# First-year medical students in Thailand: rural attitudes and preferred workplaces upon graduation.

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## Abstract

### Objectives

To compare and identify factors determining rural attitude and preferred workplace upon graduation among the first year medical students recruited by three different mechanisms: national entrance examination, quota systems and Rural Doctor Program (RDP).

### Method

An on-site self-administered questionnaire survey was launched in May 2007 to all first year medical students in six eligible medical schools in Thailand having at least two types of admission. Linear and multinomial logistic regression analyses were applied to assess the contributions of independent factors determining rural attitudes and preferred workplaces after graduation.

### Findings

A total of 1,011 medical students completed the survey (97.8% response rate) from three medical schools in Bangkok and three from other provinces. Students from provincial medical schools had a higher rural attitude and preferred to work in public health facilities once graduate. Students from quota systems and RDP had a higher rural attitude score than entrance system when adjusted for differences in medical schools. Quota systems and RDP students had higher intentions to work in public health facilities compared to private practices than students from the entrance system. Similar findings emerged though a smaller magnitude of association when adjusted for all other socio-economic factors.

### Conclusion

Students admitted by quota systems and RDP had a higher rural attitude and intention to serve public health facilities. Policy should consider scaling up quota systems and RDP while scaling down university entrance system though strong resistance is foreseeable.

## Introduction

Health workforce crisis was thoroughly described in World Health Report 2006[1]. Much has been known about factors influencing health workers' choices of rural postings [2, 3, 4, 5]; effective policy interventions to foster rural retention of health workers were lagging behind.

Financial and non-financial incentives to increase motivation and rural retention were extrinsic factors contingent on health workers' behaviour or outcomes[6]. These interventions had limited retention impact due to fatigue and were not affordable by governments in resource-poor settings [7, 8, 9].

Mandatory rural health services after graduation were applied in various countries, however evidence indicates limitations such as implementation complexities and abused by better-off individuals in Thailand[10]. Indonesian health professionals who chose rural postings by themselves stayed longer in disadvantaged areas than those with a contractual obligation [9].

Health professionals' perception on the relative desirability of urban and rural postings differed due to intrinsic motivation [6]. Intrinsic motivation, defined as "the desire to perform a task for its own sake" was applied by a number of countries in the recruitment of medical students. Admissions of students favouring rural applicants and curriculum providing rural exposures were applied to enhance student interest in rural health services [10, 11, 12, 13, 14].

There were studies supporting the hypothesis that professionals with rural background were more likely to return to their rural home towns[15, 16]. A recent study in Ethiopia[17] using contingent valuation technique found that the main determinants of willingness to work in rural areas among the final year medical and nursing students were poorer socioeconomic status, good attitude towards the poor and other intrinsic motivations.

Thailand not only faces a health workforce shortage, but also mal-distribution in flavour of the affluent urban areas in particular Bangkok[18]. In response to the rural shortage of medical doctors, in 1995 a Cabinet Resolution endorsed a program to increase the production of rural doctors, hereby called Rural Doctor Program (RDP). The RDP, a collaborative program between Ministry of Public Health (MOPH) and the Ministry of Education (MOE) applied the concept of rural recruitment, local training and hometown placement [10].

### Medical education and student admission

Historically, medical education was highly competitive; admissions were organized through the national entrance examination. All 17 (except one private) medical schools in Thailand were public universities under the jurisdictions of Ministry of Education. Ideologically, medical education was perceived as having public benefit; therefore financing medical education was heavily subsidized by the government, annual tuition fee paid by students were negligible. Three years service in public health facilities upon graduation was mandatory by regulation since 1974 through contract bonding. Non-adherence was liable to pay a fine of 400,000 Baht (US$ 12,120, exchange rate 33 Baht in 2009).

Three types of admission to medical education had different mechanisms and protocols. Entrance examination, responsible by the Ministry of Education (MOE), applied national standard academic criteria such as high school Grade Point Average and specific subject

tests as required by medical education. In this system, one year basic science, two preclinical years and three clinical years were trained in the medical school.

Since 1974, each medical school initiated and was responsible for its own quota system. This system provided preferential admission to talented rural students. High school students residing in the same region of medical school were eligible to compete in the regional quota examination, to ensure academic competency of students, organized by regional university network. Students were trained in the respective medical school for basic science, preclinical and clinical years.

