

A PATTERN OF RESEARCH IN CORONAVIRUSES IN SAUDI ARABIA FROM 2014–2018

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Abstract

The aim: to observe the contribution of authors and the collaboration of institutes functioning in Saudi Arabia through the bibliometric review of literature in Coronaviruses.

Design/Methods/Approach: Authors as solo or corroborators in research are the main sources to retrieve the material of their original articles, case reports and review articles published from 2014–2018 in PubMed indexed journals for estimation and tabulation.

Results: Total 895; 3.5 % institutes (522; 58.3 % functioning locally and 373; 41.6 % internationally) in Saudi Arabia with the support of 1878; 7.4 % authors produced 253 articles from 2014 to 2018. Position of the author always matters in research, 207; 81.8 % authors had the first position followed by 28; 11 % as a second. Majority 72; 28.4 % articles published by single institute followed 46; 18.1 % and 49; 19.3 % by two and three institutes. Johns Hopkins Aramco Healthcare, Dhahran, Kingdom of Saudi Arabia publish 57; 6.3 % stand on lead followed by the Ministry of Health (All Regions) Kingdom of Saudi Arabia and King Saud bin Abdulaziz University for Health Sciences, Jeddah & Riyadh, Saudi Arabia. Pathology and Laboratory Medicine, Community & General Medicine and Hospital Administration & Health Informatics were major disciplines of publications. Three journals, Journal of Infectious and Public Health, International Journal of Infectious Diseases and American Journal of Infection Control grab 147; 58.1 % share of publishing research.

Conclusion: This study illustrates the determinations of the Saudi public and private healthcare sectors to handle the epidemic situation and uphold the esteem of people residing in catchment areas by means of technical, logistical and financial aid to managers and decision-makers.

Keywords: bibliometric, Middle East respiratory syndrome, coronaviruses, communicable diseases, Saudi Arabia.

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1. Introduction

Global healthcare facilities always been threatening by numerous viral infections. Coronavirus or Middle East respiratory syndrome coronavirus (MERS-CoV) being counted as a danger to public health [1]. The mode of communications and transmission of this significant threat to humans poorly characterized. The intensive care unit is the best canopy for laboratory-tested infected patients for clinical treatment. In September 2012, the Saudi Ministry of Health sends alert to healthcare workers in emergency departments (EDs) for the chances of the existence of MERS-CoV infections, and this alert attracted the attention of healthcare providers [2]. A data for study of MERS-CoV was obtained from World Health Organization (WHO) to identify the prevalence and occurrence measures taken by various countries and their allied ministries to minimize the rate of morbidity and mortality in country [3]. There were 2048 laboratory-confirmed cases of MERS-CoV infection were reported from June 2012 to Dec 2017 from all over the world. A seasonal outbreak of variations in cases was found in June as highest, while the lowest was found in January from 2012 to 2017 [4].

Scientists, researchers, and academics can assess various risk factors to forecast trends and seasonal variations of MERS-CoV on the bases of monthly global reported cases of MERS-CoV by the World Health Organization [5]. A study discovered the risk factors of MERS-CoV such as: camel contact, male, old age and living in Saudi Arabia and Middle East regions were a potential target of this danger. In an-other analysis researchers claimed winter and summer months were considered as two seasonal outbreaks of MERS-CoV, hygrometry

and ambient temperature were noticeable transmissions associated with the human-camel interactions in these seasons as healthcare-associated infections. Meanwhile, the World Health Organization informed that laboratory-confirmed cases arisen in 27 countries. Human-to-human transmission of MERS-CoV not deemed to fit in healthcare settings, and far from the epidemic potential [6–8].

Bibliometric study helps a researcher to find-out objective information for facilitating in policy decisions and better use of resources and services to measure the scientific output of subject specialty and sub-subject specialty for further innovative procedures [9]. Before June 2016, there were no bibliometric studies have been found specifically on MERS-CoV. With the support of the PubMed database, 443 articles were written from 2012 to 2015 and published in 162 journals to retrieved for analysis. Results of the research show that prevention and control of the disease were focused by researchers [10]. Similar to above study, the same research was conducted on Scopus database to retrieved data of published publications in the years 2012–2015 [11]. A total of 883 articles were participated and written by 92 countries and published in cross the world on the term of MERS-CoV. With 319; 36.1 % articles, the USA was the largest contributor, followed by Saudi Arabia 113; 12.7 % articles [12].

The aim of the research: the research aimed to estimate the spectrum of investigation, dedication, and collaboration among academic institutes through the participation of authors in the production of literature related to medicine and health sciences published in the journals.

2. Material and Methods

The research data in Coronaviruses published in the PubMed indexed from January 1st, 2014 to 31st December 2018, and affiliated with Kingdome of Saudi Arabia was downloaded to tabulate in MS Office Excel Sheet 2010. The file format with comma-separated value (CSV) and Abstract on Note-paid techniques was used, typed “Coronaviruses”, “Middle East Respiratory Syndrome” and “MERS” in the Boolean operator and appears by default, typed “Kingdome of Saudi Arabia” select as “Affiliation” in next menu. Firstly, to estimate the position of authors; to calculate the collaboration of institutes nationally and internationally; to evaluate the association of topic with health sciences specialties and sub-specialties; to check the status of attention by health-care providers in Saudi Arabia, were set to explore as objectives.

