Comparision of the Academic Achievement of Chiang Mai Graduate Medical Students Which Selected by Quota, Entrance and Rural Project

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Abstract Objective: Comparison of the achievement of graduate medical students Chiang Mai University which selected by Quota, Entrance and Rural project

Methods Collecting GPAs data of graduate medical students in the academic year 2002 from registrative department and divided to 3 groups. Analysis the data by using SPSS.

Results Medical students who entered for study in the academic year 1997 were 172 students and were success in 6 year study 162 students. In premedical level, GPAs of Quota was higher than Entrance (p<0.05) and Rural project (p<0.05). In preclinical level, GPAs of Quota was higher than Entrance (p>0.05) and Rural project (p<0.05). In clinical level Rural project was higher than Quota(p>0.05) and Entrance (p>0.05). Total grade from year 1-6, GPAs of Quota was higher than Entrance (p>0.05) and Rural project (p>0.05). The achievement in premedical level was correlation with the achievement in preclinical level, clinical level and the whole program significantly at level 0.05.(r = 0.77, 0.49 and 0.76 respectively).

Conclusion Medical students from Quota had more achievement than Entrance and Rural project at premedical level, preclinical level and the whole programe. At the clinical level, They were not difference. Chiang Mai Med Bull 2004;43(2):77-86.

Keywords: academic achievement, medical graduate, quota student, entrance student, rural doctor project student
their regions rather than flooding to Bangkok by making the quota examination available for the first time in 1971. Chiang Mai University (CMU) covers the 17 provinces in the northern region, which includes Chiang Mai, Lampang, Lamphoon, Phayao, Mae Hong Sorn, Chiang Rai, Prae, Pitsanulok, Nakorn Sawan, Uttradit, Taak, Kamphaeng Petch, Sukothai, Pichit and Uthai Thani. In 1971, 10 percent of the total number of students came from the quota examination and this proportion eventually rose to 50 percent in 1983. In 1997, the Ministry of Public Health created a new policy called the “project to produce more medical doctors for rural areas” to increase more medical graduates who could work in their home provinces, especially in rural areas. To comply with this national policy, the Ministry of Public Health managed to produce more medical doctors with the cooperation of different universities. CMU, in cooperation with Lampang Central Hospital, became responsible for training more students who lived in the eight provinces of the upper northern region. These are Chiang Mai, Lampang, Lamphoon, Mae Hong Sorn, Chiang Rai, Prae, Nan, and Phayao. These medical students received their first year premedical studies and second and third year preclinical studies at CMU, while receiving their clinical studies at Lampang Central Hospital, Ministry of Public Health.

In the academic year of 2002, the first group of students from the Rural project produce more graduated medical students for rural areas. The researchers were interested to see whether there was any difference between the academic achievements of these students and those from the quota and national entrance examination.

Objective of the study
The objective of the study was to compare the achievement of medical students at CMU, who were selected through the quota entrance examination (Quota students), national entrance examination (Entrance students) and the Rural project, which produced more medical students for rural areas (Rural project students).

Definition and terminology

**Academic achievements** the result of academic evaluation through the form of accumulative grade point average (GPA) at the premedical, preclinical and clinical level and throughout the whole curriculum.

**Quota students** students who were selected for CMU medical school by the quota entrance examination (issued by CMU) and lived in the northern region.

**Entrance students** students who were selected for CMU medical school by the national entrance examination (issued by the Ministry of Tertial Education).

**Rural project students** students who were selected for CMU medical school by the Rural project in order to produce more medical students for rural areas (issued by CMU in cooperation with the Ministry of Public Health).

**Premedical level** course curriculum
for first year medical students at CMU.

Preclinical level course curriculum for the second and third year medical students at CMU.

Clinical level course curriculum for the fourth through sixth year medical students at CMU.

Throughout the whole program course curriculum for the first through sixth year medical students at CMU.

Methods of study

1. Population and samples

The target population of this study comprised graduate medical students, who were selected by Quota, Entrance and Rural project.

Purposive sampling was used to select samples from graduate medical students who started at CMU in 1997 and were successful by 2002. The number of samples was 162 students.