To respond to the shortage of medical doctors in rural areas, the RDP was initiated in 1995 and responsible to MOPH. Eligible high school students must reside in the provinces where the physician shortage was identified by the MOPH. In addition to academic criteria applied in the entrance examination system, RDP required applicants to demonstrate ethics and attitudes in serving the poor, while participating in activities or workshops organized by each medical school. Detailed operating procedures varied across medical schools; some organized activities, while others applied interviews. In RDP, basic science and pre-clinical years were trained in medical schools, while three clinical years were trained in MOPH regional hospitals, for which quality was accredited by the Thai Medical Council.

The quota system and Medical students recruited from every scheme have to pay their intuition fees which are a small amount of money, since 80% of unit cost for medical doctor production will be subsidized by the government. The exception is some RDP's students residing in remote districts who accept scholarships from the project. The fees will be paid on their behalf. They also get monthly financial support for their living through out academic years. However, 12- year rural public service or the fine of 2,000,000 Bath (US$ 60,600, exchange rate 33 Baht in 2009) is the obligation upon graduation.

This paper assesses rural attitude, preferred workplace when graduate and factors determining attitudes and preferred workplace among the first year medical students comparing three types of admissions: entrance examination, quota systems and RDP in order to inform policy designs towards higher rural posting.

## Methods

All first year medical students during the academic year of 2007 in six eligible medical schools in Thailand having at least two types of admission systems were invited to participate in the study.

A self-administered questionnaire was used to assess the students' personal background, places of birth and where they lived longest during their childhood; location of secondary school; parental occupation, education and income; households' ownership of durables; rural attitudes and preferred workplaces.

In the assessment of rural attitude, we used the eighteen questions covering three domains of work and life in rural areas in the Student Attitudes to Rural Practice and Life Questionnaire[19]. The participants were instructed to rate their agreement with each statement on Likert scale from 1 (strongly disagree) to 6 (strongly agree). In order to avoid bias, five questions were asked negatively. Content validity was assessed by a panel of five experts in human resources before the questionnaire was pre-tested. The Cronbach's alpha coefficient was 0.85. Three choices of preferred workplaces: public health facilities, specialty training right and doing private practices after graduation by paying fines.

Institutional ethical approval by each medical school was granted; researchers received approval to convene a meeting among all first year medical students, launched and collected questionnaire on-site, anonymously where no respondent's attributes can be traced.

### Data analysis

Student's economic status was represented by the quintile distribution of household wealth index. A presence (or absence) of selected assets and durables including motorbikes, electrical and electronic appliances, such as microwave ovens, refrigerators, air conditioners, telephones and computers was used to create a wealth index with an application of principal component analysis, and further distributed into quintiles among these samples.

The rural attitude score was summarized for each medical school in terms of mean and standard deviation (SD). Direction and magnitude of an association between the attitude and three admission types were assessed by a linear regression analysis. Distribution of preferred workplace was presented by each school. Likelihoods of students in the quota systems and RDP relative to the entrance examination who would choose the specialty training and public health services as contrast to private practice were determined using a multinomial logistic regression. Medical schools, residental areas and parental occupation, education and income were used for adjusting the effects of the admission types on attitude and preferred workplace.

## Results

### General characteristics

In May 2007, of 1,034 questionnaires distributed to the first year medical students in classrooms; 1,011 (97.8%) had complete responses. More than half (59.0%) of students were recruited through entrance examination, one-fourth (24.9%) through the RDP and the rest 16.1% through quota systems.

To observe confidentiality, we deliberately blacked out names of universities by using 'BKK' and 'Prov.' representing medical schools in Bangkok and provinces respectively; see Table 1. All six medical schools had varying number of RDP students, ranging from 7% to 73%. Four medical schools, three in Bangkok and one provincial level did not have quota systems. Two provincial medical schools have a smaller proportion, 14% and 15% of students recruited through entrance examination, whilst they provide 50% to 60% of their seats for quota system.

Attitudes, preferred workplaces when graduated and socio-economic profiles varied greatly across six medical schools. Student from BKK1, having the most affluence students, demonstrated a relatively lower rural attitude score, average 4.4 and a larger proportion (29%) of intention towards private practice when graduated as contrasted to working in public health facilities (26%). Two others BKK2 and BKK3, however, had higher rural attitude score (mean, 4.5-4.6) and a larger proportion (29-39%) of intention to work in public facilities. On the other end, the medical students in provincial medical schools had higher rural attitude score (mean, 4.5-4.6) and higher proportion to work in public settings (39-53%).

