

Determinants of Lack of Clinical Competence among Senior Medical Students

ASMAH MAHMOOD, ASAD JEHangIR, AZHAR BASHIR*

ABSTRACT

Objective: To study the relationship between socio-demographic factors and clinical competence among senior medical students in KEMU and to identify the most important determinant of lack of clinical competence in the medical students.

Results: A total of 100 students (60 cases and 40 controls) were recruited in the study. Overall 50% of the total individuals were males and 50% were females. In bivariate analysis the socio-demographic factors found significantly related with clinical competence were burden of theoretical studies, failure of previous examination, hesitation and lack of appreciation.

Keywords: Clinical competence, case-control study, determinants, medical students.

INTRODUCTION

Clinical Competence means the personal and technical skills that lead to effective intervention in illness or injury. Senior Medical students play the pivotal role as a part of Health care system of a country as they are the ones who are eventually responsible as Medical Representative for serving a particular community by procuring sufficient practice of clinical skills, which is the baseline to be fit for medical practice. Unfortunately, medical students are not much competent as per demand in the present era, which acts as an obstacle in saving lives, the ultimate desired intent of a medical professional, in maintenance of a healthy society. So, it is the need of time to spot the prime agents and determinants that lead to the incompetent attitude among senior medical students that may end. Lack of clinical competence among senior medical students is a serious problem arising in our set-up. It has a number of social, psychological, educational, and behavioral determinants. A study conducted previously (1993-1998) in the USA, showed that despite the increase in standardised methods (from 9.1%-48%) so many senior medical students still failed to correctly employ the evaluation methods used to practice the clinical skills.¹ In another survey, it was noticed that nearly two-thirds of pre registration house officers were unable to recall any training at either undergraduate or postgraduate level.¹² Lack of clinical competence is associated with various factors. Mainly during the pre-clinical years many students suffer from lack of direct observation and proper teaching^{4,5,10}. This lack

of proper attention, training, and, inadequate clinical knowledge leads to incompetence in practicing the clinical skills^{7,13}. At the same time, some students lack the intellectual skills and proper emotional attitudes⁴ and some even lack confidence in performing routine clinical skills.⁶ On the same aspect, some senior medical students may become rattled under the pressure and may take a little longer than usual to understand certain concepts⁴ or the students are also not well versed in the knowledge and pathology behind the disease^{6,11}. Along with this, the threatening and the non-friendly environment, where the students cannot practice the skills due to fear of embarrassment when making mistakes are also some of the contributory factors^{5,11}. Moreover, research has shown that students are not being supervised in a 1:1 teaching mode^{5,10}. No sophisticated methods are being used to assess clinical performance like objective structured clinical examination and use of standardised patients². It has also been found that lack of collectively solving the problems has decreased the competency of senior medical students⁵. Current medical curriculum is also a contributory factor as it does not cover most of the aspects of the clinical skill evaluation^{7,9}. No practice of problem oriented classes, interactional skills⁹ and no integration of clinical and psychosocial aspects are also some of the determinant factors of this incompetency⁷. Poor salaries given to the senior medical students for their service³ and less opportunities being provided for practicing³ also cause lack of interest and hence lack of competency. Experiences of instructors are also not strengthened in clinical education and hence this is also a major determinant¹⁰.

*Sr. Registrar North Surgery Department, Mayo Hospital, Lahore)
Assistance from Deptt. Of Community Medicine King Edward
Medical University).

For Correspondence: asmahmdd@gmail.com,
drazharbashir@hotmail.com, asadjehangir@gmail.com

MATERIALS AND METHODS

It was a case control study carried out in Lahore on adult population and senior medical students. A total of 100 individuals (60 cases and 40 controls) were recruited in the study. Simple random sampling was done. Overall 50% of the total individuals were males and 50% were females (Figure 1). 50% were hostelites and 50% were non. hostelites. The data was compiled and analyzed through SPSS. Analysis was done by using Epi-info and SPSS. Appropriate tests of significance were used to assess the relationship between different exposure, confounding and outcome variables. All persons lacking clinical competence and who were clinical competent were included in the study. Persons having recent injury, with congenital deformity were excluded from the study.

