

## Gender as a predictor for academic achievement

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### Abstrak

**Latar belakang:** Profesionalisme adalah hal penting yang harus diperhatikan oleh profesi dokter agar dapat menjaga kepercayaan masyarakat pada profesi ini. Mengembangkan atribut profesionalisme selama masa studi merupakan langkah yang dapat dilakukan oleh institusi pendidikan untuk mengembangkan profesionalisme siswa. Meskipun demikian, professionalism mungkin tidak hanya berpengaruh pada kinerjanya sebagai dokter kelak, namun juga akan berpengaruh pada kinerja ketika masih menjadi mahasiswa. Oleh karena itu, penelitian ini ditujukan untuk mengetahui hubungan antara faktor demografi dan atribut profesionalisme dengan keberhasilan akademik siswa.

**Metode:** Subjek penelitian potong lintang ini terdiri dari mahasiswa tahun ke 4 Fakultas Kedokteran Universitas Islam Sultan Agung (FK Unissula) Semarang semester Tahun ke empat. Data mengenai atribut profesionalisme dinilai dengan menggunakan inventory "Penilaian profesionalisme mahasiswa kedokteran", yang disusun dengan menggunakan metode Delphi oleh beberapa ahli dari berbagai bidang. Data mengenai keberhasilan akademik siswa yang diketahui dari indeks prestasi akademik (IPK) dikumpulkan dari Unit IT FK Unissula. Data dianalisis memakai regresi Cox dengan waktu yang konstan menggunakan STATA versi 9.

**Hasil:** Sebanyak 86.25% (207 dari 240) mahasiswa berpartisipasi dalam penelitian ini. Hasil akhir analisis menunjukkan bahwa tidak terdapat satupun atribut profesionalisme yang merupakan prediktor keberhasilan akademik yang dicerminkan IPK. Meskipun demikian, gender merupakan faktor yang dapat memprediksi keberhasilan akademik mahasiswa FK Unissula. Mahasiswa perempuan dibandingkan mahasiswa laki-laki 35% lebih tinggi mendapat nilai IPK [risiko relatif suaian (RRa) = 1, 35; 95 interval kepercayaan (CI) = 1, 05-1, 74].

**Kesimpulan:** Mahasiswa perempuan dibandingkan laki-laki lebih berhasil untuk mendapatkan nilai indeks prestasi kumulatif. (*Health Science Indones 2010; 1: 43 - 50*)

**Kata kunci:** gender, atribut penting profesionalisme, keberhasilan akademik mahasiswa

### Abstract

**Background:** Professionalism is central to maintaining public's trust in medical profession. Building professionalism during their study time in medical education is possible method to equip students with core attributes of professional behavior of doctor. However, the professional practice might influence not only their future job, but also their recent performance as students. This study aimed to identify the correlation between students' demographic factors and core attributes of professionalism related to good grade point average achievement.

**Methods:** Fourth year students of Faculty of Medicine Universitas Islam Sultan Agung Islamic in Semarang Indonesia took part in this cross sectional study. The core attributes of professionalism were assessed using short inventory "Assessment of Medical Student Professionalism", which was developed by some experts using Delphi method. The students' grade point average (GPA) data were collected from the Information Technology Unit of the faculty. Analysis data using Cox-regression with constant time.

**Results:** A total amount of 207 (out of 240) students participated in this study. Our final model indicates that none of the core attributes professionalism which predicts good grade point average (GPA) achievement. Female than male students had 35% increased to be good GPA achievement [adjusted relative risk (RRa) = 1.35; 95% confidence interval (CI) = 1.05-1.74].

**Conclusion:** Female but none of the core attribute of professionalism students was noted to increase academic grade point average. (*Health Science Indones 2010; 1: 43 - 50*)

**Key words:** gender, core attributes of professionalism, academic achievement

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Professionalism is an important matter that must be considered by the medical profession in order to maintain public trust to the profession. Various cases of patients' dissatisfaction towards doctors' professionalism often become public complaints which in turn would threaten public confidence in the profession of medicine.<sup>1</sup> In addition, patients treated by doctors are increasingly critical. They insist medical doctors to be professional in performing his/her profession. Therefore, medical education has an important role in developing professional attitudes among medical doctors.

In Indonesia physician competency standards, professionalism and medico legal become one of the competencies that must be generated through the learning activities in medical school in Indonesia.

