

Engagement of medical specialty trainees in research: experience at a Lebanese medical school

Fouad Fayad,¹ Ouidade A. Tabesh,¹ Tamara Lotfi,² Fadi Haddad³ and Elie Nemr⁴

¹Department of Rheumatology, Hotel Dieu de France Hospital and Saint Joseph University of Beirut, Beirut, Lebanon. ²Department of Internal Medicine, Faculty of Medicine, American University of Beirut, Beirut, Lebanon; The Global Evidence Synthesis Initiative (GESI) Secretariat, American University of Beirut. ³Department of Internal Medicine, Hotel Dieu de France Hospital and Saint Joseph University of Beirut, Beirut, Lebanon. ⁴Department of Urology, Hotel Dieu de France Hospital and Saint Joseph University of Beirut, Beirut, Lebanon. (Correspondence to: Fouad Fayad: fouadfayad@yahoo.fr).

Abstract

Background: Many challenges exist to engaging medical students and postgraduate trainees, in research in developing countries.

Aims: This study aimed to assess the motivation of and opportunities for postgraduate medical specialty trainees to engage in medical research, and the perceived obstacles to undertaking research in Lebanon.

Methods: A questionnaire-based survey of all postgraduate clinical trainees was conducted at Saint Joseph University of Beirut medical school, Lebanon. Logistic regression analysis was used to determine factors associated with engaging in research. Odds ratios (OR) and 95% confidence intervals (CI) are presented.

Results: Of 290 trainees, 252 (87%) completed the questionnaire; 40.1% were specializing in medicine, 25.8% in surgery and 34.1% in other fields. A total of 122 trainees had participated in research projects: 85.2% in data collection, 83.6% in writing of abstracts, 69.7% in writing papers for publication, 58.2% in project design and 57.4% in data analysis. Most trainees had produced considerable research output (82.0%), with an average of 2.5 publications. Enhancing their curriculum vitae (OR = 1.90, 95% CI 0.84–4.30) and enjoying research (OR = 2.05, 95% CI 0.94–4.44) were not motivational factors for engaging in research. Trainees were frustrated by the limited research opportunities, citing lack of time as a main factor.

Conclusion: There is a need for additional formal and informal support programmes to encourage postgraduate trainees to engage more in research.

Keywords: biomedical research, medical schools, publications, postgraduate training, Lebanon

Citation: Fayad F; Tabesh OA; Lotfi T; Haddad F; Nemr E. Engagement of medical specialty trainees in research: experience at a Lebanese medical school. *East Mediterr Health J.* 2020;26(x):xxx–xxx. <https://doi.org/10.26719/emhj.20.038>

Received: 29/05/19; accepted: 13/08/19

Copyright © World Health Organization (WHO) 2020. Open Access. Some rights reserved. This work is available under the CC BY-NC-SA 3.0 IGO license (<https://creativecommons.org/licenses/by-nc-sa/3.0/igo>)

Introduction

An active clinical research culture has clear benefits to health care delivery (1,2). Patients benefit from the development of new therapies and the practice of evidence-based medicine, departments benefit from enhancement of their academic profile and clinicians benefit from career advancement. Involvement of clinicians in medical research as early as possible in their careers, even as medical students, is likely to maximize these benefits (3). Although many countries include research training as a formal part of medical training, this is not universal and there are many challenges to engaging medical student in research (4). Similar arguments apply to postgraduate trainees, who benefit from and contribute to research activity also.

Many barriers to undertaking medical research in developing countries exist, such as lack of funds and facilities, and inadequate training. In addition, little is known about the research needs of trainees in these countries during their specialization, as the opportunities for engaging in research have been less well studied. The aim of this study, therefore, was to assess the motivation of and opportunities for postgraduate specialty trainees to engage in medical research, the perceived obstacles to undertaking research, and the outcomes of their participation in medical research in Lebanon.

Methods

Participants and setting

Saint Joseph University of Beirut is one of the largest Lebanese medical schools, with postgraduate training that spans 4 to 6 years. This training consists of four semesters of

general training followed by four to six semesters of medical specialization, and two semesters of general training followed by eight semesters of specialty training for surgical specialties. For paediatrics, anaesthetics, histopathology, radiology and other specialties, trainees start specializing immediately in their chosen field. All 290 postgraduate trainees from all specialties at Saint Joseph University of Beirut were invited to participate in the study during September and October 2015.

