

# Attendance and Academic Performance of First BAMS Students in Subject Rachana Sharir: A Retrospective Cohort Study

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## Abstract

Student's absenteeism is a continuous problem in medical education despite of mandatory attendance policies introduced by the universities. Aim and objective of the study was to correlate the class attendance and academic performance in theory examination in Rachana Sharir. Hence a retrospective cohort study was conducted at Rachana Sharir Department, DMAMCHRC Nagpur. Total 100 students from batch 2018 who were appeared for both internal assessment examination and final University examination of first BAMS were included in the study. Three groups were formed based on theory attendance percentage, Group I with more than an equal to 75%, Group II less than 75% and more than an equal to 50% and Group III with less than 50%. Data of first and second internal assessment theory examination as well as University theory examination of these 100 students was taken. Average marks of the students of these three groups were compared with their attendance percentage. Gender wise and residence wise (Hosteller -non hosteller) correlation studied. Female students and non-hostellers have more attendance and higher score in internal assessment and University examination. Significantly higher marks in internal assessment and University examination were observed in students with high attendance percentage. There was significantly high pass percentage in University examination in students with high attendance. Performance in internal assessment and University examinations were significantly affected by the attendance percentage of students.

**Keywords:** Attendance, Internal assessment Examination. University examination, Rachana Sharir, academic performance.

## Introduction

Duration of Bachelor of Ayurved in Medicine and surgery (BAMS) course was four and half year, among which first BAMS duration was one year. After twelfth passing students entered in professional course where teaching pattern, examination pattern and course contents

are vast different than HSC course. Hence to understand new terminology, to cope up with studies students should attend the classes regularly. Regular attendance in theory and practical, help the students to get clear idea about the subject as per course curriculum, which is essential for performing better result in examinations. Attendance during their undergraduate curriculum plays an important role to extrapolate their knowledge in the later professional life.<sup>1</sup>

BAMS Curriculum is vast and emphasis has been laid down by the Universities and regulatory bodies on attendance policies. Maharashtra University of Health Sciences has kept attendance minimum 75% for theory and 80% for practical as eligibility to appear in the

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university exams. Student attendance is an important part of professional development and it is measured as an evidence of professionalism.<sup>2</sup>

Several researches on class attendance established that on average, student with high attendance achieves higher academic performance in both coursework and examination than student with poor attendance<sup>3-6</sup>. Sarode et al conducted a study on Psychological Pain as Predictor of Impulse Control among BAMS New Entrants<sup>7</sup>. Quality of sleep has profound effect on Student's attendance in college. Rathi et al conducted a study on Quality of Sleep among Medical Students<sup>8</sup>. Goyal et al conducted the Assessment of Competency Based Medical Internship Training with 'Cumulative Grade Points Average System'<sup>9</sup>

Rachana Sharir is an essential subject as it contributes the basic knowledge of structural, histological aspect of body. Thorough understanding of anatomy is necessary for effective and safe treatment of patients. The classroom lectures and dissection sessions are the primary teaching method in subject Rachana Sharir for undergraduate students. The lecture-based learning enhances the cognitive, affective and psychomotor skills of the students.<sup>10</sup> The lectures provide benefit for learning despite its didactic nature and poor feedback. The dissection sessions (practical) also are most effective tool for improving student's knowledge, goes by hand with theory classes for better understanding and concept building.<sup>11</sup> If the student misses these classes, generally it will lead to incomplete learning and poor academic performance.

However, the studies showing relationship between separate theory and practical attendance and their comparison with assessment are limited. In Ayurveda profession there may be hardly any study on this issue. Hence, this retrospective cohort study is done to know whether attendance had any correlation with academic performance.

## Material and Method

This retrospective cohort study to assess the effect of class attendance on academic performance in theory examination of first professional BAMS students who have passed examination in July 2019 in the Rachana Sharir Department of Datta Meghe Ayurvedic Medical College, Hospital and Research Centre, Wanadongri, Nagpur, affiliated to Maharashtra University of Health sciences (MUHS), Nasik.

Students have to appear for two internal assessment examinations which were conducted in January and April 2019 as per University policy. Final University examination was conducted by University in May-June 2019. Universal sampling all 100 students of first BAMS (Batch 2018-19) who had appeared in both internal assessment examinations and final University examination were taken as study subjects. This study was an observational study so there was no ethical issue.

The data of attendance and marks in internal assessments was obtained from department record and University theory examination marks were obtained from MUHS result records. The data was compared to know whether there is any correlation between attendance and performance of students. Three groups were formed based on attendance percentage, Group I with more than an equal to 75%, Group II less than 75% and more than an equal to 50% and Group III with less than 50%. These groups were formed as per student's original attendance.

