



Original Article

The barriers of scientific research in physiotherapy

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المخلص

أهداف البحث: هناك حاجة متزايدة للاكتشافات العلمية والتحديثات لتعزيز إدارة وتنفيذ الرعاية الصحية لمختلف التخصصات. النشاط البحثي في العلاج الطبيعي في الكويت محدود، لذلك هدفت الدراسة إلى استكشاف عوائق البحث في العلاج الطبيعي في الكويت.

طرق البحث: استخدم تصميم البحث المقطعي وطريقة استبانة عبر الإنترنت ووافقت لجنة الأخلاقيات بوزارة الصحة الكويتية على الدراسة (المرجع: 2019/1076). بُنيت الاستبانة على أساس مراجعة الأدبيات المكثفة. وعقدت اجتماعات لجنة الخبراء لاعتماد البنود، ومراجعة محتواها ودقتها وصياغتها. وبذلك تتكون الاستبانة من أربع أجزاء هي: خصائص المشاركين، وخلفية البحث، وعوائق البحث، والتشجيع على البحث المستقبلي. تم جمع البيانات من قبل اختصاصيي العلاج الطبيعي العاملين في الكويت في القطاعين الحكومي والخاص. لا اعتبار المشاركين للدخول في البحث يجب أن يكون اختصاصيي العلاج الطبيعي مسجل ولديه رخصه مهنية من قبل وزاره الصحة الكويتية.

النتائج: استجاب 311 اختصاصي علاج طبيعي للاستبانة على النحو التالي: خصائص المشاركين تتمثل بما نسبته 67% من الإناث ونسبة 80% تتراوح أعمارهم ما بين 25 و44 سنة. وكان 55% من المشاركين يقرأ المقالات الأكاديمية على أساس شهري. عوائق البحث الرئيسية التي عثر عليها هي: ضيق الوقت عند 45%؛ يليه نقص في مهارات البحث ونقص في الموارد بنسبة 41% و40% على التوالي. كما حددت عوامل أخرى، بما في ذلك عبء العمل بنسبة 29%؛ والصعوبات في الحصول على الموافقة الأخلاقية بنسبة 27%؛ ونقص الحافز بنسبة 26%؛ ونقص الدعم بنسبة 25%؛ وقلة المشاركين بنسبة 22%؛ والمسؤوليات الحياتية بنسبة 21%. للتشجيع على البحث العملي المستقبلي اقترحت ورش عمل ومحاضرات بحثية بنسبة 75%، في حين اقترحت الجوائز والتقدير بنسبة 52%. وقد اقترح 45% من المشاركين التشجيع من رؤساء الأقسام.

الاستنتاجات: يمكن تطوير أبحاث العلاج الطبيعي في الكويت من خلال استهداف العوائق التي حددت والتي يمكن أن تعزز أبحاث العلاج الطبيعي والمهنة.

الكلمات المفتاحية: العوائق؛ الكويت؛ استبانة؛ العلاج الطبيعي؛ البحث

Abstract

Objective: Scientific discoveries and updates are increasingly needed to enhance how healthcare is conducted and implemented for various specialties. Research in physiotherapy in Kuwait is limited. The study aimed to explore the barriers to research in physiotherapy in Kuwait.

Methods: A cross-sectional research design and an online questionnaire method were used. The ethics committee of Kuwait's Ministry of Health approved the study (ref. 2019/1076). The questionnaire was constructed on the basis of an intensive literature review. Expert committee meetings were held to approve the items and review the content, accuracy and construction. The questionnaire consisted of four domains: participants' characteristics, research background, research barriers and encouragement for future research.

Results: Of the 311 physiotherapists who responded to the questionnaire, 67% were women, and 80% were 25–44 years of age. A total of 55% of the participants read academic articles monthly. The major research barriers were lack of time (45%), followed by lack of research skills (41%) and lack of resources (40%). Other identified factors included workload (29%), difficulties in gaining ethical approval (27%), lack of motivation (26%), lack of support (25%), lack of participants (22%) and lifetime responsibilities (21%). Respondents indicated that encouragement for future research came from research workshops and lectures (75%), awards and recognition

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(52%), and encouragement from the department heads (45%).

Conclusion: Physiotherapy research can be advanced in Kuwait by targeting the barriers identified herein, to strengthen physiotherapy research and advance the physiotherapy profession.