Questionnaire

A modified version of a previously developed questionnaire (4) was used (see appendix). The questionnaire was in English and consisted of multiple-choice questions with free text comments where applicable. Two questions addressed barriers to involvement in research with answers on a 5-point Likert scale. The questionnaire was validated by distribution to 25 trainees at Saint Joseph University of Beirut and modified according to their responses.

Statistical analysis

SPSS, version 22.0 was used for data analysis. To evaluate the relationship between the outcome of interest (involvement in research) and categorical covariates (year and type of specialization, type of hospital, reasons for engaging in research and usefulness of research), we used the chi-squared or Fisher exact tests as appropriate. We used logistic regression analysis to determine the association between the covariates and the outcome. Variables with P -value < 0.2 in the bivariate analysis were included in the logistic regression analysis. Odds ratios (OR) and 95% confidence intervals (CI) are presented. A Poisson regression approach was used to assess the relationship between number of publications and the following variables: year of specialization, type of specialty and place of work (central teaching hospital, peripheral hospital, or other institutions). An alpha level of 0.05 was considered statistically significant. Free text responses were analysed by the first author. Responses on a Likert scale are reported as: 1–2 = disagree with the statement; 3 = neither agree nor disagree; 4–5 = agree with the statement. Complete-case analysis was performed when dealing with missing data.

Ethical considerations

The research ethics committee of Saint Joseph University of Beirut approved the study. Participation was optional, and consent was assumed by completion of the questionnaire. Data were anonymized after collection to ensure confidentiality.

Results

The response rate was 87% (252/290). Most of the postgraduate participants (101, 40.1%) were trainees in medical specialties, 65 (25.8%) were surgical trainees, the rest (86, 34.1%) were trainees in nine other specialties (Table 1). All postgraduate years were represented (Table 1). Although 250 (99.2%) of the postgraduate trainees had been involved in research before their graduation in medicine, only 122 (48.4%) were engaged in research during their specialization. The rates of research engagement varied among specialties, with trainees in family medicine having the lowest rate (2/15, 13%); the differences, however, did not reach statistical significance ($P = 0.054$) (Table 1).

Year of specialization was significantly correlated with being involved in research ($P < 0.001$) and the number of publications ($P < 0.001$) (Table 1), with trainees in higher postgraduate years having more research experience and publications.

Motivation

Most trainees stated that research experience was useful (281, 86.5%) or that it depends (26, 10.3%), though this was not associated with engagement in research ($P = 0.937$). Some trainees (189) chose only one option as reasons for engaging in research: 140 (55.6%) said that they would undertake research solely to improve their curriculum vitae (CV), 35 (13.9%) solely because they would enjoy it, and 14 (5.6%) solely because it is mandatory.

Univariate analysis showed that enjoying research ($n = 73$, $P = 0.190$) and perceiving research as mandatory to obtain the diploma ($n = 42$, $P = 0.523$) were not associated with engagement in research or not ($P = 0.523$); building a better curriculum vitae, however, was ($n = 190$, $P = 0.028$). Three variables were used in the multivariable logistic regression analysis (year of specialisation, improving the CV, enjoying research), which showed that building a better curriculum vitae ($n = 190$; OR = 1.90, 95% CI: 0.84–4.30; $P = 0.123$) and enjoying research ($n = 73$; OR = 2.05, 95% CI 0.94–4.44; $P = 0.070$) were not motivational factors for engaging in research. Year of specialisation was still significantly correlated with engagement in research ($n = 47$; OR = 2.80, 95% CI: 1.26–3.63). Most respondents did not think that lack of personal motivation was an important obstacle to being involved in research: 129 (51.2%) of the trainees disagreed that it was an obstacle and 69 (27.4%) neither agreed nor disagreed. Many trainees (164, 65.1%) had approached a potential supervisor for research opportunities.

Opportunities

Most trainees had research experience (undergraduate or postgraduate) in central teaching hospitals (216/252, 85.7%); only a very few had research experience in peripheral

hospitals (12/252, 4.8%) or in other institutions (24/252, 9.5%). Postgraduate-only research had similar distribution (central teaching hospital: 101/122, 82.8%; peripheral hospital: 5/122, 4.1%; other: 16/122, 13.1%). Reviewing patient notes and collecting data, and writing abstracts were the most usual forms of participation in research (83.6% and 83.6% of trainees, respectively; Table 2).

