

## Students Perception Of Undergraduate Educational Environment In Multiple Medical Institutes Across Central India Using DREEM Inventory

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**Abstract:** Students' Perception of Undergraduate Educational Environment across Multiple Medical Institutes in Central India using DREEM Inventory **Background:** Students perception of the educational milieu can be a basis for implementing modifications & optimize educational environment. Two major ways in which the four premium medical institutes in Central India differ are their entry level selection process for undergraduates & the management structure. Students' perception of the educational climate can be swayed by the growing diversity of the students' population, educational infrastructure & their expectations. It was therefore felt interesting to study students' perception of undergraduate educational environment in these medical institutes to assess the effectiveness of educational programme. **Methodology:** DREEM inventory comprising of 50 items based on Likert Scale was administered to 153 /200 final MBBS pass students before joining internship program in all four medical institutes of Central India. SPSS11 analysed data was compared to compare the overall scores and to identify strengths & weaknesses of each institute. **Results:** All four Medical institutes showed comparable scores according to Practical Guide of Mc Aller & Sue Roff and the educational environment did not vary between the institutes. Total DREEM scores though not excellent were indicative of a more positive than negative educational environment. Teaching was viewed positively as per students' perception of learning. Teachers were focussed to keep the educational environment positive. Students' academic self perception was positive. Students found a more positive attitude regarding the perception of atmosphere. Students found the social support of institutes to be good. The highest rated items common for all colleges were knowledgeable teachers, having good friends & confidence about passing. The lowest rated common items were teacher centered teaching; exhaustive course & cheating. **Conclusion:** Close similarities in the educational environment of all medical institutes may be due to similar traditional system prevailing. Varied entry level selection process & management does not affect educational environment. [Gade S et al NJIRM 2013; 4(5) : 125-131]

**Key Words:** Educational environment, DREEM Inventory, Central India

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**Introduction:** The educational environment strongly influences student's learning experiences<sup>1</sup>. A good educational environment is essential for effective learning<sup>2,3,4,5</sup>. Positive Environment & positive learning outcomes go hand in hand<sup>1</sup>. Students perception of their educational environment have a significant impact on their behaviour & academic progress. The quality of educational environment is also indicative of the effectiveness of an educational programme. Students' perception of the educational milieu can also be a basis for implementing modification & to optimize educational environment<sup>6</sup>. In central India there are four types of medical institutes. Two major ways in which these four premium institutes differ are their entry level selection process for undergraduates & the management structure. Two are run by the State government, one by Central government, one is an unaided private medical institute & one is a Deemed

University. The admission process in all these colleges is through an entrance exam conducted by either the state govt or autonomous bodies and hence the students also belong to different cultural & socioeconomic strata & their objectives towards the course are entirely different. Students' perception of the educational climate can be swayed by the growing diversity of the students' population, educational infrastructure & their expectations & hence it becomes important to assess students' perception of their educational environment with a view to optimize education. Based on this context it was felt interesting to study students' perception of undergraduate educational environment in these institutes. DREEM [Dundee Ready Education Environment Measure] has been widely used as a tool to gather information about the educational environment in many institutions<sup>7,8,9</sup>. It was originally developed at Dundee and has been validated as a universal

diagnostic inventory for assessing the quality of educational environment of different intuitions<sup>9</sup>.

**Objectives:** To assess students perception of the educational environment in multiple medical institutes using the DREEM Inventory.

**Material & Methods:** The cross sectional study was conducted in four institutes .The study design was approved by Institutional Ethics Committee. The target population included 200 medical graduates about to enter clerkships (internship)

**Instrument:** Students' perception of educational environment were assessed by DREEM ,a widely used tool for gathering information about the educational environment in medical institutes. DREEM inventory contains 50 statements concerning a range of topics directly relevant to the educational climate. The students were asked to read all the statements and to respond using a five point Likert scale ranging from strongly agree to strongly disagree.

The items were scored as follows: 4=strongly agree, 3=agree, 2=uncertain, 1=disagree and 0=strongly disagree. Nine negative items are scored in reverse for analysis.

The DREEM inventory has a maximum score of 200 indicating the ideal educational environment.