The highly competitive nature of medical admissions resulted in a smaller chance of students living in rural areas and graduating from rural secondary school enrolled in medical education. There were sharp socio-economic contrasts across medical schools;

for example, in BKK1 and BKK2, as few as 6-7%, 11-13% and 1-3% of their students were born in, brought up and graduated from secondary schools in rural areas respectively. In addition, only 2-3% and 8-15% of their parents were farmers or engaged in the informal sector and still lived in rural areas respectively. In terms of economic status, approximately one-fourth (24-28%) and one-third (31-32%) of students from BKK1 and BKK2 belonged to the wealthiest quintiles and had their parent's monthly income above 70,000 Baht (USD 2,121). Students from provincial medical schools were less affluent, 7-16% and 7-20% belonged to the wealthiest quintiles and monthly income more than 70,000 Baht.

<Table 1 here>

**Factors determining rural attitude**

Students from the quota systems and RDP had a significant higher rural attitude than conventional entrance system by 0.89 and 1.05 scores (Table 2). The students from all five schools had a rural attitude score higher than BKK1 as reference and significantly higher among students from Prov.1 and BKK2.

<Table 2 here>

Taking into account the variations in the students' socio-economic backgrounds, in model 2 of table 2, the quota system and RDP had significantly higher attitude scores, though smaller magnitude than the entrance examination.

Female students had a higher rural attitude score than males though not statistically significant. The students whose parents owned businesses or who came from the top four wealth quintiles had a significant lower rural attitude score than those whose parents were farmers or working in the informal sector or came from the bottom wealth quintiles. Parents' incomes had a negative relationship with the rural attitude (data not shown). The rural domiciles of students and parents had an expected positive relationship with the rural attitude though not statistically significant when taking all other variables into account.

**Factors determining preferred workplace**

We found that students who intended to work in public health facilities had the highest rural attitude score; mean score 4.62 + 0.63, data not shown. Those choosing to pursue further specialist training and to work in private settings had a significantly lower rural attitude score by 0.15 and 0.26 points, respectively.

When controlled for variation in the medical schools in model 1, table 3; students admitted through the quota system and RDP intended to pursue further specialty training compared to private practice significantly less than those in the conventional entrance track by 13% and 43%, respectively. In contrast, students in the quota systems and RDP were 2.2 and 2.0 times more likely to choose their practice in public health facilities as compared with the private practice than students enrolled through entrance examination.

<Table 3 here>

Using intention to do private practice as reference and all else being equal, female students were 58% and 51% more likely than the male counterparts to choose specialist training and work in public health facilities respectively (Table 3, Model 2). Similarly, students who were brought up in rural areas had 2.1 and 1.8 times higher chance to go to specialty training and work in public health facilities than that of the urban students. As household wealth increased, student's preference to work in the public health facility

decreased and intention to go for specialist training increased until reaching the threshold at the fourth quintile.

Additional controls for the geographical areas and socio-economic status did not change the direction of such an association of quota systems and RDP. Consistently we found higher probability of intention to work in public health facilities than conventional entrance examination in model 2, though the magnitude is smaller than in model 1.

## Discussion

This study provided invaluable evidence on the differences in the medical education enrolment mechanisms; the influences of these differences on the socio-economic and geographical profiles of medical students they recruited and how these socio-economic factors determined students' attitudes towards rural life and work and their preferred choices of workplace. These understandings were important for effective design of admissions to medical education that fostered rural attitude and rural health services.

### Difference in enrolment to medical education

BKK1, 2, 3 and Prov.1 had no quota systems. There was a sheer proportion of students recruited through national entrance examination, 93% in BKK2 and 70% in BKK1; whereas BKK3 had 73% of their students recruited from RDP. In Prov.2 and Prov.3, quota had a substantial proportion, 56% and 48% respectively. These variations were explained by the philosophy of the individual university. More conservative medical schools maintained status quo position in favour of academic competencies through national entrance examination recruitment, less responsive to needs for doctors in rural areas.

The very high competitive national entrance examinations resulted in a large proportion of medical students recruited from the most affluent families in urban areas, in particular Bangkok, who graduated from a few top quality secondary public and private schools in Bangkok. Interviews with key informants from medical schools responsible for medical education revealed that these students had higher intellectual capacities, had better opportunities for private tutorial sessions specifically designed for successful entrance examinations. Special tutorials, not widely available at provincial level, were expensive and unaffordable by poorer parents in quota and RDP.

In the context of being born, brought up and studied in secondary schools in urban metropolitan areas, students from entrance examination had little opportunities to exposure to and understand what is really meant by "rural areas" where the majority of poor Thai people residing. It is unavoidable that their attitude towards rural life and work is much poorer than students recruited under quota systems and RDP.

Competition at regional level under quota and RDP systems was much less tense than the national entrance examination. While focusing on academic competency through regional examination, other intrinsic factors in favour of rural services were taken into account through various assessments. Academic competency is the only primary criteria for national entrance examination. This survey confirmed there was a higher proportion of a student from less affluent rural families recruited by quota and RDP.

Though quota systems and RDP shared similar concepts of favouring rural applicants, students in quota systems were trained six years in medical schools while in RDP, students had continued exposure to MOPH hospital settings during three clinical year training. In contrast, students through national entrance examination had little exposure to rural areas; all six years were trained in medical school. Although curriculum covered community medicines, brief exposure may have little effects on attitudes.

### Difference in rural attitude and preferred workplace

Students from quota and RDP had a significant higher attitude score than entrance system; similar findings emerged when controlled for variations in socio-economic characteristics. Students from more affluent families and richer wealth quintiles had a

significant lower rural attitude score than students from less affluent and the bottom wealth quintiles.

This study revealed that students intending to work in public health facilities had the highest rural attitude scores, while those chose to pursue specialist training and private practice had a significant lower rural attitude score.

As a result of better rural attitude, medical students in quota and RDP had significant lower intention to continue specialist training and private practice, while two times more likely to practice in public health facilities compared with private practice than students from entrance examination.

The evidences that students born and brought up in rural areas had a higher preference to work in public health facilities than those from urban areas; and that when household wealth increased, the preference on public health services decreased and the specialist training preference increased, prompt policy directions towards recruiting more students from the rural areas and from less affluent families; as there would have better intrinsic factors and higher possibility of serving public health services in particular when they were posted in their rural hometowns.

These findings confirmed that enrolment mechanisms which based on the concept of provincial and rural recruitments performed better in terms of students' rural attitude and intention to work in public health facilities.

Unfortunately, there was no systematic assessment whether the quota and RDP graduates had served a longer term of rural health services than the entrance counterparts. This prompts to further evaluation on rural retention of doctors across the three tracks.

**Strengths and limitations of the study**

On-site survey by distribution and collection of self-administration questionnaire in class room and the anonymity of survey increased response rate, 97.8% compared to mail questionnaire. The explanation of the objective and importance of the study by researchers increased good understanding and reliability of responses.

We missed one eligible provincial medical school due to delays in ethical approval far beyond the project deadline. This is a long term study, aimed to assess rural attitude and preferred workplace among the first year medical students and changes over the course of six year education, by follow up assessments in their sixth year when they are about to graduate. Due to anonymity and no identification number was given, cohort follow-up to assess within individual changes in attitudes and work preference was not possible.

## Policy recommendations

There is an opportunity for medical schools in Bangkok to introduce quota systems, despite the fact that there was no need to increase medical doctors in Bangkok and Central affluent region, these schools can affiliate with provincial medical schools to increase the proportion of medical students from provincial and district levels. Providing opportunities to students from rural less affluent families through regional competition does not compromise the academic competencies, though less competitive than national entrance examination, the societal benefit from their intrinsic factors of rural attitude and intention to work in public health facilities was overwhelming and justified policy decision to scale up quota systems and RDP.

In the light of ongoing high proportion of entrance systems in some medical schools, there is a need for curriculum reorientation and extra-curriculum activities to expose these affluent students to rural health services.

There is a need to enforce the current regulation that rural services and experiences are prerequisites for applications to specialist residency training program. Preference of specialist training should be given to the applicants who had served longer term medical services in rural areas.

