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Attitude towards Research among Postgraduate Science Students: A Study of Balangir District, Odisha

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Abstract

The primary objective of this study was to assess the postgraduate science students' attitudes towards research and explore variations based on gender, academic year, and discipline. The study was carried out within government universities in the Balangir district, located in Western Odisha, India. Employing a descriptive survey design, data were collected from 100 postgraduate science students using a standardized Attitude toward Research Scale. Data were analysed using mean, standard deviation, percentage and independent samples t-tests. Findings revealed that most of the students (72%) possess a moderately favourable attitude toward research. The findings show that early guidance, mentorship, and practical research opportunities are essential for building a strong research culture in institutions, in line with the goals of India's National Education Policy (NEP) 2020.

Keywords: *Attitude, Postgraduate Science Students, Research Engagement, Higher Education, Western Odisha, NEP 2020.*

Introduction

The National Education Policy (NEP) 2020 of India stressed the importance of nurturing a research culture and fostering innovation across all levels of higher education. Research extends its scope beyond purely academic exercise; it plays a vital role in fostering intellectual growth, driving economic progress, and enabling social transformation (Sharma, 2020; Islam, 2023). Within the domain of science, research is particularly significant as it contributes to technological innovation, facilitates new discoveries, and informs policy formulations (Yang et al., 2023). At the postgraduate level, science education transcends mere acquisition of subject knowledge; it emphasizes the development of scientific thinking, curiosity, and essential research skills required for producing original and meaningful work

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(Gross et al., 2020). During this phase, students actively engage in research-oriented tasks such as experiments, dissertations, and fieldwork, which provide them with formative experiences. These experiences are crucial for cultivating critical thinking, analytical reasoning, problem-solving abilities, scientific temperament, and inquiry-based learning (Pilai et al., 2015). Moreover, post graduate science students often contribute significantly to innovation within academic institutions through their involvement in publications, patents, and prototype development, thereby enhancing the research output and institutional reputation of universities (Chen & Chen, 2024).

Although educational institutions, including faculty and administrators, strive to promote and support research activities, the effectiveness and sustainability of such efforts largely depend on students' interest in and attitude towards research (Papanastasiou & Schumacker, 2014). While research aptitude can be systematically developed through instruction and training, students' attitudes towards research are shaped by their level of interest, perceived usefulness, emotional disposition, and willingness to participate. These factors collectively serve as a motivational base that enables the translation of theoretical knowledge into practical research engagement (Ahmed, 2020; Aithal & Aithal, 2020). Students' attitude towards research comprises perceived usefulness, anxiety, emotional response, difficulty and life relevance (Papanastasiou, 2005). Further, this attitude is influenced by factors such as students' interest in inquiry, their prior experiences, mentorship quality, and institutional support (Muthuswamy et al. 2017; Cotrina et al., 2025). Research anxiety, lack of mentorship, and limited institutional support are major challenges at the postgraduate level. These factors can lead to only a moderately favorable attitude towards research (Parveen et al., 2025). Students with a positive view of research are more likely to engage in it with interest, as they can relate it to real life problem-solving and future career opportunities. In contrast, students who see research as difficult, time-consuming, or not practically useful may develop anxiety or lose interest (Copper et al., 2023).

In this context, it is important to assess the attitudes of postgraduate science students towards research. The present study focuses on students enrolled in Master of Science (M.Sc.) programs in various science disciplines such as physics, chemistry, mathematics and biology. These students are usually required to complete research projects or dissertation as part of their degree. Understanding their attitudes is important because it directly affects their motivation, persistence, and performance in research activities (Brew, 2006). A positive

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DAJE Volume 02 (1) 2026 [January-June]
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attitude can lead to better research output and a greater likelihood of pursuing doctoral studies or research careers (Heng et al., 2020; Parveen et al., 2025). On the other hand, a negative attitude may result in delay, poor-quality work, or avoidance of research tasks (Landa-Blanco & Cortes-Ramos, 2021; Copper et al., 2023).

Review of Literature

Several studies have explored students' attitudes toward research. Abun et al. (2023) surveyed the research attitude of MBA graduates and found a significant positive correlation between favorable attitudes and the intention to conduct research. Alsabaani et al. (2023) found that though health science students lack research knowledge, but possess a positive attitude towards research. Pandey and Singh (2023) compared the research attitude among postgraduate students of arts, science and teacher education disciplines and found that M.Sc. students exhibited a more positive attitude toward research than M.A. and M.Ed. students. Wishkoski et al. (2022) studied the impact of intervention on the research attitude and found a positive shift in undergraduate students' attitudes. The research methods course also reduced research anxiety among the students.

