A STUDY OF SCIENTIFIC CURIOSITY OF SECONDARY SCHOOL STUDENTS WITH RESPECT TO THEIR DEMOGRAPHIC FACTORS

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ABSTRACT

This study aims to compare the scientific curiosity of secondary school students for various demographic variables, namely gender, class, type of institution, family structure, parental education, and parental occupation. For this purpose, data were collected from 200 students in grades 8th and 9th in Chhattisgarh, India. A survey method was employed, and data were collected from a representative sample of students using a standardized scientific curiosity inventory. The data were analyzed using descriptive statistics, t-test, ANOVA, and Post-Hoc (Multiple Comparison) test. Hypotheses were tested at the α = 0.05 level of significance. The analysis revealed no significant differences in scientific curiosity based on gender, class, type of institution, and family structure. While parental education and parental occupation showed significant differences. Students with academically supportive backgrounds demonstrated higher levels of scientific curiosity. These findings highlight the influence of socio-demographic factors on students' inclination towards scientific exploration and suggest the need for targeted educational strategies to promote curiosity-driven learning among diverse student groups.

Keywords: Scientific Curiosity, Secondary School Students, Demographic Variables.

INTRODUCTION

Science always promotes curiosity to ask several questions. Teaching technological literacy, critical thinking, and problem-solving through science education gives students the skills and knowledge they need to succeed in school and beyond. Scientific curiosity is a fundamental driving force behind the advancement of knowledge and innovation. It refers to an intrinsic desire to explore, question, and understand the natural world, often motivating individuals to seek explanations for phenomena that are not immediately apparent. Historically, scientific curiosity has been linked to major discoveries and breakthroughs, serving as the foundation for the scientific method and empirical inquiry (Kang et al., 2009). By fostering a mindset of exploration and critical thinking, scientific curiosity not only enhances learning but also promotes creativity and resilience in the face of complex challenges. As such, understanding and nurturing scientific curiosity is essential for cultivating a robust research culture and supporting continued scientific progress.

Given the 21st-century requirements, quality science education must aim to develop good, thoughtful, well-rounded, and creative individuals. It must enable an individual to develop 21st-century capabilities. 21st-century skills include critical thinking, problem-solving, reasoning, analysis, interpretation, synthesizing information, research skills, and practices, interrogative questioning, creativity, artistry, curiosity, imagination, innovation, personal expression, perseverance, self-direction, and planning, self-discipline, adaptability, initiative, communication, collaboration.

Curiosity is a trait that every human being possesses. However, given our interest in curiosity as related to the engagement in science practices, we posited that a person might have science-specific curiosity, and those aspects of curiosity may in fact be domain-specific. Curiosity in science is related 'to information-seeking behaviours, such as those that are observed in learning environments' (Jirout & Klahr, 2012),and can be defined as a desire for content-specific knowledge about natural phenomena (Spektor-Levy, Baruch, & Mevarech, 2013). In fact, across various areas of science, these interest-based behaviours are evidenced, especially in children who have developed expertise in a specific science domain through intense, prolonged engagement in science over time (Cleary & Zimmerman, 2012; Crowley & Jacobs, 2002; Palmquist & Crowley, 2007). We posit that this intense engagement leading to expertise corresponds with a high level of curiosity in children and adults. Individuals who are curious seek explanations for their interests and experiences and find pleasure in this, which satisfies their drive to learn (Kashdan et al., 2009). This discipline-specific view of curiosity aligns with the images of individuals with a high interest in science who are likely to seek out difficult challenges to engage more fully in activities that they enjoy. Curious individuals who engage in science practices are constructing their scientific identity as they investigate, question, and manipulate, particularly when participating socially with others. Identifying with scientific enterprise focuses on a person's development of a scientific identity, as being someone who recognizes himself or herself (or not) as a scientist (Cleary & Zimmerman, 2012; Weible & Zimmerman, 2016).Often, identity is associated not only with recognition but also with the sense of belonging to a community through participation in activities (Bransford et al., 2000). Many of these activities in science such as intense learning, asking questions, examining closely, and manipulating objects are the common behaviours of highly curious people (Kashdan & Silvia, 2009).