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## Conflict of interest

Declared none

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**Table 1** Descriptive statistics by medical school

| | BKK1 | BKK2 | BKK3 | Prov.1 | Prov.2 | Prov.3 |
|---|---|---|---|---|---|---|
| Sample | (184) | (357) | (71) | (94) | (215) | (90) |
| Entrance system | 70.1% | 93.3% | 26.8% | 74.5% | 14.9% | 14.3% |
| Quota system | 0.0% | 0.0% | 0.0% | 0.0% | 55.8% | 48.4% |
| CPIRD | 29.9% | 6.7% | 73.2% | 25.5% | 29.3% | 37.4% |
| Rural attitude score [a], mean (SD) | 4.37 (0.63) | 4.52 (0.64) | 4.60 (0.50) | 4.51 (0.64) | 4.49 (0.67) | 4.56 (0.57) |
| Intention to work | | | | | | |
| 1. Public health facilities | 25.5% | 29.4% | 39.4% | 45.7% | 38.6% | 53.3% |
| 2. Further specialty training | 45.7% | 51.0% | 38.0% | 36.2% | 35.8% | 36.7% |
| 3. Private practice | 28.8% | 19.6% | 22.5% | 18.1% | 25.6% | 10.0% |
| Female | 63.6% | 56.0% | 60.6% | 48.9% | 52.6% | 58.2% |
| Residence | | | | | | |
| ○ Graduated from a rural school | 1.1% | 3.3% | 7.0% | 18.1% | 7.0% | 23.1% |
| ○ Born in the rural area | 6.4% | 6.7% | 18.3% | 19.1% | 24.2% | 30.8% |
| ○ Brought up in the rural area | 13.4% | 11.1% | 32.4% | 23.7% | 32.1% | 35.2% |
| ○ Parents living in the rural area | 14.5% | 7.6% | 30.4% | 23.4% | 28.4% | 35.2% |
| Parents occupation | | | | | | |
| 1. Formal public, private sector | 47.8% | 56.5% | 64.3% | 60.2% | 69.6% | 65.9% |
| 2. Own business | 48.9% | 41.6% | 30.0% | 34.4% | 27.1% | 18.7% |
| 3. Farming, informal sector, unemployed | 3.2% | 2.0% | 5.7% | 5.4% | 3.3% | 15.4% |
| Parents education | | | | | | |
| 1. Up to secondary schools | 20.3% | 18.2% | 22.9% | 18.3% | 15.0% | 27.5% |
| 2. Colleges and above | 79.7% | 81.8% | 77.1% | 81.7% | 85.0% | 72.5% |
| Parents income, Baht per month | | | | | | |
| 1. up to 30,000 | 27.8% | 29.2% | 32.4% | 40.4% | 29.8% | 44.0% |
| 2. 30,001-50,000 | 33.5% | 30.5% | 35.4% | 40.3% | 33.7% | 33.3% |
| 3. 50,001-70,000 | 14.1% | 15.7% | 17.2% | 13.5% | 25.3% | 21.8% |
| 4. over 70,000 | 31.1% | 32.0% | 20.9% | 16.9% | 20.3% | 7.0% |
| Household wealth index | | | | | | |
| 1. Quintile 1 | 12.3% | 14.6% | 28.2% | 32.3% | 15.0% | 51.1% |
| 2. Quintile 2 | 18.7% | 16.5% | 35.2% | 19.4% | 22.0% | 16.7% |
| 3. Quintile 3 | 23.0% | 32.5% | 22.5% | 20.4% | 28.0% | 15.6% |
| 4. Quintile 4 | 18.2% | 12.6% | 9.9% | 11.8% | 19.6% | 10.0% |
| 5. Quintile 5 | 27.8% | 23.8% | 4.2% | 16.1% | 15.4% | 6.7% |

[a] possible score range 1 – 6

**Table 2** Regression coefficients on rural attitude score

| | **Model 1** | **Model 2** |
|---|---|---|
| BKK2 [a] | 0.486** | 0.386* |
| BKK3 | 0.218 | 0.135 |
| Prov.1 | 1.004*** | 0.730** |
| Prov.2 | 0.156 | 0.077 |
| Prov.3 | 0.752** | 0.427 |
| Quota [b] | 0.892*** | 0.684** |
| CPIRD | 1.045*** | 0.716*** |
| Female | | 0.114 |
| Born in the rural area [c] | | 0.159 |
| Graduated from a rural school | | -0.037 |
| Brought up in the rural area | | 0.070 |
| Parents living in the rural area | | 0.317 |
| Parents employed in formal sector [d] | | -0.304 |
| Parents working in own business | | -0.767** |
| Parents educated from colleges [e] | | -0.235 |
| Quintile 2 wealth index [f] | | -0.452** |
| Quintile 3 wealth index | | -0.505** |
| Quintile 4 wealth index | | -0.699*** |
| Quintile 5 wealth index | | -0.479** |
| Constant | -1.442*** | -0.320 |