The DREEM inventory involves 50 items divided into five domains which are:

1. Students Perception of learning (SPL) - 12items, maximum score: 48.
2. Students Perception of teachers (SPT)- 11items, maximum score :44

3. Students academic self Perception (SAP)- 8 items, maximum score :32

4. Students Perception of Atmosphere(SPA)- 12items, maximum score :48

5. Students Social Self Perception (SSP)-7 items, maximum score :28

The DREEM can be used to pinpoint specific strengths and weaknesses within the educational environment by analysing the responses to individual items.

Items that have a mean score of 3.5 or above are classed as 'real positive points'. Items with a mean of two or less are indicative of problem areas. Items with a mean between two and three are aspects of the climate that could be enhanced. The questionnaire was administered to the students of all the four institutes at the beginning of their clerkship period. Participation of the students was strictly on a voluntary basis. Brief explanation about the objectives, anonymity of the participants and the method of solving the questionnaire were given. It was also explained that the data would be used for research purpose & could not be tracked to individual participants.

**Statistical Analysis:** Summary statistics involved obtaining mean score along with standard deviation for each domain and for each institute. The statistical significance of difference in the mean scores of each domain was evaluated using one-way analysis of variance (ANOVA). Significance was tested at 5% level and analysis was carried out using SPSS 11.0 (SPSS Inc.)

**Results:** Table 1 shows the DREEM domain and total maximum score for all the institutes.

**Table 1 :The DREEM domains and overall score for all the institutes**

Domains	Institute I	Institute II	Institute III	Institute IV	P-value
Perception of Learning Mean score /48	30.7± 5.88	27.8 ± 6.51	28.43 ± 5.75	26.82 ± 6.15	0.1653
Perception of teachers Mean score/44	25.40 ± 4.74	26 ± 5.08	28.43 ± 6.24	25.05 ± 4.02	0.0556
Academic self perception Mean score/32	21.25 ± 4.94	20.2 ± 4.08	21.64 ± 3.98	19.11 ± 5.41	0.2264
Perception of Atmosphere Mean score/48	28.22 ± 4.94	30.25 ± 10.36	27.29 ± 5.95	27.35 ± 6.34	0.4342
Social self Perception Mean score /28	16.40 ± 3.04	17.7 ± 3.64	16.48 ± 3.04	13.64 ± 5.32	0.0085
Total DREEM Score Mean score /200	122 ± 20.28	121.95 ± 22.67	120.61±19.21	112±23.39	0.3962

There is no accepted agreement on what is an acceptable DREEM inventory score from the published literature<sup>10</sup>.

1. The total DREEM scores for the four institutes were in the range of 112/200 to 122/200 with a mean of 119.25/200 (60%). Though these are not excellent scores but are indicative of a more positive than negative educational environment.
2. Students perception of Learning was 28.36 /48 (60%). Meaning teaching is viewed positively as per students' perspective of learning.
3. Students' perception of teachers was 25.8/44 (59%) i.e. moving in the right direction. Teachers are focussed to keep the educational environment positive.
4. Students' academic Self Perception was 20.55/32(64.21%) i.e. more on the positive side.

5. Students perception of Atmosphere was 29.0 /48 (60%). Students found a more positive attitude regarding the perception of atmosphere.

6. Students Social Self Perception was 15.63/28(56%) meaning not too bad or students found the social support system of the institute to be satisfactory.

Table 2 shows the mean DREEM individual items scores for all the four institutes. it was found that none of the students scored any item above 3.5. Nevertheless we had some items with a score of more than 3. The three highest rated items were knowledgeable teachers, having good friends and confidence about passing. The three most problematic items were teacher centered teaching, problem of cheating and too tired to enjoy the course.