Studies have found that more curious students tend to have higher achievement or more academic success. (M. Arnone et al., 1994)found that more curious first- and second-grade students in a museum study scored higher on a content-oriented post-test than the less curious students.Jirout & Klahr, (2012),found that curiosity and achievement were independent, although curiosity was correlated with asking more questions; children who were more curious also recognized the questions that were more effective. In summary, through exposure to learning environments that stimulate curiosity and support for its expression, the students may further explore content areas as well as participate in discussions that increase interest and understanding in formal and informal settings.

Science curiosity is a desire to seek out and consume scientific information just for the pleasure of doing so. People who are science-curious do this because they take satisfaction in seeing what science does to resolve mysteries. Curiosity and curiosity-driven questioning are important for developing scientific thinking and motivation to pursue scientific questions.

a. Joyous Exploration – This is the prototype of curiosity – the recognition and desire to seek out new knowledge and information, and the subsequent joy of learning and growing.
b. Deprivation Sensitivity – This dimension has a distinct emotional tone, with anxiety and tension being more prominent than joy, pondering abstract or complex ideas, trying to solve problems, and seeking to reduce gaps in knowledge.
c. Stress Tolerance – This dimension is about the willingness to embrace the doubt, confusion, anxiety, and other forms of distress that arise from exploring new, unexpected, complex, mysterious, or obscure events.
d. Social Curiosity – Wanting to know what other people are thinking and doing by observing, talking, or listening to conversations.

Curiosity is an integral component/ strongly associated with effective learning (M. P. Arnone et al., 2011; Cambridge Core Citation_24Aug2024, n.d.; Gross et al., 2020; Kashdan & Silvia, 2009; Oudeyer et al., 2016; Peterson, 2020; Singh & Manjaly, 2022). Certainly, any good learning procedure in science will attempt to develop more scientific curiosity. The experiences of the pupils in a science class should lead to an increased science curiosity in scientific activities and discoveries. Although the existing science curiosity of a particular child may be limited in scope, it furnishes the basis for possible expansion toward new experiences. It should be clearly understood that classroom motivation is not as much a matter of creating science curiosity. A high degree of curiosity in a given area is generally considered to be advantageous for achievement in that area. It is due to curiosity that scientists, philosophers, and artists find out new facts which ultimately lead to new creations. (Arnone et al., 2011; Gross et al., 2020; Gruber & Fandakova, 2021; Kenett et al., 2023; Murayama et al., 2019; Oudeyer et al., 2016; Peterson, 2020; Singh & Manjaly, 2022). Curiosity leads to divergence in perception, thinking, and behaviour. Advancements in science and technology have been influenced considerably by man’s natural curiosity. Kreitler et al., (1975) have indicated that curiosity not only facilitates cognitive functioning in general but also facilitates the use of intellectual potential in particular. Schools must face the challenges of awakening a lifelong intellectual curiosity in students so that they can grow into creative minds and understand better to meet the demands and challenges of the future.

Scientific curiosity serves as a critical catalyst for discovery and innovation, forming the foundation upon which scientific inquiry is built. It stimulates individuals to pose questions, seek evidence, and challenge existing knowledge, thereby promoting deeper understanding and advancement across disciplines. Research suggests that fostering scientific curiosity enhances cognitive engagement, improves problem-solving skills, and increases persistence in learning tasks (Jirout & Klahr, 2012). In the context of research, cultivating curiosity is essential, as it not only drives the formulation of hypotheses but also sustains motivation through the often complex and uncertain process of investigation. By prioritizing scientific curiosity, researchers can promote a culture of continuous inquiry, critical thinking, and creative exploration, all of which are essential for meaningful scientific progress. Nasution et al., (2018; Ting & Siew (2014) studied the effect of outdoor school ground lessons on students' science process skills and scientific curiosity. The findings of this study provide a framework for science teachers to teach students through interesting and meaningful outdoor activities. Then students will improve their process skills and increase their curiosity. Hardianti et al., (2020) studied the relationship between curiosity and intrinsic motivation for science process skills. They found no significant relationship between curiosity, science process skills, and intrinsic motivation. (Xavier (2010) studied the effectiveness of instructional material in biological science based on a discovery learning model for fostering science process skills, science creativity and scientific curiosity in higher secondary students. He found his study fosters the science process skills, scientific creativity, and science curiosity of higher secondary students.