2. Data collection

Collecting GPA data for graduate medical students in the academic year 2002 was from the Registrative Department of the Faculty of Medicine, Chiang Mai University.

3. Data analysis

The statistical package for social science (SPSS) was used for data analysis. Mean, standard deviation, and comparison of the mean grade point average was determined by one way ANOVA. The correlation of achievement at the premedical, preclinical and clinical level, and throughout the whole program was determined by Pearson’s Correlation.

Results

Part I. Data of 3 groups of medical students

Graph 1 shows 172 medical students who started at CMU in 1997. Out of these, 76 were Quota students, 80 were Entrance students and 16 were Rural project students. One hundred and sixty two students (94.19% of 172) were successful in 6 years. Out of these, 74 were Quota students, (97.37% of 76), 75 were Entrance students (93.75% of 80) and 13 were Rural project students (81.25% of 16). One of the Quota students (1.32% from 76) resigned due to failing the exam twice in the fourth year and another one (1.32% from 76) repeated the study in the fifth year. Three of Entrance students (3.75% from 80) resigned (1 because of failure to register in the second year and 2 because of failing the exam twice in the third year) and another two (2.5% from 80) repeated the study in the fourth year. One Rural project student (6.25% from 16) resigned because of failure to achieve the minimum average GPA for study in the first year, another one (6.25% from 16) was transferred to a different faculty because of a psychiatric disorder and another one (6.25% from 16) repeated the study in the second year.

Part II. Grade point average of medical students and compared mean of the grade point average of 3 groups

Graph 2 shows that the average GPA of Quota students was higher than that of Entrance and Rural project students at the premedical and preclinical level and
throughout the whole program, but at the clinical level, the average GPA of Rural project students was slightly higher than that of Quota and Entrance students.

Table 1 shows that the GPA of Quota, Entrance and Rural project students at the premedical level (first year) was (2.02-4.00, 3.07±0.43), (2.07-3.77, 2.87±0.45) and (2.12-2.88, 2.47±0.23) respectively. At the preclinical level (second and third years), it was (2.03-3.99, 2.93±0.49), (2.03-3.97, 2.79±0.52) and (2.00-3.01, 2.39±0.30), respectively. At the clinical level (fourth to sixth years), it
Academic achievement of graduate medical students was (2.23-3.98, 3.10±0.38), (2.37-3.78, 3.02±0.35) and (2.66-3.62, 3.13±0.31), respectively, and throughout the whole program (first to sixth years), it was (2.33-3.94, 3.05±0.38), (2.28-3.75, 2.92±0.37) and (2.39-3.33, 2.81±0.27), respectively. The means GPA was compared by one way Anova, and they were significantly different at the premedical and preclinical level and throughout the whole program at \( p<0.05 \). They was no difference at the clinical level. Using Scheffe’s method to compare the mean GPA between Quota, Entrance and Rural project at premedical and preclinical level and throughout the whole program, the GPA of Quota and Entrance students was significantly higher (\( p<0.05 \)) than that of Rural project students at the premedical and preclinical level and the GPA of Quota students was significantly higher (\( p<0.05 \)) than that of Entrance students at the premedical level. However, there was no difference between the 3 groups throughout the whole program. This may have occurred from a type II error because of the small number of subject from the Rural project group (only 13).

**Part III. Pearson’s Correlation of grade point average between premedical, preclinical and clinical level and throughout the whole program**

Table 2 shows Pearson’s correlation between the GPA at premedical level and preclinical level, clinical level and throughout the whole program were 0.774, 0.497and 0.763, respectively at \( p < 0.001 \).

**Discussion**

This research found that success in studying medicine in 6 years from Quota students (97.37%) was higher than Entrance (93.75%) and Rural project students (81.25%). Students from the Rural project experienced most academic difficulties, which corresponded with a previous study by Punjaisee, Pinyopornpanish, Suwanthawee and Lakakul. Pinyopornpanish found that

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**Table 1.** Mean and standard deviation of the GPAs of the 3 groups of students and compared mean by one way ANOVA and Scheffe