3. Results

Total of 280 articles were downloaded and 253 articles were selected for this study, and case reports, original and review articles existing nomenclature of analysis. The basic medical, clinical, and radiological sciences with health administrative and informative management disciplines, set as basic criteria for this estimation. **Table 1** shows that, 895 institutes per 3.5 % articles through 1878; 7.4 % authors made participation in 253; 4.2 % per month average from 2014–2018.

Table 1
Study design

S. No	Years	Articles Download	Articles Excluded	Articles Included for analyzed	Average per month	Total authors	Authors per article	Total institutes	Institutes per article
1	2018	48	6	42	3.5	372	8.8 %	203	4.8
2	2017	67	5	62	5.1	461	7.4 %	238	3.8
3	2016	64	6	58	4.8	426	7.3 %	183	3.1
4	2015	48	6	42	3.5	314	7.4 %	120	2.8
5	2014	53	4	49	4	305	6.2 %	151	3.0
Total		280	27	253	4.2	1878	7.4 %	895	3.5

Table 2 reveals the breakdown of authors collaboration, that the 207; 81.8 % authors were identified as a first author following by 28; 11 % authors as a second author in 253 manuscripts.

Table 2

Author's position in manuscript

Author's Position	2018	2017	2016	2015	2014	Total with %
As a First Author	36	56	42	32	41	207 81.8 %
As a Second Author	3	2	12	6	5	28 11 %
As a Third Author		2	2	3	1	8 3.1 %
As a Fourth Author	1	2			1	4 1.5 %
As a Fifth to Ninth Author			1	1	1	3 1.1 %
10 to 19 Authors	2		1			3 1.1 %
Total	42	62	58	42	49	253

Table 3 is related to calculate the stake of public and private institutes in corroboration of production with each-other nationally or internationally. Total 72; 28.4 % institutes' shows as single followed by 46; 18.1 % and 49; 19.3 % as two and three institutes out of 895 institutes under the share of 253 articles.

Table 3

Years-wise distribution and collaboration of Institutes in production of articles with each-other

S. No	Publications	2018	2017	2016	2015	2014	Total %
1	Single Institute	7	18	16	16	15	72 (28.4)
2	Two Institutes	7	13	8	7	11	46 (18.1)
3	Three Institutes	9	11	15	7	7	49 (19.3)
4	Four Institutes	7	9	10	4	5	35 (13.8)
5	Five Institutes	2	2	5	4	4	17 (6.7)
6	Six Institutes	3	2	1	2	4	12 (4.7)
7	Seven Institutes	2	2	1			5 (1.9)
8	Eight Institutes					1	1 (0.4)
9	Nine Institutes		1				1 (0.4)
10	Ten to 15 Institutes	2	1	1	2	2	8 (3.1)
11	16 to 20 Institutes	2	1	1			4 (1.5)
12	21 to 25 Institutes	1	1				2 (0.7)
13	26 to 30 Institutes		1				1 (0.4)
	Total Articles	42	62	58	42	49	253

Fig. 1 and **Table 4** reveals the participation of the institutes countrywide and globally in research productivity. With their cooperation in presenting and sharing ideas, total 522; 58.3 % institutes functioning in Kingdom of Saudi Arabia and 373; 41.6 % workings internationally published 253 articles between 2014 and 2018.

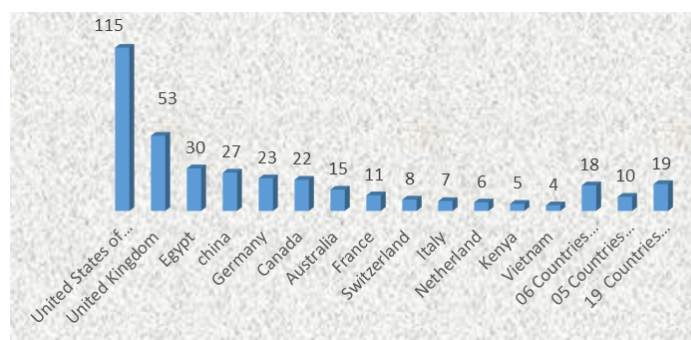


Fig. 1. The collaboration of international institutes in the participation of 373, 41.6 % with researchers functioning in Saudi Arabia out of 895 articles