Most of the previous studies were conducted by including demographic variables such as gender, class, and other common variables during sample selection, however, the present study included additional variables such as institution, family structure, parental education, and parent's job along with the common variables to explore their independent and interaction effects on scientific curiosity. Additionally, Thus, the present study intends to strengthen researcher's understanding of the relationship between scientific curiosity, and related demographic variables.

METHODOLOGY

In the present research, the researcher has tried to select the appropriate research method to solve the research problem. It has been decided to adopt the descriptive survey method as the survey is one of the most commonly used methods of descriptive research in the behavioural sciences.

Research Question

Is there any difference in the scientific curiosity of secondary school students with respect to their demographic variables (Gender, Class, Family structure, School types, Parental Education, and Parental Job)?

Objective

To compare the scientific curiosity of secondary school students with respect to their demographic variables (Gender, Class, Family structure, School types, Parental Education, and Parental Job.)

Hypothesis of the Study

H1.1: The scientific curiosity of secondary school students is not significantly different with respect to their Gender.

H1.2: The scientific curiosity of secondary school students is not significantly different with respect to their Class.

H1.3: The scientific curiosity of secondary school students is not significantly different with respect to their Institution.

H1.4: The scientific curiosity of secondary school students is not significantly different with respect to their Family structure.

H1.5: The scientific curiosity of secondary school students is not significantly different with respect to their Mother Education.

H1.6: The scientific curiosity of secondary school students is not significantly different with respect to their Father Education.

H1.7: The scientific curiosity of secondary school students is not significantly different with respect to their Mother Job.

H1.8: The scientific curiosity of secondary school students is not significantly different with respect to their Father Job.

RESULTS AND FINDINGS

Descriptives Analysis

The analysis and interpretation are based on the data collected from the secondary school students of Chhattisgarh. Descriptive as well as inferential statistics were used for the analysis of the collected data.

It is a well-established fact that to employ inferential statistics for analysis, it is an essential criterion that data must be normally distributed. Hence, before the analysis of data, the researcher determined the normality of the scientific curiosity of secondary school students. The important measures to show the normality of the studied variable scores and their graphical presentation are provided as follows: -

TABLE 1
MEAN, MEDIAN, MODE, SD, SKEWNESS, AND KURTOSIS OF THE SCIENTIFIC CURIOSITY SCORE

Mean	Median	Mode	SD	Skewness	Kurtosis
11.1	11.0	10.0	4.65	0.274	-0.250

Table 1 reflects that the mean, mean, median mode, and SD values for the scientific curiosity of secondary school students are 11.1, 11.0, 10.0, and 4.65 respectively. The skewness and kurtosis are found to be 0.274 and -0.250 respectively. With the obtained value of the distribution of scientific curiosity scores, it can be assumed a normal distribution. The graphical representation of the distribution is represented with the normal curve with histogram in the following figure:

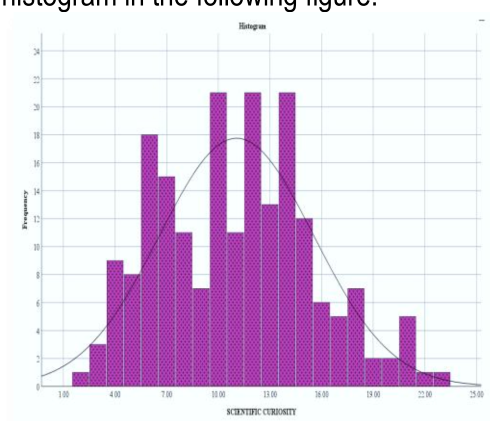

Fig.1 Normal Curve with Histogram of Scientific Curiosity of Secondary School Students

Scientific Curiosity

Objective1: To compare the scientific curiosity of secondary school students with respect to their demographic variables (gender, class, institution, and family structure)

H1.1: The scientific curiosity of secondary school students is not significantly different with respect to their gender.