RESULTS

A total of 100 individuals (60 cases and 40 controls) were recruited in the study. Overall 50% of the total individuals were males and 50% were females (Figure 1). 50% were hostelites and 50% were non-hostelites. It is clear from the graph that there is less incompetence in males than females. According to our results there is 46.7% incompetence in Male while 53.3% incompetence in female. It is clear from the graph that there is less incompetence in non-hostelites than hostelites. According to our result of statistic analysis there is 53.3% incompetency in non-hostelites while 46.7% incompetence in hostelites.

Out of 100 persons interviewed, those having burden of theoretical studies were more (75%) clinically incompetent. The risk of having clinical incompetence was 8.00 times more in those having burden of studies. So, the burden of theoretical studies was significantly associated (CI 3.117-20.530) with lack of clinical competence.

Out of 100 persons interviewed, those having failure of previous examination were more (86.7%) clinically incompetent. The risk of having clinical incompetence was 7.074 times more in those having any failure of previous examination. So, the failure of previous examination was significantly associated (CI 2.237-22.363) with lack of clinical competence.

Out of 100 persons interviewed, those having hesitation were more (80%) clinically incompetent. The risk of having hesitation was 5.333 times more in those having hesitation. So, hesitation was significantly associated (CI 2.164-13.144) with lack of clinical competence.

Out of 100 persons interviewed, those having lack of appreciation were more (68.7%) clinically incompetent. The risk of having clinical incompetence

was 3.129 times more in those having lack of appreciation. So, the lack of appreciation was significantly associated (CI 1.329-7.366) with lack of clinical competence.

Out of 100 persons interviewed, those who having favoritism were more (57.3%) clinically incompetent. The risk of having clinical incompetence was 0.620 times more in those having favoritism. However, favoritism was not significantly associated with lack of clinical competence (CI 0.214 -1.792).

Out of 100 persons interviewed, those having lack of knowledge were more (62.7%) clinically incompetent. The risk of having clinical incompetence was 1.323 times more in the those having lack of knowledge. However, lack of knowledge was not significantly associated (CI 0.597-2.934)

Out of 100 persons interviewed, those having Lack of practice were more (59.7%) clinically incompetent. The risk of having clinical incompetence was 1.047 times more in those having lack of practice. However, the Lack of practice was not significantly associated (CI 0.436-2.514) with lack of clinical competence.

Out of 100 persons interviewed, those having Lack of facilities were more (57.1%) clinically incompetent. The risk of having clinical incompetence was 0.778 times more in those having lack of facilities. However, the Lack of facilities was not significantly associated (CI 0.340-1.778) with lack of clinical competence.

Out of 100 persons interviewed, those having lethargy was more (58.7%) clinically incompetent. The risk of having clinical incompetence was 0.928 times more in those having lethargy. However, the lethargy was not significantly associated (CI 0.408-2.110) with lack of clinical competence.

Out of 100 persons interviewed, those having Lack of group activity were more (59.4%) clinically incompetent. The risk of having clinical incompetence was 1.002 times more in those having lack of group activity. However, the Lack of group activity was not significantly associated (CI 0.427-2.352) with lack of clinical competence.

Out of 100 persons interviewed, those having lack of support from paramedical staff were more (54.9%) clinically incompetent. The risk of having clinical incompetence was 0.685 times more in those having lack of support from medical staff. However, lack of support from paramedical staff was not significantly associated (CI 0.308-1.522) with lack of clinical competence.

Out of 100 persons interviewed, those having Lack of mandatory command were more (61.3%) clinically incompetent. The risk of having clinical incompetence was 1.223 times more in those having

lack of mandatory command. However, lack of mandatory command was not significantly associated (CI 0.542-2.760) with lack of clinical competence.

Out of 100 persons interviewed, those having lack of teachers concern were more(55.3%) clinically incompetent .The risk of having clinical incompetence was 0.480 times more in those having lack of teacher's concern .However ,the lack of teachers concern was not significantly associated (CI 0.180-1.284) with lack of clinical competence.

Out of 100 persons interviewed, those having lack of assistance from senior medical staff were more(58.6%) clinically incompetent .The risk of having clinical incompetence was 0.926 times more in those having lack of assistance from senior medical staff. However, lack of assistance from senior medical staff was not significantly associated (CI 0.414-2.070) with lack of clinical competence.