<table>
<thead>
<tr>
<th>Academic level</th>
<th>Group of students</th>
<th>Scheffe</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Quota (1)</td>
<td>Entrance (2)</td>
<td>Rural project (3)</td>
</tr>
<tr>
<td>Premedical</td>
<td>N=74</td>
<td>N=75</td>
<td>N=13</td>
</tr>
<tr>
<td>Mean</td>
<td>3.07</td>
<td>2.87</td>
<td>2.47</td>
</tr>
<tr>
<td>S.D.</td>
<td>0.43</td>
<td>0.45</td>
<td>0.23</td>
</tr>
<tr>
<td>Range</td>
<td>4.00-2.02</td>
<td>3.77-2.07</td>
<td>2.88-2.12</td>
</tr>
<tr>
<td>Preclinical</td>
<td>N=74</td>
<td>N=75</td>
<td>N=13</td>
</tr>
<tr>
<td>Mean</td>
<td>2.93</td>
<td>2.79</td>
<td>2.39</td>
</tr>
<tr>
<td>S.D.</td>
<td>0.49</td>
<td>0.52</td>
<td>0.30</td>
</tr>
<tr>
<td>Range</td>
<td>3.99-2.03</td>
<td>3.97-2.03</td>
<td>3.01-2.00</td>
</tr>
<tr>
<td>Clinical</td>
<td>N=74</td>
<td>N=75</td>
<td>N=13</td>
</tr>
<tr>
<td>Mean</td>
<td>3.10</td>
<td>3.02</td>
<td>3.13</td>
</tr>
<tr>
<td>S.D.</td>
<td>0.38</td>
<td>0.35</td>
<td>0.31</td>
</tr>
<tr>
<td>Range</td>
<td>3.98-2.23</td>
<td>3.78-2.37</td>
<td>3.62-2.66</td>
</tr>
<tr>
<td>The whole program</td>
<td>N=74</td>
<td>N=75</td>
<td>N=13</td>
</tr>
<tr>
<td>Mean</td>
<td>3.05</td>
<td>2.92</td>
<td>2.81</td>
</tr>
<tr>
<td>S.D.</td>
<td>0.38</td>
<td>0.37</td>
<td>0.27</td>
</tr>
<tr>
<td>Range</td>
<td>3.94-2.33</td>
<td>3.75-2.28</td>
<td>3.33-2.39</td>
</tr>
</tbody>
</table>
Rural project students had greatest problems in their first year, especially in physics. In the selection process of Rural project students, the physics exam was not included (only Math, Biology and English were), thus, some students who were weak in physics were able to pass such an entrance examination. When the result of selection was announced in December, students who were already selected might have given less importance to their classes in the final semester of high school, especially in physics where they saw little or no importance in their future field of medicine. This might have made their general academic background in physics a little weaker than students from the entrance exam, where a good physics score was critical for getting into medical school. When students of all types are put together in a class, along with the fact that classes go at a faster pace in university when compared to high school, made the students who were already weak in physics fell behind. Some felt tired, got bored and were absent from class, and they fell even further behind. This resulted in low test scores and, eventually a failed course. This study found one student from 16 of the Rural project, who resigned in the first year of study.

This research found that the average GPA at the premedical level (first year) for Quota students (3.08) was higher than that of Entrance (2.87) and Rural project students (2.47), ($p<0.05$), which correlated with a previous study by Punjaisee,\(^2\) who compared the academic achievement of first year Chiang Mai medical students in the first semester of 2000. She found that the average GPA of medical Quota students (2.99), was significantly higher ($p<0.01$) than that of Entrance students’ (2.86) and Rural project students (2.51). The higher GPA at the premedical level for quota students could be due to the fact that high school students in the northern region with good academic records tried to enter CMU by the Quota examination first. Students from outlying regions or the national entrance examination usually selected CMU as an alternative choice behind universities in Bangkok, since Chiang Mai was far away from their home. Therefore, the foundation of the academic level of high school quota students was usually better than that of national entrance students. Also, the contents at the premedical level were similar to those in high school classes. Quota students got a higher GPA than Entrance students at the premedical level. Rural project students were first accepted in 1997, which was the group studied in this research. These students were selected after the results of the quota examination were announced, meaning their selection through the project produced more

### Table 2. Pearson’s Correlation of grade point average between premedical level and preclinical, level clinical level and throughout the whole program