H1.2: The scientific curiosity of secondary school students is not significantly different with respect to their class.

H1.3: The scientific curiosity of secondary school students is not significantly different with respect to their institution.

H1.4: The scientific curiosity of secondary school students is not significantly different with respect to their family structure.

TABLE 2
COMPARISON OF SCIENTIFIC CURIOSITY OF SECONDARY SCHOOL STUDENTS WITH RESPECT TO THEIR DEMOGRAPHIC VARIABLES (GENDER, CLASS, INSTITUTION, FAMILY STRUCTURE)

Demographic Variable		Mean	SD	df	t-value	p-value	Remark
Gender	Boys	11.5	0.32	98	1.169	0.244 p>0.05	H1.1 Not Sig.
	Girls	10.7	0.86				
Class	8th	11.1	0.77	98	0.0734	0.942 P>0.05	H1.2 Not Sig.
	9th	11.2	4.19				
Institution	PVT	10.9	0.85	98	0.523	0.601 p>0.05	H1.3 Not Sig.
	GOVT	11.2	0.48				
Family Structure	Joint	11.1	0.30	98	.0076	0.994 P>0.05	H1.4 Not Sig.
	Nuclear	11.1	0.79				

Table 2 reveals that the mean and standard deviation of scientific curiosity of secondary school boys are 11.5 and 4.32 respectively, and secondary school girls are 10.7 and 4.86 respectively. The calculated t-value is

1.169 which is not significant at 0.05 level with df=198 as it is less than the critical t-value. It means that boys and girls of secondary schools in Chhattisgarh are not significantly different in their mean scientific curiosity scores. Thus, the null hypothesis i.e. "The scientific curiosity of secondary school students is not significantly different with respect to their gender" is retained. It may, therefore, be interpreted that secondary school boys and girls are not significantly different in their scientific curiosity scores.

Table 2 reveals that the mean and standard deviation of scientific curiosity of Class 8th secondary school students are 11.1 and 4.77 respectively, and class 9th secondary school students are 11.2 and 4.19 respectively. The calculated t-value is 0.207 which is not significant at 0.05 level with df=198 as it is less than the critical t-value. It means that secondary school class 8th and 9th students in Chhattisgarh are not significantly different in their mean scientific curiosity scores. Thus, the null hypothesis i.e. "The scientific curiosity of secondary school students is not significantly different with respect to their Class" is retained. It may, therefore, be interpreted that secondary school class 8th and 9th students are not significantly different in their scientific curiosity.

Table 2 reveals that the mean and standard deviation of scientific curiosity of Private secondary school students are 10.9 and 4.85 respectively and government secondary school students are 11.2 and 4.48 respectively. The calculated t-value is .523 which is not significant at 0.05 level with df=198 as it is less than the critical t-value. It means that Private and Government secondary school students in Chhattisgarh are not significantly different in their mean scientific curiosity scores. Thus, the null hypothesis i.e. "The scientific curiosity of secondary school students is not significantly different with respect to their Institution" is retained. It may, therefore, be interpreted that Secondary School students of private and government schools are not significantly different in their scientific curiosity.

Table 2 reveals that the mean and standard deviation of scientific curiosity of secondary school students belonging to the joint family are 11.1 and 4.30 respectively, and secondary school students belonging to the nuclear family are 11.1 and 4.79 respectively. The calculated t-value is 0.00756 which is not significant at 0.05 level with df=198 as it is less than the critical t-value. It means that the secondary school students of the Joint and Nuclear family of Chhattisgarh are not significantly different in their mean scientific curiosity scores. Thus, the null hypothesis i.e. "The scientific curiosity of secondary school students is not significantly different with respect to their family structure" is retained. It may, therefore, be interpreted that secondary school students of joint and nuclear family are not significantly different in their scientific curiosity.

