

## Skills` training of junior medical students: staff versus peers

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### ABSTRACT

**Introduction:** Skills` training at the faculty of medicine of AAU (SUDAN) starts early during the preclinical period. However, the patients` care pressure on trained staff, the limited resources and the difficulty of recruiting part time teachers, forced the administration finding other resources. An effective alternative could be peer-teaching. But can peer-tutors be as effective as staff in teaching skills? Our aim was to establish whether peer-tutors are as effective as trained staff and whether peer-tutees are disadvantaged by PAL and that PAL can help in solving the problem of limited resources. **Methods:** Senior students were selected and trained to participate in the skills training. Emphasis was on technique of normal examination and focused history. Learners were second-year students learning the cardiovascular module. Groups of eight students were randomly allocated to a staff or a peer-tutor. Each group attended three sessions. Performance of the learners was assessed by an OSCE at the end of the training. Data were collected in questionnaire using five-point Likert scale and analyzed.

**Results:** Eleven staff and seven peer-tutors participated. Fifty six students were taught by peers and eighty by staff. Response rate to the questionnaire was 86%. Peer-taught students obtained a significant higher scores in the OSCE than staff taught students  $P=0.002$ . There were significant differences in six of the ten items investigated in the questionnaire **Conclusion:** Peer-taught students performed better than staff-taught students. Trained Peer-tutors can be as effective as staff in teaching skills. They can participate effectively in solving the problem of shortage of trained staff. Junior medical students are disadvantaged by peer-tutoring

**Keywords:** peer-teaching, junior medical students, skills training, staff versus peers.

### Introduction

A wide range of benefits were reported for peer-assisted learning (PAL). The qualitative benefits include: cognitive and psychomotor enhancement, affective development and increased collegial behaviour. Participants in PAL may also benefit subjectively by students satisfaction and preference, promotion of students leadership and students-teacher satisfaction and confidence [1] The objective benefits of PAL include development of clinical reasoning and clinical decision-making skills, increase in the scores of the academic assessment and development in the skills competence of the participant.[1,2]PAL is accepted by all the stakeholders involved in medical education. Institution may benefit by finding an acceptable, useful, students` preferred and cost

effective method of teaching. [2] Staff may benefit by having time for other academic activities by reduction of teaching burden. Participants (peer-tutors and peer-tutees) can benefit by becoming better learners through understanding the principles of learning and teaching, and becoming effective communicators. They will also be competent future staff members as a result to their participation in peer-teaching, which represents the first step in the sequential exposure to teaching and learning principles. Many studies demonstrated the usefulness and benefits of PAL. [3-10]Is peer tutoring less beneficial than staff tutoring? Are tutees disadvantaged when tutored by peers compared to staff? Haist *et al* (1997,1998) reported that fourth-year medical students were as effective as staff in teaching junior medical students the physical examination.[11,12]. Tolsgaard *et al* (2007) and Weyrich (2009) found that training provided by peers is as effective as training offered by experts. [13,14] Graham *et al*(2008) concluded that teaching offered by peers in PAL can attain a comparable level of training compared with that provided by experienced staff. [15] Hughes *et al* (2010) compared the peer-led versus

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expert-led training of advanced cardiac resuscitation and they concluded that peers can safely and effectively teach the technique after training. [16] Ten Cate *et al* (2012) compared the academic achievement of medical students tutored by near-peers and medical students tutored by faculty. They concluded that “junior medical students are not put at disadvantage when being tutored by senior medical students. Near – peer tutoring seem to be as effective as faculty tutoring”. [17]. The college of medicine of Alzheim Alazhari University (AAU) Sudan is adopting a system-based integrated curriculum; composed of ten semesters each of 20-22 weeks. During the first 6 semesters, basic sciences, clinical knowledge and skills are integrated. The involvement of the trained clinical teachers in teaching skills and clinical knowledge for the preclerkship students increased the teaching burden on the limited number of the trained staff. As an alternative method of teaching skills to junior medical students, peer-teaching was found to be feasible and effective at the college of medicine of AAU. [18] The results of our study on PAL, encouraged us to evaluate whether peer-tutoring is as effective as staff-tutoring and that peer-tutees are not disadvantaged by PAL. We conducted our study with the hypothesis that peer-tutors can offer peer-tutees a level of training in the physical examination and history taking of the cardiovascular module, comparable to staff training; and that peer-tutees will not be disadvantaged by PAL. We hypothesized also that both groups of junior medical students (peer-trained and staff-trained) would rate their tutors not differently. The objectives of our study were to establish whether peer-tutors are as effective as staff in teaching skills for junior medical students; and that peer-tutees are not put at a disadvantage by being trained by peers.

