

Mentoring Clinical-Year Medical Students: Factors Contributing to Effective Mentoring

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Journal of Medical Education and
Curricular Development
Volume 5: 1–6
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DOI: 10.1177/2382120518757717



ABSTRACT:

THEORY: Academic mentoring is an effective method of enhancing undergraduate medical student academic performance, research productivity, career planning, and overall satisfaction.

HYPOTHESES: This study investigates the relationship between mentor characteristics and mentee academic performance, with an emphasis on identifying students who need special support.

METHODS: A cross-sectional study was conducted among fourth-year medical students at King Abdulaziz University Faculty of Medicine undertaking the clinical skills module (CSM) rotation. Mentors included senior and junior faculty members from the Department of Internal Medicine and the Department of Family Medicine. King Abdulaziz University Faculty of Medicine assigned 1 mentor for every 10 medical students. We organized our mentoring program in the following format: (1) an initial group meeting (mentor with all 10 medical students) and (2) subsequent one-on-one meetings (mentor with each mentee alone). We assessed mentor characteristics, student academic performance and satisfaction, and the rate of mentees referred for special support.

RESULTS: A total of 184 students completed the CSM rotation. Among these, 90 students responded to the preprogram survey, with 83% reporting that mentoring was important to them. Group meetings and one-on-one meetings were attended by 60% and 49% of all students, respectively. The most frequent type of support required by the participating students was psychological support (12% of mentees). Participation in the mentoring program had no significant effect on student academic performance. Mentor seniority ($P = .024$) and motivation ($P = .002$) were significantly associated with the rate of student referral for special support.

CONCLUSIONS: This study demonstrated that academic mentoring can be effective in enhancing student outcomes and promoting special support for students. Moreover, mentor and mentee motivation were found to be essential elements of a successful mentoring program.

KEYWORDS: Mentoring, medical students, student support, Saudi Arabia, psychological support

RECEIVED: August 16, 2017. **ACCEPTED:** January 17, 2018.

TYPE: Original Research

FUNDING: The author(s) received no financial support for the research, authorship, and/or publication of this article.

DECLARATION OF CONFLICTING INTERESTS: The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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Introduction

As future doctors, medical students are expected to acquire expert medical knowledge and skills and provide appropriate patient care with a high degree of confidence. Medical school is associated with many challenges with the potential for both positive and negative impacts on student performance.^{1–3} In addition to the vast amount of knowledge and skills students are expected to acquire during training, career planning is a significant challenge for medical students near graduation or shortly thereafter.^{1–3} Together, these factors can be quite stressful for medical students, and it is important to provide guidance and support to help students navigate these challenges. There is increasing consensus among medical educators regarding the need to provide adequate student mentorship and support.^{1,4–6}

Mentoring refers to the relationship between a less experienced individual (mentee) and a more experienced individual (mentor) who can offer guidance and trusted advice. In medical schools,

mentoring is an informal partnership between faculty and students.^{3,7} Medical schools worldwide have established both formal and informal mentoring programs for medical students.^{1–6,8} Much anecdotal evidence and a small number of published studies demonstrate the positive effects of mentoring on communication, education, role modeling, and career advising.^{3–6,8} Although previous surveys have indicated that 90% to 96% of medical students rated mentoring as important or very important, only one-third to one-half of students reported having actual faculty members as mentors.^{2,5,6} Mentoring or counseling medical students is recognized as a basic requirement for medical school accreditation in national and international standards.^{9,10} However, in some countries, only 30% to 60% of medical colleges offer formal mentoring programs.^{6,10} Some students seek mentors or advisors in medical schools that have not established formal mentoring programs.^{4,6} Compared with male students, female students more commonly report a lack of mentors.²



King Abdulaziz University Faculty of Medicine (KAU-FOM) is a leading medical school in Saudi Arabia and is one of the largest medical schools in the Arabian Gulf region. Although a formal structured mentoring program is available for medical students during their foundational training years (basic sciences), such programs have yet to be established for students as they progress through their clinical years. Many students seek guidance from informal mentors, such as more senior medical students, residents, or college faculty. However, medical students face unique challenges during the transition from their initial campus-based education to hospital-based and community-based training in their clinical years.

The purpose of this study was to identify characteristics of mentors and mentees that contribute to enhanced student outcomes. Specifically, we analyzed academic performance, student satisfaction following the mentoring program, and the referral rate of students experiencing difficulties to the student support unit. Data were obtained from fourth-year medical students at KAU-FOM who participated in the mentoring program.

Methods

Approval from the KAU-FOM ethical research committee was obtained. This study was also supported by the KAU-FOM administration. In this study, “mentors” are defined as academic faculty members who provide academic support to medical students and can simultaneously identify students who need additional social, psychological, health, and financial support. Mentors can refer these students to the student support unit at KAU-FOM, which provides special services such as psychological or health support. “Mentees” in this study are defined as fourth-year female students during the 2014–2015 academic year who were involved in the mentoring program during the study period.

Study design

This study used a cross-sectional design with data collected at different time points. Student participants were fourth-year female medical students from KAU-FOM who were enrolled during the second semester of the 2014–2015 academic year ($n=189$ students) from January to June 2015. Each faculty mentor was assigned 10 students using an Excel-based random selection process.

The study sample is restricted to female KAU-FOM students because a foundational year mentoring program has been in place since 2012 for female students only, with frequent evaluation of the early mentoring program since then. The program has not been well developed for the male student population. The KAU-FOM has separate curricular structures for male and female students.

Logistical challenges prevented us from including male students in the study, in particular, fourth-year clinical rotations differ for male and female students. Female students are

enrolled in the clinical skills module (CSM), which includes training in internal medicine and general surgery; in contrast, male students are enrolled in other rotations including family medicine, ENT, and ophthalmology. Therefore, it is challenging to directly compare learning outcomes, such as examination results for different courses, between sexes.

Prior to implementing the clinical-year mentoring program, an online survey was administered to assess student perceptions of mentoring during different academic years. The survey was sent to all female fourth-year students; participation was voluntary. A coordinator was appointed in the Vice Dean's clinical affairs office to facilitate data collection and communication between mentors and mentees.

The mentors were provided with information on the mentees' complete academic performance (from time of matriculation at KAU-FOM to the most recent academic performance data available). Orientation meetings were held with the mentoring committee and leaders from each group of student mentees to plan and arrange communication between mentee groups and their mentors.

Mentor characteristics

Students were assigned to one of 19 female faculty mentors out of the 22 total female faculty members in the Departments of Medicine and Family Medicine. Eleven mentors were from the Department of Internal Medicine (including 6 senior members with at least 10 years of teaching experience and 5 junior members with 5 years or less), and 8 mentors were from the Department of Family Medicine (6 senior members and 2 junior members). Three female faculty members from the Department of Family Medicine and one from the Department of Medicine were not included in the program because they were unavailable during the study.

A preparatory 1-day training workshop for all participating mentors was conducted by an expert mentoring trainer from the Medical Education Department, with the purpose of orienting the mentors to the mentoring program. The course included short lectures, interactive discussion, role-playing for mentors and mentees based on real-life stories from KAU-FOM and small-group discussions of how to address students experiencing difficulties.

The mentors were classified into 2 groups based on their responses to a verbal survey during the training course on the importance and effectiveness of mentoring and their interest in participating in the program. Mentors were classified as interested mentors if they agreed or strongly agreed that mentoring is important, agreed that mentoring is effective, and responded with interest in being involved in the mentoring program. In addition, student feedback was obtained about each mentor's level of motivation and interest during mentoring meetings. The mentees were not informed of the mentors' interest survey results. Student feedback indicated several characteristics of

Table 1. Student perceptions of the importance of mentoring: frequency and percent.

	NOT IMPORTANT "1"	SLIGHTLY IMPORTANT "2"	MODERATELY IMPORTANT "3"	IMPORTANT "4"	VERY IMPORTANT "5"	MEAN
Importance of mentoring	7 (7.95%)	7 (7.95%)	24 (27.27%)	25 (28.41%)	25 (28.41%)	3.61
Importance of mentoring: academic guidance	7 (7.87%)	9 (10.11%)	30 (33.71%)	16 (17.98%)	27 (30.34%)	3.53
Importance of mentoring: social and psychological support	11 (12.36%)	8 (8.99%)	25 (28.09%)	8 (20.22%)	27 (30.34%)	3.47
Importance of mentoring: career planning	15 (16.85%)	11 (12.36%)	24 (26.97%)	22 (24.72%)	17 (19.10%)	3.17

motivated mentors, including attention to students' academic, health and social problems, ease of accessibility, effective communication with the mentees, respect for mentee opinions, and listening skills.

Each mentor was responsible for 10 students. The program was organized with an initial group meeting between the mentor and all 10 students with subsequent one-on-one meetings held separately. The mentors were asked to complete special forms for the group meeting and the one-on-one meetings. The group meeting aimed to introduce and open communication channels between the mentors and the mentees. In those meetings, the participants agreed on the preferred communication methods and optimal time for mentoring meetings. In addition, during the group meeting, the mentors completed forms on student feedback regarding the teaching environment at KAU-FOM, the availability of educational facilities and resources, and student participation in college extracurricular activities. The one-on-one meetings focused on academic advising, career planning, and discussions of student social and educational difficulties. One-on-one meetings also allowed the mentor and mentee to discuss and determine whether the mentee needed a referral for special support.

Student support unit. The student support unit was established by the KAU-FOM to provide various types of student support, including psychological, health and medical, talent, research interest, financial, and social support, among others. This unit has access to the facilities and academic departments of the KAU-FOM and access to administration personnel to ensure that support is offered to students as needed and in a confidential manner. A major role for the unit is to support students experiencing difficulties and problems affecting their academic performance. A clear follow-up plan for these students is also implemented.

By the end of the semester, all mentoring meeting forms were collected.

An additional online postprogram survey was used to obtain student feedback about the program, student satisfaction regarding their academic performance, and each mentor's interest in the program.

Data analysis

SPSS IBM 20 was used for the statistical analysis. Descriptive statistics were used to examine and synthesize trends in the data. Comparisons of means and proportions were conducted using *t* tests and χ^2 tests.

Results

The total number of students in the fourth-year cohort for the year 2014–2015 was 189. Four students withdrew from the rotation for various reasons, and 185 students completed the rotation. Seven students were attending the CSM course for the second time after previously failing the course.

Most of the students were 22 years old ($n=170$ students), with the exception of 15 students who were 1 year older or younger.

Preprogram survey

Ninety students (49%) who attended the clinical skills course completed a voluntary preprogram survey. Among the respondents, 73% reported attending all mentoring meetings during their foundational years, whereas 14% did not attend any meetings. The remaining 13% indicated that their participation in mentoring meetings was irregular; 83% of the students indicated that mentoring was important. Students ranked academic guidance as the most important aspect of mentoring, followed by social and psychological support and then career planning (see Table 1). In terms of the students' preferences for type of mentor, there was a relatively even distribution of responses, including senior faculty (27%), junior faculty (21%), residents (27%), and senior medical students or interns (25%). Most students indicated that this preference was due to the level of experience of senior faculty members or the similar age and relatability of medical residents. Students had a variety of suggestions for mentoring meeting frequencies, with most preferring monthly meetings (51%), followed by once per academic semester (38%) and weekly (12%).

Results of mentoring meeting activities

In total, 61% of the students attended group meetings with the mentors, and approximately 49% completed all the one-on-one

Table 2. Distribution of students among mentors according to mentor characteristics.

CATEGORY	TYPE OF MENTOR	NO. OF STUDENTS, %
Mentor level	Senior	129 (69.8%)
	Junior	56 (30.27%)
Mentor department	Internal medicine	108 (58.4%)
	Family medicine	77 (41.6%)
Mentor is motivated and interested in mentoring	Yes	99 (53.5%)
	No	86 (46.48%)

meetings with their mentors. Most students (95%) who attended the one-on-one meetings also attended the group meetings. The distribution of students by mentor type (senior or junior faculty), mentor department, and perceptions of mentor motivation level was not significantly different. Table 2 shows the distribution of mentor assignments.