Out of 100 persons interviewed, those having lack of eagerness were more (58.2%) clinically incompetent. The risk of having clinical incompetence was 0.894 times more in those having lack of eagerness. However, lack of eagerness was not significantly associated (CI 0.402-1.988) with lack of clinical competence.

Out of 100 persons interviewed, those having lack of research involvement were more (56.4%) clinically incompetent. The risk of having clinical incompetence was 0.757 times more in those having lack of research. However, lack of research involvement was not significantly associated (CI 0.340-1.688) with lack of clinical competence.

Out of 100 persons interviewed, those having mental illness were more (61.3%) clinically incompetent. The risk of having clinical incompetence was 1.360 times more in those having mental illness. However, the mental illness was not significantly associated (CI 0.553-3.345) with lack of clinical competence.

Out of 100 persons interviewed, those having non-availability of proper equipment were more (59.3%) clinically incompetent. The risk of having clinical incompetence was 0.987 times more in those having non-availability of proper equipment. However, non-availability of proper equipment was not significantly associated (CI 0.445-2.188) with lack of clinical competence.

Out of 100 persons interviewed, those having negligence were more (62.5%) clinically incompetent .The risk of clinical incompetence was 1.333 times more in those having negligence. However, the negligence was not significantly associated (CI 0.600-2.964) with lack of clinical competence

Out of 100 persons interviewed, those having negative extracurricular activities were more(59.5%)

clinically incompetent .The risk of having clinically incompetence was 1.008 times more in those having negative extracurricular activities. However, the negative extracurricular activities was not significantly associated (CI 0.450-2.257) with lack of clinical competence.

Out of 100 persons interviewed, those having poverty were more (56.5%) clinically incompetent .The risk of having clinical incompetence was 0.681 times more in those having poverty. However, the poverty was not significantly associated (CI 0.285-1.627) with lack of clinical competence.

Out of 100 persons interviewed, those having physical illness were more (60%) clinically incompetent. The risk of having clinical incompetence was 1.179 times more in those having physical illness. However, the physical illness was not significantly associated (CI 0.472-2.942) with lack of clinical competence.

Out of 100 persons interviewed, those having perverted thoughts were more (59.2%) clinically incompetent .The risk of having clinical incompetence was 0.966 times more in those having perverted thoughts. However, the perverted thoughts was not significantly associated (CI 0.966-0.404) with lack of clinical competence.

Out of 100 persons interviewed, those having restricted culture were more (57.6%) clinically incompetent. The risk of having clinical incompetence was 0.837 times more in those having restricted culture. However, the restricted culture was not significantly associated (CI 0.373-1.879) with lack of clinical competence.

Out of 100 persons interviewed, those having time shortage were more (75%) clinically incompetent .The risk of having clinical incompetence was 2.615 times more in those having time shortage. However, the time shortage was not significantly associated (CI 0.90-6.907) with lack of clinical competence.

Out of 100 persons interviewed, those having undesired choice of medical profession were more (55.4%) clinically incompetent .The risk of having clinical incompetence was 0.684 times more in those having undesired choice of medical profession. However, the undesired choice of medical profession was not significantly associated (CI 0.305-1.532) with lack of clinical competence

Out of 100 persons interviewed, those having ward absentees were more (54.9%) clinically incompetent. The risk of having ward clinical incompetence was 0.665 times more in those having ward absentees. However, the ward absentees was not significantly associated (CI 0.308-1.522) with lack of clinical competence.