**Table 2: Mean DREEM individual items scores for all the four institutes**

Questions		Mean(SD) of scores for study groups				Adjusted P-value (BH correction)*
		Institute 1	Institute 2	Institute 3	Institute 4	
Registrars Perception of learning						
1	I am encouraged to participate in class	3.41 (0.75)	2.7 (1.08)	2.47 (1)	2.41 (0.8)	<b>0.0021</b>
7	The teaching is often stimulating	2.22 (1.19)	2.15 (1.14)	2.57 (0.73)	2.53 (1.07)	0.3529
13	The teaching is student centered	2.52 (1.09)	1.8 (1.06)	2.45 (0.93)	2.18 (0.73)	0.0788
16	The teaching helps to develop my competence	2.67 (0.96)	2.3 (1.03)	2.45 (1.02)	2.12 (1.05)	0.4765
20	The teaching is well focused	2.81 (0.62)	2.55 (0.76)	2.64 (0.71)	2.29 (0.59)	0.1570
22	The teaching helps to develop my confidence	2.85 (0.66)	2.4 (0.75)	2.47 (0.97)	2.41 (1.06)	0.3716
24	The teaching time is put to good use	2.93 (0.73)	2.55 (0.94)	2.32 (1.05)	2.29 (1.05)	0.1500
25	The teaching over-emphasizes factual learning	1.15 (1.32)	1.65 (0.93)	1.56 (0.82)	1.71 (0.77)	0.2276
38	I am clear about the learning objectives of the course	2.93 (0.83)	2.75 (0.97)	2.79 (0.77)	2.88 (1.05)	0.8691
44	The teaching encourages me to be an active learner	2.33 (1.27)	2.65 (0.93)	2.58 (0.96)	2.24 (0.83)	0.4765
47	Long term learning is emphasized over short term learning	3.26 (0.86)	2.75 (1.21)	2.49 (0.97)	2 (1)	<b>0.0025</b>
48	The teaching is too teacher-centered	1.63 (1.04)	1.55 (1.23)	1.62 (0.88)	1.76 (0.9)	0.8905
Students' perceptions of teachers						
2	The teachers are knowledgeable	2.93 (0.55)	3.1 (0.79)	3.21 (0.54)	3.18 (0.64)	0.3706
6	The teachers are patient with patients	2.67 (1.07)	2.25 (0.79)	2.79 (0.85)	2.88 (0.78)	0.0804
8	The teachers ridicule the students	1.78 (1.31)	1.95 (1.15)	1.98 (0.96)	1.88 (1.22)	0.8905
9	The teachers are authoritarian	1.59 (0.93)	2.05 (1.1)	1.38 (0.79)	1.35 (0.79)	0.0779
18	The teachers have good communication skills with patients	2.96 (0.76)	2.85 (0.81)	2.93 (0.75)	2.82 (0.73)	0.8905
29	The teachers are good at providing feedback to students	2.3 (0.99)	2.6 (0.88)	2.44 (0.92)	2.06 (0.9)	0.3749
32	The teachers provide constructive criticism here	2.52 (1.01)	2.3 (0.92)	2.43 (0.94)	2.18 (0.88)	0.7090

37	The teachers give clear examples	3.04 (0.85)	2.7 (0.92)	2.7 (0.87)	2.59 (1.06)	0.3928
39	The teachers get angry in class	1.93 (1.33)	1.65 (1.09)	1.91 (1.01)	1.24 (0.97)	0.1997
40	The teachers are well prepared for their classes	2.63 (1.21)	2.65 (0.88)	2.87 (0.77)	2.59 (0.87)	0.5244
50	The students irritate the teachers	1.07 (1.3)	1.9 (1.45)	2.09 (1.3)	2.29 (1.16)	<b>0.0285</b>
Students' academic self-perceptions						
5	Learning strategies which worked for me before continue to work for me now	2.89 (1.01)	2.15 (0.99)	2.68 (0.75)	2.06 (1.3)	0.0779
10	I am confident about my passing this year	2.89 (0.89)	2.9 (0.97)	3.15 (0.75)	3.24 (1.3)	0.3096
21	I feel I am being well prepared for my profession	2.96 (0.81)	2.35 (1.04)	2.57 (0.89)	2 (1.06)	0.0779
26	Last year's work has been a good preparation for this year's work	2.78 (1.22)	2.4 (1.05)	2.65 (0.96)	2.47 (0.87)	0.3928
27	I am able to memorize all I need	1.96 (1.19)	2.05 (1.15)	2.57 (0.92)	2.12 (1.11)	0.0779
31	I have learned a lot about empathy in my profession	2.52 (0.64)	2.8 (0.89)	2.74 (0.93)	2.53 (1.07)	0.3854
41	My problem solving skills are being well developed here	2.33 (1.07)	2.8 (0.77)	2.43 (0.94)	2.24 (0.9)	0.3928
45	Much of what I have to learn seems relevant to a career in healthcare	2.93 (1.24)	2.75 (0.97)	2.86 (0.79)	2.47 (1.12)	0.5049
Students' perceptions of atmosphere						
11	The atmosphere is relaxed during the ward teaching	2.74 (0.9)	3.1 (0.85)	2.5 (1.1)	2.24 (1.03)	0.1426
12	This school is well timetabled	2.44 (1.15)	2.25 (1.07)	2.39 (1.14)	2.53 (1.01)	0.8905
17	Cheating is a problem in this school	0.63 (1.15)	1.85 (1.42)	1.61 (1.43)	2.24 (1.39)	<b>0.0055</b>
23	The atmosphere is relaxed during lectures	2.78 (0.51)	2.85 (0.67)	2.47 (1.01)	2.29 (1.05)	0.3928
30	There are opportunities for me to develop interpersonal skills	2.78 (0.97)	2.7 (0.92)	2.58 (1.06)	2.29 (0.92)	0.5244
33	I feel comfortable in class socially	2.52 (1.09)	2.85 (0.81)	2.65 (0.89)	2.47 (1.12)	0.8905
34	The atmosphere is relaxed during seminars/tutorials	2.41 (0.93)	2.7 (0.86)	2.45 (1.05)	2.35 (1.41)	0.8905
35	I find the experience disappointing	2.96 (1.22)	2.15 (0.88)	1.86 (1.02)	1.94 (1.09)	<b>0.0048</b>
36	I am able to concentrate well	3 (0.92)	2.45 (0.51)	2.64 (0.86)	2.35 (1.06)	0.0779
42	The enjoyment outweighs the stress of the course	1.96 (1.02)	2.4 (1.1)	2.32 (1.13)	2.24 (1.2)	0.3928
43	The atmosphere motivates me as a learner	2.3 (1.32)	2.25 (1.16)	2.33 (1.08)	2.18 (0.95)	0.9120
49	I feel able to ask the questions I want	1.7 (1.17)	2.7 (6.73)	1.48 (1.02)	2.24 (1.48)	0.2469
Students' social self-perceptions						
3	There is a good support system for students who get stressed	2.44 (1.12)	1.4 (1.1)	1.82 (1.1)	1.29 (0.99)	<b>0.0297</b>
4	I am too tired to enjoy the course	1.41 (1.05)	1.95 (1.23)	1.77 (1.15)	1.12 (0.78)	0.1797
14	I am rarely bored on this course	1.74 (0.86)	2.05 (1.19)	1.72 (1.15)	1.29 (1.26)	0.3706
15	I have good friends in this school	3.37 (0.74)	3.4 (0.5)	3.32 (0.74)	3.18 (0.88)	0.9120
19	My social life is good	3.15 (0.82)	3.1 (0.91)	3.03 (0.85)	2.06 (1.2)	<b>0.0285</b>
28	I seldom feel lonely	1.93 (1.04)	2.6 (0.99)	2.35 (1.04)	2.18 (1.19)	0.2841
46	My accommodation is pleasant	2.37 (1.15)	3.2 (0.7)	2.48 (1.25)	2.53 (1.46)	0.2129
	*Kruskal Wallis test					

Table 3 shows mean Statistically significant DREEM items where significant differences were observed between the institutes.

**Table 3 Mean (SD) DREEM Inventory items where significant differences were observed between the institutes**

Questions		Mean(SD) of scores for study groups				Adjusted P-value (BH correction)*
		Institute 1	Institute 2	Institute 3	Institute 4	
Registrars Perception of learning						
47	Long term learning is emphasized over short term learning	3.26 (0.86)	2.75 (1.21)	2.49 (0.97)	2 (1)	0.0025
17	Cheating is a problem in this school	0.63 (1.15)	1.85 (1.42)	1.61 (1.43)	2.24 (1.39)	0.0055
35	I find the experience disappointing	2.96 (1.22)	2.15 (0.88)	1.86 (1.02)	1.94 (1.09)	0.0048
3	There is a good support system for students who get stressed	2.44 (1.12)	1.4 (1.1)	1.82 (1.1)	1.29 (0.99)	0.0297
19	My social life is good	3.15 (0.82)	3.1 (0.91)	3.03 (0.85)	2.06 (1.2)	0.0285

**Discussion:** There has been a growing interest and concern about the role of learning environment in medical education. The process of learning depends on several factors & is highly affected by motivation & creating a learning environment which will engage the learner. In adult learning theories, teaching is as much about setting the context or climate for learning as it is about imparting knowledge or sharing experiences<sup>4</sup>.