<table>
<thead>
<tr>
<th>Variable</th>
<th>GPA at the premedical level</th>
<th>r</th>
<th>Sig 2 tail</th>
</tr>
</thead>
<tbody>
<tr>
<td>GPA at the preclinical level</td>
<td>0.774</td>
<td>&lt;0.001</td>
<td></td>
</tr>
<tr>
<td>GPA at the clinical level</td>
<td>0.497</td>
<td>&lt;0.001</td>
<td></td>
</tr>
<tr>
<td>GPA throughout the whole program</td>
<td>0.763</td>
<td>&lt;0.001</td>
<td></td>
</tr>
</tbody>
</table>
medical students for rural areas and they were the ones unable to get through by way of the quota examination. Therefore, it was found that academic achievement was significantly different between the three groups. (shown in Table 1)

The average accumulative GPA at the preclinical level was lower in all three groups compared to their premedical GPA. This could be due to the fact that the contents at the preclinical level were more difficult and students had to adjust more. The classes were strictly for medical students, forcing them to compete with each other and the grades were given following the group criterion. Therefore, they received lower preclinical GPAs compared to premedical ones. Furthermore, this study found that the preclinical level of GPAs usually corresponded with premedical GPAs at a correlation of 0.77 at \( p < 0.001 \) (Table 2). This was partly due to the fact that preclinical level courses were similar to premedical ones in their style of evaluation. Grades were usually measured by test scores and not from skills and attitude. Therefore, the preclinical GPA of the Quota students was higher than that of Entrance and Rural project students in accordance with the GPA at the premedical level.

The accumulative GPA at the clinical level (fourth through sixth years) of the three groups was higher when compared to premedical and preclinical GPAs. The correlation of GPAs at the premedical level with those at the GPAs in clinical level was 0.49 at \( p < 0.001 \) (see Table 2). The rise in GPA could be due to the fact that the clinical level stressed more on clinical skills and attitude. Therefore, evaluation had to take these factors into consideration. This study also found that GPAs of the three groups were no different \( (p > 0.05) \), but Rural project students showed more improvement in their study than Quota and Entrance students (see Graph 2 and Table 1). The interesting point was to explore the reason for this phenomenon. The hypothesis contained a number of different factors such as:

1. The number of students in each group was different. The class of Rural project students in this study was divided into 2 groups. Each group consisted of only 6-7 students. Quota and Entrance students were combined then divided into 12 groups of 13-14 students. The number of groups in each ward ranged from 1-3 groups depending on the size of the ward and staff. The smaller number of students at Lampang Central Hospital made it easier for students to interact when compared to the larger groups in Maharaj Nakorn Chiang Mai Hospital. Students in smaller groups were given more opportunities to practice and improve their clinical skills under supervision than larger groups, thus resulting in better scores in clinical skills. Results of exams from the Department of Internal Medicine showed that in 2002, fourth year medical students from Lampang had higher scores in the clinical skill part of the final examination when compared to the students who studied at Maharaj Nakorn Chiang Mai Hospital.\(^{(5)}\)
2. Different institutions could play a major role, since students from the Rural project studied and practiced in Lampang Central Hospital, where the patients usually had less complicated problems and were in less severe condition. Furthermore, there were only 50-60 medical students in Lampang Central Hospital, which was far fewer than those at Maharaj Nakorn Chiang Mai Hospital, where the number of medical students at the clinical level stood at about 400-500. These factors made the environment in Lampang Central Hospital more suitable and less stressful when compared to Maharaj Nakorn Chiang Mai. Rural project students, therefore, had more time to study when compared to the other 2 groups.

3. The different evaluators could be a factor, since Rural project students were mostly evaluated in attitude and clinical skills by teachers in Lampang, while the other 2 groups were evaluated by teachers at CMU. Although the criteria for scoring are structured, there should be a study to find the inter-rater reliability to prove that there is no difference in the standard of scoring.

