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AN OBSERVATIONAL STUDY TO ASSESS AND TO COMPARE THE IMPACT OF *TRIVIDHA JNANOPAYA*

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ABSTRACT

Introduction: In contemporary medical education, heavy reliance on digital platforms for quick information often restricts deep critical thinking and can lead to conceptual misunderstandings. Traditional *Ayurvedic* philosophy highlights that profound textual mastery (*Shastra Jnana*) is best achieved through structured pedagogical frameworks. In the *Vimanasthana* of *Charaka Samhita*, *Acharya Charaka* introduces *Trividha Jnanopaya* - a threefold method for acquiring advanced knowledge comprising *Adhyayana* (structured studying), *Adhyapana* (teaching), and *Tadvidhyasambhasha*[1] (*scholarly* debate and discussion).Objectives: Literary work on *Jnanopaya* in other classics, correlation with contemporary science and to evaluate and compare the impact of *Trividha Jnanopaya* on effective perception. **Materials and Methods:** This study utilizes a four-phase observational research design involving 124 eligible Phase 1and Phase 2 BAMS students selected through an IQ entrance screening test. Participants were randomly divided into three groups using the chit method.

- **Phase 1:** Assessment of self-directed study across all groups via a baseline theory test.
- **Phase 2:** Implementation of *Adhyayana* (guided study under a teacher) for all groups, followed by a theory test for Group A.
- **Phase 3:** Implementation of *Adhyapana* (seminar presentation) for Groups B and C, followed by theory test for Group B.
- **Phase 4:** Implementation of *Tadvidhyasambhasha* (scholarly debate) for Group C, followed by theory test for Group C.

Discussion: The primary finding of this observational study demonstrates that the complete adaptation of all three *Jnanopaya* within the learning process yields accurate knowledge and helps students achieve true command over the subject matter. **Conclusion:** The study provided empirical, evidence-based data proving that the sequential application of *Trividha Jnanopaya* enhances effective perception, retention, and critical analysis skills among medical students compared to unguided or isolated study habits.

KEYWORDS: Trividha Jnanopaya, Guru-shishya Parampara, Adhyayana, Adhyapana, Tadvidya Sambhasha, Sambhasha vidhi, Vada Marga.

INTRODUCTION

The acquisition of authentic medical knowledge demands structured, systematic validation and continuous intellectual refinement. In the modern era, the rapid proliferation of internet-based resources has transformed global education. While digital tools offer unparalleled convenience, they frequently promote a culture of superficial reading, limiting an individual's innate capacity for creative conceptualization and clinical rationale. In highly sensitive fields like medical science, relying solely on fragmented internet facts without a deep foundational understanding of core principles (*Shastra Jnana*) presents clear operational risks.

To counter superficial learning, classical *Ayurvedic* literature emphasizes a rigorous, teacher-guided lineage of knowledge transmission.

As foundational texts assert

गुरुपूर्वक्रमेणैवायुर्वेदज्ञानं फलति | (Chakrapani)

This dictates that learning *Ayurvedic* science systematically through an unbroken lineage from an expert teacher yields the highest fruit of knowledge.[2]

To systematically operationalize this mastery, *Acharya Charaka* explicitly outlines the *Trividha Jnanopaya* (three tools for obtaining knowledge) in the eighth chapter of *Vimanasthana*.

तत्रोपाया ननुव्याख्यास्यामः- अध्ययनम्, अध्यापनं, तद्विद्यसंभाषा चेत्युपायाः ॥ (Cha Vi 8/6)

These three fundamental paths are defined as:

1. ***Adhyayana*:** The method of meticulous, self-disciplined study under direct expert guidance.
2. ***Adhyāpana*:** The method of teaching and transmitting concepts, which forces the presenter to clarify their own understanding.
3. ***Tadvidhyasambhāṣā*:** Engaging in debates and professional discussions with experts in the same domain.

According to classical theory, true medical competence is not born from rote memorization alone. A successful physician must cultivate six indispensable intellectual qualities: Vidya (comprehensive knowledge), Vitarka (critical analysis), Vijnana (allied scientific understanding), Smriti (retentive memory), Tatparata (perseverance through continuous observation), and Kriya3 (practical, hands-on application). Systematically adopting the Trividha Jnanopaya naturally sharpens t these exact six attributes, transforming a student into an accomplished clinician.