Variable	Case (clinically incompetent)		Control (clinically competent)		Odds Ratio	95% CI
	No.	%	No.	%		
1. lack of knowledge (n=100)						
Yes	32	53.3%	19	46.3%	1.323	0.597- 2.934
No	28	46.7%	22	53.7%		
2. Lack of practice (n=100)						
Yes	43	71.7%	29	70.7%	1.047	0.436-2.514
No	17	28.3%	12	29.3%		
3. Lack of facilities (n=100)						
Yes	36	60.0%	27	65.9%	0.778	0.340-1.778
No	24	40.0%	14	34.1%		
4. lethargy (N=100)						
Yes	37	61.7%	26	62.4%	0.928	0.408-2.110
No	23	38.3%	15	37.6%		
5. lack of group activity (n=100)						
Yes	41	68.3%	28	68.3%	1.002	0.427-2.352
No	19	31.7%	13	31.7%		
6. lack of support from paramedical staff (n=100)						
Yes	28	46.7%	23	56.1%	0.685	0.308-1.522
No	32	53.3%	18	43.9%		
7. lack of mandatory command (n=100)						
Yes	38	63.3%	24	58.5%	1.223	0.542-2.760
No	22	36.7%	17	41.5%		
8. lack of assistance from senior medical staff (n=100)						
Yes	34	56.7%	24	58.5%	0.926	0.414-2.070
No	26	43.3%	17	41.5%		
9. lack of eagerness to learn (n=100)						
Yes	32	53.3%	23	56.1%	0.894	0.402-1.988
No	28	47.7%	18	43.9%		
10. lack of research involvement (n=100)						
Yes	31	51.7%	24	58.5%	0.757	0.340-1.688
No	29	48.3%	17	41.5%		
11. non availability of proper equipment (n=100)						
Yes	32	53.3%	22	53.7%	0.987	0.445-2.6188
No	28	46.7%	19	46.4%		
12. negligence (n=100)						
Yes	35	58.3%	21	51.2%	1.333	0.600-2.964
No	25	41.7%	20	48.8%		
13. negative extracurricular activities (n=100)						
Yes	25	41.7%	17	41.5%	1.008	0.450-2.257
No	35	58.3%	24	58.5%		
14. poverty (n=100)						
Yes	39	65.0%	30	73.2%	0.681	0.284-1.627
No	21	35.0%	11	26.8%		
15. physical illness (n=100)						
Yes	45	76.3%	30	73.2%	1.179	0.472-2.942
No	14	33.7%	11	26.8%		
16. perverted thoughts (n=100)						
Yes	42	70.0%	29	70.7%	0.966	0.404-2.305
No	18	30.0%	12	29.3%		
17. restricted culture (n=100)						
Yes	34	56.7%	25	61.0%	0.837	0.371-1.879
No	26	43.3%	16	39.0%		
18. time shortage (n=100)						
Yes	21	35.0%	7	17.1%	2.615	0.990-6.907
No	39	65.0%	34	82.9%		
19. undesired choice of medical profession (N=100)						
Yes	31	51.7%	25	61.0%	0.684	0.305-1.532
No	29	48.3%	16	39.0%		
20. ward absentees (n=100)						
Yes	28	46.7%	23	56.1%	0.685	0.308-1.522
No	32	53.3%	18	43.9%		
21. mental illness (n=100)						
Yes	46	76.7%	29	70.7%	1.360	0.553-3.345
No	14	23.3%	12	29.3%		

ORIGINAL ARTICLE

22. Favoritism (n=100)						
Yes	47	78.3%	35	85.4%	0.620	0.214-1.792
No	13	21.7%	6	14.6%		
23. Lack of teachers concern (n=100)						
Yes	42	70.0%	34	82.9%	0.480	0.180-1.284
No	18	30.0%	7	17.1%		
24. Perverted thoughts (n=100)						
Yes	42	70.0%	29	70.7%	0.966	0.404-2.305
No	18	30.0%	12	29.3%		