**Setting:** the clinical skills laboratory at the college of medicine AAU

## METHODS

Using an interventional randomized design we conducted our study during the academic year 2011-2012. The study was approved by the research committee of the Alzheim Alazhari University. An informed consent obtained from all participants.

### Selection and training of peer-tutors

Senior students (clerkship's students) were invited to join the peer-teaching project on voluntary bases. Forty six volunteer showed their wish to join the project; however, only 16 were eligible and selected for training. The selected peer-tutors received 8 weeks

training sessions on the principles, concepts and theories of adults learning and skills teaching in the clinical skills laboratory (CLS). They practiced how to assess the students formatively and give feedback, demonstrate the five steps of the skills training in the CSL, set the objectives of the skills training sessions, and prepare hand outs and checklists of their sessions. Of the 16 trained peer-tutors, only seven participated in teaching the junior medical students the physical examination and focused history of the cardiovascular system (CVS) module. The emphasis was on the technique of physical examination and the normal findings. Eleven clinical staff teachers from the department of medicine and pediatrics were assigned to teach and train the junior medical students the skills required in the CVS module. The peer-tutees were all semester 4 (second year) students (no= 136), during their studying the CVS module. Junior students were briefed about the educational experience and invited to select whether they prefer to be taught by a staff or peer. One hundred and ten (110) junior students showed their wish to join the groups of peer-tutors. Since the number of the trained peer-tutors is limited, we randomly selected 56 junior students to be trained by peers. The randomization method was by selecting the students at the even numbers of the list, considering that each group of peer-tutors must include a male student because the number of the male students was much less than that of female students. The junior students were randomly assigned to groups of 7-8 students and each group was subsequently assigned randomly to be tutored by a staff or a peer. Peer-tutors were instructed to teach the skills in the CSL in systematic way using the five-step method of the skills demonstration, and then to supervise tutees while practicing at hospital. The staff tutors taught their students at hospital according to their agenda. The training sessions conducted by peer-tutors in the CSL were integrated into the regular training course of the CVS module and the staff trained their junior students during the daily activities in hospital wards. Peer-taught junior students attended 3 sessions of 2 hours each, and staff-taught junior students attended 2 rounds of 3 hours each. Both groups were allowed to practice the skills freely. An objective structure clinical examination (OSCE) organized at the end of the training course for evaluation the performance of the junior students, composed of 5 stations (focused history, peripheral vascular examination, measurement of BP, cardiac examination and recording vital signs). The examiners of the OSCE were blinded to whether the examinees were taught by staff or peers, and all of them did not participate in teaching the students. The scoring system of the OSCE was agreed upon before

the examination to be by check lists. The present educational experience and the attitude of the junior students towards it were evaluated by a questionnaire using 5-point Likert scale. Data was analysed using version 16 of SPSS as a soft ware. The values of the descriptive statistics were expressed as mean  $\pm$  Standard deviation (SD). Student's *t* test, Chi square were used where appropriate to compare the results.  $P \leq 0.05$  was considered significant for all tests.

## Results

The total number of the junior medical students was 136, 80 (58.8%) were assigned to be taught by staff and 56 (41.2%) were taught by peers. Total number of junior students who responded to the survey was 117 (86.03%), 65 (55.6%) students were from the staff-

taught group and 52 (44.4%) from the peers-taught group. Eleven staff and seven peer-tutors participated in teaching the junior medical students the skills related to the CVS module. Table 1 shows the results of the survey on the attitude of junior medical students towards their tutors. The peer-taught junior students scored higher in the OSCE than the staff- taught students. The mean score of the peer-taught students was 8.8 and that of staff-taught students was 8.32;  $P = 0.002$ . Nearly two thirds (63.1%) of the junior students who were taught by staff rated the training course as being: satisfactory 12.3%; good 38.5% or excellent 12.3%. The corresponding values of the peers-taught junior students regarding rating of the PAL were: 90.3%, 11.5%, 53.8% and 25% respectively.

