimensional nature of graphene, where the electrons are fundamentally restricted in the spatial dimension perpendicular to the graphene plane. Manufacturing at the nanoscale device components for application in electronics, spintronics and information handling, including single-electron transistors, quantum point contacts, and quantum dots, would necessitate extra restriction in the remaining two areas measurements. Nonetheless, to accomplish the sought-after extra confinement, methods (founded on electrostatic gating) designed for the formation of QDs in semiconductors (like GaAs) is not applicable due to the distinct electronic configuration of graphene. The challenge emanates from the relativistic, Dirac-like characteristics of the quasi particles with low energy in graphene. In particular, the gapless nature of the electrons in graphene[26] allows them to penetrate unimpeded through a high and wide potential barrier.[27] This phenomenon, which is known as the Klein paradox,[28,29] is in fact not a paradox but a consequence of the relativistic character of the electrons, with a sufficiently high potential being repulsive for electrons but attractive for positrons, thus resulting in positron states inside the barrier which can be matched to the electronic continuum states outside, consequently resulting in perfect transmission through the barrier; the underlying property of the Dirac equation is known as the charge-conjugation symmetry boundary[36,37]. A recent publication [38] highlighted that the single-particle edge states linked to circular graphene dots with zig-zag boundary conditions, in the absence of an external magnetic field, exhibit degeneracies and quantum numbers that closely resemble the manifold of single- particle states forming the well-known LLL in semiconductor hetero structures under high magneti fields. Additionally, the numerical analyses presented in Ref[38],which examined rather limited ranges of electron counts (i.e., $2 \leq N \leq 5$)and total angular momenta (i.e., $N(N-1) \leq L \leq 60$), indicated that employing quantum-liquid-type trial functions concerning the graphene LLL (gd-LLL) might be less effective than utilizing Wigner-crystal-type ansatzes.

In this paper, we derive analytic REM trial functions appropriate for the gd-LLL. By introducing a single variational parameter, we demonstrate numerically (through systematic comparisons with EXD calculations) that the variational variant of the REM (referred to as vREM) substantially outperforms the Laughlin trial functions (as well as the ansatz of Ref. 38) for all value so fractional fillings with in the expanded angular-momentum range$N(N-1)/2 \leq L \leq 150$, and for all of the following larger numbers of electrons N = 5, 6, 7 and 8.

Lowest and au level for circular graphene dots- Single-Particle Edge States

Structure of graphene. For circular symmetry in graphene dots, Hamiltonian is given in polar coordinates by

$$H = \hbar v_F \begin{pmatrix} H_+ & 0 \\ 0 & H_- \end{pmatrix}, \qquad (1)$$

where

$$H_s = \begin{pmatrix} 0 & e^{-is\phi}\left(-i\partial_r - \frac{s}{r}\partial_\phi\right) \\ e^{is\phi}\left(-i\partial_r + \frac{s}{r}\partial_\phi\right) & 0 \end{pmatrix}, \quad (2)$$

Where υ_F is the Fermi Velocity, and s = ± specifies the degenerate in energy valleys for the two bands formed at the K and K′ points. . The index s can be considered as a "pseudospin", which creates fourfold degeneracy when the spin degree of freedom is also considered. Hamiltonian general solution in Eq. (2) is a two component vector of the form

$$\begin{pmatrix} u_s^A(r,\phi) \\ u_s^B(r,\phi) \end{pmatrix}, \qquad (3)$$

Here the focus is on the special edge states with zero energy E=0. These E = 0 states are eigen functions of Hs under the assumption that the graphene boundary exhibits an uninterrupted zigzag edge.

Name lyone of the A and B components is every where zero (both on the boundary and inside

the dot) and the two valleys + and − are decoupled even when the two body Coulomb interaction is considered.

Given that the single-particle angular momentum $l \geq 0$ is required to ensure normalizability, the manifold of such model edge states constitutes a collection of degenerate states akin to the lowest Landau level (LLL), which is well-known in the context of 2D semiconductor devices subjected to very high magnetic fields with B. We shall refer to the manifold $l \geq 0$ as the graphene-dot lowest Landau level (gd-40 of degenerate edge states LLL). The primary distinction, aside from the normalization constant as noted in Eq. (3) of Ref. 8, between these two scenarios is that the single-particle states in the conventional LLL display an additional Gaussian multiplicative factor exp(−r 2/4Λ2 B), where ΛB = ħc/(eB) represents the magnetic length. This Gaussian factor is absent from the formulation of the edge states in Eqs. (4) and (5); rather, one finds

Exact Diagonalization and Two-Body Coulomb Matrix Elements

For a circular graphene QD comprising N electrons in the gd-LLL, the many-body Hamiltonian Ή comprises only the two-particle interelectron Coulomb repulsion, i.e.,

$$\mathcal{H} = \sum_{i=1}^{N} \sum_{j>i}^{N} \frac{e^2}{\kappa r_{ij}} \ , \tag{6}$$

where κ is the dielectric constant and r_{ij} denotes the relative distance between the I and j electrons.

The REM wave functions $\Phi^{REM}_{N,L}$ derived in the previous section will be compared to the EXD ones $\Phi^{EXD}_{N,L}$ that a resolutions of the exact diagonalization of the hamiltonian (19) in the many-body Hilbert space spanned by the Slater determinants

$$\Psi_L^I[z] = \frac{1}{\sqrt{N!}} \begin{vmatrix} \psi_{l_1}(z_1) & \dots & \psi_{l_N}(z_1) \\ \vdots & \ddots & \vdots \\ \psi_{l_1}(z_N) & \dots & \psi_{l_N}(z_N) \end{vmatrix}, \tag{7}$$

Where the single particle functions ψl(z) are given by the edge state so f Eq.(6) and the index I counts the arrangements $0 \leq l1 < l2 < \ldots < lN$ with $l1 + l2 + \ldots + lN = L$.

Namely, $\Phi^{EXD}_{N,}$ is written as

$$\Phi^{\mathrm{EXD}}_{N,L}[z] = \sum_I C_L^I \Psi_L^I[z], \tag{8}$$

And the exact diagonalization of the many-body Schr¨odinger equation yields the co efficients CLI and the EXD eigen energies EN,LEXD.

$$\mathcal{H}\Phi^{\mathrm{EXD}}_{N,L}[z] = E^{\mathrm{EXD}}_{N,L}\Phi^{\mathrm{EXD}}_{N,L}[z] \tag{9}$$

The matrix elements hΨIL|H|ΨJ Li between the basis determinants are calculated using the Slater rules43 and taking into account that, in the gd-LLL, the many-body hamiltonian has contributions from the Coulomb interaction only, i.e.,

$$\mathcal{H} = \sum_{i<j} \frac{e^2}{|z_i - z_j|}. \tag{10}$$

Naturally, one also needs the two-body matrix elements of the Coulomb interaction in the basis formed out of the single-particle edge states. These matrix elements are given through appropriate analytic expressions. Indeed by defining

$$M(m,n,k) = \int dz_1 \int dz_2 \; \psi^{\dagger}_{m+k}(z_1)\psi^{\dagger}_{n-k}(z_2)\frac{1}{|z_1 - z_2|}\psi_m(z_1)\psi_n(z_2), \tag{11}$$

one finds

$$M(m,n,k) = \frac{1}{R}\frac{2\pi\mathcal{C}\sqrt{\pi}}{(2m+2n+3)}\frac{\Gamma\left(k+\frac{1}{2}\right)}{\Gamma(k+1)} \times \left[\frac{\Gamma(n+1)}{\Gamma(n+2)}\,{}_3F_2\left(\begin{matrix}1/2,\ k+1/2,\ n+1\ ;\ 1\\ k+1,\ n+2\end{matrix}\right) + \frac{\Gamma(m+k+1)}{\Gamma(m+k+2)}\,{}_3F_2\left(\begin{matrix}1/2,\ k+1/2,\ m+k+1\ ;\ 1\\ k+1,\ m+k+2\end{matrix}\right)\right] \tag{12}$$

where ${}_3F_2$ is the generalized hypergeometric function[44] at the point $x = 1$, Γ is the Gamma function, and

$$\mathcal{C} = \frac{\sqrt{(m+k+1)\ (n-k+1)\ (m+1)\ (n+1)}}{\pi^2}. \tag{13}$$

Numerical Results

A. EXD total energies

In Fig. 1, the systematic EXD total energies for edge electrons ranging from N = 5 to N = 8 as a function of the total angular momenta L (spanning a wide range of $0 \le L \le 150$) is presented. This extensive range of L and the inclusion of N greater than 5 electrons were not achieved in a recent publication.

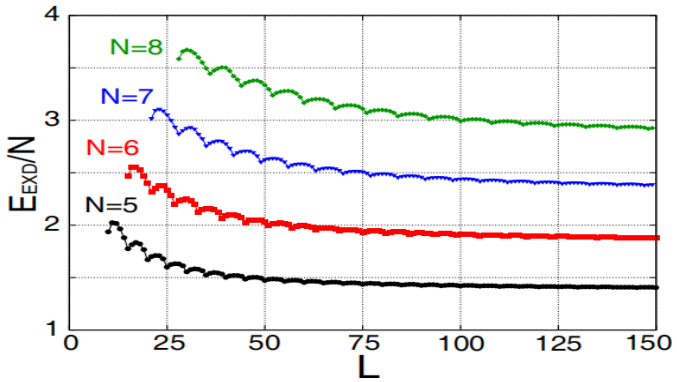

FIG. 1: Exact diagonalization ground-state energies in the graphene-dot LLL for N = 5, 6, 7, 8 electrons, as a function of the total angular momentum L. Observe the appearance of cusp states of enhanced stability at the magic angular momenta L= N(N − 1)/2 + kN, k = 0, 1, 2, . . ., a fact that indicates formation of Wigner molecules having a single polygonal-ring configuration (0,N).Energies in units of e2/(κR), with κ being the graphene dielectric constant and R the radius of the quantum dot. For L → ∞, the ground state energies approach asymptotically the classical electrostatic energy [see Eq. (27)]

For the fully polarized spins discussed here, the lowest total angular momentum is given by $L_0 = N(N-1)/2$, similar to the scenario in semiconductor quantum dots. In addition, akin to the situation

with semi conductor quantum dots, the overall energies tend to decrease on average as L increases. In addition to this average tendency, significant scillations with a period of N can be observed. These oscillations indicate that the states characterized by L = L0 + kN, where k = 0,1, . . ., are the most energetically favorable within their local vicinity. Adopting terminology from the literature on semiconductor quantum dots, we refer to these configurations in graphene quantum dots as cusp states, and the associated total angular momenta (i.e., L = L0 + kN) as magic angular momenta. It is widely recognized that cusp states evolve into fractional-quantum- Hall-effect (FQHE) states as the system approaches the thermodynamic limit (N → ∞), with the associated fractional filling factor represented by ν = L0/L.

B. EXD densities and pair correlations

The EXD eigen functions conserve the total angular momentum and the corresponding electron densities are circularly symmetric. This property "conceals" the presence of the Wigner molecule. The crystalline structure, however, is present in the intrinsic frame of reference of the electron molecule, and it can be revealed through the use of the fully anisotropic pair correlation function P(z, z0), defined as

$$P(z, z_0) = \langle \Phi^{\mathrm{EXD}}_{N,L} | \sum_{i \neq j} \delta(z - z_i)\delta(z_0 - z_j) | \Phi^{\mathrm{EXD}}_{N,L} \rangle. \quad (14)$$

P(z, z0) is often referred to as the conditional probability distribution (CPD), since it is proportional to the probability of finding an electron at z under the condition that another one is situated at the point z0 (the so called fixed, or observation, point).

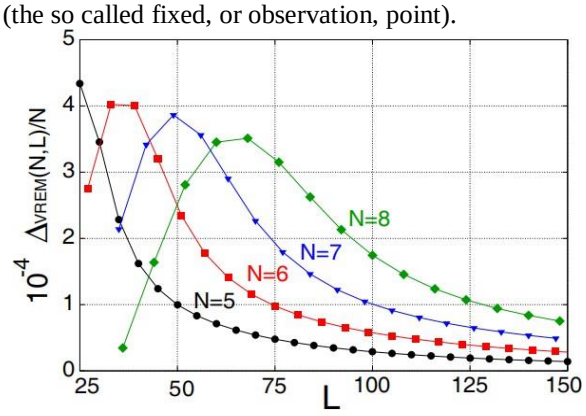

Fig.2 : Relative error (per electron) of the vREM ground state energies as a function of the total angular momentum L.

