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# Research in family medicine: Contribution, priorities, and barriers in Saudi Arabia

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## Abstract:

**BACKGROUND:** Research in family medicine is important. The objectives of this study were to explore the contribution of family physicians, their attitudes and practice, and the barriers to research in family medicine in Saudi Arabia.

**MATERIALS AND METHODS:** This study was conducted on Saudi family physicians in 2021. A self-administered questionnaire was sent to family physicians through WhatsApp and email. Information sought included demographic data, scientific profile, number of publications, reasons for conducting research, barriers to the conduct of research, attitudes and skills for the conduct of research, and priority areas of research. Data were analyzed using SPSS version 15. Descriptive statistics included mean and standard deviation for continuous variables and frequencies and percentages for categorical variables. Student's *t*-test was used to compare the means of two groups of physicians. Chi-square test and logistic regression analysis were performed to determine the association between categorical variables.

**RESULTS:** A total of 313 family physicians filled the questionnaire; majority were male (65%), were married (90%), and worked under the Ministry of Health (73%). The total number of publications since graduation was 1165 papers with an average of 3.8 papers per physician. More than 70% were interested in conducting research, and more than two-thirds considered research important to the advancement of family medicine. One-third of the family physicians were currently involved in conducting research, while 30% were supervising at least one research project. The top five areas of priority were chronic diseases, mental health, health promotion, quality of healthcare, and medical education/training; whereas the top five obstacles to the conduct of research were the lack of time, lack of research environment, lack of financial and technical support, and the absence of skills.

**CONCLUSION:** Saudi family physicians make a good contribution to research. The researchers and research bodies should focus on identifying the priority areas for research in family medicine in the next few years and provide support to achieve some of the objectives of the National Vision of 2030.

## Keywords:

Contribution, family medicine, family physician, primary care, priorities, research

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## Introduction

Research is an important keystone of medical sciences by which health organizations improve the healthcare system and quality of health services.<sup>[1,2]</sup> All medical specialties can make significant contributions to the field of health research

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and improve evidence-based healthcare. One important function of family physicians is their contribution to research in family medicine.<sup>[3]</sup> In Saudi Arabia, only a few studies have used different tools to explore the research productivity in different health professionals and estimated their contribution.<sup>[4-6]</sup> One important striking finding in some of these studies was the low level of contribution from family medicine.<sup>[4,7,8]</sup>

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A comprehensive review by AlHarbi *et al.*, of publications by Saudi family physicians revealed that of the 415 articles published during 2004–2018, 38% were published in 2017–2018.<sup>[8]</sup> Another study of primary care doctors in Riyadh revealed that most of the participants agreed that research was important and had a positive impact on clinical practice; however, 83.5% lacked the time to conduct research.<sup>[9]</sup>

A review article by Jahan and Al-Saigul of 655 articles published between 1983 and 2011 found that most were original and discussed chronic diseases or issues related to the health services.<sup>[7]</sup>

Problems with the conduct of research are both national and regional. Alshammari and Alshammari found that the most encountered barriers were lack of time and inadequate technical support.<sup>[10]</sup> In Bahrain and Oman, two studies explored the barriers to the conduct of research in primary care and found that lack of time, the scarcity of financial support, and incentives were the top challenges.<sup>[11,12]</sup>

A recent national survey that explored the priorities of research in Saudi Arabia did not adequately cover the priorities of topics in family practice and primary care despite their critical importance.<sup>[13,14]</sup>

Determination of research priorities is critical in the field of medicine worldwide. A study in Scotland that explored the priorities of primary care research found the following five important themes: diseases and illnesses, access of care, workforce, multidisciplinary team, and care integration.<sup>[15]</sup>

The objectives of this study were to explore contributions, attitudes, practice of family physicians, and the barriers to their conduct of research and determine the priority topics for research in family practice in Saudi Arabia from the perspective of family physicians.