*** p<0.01; ** p<0.05; * p<0.01

[a] BKK1 as reference

[b] Entrance system as reference

[c] urban area as reference

[d] informal sector as reference

[e] up to secondary school as reference

[f] poorest quintile 1 as reference

**Table 3** Relative risks of choices of specialty training and public practice as compared with private practice

| | Model 1 [g] | | Model 2 [g] | |
|---|---|---|---|---|
| | Specialty training | Public health facility | Specialty training | Public health facility |
| BKK2[a] | 1.46 | 2.08*** | 1.36 | 1.80** |
| BKK3 | 1.35 | 1.49 | 1.20 | 1.27 |
| Prov.1 | 1.21 | 3.06*** | 1.18 | 2.32** |
| Prov.2 | 0.96 | 1.14 | 0.93 | 1.03 |
| Prov.3 | 2.61** | 4.10*** | 2.52** | 2.86** |
| Quota [b] | 0.87 | 2.22** | 0.82 | 1.76 |
| CPIRD | 0.57** | 1.99*** | 0.50*** | 1.35 |
| Female | | | 1.58*** | 1.51** |
| Born in the rural area [c] | | | 0.56 | 0.81 |
| Graduated from a rural school | | | 2.18* | 1.63 |
| Brought up in the rural area | | | 2.13** | 1.77* |
| Parents living in the rural area | | | 0.58* | 0.98 |
| Parents employed in formal sector [d] | | | 2.15 | 1.11 |
| Parents working in own business | | | 1.62 | 0.58 |
| Parents educated from colleges [e] | | | 0.98 | 0.78 |
| Quintile 2 wealth index [f] | | | 1.23 | 0.72 |
| Quintile 3 wealth index | | | 1.46 | 0.78 |
| Quintile 4 wealth index | | | 1.72* | 0.71 |
| Quintile 5 wealth index | | | 0.88 | 0.58* |

*** p<0.01; ** p<0.05; * p<0.01

[a] BKK1 as reference

[b] Entrance system as reference

[c] urban area as reference

[d] informal sector as reference

[e] up to secondary school as reference

[f] poorest quintile 1 as reference

[g] intention towards private practices as reference

Table 4: Cross tabulation between Attitude range and Gender

| Attitude range* | Gender (%) | | Total |
|---|---|---|---|
| | Male | Female | |
| Low | 0.68 | 0.29 | 0.97 |
| Medium | 27.28 | 34.76 | 62.4 |
| High | 15.15 | 21.84 | 36.99 |
| Total | 43.11 | 56.89 | 100 |

* Total score = 6 (low=1.00-2.67, medium=2.68-4.39, high=4.40-6.00)

Table 5: Cross tabulation between Attitude range, recruitment and desire job after graduation

| Desire job | Attitude range | Recruitment (%) | | |
|---|---|---|---|---|
| | | Entrance | Quota | CPIRD |
| Private sector | Low | 0.20 | 0.00 | 0.00 |
| | Medium | 10.09 | 2.08 | 3.26 |
| | High | 2.57 | 1.19 | 2.47 |
| Public sector | Low | 0.40 | 0.00 | 0.00 |
| | Medium | 8.51 | 3.96 | 4.95 |
| | High | 6.82 | 3.17 | 7.12 |
| Specialization | Low | 0.20 | 0.00 | 0.00 |
| | Medium | 21.66 | 3.86 | 3.76 |
| | High | 8.31 | 1.98 | 3.46 |

Table 6: Cross tabulation between Attitude range, gender and desire job after graduation

| Desire job | Attitude range | Gender (%) | |
|---|---|---|---|
| | | Male | Female |
| Private sector | Low | 0.19 | 0 |
| | Medium | 7.37 | 7.75 |
| | High | 3.06 | 2.87 |
| Public sector | Low | 0.19 | 0.19 |
| | Medium | 8.04 | 9.09 |
| | High | 6.12 | 10.91 |
| Specialization | Low | 0.10 | 0.10 |
| | Medium | 11.39 | 17.42 |
| | High | 5.74 | 7.75 |