C. EXD versus Laughlinwave functions

It is interesting to compare the accuracy with which the vREM wave functions approximate the EXD ones with that of the Laughlintrial functions. The Laughlin wave functions are restricted to the so called main (odd)fractions ν = 1/(2m + 1)and have played an important role in the FQHE literature of the extended two dimensional electron gas in semiconductor hetero structures. Their form is

$$\Phi^{\mathrm{Laughlin}}_{N,L}[z] = \prod_{1 \leq i < j \leq N} (z_i - z_j)^{2m+1}, \quad (15)$$

where the Gaussian factors are missing due to the differences in the single-particle states between semiconductor and graphene quantum dots; m = 0, 1, 2, ...

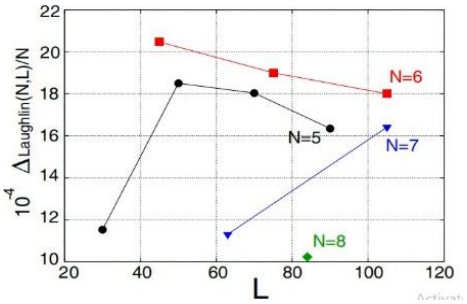

Fig.3 : Relative error (per electron) of the Laughlin energies as a function of the total angular momentum L.

In Fig. (3), we display the relative error, Δ Laughlin(N,L)=(EN, LLaughlin−EN,LEXD)/EN,L EXD, of the Laughlin total energies with respect to the ground state EXD ones as a function of increasing total angular momentum L. The Laughlin relative errors are substantially larger (on the average by a factor of 5) than the vREM ones [see Fig. 4]; this is the case even for the celebrated ν = 1/3 fractional filling.

In addition, the Laughlin overlaps $S_{Laughlin}=<\Phi^{EXD}_{N,L}|\Phi^{Laughlin}_{N,L}>$exhibit an unsatisfactory performance compared to that of the vREM overlaps, that is: (i) they become steadily smaller as the angular momentum increases, and (ii) even for ν = 1/3, they are smaller than the corresponding vREM overlaps in all instances studied here, i.e., N = 5 − 8 electrons in the graphene dot. We conclude that the Laughl in functions fail to capture the case of the gd-LLL, while the vREM functions offer an appropriate approximation for graphene QDs.

Summary

The manifold of degenerate midgap (zero-energy) edge states in circular graphene quantum dots with zig-zag boundaries resembles, under free-field conditions, 50 the celebrated lowest Landau level, familiar from the case of semiconductor hetero structures in high magnetic fields. The effect of e−einteractions in this graphene-LLL were systematically investigated and were found to generate many-body strongly correlated behavior that exhibits many similarities with the fractional quantum Hall effect. Numerical exact-diagonalization studies were presented for $5\leq N\leq 8$ fully spin-polarized electrons and for total angular momenta in the range of N $(N-1)/2\leq L\leq 150$. Moreover, we presented a derivation of a rotating-electron-molecule type wave function based on the methodology introduced earlier8 in the context of the FQHE in two-dimensional semiconductor quantum dots. The EXD wave functions were compared with the derived rotating-electron-molecule and other suggested FQHE trial functions, like the Laughlin function and the Wigner-crystal ansatz of Ref. 38. It was found that a variational extension of the REM offers a better description for all fractional fillings compared with that of the Laughlin and Wigner-crystal ansatz functions (including total energies and overlaps). The success of the REM function reflects the importance of strong azimuthal localization of the edge electrons in graphene quantum dots.

The variational REM functions were derived through the use of a two-step method: (i) first a mean-field-type single Slater determinant constructed out of Nlocalized electron or bitals (that break circular symmetry) was considered; this determinant describes the finite analog of a classical static Wigner-crystal, and (ii) a multideterminantal wave function was generated through the subsequent application of projection techniques that introduced azimuthal fluctuations and restored the circular symmetry and good total angular momenta. In contrast with the multiring arrangements of electrons in circular semiconductor quantum dots, we found that the graphene REMs exhibited in all instances a single (0, N) polygonal-ring molecular structure. Disruptions in the zig-zag boundary condition along the circular edge behave effectively as crystal-field effects that pin the electron molecule,

yielding single-particle densities with broken rotational symmetry that portray directly the azimuthal localization of the edge electrons.

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Impact of Parent Child Relationship on Self Concept and Self Confidence among Children

Dr. Noori Jamal*

Abstract:

The present study investigated the impact of parent–child relationship quality on children's self-concept and self-confidence. Parenting dimensions, including warmth/acceptance, autonomy support, and hostility/neglect, were examined to determine their differential influence on these psychological outcomes. A survey-based correlational design was employed with a sample of 136 children aged 9–14 years, randomly selected from three schools in Chapra, Bihar. Children's perceptions of parenting were assessed using the Parental Acceptance-Rejection Questionnaire (PARQ), while self-concept and self-confidence were measured using Tripathi and Tripathi's Self-Concept Scale and Sinha's Self-Confidence Scale, respectively.

Descriptive analyses revealed moderate-to-high perceived parenting scores, moderately positive self-concept, and moderate-to-high self-confidence. Comparative analyses indicated that children with high self-concept and high self-confidence reported significantly higher perceived parenting scores than their low-scoring counterparts. Pearson correlation analyses demonstrated that parental warmth was most strongly associated with self-concept ($r = .52$, $p < .001$), whereas autonomy support showed the strongest correlation with self-confidence ($r = .50$, $p < .001$). Hostility/neglect exhibited negative correlations with both self-concept ($r = –.44$, $p < .001$) and self-confidence ($r = –.47$, $p < .001$).

Implications of this study highlight the importance of parental warmth and autonomy support in enhancing children's psychological development. The findings are relevant for parents, educators, and mental health professionals aiming to promote self-concept and self-confidence in children. Future research may explore longitudinal effects, intervention strategies, and additional socio-cultural factors that influence the parent–child relationship and its impact on children's psychological outcomes.

Keywords: parent–child relationship, self-concept, self-confidence, warmth, autonomy support, children

Introduction

One of the most important and long-lasting relationships in human development is that between a parent and kid. It gives kids the first social context in which they can learn about the world, other people, and themselves. Parent-child relationships that are warm, encouraging, and communicative help children develop adaptive coping mechanisms, good identity construction, and emotional security. On the other hand, partnerships that are marked by conflict, neglect, or excessive control may prevent children from developing a stable sense of self and undermine their self-assurance.

Self-concept and self-confidence are two important psychological variables that are impacted by the nature of the parent-child connection. A child's structured view and assessment of themselves in areas like academic aptitude, social skills, and self-worth is referred to as their self-concept. Motivation, resilience, and interpersonal effectiveness are all based on a positive self-concept. Although they are connected, self-confidence more precisely describes a child's faith in their ability to complete tasks and overcome obstacles. Self-confidence indicates "what I can do," whereas self-concept reflects "who I am." For emotional adjustment, peer acceptance, and academic performance, both notions are essential.

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Research shows that while inconsistent discipline and rejection are harmful, parental warmth, acceptance, and autonomous support are favourably correlated with children's self-evaluations. Nonetheless, the majority of current research either looks at self-esteem in general or fails to distinguish between self-concept and self-confidence. Simultaneously, little study has examined how various parts of the parent-child connection specifically influence these two connected but separate facets of the self.

In light of these disparities, the current study attempts to explore how children's self-concept and self-confidence are affected by the quality of parent-child relationships. The study aims to identify the parenting elements that have the greatest impact on children's self-beliefs by analysing the varying predictive effects of parental traits such warmth, discipline, communication, and autonomy support. The results should help parents, teachers, and mental health specialists who are trying to promote a child's healthy growth.

Literature Review

Theoretical Background

Within two main theoretical frameworks, the parent-child connection has been the subject of much research. According to attachment theory (Bowlby, 1969), stable internal working models of the self and others are fostered by attentive and responsive parenting and form the foundation for positive self-evaluations. Throughout childhood and adolescence, secure connection is associated with a more positive self-concept and a stronger sense of self-worth (Krauss, Orth, & Robins, 2019). Furthermore, according to Self-Determination Theory (SDT) (Deci & Ryan, 2008), children's core psychological demands for relatedness, competence, and autonomy must be met in order for them to develop to their full potential.

Perspective-taking, self-initiation encouragement, and non-controlling guiding are characteristics of autonomy-supportive parenting, which has been shown to improve children's perceived competence and perseverance (Marbell-Pierre et al., 2019; Saïb et al., 2024). According to these frameworks, children's self-concept and self-confidence are mostly shaped by relational stability and motivational support.

Parent–Child Relationship and Self-Concept

Children's structured view and assessment of themselves in areas like social skills, academic proficiency, and overall self-worth is known as their self-concept. Research continuously demonstrates that children's self-concept is favourably correlated with supportive parental behaviours, such as warmth, acceptance, and constructive communication (Khaleque & Rohner, 2012; Krauss et al., 2019).

Krauss et al. (2019) discovered in a longitudinal study that parental warmth and supervision predicted better self-esteem trajectories from the ages of 10 to 16. Marsh et al. (2016) also found that children who had supportive parents had better social and intellectual self-concepts. Negative parenting, on the other hand, which is characterised by criticism, rejection, or uneven discipline, has been connected to identity confusion and decreased self-worth (Khaleque, 2017). The emotional atmosphere of the parent-child connection, taken as a whole, gives kids the interpersonal affirmation that serves as the cornerstone of their cognitive self-concept.

Parent–Child Relationship and Self-Confidence

Although it is linked to self-concept, self-confidence highlights children's convictions about their capacity to carry out tasks and successfully handle difficulties. According to research, promoting children's independence, encouraging autonomy, and providing constructive criticism are all crucial for building their confidence (Deci & Ryan, 2008). Marbell-Pierre et al. (2019) showed, for example, that teenagers across cultures reported higher task perseverance when they felt their parents supported their autonomy. Additionally, an authoritarian or overprotective parenting style was linked to a decrease in self-esteem and a rise in failure-related anxiety, according to a 2009 study by Turner et al. Recent research demonstrates that autonomy-supportive parenting increases kids' readiness to take on challenges and their task-related self-efficacy, which are key indicators of self-

confidence (Saïb et al., 2024). Warmth and acceptance are therefore important for self-concept, while autonomous support seems to be particularly important for confidence building.

Parenting Styles, Discipline Consistency, and Negative Parenting

Children's self-evaluations are greatly impacted by the constancy of parenting and discipline, in addition to warmth and support for autonomy. Compared to authoritarian or negligent parenting approaches, authoritative parenting—which strikes a balance between warmth and unambiguous expectations—is associated with better results (Khaleque, 2017). According to meta-analytic results, children's confidence and self-esteem are negatively predicted by parental animosity (Khaleque & Rohner, 2012). Children who get inconsistent or excessively harsh discipline are less inclined to take chances and try new things, which eventually lowers their self-confidence (Krauss et al., 2019). These results imply that the best parenting practices for fostering an adaptable self-concept and confidence are those that combine acceptance with a sensible framework.

Comparative Insights: Self-Concept vs. Self-Confidence

Even though self-confidence and self-concept are related, new research suggests that certain aspects of parenting may predict these notions differently. Self-concept seems to be more strongly linked to warmth and acceptance, but self-confidence is predicted by autonomy-supportive behaviours such promoting independence and offering meaningful options (Marbell-Pierre et al., 2019; Saïb et al., 2024). Parent-child relationships were found to predict students' creative personalities by Park and Kim (2024), with self-concept reducing the intensity of these links. This suggests that self-confidence and self-concept may function through different paths. This differential prediction emphasises how crucial it is to look at both constructs at the same time rather than using them interchangeably.

Moderators and Mediators

Contextual factors shape the impact of the quality of the parent-child connection on confidence and self-concept. Perceptions of autonomy-supportive behaviours are influenced by cultural norms; autonomy may be regarded differently in collectivist contexts than in individualist ones (Marbell-Pierre et al., 2019). Since parents with more resources and psychological health are better equipped to consistently provide warmth and autonomy support, socioeconomic status (SES) and parental mental health also moderate these relationships (Glatz et al., 2023). The impacts of parenting are either exacerbated or mitigated by peer connections and school environments, which serve as mediators (Saïb et al., 2024). These results imply that the influence of parent-child relationships varies and depends on larger ecological settings.