The research project is designed to analyze the impact of *Trividha Jnanopaya*. By conducting four-stages observational assessment among Bachelor of *Ayurvedic* Medicine and Surgery (BAMS) students. The goal is to measure and prove how *Trividha Jnanopaya* helps students understand their subjects better. In the end, this study aims to give evidenced, empirical proof that these ancient methods can maximize academic success for today's medical student.

AIM AND OBJECTIVES

AIM: To assess Trividha *Jnanopaya's* impact on 1st Phase and 2nd Phase BAMS students.

OBJECTIVES

1. Literary work on *Jnanopaya* in other classics, correlation with contemporary science.
2. To evaluate and compare the impact of *Trividha Jnanopaya* on effective perception.

MATERIALS AND METHODS

METHODOLOGY

To screen participants, an expert-validated IQ questionnaire based on the Mensa Norway method was administered online via Google Forms to all 1st and 2nd Phase BAMS students on same day.

To avoid bias, the Mensa Norway IQ test followed for selection purpose.

The Mensa Norway IQ test is widely regarded as one of the most accurate and reliable free screening tools for assessing intelligence. It is designed primarily for adults. It consists entirely of visual pattern recognition, logical thinking questions.

Distribution of Intellectual Power Categories

SI No	Intellectual power	Scores/marks(out of 50)
1	Below Average	0-15
2	Average	15-25
3	Good	25-50

The students who demonstrated good intellectual power were selected for further study. Total 124 students qualified for the study.

- **Total Respondents:** 155 students
- **Qualified Sample Size:** 124 students
- **Testing Time:** 1 hour (60 minutes)

Method of collection of Data

In 1st stage: All 1st and 2nd Phase BAMS Students (n= 124) were informed to read the concepts (*Rasa Vimana Adhyaya of Charaka Samhita*) themselves.
At the end 50 marks theory test was conducted to all groups.
First stage duration: Theory test - 2 hour
Total time - 120 minutes

In 2nd stage: All the A, B and C group students (n=124) were involved in the *Adhyayana* (*Gurumukhena Adhyayana*) of *Rasa Vimana Adhyaya of Charaka Samhita*. At the end 50 marks theory test was conducted to 'A'group students (n=42)
Second stage duration: Teaching - 6 hour
Theory test - 2 hour
Total time - 8 hour (480 minutes)

In 3rd stage: Group 'B' and Group 'C' students (n=82) were involved in *Adhyapana* (seminar presentation done by students) on different concepts of *Rasa Vimana Adhyaya* of Charaka Samhita.
At the end 50 marks theory test was conducted to 'B' group students (n=42)
Third stage duration: Seminar presentation - 5 hour
Time allotted per student for seminar presentation- 10-15 minutes
Theory test after Adhyapana - 2 hour
Total time - 7 hour (420 min)

In 4th stage: Group 'C' students (n=40) were involved in the *Tadvidyasambhasha* (a rapid question and answer method)
First Phase BAMS students – 21
The 21 students from First Phase were further divided into two sub-groups: Group'A' and Group'B'

- Group 'A' was allotted two different concepts from Rasa Vimana Adhyaya.
- Group 'B' was allotted a separate set of two concepts from Rasa Vimana Adhyaya.

Students from both groups briefly explained their respective concepts.Following the explaination ,Group 'A' students asked questions to Group 'B' and Group 'B' students in turn,posed questions to Group 'A'.

Second Phase BAMS students – 19
The 19 students from Second Phase were further divided into two sub-groups: Group'A' and Group'B'

- Group 'A' was allotted two different concepts from Rasa Vimana Adhyaya.
- Group 'B' was allotted a separate set of two concepts from Rasa Vimana Adhyaya.

Students from both groups briefly explained their respective concepts. Following the explaination, Group 'A' students asked questions to Group 'B' and Group 'B' students in turn, posed questions to Group 'A'.