The average accumulative GPA throughout the whole 6 years program of Quota students (3.05) was higher than that of Entrance (2.92) and Rural project students (2.81), but insignificant. Chiengchee T(7) studied the effects of students’ learning achievement between the quota and non-quota students at CMU in the academic year of 1976. He found that the learning achievement of the quota students was significantly higher than that of the non-quota students, especially in those from the Faculties of Medicine, Agriculture and Education. Since the average GPA throughout the whole program was dependent on that from 1 to 6 years, the GPA of Quota students at 1-3 years was higher than that of Entrance and Rural project students. Therefore, Quota students achieved a higher GPA than Entrance and Rural project students throughout the whole program. The reason for this has already been discussed at the premedical and preclinical levels.

Conclusion

Quota students produced higher academic achievement at the premedical, and preclinical level and throughout the whole program when compared to Entrance and Rural project students.

At the clinical level, there was no significant difference in academic achievement between the 3 groups.

Recommendation

1. The factors behind why Rural project students achieved greater improvement at the clinical level than Quota and Entrance students should be studied further.

2. A study should be carried out on the inter-rater reliability of the two groups of evaluators (from CMU and Lampang Central Hospital), to ensure that the improvement of GPA at the clinical level of Rural project students and other groups is not effected by a difference in evaluators.
3. We should follow and appraise the performance of graduates from the three groups to see how different their knowledge and performance are after a period of practicing in medicine.

References
2. Punjaisee N. Academic achievement of the first year medical student in the first semester in 2000 at the Faculty of Medicine, Chiang Mai University. Chiang Mai: Faculty of Medicine, Chiang Mai University; 2000.
การศึกษาเปรียบเทียบผลสัมฤทธิ์ทางการศึกษาของบัณฑิตแพทย์เชียงใหม่ที่ผ่านการคัดเลือกเพื่อเข้าศึกษาตามประเภท โควตา ทบวงและชนบท

มณี กิจญิตรพานิชย์, พ.บ., 1 สิทธิ์ วงศ์สวัสดิ์, พ.บ., 2 นงนุช ปันจัยสีห์, 3 วารุณี บัวเย็น 3

1 ภาควิชารัฐศาสตร์, 2 ภาควิชารัฐศาสตร์, 3 หน่วยทะเบียนและประเมินผล คณะแพทยศาสตร์ มหาวิทยาลัยเชียงใหม่

บทคัดย่อ
วัตถุประสงค์ เพื่อเปรียบเทียบผลสัมฤทธิ์ทางการศึกษาของบัณฑิตแพทย์เชียงใหม่ที่เข้าศึกษาตามประเภทโควตา ทบวงและชนบท

วิธีการศึกษา นักศึกษาการศึกษาของบัณฑิตแพทย์เชียงใหม่จำนวน 40 คนแบ่งเป็น 3 ประเภท 

ผลการศึกษา พบว่าผลการศึกษาของนักศึกษาแพทย์ที่เข้าศึกษาปี 2540 และสำเร็จใน 6 ปี 162 คน ผลการเรียนในระดับเตรียมแพทยศาสตร์ ประเภทโควตา สูงกว่าทบวง (P < 0.05) และทบวงสูงกว่าชนบท (P < 0.05) ระดับปรีคลินิก ไตรภาคสูงกว่าทบวง (P < 0.05) ไตรภาคและทบวงสูงกว่าชนบท (P < 0.05)ระดับคลินิก ขณะที่ระดับโควตาและทบวง (P < 0.05) ผลทดสอบสูงกว่าทบวง และชนบท (P < 0.05) และผลการเรียนในระดับเตรียมแพทยศาสตร์ มีความสัมพันธ์กับระดับprüคลินิก คลินิกและตลอดหลักสูตร (r = 0.77, 0.49 และ 0.76 ตามลำดับ ที่ P < 0.05)

สรุป ประเภทโควตามีผลสัมฤทธิ์ทางการศึกษาในระดับเตรียมแพทยศาสตร์ ปรีคลินิกและตลอดหลักสูตรสูงกว่าทบวงและชนบท ด้วยระดับคลินิกทั้ง 3 ประเภทไม่แตกต่างกัน เชียงใหม่เวชสาร 2543;43(2):77-86.

คำอ้างอิง: ผลสัมฤทธิ์ทางการศึกษา บัณฑิตแพทย์ นักศึกษาแพทย์โควตา นักศึกษาแพทย์ทบวง นักศึกษาแพทย์ชนบท