

**Original article**

## **Assessment of change in research attitude among undergraduate students in a homoeopathic medical college: an interventional study.**

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### **Abstract**

Building skills in scientific reasoning and critical thinking among medical students is an integral part of the profession. However, less participation and disinterest in research have been observed in undergraduate homoeopathic students. So, to assess the change in attitude towards research through research orientation training, this study was conducted. A study material devised on the concepts of research methodology and significance of the research; termed as the Self-developed Research Attitude Training (SRAT), was used. The SRAT training was carried out for 3 days in 2021 and 2022 for the students of 2<sup>nd</sup> BHMS, 3<sup>rd</sup> BHMS, and 4<sup>th</sup> BHMS. Research Aptitude Questionnaire (RAQ) was developed for the assessment and the students were asked to fill the specific set of RAQ questionnaires pre-SRAT and post-SRAT. The change in mean scores of RAQ in all the batches was found to be statistically significant ( $P < 0.05$ ). It is evident that the lack of orientation and motivation in students towards research can be improved through regular and problem-based learning methods in the classroom all the academic levels.

**Keywords:** Research Aptitude Questionnaire (RAQ), Homoeopathy, Short-term Studentship in Homoeopathy (STSH) program, Students.

### **Introduction**

The history reveals the importance of research among young scholars. Paul Langerhans, a 22-year-old German discovered the Islet of Langerhans in 1869. The commonly known Insulin was discovered by Charles H. Best and for the same, his mentor Dr. Banting got the Nobel prize in 1923. Even, Dr. Banting announced publicly to share 50% of the prize money with him. There are many such instances of medical students excelling in research and can contribute in a major way if oriented well [1].

The homoeopathic students at the undergraduate level can similarly contribute to research alongside grasping philosophical knowledge and clinical trainings. Scientific research at the undergraduate level can help the students know their research skills, inculcate the habit of inquiry, and above all imbibe an affirmative attitude towards evidence-based practice in homeopathy. Knowledge of medical research at the undergraduate level can help the students to know their interests and shall help them to inculcate an inquisitive attitude about the unexplored concepts of homeopathy, irrespective of what they chose to engage in the future. The purpose should be to enhance evidence-based medical knowledge and apply it in patient care and contribute to the upliftment and growth of homeopathy. It has been observed at the academic level that there lies a lacuna in the knowledge and practices among the students toward research. A compromised attitude toward research is observed



in homoeopathic students due to the lack of research training and knowledge. This leads to making a career in research less promising for them.

Through a cross-sectional survey conducted at the National Institute of Homoeopathy, India, it was found that the homoeopathic internees, new graduates, and PGTs had inadequate knowledge and compromised attitudes toward research. A severe dearth of research training and statistical support among the students at the Institutional level had been found. The work also concluded that research training and massive renovation are needed in homeopathy to generate meaningful research [2]. Central Council for Research in Homoeopathy (CCRH) under the Ministry of AYUSH introduced the Short Term Studentship in Homoeopathy (STSH) for the students of Bachelor of Homoeopathic Medicine & Surgery (BHMS) in 2014 [3]. The scheme aims to promote good quality research at homoeopathic medical colleges through work done by the students under the supervision of a guide. Through this scheme, the focus is to encourage research aptitude and capacity building among young homoeopathic researchers. The students are encouraged through a stipend to appreciate their genuine and sincere efforts and to motivate their peers to participate in the future. However, it was perceived at the Institute that in spite of the stipend, the students seemed less motivated and we were encountering less active participation in the STSH program by the students. The need to create a positive attitude and to inculcate interest in research in homoeopathic students was felt and the study was planned.

The primary objective of the study was to assess the change in attitude towards research among undergraduate homoeopathic students after providing research orientation through a training program, developed on the basic of concepts of research and its relevance. To evaluate the change in research attitude among students a self-developed Research Attitude Questionnaire (RAQ) was filled by the students before and after the training program. The secondary objective was to sensitize the undergraduate homeopathic students to participate in the STSH program.

## Methods

An interventional study was conducted at a homoeopathic medical college and hospital, consecutively for 3 days in the years 2021 and 2022. Under the Research and Development Cell of the Institute, prior to the training, a study material based on the concepts related to research methodology and the significance of research in homoeopathy with points focussing on the orientation of students to participate in the STSH program was developed by the investigators and termed as the Self-developed Research Attitude Training (SRAT). To develop the SRAT-related material, research abstracts were collected from different research portals with concise knowledge of research types and study designs from resource books along with guideline materials from the CCRH website under the STSH scheme. The SRAT material was aimed to develop a positive attitude and knowledge regarding research and STSH program.

