

ORIGINAL ARTICLE

Obstacles to health care research projects at the University of Jordan: a cross-sectional survey

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Abstract

Objective: To assess the obstacles faced by biomedical researchers in Jordan and the reasons behind the stagnation of health care research.

Background: Health care research is essential for the advancement of medical care but faces obstacles that delay the completion of research projects, and the literature is still deficient, especially in developing countries.

Methods: A cross-sectional survey was conducted of all academic staff of health care faculties at the University of Jordan who had been employed for five years or more and had at least one stagnant research project. Questionnaires were completed by the academic staff online using Google Forms after a face-to-face interview to explain the study process to them.

Results: A total of 82 researchers with a mean age of 42.68 (± 9.16) years were included most of whom (84.1%) had only one stagnant project. Of the 106 stagnant projects, 28.3% were in the basic sciences and 71.7% were in clinical research. Almost a third (29.5%) of the projects remained stagnant after reaching the publication stage. Most researchers (81.3%) identified lack of time and high workload as the most common *personal* barriers and 44.4% identified lack of funds and research incentives as the most common *institutional* barriers.

Conclusions: Medical research is affected by different barriers including lack of time, high workload, lack of funds, and insufficient incentives for research. An institutional strategic plan is required to overcome those barriers and to improve medical research.

Keywords: clinical sciences, obstacles, difficulties in completing research, causes of stagnation in research

Introduction

Medical research is crucial to the advancement of medical care in developing countries, yet medical researchers face many obstacles in completing their research projects. The quality and quantity of medical research in developing countries lag behind those in wealthier nations.¹ The literature most notably highlights lack of time to pursue medical research, because researchers are involved more in patient care and have little time to devote to the lengthy process required to complete a research project.^{2,3} Other major obstacles described by many researchers included lack of funding, poor skills, and difficulties in accessing data.³

Literature on obstacles facing medical researchers in developing countries is limited. One study of faculty members at the University of Shiraz, Iran,⁴ reported that the most common obstacles were low funding for research activities, difficulty and delays in disbursing funds, routine administrative responsibilities, and lack of sufficient knowledge of research methods and statistical tests. These findings are consistent with global patterns of obstacles.⁵ That being said, literature still has little to offer on the nature of these obstacles facing medical research, especially in developing countries. In the present study, we sought to assess the obstacles faced by health care researchers in Jordan and the reasons behind the stagnation of research. Health care research is usually governed by specific

guidelines developed by the EQUATOR network, the network for Enhancing the Quality and Transparency of Health Research (<https://www.equator-network.org>).

Methods

A cross-sectional survey was conducted from 1 October 2019 to 1 January 2020 at the University of Jordan, in Amman, the capital of Jordan, and one of the oldest universities in the country. We obtained ethical approval from the institutional review board (No. 6212/2019/67) and written informed consent from all eligible participants using online forms.

Participants

The University of Jordan has five health schools : medicine, dentistry, pharmacy, nursing, and rehabilitation. We obtained a list of all the working staff in each faculty and selected the participants according to the following criteria: academic and full-time staff who had been employed by the university for five years or more and who had at least one stagnant medical research project. The University of Jordan stipulates that faculty members must publish at least one research paper every 5 years to keep their position at the university. Medical research was defined as any research in the medical field, including basic research and clinical research. Of the total of 250 faculty members, 105 met the inclusion criteria and were invited to

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participate in the study. A total of 82 researchers agreed to participate. We explained to them that a 'stagnant project' is a project – of which the participant should be the principal investigator – that has not progressed from its current stage and is unlikely to progress in the near future because of one or more obstacles. Although our definition did not specify any dates, because they may vary depending on the stage of the project, all participants reporting that they had no stagnant projects at the time of the interview were excluded from the study.

Data collection

We visited each medical school to recruit participants and we contacted them for an appointment to interview them at their office for possible inclusion in the study. The questionnaire was administered during face-to-face interviews by any one of the authors, all of whom had been trained for the purpose. The interviewer explained the process and the nature of the study and then obtained a written consent from the participant. Next, each participant was given a link to a Google form to fill out the questionnaire online.

After reviewing relevant literature, we identified the following steps that comprise a research project.

- Planning and protocol, or the preparatory stage
- Ethical approval
- Data collection
- Experiments (for studies that require laboratory work)
- Statistical analysis
- Manuscript writing
- Publishing

The questionnaire (available as a supplementary material) comprised three parts: (1) basic information (age, gender, academic degree, academic rank, research interest (basic or clinical), etc.); (2) information about stagnant research projects (basic science or clinical), if any; and (3) a list of obstacles that participants have faced or might face during the research process. The list of obstacles had been compiled by the authors after a literature review by choosing the most appropriate ones, which were then classified into personal, institutional, and project-related obstacles, and the participants were asked to choose one obstacle they considered responsible for the stagnation of their research from each category if present.