Summary and Research Gap

This study shows that: (a) children's self-concept is consistently associated with parental warmth and acceptance; (b) autonomy-supportive parenting fosters self-confidence and perseverance; (c) hostile or inconsistent parenting erodes both domains; and (d) these associations are moderated by cultural, socioeconomic, and peer contexts. Despite these developments, only a small number of research examine several parenting aspects in a single design while concurrently evaluating self-concept and self-confidence as separate entities. The current study fills this knowledge gap by examining the ways in which particular facets of the parent-child bond predict children's self-concept and self-confidence.

Objectives and Hypotheses

Objectives

1. To examine the impact of parent–child relationship quality on children’s self-concept.
2. To assess the influence of parent–child relationship quality on children’s self-confidence.
3. To compare whether parenting dimensions (warmth vs. autonomy support) differentially predict self-concept and self-confidence.

Hypotheses

1. **H1:** Positive parent–child relationship quality will be positively associated with children's self-concept.
2. **H2:** Positive parent–child relationship quality will be positively associated with children's self-confidence.
3. **H3:** Warmth will be a stronger predictor of self-concept, whereas autonomy support will be a stronger predictor of self-confidence.

Research Methodology

The current study used a survey-based correlational approach to investigate how children's self-concept and confidence are impacted by the quality of parent-child relationships. This approach made it possible to find predictive correlations and distinct effects of particular parental traits, such as warmth, autonomy support, and hostility/neglect, on the psychological outcomes of kids. 138 kids between the ages of 9 and 14 made up the study sample, with an equal number of boys and girls. Participants were chosen at random from three Chhapra, Bihar, schools. Children have to be enrolled in grades 4 through 8 and have both parental and child agreement in order to meet the inclusion criteria. To set the scene for analysis, demographic data such as age, gender, grade, family type, parental education, and socioeconomic level were gathered.

With 24 items on a three-point Likert scale from "Almost never" to "Almost always," this tool assesses the dimensions of warmth/acceptance, autonomy support, and hostility/neglect; higher scores indicate a larger presence of the various qualities. Generally speaking, the scale's internal consistency falls between 0.70 and 0.90. Tripathi and Tripathi's (1978) Self-Concept Scale, which assesses social, moral/ethical, academic, personal, and physical elements of oneself, was used to measure self-concept. Each of the scale's 100 items is assessed using a Likert-type scale with two or five points.

Each dimension's score as well as the overall self-concept score were calculated; higher scores denoted a more favourable view of oneself. In normative samples, this scale's Cronbach's alpha falls between 0.70 and 0.85. Sinha's Self-Confidence Scale, a standardised tool frequently used in Indian contexts, was utilised to measure children's self-confidence. Children's overall confidence, self-assurance, and capacity for problem-solving are measured by this scale; higher scores indicate stronger self-confidence. For kids in school, the scale shows excellent validity and reliability.

Prior to administration, parental and child consent was obtained, and participation was voluntary. Throughout the study, children were allowed to withdraw at any moment, and confidentiality and anonymity were upheld. Twenty kids participated in a pilot study to evaluate the instruments' dependability, gauge their clarity, and gauge their completion time. Completing the questionnaire battery took about 30 to 40 minutes on average. The relationships between parenting characteristics, self-concept, and self-confidence were investigated using Pearson correlation. IBM SPSS Statistics version 26 was used for all statistical analyses.

Results

Descriptive Statistics

136 kids, 68 males and 68 girls, ages 9 to 14, participated in the study. In Table 1, descriptive statistics for the primary study variables are displayed. Moderate hostility/neglect, moderately positive self-concept, moderate-to-high self-confidence, and usually high perceived parental warmth and autonomy support were evident in the mean scores.

Table 1

Comparative Analysis of Perceived Parenting and Self-Concept Scores

Variable	No.	Mean	SD	t	df	P value
High Self-Concept	66	17.53	9.39	2.72	136	0.01
Low Self-Concept	72	14.03	8.05			

Table 1 presents a comparative analysis of perceived parenting scores among children with high and low self-concept. Children categorized as having high self-concept (n = 66) reported a mean

perceived parenting score of 17.53 (SD = 9.39), whereas those with low self-concept (n = 72) had a lower mean score of 14.03 (SD = 8.05). An independent samples t-test indicated that this difference was statistically significant, t (136) = 2.72, p = 0.01. These results suggest that children with higher self-concept tend to perceive greater positive parenting, highlighting a significant association between children's perception of parental behavior and their self-concept.

Table 2

Comparative Analysis of Perceived Parenting and Self-Confidence Scores

Variable	No.	Mean	SD	t	df	P value
High Self-Confidence	66	18.95	8.72	2.88	136	0.01
Low Self-Confidence	72	14.92	7.85			

Children with high self-confidence (n = 66) reported a higher mean perceived parenting score (M = 18.95, SD = 8.72) compared to children with low self-confidence (n = 72; M = 14.92, SD = 7.85). An independent samples t-test indicated that this difference was statistically significant, t (136) = 2.88, p = 0.005. These results suggest that children who perceive more positive parenting exhibit higher self-confidence, reinforcing the link between parent–child relationships and children's confidence development.

Table 3

Correlation of Parenting Dimensions with Self-Concept and Self-Confidence

Parenting Dimension	Parenting Dimension	Parenting Dimension
Warmth/Acceptance	.52**	.45**
Autonomy Support	.38**	.50**
Hostility/Neglect	-.44**	-.47**

p < .001.

Pearson correlation coefficients were computed to examine the associations between parenting dimensions (warmth, autonomy support, hostility/neglect) and children's self-concept and self-confidence. As shown in Table 4, parental warmth had the strongest positive correlation with self-concept (r = .52, p < .001), while autonomy support had the strongest positive correlation with self-confidence (r = .50, p < .001). Hostility/neglect was negatively correlated with both self-concept (r = –.44, p < .001) and self-confidence (r = –.47, p < .001).

Discussion

The current study looked at how children's self-concept and self-confidence are affected by the quality of parent-child relationships. According to the research, kids who experience more positive parenting—which is defined as warmth, acceptance, and support for their autonomy—have much better self-concepts and confidences. On the other hand, kids who felt more hostile or neglected expressed less confidence and self-concept. These findings align with the body of research that highlights the importance of supportive parenting in promoting kids' psychological growth (Tripathi & Tripathi, 1978; Sinha, 2005; PARQ studies).

According to the comparative analysis, autonomy support was more highly correlated with self-confidence, whereas warmth/acceptance was more strongly correlated with self-concept. This is consistent with theoretical viewpoints that contend that emotional attachment and perceived parental acceptance play a major role in shaping self-concept, whereas self-confidence grows when kids are given the freedom to experiment, make choices, and become independent (Muris, 2001; Pires et al., 2019). The deleterious consequences of unsupportive parenting practices on children's psychological well-being are further highlighted by the negative impacts of aggressive or neglectful parenting on both outcomes.

The impact of perceived parenting on self-concept and self-confidence appears to be strong across these demographic characteristics, as evidenced by the fact that gender and age, which were

adjusted for in the research, did not substantially change the results. These findings have practical ramifications for parents, teachers, and counsellors, highlighting the need of encouraging loving, accepting, and autonomy-supportive parenting techniques to help kids develop positive self-concepts and confidence.

Furthermore, the study adds to the Indian context by employing culturally validated measures, such as Sinha's Self-Confidence Scale and Tripathi & Tripathi's Self-Concept Scale, which demonstrate that parent-child relationship patterns are both measurable in local contexts and universally influential. By using longitudinal designs to investigate causality, investigating intervention options, and taking into account other factors including peer influence, academic achievement, and socioeconomic position, future research may build on these findings.

Conclusion

The current study emphasises the important influence that parent-child connections have on how youngsters perceive themselves and how confident they are. According to research, children who experience more warmth, acceptance, and autonomous support from their parents have better self-concepts and higher levels of confidence, whereas children who experience harsh or negligent parenting have lower scores on these measures. Warmth is a better predictor of self-concept, whereas autonomous support has a bigger effect on self-confidence, according to the study.

These findings highlight how crucial it is to promote parenting styles that are both supportive and autonomy-promoting in order to improve kids' psychological health. The results imply that interventions targeted at enhancing parent-child relationships can help youngsters develop healthier self-perceptions and confidence, which has practical consequences for parents, educators, and mental health professionals. To better understand the ways in which parenting affects children's self-development, future research should take into account intervention-based studies, longer-term designs, and more comprehensive sociocultural factors.

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Relationship between Playing Position and Injury Risk among Competitive Hockey Players in Bihar

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Abstract

Background: *Field hockey is a high-intensity sport with considerable physical demands that expose players to varying injury risks depending on their playing positions. While international studies have examined injury epidemiology, there is limited evidence from the Indian context, particularly at the state level.* ***Purpose:*** *This study aimed to investigate the relationship between playing position and injury incidence among competitive hockey players in Bihar.* ***Methods:*** *A total of 120 players (Forwards = 30, Midfielders = 35, Defenders = 35, Goalkeepers = 20) participated in a structured injury survey, reporting injuries sustained during the previous competitive season. Injury incidence was analyzed using descriptive statistics, and positional differences were assessed through independent samples t-tests ($p < 0.05$).* ***Results:*** *Descriptive analysis showed that defenders reported the highest mean injury incidence ($M = 3.50$, $SD = 1.05$), followed by forwards ($M = 3.20$, $SD = 1.10$), midfielders ($M = 2.60$, $SD = 1.25$), and goalkeepers ($M = 1.90$, $SD = 0.85$). Independent t-tests revealed significant differences between forwards and midfielders ($t(63) = 2.03$, $p = 0.046$), defenders and goalkeepers ($t(53) = 5.57$, $p < 0.001$), and midfielders and goalkeepers ($t(53) = 2.36$, $p = 0.02$). No significant difference was observed between forwards and defenders.* ***Conclusion:*** *The findings indicate that injury risk is position-dependent, with defenders and forwards experiencing the greatest injury burden, while goalkeepers remain comparatively less affected. These results emphasize the need for position-specific preventive strategies, such as tailored strength and conditioning, load management, and protective interventions. This study provides valuable evidence for coaches, physiotherapists, and sports administrators to design targeted injury-prevention programs for hockey players in Bihar.*

Keywords: field hockey, injury epidemiology, playing position, defenders, Bihar athletes, injury prevention

Introduction

Field hockey is a high-intensity, intermittent activity necessitating quick accelerations, decelerations, directional changes, and frequent body contact, all of which elevate the risk of injury (Murtaugh, 2001). The physical requirements and movement dynamics of the game differ significantly based on playing positions, rendering certain players more vulnerable to specific ailments than others. Defenders frequently get impact-related injuries from tackling and blocking, but forwards are more susceptible to muscular strains and ligament injuries owing to repetitive sprinting and attacking maneuvers (Dick et al., 2007). Goalkeepers, owing to their particular function, encounter distinct injury risks including contusions, joint sprains, and overuse injuries resulting from frequent diving and saving maneuvers (Theilen et al., 2016).

Research in sports epidemiology has underscored the significance of examining injury risk in connection to positional roles, as these findings offer essential insights for developing preventative methods and customized conditioning programs (Hägglund et al., 2013). In India, hockey is one of the most popular team sports; nevertheless, there has been insufficient study on injury surveillance,

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especially at the state level. Bihar has cultivated competitive hockey players who compete in national competitions; nevertheless, research on the health and safety issues affecting these sportsmen is limited. Recognizing position-specific injury trends in this group is crucial for enhancing training methods, medical assistance, and player longevity.

Comprehending the correlation between playing position and injury risk can enhance academic understanding and provide practical benefits for coaches, physiotherapists, and sports administrators in Bihar. This project aims to provide evidence-based insights on injury distribution to foster safer participation, diminish injury prevalence, and improve overall performance results for hockey players in the region.

Methods and Procedure

Participants

The study recruited 120 competitive hockey players (male = 72, female = 48) from the Bihar State Hockey Association, aged between 16–28 years (M = 21.4, SD = 3.1). Players were grouped according to their primary playing position: Forwards (n = 30), Midfielders (n = 35), Defenders (n = 35), and Goalkeepers (n = 20). All participants had a minimum of 3 years of competitive playing experience and trained at least five times per week.

