ORIGINAL ARTICLE

Evaluation of Faculty Members' and Trainees' Opinions about Quality of Ambulatory Medical Education, Sari, Iran, 2012

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Abstract

Background: Ambulatory medicine is one of the most important parts of medical education. According to its special effect on professional future of physicians, ambulatory medical education (AME) is now critically important and so many studies have been performed to survey its quality and effective factors on quality improvement it. There is deficiency in methodological studies and evidences about AME in the country. The aim of this study was to investigate the quality of AME in the viewpoint of faculty members and trainees of medical faculty of Mazandaran University of Medical Sciences, Iran.

Methods: This was a descriptive, cross-sectional study. The study's population consisted of students, residents and clinical faculty members of Mazandaran University of Medical Sciences who were included by systematic sampling. The tool for data collection was a self administered questionnaire consisted of 27 questions about demographic and educational variables of participants, and their opinions about quality of AME in clinics of the university. Items of the quality of AME consisted of environmental conditions, independent activities of the trainees, instructors' supervision, and teaching of ambulatory specific skills. Validity of the questionnaire was controlled by expertise consultation (content validity), and its reliability by test – retest (r=0.85). Data was analyzed using Spss 13 software.

Results: Totally response rate was 70% (36 faculties, 144 medical students and residents). Mean age of faculties, students and residents were 43.6±8.7 and 25±3.6 years respectively of faculties 32% and of students 60% were female. Majority of the trainees (84%) assessed the quality of AME as unsatisfactory and had negative attitude towards it, while majority of the faculties (68%) had positive attitudes toward the quality of AME. There was no significant difference in quality of AME among teaching departments in opinions of participants. Attitude of junior trainees was even more negative. Opinions of the faculty members and the trainees were similar about inappropriate physical environment of ambulatory clinics, and lack of scientific sources but there was significant difference between the opinions about independent activities of trainees in clinics (p=0.000), instruction of rational drugs prescription (p=0.000); management

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(p=0.004), and supervision of faculty members (p=0.000).
Conclusion: The overall attitudes of our participants (especially trainees) towards the current quality of ambulatory medical education were negative, mainly because of impossibility of independent activities for trainees, low supervision of faculties, insufficient teaching of rational drug prescription, differential diagnosis, and management.
Key words: Ambulatory Medicine Teaching, Attending, Student, Attitude

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Introduction

Obviously medical education should be designed, implemented and "committed" to train human sources for health system, in these way new approaches and modern strategies of the medical education, have immerged and been implemented. According to one of the most important current approaches (outcome based education), modern education should train students on the basis of their expected professional needs in future practice in the real situation (community oriented). In the traditional approach, hospital based medical education (in-patient) is predominant part of the clinical teaching and most of educational plans and programs are designed and implemented in such setting, whereas general practitioners often will work in the out-patient (Ambulatory) setting which is widely different from the in-patient setting not only in types of the diseases but also in limited time for creating effective physician – patient relationship, history taking, physical examination, out-patient diagnostic approach and treatment, therefore, now "Ambulatory Medical Educating " (AME) is considered as critically important part of curriculum and many studies have been focused on this issue worldwide.

The current experiences in the country indicated inadequacy of the "Ambulatory Medical Education" relatively (AME) (Alizade *et al*, Shaigan B. *et al*, Peyvandi A. *et al*). Different reasons and explanations are suggested for this important educational problem but there are few studies and evidences about it in the country, so in this study, we studied the quality of AME in the opinions of the students and faculties of Mazandaran University of Medical sciences (north of IRAN) as first step in process of quality improvement of AME in our university.

Methods

This research was a cross-sectional descriptive study. The study's population consisted of clinical faculty members, residents, interns and medical students of Mazandaran University of Medical Sciences (MAZUMS) (in the north of IRAN), who were included by systematic sampling.