## Materials and Methods

This study was conducted from January to March, 2021. In order to achieve the objectives of this study, an English questionnaire was developed by the investigator after a comprehensive literature review of relevant studies from Saudi Arabia.<sup>[9-14]</sup> The questionnaire comprised the following parts: demographic data, scientific profile, number of total publications, the number of publications in the past 5 years, type of publications, subjects of research, publication journals, reasons for conducting research, barriers to conducting research, attitude, skills for the conduct of research, and priority research topics in Saudi Arabia. Attitude was assessed using a five-point Likert scale for the following five questions: (1) interest in conducting research, (2) interest in taking part in

research, (3) importance of research in the development of family medicine, (4) personal contribution to research in family medicine, and (5) interest in supervising research. Attitude was classified as positive if the total score was 19 out of 25 points or higher and negative if the total score was <16 points. Practice was assessed by three questions: (1) currently supervising research (Yes or No), (2) involvement in conducting research (Yes or No), and (3) skilled in conducting research (very low-low, moderate, high, very high).

Ethical approval was obtained from the Research Ethical Committee of the General Directorate of Health Affairs-Aseer Region, vide letter number REC-NO: 11-12-2020 dated 23/12/2020, and informed written consent was taken from all participants in the study. The questionnaire was anonymous, participation was voluntary, and all the information collected was kept confidential.

The sample size was calculated using the Raosoft calculation formula as follows: margin error = 5%, confidence interval (CI) 95%, population size (total family physicians in Saudi Arabia) = 2000, and the response distribution = 50%, which gave a sample size of 323 participants. The questionnaire was constructed using the Google Forms, and the relevant link was made. In order to test the validity and feasibility of the questionnaire, a pilot study was conducted on 10 family physicians, their feedbacks were reviewed, and modifications were made to the questionnaire as necessary. Various professional and social groups of family physicians in Saudi Arabia were used to determine the study population of family physicians. An informed consent form and the link to the questionnaire were sent to family physicians through personal emails or mobile phones. Participation by filling the questionnaire constituted informed consent. Family physicians were reminded of participating in the study through follow-up emails or WhatsApp messages.

Data entry and analysis were managed using the Statistical Package for the Social Sciences software version 15 (SPSS, IBM corporation, NY, USA). Chi-square test was used to find the association between categorical variables, while the Student's *t*-test was used to find the association between continuous variables and dichotomous variables. Logistic regression analysis was done to discover the association between attitude and practice as dependent variables, and sociodemographic variables as independent variables. Results were considered significant if the P-value was  $\leq 0.05$ .

## Results

Of targeted samples, 313 participants replied to the questionnaire giving a response rate of 97%. Table 1

summarizes the profile of participants. More than two-thirds were 30–40 years old; the majority were male (65%) and married (90%). Almost 80% had the Saudi Board, 61% were consultants, more than 50% had graduated 5 years or more previously, and 73% worked in the Ministry of Health.

Table 2 depicts the contribution of family physicians to research. The total number of published papers in the previous 5 years was 505 papers, with an average of 1.6 papers per physician. More than one-third had at least one publication, while 20% had two published papers, and 8% had published five or more papers. The total number of publications since graduation from Saudi Board holders or equivalent certificates was 1165 papers, with an average of 3.8 papers per physician. Regarding the type of the published research, 73% were cross-sectional, 10.7% were retrospectives, 6%

were review articles, and 3% were experimental. The most common studied topics were related to chronic diseases (27%), lifestyles (13%), health promotion (12%), women health (8%), and medical education and training (2%).

Less than one-fifth of the papers (19%) were published in local Saudi journals, and a similar number was published in Indian journals, 13% were published in Arab journals, and 12% of the papers were published in European or American medical journals.

Table 3 shows the attitude and practice of participants to research. More than 70% were interested in conducting research or participating in research in the next 5 years; more than two-third thought that research was crucial to the development of family medicine in Saudi Arabia, while 42% thought that they contributed much to research. Less than half (47%) were interested in supervising research in the next 2 years; 40% of the participants conduct research of their personal interest, 60% to get academic promotion, and 17% for financial gain. About one-third were currently involved in research work, 30% were supervising at least one research, and 23% had the skills to conduct research.