Westhuizen (2018) found that postgraduate students' knowledge, attitudes, and self-efficacy improved after receiving online research course. A study among postgraduate students of Panjab University, Chandigarh conducted by Kaur (2015) reported that most students did not possess a positive attitude toward research and found that male postgraduate students had a more favourable attitude towards research than female postgraduate students. Shah and Purani (2014) examined the research attitude among M.Ed. and M.Phil. students in Ahmedabad, and found an average level of attitude among the students, with female students and those from science and commerce backgrounds showing more favorable attitudes.

Research Gap and Need for the Study

The review of literatures indicates that while many studies have explored students' attitudes towards research across different academic levels and disciplines, limited focus has been placed on postgraduate science students in regional context. Most existing research centers on general postgraduate populations or professional courses such as health sciences, business administration, and M.Ed., with relatively limited attention to the role of variables like gender, academic year, and specific science disciplines within this group. Moreover, inconsistencies in findings across contexts highlight the need for localized studies. In line

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with the National Education Policy (NEP) 2020, which emphasizes the development of a research-intensive higher education system in India, assessing students' attitude towards research at postgraduate level becomes essential for designing effective institutional interventions (Bhutia & Chhetri, 2025).

There remains a notable gap in research focusing on postgraduate science students in regional Indian setting such as Western Odisha, along with limited clarity on the influence of the demographic factors. Addressing this gap, the present study examines and compares the research attitude of postgraduate science students in Balangir District of Western Odisha across selected variables, aiming to contribute context-specific insights for educators and policy makers to foster supportive research environments.

Objectives of the study

The study was guided by the following objectives:

1. To examine the attitude of postgraduate science students toward research.
2. To compare the attitude of postgraduate science students toward research based on
   a) Gender,
   b) Academic year, and
   c) Discipline.

Hypotheses

The following null hypotheses were formulated for testing:

H_{01}: There is no significant difference in the attitude of postgraduate science students toward research in relation to their gender.

H_{02}: There is no significant difference in the attitude of postgraduate science students toward research in relation to their academic year/batch.

H_{03}: There is no significant difference in the attitude of postgraduate science students toward research in relation to their discipline.

Methodology

Aligning with the objectives, a descriptive survey research design was adopted to conduct this study. The targeted population of the study comprised students enrolled in postgraduate science programs in government universities within the Balangir district of Western Odisha. The study was delimited to Physical Sciences and Biological Sciences disciplines only.

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The selected district has a single government university offering postgraduate programmes in science. The university provides M.Sc. degrees in five disciplines (Physics, Chemistry, Mathematics, Botany, and Zoology) with an intake capacity of 16 students. Therefore, total number of students in each department for both first- and second-year classes, resulted in a total population of 160 students. From the institutional records, the list of enrolled students was obtained, and only those with 85% or above attendance were considered as the target population. Using a 95% confidence level, the required sample size was calculated to be 101 students. Each eligible student was then assigned a unique identification number, and simple random sampling through computer-generated random numbers was applied. Finally, a sample of 100 students was selected, ensuring equal representation across Physical and Life Science disciplines, as well as across first-year and second-year cohorts. This sample size was considered adequate for the planned statistical analyses (t-tests), balancing statistical power with practical constraints of data collection in the specific regional context.

Researchers used a standardized tool namely "Attitude toward Research Scale" developed by Papanastasiou (2005). This scale has 32 items distributed in five dimensions. These dimensions are usefulness of research, research anxiety, positive feelings towards research, research difficulty, and relevance of research to life. The original scale has a reported reliability coefficient of 0.948, indicating high internal consistency. To ensure contextual relevance, the scale was revalidated. The expert validation ensures the content validity and the pilot study conducted on a small sample (N=30) confirmed face validity and yielded a Cronbach's Alpha of 0.88. This indicates good reliability for use with the target population. No modifications were made to the scale items during this revalidation, which primarily focused on face validity and internal consistency.

Before data collection permission was obtained from the principal and head of the respective departments. Data were collected during regular class hour. The students were informed about the purpose of the study, and informed consent was obtained from all participants. Collected data were organized and scored. To determine the general level of attitude, analysis was done using mean, standard deviation, frequency. Independent samples t-tests were conducted to test the hypotheses.

Findings

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DAJE Volume 02 (1) 2026 [January-June]
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Table 1 and 2 demonstrate the overall attitude of postgraduate science students towards research, while Table 3 to 5 show the comparisons based on the selected demographic variables.