At the end 50 marks theory test was conducted to C (n=40) group students
Fourth stage duration: Tadvidya Sambhasha - 2 hour
Theory test - 2 hour
Total Time - 4 hour (240 minutes)
Total Study Duration – 22 hour (1320 min)

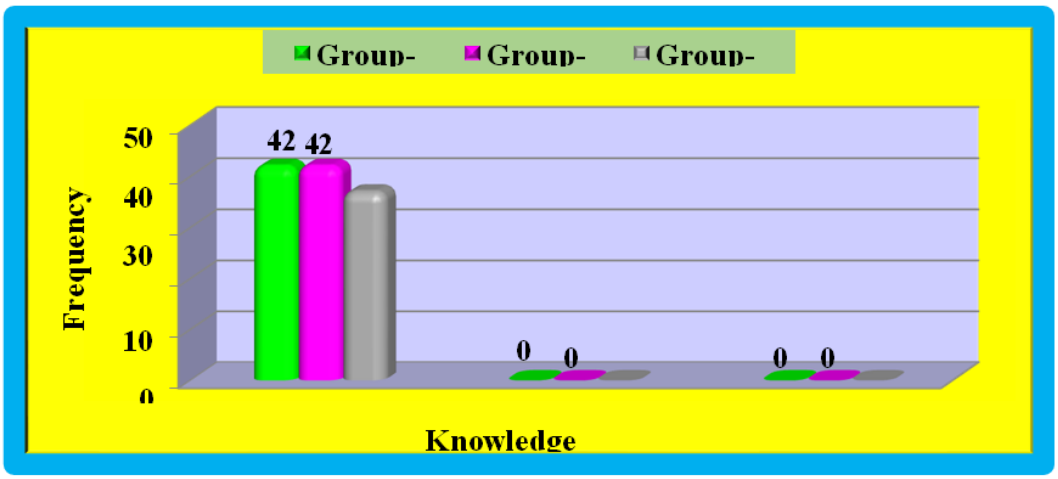
The pattern of Question paper was as per apex body NCISM and RGUHS norms, LAQ, SAQ and MCQ.

OBSERVATIONS AND RESULTS

- Total 124 students were involved in this study. Out of which 42 students were in group A, 42 students were in group B and 40 students were in group C. The observation was recorded and statistically analysed and necessary charts and graphs were made.

- **Table No. 1: Distribution of Students According to Pre-test Knowledge Levels in Group A, Group B and Group C.**

SI NO	Knowledge Level	Group-A		Group-B		Group-C	
		N(Sample size)	%	N(Sample size)	%	N(Sample size)	%
1	Below Average	42	100.0	42	100.0	40	100.0
2	Average	00	0.0	00	0.0	00	0.0
3	Good	00	0.0	00	0.0	00	0.0
	Total	42	100.0	42	100.0	40	100.0



Graph No 1: Distribution of students according to pre-test levels in Group A, Group B, and Group C.

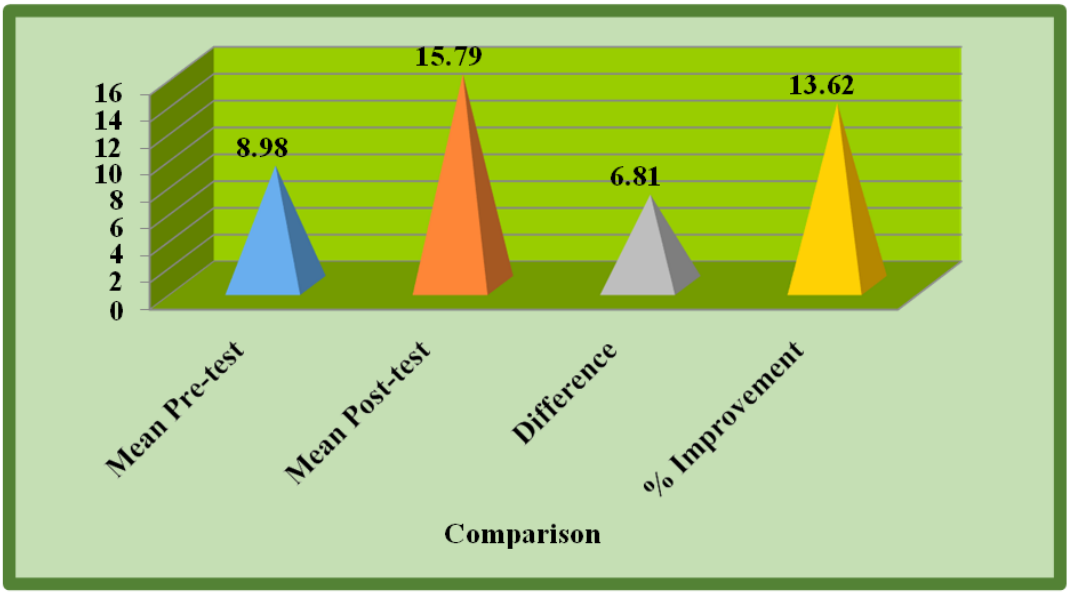
Table No. 2: Comparison of Pre-test Knowledge Score in Group A, Group B, and Group C.