Statistical analysis

We used SPSS ver. 21.0 (Chicago, USA) for statistical analysis. We used mean \pm standard deviation to describe the continuous variables such as age; frequency to describe the categorical variables such as gender; the chi-square test to analyse the differences, if any, among the five faculties in the obstacles listed; and the Kruskal–Wallis test to analyse the differences in the duration and in the number of researchers between different stages of research. All the underlying assumptions were met, unless otherwise indicated. We adopted a *p* value of 0.05 as a significant threshold.

Results

Of the 82 researchers included in the study, 39 (47.6%) were men and 43 (52.4%) were women, with a mean age of 42.68 (\pm 9.16) years (Table 1). Of the total, 69 (84.1%) had only one stagnant project and 13 (15.9%) had more than one, ranging

from two to five projects. Most had a PhD degree, and only one had obtained the final degree from the University of Jordan. Only 40% had administrative responsibilities as vice dean, assistance dean, a member of different faculty committees, etc.

Table 1. Characteristics of participants

Baseline characteristics		Number (%)
Age (years)	Mean age: 43 \pm 9	
Gender	Women	43 (52.4%)
	Men	39 (47.6%)
Number of projects	1	69 (84.1%)
	2	7 (8.5%)
	3	3 (3.7%)
	4	1 (1.2%)
	5	2 (2.4%)
Faculty (primary degree)	Dentistry	15 (18.3%)
	Medicine	19 (23.2%)
	Nursing	14 (17.1%)
	Pharmacy	21 (25.6%)
Rehabilitation sciences		13 (15.9%)
Master's	Yes	61 (74.4%)
	No	21 (25.6%)
PhD	Yes	76 (92.7%)
	No	6 (7.3%)
Country from which highest degree was obtained	Australia	3 (3.7%)
	Canada	3 (3.7%)
	France	1 (1.2%)
	Germany	3 (3.7%)
	Italy	3 (3.7%)
	Jordan	1 (1.2%)
	UK	39 (47.6%)
	USA	29 (35.4%)
Academic rank	Lecturer	3 (3.7%)
	Associate Professor	26 (31.7%)
	Assistant Professor	35 (42.7%)
	Professor	18 (22.0%)
Administrative responsibilities	Yes	33 (40.2%)
	No	49 (59.3%)
Total proposals (number and SD)		9 \pm 10
Total publications (number and SD)		8 \pm 10

A total of 106 projects were reported as stagnant, 30 (28.3%) in the basic sciences and 76 (71.7%) in clinical research (Table 2). The projects covered a range of study types, cohort studies being the most frequent. The projects had been in progress for 24 months on average (range, 8–40 months); involved four (range, 2–6) researchers; and had been stalled for 10.9 \pm 10.2 months. Slightly less than a third (31, or 29.5%) of the projects had stagnated at the publishing stage, followed by a similar proportion (30, or 28.6%) at the data collection stage (Figure 1).

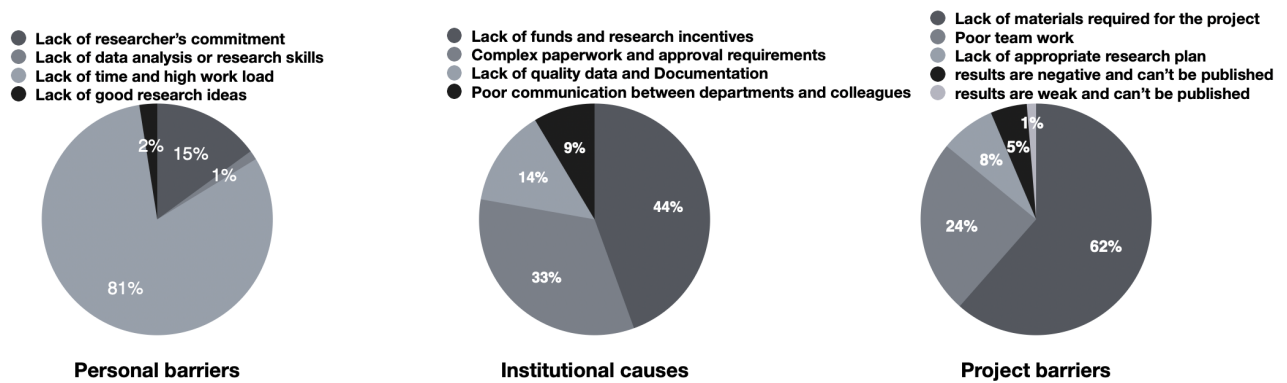


Figure 1. Proportion (%) of projects stagnating at different stages of research.

Table 2. Characteristics of stagnated projects

Characteristics of the included projects		Number (%)
Type (basic science or clinical research)	Basic sciences	30 (28.3%)
	Clinical research	76 (71.7%)
Type of projects	Ideas, editorials, opinions	17 (16.2%)
	Retrospective	3 (2.9%)
	Prospective	4 (3.8%)
	Case reports	1 (1.0%)
	Animal research	13 (12.4%)
	Randomized controlled double-blind studies	19 (18.1%)
	Cohort study	26 (24.8%)
	Case control	11(10.5%)
	Systemic review and meta-analysis	4 (3.8%)
	Experimental, <i>in vivo</i> , and <i>in vitro</i>	6 (5.8%)
	Qualitative	1 (1%)
Time elapsed since the project began (months)		24 ± 16
Number of researchers involved in the project		4 ± 2
Duration for which the project has remained at its current stage (months)		10.9 ± 10.2

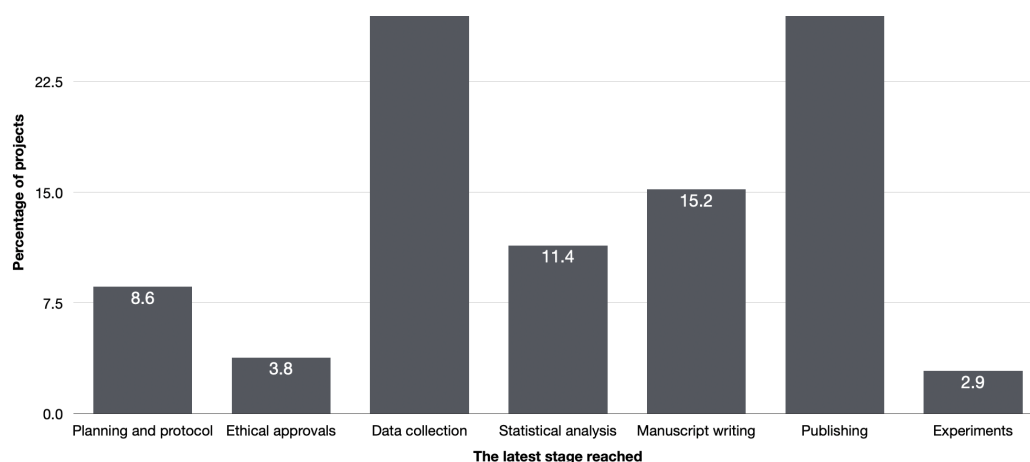


Figure 2. Relative contribution (%) of each obstacle to stagnation of research as perceived by participants.

Table 3. Institutional causes

Health care faculties – Bachelor	Institutional causes, number (%)			
	Lack of funds and research incentives	Complex paperwork and approval requirements	Lack of quality data and documentation	Poor communication between departments and colleagues
Dentistry	3 (20%)	5 (33.3%)	6 (40.0%)	1 (6.7%)
Medicine	9 (47.4%)	6 (31.6%)	3 (15.8%)	1 (5.3%)
Nursing	7 (53.8%)	3 (23.1%)	1 (7.7%)	2 (15.4%)
Rehabilitation sciences	10 (76.9%)	2 (15.4%)	1 (7.7%)	0 (0.0%)
Pharmacy	7 (33.3%)	11(52.4%)	0 (0.0%)	3 (14.3%)
Total	36 (44.4%)	27 (33.3%)	11 (13.6%)	7 (8.6%)

The faculties differed significantly only in terms of institutional factors ($p = 0.019$): participants from medical sciences, rehabilitation sciences, and nursing chose lack of funds as the most common institutional factor; dentistry researchers chose lack of quality data; and pharmacy researchers mentioned complex paperwork and the requirement for approval as the most common institutional factors (Table 3).

The most-often-reported causes for stagnation of projects are shown in Figure 2. The personal barriers were lack of time and high workload (reported by 65, or 81.3%, of the participants); the institutional barriers were lack of funds and insufficient incentives for research (36, or 44.4%); and the most common project-related barrier was lack of materials required for the project (48, or 61.5%).

Discussion

Our survey of academic health care staff at the University of Jordan is one of the first studies to explore at what stage and why medical research in developing countries tends to stagnate. Each of the majority (84.1%) of participants reported only one stagnant research project, and 15.9% of the participants reported that they were stuck with more than one, with data collection being the most common stage at which their research came to a halt.

Attempts to identify the main obstacles to medical research have been made earlier. A broad sample of medical researchers at a Swiss university hospital showed that the most frequent difficulties were related to patient enrolment (mentioned by 44% of the respondents) and data collection (27%).⁶ A study of clinical databases at the University of California at San Francisco highlighted problems with data collection because data are often dispersed, making their retrieval a challenging task, and obtaining useful data proved complicated because of the different platforms and personnel involved.⁷ Obtaining first-hand experimental data requires laboratory facilities and materials, and possibly laboratory animals and their maintenance, for which financial support is essential.⁸

Our finding that publication was a major obstacle is consistent with the findings reported in the literature on medical research. A systematic review identified diverse reasons for original scientific articles being rejected by journals and concluded that essential guidelines to authors would improve the chances of acceptance.⁹ An expert opinion has shed light on the decline in productivity in terms of publishing that accompanies career progression.¹⁰ A study of medical residents at the University of British Columbia found that prior experience with publication

was an independent predictor of publication success.¹¹

As medical researchers are generally involved in patient care, lack of time and high workload are often considered major obstacles that lead to stagnation of medical research¹² — these two were also reported as the top personal obstacles (reported by 81.3% of the respondents) in the present study. Insufficient training in research methodology and research design in medical school have also been listed as limiting factors for doing research by medical undergraduates,^{13,14} which means that most of the residents start their clinical career without research experience and require formal training in the basics of study design and analysis.¹⁵ Lack of protected research time was also identified as a barrier to research during residency training.¹⁶

In the present study, 44.4% of the participants identified lack of funds and insufficient incentives for research as the most common institutional barriers; this proportion is much higher than that reported from Switzerland (19.2%)⁶ whereas in Shiraz University, the two factors accounted for 90% of all the obstacles.⁸ In a small study conducted in the Middle East and North Africa, the top barriers to conducting research were obtaining funding and lack of time.¹⁷ Supporting institutions by making the process of obtaining funding easier is essential to enhance academic research not only in African institutions^{18,19} but also in all developing countries.²⁰

Arab nations fare poorly in terms of medical research output and its broad impact: the 2013 Scimago Institutions Rankings reported that out of 2740 universities and research institutions worldwide, only 60 were from Arab countries;¹² clinical research receives much less funding than basic science research does even in high-income countries such as USA.³ In the present study, pharmacy researchers chose complex paperwork and obtaining approval as the most common institutional factors. Obtaining approval from the institutional review board is a known cause of delay^{22,23} and might prevent researchers from conducting research trials.²⁴

Another obstacle to medical research is the difficulty in enrolling patients, which could be due to the long duration of the project, complex consent forms, or concerns related to privacy, especially if the research involves examining the medical records of the participating patients.³ In the present study, patient enrolment was reported as a significant difficulty by 44% of the participants and data collection, by 27% of them. An alternative is to use retrospective data, but it is often difficult to draw valid inferences from such data for answering many types of research questions.⁷

The main limitation of the present study was the absence of a precise and objective measure to define a stagnated project. It was difficult to specify a duration after which a project can be considered as stagnant given the wide variability in the duration of different projects, the demands made on them, and other considerations. We simply described the condition in the face-to-face interviews and left it to individual researchers whether to consider their project as stagnant. Another limitation was that we did not ask the participants about their teaching and clinical responsibilities.

Conclusion

Medical research at the University of Jordan is hampered by both personal barriers, including lack of time and high workload, and institutional barriers, including lack of funds and insufficient incentives for research, although researchers from different faculties face different barriers. Faculty directors need to devise a clear institutional strategic plan to overcome these obstacles and facilitate medical research at the University of Jordan.

Data availability

The data sets used or analysed for the current study are available upon request at the discretion of the corresponding author.

Competing interests

The authors declare that they have no competing interests.

Funding

The authors received no specific funding for this work.

Ethical statement

This retrospective study was approved by the institutional review board of the University of Jordan and all procedures performed were in accordance with the ethical standards of the institutional and/or national research committee and with the principles of the World Medical Association's Declaration of Helsinki. Informed consent was obtained from participants.

Authors' contributions

Saif Aldeen AlRyalat and Randa Farah contributed to the conception and design of the work. Wala'a Aburumman, Dana Sakaji, Muna Alhusban, Reem Hamasha, Majd Alkhrissat, Mohammad Qabalawi, and Ayat Alni'mat contributed to the acquisition of data; Saif Aldeen AlRyalat contributed to their analysis; and Randa Farah and Saif Aldeen AlRyalat contributed to their interpretation. Wala'a Aburumman, Dana Sakaji, Muna Alhusban, Reem Hamasha, Majd Alkhrissat, Mohammad Qabalawi, and Ayat Alni'mat drafted the manuscript, and Randa Farah and Saif Aldeen AlRyalat revised it critically. All authors gave their final approval and agreed to be accountable for all aspects of work ensuring its integrity and accuracy.

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