Mentor characteristics and mentoring meeting attendance

Ten (52.6%) mentors were categorized as motivated for mentoring based on the mentors' verbal survey during the preparatory workshop and the students' postprogram online survey. Senior mentors were enriched within the motivated group, with 8 senior and 2 junior faculty classified as motivated. In total, 99 students were among the group of motivated mentors, and 90 students were with nonmotivated mentors ($P = .001$ by a χ^2 test).

Group meeting attendance was significantly increased for students with senior and motivated mentors compared with junior and less motivated mentors (86 attendees for senior versus 26 for junior mentors, $P = .014$; 88 for motivated versus 24 for nonmotivated mentors, $P < .001$). Similarly, one-on-one meetings were more frequently attended by students with senior and motivated mentors compared with junior and less motivated mentors (66 for seniors versus 25 for juniors, not statistically significant, $P = .40$; 76 for motivated versus 15 for nonmotivated, $P < .001$).

Student exam results

Students who attended group meetings had higher final exam performance scores for both the MCQ course (attended group meeting = 11.12 versus did not attend group meeting = 10.76, $P = .35$) and clinical examinations (attended group meeting = 20.33 versus did not attend group meeting = 19.91, $P = .42$) but these differences did not reach statistical significance. In addition, we analyzed the results of the 7 returning students who previously failed the course. The performance of these students did not significantly differ compared with that of students attending the course for the first time (10.7 versus 10.9,

$P = .30$ for MCQ; 18.2 versus 20.2, $P = .40$ for OSCE). Nearly all the students who attended the one-on-one mentoring meetings responded that their current course mostly met the educational objectives; most rated the subject content easy to acceptable. Most of the students reported satisfaction with their academic performance (75 of the 90 [83%] students who participated in the meetings). Among responding students, performance satisfaction did not correlate with any mentor characteristics.

A total of 25 (13.2%) students reported needing support. Among the 90 students who attended mentoring activities, the most common types of requested support were psychological (12%) and talent and creativity (11%).

Mentor characteristics such as mentor motivation and interest in mentoring ($P = .024$) and seniority ($P = .002$) correlated with the ability to identify students needing referral to the student support unit. Among students who were actively involved in the mentoring program, mentor characteristics did not significantly associate with student performance in the MCQ or OSCE courses. However, the total final CSM mark was elevated for students of senior mentors compared with that for students with junior mentors, and a similar increase was found for students of motivated mentors compared with that for students with less motivated mentors (39.3 versus 38.6, $P = .30$ and 39.7 versus 38.4, $P = .06$, respectively).

Students provided multiple reasons for not attending mentoring meetings, including lack of interest, belief that mentoring would not be helpful, lack of time to meet with the mentor, or dislike of the assigned mentor. Of the students who participated in the program, 50% were happy with their current mentor; the remaining 50% reported that they wanted a more senior faculty member.

Discussion

The data from our preprogram survey demonstrated that most of the fourth-year medical students who responded to the survey valued academic mentoring. In addition, students thought that academic mentoring would be effective in supporting their academic performance and psychological needs. This finding is important, and previous data on mentoring have shown similar results.^{1,4-6,11} Although ours was a short-term study that lacked

the ability to analyze outcomes of career planning advice, most students in our cohort thought that academic mentoring is useful for guiding career planning. This is a meaningful finding, as the students in the study cohort were fourth-year medical students with 2 remaining years of medical school and 1 additional year of internship training. These results may indicate that academic mentoring can be of great value as medical students approach graduation and emphasizes that final year students need mentoring that focuses on career planning in addition to academic support.