Test	Mean	SD	%Knowledge	F-value	p-value
Group A	8.98	4.26	17.9	0.023	<0.978 (NS)
Group B	9.14	3.52	18.3		
Group C	9.11	3.43	18.22		

Graph No. 2: Comparison of Baseline Knowledge Scores among Students in Group A, Group B, and Group C.

Table No. 3: Comparison of Pre-test and Post-test Knowledge Scores Among Students in Group A (Adhyayana).

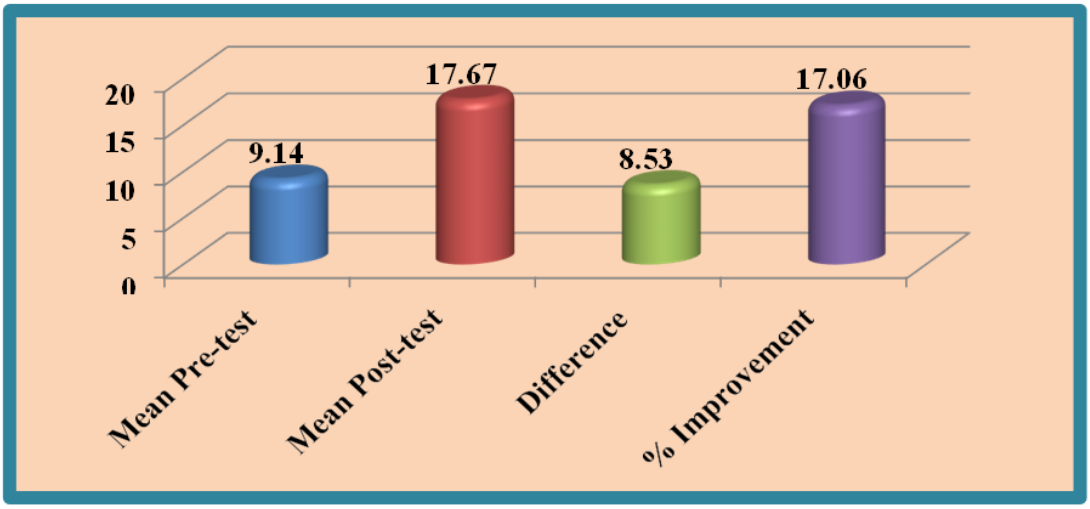
Test	Mean	SD	%Improvement	df	t-value	p-value
Pre-test	8.98	4.26	13.62	41	5.79	<0.001 (HS)
Post-test	15.79	8.02				



Graph No. 3: Effectiveness of Adhyayana on Knowledge Scores Among Students.

Table No. 4: Comparison of Pre-test and Post-test Knowledge Scores Among Students in Group B (Adhyayana + Adhyapana)