The tool of data collection was a self administered questionnaire consisted of 27 questions about research variables including: Age, gender, teaching department, academic position, scientific degree of faculty members, educational variable of the participants and a set of questions about characteristics and quality of the AME in MAZUMS. Items of the quality consisted of: environmental condition, numbers and variety of the patients, availability of scientific sources, trainees' independent activities (for history taking, physical examination, prescription of the drugs), supervision of trainers, the quality of instructors' educational activities especially about ambulatory specific skills. Each variable is scored by likert scale (Gjerde CL. *et al*, Mazor KM. *et al*, Whitcomb ME). The questionnaire was validated by experts' consultation in medical educations (content validity). To survey content validity and feasibility of the questionnaire, pilot study was performed on 10% of the sample, and according to that, essential modifications were implemented on the questionnaire. To survey reliability, test re-test was performed in pilot study and appropriate correlation coefficient (r=0.85) confirmed reliability of the questionnaire.

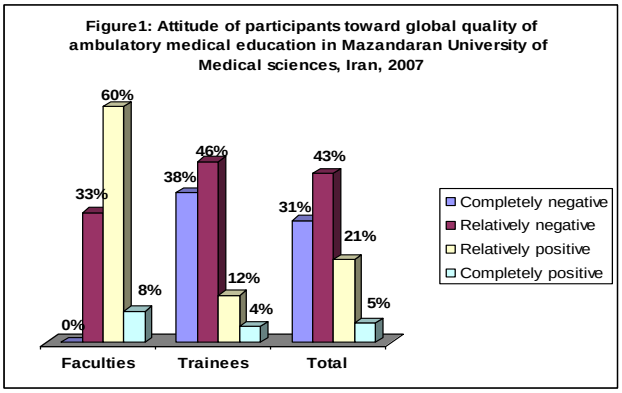
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For definition of categories of attitude toward the quality of the AME, total score of each questionnaire was calculated, then according to cut points of 25, 50 and 75, the attitude was categorized in 4 groups: completely negative, relatively negative, relatively positive, completely positive. Participation in the study was voluntary. Data was analyzed using spss13 soft ware. The methods of descriptive and analytical statistics: T test, ANOVA, correlation coefficient of spearman (r), chi square, (compensatory ratios) (comparison of means) were performed. P value <0.05 was considered significant.

Results

Out of 51 instructors and 205 trainees (residents, interns, students of clerkship), 180 questionnaires were returned (response rate 70%). The respondents included 144 trainees [31 residents (22%), 49 interns (34%), 64 students of clerkship (44%)] and 36 instructors (21 specialists and 15 sub specialists). Eighty five trainees (60%) and 12 instructors (33%) were female. Mean age of the faculties was 43.6±8.7 years and mean duration of academic teaching was 10.6±7.3 (2-30) years. Mean age of trainees was 25±3.6 years.

Opinions of the participants about quality and characteristics of AME at Maz ums are shown, globally and by separation of trainers and trainees (figure 1). As seen majority of our participants (74%) assessed the quality of the AME as unsatisfactory and had negative attitude toward it, completely or relatively, and there was significant (p=0.000) difference between the instructors` and the trainees' attitude toward it. Majority of the trainees (84%) assessed the AME as unsatisfactory but in the opinions of most of the faculties (68%), the quality of the AME was good.



There was significant difference (p=0.000) between the opinions of different levels of the trainees; as 48% of clerkship students and 41% of interns completely negative attitude toward quality of the AME and assessed the quality of it unsatisfactory whereas only 11% of residents had such opinion (P=0.000). Of female trainees, 42% and of males, 29% had negative attitude toward quality of the AME. (P=0.035)

Significant relationship between clinical rotation of the trainees and their opinions about quality of the AME wasn't detected (p=0.091), also there were not significant relationship between opinions of the faculties about the AME and their age, gender and scientific degree (p= 0.12). The trainees` opinions about quality of the AME at 1 month (minor) clinical rotations (ENT, Dermatology, …) and more than 1 month (major) rotations (surgery, Internal medicine, …) were not significantly different. Among major rotations, the trainees assessed quality of the AME at clinics of internal medicine more satisfactory than other rotations (p=0.053). The most relevant items of the questionnaire with overall attitude of the participants toward quality of the AME included: feeling of being helpful for the trainees (r=0.77), independent drug prescription and treatment by the trainees (r=0.709), instruction of rational drug prescription(r=0.699), discussion of differential diagnosis(r=0.69), follow up of patients (r=0.63) supervision of the faculties

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on the trainees' diagnostic and therapeutic activities (r=0.63).

Comparison of the trainees' and the faculties' opinions about items of the quality of the AME is shown in table 1. As it demonstrated in the table, except some items including: environmental condition, number of patients, answering to trainees' questions and presence of sub-specialists faculties in the clinics, there were significant difference between opinions of the faculties and the trainees about the quality of other items. Although almost all instructors believed that they perform effective supervision and discuss about differential diagnosis systematically, and answer the trainees' questions about diagnostic and therapeutic approach to the patients, the majority of the trainees disagreed with it and had opposite opinion (p=0.000). Also majority of the faculties reported enough possibility for independent activities of the trainees in the clinics (history taking, physical examination, drug prescription), whereas most of the trainees had different opinion and assessed such possibility in the AME as inappropriate (p=0.000). About instruction of ambulatory specific skills (outpatient treatment, management at ambulatory setting), although most of the faculties reported these instructions as appropriate, majority of the trainees reported it as inappropriate and insufficient .Comparison of the faculties' opinions about items of quality of the AME, between 1-month clinical rotations and more than 1-month rotations did not show significant difference. Between major rotations there were some significant differences in the trainees' opinions about the quality of AME (table-2)

Table 1: Opinion of the faculties and trainees about items of quality of ambulatory medical education, Mazandaran University of medical sciences, Iran, 2012 (n %)

Item					
		Yes (%)	No (%)		P value
Define educational objectives	Faculty	60	40		0.009
	Trainee	35	65		
Systematic, structured discussion of faculties	Faculty	94	6		0.000
	Trainee	58	42		
Supervision on and correction of trainees activities by faculties	Faculty	100	0		0.000
	Trainee	71	29		
		Inappropriate	**Fair**	**Appropriate**	
Physical environment	Faculty	65	22	13	0.12
	Trainee	46	38	16	
		High	**Fair**	**Low**	
Number of the patients	Faculty	54	43	3	0.79
	Trainee	56	33	12	
Variety of the patients	Faculty	46	47	6	0.003
	Trainee	18	56	26	
Possibility of independent treatment for the trainees	Faculty	22	39	39	0.000
	Trainee	9	19	72	
Possibility of follow up of the patients	Faculty	29	37	34	0.000
	Trainee	8	23	68	
Instruction of management in ambulatory setting	Faculty	46	46	9	0.004
	Trainee	20	44	36	
Instruction of rational drug prescription	Faculty	52	37	11	0.000
	Trainee	14	27	58	
Interest in ambulatory education	Faculty	90	8	2	0.000
	Trainee	29	49	22	
Discussion about differential diagnosis	Faculty	89	8	3	0.000
	Trainee	21	49	29	

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Table 2: Opinion of the trainees about quality of ambulatory education in more than 1 month rotations, Mazandaran University of medical sciences, Iran, 2012 (n %)

Percent of trainees who assessed the item as high					
Item of quality	Gynecology (%)	Internal medicine (%)	Surgery (%)	Pediatrics (%)	P value
Defined educational objectives	58	44	21	20	0.012
Possibility of independent visit for the trainees	44	49	26	24	0.025
Possibility of independent drug prescription for the trainees	17	14	8	5	0.036
Possibility of observation of faculties activities	43	8	14	62	0.029
Instruction of management at ambulatory setting	25	8	30	24	0.000
Supervision and correction of trainees' activities	79	5	50	85	0.008

Discussion:

In this study the overall attitude toward quality of the AME was negative and most of the participant (especially trainees) assessed it as unsatisfactory, these findings are similar to some studies in Iran like: study of Alizadeh et al in which most of trainees believed that existing ambulatory medical teaching isn't useful for their future needs, also Peyvandi et al found similar results, but the finding of Shaigan *et al* were different. Globally in comparison with some studies of developed countries(Prislin *et al*, Wolpaw TM *et al*, Dolmans DH *et al*) , it seems there insufficiency and inadequacy in instruction and learning at ambulatory setting in the country. According to significant difference between opinions of the trainees and faculties about the quality of AME, our results are similar to the study of Qualters *et al* at Illinois and Lubetkin *et al* at Ohio in which faculties had more positive attitude about quality of AME than trainees, but the study of Prislin *et al* at John Hopkins indicated similarity of trainees' and faculties' opinions about AME.