Out of the 122 trainees who had participated in post-graduate research, 100 (82.0%) generated output: publications (64, 52.4%), oral presentations (41, 33.6%), poster presentations (34, 27.9%), thesis (27, 22.1%) or abstracts (24, 19.7%). Trainees had published on average 2.5 papers (range: 1–25); 45 trainees had only one publication each and three trainees had more than 10 publications each. Only 27 (44.3%) trainees had been published as the first author and 34 (55.7%) as co-authors (data missing for three participants). No significant difference was found in the number of publications generated by trainees working in different specialties or places of work.

Perceived obstacles to engaging in research

Trainees felt frustrated by the lack of opportunities to engage with research: 136 (54.0%) agreed that they felt frustrated while 80 (31.7%) neither agreed nor disagreed. Lack of research within their respective departments was another main concern, with 119 (47.2%) respondents agreeing that there was a lack of research in their department.

Many trainees (110, 43.7%) felt there was a lack of competent advisers, although 80 (31.7%) thought there were competent advisers available. About half of the trainees (127, 50.4%) thought that supervisors were not interested in involving trainees in research. Lack of time for research was the commonest obstacle reported by the trainees (176, 69.8%).

Suggestions on how to increase engagement in research included more time for research (35.1%), more funding (26.0%), implementation of a mandatory research course (23.4%), more competent and motivated advisers (18.2%) and creation of a research department (14.3%) (Table 3).

Discussion

Institutions and individuals benefit greatly when clinical staff, including medical students, are involved in active research (3,5,6). We examined perceptions of postgraduate trainees about research opportunities in a medical school in Lebanon. Although trainees were motivated to participate in research, fewer than half had the opportunity to do so because of lack of opportunities, time and support.

A study in Pakistani medical universities found comparable results to ours regarding the value of research and being actively involved in research; only 41.5% of junior faculty in Pakistan were currently involved in research (7) compared with 48.4% of our trainees. A report from Saudi Arabia found more respondents recognized the value of research (97.9%) than our trainees (86.5%) but only 30.4% were involved in any research activity (8). The Saudi study reported the same barriers as our study (8).

Engagement in research as an undergraduate was associated with greater engagement with academia after graduation (9–11). Medical students in Lebanon have to complete a thesis to graduate, as in other countries such as Peru, Germany and some universities in the United States of America (9), and our trainees had positive attitude towards the value of research. However, this attitude did not translate into high levels of involvement in research in our study. Evidence on the relationship between mandatory thesis submission for graduation and future participation in research is lacking and it would be useful to evaluate this relationship further.

The most frequently cited barrier to research in our study was lack of time, which is similar to other studies (4,12–14). Lack of funds and facilities, inadequate training and a lack of recognition of the value of academic activity are also commonly reported barriers to engagement in research in developing countries (12,15). The complex process of securing funding is not limited to developing countries (16) as it is also reported as a major obstacle in developed countries (17). Informal support programmes, such as journal clubs and research interest groups, benefit undergraduates (18) and could be useful in postgraduate training.

Trainees did not think that their own lack of motivation was a barrier to engaging in research, but thought that a lack of interest of potential supervisors was a particular problem. However, only 65.1% had approached a potential supervisor to get involved in research and 55.6% said they would undertake research just to improve their curriculum vitae. These attitudes risk demotivating potential supervisors in investing their time and support for such trainees.

Maintaining an active environment conducive to research is important. This environment is possibly lacking in Lebanon as suggested by the trainees' concerns about lack of competent advisors and research carried out in their department. It appears that there is a need for additional formal and informal support programmes to encourage postgraduate trainees to engage more in research.

Funding: None.

Competing interests: None declared.