However after second assessment examination, to make students eligible to appear University examination extra classes were conducted.

Data entered in Microsoft Excel as attendance percentage and marks obtained by the students. Also gender wise and residence wise (Hosteller -non hosteller) data entered in Microsoft excel sheet. Results were tabulated; the quantitative data was analyzed by average, proportions and Chi-square test for significance.  $P < 0.05$  significance was expressed.

## Result

This study was undertaken to see the attendance and academic performance of BAMS students in subject Rachana Sharir. Total 100 admissions in the study institute and all 100 students included in the study. The average attendance of the students was  $68.31 \pm 11.95\%$  ranging from 34.0 to 90.67%. The average internal assessment marks in theory was  $44.84 \pm 14.15\%$  with range 3.89-78.89. The average Final University marks scored in theory was  $56.12 \pm 9.39\%$  ranging from 26.67 to 80.0. To compensate the less attendance of the students, Rachana Sharir department had conducted 45 extra classes so as to make the students eligible for university examination.

There were 63 female students and 37 male students, their attendance and performance in internal assessment and final University examination marks are as shown in table No. 1.

**Table 1: Gender wise distribution of study subject as per attendance and marks score.**

| Gender                              | Female      | Male        | P value  |
|-------------------------------------|-------------|-------------|----------|
| No. of students                     | 63          | 37          |          |
| Attendance in percentage            | 70.43±10.64 | 64.71±13.29 | 0.01, S  |
| Int. Assessment Marks in percentage | 46.97±14.72 | 41.23±13.71 | 0.02, S  |
| Uni. Marks in percentage            | 57.81±9.55  | 53.24±8.47  | 0.009, S |

The average attendance of female students was 70.43±10.64% and that of male students was 64.71±13.29%. Female students have more attendance than their counter part. This difference was statistically significant (p=0.01). Internal assessment marks scored in theory by female students was 46.97±14.72% and that of male students was 41.23±13.71%. This difference in marks scored in theory examination was statistically significant (p=0.02). Final University examination marks

scored by female students was 57.81±9.55% and that of male students was 53.24±8.47% and this difference was statistically significant (p=0.009).

There were 74 students who were staying in hostel and 26 students who were staying at home (non-hosteller), their attendance and performance in Theory internal assessment and final University examination marks are as shown in table No. 2.

**Table 2: Residence wise distribution of study subject as per attendance and marksscore.**

| Residence                           | Non Hostel  | Hostel      | P value  |
|-------------------------------------|-------------|-------------|----------|
| No. of students                     | 26          | 74          |          |
| Attendance in percentage            | 72.29±11.45 | 66.92±11.87 | 0.02, S  |
| Int. Assessment Marks in percentage | 49.08±15.37 | 43.36±14.06 | 0.04, S  |
| Uni. Marks in percentage            | 57.80±9.11  | 55.53±9.47  | 0.14, NS |

The average attendance of non-hosteller students was 72.29±11.45% and that of hosteller students was 66.92±11.87%. Non-hosteller student's attendance was more than that of hosteller students. This difference was statistically significant (p=0.02). Internal assessment marks scored in theory by non-hosteller students was 49.08±15.37% and that of hosteller students was 43.36±14.06%. This difference in marks scored in theory

examination was statistically significant (p=0.04). Final University examination marks scored by non-hosteller students was 57.80±9.11% and that of hosteller students was 55.53±9.47% though the marks scored by non hosteller was more but this difference was not statistically significant (p=0.14). Attendance and performance in theory examination of internal assessment and final examination were shown in table no 3.

**Table 3: Distribution of study subject as per attendance and marks obtained in theory**

| Group Percentage | Group I (≥75) | Group II < 75 and ≥ 50 | Group III < 50 | Total       | ANOVA P Value | Post hoc Results |
|------------------|---------------|------------------------|----------------|-------------|---------------|------------------|
| No. of students  | 30            | 62                     | 08             | 100         |               |                  |
| Attendance       | 81.00±4.37    | 65.55±6.52             | 42.18±5.61     | 68.31±11.95 |               |                  |

| Group Percentage              | Group I ( $\geq 75$ ) | Group II<br>< 75 and $\geq 50$ | Group III<br>< 50 | Total             | ANOVA<br>P Value | Post hoc Results   |
|-------------------------------|-----------------------|--------------------------------|-------------------|-------------------|------------------|--|
| Int. Asse Marks in percentage | 50.11 $\pm$ 10.85     | 44.87 $\pm$ 13.88              | 24.93 $\pm$ 16.02 | 44.84 $\pm$ 14.55 | 0.000            | Gp I vs Gp II: NS<br>Gp II Vs Gp III : S<br>Gp I Vs Gp III : S |
| Uni. Marks in percentage      | 58.15 $\pm$ 6.79      | 56.21 $\pm$ 10.03              | 47.78 $\pm$ 9.06  | 56.12 $\pm$ 9.39  | 0.000            | Gp I vs Gp II: NS<br>Gp II Vs Gp III : S<br>Gp I Vs Gp III : S |

There were 30 students whose attendance was more than or equal to 75%, were in group-I. 62 students have attended more than or equal to 50 and less than 75% were in group - II and 8 students attended the classes less than 50% were in group - III. The average attendance was 81.0 $\pm$  4.37, 65.55 $\pm$ 6.52 and 42.18 $\pm$ 5.61 in group I, II and III respectively. The marks scored in internal assessment in theory were 50.11 $\pm$ 10.85, 44.87 $\pm$ 13.88 and 24.93 $\pm$ 16.02 in group I, II and III respectively. The difference was statistically significant

between group II verses III and group I verses III but not significant in group I verses II. The marks scored in final theory examination in percentage were 58.15 $\pm$ 6.79, 56.21 $\pm$ 10.03 and 47.78 $\pm$ 9.06 in group I, II and III respectively. The difference was statistically significant between group II verses III and group I verses III but not significant in group I verses II.

Table No. 4 shows marks scored in internal assessment theory examination by students from different groups of attendance in subject Rachana Sharir.

**Table 4: Distribution of study subjects as per attendance and marks obtained in Internal Assessment Exam**

| Group Percentage            | No. of students | Marks less than 50 % |        | Marks more than and equal to 50% |       |
|-----------------------------|-----------------|----------------------|--------|----------------------------------|-------|
|                             |                 | No.                  | %      | No.                              | %     |
| Group I $\geq 75$           | 30              | 17                   | 56.67  | 13                               | 43.33 |
| Group II < 75 and $\geq 50$ | 62              | 44                   | 70.97  | 18                               | 29.03 |
| Group III < 50              | 08              | 08                   | 100.00 | 00                               | 00.00 |
| Total                       | 100             | 69                   | 69.00  | 31                               | 31.00 |

Chi square = 3.04, d.f. = 1, ( $^375$  Vs <75), P = 0.08, NS

17(5 marks and 13 (43.33%) students scored more than an e6.67%) students scored less than 50% qual to 50%, in theory internal assessment examination, whose attendance was more than 75 %(group I). From group II, 44(70.97%) scored less than 50% marks and 18(29.03%) scored more than an equal to 50%. All 8(100%) scored

less than 50% were among group III. However the marks scored in these different groups were not statistically significant.

Table No. 5 shows marks scored in final University theory examination by students from different groups of attendance in subject Rachana Sharir.

**Table 5: Distribution of study subject as per attendance and marks obtained in University Exam**

| Group Percentage       | No. of students | Marks less than 50 % |              | Marks more than and equal to 50% |              |
|------------------------|-----------------|----------------------|--------------|----------------------------------|--------------|
|                        |                 | No.                  | %            | No.                              | %            |
| Group I ≥ 75           | 30              | 03                   | 10.00        | 27                               | 90.00        |
| Group II < 75 and ≥ 50 | 62              | 16                   | 25.81        | 46                               | 74.19        |
| Group III < 50         | 08              | 04                   | 50.00        | 04                               | 50.00        |
| <b>Total</b>           | <b>100</b>      | <b>23</b>            | <b>23.00</b> | <b>77</b>                        | <b>77.00</b> |

Chi square = 4.089, d.f. = 1, (<sup>3</sup>75 Vs <75), P = 0.043, S

Less Only 3 (10.0%) students scored than 50% marks and 27 (90.0%) students scored more than an equal to 50%, in final university theory examination, whose attendance was more than 75 % (group I). From group II, III equal no. of students i. e. 4(50.0%) scored less than as well as more than and equal to 50%. This

difference was statistically significant (p = 0.043). 16(25.81%) scored less than 50% marks and 46(74.19%) scored more than an equal to 50% and in group.

Table no 6 shows the University result in subject Rachana Sharir by attendance in different groups.

**Table 6: Distribution of study subject as per attendance and University Result In subject**

| Group Percentage       | No. of students | Pass      |              | Fail      |              |
|------------------------|-----------------|-----------|--------------|-----------|--------------|
|                        |                 | No.       | %            | No.       | %            |
| Group I ≥75            | 30              | 29        | 96.67        | 01        | 3.33         |
| Group II < 75 and ≥ 50 | 62              | 49        | 79.03        | 13        | 20.97        |
| Group III < 50         | 08              | 05        | 62.50        | 03        | 37.50        |
| <b>Total</b>           | <b>100</b>      | <b>83</b> | <b>83.00</b> | <b>17</b> | <b>17.00</b> |

Chi square=5.67, d.f. = 1, (<sup>3</sup>75 Vs <75), P = 0.017, S

From group I, 29(96.67%) students passed in final University Examination in subject Rachana Sharir and only 1 (3.33%) student failed. 49(79.03%) students passed and 13(20.97%) students failed from group II. Whereas from group III, 5(62.50%) students passed and 3 (37.50%) failed. It indicates that higher the percentage of attendance, more number of students gets through the examination and vice versa and this difference is statistically significant.

### Discussion

Student’s absenteeism is a continuous problem in medical education despite mandatory attendance policies introduced by the universities. Professional courses like medical education require high attendance in theory and practical classes for better understanding of the

subject and for acquiring skills for better performance in their later career life. There is no better alternative of attending the classes for better academic performance in medical profession.

The average attendance of female students was 70.43±10.64% and that of male students was 64.71±13.29%. Internal assessment marks scored in theory by female students was 46.97±14.72% and that of male students was 41.23±13.71%. Final University examination, marks scored by female students was 57.81±9.55% and that of male students was 53.24±8.47%. Average attendance, internal assessment examination and University examination marks were more in female students than male students and this difference was statistically significant. This indicates that female students are more sincere and studious.

The average attendance of non-hosteller students was 72.29±11.45% and that of hosteller students was 66.92±11.87%. Internal assessment marks scored in theory by non-hosteller students was 49.08±15.37% and that of hosteller students was 43.36±14.06%. Average attendance and internal assessment examination marks were more in non-hosteller students than hostel students and this difference was statistically significant. Hostellers are from other places and initially may be homesick. They may require more time to get adjusted with professional course environment.

The average attendance was 81.0± 4.37, 65.55±6.52 and 42.18±5.61 in group I, II and III respectively. The marks scored in internal assessment in theory were 50.11±10.85, 44.87±13.88 and 24.93±16.02 in group I, II and III respectively. The marks scored in final theory examination in percentage were 58.15±6.79, 56.21±10.03 and 47.78±9.06 in group I, II and III respectively. The difference was statistically significant between group I verses group III and group II verses group III. Similar findings were observed by Sangeeta M Varalakshmi K<sup>12</sup>, Richard P Deane and Deidre J Murphy<sup>13</sup>, Lima Koruthara Mohanan et al<sup>14</sup>

From group I, 90% students score more than 50% marks in University examination while in group II and III score 74.19% and 50% students score more than 50% marks. This difference was statistically significant. Similar observation was found by Priya Dhengre and Ashok Jadhao(1), Roy SS and Chadalawada J<sup>15</sup>, Biswas SS and Jain V(6)

From group I, 96.67% students passed in final University Examination in subject Rachana Sharir, 79.03% group II. 62.50% students passed from group III. It indicates that higher the percentage of attendance, more number of students gets through the examination and this difference is statistically significant. Similar observation by Lima Koruthara Mohanan et al(14), Varul M, Vegad A et al<sup>16</sup>, Chilwant KS and Hundekari JC<sup>17</sup>.

Attendance and performance are closely related with each other. Assessment is an integral part of education system. The goal of assessment is to monitor student's academic performance<sup>18</sup>. To improve the performance of students we can apply remedial teaching method stated by P. Dandekar through which performance can improve which helps to create student's interest in the studies. Assessment improves students approach towards

learning<sup>19</sup>. It also helps in attendance improvement. Applying Objective structured practical examination (OSPE) assessment system used by Anita et al could improve students' performance and attendance<sup>19</sup>.

Here in this study an effort had been taken to find out the correlation between attendance & academic performance based on formative and summative assessment.

## Conclusion

This study demonstrates a significant association between attendance percentage and academic performance in internal assessment theory and final University examinations of first BAMS students in subject Rachana Sharir. It was also observed that gender wise and residence-wise correlation between class attendance and academic achievement. Further studies require identifying the reasons for student absenteeism and measures to overcome these factors for improving the quality of education in Ayurved colleges.

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**Conflict of Interest:** Nil.

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