Objective: To compare the scientific curiosity of secondary school students with respect to their demographic variables (mother's education, father's education, mother's job, father's job)

H1.5: The scientific curiosity of secondary school students is not significantly different with respect to their mother's education.

TABLE 3
COMPARISON OF SCIENTIFIC CURIOSITY OF SECONDARY SCHOOL STUDENTS WITH RESPECT TO THEIR MOTHER'S EDUCATION

Source of Variance	Sum of Square	df	Mean square	F	p-value
Between Groups	49092.231	97	24546.115	7.832	0.001*
Within Groups	617387.269	97	3133.946		
Total	666479.500	99			

*Significant at 0,05 level

It is evident from Table 3 that the calculated F value is 7.832 which is significant at 0.05 level with df 2/197. It reveals that mean scores of scientific curiosity of secondary school students belonging to their respective mother education i.e. class 1-5, class 6-10, and class 10 above differ significantly. Thus, the null hypothesis "the scientific curiosity of secondary school students is not significantly different with respect to their mother's education" is rejected. It can be finally stated that secondary school students are significantly different in their scientific curiosity with respect to their mother's education.

In order to ascertain which pair is significantly different from other pairs, data were further analysed with the help of multiple comparison test (post-hoc test).

TABLE 4
POST-HOC (MULTIPLE COMPARISON) TEST OF SIGNIFICANCE FOR SCIENTIFIC CURIOSITY OF SECONDARY SCHOOL STUDENTS WITH RESPECT TO THEIR MOTHER'S EDUCATION

Groups	Mean	MD	SE	p-Value	Sig
Students whose mother's Edn 0-5	10.14	12.122	10.289	0.240	Not Sig
Students whose mother's Edn 6-10	12.93				
Students whose mother's Edn 0-5	10.14	36.117	9.140	0.001*	Sig
Students whose mother's Edn above10	11.39				
Students whose mother's Edn 6-10	12.93	23.995	11.110	0.0322*	Sig
Students whose mother's Edn is above10	11.39				

*Significant at 0,05 level

From the table 4, it is revealed that the mean difference value of scientific curiosity of secondary school students having their mother education 0-5 class and 6-10 class is 12.122 and the corresponding p value is 0.240 (P > 0.05), which is not significant at 0.05 level. It indicates that scientific curiosity of secondary school students with respect to their mother's education i,e 0-5 & 6-10 class are not significantly different. However, the mean difference value of scientific curiosity of secondary school students having their mother education 0-5 class and above 10 class is 36.117 and the corresponding p-value is 0.001(p < 0.05), which is significant at 0.05 level. It indicates that scientific curiosity of secondary school students with respect to their mother's education i,e 0-5 & above 10 class are significantly different. The mean difference value of scientific curiosity of secondary school students having their mother education 6-10 class and above 10 class is 23.995 and the corresponding p-value is 0.0322 ($p < 0.05$), which is significant at 0.05 level. It indicates that the scientific curiosity of secondary school students with respect to their mother's education i,e., 6-10 & above 10 class are significantly different.

H1.6: The scientific curiosity of secondary school students is not significantly different with respect to their father's education

TABLE 5
COMPARISON OF SCIENTIFIC CURIOSITY OF SECONDARY SCHOOL STUDENTS WITH RESPECT TO THEIR FATHER'S EDUCATION

Source of Variance	**Sum of Square**	**df**	**Mean square**	**F**	**p-value**	**Sig.**
Between Groups	93033.56	97	6516.78	15.98	< 0.001*	Sig.
Within Groups	573445.93		910.89			
Total	666479.50	99				

*Significant at 0,05 level

It is evident from Table 5 that the calculated F value is 15.980 which is significant at 0.05 level with df 2/197. It reveals that mean scores of scientific curiosity of secondary school students belonging to their respective father education i.e. class 1-5, class 6-10, and class 10 above differ significantly. Thus, the null hypothesis "The scientific curiosity of secondary school students is not significantly different with respect to their father's education" is rejected. It can be finally stated that secondary school students are significantly different in their scientific curiosity with respect to their father's education.