Table 4 demonstrates the priorities of research topics and barriers to the conduct of research. The top five priority topics were chronic diseases (73%), mental health (59%), health promotion (53%), quality of healthcare (49%), and medical education/training (39%). The top five barriers to the conduct of research were the lack of time (70%), absence of a research environment (47%), scarcity of financial support (37%), inadequate technical support (35%), and lack of research skills (34%).

The average number of publications in the previous 5 years was 1.8 for males and 1.2 for females ( $P = 0.003$ ) (Table 5). The consultants on average had 5 publications in the past five years compared to average of 1.7 publications for specialists ( $P = 0.002$ ).

On univariate analysis for the association between sociodemographic characteristics of family physicians and attitude to research, marital status was the only significant variable: married participants (60%) showed a more positive attitude toward research compared to unmarried (39%) ( $P = 0.037$ ). Participants older than 40 years were more skilled in research than those younger than 40 years (79% vs. 66%,  $P = 0.029$ ); males were more skilled in the conduct of research compared to females (74% vs. 59%,  $P = 0.007$ ).

Table 6 presents the results of the logistic regression analysis. Married family physicians had better attitudes

**Table 1: Profile of participating Saudi family physicians, Saudi Arabia, 2021 (n=313)**

Variables	N (%)
Age group (year)	
<30	16 (5.1)
30–40	218 (69.6)
41–50	47 (15.0)
51–60	25 (8.0)
>60	7 (2.2)
Sex	
Male	205 (65.5)
Female	108 (34.5)
Marital status	
Married	283 (90.4)
Single	26 (8.3)
Divorced	4 (1.3)
Qualifications	
SBFM	251 (80.2)
ABFM	168 (53.7)
CBFM	3 (1.0)
Others	63 (20.1)
Position	
Consultant	192 (61.3)
Specialist	121 (38.7)
Years since graduation (years)	
<5	154 (49.2)
5–10	100 (31.9)
11–15	20 (6.4)
16–20	16 (5.1)
>20	23 (7.3)
Sector	
Ministry of Health	230 (73.4)
Ministry of Education	32 (10.2)
Ministry of Defense	28 (8.9)
Ministry of National Guard	4 (1.3)
Ministry of Interior	3 (1.0)
Private and other sectors	16 (5.1)

SBFM=Saudi Board Family Medicine, ABFM=Arab Board Family Medicine, CBFM=Canadian Board Family Medicine

**Table 2: Contribution of Saudi family physicians to research, Saudi Arabia 2021 (n=313)**

Contribution	N(%)
Number of publications in the past 5 years (n=505)	
No publication	82 (26.2)
One publication	109 (34.8)
Two publications	63 (20.1)
Three publications	21 (6.7)
Four publications	14 (4.5)
≥ five publications	24 (7.7)
Types of research (n=355)	
Case report	12 (3.4)
Cross-section	260 (73.2)
Prospective	10 (2.8)
Retrospective	38 (10.7)
Experimental	11 (3.1)
Meta-analysis	4 (1.1)
Review	20 (5.6)
Subjects-topics of research (n=505)	
Chronic diseases	138 (27.3)
Health promotion	60 (11.9)
Lifestyles	68 (13.5)
Child health	24 (4.8)
Adolescent health	16 (3.2)
Women's health	40 (7.9)
Sex health	4 (0.8)
Quality	20 (4.0)
Healthcare system	13 (2.6)
Occupational health	10 (2.0)
Geriatric health	11 (2.2)
Cancer	11 (2.2)
Accidents	4 (0.8)
Emergency	9 (1.8)
Medical education and training	30 (5.9)
Others	73 (14.5)
Journals of publication (n=388)	
Local (Saudi) Journals	73 (18.8)
Arab Journals	49 (12.6)
Indian Journals	73 (18.8)
Pakistani Journals	16 (4.1)
Other Asian Journals	18 (4.6)
African Journals	5 (1.3)
European Journals	47 (12.1)
American Journals	44 (11.3)
Other Journals	63 (16.2)

toward conducting research (odds ratio [OR] = 2.097, 95% CI 0.918–4.788), but this was statistically not significant. Males were more skilled in conducting research (OR = 1.819, 95% CI 1.081–3.063). Family physicians older than 40 years were also more skilled in conducting research (OR = 1.758, 95% CI 0.841–3.788), but this was not statistically significant.