Table 1: Mean and Standard Deviation of Attitude towards Research

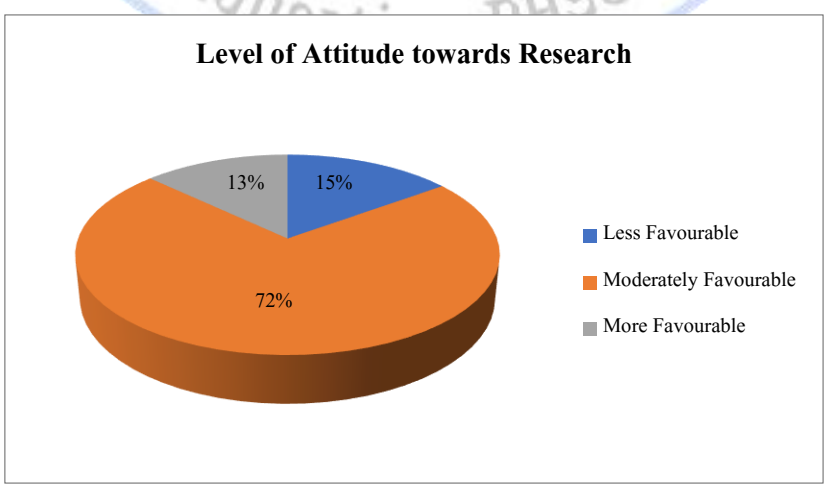
N	Mean	SD	Min	Max
100	117.74	12.32	86	147

As shown in Table 1, the overall mean score of attitudes towards research among the participants (N = 100) was 117.74 with a standard deviation of 12.32. The scores ranged from a minimum of 86 to a maximum of 147, suggesting a reasonably wide distribution in attitudes.

Table 2: Level of Attitude towards Research

Level of Attitude	Core Range	Frequency (%)
Less Favourable	86-106	15
Moderately Favourable	106-130	72
More Favourable	131-147	13

Table 2 categorizes students' attitudes into three levels using the mean and standard deviation (M±SD) method. A significant majority of students (72%) exhibited a "moderately favourable" attitude towards research. About 15% of the students showed a "less favourable" attitude, while only 13% displayed a "more favourable" attitude. These findings indicate that while most students hold a generally positive view, a very small proportion possesses highly favourable perceptions, suggesting considerable scope for enhancing research motivation and orientation. This can be represented graphically in Fig. 1.



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DAJE Volume 02 (1) 2026 [January-June]
Published on: 26 August, 2026

Figure. 1: Level of Students' Attitude towards Research

Table 3: Comparison of Mean Attitude Scores of Male and Female Students

Gender	N	Mean	SD	t-value	Sig. (2-tailed)
Male	51	119.37	13.523	1.357	0.178
Female	49	116.04	10.815		

Table 3 presents a comparison of research attitude scores between male and female students. The mean score for male students (M = 119.37, SD = 13.52) was higher than that for female students (M = 116.04, SD = 10.82). However, the t-test result (t (98) = 1.357, p =.178) indicates that this difference is not statistically significant at the.05 level. Thus, researchers failed to reject the null hypothesis (H_{01}). Though there is difference in the mean score but the difference is not statistically significant. This can be represented graphically as shown in Fig. 2.

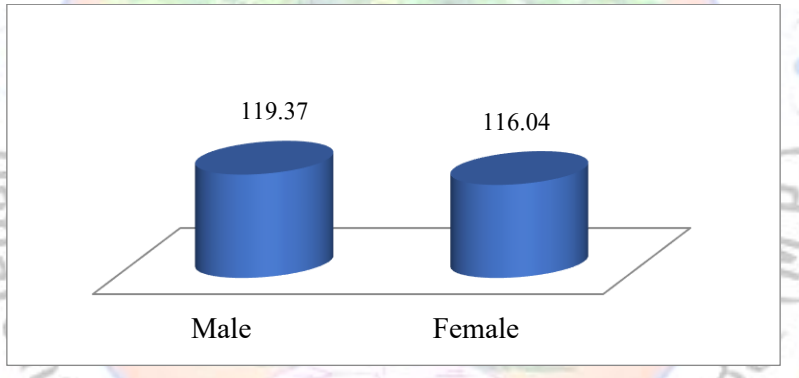


Figure. 2: Comparison of Mean Scores of Students' Attitude in relation to Gender

Table 4: Comparison of Mean Attitude Scores of First and Second-Year Students

Academic Year	N	Mean	SD	t-value	Sig. (2-tailed)
First Year	50	118.30	11.960	0.453	0.652
Second Year	50	117.18	12.774		

As presented in Table 4, first-year students (M = 118.30, SD = 11.96) had a mean attitude score very similar to that of second-year students (M = 117.18, SD = 12.77). The difference was not statistically significant (t (98) = 0.453, p =.652). Thus, researchers failed to reject the null hypothesis (H_{02}). This suggests that attitudes towards research do not significantly change as students' progress through their postgraduate program in this context.