References

1. The role of the clinical academic. London: British Medical Association; 2014.
2. NHS England research plan. London: NHS England; 2017 (<https://www.england.nhs.uk/wp-content/uploads/2017/04/nhse-research-plan.pdf>, accessed 24 May 2019).
3. Gonzalo JD, Dekhtyar M, Hawkins RE, Wolpaw DR. How can medical students add value? Identifying roles, barriers, and strategies to advance the value of undergraduate medical education to patient care and the health system. *Acad Med.* 2017;92(9):1294–301. <http://doi.org/10.1097/ACM.0000000000001662>
4. Nikkar-Esfahani A, Jamjoom AA, Fitzgerald JE. Extracurricular participation in research and audit by medical students: opportunities, obstacles, motivation and outcomes. *Med Teach.* 2012;34(5):e317–24. <http://doi.org/10.3109/0142159X.2012.670324>
5. Saint S, Flanders SA. Hospitalists in teaching hospitals: opportunities but not without danger. *J Gen Intern Med.* 2004;19(4):392–3. <http://doi.org/10.1111/j.1525-1497.2004.42002.x>
6. Schexnayder S, Starring H, Fury M, Mora A, Leonardi C, Dasa V. The formation of a medical student research committee and its impact on involvement in departmental research. *Med Educ Online.* 2018;23(1):1424449. <http://doi.org/10.1080/10872981.2018.1424449>
7. Sabzwari S, Kauser S, Khuwaja AK. Experiences, attitudes and barriers towards research amongst junior faculty of Pakistani medical universities. *BMC Med Educ.* 2009;9:68. <http://doi.org/10.1186/1472-6920-9-68>
8. Mitwalli HA, Al Ghamdi KM, Moussa NA. Perceptions, attitudes, and practices towards research among resident physicians in training in Saudi Arabia. *East Mediterr Health J.* 2014;20(2):99–104.
9. Amgad M, Man Kin Tsui M, Liptrott SJ, Shash E. Medical student research: an integrated mixed-methods systematic review and meta-analysis. *PLoS ONE.* 2015;10(6):e0127470. <http://doi.org/10.1371/journal.pone.0127470>
10. Straus SE, Straus C, Tzanetos K, International Campaign to Revitalise Academic Medicine. Career choice in academic medicine: systematic review. *J Gen Intern Med.* 2006;21(12):1222–9. <http://doi.org/10.1111/j.1525-1497.2006.00599.x>
11. Dorrance KA, Denton GD, Proemba J, La Rochelle J, Nasir J, Argyros G, et al. An internal medicine interest group research program can improve scholarly

- productivity of medical students and foster mentoring relationships with internists. *Teach Learn Med.* 2008;20(2):163–7. <http://doi.org/10.1080/10401330801991857>
12. Habineza H, Nsanzabaganwa C, Nyirimanzi N, Umuhoza C, Cartledge K, Conard, C, et al. Perceived attitudes of the importance and barriers to research amongst Rwandan interns and pediatric residents – a cross-sectional study. *BMC Med Educ.* 2019;19(4). <https://doi.org/10.1186/s12909-018-1425-6>
 13. Amin TT, Kaliyadan F, Al Qattan EA, Al Majed MH, Al Khanjaf HS, Mirza M. Knowledge, attitudes and barriers related to participation of medical students in research in three Arab universities. *Educ Med J.* 2012;4(1):e43–56. <http://doi.org/10.5959/eimj.v4i1.7>
 14. Clancy AA, Posner G. Attitudes toward research during residency: a survey of Canadian residents in obstetrics and gynecology. *J Surg Educ.* 2015;72(5):836–43. <http://doi.org/10.1016/j.jsurg.2015.02.007>
 15. Pallamparthi S, Basavareddy A. Knowledge, attitude, practice, and barriers toward research among medical students: A cross-sectional questionnaire-based survey. *Perspect Clin Res.* 2019;10(2):73–8. http://doi.org/10.4103/picr.PICR_1_18
 16. Alemayehu C, Mitchell G, Nikles J. Barriers for conducting clinical trials in developing countries- a systematic review. *Int J Equity Health.* 2018;17(1):37. <http://doi.org/10.1186/s12939-018-0748-6>
 17. Moses H, Matheson DHM, Cairns-Smith S, George BP, Palisch C, Dorsey ER. The anatomy of medical research: US and international comparisons. *JAMA.* 2015;313(2):174–89. <http://doi.org/10.1001/jama.2014.15939>
 18. Chang Y, Ramnanan CJ. A review of literature on medical students and scholarly research: experiences, attitudes, and outcomes. *Acad Med.* 2015;90(8):1162–73. <http://doi.org/10.1097/ACM.0000000000000702>.