**Table 1: The responses of Junior Students to the statements of the survey regarding their tutors**

No	Questions	Staff –taught students no=65		Peer-taught students no= 52		P- value
		Agreement, Mean $\pm$ SD		Agreement, Mean $\pm$ SD		
		(%)	(/5)	(%)	(/5)	
1.	Tutors were well prepared for each session	62.0	3.44 $\pm$ 1.40	80.7	4.08 $\pm$ 1.11	0.016
2.	Tutors were enthusiastic	58.5	3.38 $\pm$ 1.16	65.4	3.75 $\pm$ 0.90	0.066
3.	Tutors are knowledgeable	83	4.10 $\pm$ 1.04	84	4.15 $\pm$ 0.99	0.809
4.	Tutors are skilful	78.3	3.93 $\pm$ 1.05	86.6	4.13 $\pm$ 0.97	0.304
5.	Tutors demonstrated skills in a satisfactory way	55.4	3.30 $\pm$ 1.32	78.8	3.94 $\pm$ 0.99	0.005
6.	Tutors answered questions raised by students	77	3.86 $\pm$ 1.04	78.8	4.05 $\pm$ 1.05	0.325
7.	Tutors provided constructive feedback	52.2	3.30 $\pm$ 1.29	80.7	4.03 $\pm$ 0.83	0.001
8.	I had difficulty to follow and understand my tutor	40	2.83 $\pm$ 1.25	15.4	2.13 $\pm$ 1.01	0.002
9.	My rating of the CVS skills training course is	50.8	3.12 $\pm$ 1.29	78.8	3.90 $\pm$ 0.97	0.000
10	I would recommend my tutor to continue teaching other students	69.2	3.76 $\pm$ 1.24	92.3	4.53 $\pm$ 0.75	0.000

**Note: Agreement is defined as a response of four or five on a five-point Likert scale. SD = standard deviation**

Peer-learners demonstrated significant difficulty to follow and understand staff-tutors than peer-tutors, fig 1. and a significant percentage of peer-learners recommended peer-tutors to continue teaching others than staff-tutors.fig.2.

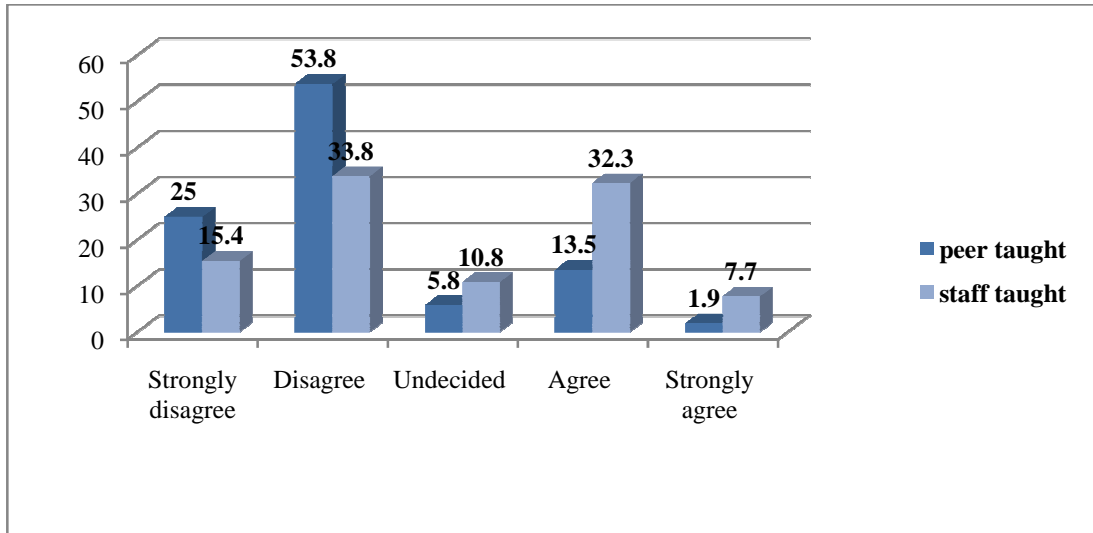


Figure1: Comparison of the difficulty to understand and follow the tutors during training sessions

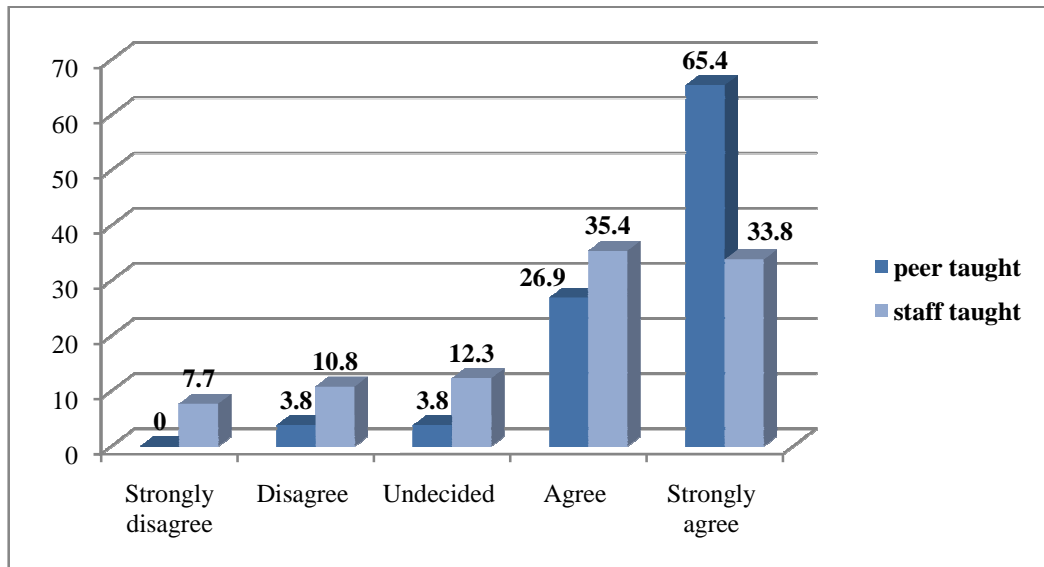


Figure 2: Significant higher recommendation of peer-tutors than staff-tutors to continue teaching

Themes extracted from the open question were similar for both groups in regards to the usefulness of the experience, the necessity of its continuation and the short time allowed to practise the skills. Some of the common cited themes by junior students are:

**Staff-taught students:** “Staff were often busy”  
“Sessions were sometimes short”

“Staff were knowledgeable and skilful” “Some of the staff think that it is not the level of teaching these skills” “It was a good experience” “No enough time to practise the skills”

“It is necessary to continue the PAL”

**Peers-taught students:** “It was a good experience”,  
“We benefited a lot”, “It is wise to be continued in the

future with other modules”, “We need more time to practise”, “Peers were knowledgeable and answered the raised questions”, “There was some difficulty to find patients and places to practise”, “It is recommended to include PAL in the curriculum officially.”

### Discussion

Our study showed that peer-tutors provided a training course of focused history and physical examination of the CVS module, as effective as trained clinical teachers. The effectiveness of the PAL was evidenced by the performance of the junior medical students on the OSCE. Our study also demonstrated that junior medical students were not put at disadvantage when tutored by trained peer-tutors. Another result of our study is that peer-taught junior students can outperform staff-taught students in the OSCE. Our results are in agreement with other studies which compared peer-led to staff-led skills training to junior medical students.[11-16] The outperformance of peer-taught junior students compared to staff-taught is also reported by Cate *et al.*[17] Factors that can explain the same or better results of peer-taught junior students compared to staff-taught students include: The emphasis of the training were on physical examination and normal finding, and these skills can be mastered by senior students (peer-tutors). The selected peer-tutors were from the best students in the clerkship rotation and they were motivated. The selected peer-tutors had a previous experience with peer-teaching[18] They were volunteers (more enthusiastic) while staff were assigned by the departments for teaching junior students in addition to their duties in patients` care, teaching senior students and looking for private practice to improve income. The staff may not be enthusiastic to teach in the CSL, they often teach according to their agenda and prefer to deliver lectures than teaching skills.[13] The social and cognitive congruence of the peer-tutors and junior students also plays a major role in the successfulness of the experience. [5] We used the 5-step method of skills` demonstration because we found it more practical and the peer-tutors mastered it in short time. [19] The results of our study showed that peer-tutors were recommended to continue teaching others more than staff who may be busy due to other obligation and duties. The free comments of the junior medical students confirmed the usefulness of PAL in skills training, because they mentioned that it was a good experience and showed the desire to continue peer-teaching as a model of skills training, and they should be allowed enough time to practise. Our study being a

single institute experience and a single module skills training limits the generalizability of its results. Presence of a control group of junior students who were not trained could have participated in confirmation of the sensitivity of our tool of assessment.

### Conclusion

Peer-tutors can be as effective as staff-tutors in teaching skills. Junior medical students are not disadvantaged by peer-tutoring. PAL for skills training of junior medical students is effective and comparable to training provided by clinical staff and it can help in alleviating the teaching burden of the limited clinical staff and in solving the shortage of trained staff.

### Contribution

**IMM;** conceptualize the study and its design, contributed in data collection and interpretation, reviewed the literature and writing the manuscript and gave the final approval for publication.

**AAK;** Contributed in data acquisition and interpretation, participated in drafting and the approval of the final version of the manuscript

**ANH;** Contributed in data collection and interpretation, involved in drafting and the final approval of the manuscript.

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