In the final logistic regression model obtained by using the backward elimination method, being married was the only significant factor associated with attitude to conducting research (AOR=2.285, 95%CI 1.032-5.056).

**Table 3: Attitude and practice regarding research among Saudi family physicians, Saudi Arabia, 2021 (n=313)**

Attitudes and practices	N (%)
Interest to conduct research in the next 5 years	
Very high	122 (39.0)
High	73 (23.3)
Moderate	77 (24.6)
Low-very low	41 (13.1)
Interest to share in research in the next 5 years	
Very high	130 (41.5)
High	87 (27.8)
Moderate	61 (19.5)
Low-very low	35 (11.2)
Importance of research in developing family medicine in Saudi Arabia	
Very important	206 (65.8)
Important to some extent	74 (23.6)
Less important-unimportant	33 (10.5)
Personal contribution to research in family medicine in Saudi Arabia	
Very high	62 (19.8)
High	68 (21.7)
Moderate	87 (27.8)
Low-very low	96 (30.6)
Interest to supervise research in the next 2 years	
Very high	85 (27.1)
High	63 (20.1)
Moderate	90 (28.8)
Low-very low	75 (24.0)
Reasons for conducting research	
Personal interest	126 (40.2)
Academic promotion	188 (60.1)
Financial incentives	52 (16.6)
>1 reason	61 (19.5)
Involved in conducting research currently	
Yes	116 (37.0)
No	197 (62.9)
Currently supervising research	
Yes	94 (30.0)
No	219 (70.0)
Skillful to conduct research	
Very high-high	72 (23.0)
Moderate	144 (46.0)
Low-very low	97 (31.0)

Similarly, males were 1.86 times more skillful in conducting research than females (AOR=1.860, 95% CI 1.125-3.076).

## Discussion

This is one of the few studies that explored research on family medicine by family practitioners in Saudi Arabia.<sup>[8-10]</sup> In this study, we tried to answer a few research questions, including the contribution of family doctors to research and relevant factors in addition to priority topics of research in family

medicine. Most of the participants (74%) had published at least one work, with a total of 1165 and an average of 3.8 publications since graduation from the residency program, while 505 papers had been published by the participants in the previous 5 years with an average of 1.6 publications per physician. In a study conducted on faculty members at King Saud University Medical and Health Sciences colleges, it was found that 38.6% of them had published at least one paper in the previous 2 years.<sup>[16]</sup> Another study revealed that 415 articles had been published by family doctors in the previous 15 years, and almost 104 articles were published in 2018.<sup>[8]</sup> In another study by Jamjoom, it was found that only 18 studies were published on family medicine at the low rank of 47

compared to other medical specialties.<sup>[4]</sup> In a review by Ul Haq *et al.*, on publications from 2008 to 2017, it was found that 35,291 papers were published at an annual growth of 17.7%, and that 24,546 (54.3%) papers were on medicine. However, the contribution of the medical specialties was not indicated.<sup>[5]</sup> In general, in the absence of special standards, variations were expected as different tools were used by different researchers to assess the productivity of research of health professionals.

In this study, the majority (73%) of published papers were cross-sectional, while review articles and experimental studies represented 6% and 3%, respectively. These figures are lower than the figures reported by AlShammari and Alshammari, who found that 93% of papers published by family doctors were cross-sectional and 7% were cohort or case-control studies.<sup>[10]</sup>

**Table 4: Priority topics for research in family medicine and barriers to the conduct of research, Saudi Arabia, 2021 (n=313)**

Variables	N (%)
Rank of priority topics (n=313)	
Chronic diseases	228 (72.8)
Mental health	184 (58.8)
Health promotion	166 (53.0)
Quality of healthcare	153 (48.9)
Medical education and training	122 (39.0)
Health Economy	105 (33.5)
Women health	100 (31.9)
Geriatric health	100 (31.9)
Communicable diseases	81 (25.9)
Occupational health	80 (25.6)
Sex health	77 (24.6)
Heart diseases	72 (23.0)
Drug abuse	65 (20.7)
Cancer	59 (18.8)
Road traffic accidents	43 (13.7)
Barriers to research (n=313)	
Lack of time	219 (70.0)
Lack of research environment-atmosphere	147 (47)
Lack of financial support	115 (36.7)
Lack of technical support	110 (35.1)
Lack of skills	107 (34.2)
Lack of research secretaries	93 (29.7)
Lack of interest	86 (27.5)
Lack of knowledge	48 (15.3)