Table 1: Specialties and academic year the trainees, according to engagement in medical research

Variable	Engaged in postgraduate research (n = 252)		Publications per trainee ^b (n = 252)
	Yes	No	Median (min–max)
<i>Specialty</i>			
Medicine ^a	43	58	0 (0–25)
Surgery ^a	37	28	0 (0–13)
Anaesthesia ^a	8	11	0 (0–0)
Radiology ^a	8	9	0 (0–7)
Family medicine ^a	2	13	0 (0–0)
Paediatrics ^a	8	6	0 (0–1)
Obstetrics/gynaecology	8	2	1 (0–2)
Psychiatry	5	1	1 (0–1)
Radiotherapy	1	1	0 (0–0)
Histopathology	1	1	0.5 (0–1)
Paediatric surgery	1	0	0
<i>Year of training</i>			
1st	5	48	0 (0–0)
2nd	17	36	0 (0–3)
3rd	24	26	0 (0–2)
4th	32	18	0 (0–8)
5th	39	2	1 (0–16)
6th	5	0	13 (1–25)

There was no correlation between specialty and engagement in research ($P = 0.054$). Year of specialization was significantly correlated with engagement in research ($P < 0.001$) and number of publications ($P < 0.001$).

^aChi-squared test; Fisher exact test for other comparisons.

^bExcludes presentations, abstracts and thesis.

Table 2: Participating roles in postgraduate medical research project

Research role	No. (%) (<i>n</i> = 122)
Reviewing patient notes and collecting data	104 (85.2)
Writing abstracts	102 (83.6)
Analysing data	70 (57.4)
Writing papers for publication	85 (69.7)
Designing research project protocol	71 (58.2)
Handing out questionnaires	52 (42.6)
Conceiving research project idea	56 (45.9)
Undertaking laboratory work	19 (15.6)

Table 3: Trainees’ suggestions on how to increase postgraduate involvement in medical research

Suggestion	No.^a (%)
More time dedicated to research	27 (35.1)
Providing funds for research	20 (26.0)
Implementing a (mandatory) course for research in medical school	18 (23.4)
More competent and motivated advisers	14 (18.2)
Creating a research department	11 (14.3)
Enhancing the value of research	3 (3.9)
Having statisticians available	2 (2.6)
Creating computerized database in each department	1 (1.3)

^a77 trainees responded to this free text question. Some respondents gave more than one suggestion.

Appendix

Questionnaire

Involvement of fellows in medical research:

Motivation, opportunities, obstacles and outcomes

(1) What is your medical specialty?

- Medicine Surgery Pediatrics OBG Family Medicine
 Psychiatry Anesthesia Radiology

(2) What is your year of specialization?

- R1 R2 R3 R4 R5 R6

(3) Do you think research experience is useful for fellows?

- Yes No It depends to the future medical career

(4) Why do you want to carry out research work?

- You enjoy research You want your CV to look better
 It is mandatory to obtain the diploma
 Other

(5) Have you approached anyone about getting involved in research work?

Yes No

(6) Have you ever been involved in research?

- Before medical graduation? Yes No

..... If yes please select and specify the number in brackets:

Published Paper () Published abstract () Oral Presentation ()

Poster Presentation () Thesis ()

- During specialty? Yes No

If yes please select and specify the number in brackets:

Published Paper () Published abstract () Oral Presentation ()

Poster Presentation () None ()

(7) If your research work was presented/published, where were you on the list of authors?

First author Co-author None

(8) Where did you carry out the research work?

Central Teaching Hospital Peripheral Hospital Other

(9) What specialty or specialties have you undertaken your research work?

Medicine Surgery Pediatrics OBG Family Medicine

Psychiatry Anesthesia Radiology

(10) What level in training was the individual who got you involved in research work?

MD MD, MSc MD, PhD PhD

(11) What part did you play in the research work? (You can choose more than one)

Conception of the idea

Design of the research project

Going through patient notes and collecting data

Handing out questionnaires

Lab work

Analyzing data

Writing of abstracts

Designing posters for presentation

(Local / National / International) please circle type of meeting

Delivering oral presentation

(Local / National / International) please circle type of meeting

Writing of papers for publication

(12) Have you been frustrated by lack of opportunities available to carry out research work?
('1' = completely disagree, '5' = completely agree)

1 2 3 4 5

(13) What do you think are the main obstacles in getting involved in research work? (Indicate to what extent you agree with the following statements: '1' = completely disagree, '5' = completely agree)

Lack of motivation on your behalf

1 2 3 4 5

Lack of competent advisors

1 2 3 4 5

Lack of research carried out in your department

1 2 3 4 5

Lack of interest by the supervisors to get fellows involved in research work

1 2 3 4 5

Lack of time due to other commitments

1 2 3 4 5

Other.....

(14) Do you have any recommendations for increasing fellows' opportunities for involvement in research?

.....

(15) Any other comments: