

Changing opinions about research by Saudi medical students

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Objective: The objective of this study was to investigate and compare the opinions and attitudes of medical students toward medical research in five Saudi universities and examine the changes observed in these opinions and attitudes in one of these universities over a period of time.

Methods: This is a cross-sectional study conducted among medical students in five Saudi universities. This study was based on a survey undertaken in 2015. The survey consisted of five questions inquiring about the opinions and attitudes of medical students toward medical research. The same survey was carried out 8 years earlier in one of these universities (King Abdulaziz University [KAU]), and the results obtained during the two periods (2007 and 2015) were compared.

Results: A convenient sample of 924 students was selected from five Saudi universities. Ninety-five (10.3%) of the medical students were not aware of the usefulness and importance scientific research will have on their future careers. A total of 409 (44.3%) stated that they had no knowledge on how to conduct scientific research. On the other hand, a vast majority of medical students (98.1%) expressed a willingness and interest to participate in scientific research if provided with an opportunity. The percentage of students from KAU strongly agreeing to participate in research rose from 33.1% in 2007 to 81.5% in 2015 ($P=0.001$). Of all the students surveyed, 431 (46.6%) had participated in scientific research as undergraduates.

Conclusion: Most students in five Saudi universities expressed enthusiasm for participating in a research project, but only a few of them had sufficient knowledge on basic research. There was considerable improvement in students' perception of research in KAU when comparing their responses in 2007 to those in 2015.

Keywords: Saudi Arabia, attitude, medical students, research

Introduction

Research is an essential factor in the progress and prosperity of any nation. For a long time, it had been apparent that Arab countries were lagging behind in the field of medical research. A study revealed that published research from institutions in the Arab world were few, and the majority of them were of poor quality.¹ An important solution to this problem is to encourage undergraduate students to take part in research projects. A study showed that research activity of medical students in Germany had positively influenced the publication output of the medical faculties.²

Additionally, student involvement in research increases the number of future physician-scientists.^{3,4} For these reasons, many scientists and researchers suggest providing medical students with courses and workshops in research methodologies and manuscript writing.^{5,6}

In this study, we aimed to investigate the perceptions and attitudes of medical students toward medical research, using a simple survey. The medical students at King

Abdulaziz University (KAU) participated in this survey and the survey was carried out in 2007 and repeated in 2015. The same survey was also carried out in four other Saudi universities in 2015.

Materials and methods

This is a cross-sectional study and students from five Saudi universities participated in the study: (KAU, Jeddah; King Saud University [KSU], Riyadh; King Saud bin Abdulaziz University for Health Sciences [KSAU-HS], Riyadh; Alfaisal University, Riyadh; and Imam Muhammad ibn Saud Islamic University, Riyadh). These universities were selected as they were located in the largest two cities in Saudi Arabia. This study was approved by the ethics committee of King Abdulah International Medical Research Center.

Only KAU students participated twice in the survey (in 2007 and 2015). The second survey was performed in March 2015. Verbal consent was obtained from the participants. Students from 1st-year class to 5th-year class participated in the study. A hardcopy questionnaire was used in the survey. Statistical analysis was done by Statistical Package for Social Sciences version 17 (SPSS Inc., Chicago, IL, USA). Data obtained were tabulated and analyzed using chi-square statistics for categorical variables. Differences were considered to be statistically significant at $P < 0.05$.

The survey included the following five questions: 1) whether the student was aware of the usefulness and importance that scientific research will have on his or her future career; 2) whether the student had knowledge on how to conduct scientific research; 3) whether or not the student would agree to participate in scientific research if provided with an opportunity; 4) whether or not the students had ever conducted scientific research during their undergraduate education; and 5) whether or not the university to which the students belonged to had a research club or a day dedicated to scientific research.

Results

A sample of 924 medical students from five different Saudi universities was included in the study: KAU, 233 students; KSAU-HS, 140 students; KSU, 108 students; Alfaisal University, 124 students; and Imam University, 150 students.

We used the same questionnaire that was used in 2007 at KAU (169 students). Of the entire group surveyed, 829 (89.7%) were aware of the usefulness that research will have on their future career. The highest awareness, according to Question 1 (Table 1), was seen in KAU 2015 (97.9%) as compared to other universities (Table 1). Thirty-six participants (24%) from Imam University were not aware of the importance of research, which was statistically significant (P -value < 0.0001).

Table 1 Overall survey responses

Questions	Answer	KAU 2007	KAU 2015	KSAU-HS	KSU	Alfaisal University	Imam University	Total
Sample size	–	169	233	140	108	124	150	924
1) I am aware of the usefulness and importance of scientific research for my future career	Yes, n (%)	142 (84%)	228 (97.9%) [§]	126 (90%)	100 (92.6%)	119 (96%)	114 (76%) [#]	829 (89.7%)
	No, n (%)	27 (16%)	5 (2.1%) [§]	14 (10%)	8 (7.4%)	5 (4%)	36 (24%) [#]	95 (10.3%)
2) I have knowledge of ways of conducting scientific research	Yes, n (%)	42 (24.9%) [#]	162 (69.5%)	67 (47.9%)	92 (85.2%) [§]	94 (75.8%)	58 (38.7%)	515 (55.7%)
	No, n (%)	127 (75.1%) [#]	71 (30.5%)	73 (52.1%)	16 (14.8%) [§]	30 (24.2%)	92 (61.3%)	409 (44.3%)
3) I would participate in research if given the opportunity	Strongly agree, n (%)	56 (33.1%)	190 (81.5%) [§]	52 (37.1%)	31 (28.7%)	56 (45.2%)	73 (48.7%)	458 (49.6%)
	Agree, n (%)	49 (29%)	34 (14.6%) [§]	39 (27.9%)	35 (32.4%)	37 (29.8%)	33 (22%)	227 (24.6%)
	I will think about it, n (%)	59 (34.9%)	7 (3%) [§]	46 (32.9%)	40 (37%)	29 (23.4%)	40 (26.7%)	221 (23.9%)
	I do not agree, n (%)	5 (3%)	2 (0.9%) [§]	3 (2.1%)	2 (1.9%)	2 (1.6%)	4 (2.7%)	18 (1.9%)
4) I have participated in research as an undergraduate	Yes, n (%)	46 (27.2%) [#]	132 (56.7%)	53 (37.9%)	81 (75%) [§]	77 (62.1%)	42 (28%) [#]	431 (46.6%)
	No, n (%)	123 (72.8%) [#]	101 (43.3%)	87 (62.1%)	27 (25%) [§]	47 (37.9%)	108 (72%) [#]	493 (53.4%)
5) Is there a club for research or a day dedicated to research at your university?	Yes, n (%)	– [*]	97 (41.6%)	112 (80%) [§]	47 (43.5%)	93 (75%)	2 (1.3%) [#]	351 (46.5%)
	No, n (%)	– [*]	136 (58.4%)	1 (0.7%) [§]	5 (4.6%)	10 (8.1%)	46 (30.7%) [#]	198 (26.2%)
	I do not know, n (%)	– [*]	0 (0%)	27 (19.3%) [§]	56 (51.9%)	21 (16.9%)	102 (68%) [#]	206 (27.3%)

Notes: ^{*}This question was not asked in the survey carried out in 2007 (P -value < 0.0001 between all the comparisons between the universities); [§]most favorable answers among other universities; [#]least favorable answers among other universities.

Abbreviations: KAU, King Abdulaziz University (Jeddah); KSU, King Saud University (Riyadh); KSAU-HS, King Saud bin Abdulaziz University for Health Sciences (Riyadh).

Five hundred and fifteen (55.7%) state that they have knowledge of how to conduct research, while KSU students had a higher percentage (85.2%) among the group as compared to KAU (2007) (24.9%; $P<0.0001$). A total of 685 (74.1%) participants reported that they would participate in research if given an opportunity. KAU students surveyed in 2015 scored the highest for the aforementioned question (96.1%; $P<0.0001$).

Of the entire group surveyed, less than half (431, 46.6%) of the students participated in research as undergraduates. The highest proportions of students (75%) involved in research were from KSU. KAU (2007) and Imam University had the lowest percentage of student participation (46 [27.2%] and 42 [28%]), respectively ($P<0.0001$). A total of 351 students (46.5%) in our sample stated that their university had a research club and/or research day activity (with the highest score seen in KSAU-HS [80%]) ($P<0.0001$) (Question 5, Table 1).

On the other hand, 206 (27.3%) students were not aware of the existence of any such activity in their university. On cross-tabulating the previous responses of the entire group on research and knowledge of conducting research, we found that 88 (20.4%) of the students who did participate in research indicated that they did not have knowledge on how to conduct research (Table 2).

On comparing the responses of KAU medical students in 2015 to those in 2007, we found significant improvements in their responses to all five questions ($P<0.0001$) (Table 1; Figure 1).

Table 2 Percentage of students who did research during their undergraduate program but who do not think that they have enough knowledge (P -value <0.0001)

Question	Have you ever conducted scientific research during your undergraduate program?			
	Yes	No	Total	
Do you have knowledge of how to conduct scientific research?	Yes	343 (79.6%)	172 (34.9%)	515 (55.7%)
	No	88 (20.4%)	321 (65.1%)	409 (44.3%)
	Total	431 (100.0%)	493 (100.0%)	924 (100.0%)

Discussion

We found out that the overall participation of Saudi Arabia students in research is good but it needs more improvement. Different universities we surveyed showed different results.

In KAU (surveyed twice in 2007 and 2015), all the aspects surveyed showed positive results. Most students showed enthusiasm to participate in a research project; however, fewer had knowledge about basic research skills. Less than half of the students stated that they had been involved in an undergraduate research project. These responses are almost similar to the responses obtained in previous surveys done in Saudi Arabia.⁷⁻⁹ The main reason for minor differences might be due to different word phrasing, different universities, and various medical student levels.

Most students appreciated the importance of being involved in research and publishing their work, which would have a great impact on their future careers. It was evident that there had been a great improvement in students' perceptions

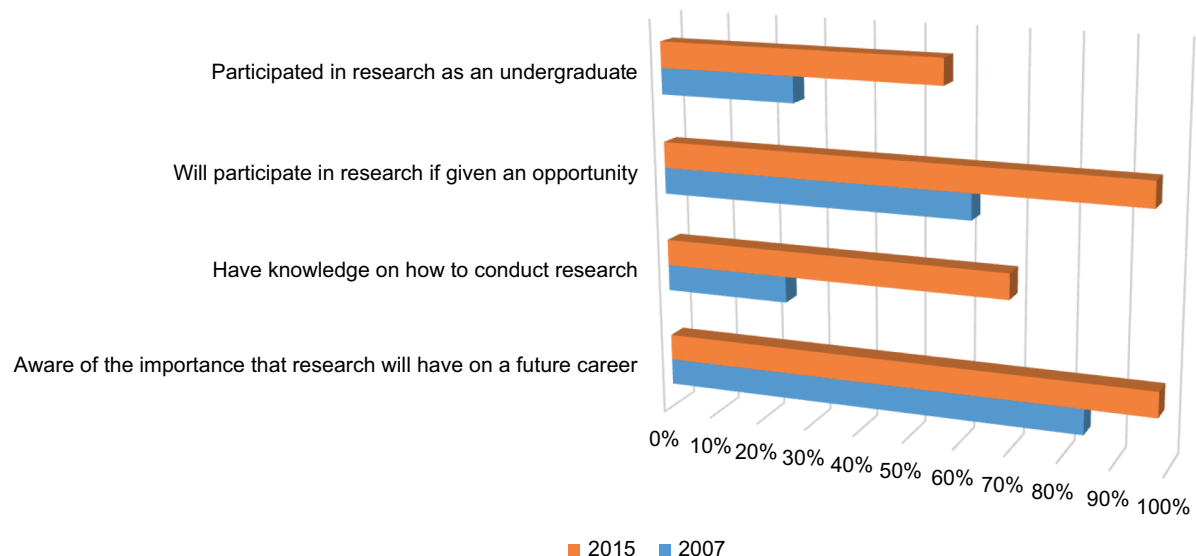


Figure 1 Comparison between the responses of medical students between years 2007 and 2015. All comparisons showed P -value <0.0001 .

about research in KAU over the years. Here, the percentage of students who became aware of the importance of research increased significantly (Figure 1). This improvement observed in KAU might be due to various programs that promoted students' research, which were established after 2007.¹⁰

On the other hand, 24% of medical students who belonged to Imam University did not appreciate the importance of research. This might be due to lack of awareness of research programs at Imam University, as this university started teaching medicine only recently.

Basic research skills are crucial in conducting any research. It has been demonstrated that the most significant barrier to participation of medical students in research is their lack of familiarity with research skills.¹¹ Some authors suggested assigning free time for students to devote to research.¹² Our data are consistent with the literature in that a high percentage of students expressed a lack of necessary skills for conducting research.¹¹

Another important factor in promoting research by students is their enthusiasm for research. A study that evaluated the research experience of undergraduates concluded that the most important element to motivate students to join any research program is to foster enthusiasm in them toward research.¹³ In our study, most students showed enthusiasm and willingness to participate in research. The motivational factors for a medical student to participate in research according to a study were as follows: "facilitate entry into competitive residency programs," "improve curriculum vitae," and "publish in peer-reviewed journals".¹⁴

The notable change we found in KAU since 2007 is encouraging in that we found that almost all students in KAU want to take part in research currently as compared to only 62.1% ("strongly agree" [33.1] + "agree" [29]) in 2007. This reflects the awareness of students about the importance research in the field of medicine.

Barriers preventing students from participating are numerous and well investigated in the literature. One barrier might be the lack of institutional infrastructure.¹⁵ Another is the lack of incentives and motivation from universities.¹⁶ Another important barrier is student's lack of basic skills of research.¹¹ A local study that included medical students showed that the top three barriers were 1) "lack of time", 2) "lack of formal undergraduate research courses in curriculum," 3) and "lack of undergraduate research mentors" based on their opinion.¹⁷ Research clubs and programs are very important channels to promote research for the students and increase their participation. In one study, three-quarters of students who participated in a research program stated that the experience has motivated them to consider future research projects.¹⁸ Another study has

shown that setting up a research program had increased the number of students participating in research¹⁹ and improved the students' abilities in conducting research.²⁰ We believe that our results are related to university policies regarding research promotion and that the more the universities focus on medical student research, the more likely students are to participate in research and publish their work.

This study has several limitations. First, we did not use a validated questionnaire. Second, our sampling was convenient and liable to sampling errors. Our research was intended to explore students in KAU to evaluate the need for a research club in 2007. On the other hand, the total number of medical students participated from the two major cities in Saudi Arabia was relatively large. Our results show that more efforts are needed to create awareness among students in the field of research, despite all these limitations. Further studies should focus on exploring the level of awareness of medical students and their knowledge on scientific research.

Disclosure

The authors report no conflicts of interest in this work.

References

1. Al-Khader AA. Enhancing research productivity in the Arab world. *Saudi Med J.* 2004;25(10):1323–1327.
2. Cursiefen C, Altunbas A. Contribution of medical student research to the Medline-indexed publications of a German medical faculty. *Med Educ.* 1998;32(4):439–440.
3. Solomon SS, Tom SC, Pichert J, Wasserman D, Powers AC. Impact of medical student research in the development of physician-scientists. *J Investig Med.* 2003;51(3):149–156.
4. Hunskaar S, Breivik J, Siebke M, Tømmerås K, Figenschau K, Hansen JB. Evaluation of the medical student research programme in Norwegian medical schools. A survey of students and supervisors. *BMC Med Ed.* 2009; 9:43.
5. Habibzadeh F. How can developing countries succeed in biomedical journalism? *Saudi Med J.* 2004;25(1 Suppl):S6–S7.
6. Jawaid SA. Problems faced by editors of peer reviewed medical journals. *Saudi Med J.* 2004;25(1 Suppl):S21–S25.
7. Noorelahi MM, Soubhanneyaz AA, Kasim KA. Perceptions, barriers, and practices of medical research among students at Taibah College of Medicine, Madinah, Saudi Arabia. *Adv Med Educ Pract.* 2015;6: 479–485.
8. Alghamdi KM, Moussa NA, Alessa DS, Alothimeen N, Al-Saud AS. Perceptions, attitudes and practices toward research among senior medical students. *Saudi Pharm J.* 2014;22(2):113–117.
9. Al-Hilali SM, Al-Kahtani E, Zaman B, et al. Attitudes of Saudi Arabian Undergraduate Medical Students towards Health Research. *Sultan Qaboos Univ Med J.* 2016;16(1):e68–e73.
10. Faculty of Medicine King Abdulaziz University: Institutional Self-Study Summary Report. Available from: http://www.kau.edu.sa/Files/140/Files/83793_Faculty%20of%20medicne%20KAU%20Final%20Self%20Study%20Report%20of%20LCME.%20pdf.pdf. Accessed September 29, 2016.
11. Ashrafi-Rizi H, Fateme Z, Khorasgani ZG, Kazempour Z, Imani ST. Barriers to research activities from the perspective of the students of Isfahan University of Medical Sciences. *Acta Inform Med.* 2015;23(3):155–159.
12. Aziz KA, Sallam T, Ibrahim AH, Sufian T. Improvement of research and biomedical publication. *Saudi Med J.* 2004;25(10):1319–1322.

13. Russell SH, Hancock MP, McCullough J. The pipeline. Benefits of undergraduate research experiences. *Science*. 2007;316(5824):548–549.
14. Mina S, Mostafa S, Albarqawi HT, et al. Perceived influential factors toward participation in undergraduate research activities among medical students at Alfaisal University—College of Medicine: a Saudi Arabian perspective. *Med Teach*. 2016;38(Suppl 1):S31–S36.
15. Al-Gindan YM, Al-Sulaiman AA, Al-Muhanna FA, Abumadini MS. Research and research activities in a university in Eastern Saudi Arabia. *Saudi Med J*. 2002;23(11):1324–1326.
16. de Oliveira NA, Luz MR, Saraiva RM, Alves LA. Student views of research training programmes in medical schools. *Med Educ*. 2011;45(7):748–755.
17. Kharraz R, Hamadah R, AlFawaz D, et al. Perceived barriers towards participation in undergraduate research activities among medical students at Alfaisal University-College of Medicine: a Saudi Arabian perspective. *Med Teach*. 2016;38(Suppl 1):S12–S18.
18. Jacobs CD, Cross PC. The value of medical student research: the experience at Stanford University School of Medicine. *Med Educ*. 1995;29(5):342–346.
19. Gonzales AO, Westfall J, Barley GE. Promoting medical student involvement in primary care research. *Fam Med*. 1998;30(2):113–116.
20. Frishman WH. Student research projects and theses: should they be a requirement for medical school graduation? *Heart Dis*. 2001;3(3):140–144.

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