Variables

- Independent variable: Playing position (Forward, Midfielder, Defender, Goalkeeper).
- Dependent variable: Injury incidence (number of injuries reported in the last competitive season).
- Control variables: Age, sex, training age, and weekly training load.

Procedure

A structured injury survey questionnaire adapted from the NCAA Injury Surveillance System (Dick et al., 2007) was administered. Players reported the number, type, severity, and mechanism of injuries sustained in the past season. Data were cross-verified with team physiotherapists and medical staff to ensure reliability.

Statistical Analysis

1. Descriptive statistics (mean, standard deviation, frequency, percentage) were calculated for injury incidence across positions. Independent t-tests were used to compare mean injury incidence between two key positions at a time (e.g., forwards vs defenders). A significance level of $p < 0.05$ was adopted.

Results

Table no. 1 - Descriptive Statistics

Position	N	Mean Injuries	SD	Min	Max
Forwards	30	3.20	1.10	1	6
Midfielders	35	2.60	1.25	0	5
Defenders	35	3.50	1.05	1	6
Goalkeepers	20	1.90	0.85	0	3

The descriptive statistics reveal notable variations in injury incidence across different playing positions among competitive hockey players in Bihar. Defenders recorded the highest average injury incidence (M = 3.50, SD = 1.05), with reported injuries ranging from 1 to 6 per player. This suggests that defenders are particularly vulnerable to frequent injuries, likely due to the high-contact demands of their role, which involves tackling and blocking. Forwards also showed a relatively high mean number of injuries (M = 3.20, SD = 1.10), with a similar range of 1 to 6 injuries, indicating their susceptibility to muscle strains and impact injuries associated with repeated sprinting and aggressive offensive play. Midfielders reported a moderate injury rate (M = 2.60, SD = 1.25), spanning from 0 to 5 injuries, reflecting their balanced role of both offensive and defensive duties. Goalkeepers had the lowest mean injury incidence (M = 1.90, SD = 0.85), with a narrower range of 0 to 3 injuries, likely due to the protective equipment they use and reduced physical contact compared

to outfield players. Overall, the data highlight that defenders and forwards are at higher risk of injuries, while goalkeepers remain the least affected group.

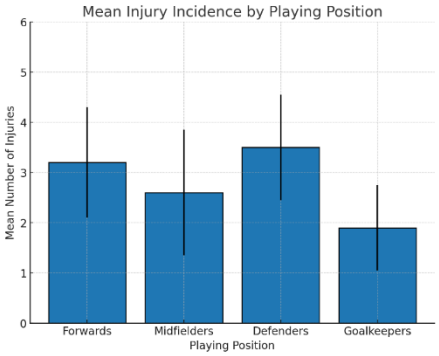

Table 2. Independent Samples t-test Comparing Injury Incidence by Playing Position

Comparison	Mean Difference	t-value	df	p-value	Interpretation
Forwards vs. Defenders	-0.30	-1.08	63	0.28	Not significant
Forwards vs. Midfielders	0.60	2.03	63	0.046*	Significant (p < 0.05)
Defenders vs. Goalkeepers	1.60	5.57	53	<0.001**	Highly significant
Midfielders vs. Goalkeepers	0.70	2.36	53	0.02*	Significant (p < 0.05)

*Note: $p < 0.05$ = statistically significant; **p** < 0.001 = highly significant.

The independent t-test results indicate clear differences in injury incidence between certain playing positions among Bihar State hockey players. The comparison between forwards and defenders showed a small mean difference (−0.30 injuries) that was not statistically significant ($t(63) = -1.08$, $p = 0.28$), suggesting that both positions experienced similar levels of injury. In contrast, forwards had significantly more injuries than midfielders, with a mean difference of 0.60 injuries ($t(63) = 2.03$, $p = 0.046$), indicating that forwards are at greater risk, likely due to the explosive sprinting and attacking demands of their role. The largest difference was observed between defenders and goalkeepers, where defenders sustained an average of 1.60 more injuries, a highly significant difference ($t(53) = 5.57$, $p < 0.001$). This highlights that defenders are considerably more vulnerable to injuries than goalkeepers, reflecting the greater physical contact and tackling demands placed on them. Similarly, midfielders reported significantly more injuries than goalkeepers ($t(53) = 2.36$, $p = 0.02$), with a mean difference of 0.70 injuries. Overall, these results demonstrate that while forwards and defenders face higher injury risks, goalkeepers remain comparatively protected, with significantly fewer injuries across the season.

Discussion of Findings

The findings of this study highlight the significant role of playing position in determining injury risk among Bihar State hockey players. Defenders recorded the highest injury incidence, which may be attributed to the high frequency of tackles, interceptions, and blocking activities that increase exposure to contact and impact injuries. This aligns with earlier research suggesting that defenders in contact sports often experience more collision-related injuries (Theilen et al., 2016); (Rathore, 2017).

Forwards also showed a relatively high injury rate, likely due to repeated sprinting and agility movements (Rathore et al., 2024); (Rathore & Chandel, 2023), which predispose them to muscular strains and ligament injuries. Comparatively, midfielders sustained moderate injury levels, as their role involves both attacking and defending but with less extreme exposure than forwards or defenders.

Goalkeepers reported the lowest injury incidence, which can be explained by their specialized protective equipment (helmets, pads, gloves) and relatively confined movement area. However, when

injuries occurred, they tended to be severe contusions or joint injuries due to high-speed ball impacts, consistent with prior studies (Murtaugh, 2001).

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Personality Traits and Academic Adjustment as Predictors of Academic Success among College Students

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Abstract-

This study aims to explore the role of personality traits and academic adjustment as predictors of academic success among married and unmarried college students. A sample of 200 students (100 married and 100 unmarried), balanced for gender, was selected from various colleges using purposive sampling. Data were collected using the Eysenck Personality Inventory (EPI), Bell Adjustment Inventory, and academic performance (measured by final examination scores). The study tested whether marital status significantly affects personality, adjustment, and academic performance. The findings are expected to contribute to understanding how psychosocial and personality factors influence students' academic success, providing valuable insights for educators, counselors, and policy makers.

Keywords- *Personality Traits, Academic Adjustment, Academic Performance, Married Students, Unmarried Students, College Education*

Academic success is a multifaceted outcome shaped by a wide array of individual and contextual factors. In recent years, there has been increasing interest in examining the psychological variables that influence academic performance, particularly in higher education settings. Among the various internal factors, personality traits and academic adjustment have been recognized as crucial components contributing to students' success or failure in college environments. Understanding these variables is not only essential for improving academic outcomes but also for promoting students' overall well-being and development.

Personality traits, as conceptualized in Eysenck's model, refer to consistent patterns of thinking, feeling, and behaving. Traits such as extraversion, neuroticism, and psychoticism are known to impact how individuals engage with academic tasks, manage stress, and interact socially within college environments. For example, students high in extraversion may benefit from better social support and participation, whereas those high in neuroticism may experience anxiety and emotional instability, which could hinder their academic performance. In contrast, emotionally stable and conscientious individuals are more likely to adapt to academic demands effectively.

Academic performance is a complex outcome influenced by a variety of psychological, social, and personal factors. Among these, personality traits and the ability to adjust to academic environments play a pivotal role. College life introduces significant challenges, especially for married students who often balance familial responsibilities with academic demands. This study investigates how personality and adjustment contribute to academic performance and whether these factors differ significantly between married and unmarried college students.

Academic adjustment refers to a student's ability to adapt to various demands of the college environment, including academic workload, social life, emotional balance, and institutional structures. Adjustment difficulties can result in poor academic outcomes, low self-esteem, and high dropout rates. Married students, in particular, may face unique challenges in balancing academic responsibilities with family life, financial pressures, and social roles, which may significantly affect their adjustment and, consequently, their academic success.

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The intersection between personality and adjustment is particularly relevant in understanding differences in academic performance between married and unmarried college students. While unmarried students may have fewer external responsibilities, married students may possess greater emotional maturity or support systems that influence how they adjust academically. However, empirical research on this comparison remains limited, especially within the Indian socio-cultural context where marital roles and expectations are distinct.

Academic performance is a key indicator of success in the educational journey of students. Over the years, researchers have attempted to uncover the psychological, social, and environmental factors that influence academic outcomes. Two significant psychological constructs that have consistently drawn scholarly attention are personality traits and academic adjustment.

Personality and Academic Performance- Personality has long been recognized as a critical determinant of human behavior, including performance in academic settings. Eysenck's personality theory, which categorizes traits primarily into Extraversion, Neuroticism, and Psychoticism, provides a foundational framework for understanding how personality influences academic outcomes. According to Eysenck (1967), individuals high in extraversion tend to be sociable, active, and assertive, which may help them form supportive peer networks and engage actively in classroom discussions. Conversely, those high in neuroticism are often anxious and emotionally unstable, which can impair concentration, memory, and overall academic performance.

Chamorro-Premuzic and Furnham (2003) found that personality traits significantly predicted academic performance, especially traits related to conscientiousness and emotional stability. While Eysenck's model does not directly include conscientiousness, traits from his model, such as low neuroticism and high extraversion, have been found to positively correlate with better academic achievement.

Adjustment and Academic Performance- Adjustment in college is a multifaceted process that includes adapting to academic demands, social environments, emotional pressures, and institutional expectations. Poor academic adjustment can lead to stress, burnout, and ultimately, low academic performance (Baker & Siryk, 1984). Bell's Adjustment Inventory, widely used to assess adjustment, categorizes it into several domains—home, health, emotional, and social—which collectively reflect an individual's capacity to adapt to life circumstances.

According to Robbins et al. (2004), adjustment is one of the strongest non-cognitive predictors of academic performance. Students who are better adjusted are more likely to be resilient in the face of academic challenges, maintain motivation, and perform well academically.

Marital Status and Academic Life- Marital status has emerged as a moderating variable in several studies examining academic success. Married students often face dual roles—managing academic responsibilities along with family obligations. Ross et al. (1999) suggests that marital commitments may either act as stressors or support systems depending on the nature of the relationship and the individual's coping capacity. Unmarried students, while generally free from family burdens, may lack the emotional and practical support that married students might receive.

Despite these findings, there is limited research comparing the influence of personality traits and adjustment between married and unmarried college students. This study addresses this gap by exploring how these psychological factors predict academic performance in both groups.

This study aims to explore the predictive value of personality traits and academic adjustment on academic performance among married and unmarried college students. It seeks to identify whether significant differences exist in personality, adjustment levels, and academic performance based on marital status. Additionally, it examines the degree to which personality and adjustment individually and collectively influence academic outcomes.

Aims and Objectives-

(i). To find the adjustment made by married and unmarried college students.
(ii). To assess the personality traits of married and unmarried college students.
(iii). To find the effect of adjustment on academic performance.
(iv). To quantify the effect of personality traits on academic performance.

Hypotheses

H01. There would be a significant difference between adjustment made by married and unmarried college students.

H02. There would be a significant difference between personality traits of married and unmarried college students.

H03. There would be a significant difference between academic performance of married and unmarried college students.

Methodology

Research Design- A between-group design was used to compare married and unmarried college students on the variables of personality, adjustment, and academic performance. This design allows for identifying significant differences between these two groups while controlling for extraneous variables.

A. Sample- The sample comprised 200 college students, with 100 married and 100 unmarried students. An equal number of male and female participants was maintained in each group to ensure gender balance. Participants were selected purposively from various colleges.

B. Tools for Data Collection- Eysenck Personality Inventory (EPI): Used to assess key personality traits, particularly extraversion and neuroticism.

a. Bell Adjustment Inventory: Used to measure levels of adjustment in different domains such as home, health, social, and emotional.

b. Academic Performance: Operationalized as the percentage of marks obtained in the most recent final examination.

Data Analysis- Independent samples t-test to compare personality traits, adjustment, and academic performance between married and unmarried students. Pearson correlation to analyze the relationship between personality traits, adjustment, and academic performance. Regression analysis to examine the predictive power of personality and adjustment on academic success.

Expected Results and Implications- The findings of this study can provide valuable insights for educators, academic counselors, and policymakers in developing targeted interventions to support diverse student populations. Enhancing students' awareness of their personality traits and helping them cultivate better adjustment strategies may contribute not only to academic success but also to personal growth and satisfaction throughout their college experience.