Most of our students thought that mentoring will help them in career planning. Previous studies on mentoring have revealed benefits for career planning.^{1,3,5,6,12-14}

Another important finding of the preprogram student survey was the preferred experience level of the mentor. Senior faculty and internal medicine residents in the training program were the most preferred mentor types. Several previous investigations have demonstrated the effectiveness of senior faculty members in formal mentoring programs.¹⁵⁻¹⁷ Our program also demonstrated that senior mentors were most effective, based on the mentoring meeting data. Similarly, our study indicated that senior expert mentors were more likely to recognize students in need of referral to the special support unit. The effectiveness of residents, junior academic trainees, and peer mentoring for medical students has also been revealed by several previous data sets.¹⁸⁻²¹ The effectiveness of residents as mentors may be attributed to the fact that resident mentors present fewer barriers to students compared with faculty.

Although all the mentors who were actively involved in the program participated in a preprogram training workshop, an important finding of this study is that mentor interest and motivation was an important predictor of effective mentoring. Mentor motivation had a significant impact on meeting activities, student feedback, referral for special support, and, to some extent, student academic performance in the short term. In addition to the importance of mentor training, these findings indicate that mentor motivation and support are essential factors for a successful mentoring program. Support can take different forms, such as financial assistance, reduction in academic load, recognition, and nomination along with other support methods according to culture and the institution.^{4,16,22-24} All the mentors selected for our study were women in an effort to reduce potential bias resulting from social and cultural barriers that might confound the results by including both male and female mentors.

Students should be instructed about the importance and benefits of mentoring programs before starting a structured mentoring meeting. We sought to raise awareness of our mentoring program for student cohorts in the preparatory phase. However, student participation in our program was voluntarily, and approximately one-third of the students did not actively participate in mentoring meetings. Additional important factors for mentoring success include student motivation

and the allocation of suitable amounts of flexible time for mentoring activities.^{12,21,24} Previous reports on mentoring have indicated that 20% to 50% of medical students have mentors.^{6,18,25} It is essential to determine the various types of student needs and motivations before initiating an obligatory mentoring program for all clinical-year students. In our cohort, students who participated in mentoring showed enhanced academic performance, although this increase was not significant. However, previous reports have also indicated that high-achieving or "A" students were more likely to be actively involved in mentoring.⁵

Our students suggested various mentoring meeting frequencies ranging from a few per year to much more frequent meetings. Several previous reports have also documented mentoring meeting frequencies ranging from 2 to 40 meetings per year.^{2,5,26}

A small number of students were referred to the student support unit in the course of our study, similar to previous reports.^{27,28}

Academic and social pressure in medical school may trigger adverse psychological effects or psychiatric illness. In this study, psychiatric support was the most required support type among the cohort. Our findings were obtained over a short time period, and we are encouraged by the initial results because mentoring is a long, dynamic process. We expect a long-term mentoring program to reveal additional positive impacts for mentoring.

There are some limitations to this study:

1. No male students were involved. As such, we could not examine the sex-based effects of the program. This is especially important because previous studies on Saudi medical students have revealed sex-dependent differences in learning styles.^{29,30} Nonetheless, there are several reasons for including only female students in this study, as described in the "Methods" section.
2. Our program's academic performance was assessed over a short period of time, whereas mentoring is intended to be a long-term relationship with a durable effect on academic performance and career planning.
3. Mentor selection was not optional for students; this was expected to give better outcomes but could have had some effect on the findings.

Conclusions

Our clinical-year students value academic mentoring and expect that it will enhance their academic performance and career planning. Support from administrative units and personnel (dean, vice deans, and student support unit) is essential for the success of academic mentoring. Mentor motivation and experience are essential for effective mentoring. The sustainability of the mentoring program requires continued motivation of the staff running the program. Our work may be beneficial

for the entire KAU-FOM administration if mentoring programs for medical students in their clinical years are implemented in the future.

Author Contributions

HIF participated in designing the study, analysis of the result, writing the article, editing of the manuscript and final approval of the published version.

YSP participated in designing the study, analysis of the result, writing the article and editing of the manuscript.

JF participated in designing the study, critical review of the manuscript, and editing the manuscript.

AT participated in designing the study critical review and editing of the manuscript.

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