As Clark *et al* at Texas and Ruiz Moral in Spain indicated, student centered approach is critically important in medical education generally and at ambulatory setting specially so according to negative attitude of the trainees toward AME in our study, it's necessary to survey reasons of negative attitude and unsatisfactory assessment of the trainees. Comparison of opinions of different levels of the trainees indicated more negative attitude belonged to junior trainees, as the student of clerkship had the most negative and residents, the most positive attitudes toward the AME; these differences in opinions of different levels of the trainees are similar to findings of Schultz *et al* and probably is explained by lack of involvement and participation of the junior trainees in diagnostic and therapeutic process in the clinic, so designing a plan for participation of all levels of trainees at ambulatory setting is surely essential.

Absence of significant difference in overall opinions of the participants about quality of the AME between 1 month rotations (ENT, dermatology,…) and more than 1 month rotations (surgery, pediatrics, internal medicine, OB Gyn) and between the rotations of each group, indicated general impairment and insufficiency in the outpatient/ ambulatory medical education in our university, and proves the need for a extensive and multidimensional plan for quality improvements of AME.

The study showed convergence of the faculties' and the trainees' opinion about environmental factors in clinics such as: physical environment, equipment facilities, number, and variety of the patients, whereas

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there was significant difference between the opinions about some items including: trainees' independent activities, delivery of faculties' educational tasks and instruction of ambulatory specific skills.About physical environment of the clinics, convergence of opinions is similar to the study of Bowen *et al*, although optimization of this item is laborious, expensive, and time consuming, but according to importance of this factor in the opinions of both the faculties and the trainees, there should be a plan for future.

Duration of visit for each patients at ambulatory setting, as Solomon *et al* indicated these factors are very important for teaching – learning process so some efforts (Usatine *et al*) had focused on fine measurement of such duration with and without presence of the trainees at ambulatory setting, which was documented it consider that duration as one important index of quality at ambulatory clinics in the study of Denton *et al* and Chang *et al*. The study showed that both faculties and trainees assessed the time of visit for each patient as insufficient, so there was not enough time for teaching – learning activities. It seems that problem is related manly to absence of a "case selection" strategy (like the study of Simon *et al*) at our ambulatory setting and laborious therapeutic load on our educational clinics, so it is critically essential to separate educational from therapeutic clinics, designing, and implementation a "case selection" strategy.An important concern in the clinics of teaching (university-affiliated) hospitals is different sample of the patients in these clinics cases that are more complicated compared to public clinics and ambulatory setting out of university. So there is a risk of exposure to a biased sample of the patients which is not similar to the patients in future real work of the trainees. Thus as Albritton *et al*, and Muscovite *et al* indicated, there should be a plan for achievement of the most similar sample of the patients to real situation. Some evidences such as the study of Norris *et al* and Brill *et al* have documented success of such plan for quality improvement of AME. One of such plans may be implementation of ambulatory education at the centers of public health system (out of university).

Identification and clarifying of educational objectives at each ambulatory setting, as Irby *et al* and Nierenberg *et al* have indicated, are important. The study showed although based on opinion of the faculties such educational objectives were identified while in the opinions of the trainees, the objectives were not sharp and clarified, so it seems necessary to identify and clarify of sharp educational objectives and study topics as written items in "log book".

This study as the study of Kernan *et al* and O'Connor *et al* and others, indicated critical importance of independent diagnostic and therapeutic activities at ambulatory setting for the trainees, so this problem should be urgently considered in our settings globally and in some of our clinics (pediatrics, surgery) specially, to assure enough authority for the trainees. It is obvious that independent activity of the trainees will be appropriate and beneficial only if it is supervised by the faculties as mentioned in the study of Masood *et al*, Salerno *et al*, our study indicated insufficiency of such supervision by the faculties, so there is need to organize teaching courses or workshops for the faculties in this issues which its benefits were documented by Roth *et al* and Forjuoh *et al* and by some others (Holmboe ES *et al*).