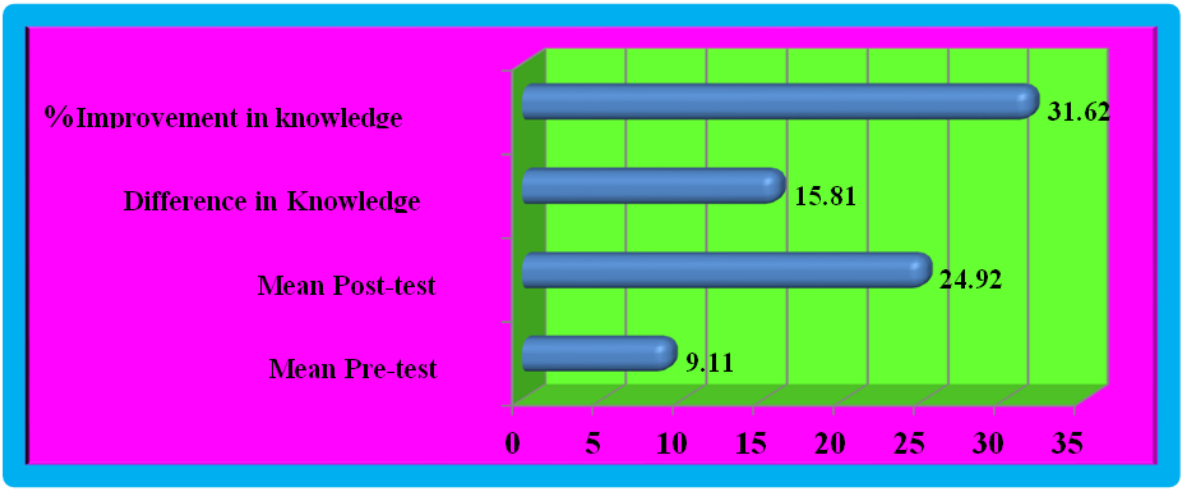
Test	Mean	SD	%Improvement	df	t-value	p-value
Pre-test	9.14	3.52	17.06	41	7.32	<0.001 (HS)
Post-test	17.67	7.44				



Graph No. 4: Effectiveness of Adhyayana + Adhyapana on Knowledge Scores Among Students.

Table No. 5: Comparison of Pre-test and Post-test Knowledge Scores Among Students in Group C (Adhyayana + Adhyapana + Tadvidya Sambhasha)

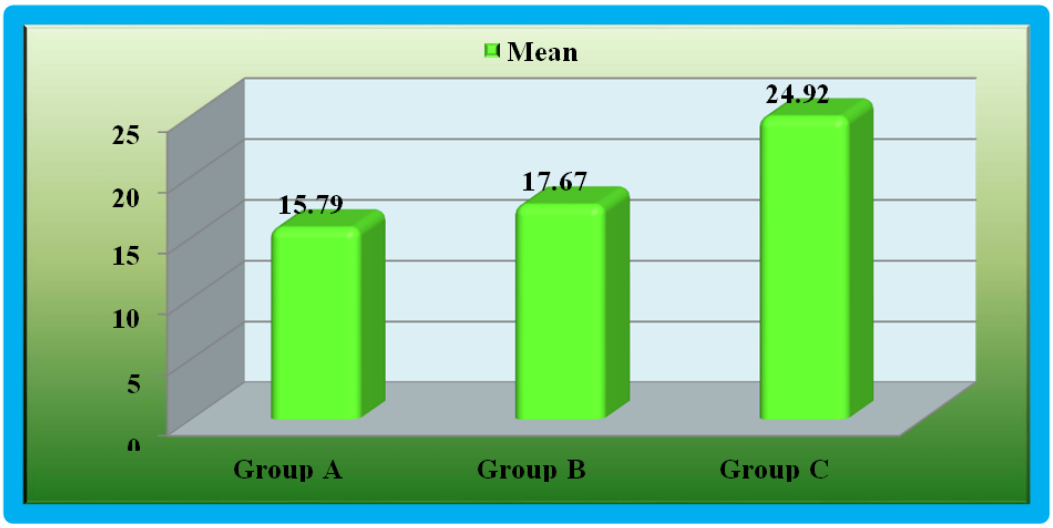
Test	Mean	SD	% Improvement	df	t-value	p-value
Pre-test	9.11	3.43	31.62	12.34	36	<0.001 (HS)
Post-test	24.92	9.49				



Graph No. 5: Effectiveness of Adhyayana + Adhyapana + Tadvidya Sambhasha on Knowledge Scores Among Students.

Table No. 6: Comparison of Mean Post-test Knowledge Scores among Students in Group A, Group B, and Group C.

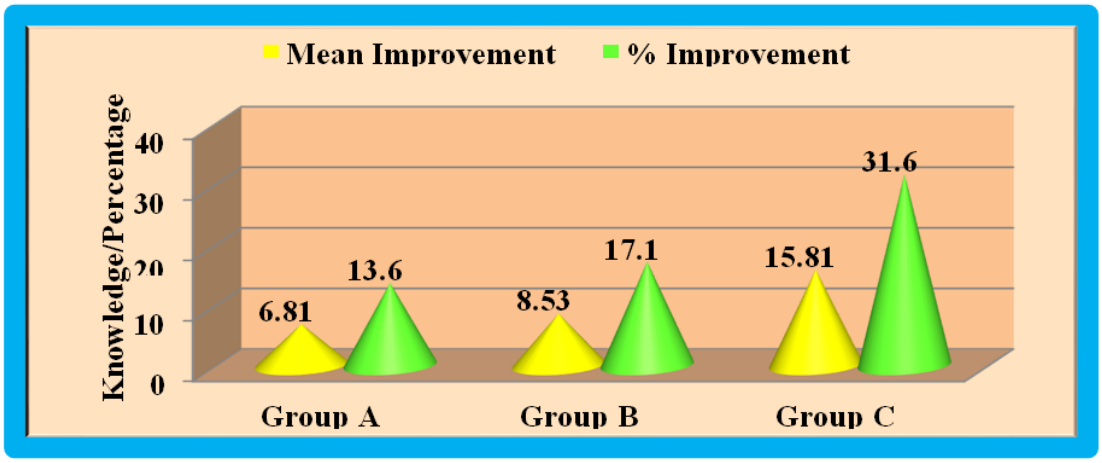
Group	Mean	SD	F-value	p-value
Group A	15.79	8.02	13.01	< 0.001 (HS)
Group B	17.67	7.44		
Group C	24.92	9.49		



Graph No. 6: Mean Post-test Knowledge Scores of Students Following Different Teaching-Learning Interventions.

Table No. 7: Percentage Improvement in Knowledge Scores among Students in Group A, Group B, and Group C.

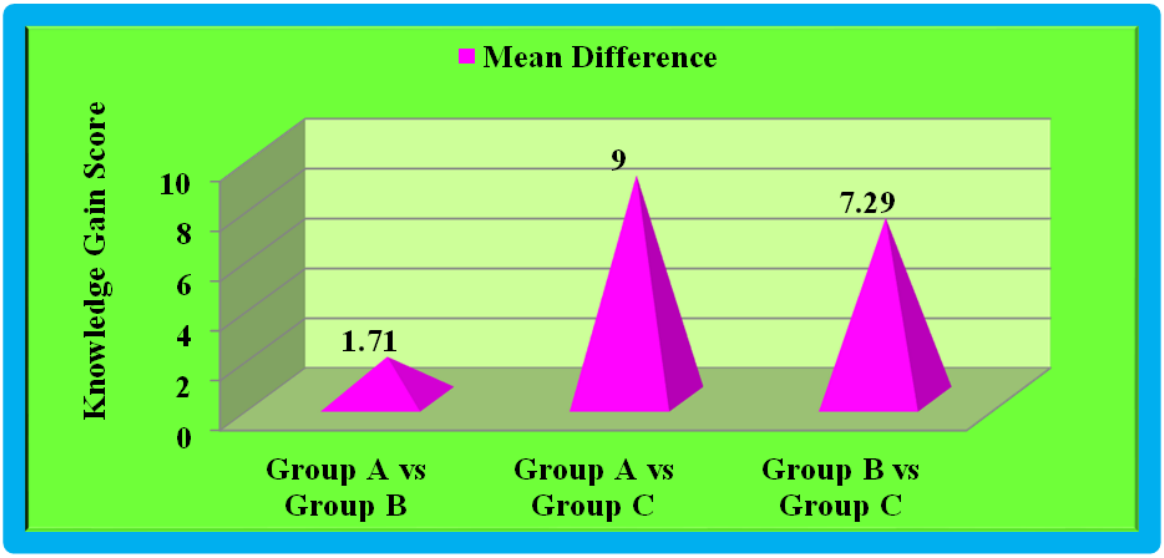
Group	Pre-test Mean	Post-test Mean	Mean Improvement	% Improvement	Rank
Group A	8.98	15.79	6.81	13.6	III
Group B	9.14	17.67	8.53	17.1	II
Group C	9.11	24.92	15.81	31.6	I



Graph No. 7: Comparison of Improvement in Knowledge Scores among Students in in three groups.

Table No. 8: Post Hoc Comparison of Knowledge Gain Scores among Students in Group A, Group B, and Group C (Tukey HSD)

Comparison	Mean Difference	p-value	Significance
Group A vs Group B	1.71	0.561	NS
Group A vs Group C	9.00	<0.001	HS
Group B vs Group C	7.29	<0.001	HS



Graph No. 8: Post Hoc Comparison of Mean Knowledge Gain Scores among Students in Group A, Group B, and Group C.

DISCUSSION

In *Ayurveda*, *Acharya Charaka* provides a profound, structured framework for this exact progressive journey of knowledge acquisition in the *Vimanasthana* chapter of the *Charaka Samhita*. *Acharya* states that to gain absolute mastery over the *Shastra* (scientific treatises) and to achieve clinical success, a physician must systematically pass through the three stages of *Trividha Jnanopaya* (*Adhyayana*, *Adhyapana*, and *Tadvidya Sambhasha*).

Here is how *Ayurvedic* philosophy explains the sequential description of research results, showcasing how knowledge transforms from a seed into a blooming tree:

1. The Pre-Test State: *Ajnana* (Ignorance) & Unawakened *Buddhi*

In the Pre Test (before the implementation of Trividha Jnanopaya) students of all three groups scored below average.Without structured guidance (*Guru Mukhena Adhyayana*), the intellect cannot naturally comprehend the hidden deeper meanings embedded within the lines of the Shastra.

2. *Adhyayana* (Group A): The Sowing of the Seed (*Shravana*)

The mean pre-test knowledge score of students in group A, who received the Adhyayana was 8.98 ± 4.26, which increased to 15.79 ± 8.02 in the post-test. *Adhyayana* method showed a significant increase in knowledge scores with a 13.62% improvement frompre-test to post-test, demonstrating the effectiveness of the intervention.

Adhyayana is the fundamental act of systematic study and learning under the direct guidance of a teacher (*Guru*). This method brought students scores up to **15.79**. *Adhyayana* removes the initial layer of ignorance and creates *Grahana* (basic reception of knowledge) and removes one's own doubts and helps to know the fault of others.[4] However, it is primarily a unidirectional phase. The student possesses the tools, but does not yet know how to wield them fluidly, which is why Group A showed the lowest magnitude of improvement among the post-test groups.

3. Adhyapana (Group B): The Expansion of Clarity

The mean pre-test knowledge score of students in group B, who received the Adhyayana and Adhyapana was 9.14 ± 3.52, which increased to 17.67 ± 7.44 in the post-test. The *Adhyayana* + *Adhyapana* method showed a significant increase in knowledge scores with a 17.06 % improvement from pre-test to post-test. The intervention was highly effective and produced greater improvement than the *Adhyayana* method alone. *Adhyapana* is the act of teaching, explaining, and imparting the Shastra to others. Through teaching, one's own understanding becomes crystal clear and unshakable. Acharya Sushruta tells that the knowledge gained from the guru is not meant to remain confined to oneself, it must be imparted to others; otherwise, it is a debt to the instructor as well as a sin.[5]

There is a famous rule in educational psychology: "To teach is to learn twice". In the teaching process, a student must engage in *Vitarka* (critical analysis) and present the material logically to a class. This explains why Group B achieved a noticeably better score of **17.67**. By stepping into the role of a teacher, the student transitions from a passive listener to an active disseminator. This process firmly establishing the scriptural knowledge into their consciousness, sharpening their *Bodha* (deep understanding) far beyond what solitary reading could achieve.