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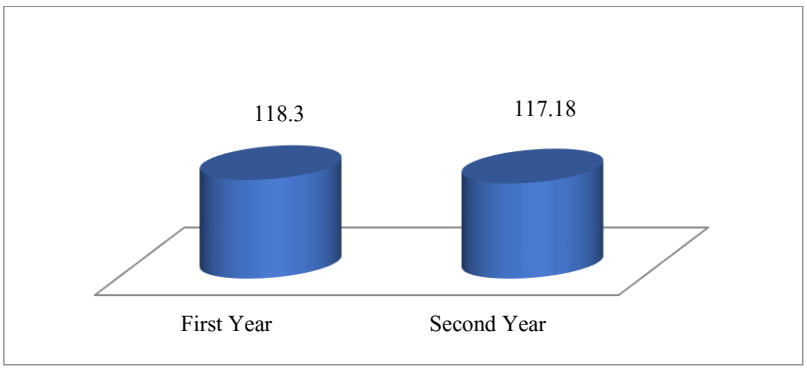


Figure. 3: Comparison of Mean Scores of Students' Attitude in relation to Batch

Table 5 Comparison of Mean Attitude Scores of Physical and Biological Science Students

Discipline	N	Mean	SD	t-value	Sig. (2-tailed)
Physical Sciences	50	119.12	14.045	1.121	0.265
Biological Sciences	50	116.36	10.281		

Table 5 shows that students from the Physical Sciences (M = 119.12, SD = 14.05) had a slightly higher mean attitude score compared to those from the Biological Sciences (M = 116.36, SD = 10.28). However, this difference was not statistically significant (t(98) = 1.121, p =.265). Thus, in this case also, researchers failed to reject the null hypothesis (H_{03}) at 0.05 level, indicating that the broad science discipline does not significantly influence students' attitudes toward research in this sample.

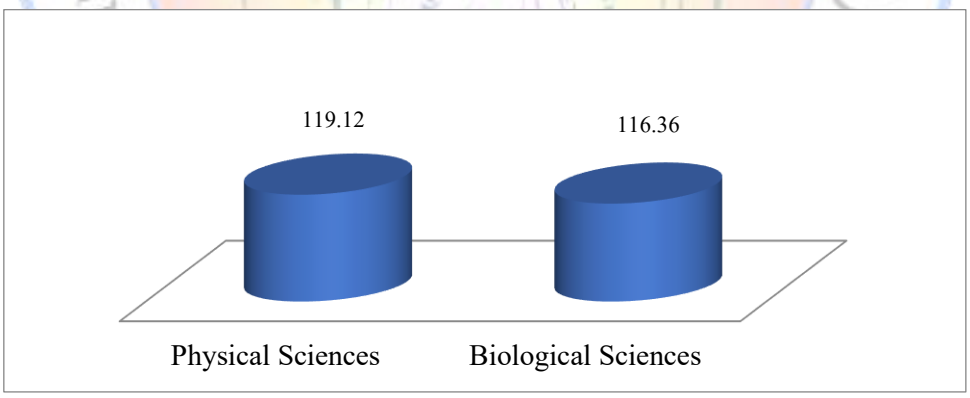


Figure. 4: Comparison of Mean Scores of Students' Attitude in relation to Discipline

Discussion

This study aimed to examine the attitude of postgraduate science students in the Balangir district of Western Odisha towards research and to compare their attitudes across gender, academic year, and discipline. The primary finding revealed that a majority (72%) of students exhibit a moderately favourable attitude, with only 13% demonstrating a more