To ascertain which pair is significantly different from other pairs, data were further analysed with the help of multiple comparison test (post-hoc test).

TABLE 6
POST-HOC (MULTIPLE COMPARISON) TEST OF SIGNIFICANCE FOR THE SCIENTIFIC CURIOSITY OF SECONDARY SCHOOL STUDENTS WITH RESPECT TO THEIR FATHER'S EDUCATION

Group	**Mean**	**MD**	**SE**	**p-Value**
Students whose father's Edn 0-5	10.39	18.903	9.300	0.043*
Students whose father's Edn 6-10	11.06			
Students whose father's Edn 0-5	10.39	34.007	9.262	< 0.001*
Students whose father's Edn is above10	11.97			
Students whose father's Edn is 6-10	11.06	52.910	9.501	< 0.001*
Students whose father's Edn is above10	11.97			

*Significant at 0.05 level

Table 6, reveals that the mean difference value of scientific curiosity of secondary school students having their father education 0-5 class and 6-10 class is 18.903 and the corresponding p-value is 0.043 ($P < 0.05$) which is significant at 0.05 level. It indicates that the scientific curiosity of secondary school students with respect to their father's education i,e., 0-5 classes & 6-10 classes are significantly different. Similarly, the mean difference value of scientific curiosity of secondary school students having their father education 0-5 class and above 10 class is 34.007 and the corresponding p-value is < 0.001 which is significant at 0.05 level. It indicates that the scientific curiosity of secondary school students with respect to their father's education i,e 0-5 class and above 10 class is significantly different. The mean difference value of scientific curiosity of secondary school students having their father education 6-10 class and above 10 class is 52.910, and the corresponding p-value is < 0.001 (P < 0.05) which is significant at 0.05 level. It indicates that the scientific curiosity of secondary school students with respect to their father's education i,e., 6-10 class and above 10 class is significantly different.

H1.7: The scientific curiosity of secondary school students is not significantly different with respect to their mother's job.

TABLE 7
COMPARISON OF SCIENTIFIC CURIOSITY OF SECONDARY SCHOOL STUDENTS WITH RESPECT TO THEIR MOTHER'S JOB.

Source of Variance	Sum of Square	df	Mean Square	f-ratio	p-value
Between Groups	66375.641	97	33187.820	10.895	<0.001*
Within Groups	600103.859		3046.212		
Total	666479.500	99			

*Significant at 0,05 level

It is evident from Table 7, that the calculated F value is 10.895 which is significant at 0.05 level with df 2/197. It reveals that mean scores of scientific curiosity of secondary school students belonging to their respective mother job i.e., Government job, Private job, and No job differ significantly. Thus, the null hypothesis "the scientific curiosity of secondary school students is not significantly different with respect to their mother's" is rejected. It can be finally stated that secondary school students are significantly different in their scientific curiosity with respect to their mothers.

In order to ascertain which pair is significantly different from other pairs, data were further analysed with the help of multiple comparison test (post-hoc test).

TABLE 8
POST- HOC (MULTIPLE COMPARISON) TEST OF SIGNIFICANCE FOR THE SCIENTIFIC CURIOSITY OF SECONDARY SCHOOL STUDENTS WITH RESPECT TO THEIR MOTHER'S JOB.

Group	Mean	Mean Difference	Standard Error	p-Value
Students whose mother's Jobs in the Government	.42	0.035	2.169	0.411
Students whose mother's jobs in Private	.67			
Students whose mother's Jobs in the Government	.42	2.064	0.530	0.001*
Students whose mother's have No Job	2.23			
Students whose mothers' jobs in Private	.67	2.029	.472	0.001*
Students whose mother's have No Job	2.23			

*Significant at 0,05 level

Table 8, reveals is that the mean difference value of scientific curiosity of secondary school students having their mother job in government and jobs in private is 10.035, and the corresponding p-value is 0.411 (P > 0.05) which is not significant at 0.05 level. It indicates that the scientific curiosity of secondary school students with respect to their mother's job, i.e., in government and private are not significantly different.

However, the mean difference value of scientific curiosity of secondary school students having their mother jobs in government and having no jobs is 42.064, and the corresponding p-value is < 0.001 (P < 0.05) which is significant at 0.05 level. It indicates that the scientific curiosity of secondary school students is significantly different with respect to their mother's job i,e., the government, and having no job. The mean difference value of scientific curiosity of secondary school students having their mother's job private and having no job is 32.029, and the corresponding p-value is < 0.001 (P < 0.05) which is significant at 0.05 level. It indicates that the scientific curiosity of secondary school students is significantly different with respect to their mother's job i,e. private and having no jobs.

H1.8: The scientific curiosity of secondary school students is not significantly different with respect to their father's job.

TABLE 9
COMPARISON OF SCIENTIFIC CURIOSITY OF SECONDARY SCHOOL STUDENTS WITH RESPECT TO THEIR FATHER'S JOB.

Source of Variance	Sum of Square	df	Mean square	f-ratio	p-value
Between Groups	42288.859	2	1144.429	6.673	0.002*
Within Groups	624190.641	97	168.480		
Total	666479.500	99			

*Significant at 0,05 level

It is evident from Table 9, that the calculated F value is 6.673 which is significant at 0.05 level with df 2/197. It reveals that mean scores of scientific curiosity of secondary school students belonging to their respective father job i.e. government job, private job, no job differs significantly. Thus, the null hypothesis “The scientific curiosity of secondary school students is not significantly different with respect to their father's job” is rejected. It can be said that secondary school students are significantly different in their scientific curiosity with respect to their father's job.

In order to ascertain which pairs are significantly different from other pairs, data were further analyzed with the help of multiple comparison tests (post-hoc test).

TABLE 10
POST-HOC (MULTIPLE COMPARISON) TEST OF SIGNIFICANCE FOR THE SCIENTIFIC CURIOSITY OF SECONDARY SCHOOL STUDENTS WITH RESPECT TO THEIR FATHER'S JOB.

Group	Mean	MD	Standard Error	p-Value
Students whose father's jobs in Government	9.52	5.054	10.044	> 0.136
Students whose father's jobs in Private	11.54			
Students whose father's jobs in Government	9.52	9.977	11.247	< 0.001*
Students whose fathers have no Job	11.65			
Students whose father's Job in Private	11.54	4.923	9.466	< 0.009*
Students whose fathers have no Job	11.65			

*Significant at 0,05 level

Table 10, reveals that the mean difference value of scientific curiosity of secondary school students having their father Jobs in government and jobs in private is 15.054, and the corresponding p-value is 0.136 (P > 0.05) which is not significant at 0.05 level. It indicates that the scientific curiosity of secondary school students with respect to their father's job i.e. in government and private are not significantly different. However, the mean difference value of scientific curiosity of secondary school students having their father Jobs in government and those having no jobs is 39.977, and the corresponding p-value is < 0.001 (P < 0.01) which is significant at 0.01 level. It indicates that the scientific curiosity of secondary school students with respect to their father's job i, the government, and having no job are significantly different. The mean difference value of scientific curiosity of secondary school students having their father's job in private and having no job is 24.923, and the corresponding p-value is 0.009 (P < 0.05), which is significant at the 0.05 level. It indicates that the scientific curiosity of secondary school students with respect to their father's job i,e., in private and having no jobs, are significantly different.

CONCLUSION

In summary, the present study aimed to compare the scientific curiosity of secondary school students based on various demographic factors such as gender, class, type of institution, family structure, parental education, and parental occupation. The findings revealed that scientific curiosity is not significantly varied across demographic groups like gender, class, institute, and family structure. Scientific curiosity is significantly different with respect to their parents education and parents job. These results emphasize the need for educators and policymakers to recognize and address demographic disparities when designing curricula and interventions to foster scientific curiosity among all students. Overall, promoting equitable opportunities for scientific exploration and providing targeted support to underrepresented groups are crucial steps toward cultivating a more scientifically engaged and innovative generation.

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