4. Tadvidya Sambhasha (Group C): The Ultimate Awakening of Wisdom (*Jnana-Vijnana*)

The mean pre-test knowledge score of students in group

C, who received the Adhyayana Adhyapana & Tadvidya Sambhasha was 9.11 ± 3.43, which increased to 24.92 ± 9.49 in the post-test. Students exposed to the *Adhyayana + Adhyapana + Tadvidya Sambhasha* method showed a highly significant increase in knowledge scores with a 31.62% improvement from pre-test to post-test. This represents the gold standard of the traditional *Ayurvedic* Pedagogy. Acharya Charaka explicitly highlights its unique, transformative power by stating:
"Discussion with experts improves and advances knowledge. It brings clarity, increases the power of speech, removes doubts, reinforces previous learning, enables new things to be heard, it reveals the secrets and gives the confidence to apply knowledge.[6]"

This classical truth is perfectly validated by Group 'C's (who involved in *Adhyayana, Adhyapana, Tadvidya Sambhasha)* extraordinary, highly significant leap to a score of **24.92**. In a debate or scholarly discussion, a student's mind is dynamically challenged. They must spontaneously counter opposing views, justify clinical reasoning, and synthesize their *Jnana* (theoretical knowledge) into *Vijnana* (applied, experiential wisdom).

The step-by-step rise in test data proves that while *Adhyayana* breaks the initial ground and *Adhyapana* helps organize the internal framework, *Tadvidya Sambhasha* that removes all lingering doubts, sharpens the intellect, and unlocks ultimate academic performance and mastery. The *Trividha Jnanopaya* must be practiced as a unified, complete cycle to truly achieve perfection in education.

The stepwise linear escalation in post-test scores from Group A (15.79) to Group B (17.67), culminating in the peak performance of Group C (24.92), provides clear, empirical proof of the cumulative hierarchy embedded within Acharya Charaka's Trividha Jnanopaya.

While studying under the guidance of teacher (*Adhyayana)* breaks the ice of baseline unfamiliarity, it lacks interactive depth. Incorporating peer teaching (*Adhyapana*) deepens internal cognitive structure through forced active retrieval. However, the ultimate synthesis of knowledge occurs only during *Tadvidya Sambhasha*, where scholarly debate challenges the student to dynamically apply, defend, and refine their comprehension.

The data demonstrates that knowledge is not a static object to be collected (as in Adhyayana alone), but a dynamic capacity that thrives, deepens, and multiplies through collaborative intellectual exchange.

CONCLUSION

1. The core principles of modern teaching methodologies are deeply mirrored within the framework of *Trividha Jnanopaya*, proving that ancient Ayurvedic learning models remain highly relevant today.
2. By observing the scores of students among the three groups before the implementation of the respective teaching-learning interventions. It is evident that independent learning alone does not yield a reliable acquisition of *Ayurvedic* knowledge.
3. A comparison of pre-test and post-test scores revealed that students in Group A, who studied(Adhyayana) under the guidance of Guru, achieved significantly higher marks than those who relied solely on *Swa-adhyaya* (self-study). This finding suggests that *Adhyayana* effectively removes foundational layers of ignorance, thereby facilitating *Grahana* (the basic reception of knowledge) and establishing robust *Smriti* (memory and recollection).
4. A comparison of pre-test and post-test scores revealed that students in Group B, who engaged in *Adhyayana* (studied under the guidance of guru) and Adhyapana(Seminar Presentation) achieved significantly higher marks than those who relied solely on *Swa-adhyaya* (self- study). Adhyapana(presenting seminars) refines, clarifies, deepens one's own existing knowledge.
5. A comparison of pre-test and post-test scores revealed that students in Group 'C'who engaged in *Adhyayana* (studied under a guru) and *Adhyapan*a and *tadvidya Sambhasha* achieved significantly higher marks than those who relied solely on *Swa- adhyaya* (self-study). *Tad-vidya Sambhasha* imparts thorough knowledge, sharpens logical thinking, and refines communication skills.
6. To truly master a subject and achieve deep knowledge, one must adopt a holistic learning methodology encompassing three core pillars: *Adhyayana, Adhyapana*, and *Tad-vidya Sambhasha.*
7. Research seamlessly provides an empirical, statistical proof for a thousands-of-years-old Ayurvedic principles.

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