Keywords: Barriers; Kuwait; Physiotherapy; Questionnaire; Research

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Introduction

Scientific research can significantly improve healthcare and enhance the understanding of health-related issues, because it involves clinicians, researchers and healthcare organizations.^{1,2} Scientific research can also inform decisions associated with health policies, programs and practices supporting the delivery of health services, through the use of quantitative, qualitative or mixed method research designs.^{3,4} Research can contribute to more effective healthcare by solving health problems and assisting practitioners and policy makers.⁴ However, research is strongly associated with social, cultural, economic, political, legal and institutional factors.⁴ Furthermore, the influence of context on the implementation of research necessitates exploring certain health-related issues at the national level to aid in research implementation. Moreover, low levels of research activity are a major challenge for policymakers and stakeholders in some countries, thus complicating decision-making. Physiotherapy is an essential profession for managing and preventing health issues, and improving overall quality of life and public health; therefore, it must be evidence-based.⁵ However, in Kuwait, the activity of scientific research in physiotherapy is highly limited by several barriers. The Kuwait Physical Therapy Administration provided us with the number of ethical approval applications submitted to their ethics committee. The records of the ethics committee of the Physiotherapy Administration of Kuwait Ministry of Health showed that in the years 2017–2019, only 12 studies applied for ethical approval. All ethical applications for physiotherapy-related research in Kuwait are directed from the Ministry of Health main ethics committee for approval by the ethics committee of the Physiotherapy Administration. Therefore, exploring the physiotherapy research barriers in Kuwait would provide valuable information to support administrative officials in evaluating and combating those barriers to advance and strengthen physiotherapy research, and consequently advance physiotherapy toward evidence-based practice.

Research barriers have been explored in various cohorts, including psychologists, psychiatrists, social workers, residents and medical students, and among a more general cohort of medical professionals.^{6–14} The barriers to

implementing evidence-based practice in physiotherapy have been systematically reviewed to improve the proficiency of clinical practice.¹⁵ Evidence-based practice in physiotherapy has been found not to translate into consistent high-quality practice, in terms of knowledge, attitude and implementation.¹⁵ However, the literature is limited in studies specifically exploring the research barriers and obstacles to conducting scientific research in the physiotherapy profession, which, as an autonomic discipline, has a unique clinical nature in practice. Additionally, the barriers to conducting scientific research have been explored in various countries such as the United Kingdom, Australia, Africa, South America, China and India.^{6,10,12}; however, only three studies have been conducted in the Middle East region, including Egypt, KSA and Iran.^{7–9} Therefore, the objective of this study was to explore the barriers to conducting scientific research in physiotherapy in Kuwait. The findings of the current exploration may aid in the implementation of strategic plans and policies to overcome the barriers and obstacles to research conducted by physiotherapy professionals in Kuwait, as a representative of the Middle East region.

Materials and Methods

Study design and ethics

This study used an observational cross-sectional survey design with an online questionnaire. The questionnaire method is useful and effective for investigating specific practices by including a representative sample population with different characteristics.¹⁴ The study was approved by the regional ethics committee of the Kuwait Ministry of Health (ref. 2019/1076). Confidentiality, anonymity and informed consent were fundamental ethical characteristics of the questionnaire. People who responded to the questionnaire were invited to participate without coercion. Submission of the questionnaire was considered to constitute informed consent.

Questionnaire development process

The questionnaire was developed in two stages. The first stage was based on an intensive review of the literature to identify the potential barriers to conducting research and to aid in formulating the primary question. The second stage aimed to develop the questionnaire through expert committee meetings. A literature review was conducted to explore a wide range of original articles and reviews associated with barriers to research in physiotherapy. The PubMed and Medline search engines were searched with the key words of barriers, obstacles, research, physical therapy or physiotherapy, from January to March of 2019. No study was identified that specifically explored research barriers in the physiotherapy profession. Because of the lack of research on barriers to conducting physiotherapy research, the literature review was expanded to other medical professions, to aid in constructing the primary question. The terms “physiotherapy” and “physical therapy” were excluded from the search strategy. Nine studies and reviews exploring the research barriers among other medical professions were

identified (Table 1). According to the review, the primary question of the questionnaire was formulated, which consisted of 14 answers. The most frequently discussed research barriers in the previous literature were a lack of time, research skills and resources (Table 1). Other barriers were also frequently discussed, including workload, lack of support, lifetime responsibility, lack of volunteers, fear of failure to publish the study, difficulty in gaining ethical approval, high cost of resources, long time periods for acquisition of results, complicated regulations and infrastructure, research not being included in job descriptions and lack of motivation (Table 1). The primary question was constructed accordingly.

An expert committee meeting was held after the primary question was formulated, which consisted of physiotherapists with master's and/or PhD degrees in physiotherapy who had experience in conducting research. The committee approved the formulated research barrier question and identified the variables, relevant to the Kuwaiti context, according to the review. An initial questionnaire was then designed. The developed questionnaire consisted of four main domains: participants' characteristics, research background, research barriers and encouragement for future research. The questionnaire included mainly closed-ended questions and was drafted in English. The English language is generally well understood by Arabic and non-Arabic speaking physiotherapists who are registered with the Ministry of Health.

The experts committee reviewed the content, accuracy, construction problems and grammatical errors, and ensured that the items did not contain offensive content or bias toward particular respondents. The next step was to reduce the statements and discard any redundancies. The code of ethics was considered during the questionnaire development process, including the following: 1) voluntary participation was ensured through allowing participants the freedom to complete or withdraw from the research, 2) participation was anonymous, and informed consent was assumed when the participants successfully submitted fully completed questionnaires, and 3) the aim and content of the questionnaire were clearly stated on the introduction page. Additionally, the questionnaire items did not include any invasive or personal questions; the questions were associated with basic demographic data and general background information, without requiring disclosure of any private, personal or sensitive information. The face validity and specific content validity were developed via peer expert review. After three drafts, the final questionnaire was approved, ensuring the implementation of the ethics code (Table 2). SurveyMonkey Inc. (San Mateo, California, USA) was used to create an online questionnaire. Concise, explicit and simple English was used on the welcome page, clarity was maintained throughout all items, and instructions were included to maximize respondents' understanding.¹⁶ The questionnaire contained a total of 11 items (Table 2). The average length of time needed to complete the questionnaire was approximately 5–10 min. To determine the minimum number of participants needed for the study we used the subject to item ratio, a prevalent guideline for determining a prior sample size for studies using questionnaires.¹⁶

Because the questionnaire included 11 items, and a subject to item ratio of 20:1 was used, a minimum of 220 participants were needed for the study.¹⁶

Study sample

The data were collected from physiotherapists working in Kuwait in the government and private sectors, with all levels of physiotherapy qualifications. Approximately 768 physiotherapists, including BSc, MSc, PhD and DPT holders, were registered according to the Kuwait Physiotherapy Administration annual statistics of 2019. To be considered eligible for the study, physiotherapists were required to be licensed and registered with the Ministry of Health of Kuwait.

Questionnaire distribution and data collection and management

Data collection started on September 16, 2019 and continued for 7 weeks. The study invitation, participation announcement and an online link to the questionnaire were distributed by the Physical Therapy Administration via their WhatsApp network for all Kuwaiti hospitals. The heads of the physiotherapy departments of Kuwaiti hospitals received an official invitation letter to encourage participation among their staff. Two weeks before the deadline, a reminder WhatsApp message was sent to all registered physiotherapists through the same WhatsApp network to increase the response rate. On December 2, 2019, the online questionnaire was closed, and the data analysis began. Data were collected with SurveyMonkey, which provided detailed descriptive statistics of percentages and the frequency distribution. Both completed and incomplete surveys were included.

Results

With a response rate of 40.5%, a total of 311 surveys were received from 768 invited physiotherapists. In terms of the demographic characteristics, 80% of the respondents were 25–44 years of age, and 67% of the respondents were women (Table 3). Most the respondents had more than 15 years of work experience in physiotherapy at 36%, and 78% held a Bachelor's degree in physiotherapy (Table 3). Regarding the respondents' research background, 56% indicated that they read academic articles on a monthly basis, whereas 53% indicated that they had conducted research previously (Table 4).

A total of 309 of the 311 respondents answered the research barrier questions. The main reasons indicated were a lack of time (45%); lack of research skills (41%); and lack of resources, including funding, research software and database access (40%; Table 5). Some respondents indicated that workload (29%), difficulties in gaining ethical approval (28%), lack of motivation (26%) and lack of support (25%) were reasons for the dearth of research in physiotherapy in Kuwait (Table 5). Table 5 and Figure 1 detail the barriers to conducting physiotherapy research. Most respondents (77%) indicated that workshops and lectures in research could be an effective way to improve and encourage

Table 1: Literature review of studies exploring the barriers to conducting scientific research.

	Authors (year)	Study title	Study design	Study cohort	Identified research barriers
1	Pfeiffer, Burd and Wright, (1992) ¹¹	Clinicians and research: recurring obstacles and some possible solutions	Survey design	273 clinicians in residential treatment centers (Devon) 95 psychologists 27 psychiatrists 151 social workers	<ul style="list-style-type: none"> - Insufficient time (89%) - Research not part of the job description (84%) - Lack of financial support (77%) - Lack of experience (16%) - Ethical issues (22%) - Internal review board formalities for project approval (39%)
2	Gill et al., (2001) ⁹	Obstacles to residents' conducting research and predictors of publication	Survey design	81 residents of the University of the British Columbia (United Kingdom)	<ul style="list-style-type: none"> - Lack of time (n = 51, 68%) - Lack of research interest (n = 32, 31%) - Lack of faculty research interest (n = 15, 20%)
3*	Sung et al., (2003) ¹³	Central challenges facing the national clinical research enterprise	Conceptual review	NA	<ul style="list-style-type: none"> - Public participation - Information systems - Workforce training - Funding
4*	Pickstone et al., (2008) ¹²	Building research capacity in the allied health professions	Debate of the United Kingdom model	Allied health professions (United Kingdom)	<ul style="list-style-type: none"> - Lack of a clear set of research competencies - Pressure of clinical caseloads - Complex multidisciplinary nature of interventions - Lack of access to research training
5	Pager, Holden and Golenko (2012) ¹⁰	Motivators, enablers and barriers to building allied health research capacity	Survey design	81 allied health professionals from multidisciplinary primary healthcare teams in Queensland Health (Australia)	<ul style="list-style-type: none"> - Work roles take priority (n = 70, 86%) - Lack of time for research (n = 66, 81%) - Desire for work/life balance (n = 46, 57%) - Lack of funds for research (n = 45, 55%) - Lack of skills for research (n = 44, 54%) - Lack of suitable remuneration (n = 42, 52%) - Lack of administrative support (n = 40, 49%) - Lack of software for research (n = 33, 41%) - Other personal commitments (n = 28, 34%) - Lack of library/internet access (n = 9, 11%)
6	Alghamadi et al. (2014) ⁶	Perceptions, attitudes and practices regarding research among senior medical students	Self-administered questionnaire	170 senior medical students at King Saud University, KSA	<ul style="list-style-type: none"> - Lack of training courses (n = 151, 88.8%) - Lack of professional supervision (n = 143, 84.7%) - Difficulty in following up with patients (n = 131, 77.1) - Lack of time (n = 123, 72.3%) - Poor accessibility to databases (n = 120, 70.6%) - Lack of funding (n = 92, 54.1%)
7	Ataee et al. (2015) ⁷	Research barriers, according to viewpoints of experts who attended research workshops of the Mazandaran University of Medical Sciences	Cross-sectional survey design Mail or hardcopy questionnaire	213 participants (Iran) 47 physicians 42 nurses 23 obstetricians 52 health experts 49 others	<p>Individual barriers: total variance (tv)</p> <ul style="list-style-type: none"> - Lack of awareness and knowledge (3.27 = 31.62% of tv) - Lack of time and business (1.57 = 18.85% of tv) - Lack of motivation (1.155 = 15.11% of tv) <p>Organizational barriers:</p> <ul style="list-style-type: none"> - Lack of organizational support (4.6 = 25.92% of tv) - Lack of library services and devices (25.92% of tv) - Lack of facilities (8.893% of tv) - Lack of access to various research (6.686% of tv) - Lack of cooperation (6.214% of tv) - Lack of facilities and consulting (5.66% of tv)

8*	Alemayehu et al. (2018) ⁵	Barriers to conducting clinical trials in developing countries: systematic review	Systematic review	<ul style="list-style-type: none"> -Oncologists with clinical trial experience (Africa, Asia and South America) -Senior and accomplished investigators (Chile, Egypt, Greece, China, India, Australia and United States) -Investigators (7 participants): Chile, Egypt, Greece, China, India, Australia and United States -Investigators and stakeholders: South Africa -Health professionals: China -Health researchers and stakeholders: Ethiopia -Local health researchers, stakeholders and regulators: Ethiopia and Cameroon -Researchers and stakeholders: Africa -Medical oncologists: Latin America -Medical staff: KSA 	<ul style="list-style-type: none"> - Lack of finances: lack of funding, lack of skilled personnel, and lack of awareness and motivation - Ethical and regulatory system obstacles: delay of approval decisions, unskilled authorities, overly complex and unreasonably strict ethical and regulatory system - Lack of research environment: lack of infrastructure, lack of research materials/facilities, lack of conducive scientific atmosphere, lack of policy makers' understanding of the importance of research - Operational barriers: lack of supportive administrative system, lack of/difficulty in patient recruitment - Competing demands: lack of time, other competing priorities, jobs and their attendance responsibilities
9	Dadipoor et al. (2019) ¹⁵	Barriers to research activities, as perceived by medical university students: cross-sectional study	Cross-sectional survey design	<p>400 participants: medical students in Bandar Abbas university (Iran)</p> <ul style="list-style-type: none"> 92 health students 61 nursing students 100 paramedical students 90 medical students 57 dental students 	<p>Personal barriers (mean score)</p> <ul style="list-style-type: none"> - Inadequate knowledge of research methods (2.91) - Inadequate skill in conducting research (2.89) - Inadequate skill in statistics methods (2.82) - Intensive courses (2.74) - Too much enthusiasm (2.56) - Social responsibilities (2.52) - Family responsibilities (2.11) <p>Organizational barriers (mean score)</p> <ul style="list-style-type: none"> - No access to information sources (2.75) - Limited access to facilities and research environments (2.71) - Disabling bureaucracy (2.67) - Inadequate income from research vs. other activities (2.66) - Demotivating university authorities (2.65) - Obligation to follow a certain framework (2.58) - Failed cooperation between professors and organizations (2.57) - Limited time (2.56)

* Refers to articles that do not specify the percentages for the research barriers but were included in the review to inform the construction of the questionnaire.

Table 2: Questionnaire developed to explore the barriers to conducting scientific research in physiotherapy in Kuwait.

1	What is your age?	- 20 to 24 - 25 to 34 - 35 to 44 - 45 to 54 - 55 to 64 - 65 to 74
2	Gender	- Male - Female
3	How many years of experience do you have?	- Less than 5 years - 5–10 years - 10–15 years - More than 15 years
4	What is your qualification(s)?	- Diploma - BSc - MSc - PhD
5	In which hospital do you work? (Please specify your work setting if possible, e.g., orthopedic, pediatric, etc.)	- Open
6	How often do you read academic articles/peer reviewed journals?	- Daily - Weekly - Monthly - Not interested
7	In your opinion, why do we lack research in physiotherapy?	- Lack of research skills - Lack of resources (funding, research software, database access, etc.) - Fear of failure to publish work - Lack of volunteers - Lack of time - Difficulty in gaining ethical approval - Workload (clinical case load) - Lifetime responsibilities - Lack of support - High cost of resources - Some results take long times to acquire - Complicated regulations and infrastructure - Not part of the job description - Lack of motivation - Other (please specify)
8	Have you conducted any research before?	- Yes - No
9	How can we improve/encourage physiotherapists to conduct research in the future?	- Encouragement from heads of departments - Awards and recognition for researchers - Workshops and lectures about research

Table 2 (continued)

10	Do you believe that it's important for physiotherapists to conduct research?	- Yes - No
11	Do you think that conducting a research study should be included as an evaluation criterion for promotion among physiotherapists?	- Yes - No

Table 3: Demographic characteristics of respondents, including age and gender. Years of work experience and qualifications are also shown (n = 311).

Age (years)	Percentage	Frequency
20 to 25	6.11%	19
25 to 34	35.37%	110
35 to 44	44.37%	138
45 to 54	10.61%	33
55 to 64	2.57%	8
65 to 74	0.96%	3
Gender	Percentage	Frequency
Male	32.69%	101
Female	67.31%	208
Years of Experience	Percentage	Frequency
Less than 5 years	13.83%	43
5–10 years	25.40%	79
10–15 years	24.76%	77
More than 15 years	36.01%	112
Qualifications	Percentage	Frequency
Diploma	0.32%	1
Bachelor	78.14%	243
MSc	19.61%	61
PhD	1.93%	6

physiotherapists to conduct research in the future (Table 5). More than half the respondents (53%) reported that awards and recognitions for researchers could improve and encourage research in physiotherapy. Table 5 details the suggested solutions to improve and encourage physiotherapy research.

Table 4: Research interest and background regarding the frequency of reading academic articles (n = 308) and previous experience in conducting research (n = 309).

Frequency of reading academic articles	Percentage	Frequency
Daily	3.9%	12
Weekly	25.65%	79
Monthly	56.19%	170
Not interested	15.26%	47
Conducting research previously	Percentage	Frequency
Yes	52.75%	163
No	42.72%	132
Other (please specify)*	4.53%	14

* The provided answers pertained to research conducted during the academic year at universities and involvement in data collection as part of a research.

Table 5: Barriers to conducting physiotherapy research (n = 309) and suggested solutions to improve and encourage physiotherapy research (n = 301).

Research barriers	Percentage	Frequency
Lack of research skills	40.78%	126
Lack of resources (funding, research software, database access, etc.)	40.13%	124
Fear of failure to publish work	10.68%	33
Lack of volunteers	22.33%	69
Lack of time	44.98%	139
Difficulty in gaining ethical approval	27.83%	86
Workload (clinical case load)	29.13%	90
Lifetime responsibilities	20.71%	64
Lack of support	25.24%	78
High cost of resources	6.15%	19
Long time periods for acquisition of results	7.44%	23
Complicated regulations and infrastructure	11.33%	35
Not part of the job description	6.80%	21
Lack of motivation	25.89%	80
Other (please specify)	8.41%	26
Suggested solutions to improve and encourage physiotherapy research	Percentage	Frequency
Encouragement from heads of departments	46.84%	141
Awards and recognition for researchers	53.49%	161
Workshops and lectures about research	77.08%	232



Figure 1: Bar graph illustrating the barriers to conducting physiotherapy research.

Discussion

To our knowledge, this is the first study to examine the research barriers among physiotherapy professionals in Kuwait and to investigate the reasons for the low research activity. The overall response to the questionnaire was encouraging, despite the initial reluctance of a sizable

proportion to participate. Most respondents were female physiotherapists, and the most prevalent age range was 25–44 years of age. Most respondents had more than 15 years' work experience including clinical, administrative and academic experience. Additionally, most respondents acknowledged the importance of research and frequently read research studies. The findings from the questionnaire yielded satisfactory results, which may aid in addressing these research barriers in the future to improve physiotherapy research in Kuwait. One of the most common barriers was lack of time (44.9%); other studies, including a systematic review, have reported this barrier as a major obstacle to conducting research in areas including the United Kingdom, Australia and Iran.^{1,5,7,15–18} This barrier may be due to personal obstacles, such as family responsibilities or part-time work other clinics. The questionnaire also revealed that 21% of respondents (n = 64/306) indicated lifetime responsibilities, and some indicated that the workload at their clinics has prevented them from conducting research (29.13%, n = 90/309). Both these reasons may be associated with a lack of time. One respondent, elaborating on workload, stated: "*The Physiotherapy Administration is mainly concerned about the caseload in statistics, so we can't minimize the caseload.*" Balancing workload with attention to conducting research is crucial; this balance can be supported by developing new research policies for clinical physiotherapists and encouraging innovative research ideas.

Other major organizational barriers described by respondents were a lack of research skills (40.78%), and a lack of resources (40.13%) such as funding, research facilities and equipment, research software programs and library access to databases. The findings of the current study support those of Pager, Holden and Golenko (2012), who have surveyed allied health professionals in Australia,¹¹ and of Dadipoor et al. (2019), who have surveyed medical students in Iran.¹⁶ The findings of the current study among physiotherapists indicated an awareness of the importance of high standards in research skills. Such skills are crucial for physiotherapists in Kuwait to enable them to conduct high quality research studies. The major barriers obstructing progress in clinical research were a lack of financial resources, lack of skilled personnel, and regulatory and administrative issues. These barriers have also been found in a major systematic review investigating research barriers⁶ and a recent study investigating researcher and non-researcher students in medical sciences in Iran.¹⁷

Other organizational barriers include difficulties in approving physiotherapists' research proposals to gain ethical approval (28%, n = 86/309), complicated regulations (11.33%) and a lack of support from the Ministry of Health (25.24%, n = 78/309). One respondent noted: "*We don't lack research in physiotherapy; we lack research by physiotherapists in Kuwait because of lack of support.*" According to this response, these organizational barriers may be associated with reactions such as fear of failure and feelings of distress regarding publishing a research study (10.68%). Some respondents found that attempts to obtain outcomes for certain studies are slow because of bureaucratic procedures (7.44%), such as in studies including follow-up investigations. Another respondent's answer, associated with gaining faster results, described "*unrealistic meeting points between research results and evidence-based practice.*" In

addition, the low numbers of volunteers willing to participate in research studies (22%, n = 69/309) was found to be a barrier that has prevented and demotivated physiotherapists from pursuing potential research studies. Most of these organizational barriers have been found in other articles to be the main barriers to conducting research.^{1,6,8,18,19}

In Kuwait, conducting research studies is not part of physiotherapists' job descriptions, particularly for those who work at government hospitals; therefore, 7% (n = 21/309) of the respondents believed that this is a barrier that prevents them from conducting research. However, more than half (53.49%, n = 161/309) the respondents reported that awards and recognition for researchers could encourage research and compensate for research not being part of physiotherapists' job descriptions. Many studies have found that financial compensation is essential to encouraging researchers in the healthcare system to conduct more research.^{1,6,8,19,20} The benefits of research are understood by both junior and senior physiotherapists, along with awareness of the need for more knowledge and training in research methods and enhancing and developing research skills. Therefore, many respondents (77.08%, n = 232/301) indicated that workshops and more research lectures should be offered, given that these resources are often limited to physiotherapy undergraduate students. With that aspect in mind, many respondents (46.84%, n = 141/301) reported that encouragement from heads of departments could encourage physiotherapists to conduct research while balancing their workload. In addition, new policies and regulations should be developed by the Ministry of Health to provide a clear path for physiotherapists, and to motivate and prepare them for research.

Another barrier that could be both personal and organizational was a lack of motivation (25.89%). In future studies, a lack of motivation could be further investigated to discover whether a higher correlation exists with personal or organizational barriers, and which barriers are more likely to demotivate physiotherapists and prevent them from conducting research. A lack of motivation has been found to prevent other clinicians in other developing countries from conducting research.^{6,8} When the participants were asked about whether they had conducted a research study themselves, more than half (52.75%) answered yes. However, this question should be further explored in the future, to differentiate among the types of studies conducted and when the studies were conducted, for example, whether a study was university or work-related research.

Three studies were previously conducted in relatively similar geographical and cultural areas of the Middle East region, including KSA, Iran and Egypt.^{7–9} In KSA, the perception, attitudes and practices toward research have been explored among 170 senior medical students at the King Saud University with a self-administered questionnaire.⁷ In Iran, research barriers have been explored among 213 physicians, nurses, obstetrician and health experts who attended research workshops at the Mazandaran University of Medical Sciences, through a cross-sectional survey design and mail/hardcopy questionnaire.⁸ Moreover, Alemayehu, Mitchell and Nikles (2018) have systematically reviewed the barriers to conducting clinical trials in developing countries, including investigators from

Egypt and medical staff from KSA.⁹ Regardless of the discrepancy in the professions explored in previous studies conducted in the Middle East, high similarities exist between the research barriers identified in this study and prior studies, although the percentages differ. Lack of time was the main research barrier identified in the present study, at 44.98%, whereas the percentage was 72.3% in KSA and 18.85% in Iran.^{7,8} A lack of resources was also found in the current study, including funding, research software and database access, at 40.13%. Similarly, in KSA, poor accessibility to databases was noted by 70.6% of respondents, and a lack of funding was described by 54.1% of respondents.⁶ In Iran, a lack of library services and devices was identified by 25.92% of respondents.⁸ Although the exact percentages for the identified barriers were not specified in the systematic review by Alemayehu, Mitchell and Nikles (2018), which included a sample from Egypt and KSA, their findings agree with the current findings, which highlighted that a lack of financial support, funding, research material/facilities and time were major barriers to conducting scientific research.⁹ The fluctuations observed in the percentages of the identified barriers among the Middle East countries is mainly associated with the nature of the explored profession. For example, the study in KSA was on medical students, thus explaining the finding that the highest percentage was for a lack of time (70.6%), given medical students' study requirements.⁷

Stakeholders and health policymakers should implement effective strategies for overcoming the identified barriers to improve health through evidence-based practice by encouraging and increasing the activity of scientific research. Strict rules and regulations should be set to face the main challenge of a lack of time. Clearly, researchers lack the time necessary for conducting research. In Kuwait, physiotherapists have similar patient loads regardless of whether they are conducting research. Setting rules to reduce patient load among physiotherapists who are performing research will be essential. Such a rule should encourage an increase in research activity. Additionally, the Kuwait Ministry of Health receives the largest annual budget from the government; however, the lack of funds for research is a major challenge. Setting an annual budget for physiotherapy research to cover the resources needed for research would provide a solution. Kuwait's physiotherapists lack access to full text articles, which is essential for conducting research. Accessing the full text of studies requires institutional subscriptions. However, the Kuwait Ministry of Health—the main governmental employer of physiotherapists in Kuwait, including all Kuwait governmental hospitals and clinics—does not provide employees, including physiotherapists, open access to research articles and databases allowing the full text of articles to be read without a subscription. Only physiotherapists affiliated with Kuwait University have access to full text articles through the medical library. Reading the full text of studies is essential for conducting research, and this restriction must be resolved. Additionally, some research studies require special equipment for examination, yet no budget has been set by the Kuwait Ministry of Health for the equipment needed for research. The ethics committee of the Physical Therapy Administration receives all applications for physiotherapy research in Kuwait and has a powerful review

board that could evaluate research proposals with high and promising value, and recommend funding for equipment and other expenses. Additionally, research budgets could be used for awarding and recognizing researchers as an encouragement, and for planning research workshops and courses.

The validity measure is essential for newly developed questionnaires to examine the ability to measure the intended parameters.^{21,22} However, the questionnaire used in the present study cannot be considered a newly developed questionnaire, because all questionnaire items were retrieved from nine previously published studies and reviews.^{6–8,10–14,18} Three studies from the retrieved literature were conducted in countries with populations of similar ethnicity to the population of Kuwait (KSA, Egypt and Iran) and also studied health professionals.^{7–9} A review of the methods for enhancing the validity of research indicated that using or adapting existing questions or surveys with demonstrated validity is preferable, with appropriate acknowledgment and citation; this practice greatly decreases the burden of formally testing new questionnaires.^{23,24} Although quantifiable statistical data are not provided with face and content validity, both types of validity were considered in the current study. Face validity, a subjective assessment of a questionnaire, was used to examine the face value in terms of feasibility, readability, consistency of style and formatting, and clarity of the language, according to input from individuals with expertise in survey methods in research.²⁵ Essential elements of content validity were also used to test the questionnaire's items theoretically for having true meaning relevant to the specific topic explored.²³ Content validity was ensured through an exhaustive literature review to extract the items, and evaluation by experts in the same research field indicated that the items were necessary and useful. However, the content validity ratio was not calculated, mainly because the items were extracted from previously published and validated questionnaires. Through multiple drafts, the face validity, essential elements of content validity and the implementation of the ethics codes were ensured. Additionally, the questionnaire consisted of closed questions. The aim of the questionnaire was not to measure or assess a sensitive topic but to determine common topics that every physiotherapist might encounter, and the target respondents were educated and had good English proficiency.

A pilot study was not conducted, and this absence could be considered a study limitation. However, the implemented questionnaire was not newly developed but was adapted from previous studies; it used simple language and direct, closed-ended questions; provided instructions; and had no nominal scale. Additionally, only two respondents did not answer the primary question on research barriers, and 96.7% of the respondents answered all the questions, thus indicating that the questionnaire had appropriate formatting and language with no errors.²⁶ The questionnaire consisted mainly of closed-ended questions, thus limiting the exploration of more research barriers. Another limitation is that the current study was conducted on physiotherapists registered with the Ministry of Health of Kuwait; thus, the results cannot be generalized beyond this sample population.

Conclusion

Physiotherapy is an essential healthcare profession, and further population-based studies must be conducted to solve national issues related to the specific context of each country. The lack of research activity in physiotherapy in Kuwait is a major challenge for policymakers. However, the barriers to research identified by the current study could be targeted to improve research activity in the physiotherapy profession in Kuwait to move toward better evidence-based practice.

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Conflict of interest

The authors declare no conflicts of interest.

Ethical approval

The ethics committee of the Kuwait Ministry of Health approved the study (ref. 2019/1076) in accordance with the declaration of Helsinki. Date: 2019.

Authors contributions

NA conceived and designed the study, conducted research, provided research materials, organized data, analyzed and interpreted data, and wrote the initial and final drafts of the article. FA conceived the study, conducted research, provided research materials, interpreted data and wrote the initial draft of the article. AS conceived the study, conducted research, provided research materials, collected and organized data, interpreted data, and wrote the initial and final drafts of the article. All authors have critically reviewed and approved the final draft and are responsible for the content and similarity index of the manuscript.

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