Academic performance: Obtained the hypothesis that the married and unmarried college student's groups differ-significantly with respect to their academic performance. There were sub-hypotheses which were left for verification. Hypothesis testing no that the married and unmarried college student's groups have been differ-significantly on overall adjustment with respect to their academic performance. The groups were compared and Means scores difference (t- ratio) was computed (Table-1) below:

Table-1

Significance of Means difference between married and unmarried college students' scores of overall adjustment on academic performance

College Student Groups	Total adjustment			t	df	p value
	N	Mean	SD			
Married	100	21.65	4.94	6.56	198	p<0.01
Unmarried	100	25.48	3.11			

Table-1 examine that the married and unmarried college students differ on area of over all adjustment and academic performance (t=6.56, df=198, p<.01) are significant. The Mean of married groups is 21.65 and mean of unmarried college students' groups is 25.48. The married college students' groups have more academic performance on overall adjustment problem then unmarried college students' group.

Hypothesis testing that the married and unmarried college student's academic performance groups would differ significantly on personality characteristics. Both groups cell frequency was put in frequency table and Chi-square comparison was made (table-1) below:

Table-2

Chi-squire comparison of married and unmarried college student's academic *performance groups on personality characteristics.*

Groups	Total	Academic performance	Personality characteristics	X^2	df	Sig. value
Married	*100*	*62*	*38*			
Unmarried	*100*	*44*	*56*	*4.74*	*198*	*p<0.01*

Table-2 shows that married and unmarried college student's academic performance groups differ significantly on personality characteristics (X^2=4.74, df=198, p<0.01) are significantly. the result supports hypothesis. The married college students' groups respond 62 on academic performance and 44 on personality characteristics. While unmarried college students have shown 38 on academic performance and 56 on personality characteristics. These findings suggest that married students tend to exhibit higher academic performance, whereas unmarried students display more pronounced personality traits. The significant Chi-square value indicates that the observed differences are not due to chance, thus supporting Hypothesis 2. The result implies a relationship between marital status and the distribution of personality traits in relation to academic performance. This could be attributed to varying life responsibilities and social roles: married students may exhibit greater focus or responsibility toward academics due to life circumstances, while unmarried students may have more room to express diverse personality characteristics. Unmarried students may show better academic adjustment due to fewer familial responsibilities. Personality traits, particularly low neuroticism and high extraversion, may be positively associated with academic performance. Adjustment scores will significantly correlate with academic success. Personality and adjustment will jointly predict academic performance.

Implications: These findings can guide university counseling services to provide tailored support to married students and develop personality-enhancement and adjustment-focused interventions to improve student outcomes.

Limitations- Purposive sampling may limit generalizability. Self-reported tools can introduce bias. Marital status alone may not capture the full complexity of students' personal lives (e.g., parenting, working status).

Conclusion- The study seeks to illuminate the psychological and contextual factors that influence academic success among college students. By comparing married and unmarried students, this research aims to provide a more nuanced understanding of how personality traits and academic adjustment shape performance, thereby contributing to more inclusive and supportive educational environments.

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Impact of Bavistin Fungicide Stored with Gram Seed at Varying RH for Six Months Period on Seed Germination and Morphological Features of Thirty Days Old Seedling

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Abstract

The present experiment was conducted to know the impact of bavistin fungicide stored with gram seeds at varying RH for six months period on seed germination and morphological characteristics of thirty days old plants. The three different concentration of bavistin viz. 0.1%, 0.2% and 0.3% and the three different RH viz. 60%, 70% and 80% has been taken into account. Gram seeds dressed with bavistin fungicide was stored at 60%, 70% and 80% RH for six months period. Germination percentage and seedling vigour were evaluated. The germination of gram seeds initially starts from 3rd day of sowing in the seed samples dressed with 0.2% and 0.3% stored at 70% RH and in the all seed samples stored at 80% RH. The maximum germination percentage was observed in the both control and dressed seeds stored at 70% RH and the minimum germination percentage of seeds were observed in the seeds dressed with 0.1%, bavistin stored at 60% RH. The length of root was more in the seeds dressed with 0.1% bavistin stored at 60% and 70%. RH and in the control seeds stored at 80% RH and was less in the seeds dressed with 0.1% bavistin stored at 60% and 80% RH in the 30 days old gram plants. The length of shoot was more in the 30 days old gram plants raised from 0.1% bavistin dressed seeds stored at 70% RH and was less in the 30 days old gram plants raised from the control seeds stored at 60% and 80% RH. The number of node and internode in the 30 days old gram plants was more in the plants raised from control seeds stored at 80% RH and was less in the plants raised from control and 0.1% and 0.2% bavistin dressed seeds stored at 60% RH. The biomass of the 30 days old gram plants raised from the seeds dressed with 0.2% bavistion stored at 70% RH was more and was less in the 30 days old gram plants raised from the seeds dressed with 0.3% stored at 80% RH.

Keywords: Seed, gram, germination, bavistin, root length, shoot length, node, internode, biomass, relative humidity (RH).

Introduction

Gram (*Cicer arietinum* L.) is highly nutritious pulse crop. Gram is one of the earliest food legumes cultivated by man and plays an important role in human diet and agricultural systems. It is a good protein supplement for vegetarian people. Being a leguminous crop, gram improves soil fertility by fixing atmospheric nitrogen. Large amounts of fungicides and pesticides are being used in modern agricultural practices. Seed viability is a major factor in crop stand establishment and subsequent productivity in many parts of the world. Fungicide application is the common practice in modern agriculture for the control of fungal pathogen. Bavistin is a systematic fungicide. It may act either by killing or inactive the pathogen or by increasing resistance in the host plant or by interfering with pathogenic processes which may block the symptoms development. In advanced countries, Strict monitoring and regulation system for pesticides and fungicides ensure the safe use and proper handling of pesticides and fungicides. The control schemes further ensure their use on scientific basis that support their effectiveness against target pest and not posing significant hazard to the environment and human health (Glover-Amengor and Tetteh, 2008). Seed germination was not significantly affected when treated with captan 0.2% and carbendazim 0.15%. on flax Seed (Saeidi and Mirik, 2006). Not much information is available on the effect of bavistin on gram crops. So, an

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attempt has been made to explore the effect of bavistin on germination and morphological features of 30 days old gram plants.

Materials and Methods

Gram seeds were collected from the seed dealer of Ara (Bhojpur). Soil was collected from farm land and cleaned properly and was dried in sun. The seeds of gram were dressed with 0.1%, 0.2% and 0.3% bavistin. The control and dressed seeds were stored at 60%, 70% and 80% RH for six months period.

RH was maintained by the methods suggested by Wexler and Hosegawa (1954), and Wink and Sears (1950).

Germination of Seeds and Culture of Seedlings: Seeds were germinated in earthen pots containing soil. Seeds were sown nearly 5 mm below the soil surface. Earthen pots were placed in open space of garden. The seedling was cultured for 30 days. Water was sprinkled occasionally to keep the soil moist. The account of germinated seeds were maintained. The length of root and shoot, number of nodes and internodes and biomass of 30 days old gram plants were recorded.

Determination of Biomass: The 30 days old plants of gram were uprooted gently and washed with tap water. A set of three plants in three replicates from each lot were kept in butter paper pocket and dried in an incubator at 80°C for 48 hours. It was placed over fused $CaCl_2$ in the sealed desiccator for next 48 hours and weighed. The weight of per plant in mg was calculated.

Results and Discussion

In the present investigation, the impact of different concentration of bavistin fungicide stored with gram seeds at varying RH for six months period on germination, morphological features and biomass of 30 days old gram plants were studied. The result obtained in the present study has been depicted in Table-1 and 2. Three different concentration of bavistin i.e. 0.1%, 0.2% and 0.3% and three varying RH i.e. 60%, 70% and 80% has been taken into account. Gram seeds dressed with bavistin was stored at 60%, 70% and 80% RH for six months period. The undressed gram seeds were also stored at 60%, 70% and 80% RH for six months period treated as control. The germination of gram seeds initially starts from 3rd day of sowing in the seed samples dressed with 0.2% and 0.3% stored at 70% RH and in all the seed samples stored at 80% RH. The maximum germination percentage was observed in the both control and bavistin dressed seeds stored at 70% RH and the minimum germination percentage of seeds were recorded in the seeds dressed with 0.1%. bavistin Stored at 60% RH.

The root length of 30 days old gram plants was more in the plants raised from the seeds dressed with 0.3%bavistin stored at 60% and 70% RH, and in the plants raised from the control seeds stored at 80% RH and was less in the plants raised from the seeds dressed with 0.1% bavistin stored at 60% and 80% RH in the 30 days old gram plants.

Table-1. Impact of different concentration of bavistin fungicide stored with gram seed at varying RH for six months period on seed germination.

RH (%)	Concentration of Bavistin Fungicide	Percent Germination of Pea Seeds (Mean)									
		Number of Days									
		1	2	3	4	5	6	7	8	9	10
60%	Control	-	-	-	33	37	47	53	70	70	73
	0.1%	-	-	-	-	07	10	10	20	20	20
	0.2%	-	-	-	47	50	63	70	77	80	80
	0.3%	-	-	-	43	53	63	70	77	83	87
70%	Control	-	-	-	53	60	63	77	83	90	100
	0.1%	-	-	-	40	53	67	80	87	100	100
	0.2%	-	-	23	43	67	80	80	100	100	100
	0.3%	-	-	40	67	77	83	90	93	100	100
80%	Control	-	-	07	33	43	67	67	77	83	87
	0.1%	-	-	20	43	47	63	63	70	73	73
	0.2%	-	-	23	43	53	60	67	70	73	73
	0.3%	-	-	33	47	57	67	70	83	90	90

Table-2. Length of root and shoot, number of node and internode and biomass of the 30 days old seedlings raised from gram seeds stored with bavistin fungicide at varying RH for six months period

RH (%)	Concentration of Thiram Fungicide	Root Length (mean cm/seedling ± S.E.)	Shoot Length (mean cm/seedling ± S.E.)	Number of Node (Mean ± S.E.)	Number of Internode (Mean ± S.E.)	Number of Leaf (Mean ± S.E.)
60%	Control	07± 0.02	15± 0.04	10± 0.03	09 ± 0.03	513.0 ± 0.04
	0.1%	06± 0.01	17± 0.05	10± 0.03	09± 0.03	516.2± 0.05
	0.2%	08± 0.02	16 ± 0.04	10± 0.03	09 ± 0.03	515.4± 0.04
	0.3%	11± 0.01	17± 0.05	11± 0.03	10± 0.03	516.2± 0.05
70%	Control	08± 0.02	20± 0.06	13± 0.04	12± 0.03	625.2± 0.07
	0.1%	10± 0.03	24± 0.07	13± 0.04	12± 0.03	635.4± 0.01
	0.2%	08± 0.02	20 ± 0.06	13± 0.04	12± 0.03	642.2± 0.06
	0.3%	11± 0.01	18± 0.05	13± 0.04	12± 0.03	618.2± 0.05
80%	Control	11± 0.01	15± 0.05	14± 0.04	13± 0.04	514.2± 0.04
	0.1%	06± 0.01	17± 0.05	12± 0.03	11± 0.03	518.4± 0.05
	0.2%	07± 0.02	17± 0.05	13± 0.04	12± 0.03	528.2± 0.02
	0.3%	07± 0.02	16± 0.04	11± 0.03	10± 0.03	510.2± 0.03

The shoot length of 30 days old gram plants raised from 0.1%. bavistin dressed seeds stored at 70% RH was more and was less in the 30 days old gram plants raised from the control seeds stored at 60% and 80% RH.

The number of nodes and internodes of 30 days old gram plants raised from the control seeds stored at 80% RH was more and was less in the 30 days old gram plants raised from control and 0.1% and 0.2% bavistin dressed seeds stored at 60% RH.

The biomass of the 30 days old gram plants raised from the seeds dressed with 0.2% bavistin stored at 70% RH was more and was less in the 30 days old gram plants raised from the seeds dressed with 0.3% bavistin stored at 80% RH.

The fungicide bavistin used in the present study have inhibitory effect as well as growth promoting effect on germination and seedling growth of gram. The improvement in the growth parameters may be due to its application which causes elimination of pathogenic population. It has been noticed that the use of bavistin fungicide cause deterimental effect on the Seed germination and seedling growth. In the present experiment it was observed that bavistin application gave best germination, growth and biomass stimulating effect on the dressed bavistin seeds.