DREEM questionnaire is the most specific tool for investigation of the unique environment experienced by the students of medical & healthcare courses & students' feedback plays a crucial role in the success of educational climate.

The present study was done with a view to determine students' perception of educational environment in four medical institutes across Central India. The results presented in this study revealed a total DREEM score of four institutes in the range of 112/200 to 122/200 with a mean of 119.25/200. According to the practical guide of McAleer and Roff<sup>11</sup> a score of 100-150 is indicative of a more positive environment.

The following is an approximate guide to interpret the overall score.

0-50 Very Poor,  
51-100 Plenty of Problems  
101-150 More Positive than Negative  
151-200 Excellent

Some studies in India have reported the overall DREEM score to be 101/200(11),107/200<sup>8</sup> and

117/200<sup>13</sup>. The total DREEM score in our study are higher than the study carried out earlier in India. Whereas a study of final year students in Trinidad reported an overall mean score of 109.9/200<sup>14</sup>, a study done at an Iranian medical sciences university a mean overall score of 99.6/200<sup>6</sup> and in King Abdul Aziz University a mean score of 102/200<sup>15</sup> was obtained and this is close to our results. This could be due to similarity in the education system.

A similar kind of study carried out in eight teaching hospitals has reported a DREEM score of 139/200 which was higher than our study<sup>10</sup>. In another study at a medical school in England the mean scores were 124/200<sup>16</sup>. These values are higher as compared to our score probably because of the modern systems prevailing in these universities. The DREEM global scores for medical schools in Sri Lanka, Nepal, Nigeria & UK were reported as 108/200<sup>7</sup>, 130/200, 118/200<sup>3</sup> & 139/200<sup>10</sup>.

The DREEM subscale scores in our study in all the four medical colleges are higher as compared to some other studies in India<sup>12, 13</sup>. The score of the four contributory DREEM domains were not statistically different from the overall mean DREEM score (Table1). However the domain of Social Self Perception was the lowest scoring domain (56%). None of our students in any institute scored any item above 3.5. Nevertheless we had some items with a score more than 3.

The three highest rated items were item 2 (the teachers are knowledgeable), item 10 (I am

confident about passing this year), & item 15 (I have good friends). These results are similar to a study carried out in a medical college in India.<sup>12</sup>. The three most problematic items were item 48 (teaching is too teacher centered), item 17 (cheating is a problem) & item 4 (I am too tired to enjoy the course).

Low score in the domain of 'social self perception' and a poor score of less than 2 for a item no 4 (I am too tired to enjoy the course) might be due to lack of good support system for many students & stress of studying medicine & the exhaustive curriculum. These are the areas of weaknesses which have to be addressed for rectification.

This could be due to a poor support system for the students who get stressed, boredom & tired. It is recommended that all the institutes should have a mentoring programme for all the students where senior as well as junior students & faculty engage with them to reduce stress & provide support. We recommend that the mentorship programme can be extended to senior students as well.

Curriculum planners could consider ways to make the curriculum less bulky and more innovative, engaging and meaningful so as to avoid student boredom and tiredness.<sup>17</sup>

To circumvent the problem of cheating, the establishment of "an institutional culture of integrity" is a necessity. This will require clarity of institutional regulations, more active participation by the students, interactive teaching of medical ethics with exposure to anticipated ethical situations faced by students themselves and the introduction of new strategies in assessment<sup>18,14</sup>.

Our higher scores in the region are reassuring & is perhaps an indicator of better educational environment. The no significant differences between the overall DREEM scores were the significant findings. Although there are some non significant & subtle differences in total DREEM scores between the schools, the findings were more or less similar & this can be explained by the traditional system prevailing in these institutes.

In practical terms our study results indicate that regardless of the admission criteria for the students, regardless of the socioeconomic background of the students the educational environment was no different in all the four institutes. This also means that education delivery which is being done by the teachers plays a major role in creating & maintaining a positive learning environment of a institute. Analysis of the individual items for the strengths & the weaknesses of the individual institutes were shared with them.

**Conclusion :**The educational environment is a complex mix of multiple factors & is specific to each institution. When the guide of McAleer and Roff was used to determine the educational environment in multiple medical institutes across Central India all the students taken together viewed teaching positively (students' perception of learning), the perception of teachers was that they are moving in the right direction. Students' also viewed academic self perception was more on the positive side, positive attitude about the perception of atmosphere, their social perception was 'not too bad'. In conclusion students assessed the educational environment at all the four medical institutes as more positive than negative.

**Acknowledgement:** Authors thank Dr. Dhananjay Raje, Head Data Analysis Group MDS Bio-Analytics Pvt. Ltd. for helping in statistical analysis of the data. Also, authors thank all the students who participated in the study and gave their valuable time in completing the questionnaire.

#### References:

1. Syed Ilyas Shehnaz & Jayadevan Sreedharan. Students' Perception of learning environment in a medical school experiencing curricular transition in United Arab Emirates. *Medical Teacher* 2011; 33:e37-e42.
2. Genn JM 2001. AMEE medical education guide no.23 (Part1): Curriculum, environment, climate. quality and change in medical education-A unifying perspective. *Med Teach* 23:337-344.

3. Roff S, McAleer S, Ifere OS, Bhattacharya S. 2001. Aglobal diagnostic tool for measuring educational environment: Comparing Nigeria and Nepal. *Med Teach* 23:378-382.
4. Hutchison L. 2003. The ABC of learning and teaching: Educational environment. *BMJ* 326;810-812.
5. Till H 2004. Identifying the perceived of a new curriculum by means of the Dundee ready Education Environment Measure (DREEM) Inventory. *Med Teach* 26:39-45.
6. Teamur Aghamolaei, Ismael fazel; Medical students' perception of the educational environment at an Iranian Medical Sciences university. *BMC Medical Education* 2010,10;87
7. Jiffry MTM, McALEER, Fernandoo S, Marasinghe RB. Using the DREEM questionnaire to gather baseline information on an evolving medical school in Sri Lanka. *Med Teach*. 2005;27:348-352.
8. Mayya SS, Roff S. Students Perception of Educational Environment: A Comparison of Academic Achievers and Underachievers at Kasturba Medical College, India. *Education for Health*. 2004;17:280-291
9. Roff S, McAleer S, Harden R., et al. Development & validation of the Dundee Ready Education Environment Measure (DREEM). *Med Teach* 1997;19:295-299.
10. Verma R, Tiyagi E, Gupta JK: Determining the quality of educational climate across multiple undergraduate teaching sites using the DREEM inventory. *BMC Med Educ* 2005,5(1):8
11. McAleer S, Roff S: A practical guide to using the Dundee ready Education Environment Measure (DREEM). In *Curricular, Environment, Climate and Change in Medical Education: A Unifying Perspective*. AMEE Education Guide No. 23. Dundee; Association for Medical Education in Europe Edited by: Genn JM 2001, 29-33.
12. Varun Kohli and Upreet Dhaliwal. Medical students' perception of the educational environment in a medical college in India: A cross sectional study using the Dundee ready Education Environment questionnaire. *J Educ Eval Health Prof* 2013;10:5
13. Reem Abraham, K Ramnarayan, P Vinod and Sharmila Torke. Students' Perception of learning environment in an Indian medical school. *BMC Medical Education*. 2008;8:20.
14. Bassaw B, Roff S, McAleer S, Poopnarinesingh S, De Lisle J, Teelucksingh S, Gopauls: Students Perspective on the educational environment, faculty of medical Sciences, Trinidad. *Medical Teacher* 2003,25(5):522-26.
15. Al-Hazimi A, Al-hyiani A, Roff S: Perception of the educational environment of the medical school in King Abdul Aziz University, Saudi Arabia. *Med Teacher* 2004,26 (6):570—73.
16. Fidelma D, McAleer S, Roff S: Assessment of the undergraduate medical education environment in a large UK medical school. *Health Education Journal* 2006,65(2):149-58.
17. Arzuman H, Yusoff MS, Chit SP, Big Sib. students' perception of the educational environment at the school of medical sciences, University Sains Malaysia, using the Dundee ready Education Environment Measure (DREEM) Inventory. *Malays J Med Sci*. 2010;17:40-47.
18. Glick SM. Cheating at medical school *BMJ* 2001; 322 :250-251

Conflict of interest: None
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Funding: None
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