Multivariate logistic regression analysis of effects variables in the equation

Factors	Crude OR	95% C.I. for crude Odd ratio		Odds	95% C.I. for odd ratio	
	ratio	Lower	Upper	Ratio	Lower	Upper
The burden of theoretical studies.	8.000	3.117	20.530	12.319	1.812	83.734
Failure in previous examination.	7.074	2.237	22.360	33.845	3.784	302.747
Favoritism	0.620	0.214	1.792	.019	.001	.304
Hesitation	5.333	2.164	13.144	8.417	1.216	58.280
Lack of knowledge	1.323	0.597	2.934	.796	.140	4.510
Lack of practice	1.047	0.436	2.514	.367	.052	2.615
Lack of facilities	0.778	0.340	1.778	1.149	.204	6.460
Lethargy	0.928	.408	2.110	.355	.062	2.034
Lack of group activity	1.002	.427	2.352	.248	.031	1.977
Lack of support from paramedical staff	.685	.308	1.522	.580	.107	3.148
lack of mandatory command	1.223	.542	2.760	1.481	.244	8.980
Lack of teachers concern	.480	.180	1.284	.126	.016	.970
Lack of assistance from senior students	.926	.414	2.070	.318	.048	2.126
Lack of appreciation	3.129	1.329	7.366	8.897	1.446	54.736
Lack of eagerness	.894	.402	1.988	.471	.080	2.791
Lack of research involvement.	.757	0.340	1.688	.471	.087	2.547
Mental illness	1.360	.553	3.345	3.529	.369	33.704
Lack of Equipment	.987	.445	2.188	.813	.139	4.759
Negligence	1.333	.600	2.964	.530	.091	3.074
Negative Extracurricular activity	1.008	.450	2.257	.296	.053	1.642
Poverty	0.681	.285	1.627	.401	.052	3.106
Physical illness	1.179	.472	2.942	.855	.120	6.113
Perverted Thoughts	.966	.404	2.305	.126	.018	.898
Restricted culture	.837	.373	1.879	2.331	.363	14.990
Time shortage	2.615	.990	6.907	2.966	.436	20.191
Undesired choice of medical profession	.684	.305	1.532	.251	.041	1.544
Ward absentees	.685	.308	1.522	.399	.052	3.053

The bivariate analysis showed above some of the factors exhibited statistically significant association with burden of theoretical studies, failure in previous examination, lack of appreciation and hesitation. It was observed that there were some changes between the crude odds ratios and the adjusted odds ratios. Major changes were observed that the factors "favoritism", "lack of teacher concern" and "perverted thoughts" were found to be significant by multivariate while they were not significant in bivariate analysis.

After observing the factors of lack of clinical incompetence, multivariate logistic regression analysis was used to study the overall effect of each factor while controlling for all the studied factors. Only the factors, which showed statistically significant relationship in the earlier model, were added to the new model i.e., burden of theoretical studies,

hesitation, lack of appreciation and failure in any previous examination. It was observed that after controlling all these factors exhibited significant association with perverted thoughts, favoritism and lack of knowledge. The strongest association was after doing multivariate analysis was exhibited by failure in previous examination (OR: 33.84, CI 95%: 3.7 to 302.7) followed by theoretical burden (OR: 12.3, CI 95%: 1.8 to 83.7) followed by lack of appreciation (OR: 8.8., CI 95%: 1.4 to 54.7) followed by hesitation (OR: 8.4, CI 95%: 1.4 to 58.2)

DISCUSSION

In this study it was found that burden of theoretical studies was associated with lack of clinical competence in senior medical students. Similar results were found in a study Ziaee V, Ahmadinejad

Z, Reza A, Morravedji/ at Tehran University of Medical Sciences/in 2000¹⁰.

Lack of appreciation was also associated with lack of clinical competence. In a similar study, Conducted by Gandy, Shapiro J/ at Education Systems American Physical Therapy Association 1111 N Fairfax St Alexandria, VA 2231/1993., same results were found. Hesitation is also associated with lack of clinical competence. similar results were obtained in a study conducted by Premadasa IG, Shehab D, Al Jarallah IF, Thalib L/ at Kuwait Institute for Medical Specialization, Kuwait/ 2008.

In this study it was found that lack of clinical competence in medical students was more because of negative extracurricular activities, undesired choice of medical profession, and favoritism .No study so far has been conducted on this aspect.

CONCLUSION

The determinants of lack of clinical competence in senior medical students identified include burden of theoretical studies, hesitation, lack of appreciation, failure in previous examination while the factors like lack of practice, lack of facilities, lack of knowledge, lethargy, lack of support from paramedical staff, lack of teacher's concern, lack of assistance from seniors, lack of eagerness to learn, non availability of proper equipment, negative extracurricular activities, physical illness, perverted thoughts, lack of research work, time shortage, undesired choice of medical profession, ward absentees, favoritism were not found to be significantly associated.