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favourable attitude. This general pattern of moderately positive attitudes aligns with findings from Shah and Purani (2014) and Alsabaani et al. (2023), who also reported average or generally positive attitudes among postgraduate and health science students, respectively. The small percentage of students with a more favourable attitude is suggesting that while research is not viewed negatively, deep enthusiasm or strong engagement may be lacking for many. Students' attitude towards research does not yield any statistically significant differences across gender, year of study, and academic discipline. While Kaur (2015) found male postgraduate students in Panjab had a more favourable attitude and Shah and Purani (2014) found that female students in Ahmedabad showed more favourable attitudes towards research, the present study reported non-significant gender-based differences. The lack of gender difference in students' attitude towards research in Balangir district of Western Odisha suggests that the influence of gender on research attitudes is likely context-dependent. It indicates that male and female students in this specific sample experience similar levels of encouragement, opportunity, and barriers related to research. The absence of a significant difference in attitudes between first-year and second-year postgraduate science students is notable. This finding aligns with Wishkoski et al. (2022), who emphasized that changes in research attitudes are often linked to targeted instruction, research methodology courses, exposure to research activities rather than mere progression through academic years. This finding suggests that the existing postgraduate curriculum or institutional environment may not naturally promote a more positive attitude towards research over time. It supports Westhuizen's (2018) view that structured interventions are more effective in shaping research attitudes than demographic factors or academic progression alone.

The lack of significant difference in attitudes between students of Physical Sciences and Biological Sciences suggests a relatively uniform experience or perception of research across these broad disciplinary groups within this context. This is partly aligning with the study of Pandey and Singh (2023), which indicates that M.Sc. students had more favourable attitudes than M.A. or M.Ed. students. The non-significant differences across all three variables (gender, year, discipline) in this study might indicate that systemic or institutional factors, such as a uniform curriculum in terms of research exposure, similar levels of faculty research engagement, or shared institutional constraints, e.g., resource availability, mentorship quality, etc. are more influential in shaping research attitudes in this context than the

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Published on: 26 August, 2026

individual demographic factors examined. Such shared experiences may result in similar attitude across groups. For example, common challenges as reported in study of Talreja et al. (2024) may affect the influence of demographic differences.

The findings show that postgraduate science students in this region have a stable and moderately positive attitude towards research. But there is a scope for improvement, because a more positive attitude is important for engaging students in research. Similarly, Bhutia and Chhetri (2025) point out that a moderately favourable attitude, though not negative, may not be enough to achieve the high level of research involvement and innovation expected under policies such as NEP 2020.

Limitations of the Study

The study has a few limitations such as –

- The findings are based on postgraduate students from government universities in one district of Western Odisha. This limits their generalizability to other regions or types of the institutions.
- The cross-sectional design captures attitudes at a single point in time. This does not allow for conclusions about change or causality.
- The quantitative approach identifies overall trends but does not explore the deeper reasons behind students' attitudes, which could be better understood through qualitative research.

Implications for Future Research

- Future studies may benefit from following students over time to see how their attitudes towards research change and how particular interventions make a difference.
- In-depth qualitative studies could help capture students lived experience and highlight on the institutional support, pedagogical and personal factors that support or hinder positive research attitude.
- Studies comparing government and private institutes, also different regions of the country would further enrich the understanding the pattern.
- Examining how specific initiatives under NEP 2020 influence students' research attitudes as they are translated into practice would be a valuable direction for future research.

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DAJE Volume 02 (1) 2026 [January-June]
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Recommendations

Based on the findings, the following are the recommendations to strengthen research attitude, orientation and engagement among postgraduate science students in aligning with the NEP 2020:

- The overall moderate attitude highlights the need for academic guidance. Structured faculty-mentored research can improve motivation and research competence.
- Since the findings show that students' attitudes do not improve significantly as they progress academically, research methodology and hands-on research activities should be introduced from the beginning of the postgraduate programmes.
- Institutional initiatives such as seminar, journal clubs, student conferences and interdisciplinary activities can make research more visible, engaging, and valued by all students. Also, encouraging student participation in conferences, publications, research internships and workshops at different places can help students to get research exposure and appreciate the practical value and rewards research.
- To support inclusive participation in research, universities should provide equitable and quality access to funding, laboratories, equipments, digital resources, and research opportunities.
- Highlighting how research skills contribute to career development and societal problem-solving though alumni interaction, industry talks, and applied research projects can enhance the perceived usefulness of the research.

Conclusion

This study explores the Postgraduate Science students' attitude towards research in government universities of Balangir district located in Western Odisha. Most students showed a moderately favorable attitude towards research, suggesting scope for improving students' attitude towards research. The study found no significant differences across gender, year of study or discipline, indicating a strong influence of the shared academic environment. This highlights the need for institution-wide strategies such as early research exposure, structured training, and effective mentorship which is vital for developing a research-oriented academic culture in line with the national priorities such as NEP 2020.

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