Chronic diseases was the most common topic for research represented the majority of the topics of the published papers (27%), followed by lifestyles (14%), health promotion (12%), medical education (6%), and adolescent health (3%). In a study conducted by Jahan and Al-Saigul on 655 papers published by primary care in Saudi Arabia, it was found that chronic diseases (36.4%), health services (23.9%), maternal-childhood care (14.8%), communicable disease (9.5%), and medical education (6.3%) represented the top five topics of research.<sup>[7]</sup>

In the current study, 19% of participants published their work in Saudi journals, 19% in Indian journals, 13% in Arab journals, while 12% were in European or American journals. Alharbi *et al.*, reported that 25% of the papers were published in Saudi Journals, 5% in Indian journals, but the majority (59%) of papers were published in other journals.<sup>[8]</sup>

The selection of a journal to publish depends depends on many factors such as quick response, high acceptance rate, and low fees of publication in addition to the impact factor of the medical journal. However, with the increasing rate of research produced by family physicians in the past few years, it has been suggested that more

**Table 5: Association between sociodemographic and research productivity of Saudi family physicians, Saudi Arabia, 2021 (n=313)**

Variables	N (%)	Publication in the past 5 years Mean±SD	P-value
Sex			
Male	205 (65.5)	1.8±1.8	0.003
Female	108 (34.5)	1.2±1.4	
Position			
Consultant	192 (61.3)	1.9±1.9	0.002
Specialist	121 (38.7)	1.2±1.3	

t-test=Student's t-test, DF=Degree of freedom, CI=Confidence interval, SD=Standard deviation

**Table 6: Logistic regression analysis: factors related to attitude toward conducting research and skills to conduct research**

	AOR	95% CI for AOR	P-value
<b>Attitude toward conducting research</b>			
Sex			
Male	1.056	0.641 - 1.741	0.831
Age group			
Age (>40 year)	1.064	0.557 - 2.032	0.852
Marital status			
Married	2.097	0.918 - 4.788	0.079
Years since graduation			
≥ 15 year	0.637	0.285 - 1.424	0.271
Number of qualifications			
≥ qualifications	1.101	0.649 - 1.868	0.721
Position			
Consultant	1.274	0.719 - 2.256	0.407
Constant			0.240
<b>Skilled to conduct research</b>			
Sex			
Male	1.819	1.081 - 3.063	0.024
Age group			
Age (>40 year)	1.785	0.841 - 3.788	0.132
Marital status			
Married	1.097	0.474 - 2.537	0.829
Years since graduation			
≥ 15 year	0.853	0.340 - 2.143	0.736
Number of qualifications			
≥ qualifications	1.054	0.596 - 1.863	0.857
Position			
Consultant	1.147	0.626 - 2.101	0.658
Constant	1.116		0.821

AOR=Adjusted odds ratio, CI=Confidence interval

national journals in family practice and primary care be published in Saudi Arabia.

Many factors affecting the productivity in research could be personal or professional in character, or related to the work environment. In this study, the average number of published papers by male participants in the past 5 years was significantly higher (1.8 vs. 1.2); the consultants had a higher rate of total publication (five publications) than the 1.7 publications per specialist, 1.8 publications for each consultant, and 1.2 per specialist in the previous 5 years. In one study from Riyadh, it was found that males, younger, and junior professionals published more research than their counterparts.<sup>[9]</sup>