Data showed that the recommended concentration of bavistin favours growth of seedling but concentration higher than recommended could be unfavourable for proper growth of seedling. A number of workers including Reyes (1975), Debbarmal *et al*. (2018), Kale *et al*. (1992) and Ampofo *et al.* (2009) investigated that higher concentrations of fungicides and pesticides have harmful effects on various growth parameters of plants. This study has direct application in the fungicide management programme.

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A Comparative Analysis of Mood States among Athletes and Non-Athlete Students

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Abstract

The specific emotional state of an individual can be articulated through multiple dimensions including anxiety, depression, aggression, serenity, relaxation, excitement, happiness, and vigor. Mood states play a crucial role in academic functioning, psychological health, and performance outcomes, making their study highly relevant among student populations. The present study aimed to compare mood states among athletes and non-athlete students by examining levels of anxiety, stress, depression, regression, fatigue, extraversion, and arousal. A sample of 100 college students was selected, consisting of 50 student athletes (25 males and 25 females) and 50 non-athletes (25 males and 25 females), all aged between 18–21 years (M = 19.16, SD = 2.01) from Vaishali district of Bihar. Participants were chosen using quota sampling based on non-probability purposive methods. The Eight State Questionnaire (8SQ), developed by Cattell and Curran (1973) and adapted for Indian populations by Kapoor and Bhargava (1990), was administered to measure the specified mood states. Data was analyzed using mean, standard deviation, and t-tests. Findings revealed that non-athlete students reported significantly higher levels of anxiety, stress, depression, regression, fatigue, guilt, introversion and arousal compared to their athlete peers. These results highlight the positive psychological benefits of athletic participation, suggesting that sports engagement may buffer against negative emotional states and enhance emotional regulation. The study contributes to the literature on sports psychology by reinforcing the importance of physical activity in promoting mental well-being and stabilizing mood among students (Beedie et al., 2000; Lochbaum et al., 2021).

Keywords: Athletes, Non-athlete students, Mood, States

Introduction

Mood is a dynamic psychological construct that reflects the enduring affective states of individuals, influencing cognition, motivation, and behavior (Lane & Terry, 2000). Unlike fleeting emotions, mood states represent a broader affective disposition that can fluctuate in intensity and duration. Within psychology, the study of mood has gained particular relevance due to its association with mental health, performance, and overall well-being. Among student populations, mood regulation is crucial for managing academic pressures, interpersonal relationships, and identity formation. For athletes, mood states are even more critical, as they have been shown to directly influence performance outcomes, resilience, and recovery (Terry, 1995). Athletes are generally reported to experience lower levels of negative mood states such as tension, depression, anger, fatigue, and confusion, and higher levels of vigor compared to non-athletes (Morgan, 1980; Brandt et al., 2016). This finding, often referred to as the "iceberg profile" in sports psychology, suggests that physical activity has a buffering effect against stress and emotional instability (Renger et al., 2020). In contrast, students who do not participate in sports may exhibit elevated stress, fatigue, and anxiety, which could negatively affect academic performance and psychological well-being (Peluso & Andrade, 2005).

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The Indian context offers a particularly interesting ground for such research. College students in India are frequently exposed to intense academic competition, societal expectations, and family responsibilities, all of which can contribute to heightened psychological distress (Deb et al., 2015). Within this environment, sports participation can provide not only physical health benefits but also emotional and social resources that promote better coping strategies and improved life satisfaction. However, despite an expanding body of research on mood states among athletes in Western populations, limited studies have systematically compared mood profiles of Indian athletes and non-athletes, particularly in student groups (Kumar & Shukla, 2018).

Several models have been used to conceptualize mood states, with the Profile of Mood States (POMS) developed by McNair, Lorr, and Droppleman (1971) being one of the most widely used instruments internationally. In India, adaptations such as the Eight State Questionnaire (8SQ) by Cattell and Curran (1973), later standardized by Kapoor and Bhargava (1990), have provided culturally relevant tools to assess specific dimensions including anxiety, stress, depression, regression, fatigue, extraversion, and arousal. These constructs not only capture the negative aspects of mood but also positive dimensions such as arousal and extraversion, thereby offering a holistic understanding of emotional states.

Participation in athletic activities is believed to enhance psychological well-being through multiple mechanisms. Exercise-induced physiological changes, such as the release of endorphins and reduction of cortisol, are strongly associated with improved mood and stress regulation (Biddle et al., 2015). Moreover, sports participation provides athletes with a structured environment, social support, and opportunities for mastery, all of which contribute to enhanced self-esteem and resilience (Weinberg & Gould, 2019). In contrast, non-athlete students often lack such structured avenues for emotional expression and stress management, rendering them more vulnerable to psychological distress (Méndez-Giménez et al., 2020).

The significance of studying mood states in athletes and non-athletes extends beyond sports psychology, as it intersects with educational psychology and mental health. Identifying differences in mood profiles between these groups can inform interventions aimed at promoting mental health through physical activity and structured sports programs within academic institutions. Furthermore, understanding the role of sports in mood regulation is particularly relevant in the post-pandemic era, where students have experienced heightened anxiety, depression, and uncertainty due to disruptions in education and lifestyle (Lochbaum et al., 2021).

Given this background, the present study seeks to conduct a comparative analysis of mood states among athlete and non-athlete college students in India. By focusing on specific dimensions such as anxiety, stress, depression, regression, fatigue, extraversion, and arousal, the study aims to clarify the extent to which athletic participation influences psychological states. This research is expected to contribute to both theoretical understanding and practical applications by highlighting the psychological benefits of sports participation, thereby informing policy and programmatic efforts within higher education institutions.

Objective of the Study

1) To compare mood states of athlete and non-athlete students.
2) To compare mood states of male and female students.

Hypotheses of the Study

1) There shall be significant differences between athlete and non-athlete students on different mood states.
2) There shall be significant differences between male and female students on different mood states.

Methods

The study was conducted on a total sample of 100 college-going students, in which 50 were athlete students (25 male and 25 female students) and 50 non-athlete students (25 male and 25 female students) from Vaishali district of Bihar. The subjects selected in this sample were in the age group of 18 years-21 years and ratio 1:1. The Eight State Questionnaire (8SQ), developed by Cattell and Curran (1973) and adapted for Indian populations by Kapoor and Bhargava (1990), was administered to measure the specified mood states. Data was analyzed using mean, standard deviation, and t-test.

Results and Discussion

Observation of Table 1 indicates that athlete and non- athlete groups differ significantly between themselves not only on overall mood state but also on its different eight dimensions. On anxiety dimension the mean and SD values obtained by athlete students are 14.45 and 2.85 respectively while those values obtained by non- athlete students are 16.08 and 2.97 respectively. It is observed that the calculated 't' ratio = 2.80 is higher than the value required for significance at .01 level. On stress dimension the mean and SD values obtained by athlete students are 14.69 and 2.71 respectively while those values obtained by non- athlete students are 17.53 and 3.14 respectively. It is observed that the calculated 't' ratio = 4.84 is higher than the value required for significance at .01 level. On depression dimension the mean and SD values obtained by athlete students are 15.14 and 2.83 respectively while those values obtained by non- athlete students are 17.06 and 2.92 respectively. It is observed that the calculated 't' ratio = 3.34 is higher than the value required for significance at .01 level. On regression dimension the mean and SD values obtained by athlete students are 15.32 and 2.69 respectively while those values obtained by non- athlete students are 17.52 and 3.19 respectively. It is observed that the calculated 't' ratio = 3.73 is higher than the value required for significance at .01 level. On fatigue dimension the mean and SD values obtained by athlete students are 14.86 and 2.33 respectively while those values obtained by non- athlete students are 17.31 and 3.05 respectively. It is observed that the calculated 't' ratio = 4.51 is higher than the value required for significance at .01 level. On guilt dimension the mean and SD values obtained by athlete students are 14.28 and 2.54 respectively while those values obtained by non- athlete students are 16.34 and 2.74 respectively. It is observed that the calculated 't' ratio = 3.90 is higher than the value required for significance at .01 level. On extraversion dimension the mean and SD values obtained by athlete students are 18.13 and 2.84 respectively while those values obtained by non-athlete students are 15.98 and 2.61 respectively. It is observed that the calculated 't' ratio = 3.94 is higher than the value required for significance at .01 level. On arousal dimension the mean and SD values obtained by athlete students are 15.04 and 2.28 respectively while those values obtained by non- athlete students are 16.84 and 2.70 respectively. It is observed that the calculated 't' ratio = 3.60 is higher than the value required for significance at .01 level. On overall mood states, which is the sum total of all these eight dimensions, the mean and SD values obtained by athlete students are 121.91 and 14.66 respectively while those values obtained by non- athlete students are 134.66 and 16.74 respectively. It is observed that the calculated 't' ratio = 4.05 is higher than the value required for significance at .01 level. All significant ‘t’ ratios prove that athlete and non athlete groups differ significantly not only on overall mood state but also on different dimensions of mood state namely anxiety, stress, depression, regression, fatigue, guilt, extraversion, and arousal. As such hypothesis 1 is proved and accepted.

Table-1
Showing Means, S.Ds. and t-ratios of Mood States Scores – Athelete and Non-Athelete Groups

Groups	Dimension	N	Means	S. D.	df	't' ratios	Level of Sign.
Athelete	**ANXIETY**	50	14.45	2.85	98	2.80	.01
N-Athelete	"	50	16.08	2.97			
Athelete	**STRESS**	50	14.69	2.71	98	4.84	.01
N-Athelete	"	50	17.53	3.14			
Athelete	**DEPRESSION**	50	15.14	2.83	98	3.34	.01
N-Athelete	"	50	17.06	2.92			
Athelete	**REGRESSION**	50	15.32	2.69	98	3.73	.01
N-Athelete	"	50	17.52	3.19			
Athelete	**FATIGUE**	50	14.86	2.33	98	4.51	.01
N-Athelete	"	50	17.31	3.05			
Athelete	**GUILT**	50	14.28	2.54	98	3.90	.01
N-Athelete	"	50	16.34	2.74			
Athelete	**EXTRAVERSION**	50	18.13	2.84	98	3.94	.01
N-Athelete	"	50	15.98	2.61			
Athelete	**AROUSAL**	50	15.04	2.28	98	3.60	.01
N-Athelete	"	50	16.84	2.70			
Athelete	**OVERALL (MS)**	50	121.91	14.66	98	4.05	.01
N-Athelete	"	50	134.66	16.74			

Observation of Table 2 indicates that male and female groups differ significantly between themselves not only on overall mood state but also on most of its dimensions. On anxiety dimension the mean and SD values obtained by male students are 16.71 and 2.98 respectively while those values obtained by female students are 13.82 and 2.43 respectively. It is observed that the calculated 't' ratio = 5.31 is higher than the value required for significance at .01 level. On stress dimension the mean and SD values obtained by male students are 17.74 and 3.14 respectively while those values obtained by female students are 14.48 and 2.65 respectively. It is observed that the calculated 't' ratio = 5.61 is higher than the value required for significance at .01 level. On depression dimension the mean and SD values obtained by male students are 15.25 and 2.86 respectively while those values obtained by female students are 16.95 and 3.22 respectively. It is observed that the calculated 't' ratio = 2.79 is higher than the value required for significance at .01 level. On regression dimension the mean and SD values obtained by male students are 17.42 and 2.72 respectively while those values obtained by female students are 15.42 and 2.54 respectively. It is observed that the calculated 't' ratio = 3.80 is higher than the value required for significance at .01 level. On fatigue dimension the mean and SD values obtained by male students are 14.76 and 2.23 respectively while those values obtained by female students are 17.41 and 3.15 respectively. It is observed that the calculated 't' ratio = 4.86 is higher than the value required for significance at .01 level. On guilt dimension the mean and SD values obtained by male students are 14.94 and 2.75 respectively while those values obtained by female students are 15.68 and 3.04 respectively. It is observed that the calculated 't' ratio = 1.28 is lower than the value required for significance at .05 level. On extraversion dimension the mean and SD values obtained by male students are 17.66 and 2.81 respectively while those values obtained by female students are 16.45 and 2.62 respectively. It is observed that the calculated 't' ratio = 2.23 is higher than the value required for significance at .05 level. On arousal dimension the mean and SD values obtained by male students are 17.03 and 2.68 respectively while those values obtained by female students are 14.85 and 2.35 respectively. It is observed that the calculated 't' ratio = 4.32 is higher than the value required for significance at .01 level. On overall mood states, which is the sum

total of all these eight dimensions, the mean and SD values obtained by male students are 131.5 and 15.63 respectively while those values obtained by female students are 125.10 and 16.34 respectively. It is observed that the calculated 't' ratio = 2.02 is higher than the value required for significance at .05 level. Mostly significant 't' ratios (eight out of nine) prove that male and female groups differ significantly not only on overall mood state but also on most of the dimensions of mood state namely anxiety, stress, depression, regression, fatigue, extraversion, and arousal. As such hypothesis 2 is proved and accepted.

Table-2

Showing Means, S.Ds. and t-ratios of Mood States Scores – Male and Female Groups

Groups	Dimension	N	Means	S. D.	df	't' ratios	Level of Sign.
MALE	**ANXIETY**	50	16.71	2.98	98	5.31	.01
FEMALE	"	50	13.82	2.43			
MALE	**STRESS**	50	17.74	3.14	98	5.61	.01
FEMALE	"	50	14.48	2.65			
MALE	**DEPRESSION**	50	15.25	2.86	98	2.79	.01
FEMALE	"	50	16.95	3.22			
MALE	**REGRESSION**	50	17.42	2.72	98	3.80	.01
FEMALE	"	50	15.42	2.54			
MALE	**FATIGUE**	50	14.76	2.23	98	4.86	.01
FEMALE	"	50	17.41	3.15			
MALE	**GUILT**	50	14.94	2.75	98	1.28	NS
FEMALE	"	50	15.68	3.04			
MALE	**EXTRAVERSION**	50	17.66	2.81	98	2.23	.05
FEMALE	"	50	16.45	2.62			
MALE	**AROUSAL**	50	17.03	2.68	98	4.32	.01
FEMALE	"	50	14.85	2.35			
MALE	**OVERALL (MS)**	50	131.5	15.63	98	2.02	.05
FEMALE	"	50	125.1	16.34			

Conclusions

Our findings led to the following conclusions:-

1) Athletes experience significantly lower anxiety, stress, depression, regression, fatigue, guilt, introversion, and arousal than non-athletes.
2) Male students experience significantly lower depression and fatigue whereas significantly higher anxiety, stress, extraversion, arousal and overall mood state than female students.

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Folk Narrative-Based Theatre: Impact on Audiences, Limitations, and Expansion

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Abstract

This study presents an analysis of the significance and contemporary relevance of folk narratives in the Indian theatrical tradition. The study examines the creative process of plays based on folk tales, folk participation, and the distinctive features of Indian folk theatrical forms. A comprehensive analysis has been conducted of significant plays written by Habib Tanvir, Girish Karnad, and Vijay Tendulkar, who connected folk narratives with modern social questions. The research establishes that such theatrical forms impact audiences on two levels—the emotional experience of the narrative and the artistic presentation of performance. Additionally, practical challenges of this theatre have been identified, such as linguistic barriers, complexity of cultural contexts, and difficulties in experimental presentation. In conclusion, it becomes clear that folk narrative-based theatre is not merely a medium for preserving cultural heritage, but plays a crucial role in developing ethical values, social awareness, and community unity in contemporary society.

Keywords: Folk narrative, Indian theatrical tradition, folk theatre, collective creativity, audience impact, dramatic adaptation, cultural preservation, Charandas Chor, Hayavadana, Ghashiram Kotwal, Nacha, Tamasha, Yakshagana, contemporary theatre

Introduction

The development of Indian theatrical tradition has been enriched by the continuous contribution of folk narratives. From ancient times to the present, these narratives have not merely been sources of entertainment but have been carriers of community's shared memories, cultural beliefs, and moral teachings.[1] In the current context, when society faces rapid social transformation, value disintegration, and crisis of cultural identity, the relevance of theatre based on folk tales becomes even more significant.

Folk narratives are not the imagination of a single creator but result from the collective life experiences and social memories of many generations.[2] They contain deep insights into local culture, language, and folk customs, which establish natural intimacy with audiences. In Indian folk theatre, diverse styles such as Nautanki, Bhavai, Tamasha, Yakshagana, and Kathakali exist, which provide unique theatrical experiences through the integration of music, dance, and drama.[3]

The objective of this research is to systematically study various dimensions of folk tale-based theatre—its collective creative process, nature of participatory creation, impact on audiences, practical limitations, and possibilities for future expansion. In this research, while analyzing the significant works of contemporary playwrights such as Habib Tanvir, Girish Karnad, and Vijay Tendulkar, an attempt has been made to clarify how ancient folk narratives acquire new meaning and relevance in modern theatre.

This research has been prepared from an interdisciplinary perspective of folk literature, sociology, and theatre studies.[4] It includes contributions from Indian and international scholars—such as Richard Dorson and Claude Lévi-Strauss. The thesis of the research is that even in the era of globalization and modernity, folk tale-based theatre can remain a powerful medium of cultural preservation, social dialogue, and ethical awareness.

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Preamble

In the landscape of contemporary theatre, the importance of folk narratives is continuously increasing. An important question is: why does theatre, whose history is enriched with stories of gods and kings, need folk tales?[5] In the present time, when social consciousness, Dalit discourse, and women's consciousness are being discussed, and simultaneously, erosion of moral values is also visible, the role of folk tales in fulfilling society's cultural needs becomes extremely important.

The study of folk tales and folk plays is necessary not only from a literary perspective but also from a sociological perspective.[6] Folk culture is that foundation of human civilization on which society's moral and cultural beliefs are based. According to Richard Dorson, folk tales represent society's collective memory and transmit cultural values from generation to generation.[7]

Collective Creativity

Creations of folk literature are not those of a single individual but are formed from the collective consciousness of the community. Ethnic memories, oral traditions, and daily life experiences are incorporated into them.[8] Therefore, they display the intimate presence and deep impression of a society's locality, its consciousness, and its mentalities.

Ramesh Kuntal Megh's view is that "in the creative process of folk literature, collective consciousness replaces individual consciousness."[9] This collectivity is the greatest strength of folk tales, which provides them broad popular acceptance.

The continuity of human civilization lies in the fact that society preserves memories of its past; folk tales are the cultural expression of that memory preservation.[10] When civilization, in its aggressive form, attempts to forget locality and indigenousness, it is this call of memory that expresses people's sentiments through symbols, images, and mythological tales.[11] This is the purest form of sensibilities within society.

One society's ethnic memory and consciousness connect with another society. Thus, by highlighting the joys and sorrows, attachments and aversions, and aspirations of all human civilization, it presents a grand narrative.[12] This is why similarities appear in folk tales of different cultures.

Participatory Creation

The creative energy of folk plays is so powerful that listeners, speakers, spectators, and connoisseurs all become participants in its creative process.[13] In folk-oriented creations, an individual's inner truth is revealed, and the individual has the freedom to shape the story according to their understanding. This provides an extensive foundation for creative freedom.

In the Indian folk theatrical tradition, artists and spectators remain participants in mutual experience; there is no concrete dividing line between stage and auditorium.[14] This characteristic distinguishes folk plays from proscenium theatre.

In folk plays, women and men, animals and birds, sky and netherworld, nature—all can be humanized.[15] Between two characters, the boundaries of time dissolve. A person of the present can go to ancient times, and a person of ancient times can be present in today's time.[16] Time does not obstruct their mobility.

Indian Folk Theatrical Traditions

Various folk theatrical styles have developed in different regions of India. Rajasthan's Bhavai, Uttar Pradesh and Bihar's Nautanki, Assam's Bhaona, Gujarat's Bhavai, Andhra Pradesh's Burrakatha, Karnataka's Yakshagana, Kerala's Kathakali and Terukkuttu, Maharashtra's Tamasha and Lavani are among many such styles.[17]

All these styles have their own distinctive features, but some common elements exist in all:

1. **Integration of Music and Dance**: In folk plays, music and dance are integrally connected with narrative presentation.
2. **Audience Participation**: Spectators are not merely passive viewers but actively participate in the performance.

3. **Religious and Moral Message**: Most folk plays are based on religion, morality, and social values.
4. **Local Language and Culture**: Each style reflects the language, dialect, and cultural traditions of its region.

History of Folk Tales in Indian Theatre

Ancient Context

In the ancient Indian narrative tradition, the Mahabharata can be counted among the earliest sources of dramatic presentation.[18] The most ancient collection of folk tales in Sanskrit is Brihatkathasara, whose author was Gunadhya. This text was written in Paishachi language, which is no longer available.

According to Dr. Bühler, it was composed in the first century CE.[19] Sanskrit playwrights drew inspiration for plots and characters from narratives like Brihatkatha. The great poets Bhasa, Bhavabhuti, and Harsha took the subject matter of their plays from this folk tale collection.

One reason for the creation of folk tale-based plays is that even after many years, they still leave the same impact on audiences' minds today.[20] One reason for this is that society has collective participation in the creation of folk tales. Each character belongs to the same society where common people's joys and sorrows are connected, therefore spectators find it to be their own play.

Contemporary Folk Tale-Based Plays

Major Plays

Several important plays based on folk tales are found in contemporary theatre:

- Vijay Tendulkar's "Ghashiram Kotwal"
- Girish Karnad's "Hayavadana" and "Nagamandala"
- Sarveshwar Dayal Saxena's "Bakri"
- Bertolt Brecht's "The Caucasian Chalk Circle"
- Habib Tanvir's "Charandas Chor"
- Shanta Gandhi's "Jasma Odan"
- Dr. Lakshminarayan Lal's "Tota-Maina"

Among these, several plays were written in folk style while several were for proscenium theatre.[21]

Detailed Analysis

Charandas Chor

Habib Tanvir's play "Charandas Chor" represents that special form of Indian theatre where a vibrant confluence of folk tradition and modern perspective is visible.[22] This play is based on a popular folk tale of Chhattisgarh and is presented in the Nacha style. It not only entertains but also connects spectators with their identity, culture, and value consciousness.

Folk tales are mirrors of society's memory and collective experience. When they are presented on stage, they not only reconstruct the past but also create new dialogues with present spectators.

Plays like "Charandas Chor" introduce spectators to deep morality and philosophy through simple humor and song-music. Despite being an ordinary thief, Charandas never speaks untruth. This paradox compels spectators to reflect that truthfulness does not depend only on social identity but is defined by personal conduct.

Such folk theatre generates intimacy among common people. Rural spectators recognize their dialect, songs, expressions, and folk style in it, while urban spectators gain a new experience. This creates a social bridge.

In 'Charandas Chor', Habib Tanvir adopted the Chhattisgarhi 'Nacha' style, connecting folk form and color with modern social contexts and creating new theatrical aesthetics.[23]

The mixture of music, song, dance, and humor in Nacha attracts spectators. This style prevents dialogues from becoming overly serious and keeps the story vibrant. Combined with modern theatre techniques, stage design, and experimentalism, its effectiveness increases further.

Folk tale-based theatre not only entertains but also prepares ground for ideological discourse. Charandas Chor's truth-loving character stands against corrupt power and false pretense. Consequently, this play provides spectators with new perspectives on governance, politics, and morality. Thus folk theatre also becomes a tool of social criticism.

However, folk tale-based theatre has its own limitations. The first limitation is connected with language and folk dialect. Rural spectators easily understand it, but it sometimes creates difficulty for urban or migrant spectators.

The second limitation is of subject matter. Folk tales are usually based on simple structure; they have relatively less complex psychological depth. This sometimes makes their impact seem lighter compared to serious or classical theatre.

The third limitation is of theatrical experimentalism. The simple aesthetics of folk drama sometimes experiences difficulty in establishing harmony with modern technical stage design.

Despite these limitations, the scope of folk tale-based theatre is continuously expanding. Theatre practitioners are connecting folk tales with global contexts through new experiments. "Charandas Chor" has been translated into several languages and presented on international stages. This is proof that folk-based stories can dialogue with shared sensibilities of the world.

In today's time, when people are becoming disconnected from their roots, folk tale-based theatre can become a powerful means of maintaining cultural memory and identity. Stages connected with education and social concerns are also using these tales to make society aware and to educate along with entertainment.

Hayavadana

Girish Karnad's play "Hayavadana" is a distinctive example of that tradition in Indian theatre where new meanings are generated by connecting ancient folk tales and mythological stories with modern contexts.[24] This play is based on the story described in "Vetalapanchavimshati" from Kathasaritsagara, but Karnad did not make it merely a repetition; he connected it with the philosophical problem of human identity, incompleteness, and the search for completeness.

Folk tales contain society's deep cultural memory and life experience. When they are presented on stage, they do not remain merely a means of entertainment but present thought-provoking discourse.

"Hayavadana" compels spectators to think about where human completeness lies—in intellect, body, or emotions? This play goes beyond the periphery of an ordinary story, raises deep philosophical questions, and inspires spectators toward introspection. The complex problem woven into the simple framework of the folk tale quickly establishes an intimate relationship with spectators because they see reflections of their own unfulfilled desires and struggles in it.

Karnad presented deep modern questions while using the simplicity of folk tales.[25] In the story of the exchange of head and body, he placed the idea that human's real identity lies not in the body but in consciousness and thoughts. In this play, the character of Hayavadana with a horse's head becomes a symbol of human's constant struggle against incompleteness.

Additionally, Karnad gave spectators an intimate experience by using presentation styles like the Kannada folk play "Yakshagana."

The greatest strength of folk-based plays is that while remaining within common spectators' understanding, they illuminate deep questions. The story of Hayavadana compels spectators to reflect on the question that the desire for perfection ultimately provides only imperfection. Through folk tales, complex philosophical discourse comes forth in a simple and interesting form, which is more vibrant and accessible compared to classical texts. Its impact is not only emotional but also at the ideological level.

Folk tale-based theatre has some of its own limitations, which are also visible in "Hayavadana." In terms of language and style—folk language or traditional theatrical style does not reach every spectator equally, especially urban or global spectators sometimes experience distance in it.

The simplicity of subject matter is also a limitation. The framework of folk tales is usually straightforward, which requires additional effort to develop psychological depth. Excessive symbolism—the excessive use of folk tale and mythological characters can sometimes seem like unnecessary symbolism to modern spectators.

Despite these limitations, the field of folk tale-based theatre is continuously expanding. "Hayavadana" has been translated into several languages and this play has been presented not only on national but also on international stages.[26] This makes it clear that although the roots of folk tales may be local, their questions can be universal.

Today, when society is grappling with new questions of identity, gender, and self-expression, folk tale-based staging can present these questions in a more acceptable and intimate manner. In the fields of education, social discourse, and cultural dialogue too, these plays can convey deep messages to spectators by creating a confluence of folk and modernity.

Girish Karnad's "Hayavadana" is an excellent example that ancient folk tales are not merely sources of entertainment but can become a medium for deep exploration of contemporary problems and human existence. Folk tale-based plays leave a deep impact on spectators' minds, although some limitations of language, symbol, and presentation remain in them. Nevertheless, the cultural intimacy and possibility of global dialogue obtained from them maintain their relevance even today.

Ghashiram Kotwal

Vijay Tendulkar's famous play "Ghashiram Kotwal" is considered an important milestone in Indian theatre.[27] This play is based on the background of Maharashtra's 18th-century Peshwa court and is presented in the folk theatrical style called Tamasha. In it, Tendulkar created sharp criticism of power, politics, and corruption by basing it on a historical story.

Maharashtra's folk theatrical tradition 'Tamasha' is a vibrant presentation style filled with the energy of singing, dancing, dialogue, and satire.[28] Tendulkar used this folk style not merely for entertainment but through it highlighted historical political truth and modern social ironies.

The story of the Peshwa period's patriarchal power structure and exploitation of women is presented on stage with folk energy. The folk style attracts spectators, but the serious criticism hidden within it comes forth in an extremely sharp and effective manner.

Plays based on folk tales and folk styles establish direct dialogue with spectators. The impact of "Ghashiram Kotwal" manifests on several levels. From the perspective of political-social awareness—spectators experience that the game of power and corruption that occurred in history is not merely a problem of the past but is relevant even today.

Emotional and intellectual shock—the cruel truth that suddenly emerges amid Tamasha style's song-dance shakes spectators to their core. This confluence of entertainment and criticism leaves a deep impact. From the perspective of cultural intimacy—spectators of Maharashtra see the vibrant form of their folk culture in it, while other spectators gain a new experience of Indian folk tradition.

Through this historical story, Tendulkar demonstrated how people positioned at the center of power control administration and society for their own interests.[29] Ghashiram becomes an authority of power from an ordinary person, but ultimately he becomes a sacrifice to corrupt politics.

This story not only entertains spectators but also introduces them to the reality of power. From this, spectators can also compare with their present society and understand that the tendencies of power and corruption remain permanently present despite time change.

Plays created using folk tales and folk styles have some of their own limitations. Linguistic and cultural context—spectators unfamiliar with Tamasha style may have difficulty understanding the full meaning of song-music and satire.

Historical and folk simplification—presenting historical events in folk style sometimes makes their complexity seem less. Risk of symbol and exaggeration—the colorfulness of Tamasha can sometimes lighten the intensity of serious issues or take only the form of entertainment.

Despite these limitations, the expansion of theatre based on folk tales and folk styles is extremely broad. The staging of "Ghashiram Kotwal" was not limited to Maharashtra alone but was

presented in many places in the country and abroad.[30] This makes it clear that although the roots of folk styles may be regional, their questions can be universal.

In today's time, folk styles can become an important medium for establishing cultural diversity on stage. At educational and social levels too, such plays can become powerful means of making society aware about questions like power, gender equality, and corruption.

Adaptation of Story

While adapting folk tales into plays, the playwright sometimes presents the original story as it is. For example, Dr. Lakshminarayan Lal wrote the play "Tota-Maina" based on the folk tale of "Tota-Maina."[31] But sometimes the playwright also provides a different message to spectators by making changes in the original story.

Impact on Audiences

Two-Dimensional Impact

Folk tale-based plays impact spectators in two ways:

1. Impact of the story
2. Impact of theatrical performance

Impact of the Story

Regarding any folk tale, some spectators are previously aware while some spectators are unaware.[32] For spectators previously unaware of the original story, this is a new story. However, those spectators who know the original story beforehand maintain a special curiosity. The playwright creates an effective story by making contemporary the story that the spectator had been hearing and telling as an ordinary folk tale until today, in various forms.

Impact of Theatrical Performance

The impact of theatrical performance also falls differently on both types of spectators.[33] The spectator sometimes watches a folk tale-based play in folk theatrical style and sometimes in modern theatre style. If the theatrical performance of the story that the spectator has been hearing and telling since childhood is in modern theatrical style, the spectator remains amazed.

Deep Mental Impact

Folk narrative is a narrative of collective consciousness, therefore it is an inseparable part of people's memory.[34] Its impact is also as subtle as it is part of our social and mental structure. It remains in the subconscious of spectators. Attachment, aversion, and imaginations remain positioned at the center of any society's subconscious mind and also create a social sanskar (conditioning).

Limitations

Limitations of the Original Story

The biggest limitation of folk tales is that excessive imagination is required to understand them.[35] Trees and plants conversing with humans, birds talking with humans, coming alive after death, etc. Additionally, these stories are bound in the specificity and language of a particular region.

Limitations of Dramatic Adaptation

In dramatic adaptation of folk tales, it is necessary to keep folk in mind.[36] Since spectators know the story beforehand, its originality cannot be eliminated. In dramatic adaptation of these stories, simplicity of language and dialogue must always be maintained. While characterizing, religious sentiment must always be considered.

Limitations of Performance

There are also many limitations in the performance of folk tale-based plays.[37] Spectators view folk tale-based plays from a special perspective. Many imaginary actions occur in folk tales that can only be understood through spectators' imagination.

Linguistic and Cultural Barriers

The regionality of folk tales connects them to a particular language and vernacular, which limits their spread, but this same characteristic also provides them local identity.[38] An example of this is plays written by Girish Karnad in Kannada, which remain bound in linguistic limitations.

Challenge of Audience Class

There is also a spectator class that is influenced by modernity and post-modernity, which has considered the word 'folk' itself as inferior.[39] For them, theatre based on such stories has no justification. One reason for this is also today's mechanical and busy lifestyle, because that class is not familiar with folk's suffering and happiness.

Dimensions of Expansion

Broad Freedom

The word 'folk' itself is an extremely flexible word.[40] It provides everyone such freedom that they can adapt it to the present time without damaging the soul and core of these stories and present it with a mixture of their imaginations. This is also the broader expansion of folk tale-based theatre.

Local Adaptation

Folk tale-based theatre automatically adopts the form of local dialect, costume, etc., at each place.[41] For example, Shakuntala's Dushyanta wears a Mughal cap and achkan in Rajasthan's Bhavai and speaks dialogues in Marwari language, while in Uttar Pradesh's Nautanki, Dushyanta wears dhoti-kurta and speaks dialogues in Hindi language.

Expansion in Various Styles

Plays have been created on the same folk tale in different regions, in different cultures, by different playwrights.[42] "Andher Nagari Chaupat Raja," "Ghashiram Kotwal," "Saiyya Bhaye Kotwal," "Bakri," "Ancho Ka Hathi"—the same folk tale is visible at the root of all these plays.

International Expansion

The expansion of folk tales can also be seen at the international level.[43] For example, Brecht wrote "The Caucasian Chalk Circle" by changing the style along with the content of the play "The Chalk Circle" written in China. And on this same plot, Bhikhari Thakur wrote a play called "Gabardhinchor" in Bidesia style.

Expansion in Modern Media

As a form of expansion of folk tale-based plays, it can also be seen that first the folk tale, then its dramatic adaptation, then production of film or animation based on it.[44] Making a play based on a folk tale contemporary is also an expansion of that play.

Contemporary Relevance

Social Necessity

Just as social consciousness, Dalit consciousness, women's discourse are being discussed in our society, and at another level moral values are also declining, and most importantly, our society's cultural aspiration is not being fulfilled, folk tales are needed most in that society.[45] Because these folk tales are stories of entertainment, morality, and social consciousness.

Contribution to Sanskar Formation

The threads of many parts of our creative activity are in folk life.[46] Its impact falls unknowingly on our thinking, sanskars, and actions. Especially, a vast part of our cultural tradition is connected with folk culture.

Cultural Preservation

Folk's aspiration is that everyone's welfare should happen in the world and no person should remain unhappy.[47] The sentiment of "Sarve bhavantu sukhinah sarve santu niramayah. Sarve bhadrani pashyantu ma kashchit duhkhabhagbhavet" (May all be happy, may all be free from disease. May all see auspiciousness, may no one experience suffering) appears pervasive everywhere.

Conclusion

These folk tale-based plays that elevate moral values, provide entertainment, and awaken social consciousness have an extremely positive impact on spectators.[48] Although some such plays do not completely pass the test of logic, the test of science, they provide full entertainment to spectators and also provide lessons of morality.

Despite the limitations of folk tale-based theatre, its impact has continued to fall on spectators. The basic purpose of folk tales is to strengthen morality, mutual cooperation, and the spirit of welfare

in society.[49] Its same excellent aspiration remains that the empire of peace should be established everywhere in the world.

In the present era, when the influence of individualism and materialism is increasing, folk tale-based theatre performs the work of keeping community values and the spirit of collectivity alive.[50] It is not only a means of entertainment but also an important medium for formation of social sanskars and development of cultural consciousness.

Their expansion has been happening and will continue to happen in various forms. With time, dramatic adaptation of these folk tales will continue to happen with new techniques and new styles, which will maintain their relevance and preserve cultural wealth for future generations.[51] In the context of contemporary theatre, the role of folk tales is not limited only to preservation of tradition but is also a source of solutions to challenges of modern life.

Folk tale-based theatre is a carrier of Indian cultural heritage. It not only preserves memories of the past but also enriches them with new meanings according to the needs of present society. Playwrights like Habib Tanvir, Girish Karnad, and Vijay Tendulkar have proved their relevance by connecting folk tales with modern social, political, and philosophical questions.

The two-level impact of these plays on spectators—the emotional impact of the plot and the aesthetic impact of theatrical presentation—makes them distinctive. Linguistic limitations, complexity of cultural contexts, and expectations of modern spectators certainly present challenges, but the capability of folk tale-based theatre lies in crossing these limitations and establishing its identity in global contexts.

In the future, through digital media, new technologies, and international collaboration, the expansion of folk tale-based theatre will be even broader. This theatre can play an important role in connecting the young generation with their cultural roots, encouraging social dialogue, and re-establishing human values.

Ultimately, folk tale-based theatre is not merely a form of art but is a living representation of society's collective consciousness, cultural identity, and moral values. Its relevance and capability have become even more important in the present time.

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