Rational drug prescription, of course, is one of the most important aspects in ambulatory management of patients, as some evidences such as the study of Burge *et al*, Irby *et al*, Nierenberg *et al* and Kernan *et al*, have

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highlighted this importance. There are some experiences and evidences about benefits of attendance of a teaching pharmacist in ambulatory setting for improvement of trainees' skills in the study of Stebbins *et al*. Many evidences have documented impairment of rational drug prescription in the country (Dehghanzad G. *et al*, Asadi poya), as, in this way, the trainees in our study, reported insufficient teaching of such important skill at ambulatory setting, so there is need to incorporate a regular plan for instruction of rational drug prescription at our teaching clinics. Appropriate effective physician-patient relationship, as many evidences (Kalet *et al*, O'Neill *et al*) have indicated, is essential for achievement of appropriate compliance of patient and success of treatment. There were not evidences of effective instruction of physician-patient relationship at the ambulatory setting in our study, so it seems that instruction of such important skill should be highlighted in our clinics as experience of Sieveres *et al*, Haq *et al*, and Zali *et al*.

About relationship between gender of the trainees and their opinions, the study showed more negative attitude in female trainees toward the quality of AME, which is similar to the study of Wang cheng *et al* and Carrey *et al*. This finding may be explained by lower tolerance or higher educational ideals in female trainees.

However as indicated above based on our study; the most important and correctable challenges for quality improvement of AME is role and function of the faculties in providing possibility of independent activity for trainees, supervision and instruction of ambulatory specific skills in outpatient management. Obviously, the best way for achievement of a good educational function of the faculties is increasing their knowledge and optimizing their attitude toward importance of AME and effective teaching method on it. For knowledge improvement of the faculties, workshops, continues educational program or as the experience of Wilkerson et al, fellowship courses, maybe considered and implemented.

Motivation of instructors is absolutely important in their educational function, as some evidences indicated lack of appropriate educational motivation in our instructors; so there are some evidences about interventions for solving this problem such as: attention to economic aspects of the faculties (Berbano *et al*), implementation of a regular program for assessment function of the faculties with, judgment and feed back (Scott *et al*, Robert *et al*) and use of interested non faculty member teaching physician at ambulatory setting (Fulterson *et al*); although some studies in the country (Mahoori *et al* and Maghisi *et al*) indicated possible resistance of some faculties, which should be managed.

Some evidences created new landscapes for AME evaluation (Wofford JL), evidence based ambulatory medicine(Huang W) and other new views (Pettus MC, Davis D).

Limitation

While this study, may be the most extensive ones about AME in the country but, we are aware of some limitations such as: investigation of quality via opinions, retrospective method of the study, implementation of the study on one university.

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References

Albritton TA, Wagner PJ. Linking cultural competency and community service: a partnership between students, faculty, and the community. Acad Med. 2002 Jul;77(7):738-9.

Alizade M, Sadeghi Hasan Abadi A, Tabatabaii HR, Sharifi B. Opinion of general physician of urban health center about ambulatory medical education. Abtract book of 11 International Geographic Medicine about Ambulatory education, Shiraz, Iran. 116

Asadi poya A. Survey on Knowledge of Shiraz University 's interns about treatment of common cold as the most common ambulatory illness. Abtract book of 11 International Geographic Medicine about Ambulatory education, Shiraz, Iran. 146

Berbano EP, Browning R, Pangaro L, Jackson JL. The impact of the Stanford Faculty Development Program on ambulatory teaching behavior. J Gen Intern Med. 2006 May;21(5):430-4.

Bowen JL, Clark JM, Houston TK, Levine R, Branch W, Clayton CP, Alguire P, Esham R, Boulware DW, Ferenchick G, Kern DE. A national collaboration to disseminate skills for outpatient teaching in internal medicine: program description and preliminary evaluation. Acad Med. 2006 Feb;81(2):193-202.

Bowen JL, Stearns JA, Dohner C, Blackman J, Simpson D. Defining and evaluating quality for ambulatory care educational programs. Acad Med. 1997 Jun;72(6):506-10.

Bowen JL, Irby DM. Assessing quality and costs of education in the ambulatory setting: A review of the literature. Acad Med. 2002 July; 77(7): 621-680

Brill JR, Jackson TC, Stearns MA.Community medicine in action: an integrated, fourth-year urban continuity preceptorship. Acad Med. 2002 Jul;77(7):739.

Burge S, White D, Bajorek E, Bazaldua O, Trevino J, Albright T, et al. Correlates of medication knowledge and adherence: findings from the residency research network of South Texas. Fam Med. 2005 Nov-Dec;37(10):712-8.

Carney PA, Dietrich AJ, Eliassen S, Pipas C, Donahue D. Differences in ambulatory teaching and learning by gender match of preceptors and students. Fam Med. 2000 Oct;32(9):618-23.

Chang SR, Chen YC, Chen KH. Actual time spent estimate--an index profile in management for pediatric outpatient care. Qual Manag Health Care. 2006 Oct-Dec;15(4):237-43.

Clark DL, Melillo A, Wallace D, Pierrel S, Buck DS. A multidisciplinary, learner-centered, student-run clinic for the homeless. Fam Med. 2003 Jun;35(6):394-7.

Crump WJ, Chambers DL, Bolt J. Initial community site development for first-and second-year medical students. Fam Med. 1996;28:634–9.

Davis D, Thomson O'Brien, Freemantle N, Wolf FM, Mazmanian P, Taylor- Vaisey A. Impact of formal continuing medical education: Do conferences, workshops, rounds and other traditional continuing education activities change physician behavior or health care outcomes. JAMA. 1999 Sep; 282(9): 867- 874

Dehghanzad G, Sadeghi hasan abadi A, Alborzi A. Survay on prescription of general practionners. Abtract book of 11 International Geographic Medicine about Ambulatory education, Shiraz, Iran. 170

Delva MD, Schultz KW, Kirby JR, Godwin M. Ambulatory teaching: Do approaches to learning predict the site and preceptor characteristics valued by clerks and residents in the ambulatory setting. BMC med edu 2005; 5: 35

[Downloaded from intjmi.com on 2026-11-22]

Denton GD, Durning SJ, Hemmer PA, Pangaro LN. A time and motion study of the effect of ambulatory medical students on the duration of general internal medicine clinics. Teach Learn Med. 2005 Summer;17(3):285-9.
Dolmans DH, Wolfhagen HA, Essed GG, Scherpbier AJ, Van Der Vleuten CP.Med Educ. Students' perceptions of relationships between some educational variables in the out-patient setting. 2002 Aug;36(8):735-41.
Elnicki DM, Lescisin DA, Case S. Improving the National Board of Medical Examiners internal Medicine Subject Exam for use in clerkship evaluation. J Gen Intern Med. 2002 Jun;17(6):435-40.
Elnicki DM, Kolarik R, Bardella I. Third-year medical students' perceptions of effective teaching behaviors in a multidisciplinary ambulatory clerkship. Acad Med. 2003 Aug;78(8):815-9.
Fitzgibbons JP, Bordley DR, Berkowitz LR, Miller BW, Henderson MC. Redesigning residency education in internal medicine: a position paper from the Association of Program Directors in Internal Medicine. Ann Intern Med. 2006 Jun 20;144(12):920-6
Forjuoh SN, Reis MD, Couchman GR, Symm B, Mason S, O'Banon R. Physician response to written feedback on a medication discrepancy found with their elderly ambulatory patients. J Am Geriatr Soc. 2005 Dec;53(12):2173-7.
Fulkerson PK, Wang-Cheng R. Community-based faculty: motivation and rewards. Fam Med. 1997;29:105–7.
Gjerde CL, Xakellis GC, Levy BT. Skills actively performed during a family medicine community-based preceptorship. Fam Med. 1997;29:21–6.
Gjerde CL, Levy BT, Xakellis GC. Unique learning contributions of a family medicine preceptorship. Fam Med. 1998;30:410–6.
Gjerde CL, Kokotailo P, Olson CA, Hla KM. A weekend program model for faculty development with primary care physicians. Fam Med. 2004 Jan;36 Suppl:S110-4.
Haq C, Grosch M, Carufel-Wert D. Leadership Opportunities with Communities, the Medically Underserved, and Special Populations (LOCUS). Acad Med. 2002 Jul;77(7):740
Harrison RL, MacNab AJ, Duffy DJ, Benton DH. Brighter Smiles: Service learning, inter-professional collaboration and health promotion in a First Nations community. Can J Public Health. 2006 May-Jun; 97(3):237-40
Holmboe ES, Hawkins RE, Huot SJ. Effects of training in direct observation of medical residents' clinical competence: a randomized trial. Ann Intern Med. 2004 Jun 1;140(11):874-81.
Huang W. Ambulatory teaching and evidence based medicine: Applying classroom Knowledge to clinical practice. Fam Med 2005 Feb; 37(2): 87-89
Irby DM, Ramsey PG, Gillmore GM, Schaad D. Characteristics of effective clinical teachers of ambulatory care medicine. Acad Med. 1991; 66(1):54–5.
Kalet A, Pugnaire MP, Cole-Kelly K, Janicik R, Ferrara E, Schwartz MD, Lipkin M Jr, Lazare A. Teaching communication in clinical clerkships: models from the macy initiative in health communications. Acad Med. 2004 Jun;79(6):511-20.
Kernan WN, O'Conner PG. Site accommodation and preceptor behaviors valued by 3rd year students in ambulatory internal medicine clerkship. Teach and Learn in Med 1997; 9(2): 96-102
Kernan WN, O'Connor PG. Site accommodations and preceptor behaviors valued by 3rd-year students in ambulatory internal medicine clerkships. Teach Learn Med. 1997; 9(2):96–102.

[Downloaded from intjmi.com on 2026-11-22]

Kim N, Talwalkar J, Holmboe E. Challenges in ambulatory resident education: medication knowledge in disadvantaged patients. Conn Med. 2006 Oct;70(9):549-57

Lubetkin EI, Krackov SK, Storey-Johnson. The use of questionnaires to assess achievement of course goals in medical students' longitudinal community-based clinical experiences. Acad Med. 1999; 74: 1316–9.

Mahoory K, Sadeghi hasan abadi A, Karimi A, Tabatabaii HR. Opinions of clinical faculties about participation of private physicians in ambulatory education. Abtract book of 11 International Geographic Medicine about Ambulatory education, Shiraz, Iran. 209

Masood J, Wood D, Calleary J, Wiseman O, Lane T, Barua JM. The need for supervised training in urology outpatients: A case for restructuring. BJU Int. 2006 Dec;98(6):1144-5

Mazor KM, Stone SL, Carlin M, Alper E. What do medicine clerkship preceptors do best?

Acad Med. 2002 Aug;77(8):837-40.

McKee MD, Steiner-Grossman P, Burton W, Mulvihill M. Quality of student learning and preceptor productivity in urban community health centers. Fam Med. 1998; 30:108–12.

Mehta BH, Rodis JL, Nahata MC, Bennett MS. Advancing patient care through innovative practice: the Clinical Partners Program. Am J Health Syst Pharm. 2005 Dec 1;62(23):2501-7.

Moghbeni A, Sadeghi hasan abadi A, Jolaii H, Tabatabaii HR. Opinions of nonfaculty specialist physicians about their participation in ambulatory education. Abtract book of 11 International Geographic Medicine about Ambulatory education, Shiraz, Iran. 25

Moskowitz D, Glasco J, Johnson B, Wang G. Students in the community: an interprofessional student-run free clinic. J Interprof Care. 2006 Jun;20(3):254-9.

Nierenberg DW, Eliassen MS, McAllister SB, Reid BP, Pipas CF, Young WW, Ogrinc GS. A web-based system for students to document their experiences within six core competency domains during all clinical clerkships. Acad Med. 2007 Jan;82(1):51-73.

Norris TE, House P, Schaad D, Mas J, Kelday JM. Student providers aspiring to rural and underserved experiences at the University of Washington: promoting team practice among the health care professions. Acad Med. 2003 Dec;78(12):1211-6.

O'Neill BJ, Wyness MA. Student voices on an interprofessional course. Med Teach. 2005 Aug;27(5):433-8.

Pettus MC. Implementing a medicine-spirituality curriculum in a community-based internal medicine residency program. Acad Med. 2002 Jul;77(7):745.

Peyvandi A, Nazari A, Madah S. Opinion of faculties and medical students of Semnan University of medical sciences about ambulatory medical education. Abtract book of 11 International Geographic Medicine about Ambulatory education, Shiraz, Iran. 84

Prislin MD, Fitzpatrick C, Giglio M, Lie D, Radecki S. Initial experience with a multi-station objective structured teaching skills evaluation. Acad Med. 1998 Oct;73(10):1116-8.

Prislin MD, Feighny KM, Stearns JA, Hood J, Arnold L, Erney S, Johnson L. What students say about learning and teaching in longitudinal ambulatory primary care clerkships: a multi-institutional study. Acad Med. 1998 Jun; 73(6):680-7.

Qualters DM, Regan MB, O'Brien MC, Stone SL. Comparing ambulatory preceptors' and students' perceptions of educational planning. J Gen Intern Med. 1999 Mar;14(3):196-9.

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Roberts KB, Devries JM. APA/HRSA National Faculty Development Scholars Program: community-based teaching track. Ambul Pediatr. 2004 Jan-Feb;4(1 Suppl):92-7.

Roth CS, Fagan MJ, Griffith JM, Nelson D, Zhao Y. Evaluation of a worksheet to structure teaching and learning outpatient internal medicine. Med Teach. 2003 May;25(3):296-301.

Ruiz Moral R, Munoz Alamo M, Alba Jurado M, Perula de Torres L. Effectiveness of a learner centered training programme for primary care physician in using patient – centered consultation style. Family practice, Oxford University Press 2001; 18 (1): 60 – 64

Salerno SM, Jackson JL, O'Malley PG. Interactive faculty development seminars improve the quality of written feedback in ambulatory teaching. J Gen Intern Med. 2003 Oct;18(10):831-4.

Sauer BL. Student-directed learning in a community geriatrics advanced pharmacy practice experience. Am J Pharm Educ. 2006 Jun 15;70(3):54.

Schultz KW, Kirby J, Delva D, Godwin M, Verma S, Birtwhistle R, Knapper C, Seguin R. Medical Students' and Residents' preferred site characteristics and preceptor behaviors for learning in the ambulatory setting: a cross-sectional survey. BMC Med Educ. 2004 Aug 6; 4:12

Scott I, Sazegar P. Why community physicians teach students (or not): barriers and opportunities for preceptor recruitment. Med Teach. 2006 Sep;28(6):563-5.

Shaigan B, Ahmadi A. Opinions of medical students about efficacy of community oriented ambulatory medical education. Abtract book of 11 International Geographic Medicine about Ambulatory education, Shiraz, Iran. 37

Sievers B, Wolf S. Achieving clinical nurse specialist competencies and outcomes through interdisciplinary education. Clin Nurse Spec. 2006 Mar-Apr;20(2):75-80.

Simon SR, Davis D, Peters AS, Skeff KM, Fletcher RH. How do precepting physicians select patients for teaching medical students in the ambulatory primary care setting? J Gen Intern Med. 2003 Sep;18(9):730-5

Solomon DJ, Rosebraugh CJ, Speer AJ, Holden MD, Szauter KM. The impact of the location and structure of an ambulatory rotation on cognitive knowledge and performance. Eval Health Prof. 1999 Jun;22(2):197-207

Stebbins MR, Kaufman DJ, Lipton HL. The PRICE clinic for low-income elderly: a managed care model for implementing pharmacist-directed services. J Manag Care Pharm. 2005 May;11(4):333-41.

Usatine RP, Tremoulet PT, Irby D. Time-efficient preceptors in ambulatory care settings. Acad Med. 2000 Jun;75(6):639-42

Wang-Cheng RM, Fulkerson PK, Barnas GP, Lawrence SL. Effect of student and preceptor gender on clinical grades in an ambulatory care clerkship. Acad Med. 1995 Apr;70(4):324-6.

Whitcomb ME. Ambulatory Based clinical Education: Flexner revisited. From the editor. Acad med. 2006 Feb; 81(2): 105-6

Wilkerson L, Uijtdehaage S, Relan A. Increasing the pool of educational leaders for UCLA. Acad Med. 2006 Nov;81(11):954-8.

Wofford JL, Singh S. Exploring the educational value of clinical vignettes from the Society of General Internal Medicine national meeting in the internal medicine clerkship: a pilot study. J Gen Intern Med. 2006 Nov; 21(11):1195-7.

Wolpaw TM, Wolpaw DR, Papp KK. SNAPPS: a learner-centered model for

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outpatient education. Acad Med. 2003 Sep; 78(9):893-8.
Zali MR, Mahdavi MS, Nobakht A. Norozi A, Akbari A. Causes of unsatisfaction from the physicians. Abtract book of 11 International Geographic Medicine about Ambulatory education, Shiraz, Iran. 105

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