The association between attitude to research and sociodemographic variables was not significant except for marital status. However, the logistic regression revealed no association with all sociodemographic variables of the participants. A study conducted by Al-Abdullateef on primary care doctors found that most participants agreed that research in primary

care was important, with almost two-third of them interested in conducting research. However, there was no association between interest and the demographics of the participants.<sup>[9]</sup> A study in Bahrain found that the designation, age group of 40–50 years, and doctors with postgraduate qualification were positive toward the conduct of research.<sup>[11]</sup> In a recent study of chairs of US Family Medicine department, it was reported that 91% believed that research was important and enhanced the prestige of the department of family medicine.<sup>[17]</sup> In Oman, Jahan *et al.*, found that most healthcare professionals mentioned that research contributed to the improvement of patient care helped in promotion, created professional enhancement, and helped to change health policy.<sup>[12]</sup>

On the conduct of research, the study found that more than one-third of the participants were involved in research, 30% were currently supervising research, while about 23% were very skilled in the conduct of research. Alghanim and Alhamali reported a higher figure of 56% of faculty members of medical and health schools involved in research.<sup>[16]</sup>

The association between skills in conducting research and sociodemographic or professional characteristics was significant for males (74% vs. 59%) and older participants above 40 years (79% vs. 66%). However, logistic regression analysis showed that being male was a strong predictor of being skilled in conducting research. Khalaf *et al.*, found that supervising research and training on research methods had a more positive effect on research productivity than working in an administrative capacity.<sup>[11]</sup>

Sixty percent of participants mentioned that they conducted research for academic reasons. However, 11% of the participants were from universities. These findings could indicate that some participants intended to move to academic institutions, a move which requires publication of articles before acceptance.

Research in family medicine faces many challenges as has been reported. The lack of time, absence of research environment, the scarcity of financial and technical support, and lack of skills were the top five obstacles to the conduct of research by family doctors. Similar obstacles have been reported from Saudi Arabia, Bahrain, and Oman.<sup>[9-12,16,18]</sup> In order to overcome these barriers, it is suggested that department of research in the health sectors should pay a greater attention to these issues and give assistance to researchers by setting aside time for research, providing professional secretaries, allocating adequate budget for research, and conducting training courses in research methodology.

In the current study, the participants chose 15 research priorities; the top five of which were chronic diseases, mental health, health promotion, quality of healthcare, and medical education. In a study conducted in the Qassim region of Saudi Arabia, the top 10 topics were diabetes, hypertension, bronchial asthma, child health, maternal health, quality of care, health education, vaccination, health services management, and geriatrics.<sup>[14]</sup> In a recent national study by AlOtaibi *et al.*, of more than 2200 participants, the five research priorities mentioned in the first agenda were: health services delivery (41%), health workforce (14%), governance and leadership (13%), response to emergency and disaster (10%), and health information system (9%), while the top five priorities in the second agenda were: noncommunicable diseases (17%), child health (16%), medications (13.6%), women health (10.4%), and dental health (10.4%).<sup>[13]</sup> A study from Australia revealed the following top priorities of research in general practice: chronic diseases, cancer, mental health, dementia, and joint problems.<sup>[19]</sup> Another study conducted by the University of New South Wales pointed out that mental health, aged care, chronic diseases, child health, and vaccination were the top five themes of research during 2006–2019.<sup>[20]</sup> A recent study from Scotland found that the top five priorities were diseases-illnesses, access to care, workforce, multidisciplinary teams, and integrated care.<sup>[15]</sup> The differences in priorities in research among countries are expected due to many factors such as the epidemiology of diseases, the nature of healthcare system and the tools used in the studies.<sup>[21]</sup>

In this regard, the MOH, the relevant health sectors, Ministry of Education and the research bodies, and the relevant scientific societies should together determine the top 20 research priorities, allocate a budget, invite researchers, and get the various groups to focus and work together on the priorities selected to achieve the National Vision of 2030.

Despite the best efforts to form an adequate sample size for this study, there were some limitations, including the choice of a convenient method for sampling. Since participation was voluntary, there was the problem of reaching all working Saudi family physicians from all regions in Saudi Arabia.

## Conclusion

This study revealed that Saudi family physicians made a good contribution to medical research, despite the many challenges to the production of high-quality research. Many research priorities such as chronic diseases, mental health, health promotion, and quality of healthcare should be the focus of researchers in the next

few years to provide support and achieve some of the objectives of the national vision of health transformation by 2030.

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## Conflicts of interest

There are no conflicts of interest.

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