In Faculty of Medicine Universitas Islam Sultan Agung (FM Unissula), the learning activities of professionalism so far only give more emphasis on the development of doctor's behavior according to the code of medical ethics through activities bio-ethic lab skills. Students discuss medical ethic cases and solve them with the consideration of the code of ethics and medico legal in small group.

The attitude of professionalism in daily life such as the presence of timely and students' responsibility is assessed using daily assessment methods during the tutorial and clinical skill training activities. Students who considered have professional behavior problems will receive serious report concerning professional behavior and would be given assistance. This practice is also applied for some other medical faculties.<sup>2</sup> Nevertheless, the assessment of professional students attitude has not been done thoroughly in accordance with the core attributes of professionalism.

Publications of professionalism in medical education so far focused on how students' professionalism is developed<sup>4,5</sup> and how the students' professionalism is assessed during the period of study.<sup>2,6</sup> In addition, other publications emphasize the importance of professionalism to the task of medical doctors in providing health services, some factors that affect the attitude of medical professionalism<sup>7</sup> as well as the core

attributes of professionalism and how the instruments to measure those attributes of professionalism are developed.<sup>3</sup>

This paper presents finding correlation between students' demographic factors and core attributes of professionalism related to good grade point average achievement.

## METHODS

Core attributes of professionalism were assessed using a short inventory "Assessment of Medical Student Professionalism", which was developed by a board of experts that consists of general practitioners, clinicians, psychologists and medical education specialists using Delphi method.<sup>6</sup> The items of the inventory were developed based on the core attributes of professionalism suggested by Steinert were<sup>5</sup>: (1) competence: to master and keep current the knowledge and skills relevant to medical practice; (2) commitment to learning: being obligated or emotionally impelled to act in the best for their learning, (3) integrity and honesty: firm adherence to a code of moral values or incorruptibility; (4) morality and ethics: to act for the public good, conformity to the ideals of right human conduct in dealings with teachers, colleagues, patients and society; (5) altruism: the unselfish regard for, or devotion to, the welfare of others; placing the needs of colleagues and the patient before one's self-interest, (6) autonomous: the student's freedom to make independent decisions in their learning, in the best interest of patients and for the good of society; (7) self regulation: the privilege of setting and maintaining standards, being accountable for one's actions and conduct of medical student practices, and for the conduct of one's colleagues, and the profession; (8) responsibility to society: the obligation to use one's expertise for, and to be accountable to, society for those actions, both personal and of the profession as medical students, which relate to the public good (9) responsibility to profession: the commitment to maintain the integrity of the moral and collegial nature of the profession and to be accountable for one's conduct to the profession as medical students and future doctor; (10) teamwork: the ability to

recognize and respect the expertise of others and work with them in the community's and patient's best interest.

Validity and reliability analysis of the inventory was reliable, each 29 questions were valid and its Cronbach alpha was 0.884. Data on academic achievement student grade point average (GPA) was available from Information Technology Unit of FM Unissula.

The researcher assisted participating students to understand the meaning of statements in the inventory by providing additional explanation during students working with the inventory.

Informed consent to the respondent in the questionnaire was given in writing and verbally.

For this analysis, GPA divided into two category (high = 3 or more, low = 2.9 or lower). Data was analyzed using the software Stata 9 based on Cox regression with constant time. This study was approved by the Ethics Committee of FM Unissula.

## RESULTS

240 students participated in this study, and 33 subjects were dropped out because their inventories were not completely filled out, leaving 207 (86.3%) subjects for analysis.

Table 1. The core attribute of professionalism and the risk of academic achievement

	Academic achievement		Crude relative risk	95% interval confidence	p
	Low (n=68)	High (n=139)			
<b>Integrity</b>					
Low or moderate	23	40	1.00	Reference	
Good	45	99	1.08	0.75-1.56	0.671
<b>Morality</b>					
Low or moderate	7	8	1.00	Reference	
Good	61	131	1.28	0.63-2.61	0.499
<b>Altruism</b>					
Low or moderate	32	68	1.00	Reference	
Good	36	71	0.98	0.70-1.36	0.899
<b>Responsibility to the profession</b>					
Low or moderate	27	56	1.00	Reference	
Good	41	83	0.99	0.71-1.39	0.963
<b>Team working</b>					
Low to moderate	10	20	1.00	Reference	
Good	58	119	1.01	0.63-1.61	0.972
<b>Self regulation</b>					
Low or moderate	60	99	1.00	Reference	
Good	8	40	1.06	0.83-1.38	0.604
<b>Social responsibility</b>					
Low or moderate	16	16	1.00	Reference	
Good	52	123	1.23	0.83-2.37	0.264
<b>Commitment to learning</b>					
Low or moderate	16	18	1.00	Reference	
Good	52	121	1.04	0.76 - 1.42	0.793
<b>Autonomous</b>					
Low or moderate	18	21	1.00	Reference	
Good	50	118	1.23	0.90-1.66	0.192

Table 1 shows that 67.15% (139/207) of the subjects had good grade point average (GPA 3 or more). The number of subjects with high academic achievement was twice as much the number of low academic achievement. They were similarly distributed with respect to integrity, morality, altruism, responsibility to the profession, team working, self regulation, social responsibility, commitment to learning, and autonomous.

Table 2 shows the most dominant factor was the gender. Compared to male counterparts, female students would have 35% increases to be high academic achievement. In term of age, students aged 18-21 years than older age (22-25 years) had 76% chance to be good academic achievement compared to their reference.

Tabel 2. Relationship among several factors and risk of high academic achievement

	Academic achievement		Adjusted relative risk*	95 % interval confidence	p
	Low (n=68)	High (n=139)			
Self assessed competence					
Low	12	10	1.00	Reference	
Moderate	8	31	1.34	0.81–2.25	0.261
Good	48	98	1.25	0.78–2.04	0.348
Gender					
Male	36	37	1.00	Reference	
female	32	102	1.35	1.05–1.74	0.021
Age					
21-25 years	12	7	1.00	Reference	
18-20 years	56	132	1.76	0.97–3.29	0.064

\*Relative risk adjusted each other among variables listed on this Table

## DISCUSSION

There are several limitations which need to be considered in the interpretation. Among others, data was explored using students' self assessed short inventory. The self assessed activity might subjectivity and quality of data, since in completing the inventory; students had to do reflection on their own conditions. Nevertheless, the inventory used in this study met prerequisite to serve as a tool to collect data for the reliability and validity of the inventory were eligible. To minimize this one, researcher guided the subjects and gave further explanation during completing the inventory in order to minimize bias of misunderstanding of

what was actually expected and explored by the inventory. Students' saturation when working with the inventory which might affect the objectivity of data was expected to be minimized because the inventory was only consisted of 29 questions.

In addition, the written informed consent was given, and they were informed that the data treated confidentially.

The results indicate that gender was a predictor for academic achievement. Academic achievement obtained by female students is better compared to that of obtained by male students. This finding is consistent with Sheard's study<sup>10</sup> which reported that the female students were more outperformed than

their male counterparts in each measured academic assessment criteria.

Female students also had a significantly higher mean score on hardiness commitment compared to male students. The results of meta-analysis conducted by Ferguson<sup>8</sup> also reported that internationally, female students were marginally higher success rate in the context of learning in the Faculty of Medicine. However, this finding differs from previous study conducted by Frisclagher<sup>9</sup> which reported that female students were less successful. He explained that his finding was partly in accordance with enduring trend in the study of medicine, because other study in Austrian University informs opposite trends. This trend seems to be different from that in Indonesia. In FM Unissula for instance, at least for the last 6 years; the number of female students has been more than doubled the number of male students, and most of them get better academic achievement than that of the males.

Sheard's<sup>10</sup> study informed that age was predictor of academic achievement. He reported that mature- age students achieved higher final degree GPA compared to young undergraduates. The result of this study confronted that finding, in which the young students had better academic achievement than the mature ones. This might have something to do with the learning approach applied at the school; that is problem based learning, which drives all of students –not only the mature but also the young- to manage their learning and do self directed learning.

Morality does not seem to predict academic achievement, since the result indicates that participants who had low and high academic achievement were equally distributed with respect to morality, and that nearly the whole subjects have good morality. However, this results seem to be different from Ferguson's<sup>8</sup> review study which reported that large numbers of medical students have or would consider engaging in dishonest behavior, particularly if it would result in providing a competitive advantage vis-à-vis their peers. Austin's<sup>11</sup> study which analyzed academic dishonesty in

Canadian pharmacy also reported that not only the students but also the teachers perform academic dishonesty, and cheating is even endemic in university students. He suggested that the issue of academic dishonesty need to be explored further, since the regulation of professional practice in most jurisdictions is premised on the trustworthiness of individual practitioners. In general, the level of honesty expected of professionals is higher than that expected of others in society. Some studies have indicated that moral reasoning is significantly related to clinical decision-making, suggesting the need to consider moral development an integral part of professional development and practice. This topic needs to be analyzed further, particularly in the context of Indonesian medical students.

The findings also indicate that responsibility to the profession was not the predictor of academic achievement. Both students who have high and low academic achievement were also similarly distributed with respect to responsibility to the profession, and most of them have good responsibility to profession. This finding is consistent with Robow's<sup>12</sup> study, which tried to explore individual mission statements written by medical students nationally. When the mission statements were compared with classic medical oaths and contemporary professionalism guidelines, they were similar across different schools and described student's intention to be responsible to the profession of doctor. The first theme of their statements was professional skills, includes dealing with the negatives of training, listening and empathy, growth and development. The second theme was personal qualities, includes wholeness, humility, and constancy and perfectionism. The third theme was a scope of professional practice, includes physician relationships, positive emotions, healing, service, spirituality, and balance. Unlike the content of classic oaths and contemporary professionalism statements, the study reported that the students' statements dealt with fears, personal-professional balance, love, nonhierarchical relationships, self-care, healing, and awe as key to being a physician.

These statements reflect student's responsibility to their profession as future doctor.

The finding reveals that commitment to learning activities was not a predictor of academic achievement. These results confronted with Sheard's<sup>10</sup> study which reported that commitment was the most significant predictor of academic achievement. Kluger<sup>13</sup> who used a modified version of Rusbult and Farrel's commitment questionnaire to predict final grade in university reported that commitment correlated positively with academic achievement. Students who have commitment to education and to organize learning activities, of course, will succeed in their education. Further study should be conducted using different reliable measurements to analyze this issue.

Autonomy was not found to be predictor of high academic achievement. This finding is also different with Ngai's<sup>14</sup> study. According to Ngai, students who are autonomous generally can overcome personal problems and learning, consequently they can manage academic stress which is commonly encountered by medical students. Personal autonomy can support students to develop a recognition of and faith in their potential. It enhances self assurance, assumption of new responsibilities, and achievement of individual growth.

Team working is also predictor of academic success. Research conducted by Wigen<sup>15</sup> about the academic success of students working in PBL groups, showed the same findings. In addition, Schmidt's study reveals that PBL graduates, who usually apply team-working during their study period rated themselves as having much better interpersonal skills, better competencies in problem solving, self-directed learning and information gathering, and somewhat better task-supporting skills, such as the ability to work and plan efficiently.<sup>16</sup> This indicates that team working during period of study would affect students' academic achievement as well as their future performance.

The result of this study is not also in accordance with Howse's study in that self regulation is predictor of academic achievement in

economically disadvantage young children.<sup>17</sup> Because the population of this study is different from those of Howse, the results tend to be different, too. This suggests that self regulation affects the academic achievement occurred in all populations, both in adult and in children. Other study conducted by Lounsbury et al.<sup>18</sup> which examined the 24 Values in Action (VIA) character strengths in relation to two indices of academic success--student satisfaction and GPA also reported that self regulation was positively and significantly related to academic success. According to Brockett and Hiemstra,<sup>19</sup> personal responsibility of learners to learning activities can be seen from the learner's self regulation and self-directed learning activities. Self regulation is influenced by the characteristic of the learner, while self-directed learning is influenced also by the teaching and learning. Furthermore, both - self regulation and self-directed learning contributes to student's self-direction in learning. Students who can direct themselves and all their learning activities will become good independent learners. As a result, the learning result or their academic achievement will also be good.

Student self-assessed competence was also not predictor of learning success. In this study, the competence was self assessed by students themselves. In these circumstances, they were required to conduct self-assessment. Self assessment is believed to be a skill that should be possessed by all higher education students. This activity requires students to find the gap between their existing knowledge and the target. The gap is what prompted him to perform life-long learning, which in turn will improve academic performance. Therefore, the expertise to conduct self-assessment also needs to be taught to students. However, failure to conduct self assessment is explicable and often occurs in the context of young learners. Topping's study explains that when it is applied to the novice learner, self-assessment tends to be not reliable because the clever students tend to judge themselves with low scores, while the learners who have medium to low academic achievement abilities tend to assess themselves with high score.<sup>20</sup> Other study conducted in other field than medicine, Hailikari et al.

reported that academic self-beliefs strongly correlated with previous study success and had a strong direct influence on prior knowledge test performance. However, self-beliefs predicted student achievement only indirectly via prior knowledge.<sup>21</sup> Niraula's study (2006), also indicate that academic competence is a predictor of academic performance and clinical skill performance.<sup>22</sup>

In conclusion, female but none of the core attribute of professionalism students was noted to increase academic grade point average.

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