Recommendations

1. The study pattern should be less theory based and more clinically oriented.
2. The teachers should encourage the students to learn and do more clinical work.
3. The fear of failing should be eliminated from the mind of students by the friendly attitude of examiners.
4. The students should learn clinical skills.

REFERENCES

1. Kassebaum DG, Eaglen RH. Shortcomings in the evaluation of student's clinical skills and behaviours in medical school. *Journal of Association of American Medical Colleges* [online] 1999 [cited 2009, July 24]; 74(7): 842-9. Available: https://www.researchgate.net/publication/12869345_shortcomings_in_the_evaluation_of_student's_clinical_skills.
2. Wass V, Vleuten C, Shatzer J, Jones R. Assessment of Clinical Competence. *The Lancet* [online] 2001 [cited 2009, July 24]; 357(9260):945-49. Available from: <http://www.sciencedirect.com/science?ob=ArticleURL>.
3. Tamblin R, Battista R. Changing clinical practice: which interventions work. *Journal of Continuing Education in the Health Professions* [online] 2007 [cited 2009, July 24]; 13(4):273-288. Available from: <http://www.interscience.wiley.com/journal/114208088/abstract>.
4. Sitham, Sean. Educational malpractice. *The Journal of American Medical Association* [online] 1991 [cited 2009, July 23]; 1(98): 7484. Available from: <http://www.facs.org/abstracts/Health/The-new-medical-malpractice-crisis-Claims-errors-and-compensation-payments-in-medical-malpractice-li.html>.
5. Gandy, Shapiro J. Enhancing clinical competence using a collaborative clinical education model. *Journal of physical therapy* 1993 [cited 2009, July 23]; 73(10):219. Available from: <http://www.thefreelibrary.com>.
6. Premadasa IG, Shehab D, Al Jarallah IF, Thalib L. Frequency and confidence in performing clinical skills among medical interns in Kuwait. *Med Tech* [online] 2008 [cited 2009, July 23]; 30(3):60-5. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/18484443>.
7. Junqbauer J, Kamenik C, Alfermann D, Brahler E. How do young physicians assess their medical studies in retrospect? results of a medical graduates' survey in Germany. *Gundheitsese* [online] 2004 [cited 2009, July 23]; 66(1):51-6. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/14767791>.
8. Coppola AG, Karakousis PC, Metz DC, Go MF. Hepatitis C knowledge among primary care residents: is our teaching adequate for the times. *Am J Gastroenterol* [online] 2004; 99(9):1720-5. Available from: http://www.ncbi.nlm.nih.gov/pubmed/15330909?ordinalpos=22&itool=EntrezSystem2.PEntrez.Pubmed.Pubmed_ResultsPanel.Pubmed_DefaultReportPanel.Pubmed_RVDocSum.
9. Perkins J.J, Fisher S. Increased focus on the teaching of interactional skills to medical practitioners. *Humanities, Social Science and Law* [online] 1996 [cited 2009, July 22]; 1(1):17-25. Available from: <http://www.springerlink.com/content/wrp317632h150763/?p=1a4aea28be3240409dffd1abad9e6e6&pi=2>.
10. Ziaee V, Ahmadinejad Z, Reza A, Morravedji. An Evaluation on Medical student's satisfaction with clinical education and its effective factors [online] 2004 [cited 2009, July 22]; 9(8):298. Available from: http://www.Med_ed_online.org.
11. Sičaja M, Romić D, and Prka Z. Medical Students' Clinical Skills Do Not Match Their Teachers' Expectations: Survey at Zagreb University School of Medicine, Croatia. *Croatian Medical Journal* [internet] 2006 [cited 2009, July 24]; 47(1):169-175. Available from: <http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=2080370>
12. P B Goodfellow, MB FRCS and P Claydon, MB ChB. Students sitting medical finals-ready to be house officers? *R Soc Med* [internet]. 2001 [cited 2009, July 24]; 94(10): 516-520. Available from: <http://www.central.nih.gov/articlerender.fcgi?artid=1282206>
13. Dr Philippa Claydon, Moscrop A. New house officers lack clinical skills. *BMJ* [internet] 2001 [cited 2009, July 24]; 323(7316): 770. Available from: <http://www.Pubmedcentral.nih.gov/articlerender.fcgi?artid=1172954>