Alongside this, three different sets of structured questionnaires (RAQ) in the English language were developed for different batches of BHMS as per their curriculum. The Research Aptitude Questionnaire (RAQ) consisted of two sections. The first section sought demographic details of the respondents along with the consent form. The second section comprised of closed-ended questions, each with multiple-choice options with 1 score for the correct response and 0 for a wrong response. The number of questions in each set of the questionnaire varied depending on the academic level. The RAQ was developed with 20 questions for the 4<sup>th</sup> BHMS, 15 questions for the 3<sup>rd</sup> BHMS, and 10 questions for the 2<sup>nd</sup> BHMS students, each separately. It took 5-10 minutes time to complete the questionnaire. Instructions on how to complete the questionnaire were provided by the investigators. Students were asked to fill through online Google forms, a specific set of RAQ



questionnaires before the SRAT training started (pre-training). A one-day training, each for the students of the 2<sup>nd</sup>, 3<sup>rd</sup>, and 4<sup>th</sup> BHMS batches using the SRAT was conducted by the faculty members under the Research and Development cell of the Institute. At the end of the training, the same set of RAQ questionnaires was again filled by the students, post SRAT. Informed consent was taken from the students. Their response was noted and the pre-assessment and post-assessment scores on RAQ were analyzed. All responses were individually extracted in a specially designed Microsoft Excel spreadsheet and subjected to statistical analysis. Data were expressed in terms of absolute values, percentages, means, and standard deviation. Due to the non-normality of the data, non-parametric tests were considered. Statistical difference between the pre and post-training response on RAQ was calculated using the Kruskal-Wallis test. The P-values less than 0.05 were considered statistically significant.

## Results

The number of participants out of the total strength of 251 students in the year 2021 and 237 students in the year 2022 was 83 and 142, respectively. The response rate in pre-training was in a total of 33% (83/251) in 2021 and 59.9% (142/237) in 2022. There was a dropout of 24% (n=20) in 2021 and 35% (n=50) in 2022, as these students did not attempt the RAQ post-training. The change in the overall scores of the RAQ questionnaire in the individual responses was calculated and an improvement was seen in the scores from pre-SRAT to post-SRAT in a majority of the students. (Table 1)

Table 1: Distribution of students according to appearance in pretest and post-test RAQ

Year	UG Course (BHMS)	Total no. of students	Appeared in RAQ pre-SRAT (response rate%)	Appeared in RAQ post- SRAT (response rate%)	Improvement in scores (pre and post-SRAT)
2021	2 <sup>nd</sup> yr. BHMS	59	31(52%)	26(76.4%)	24(92%)
	3 <sup>rd</sup> yr. BHMS	93	32(34.4%)	20(62.5%)	17(85%)
	4 <sup>th</sup> yr. BHMS	99	20(20.2%)	17(85%)	16(94%)
2022	2 <sup>nd</sup> yr. BHMS	85	61(71.6%)	50(81.9%)	45(90%)
	3 <sup>rd</sup> yr. BHMS	59	40(67.7%)	20(50%)	16(80%)
	4 <sup>th</sup> yr. BHMS	93	41(44%)	22(53.6%)	19(86%)

The analysis of the scores represents a significant difference in the scores in pre and post-SRAT sessions using the Kruskal-Wallis test (Table 2). The p values interpret that the change in mean scores before and after the SRAT in all the batches are statistically significant ( $P < 0.05$ ), for both the years 2021 and 2022. A significant difference in mean scores pre-SRAT and post-SRAT survey was also seen.

## Discussion

There was a significant improvement in the score of the students in both the consecutive academic years' under the study. In 2021, improvement in RAQ score is observed in post-SRAT in all the three

Table 2: Distribution of mean scores in RAQ under different batch of students (Pre and post SRAT)

			Range	Median (Q <sub>1</sub> ,Q <sub>3</sub> )	Mean ± SD	H value	P
<b>2021</b>	2 <sup>nd</sup> yr. BHMS	Pre	1-10	6(4,8)	5.8±2.3		
		Post	3-10	8(7,10)	8.2±2.0	13.5854	0.00023*
	3 <sup>rd</sup> yr. BHMS	Pre	5-15	11(10,13)	11.0±2.3		
		Post	7-15	13(12,14)	12.6±2.1	4.8667	0.02738*
	4 <sup>th</sup> yr. BHMS	Pre	2-14	12(8.5,14)	10.9±3.7		
		Post	10-19	15(14.5,19)	15.9±2.7	12.1451	0.00049*
<b>2022</b>	2 <sup>nd</sup> yr. BHMS	Pre	2-8	6(5,7)	5.93±1.43		
		Post	4-10	8(7,9)	7.38±1.7	32.3511	< .00001*
	3 <sup>rd</sup> yr. BHMS	Pre	6-12	8(7,10)	8.3±1.9		
		Post	8-14	11(9,13)	9.7±2.3	18.1928	0.00002*
	4 <sup>th</sup> yr. BHMS	Pre	4-16	8(5.5,9)	7.9±3.1		
		Post	10-20	14.5(12,18)	11.5±4.7	19.7085	< .00001*

S.D.= standard deviation. \*P<0.05, significance at the 0.05 level (two-tailed)

batches. A total of 92% (24/26) improvement in the individual RAQ scores of 2<sup>nd</sup> BHMS students was seen post-training. 85% (17/20) improvement in the individual RAQ score of 3<sup>rd</sup> BHMS students and 94% (16/17) improvement in the individual RAQ score of 4<sup>th</sup> BHMS students, post-training was seen. Likewise, improvement in the RAQ score was also seen after providing SRAT in 2022. 90% (45/50) upgradation in the individual RAQ scores of 2<sup>nd</sup> BHMS, 80% (16/20) upgradation in individual RAQ scores of 3<sup>rd</sup> BHMS, and 86% (19/22) upgradation in the individual RAQ scores of 4<sup>th</sup> BHMS students was noted. There was a significant change in mean scores of the RAQ questionnaire pre-SRAT and post-SRAT (Table 2) in both 2021 and 2022, and a statistically significant P value was found. This implies that the orientation training for students can help to improve the perspective and attitude of homoeopathic students towards research at the undergraduate level.

During the study, less participation of the students was observed in both years' surveys. A large group of students showed disinterest and did not give consent for participation in the study. The lack of knowledge, incuriosity, and disinterest towards research could be deduced as the possible cause for the notable number of less participation. This also signifies the lacunae in the undergraduate classroom learning towards the need for and importance of research in homoeopathy. Moreover, a significant drop-out of the students was seen in all the batches of undergraduate students in the post-SRAT session (20 participants in 2021 and 50 participants in 2022 did not respond in the post-SRAT RAQ).

The students recognized the benefit of research skills and showcased interest to participate in the short-term research program of CCRH after undergoing SRAT. There were 11 proposals uploaded to the STSH scheme by BHMS students in 2021 and 16 proposals in 2022, out of which, 2 students were selected to submit their complete research for final selection in 2021 and the selection result for the same is waiting for 2022. In a previous study from two medical colleges in Maharashtra on the attitude of undergraduate medical students toward research, it was found that 94.7% of students showed a positive attitude toward research. The perceived barriers were time constraints (45%) and inadequate training for research (50%) [4]. Another survey study exploring the perception of homeopathic undergraduate students towards research in West Bengal also concluded that undergraduates have a positive attitude towards homeopathic research but need a realistic understanding of the research process. Opportunities for research skill development were observed to be underdeveloped [5].

The less sample size in the Pre and Post assessment test is there, which is a limitation of the study. Absenteeism and the COVID-19 pandemic could not be ruled out as the factors responsible for the lesser number of participants. The study may be implemented in a higher sample size and in different homoeopathic colleges in India to inculcate an effective research orientation among the students and the results of the study may be verified.

## Conclusion

The study assessing the change in perspective of undergraduate homoeopathic students towards research post-intervention is one of a kind. Through the pragmatic approach, this is evident that SRAT causes a positive attitude toward research among homoeopathic students. Although there is an appropriate zeal in the creative and enthusiastic minds of young undergraduate students, the study brings us to the concern that there is inadequacy in the knowledge and aptitude of students towards research. An advanced approach of Problem-based learning, where the students are involved more actively in the process will definitely be fruitful to solve real-time issues faced at the Institutional level. The researchers urge to initiate continuous orientation and training sessions at an undergraduate level aimed at self-directed learning, problem-solving, group discussions, and feedback so that more students can be influenced and motivated to develop a mindset for evidence-based practice in the field of homoeopathy.

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