Table 4

Participations of institutes functioning in KSA

S. No	The hierarchical positions of participatory institutes with 50 other institutes of KSA	Totals (% out of total)	
1	Johns Hopkins Aramco Healthcare, Dhahran, Kingdom of Saudi Arabia.	57	6.3 %
2	Ministry of Health, Riyadh, Saudi Arabia (All Regions)	49	5.4 %
3	King Saud bin Abdulaziz University for Health Sciences, Jeddah & Riyadh, Saudi Arabia.	47	5.2 %
4	Al-Faisal University, Riyadh, Kingdom of Saudi Arabia.	42	4.6 %
5	King Saud University, Riyadh, Kingdom of Saudi Arabia.	42	4.6 %
6	King Abdullah International Medical Research Center (KAIMRC) Riyadh, Saudi Arabia.	38	4.2 %
7	King Faisal Specialist Hospital and Research Center, Jeddah & Riyadh Saudi Arabia.	30	3.3 %
8	King Abdulaziz Medical City, Riyadh, Saudi Arabia.	29	3.2 %
9	King Abdulaziz University, Jeddah, Kingdom of Saudi Arabia.	28	3.1 %
10	King Fahad General Hospital – Jeddah, Jeddah, Saudi Arabia.	15	1.6 %
11	Prince Mohamed Bin Abdulaziz Hospital, Ministry of Health, Riyadh, Saudi Arabia.	14	1.5 %
12	02 Institutes Published Ten Articles	20	2.2 %
13	02 Institutes Published Seven Articles	14	1.5 %
14	01 Institute Published Six Articles	6	0.6 %
15	04 Institutes Published Five Articles	20	2.2 %
16	07 Institutes Published Four Articles	16	1.7 %
17	03 Institute Published Three Articles	21	2.3 %
18	03 Institutes Published Two Articles	6	0.6 %
19	28 Institutes Published One Articles	28	3.1 %
1	Institutes functioning in Kingdom of Saudi Arabia	522	58.3 %
2	Institutes Functioning Internationally	373	41.6 %
Total		895	

Table 5 present 14 main specialties and sub-specialties of health and medical sciences, researchers pay their focused to deal this significant danger from experimental sides to informative side with a description of preventive and cure measures thru collaboration of every sector of society.

Table 6, displays that, total of 121 journals were published 253 articles from 2014 to 2018. Only 63 articles (25 % out of total number) published in five journals and the remaining 190 articles published in 116 journals out of 121 journals.

Table 5
Subject-wise distribution of publications (Largest to smallest)

S. No	Subjects	Total articles (% out of total)	
1	Pathology and Laboratory Medicine	55	21.7 %
2	Community & General Medicine	53	20.9 %
3	Hospital Administration & Health Informatics	39	15.4 %
4	Epidemiology	27	10.6 %
5	Respiratory Diseases	25	9.8 %
6	Pharmacology	19	7.5 %
7	Medical Education	14	5.5 %
8	Dentistry	4	1.5 %
9	Pediatric	4	1.5 %
10	Radiology	4	1.5 %
11	Cardiology	3	1.1 %
12	Obstetrics	3	1.1 %
13	Neurology	2	0.7 %
14	Urology	1	0.4 %
		253	

Table-6
Journal-wise distribution of publications (Largest to smallest)

S. No	Journals	Total articles (% out of total)	
1	Journal of Infectious and Public Health.	21	8.3 %
2	International Journal of Infectious Diseases.	16	6.3 %
3	American Journal of Infection Control.	11	4.3 %
4	Travel Medicine and Infection Diseases.	8	3.1 %
5	Lancet Infectious Diseases.	7	2.7 %
6	02 Journals published 6 article in each	6	2.3 %
7	02 Journals published 5 article in each	5	1.9 %
8	09 Journals published 4 article in each	36	1.5 %
9	07 Journals published 3 article in each	21	1.1 %
10	15 Journals published 2 article in each	30	0.7 %
11	81 Journals published 1 article in each	81	0.4 %
Total Articles		253	

4. Discussion

Total of 121 journals supported to published 253 case reports, original and review articles in journals associated with PubMed databases. The huge participation 895; 3.5 % of institutes with corroboration of 1878 authors to write down their observations, analysis, findings and suggestions to handle this MERS-CoV, a significant threat to personals of healthcare, government officials and of course society.

The spectrum of this hazards involve every-one in health science sector from diagnostic to drug therapy, provision of information to community, taking efforts in the management of primary healthcare unit, to evaluate the policies, modification and redesigning of measures according to WHO guidelines and standards to deal sensitivity of present and clear danger. The research period reveals the deep efforts of public and private health sector, the calmness of society and missionary

movements of healthcare community to coop-up this endangerment. The interaction of 150; 59.2 % institutes among nationally 3.8 and internationally institutes is a vibrant example for teamwork and sharing of ideas, meanwhile 21; 8.3 % articles were written by solo or single-author affiliated with single institute out of 253; 91.6 % articles, 1.1 from total 1878 authors and 874; 97.6 % institutes.

5. Conclusion

Even though much literature on this topic written and published by researchers inside and outside of Kingdom of Saudi Arabia in many other scientific and multidisciplinary databases, but journals connected with PubMed have worth to read and refer by basic health science, clinical sciences and radiological science community. It strongly seems that from 2014 to 2018, Saudi institutes passionately involve in research in MERS CoV, they produced one article on every fifth day of calendar with the contribution of 7.4 authors and backing by 3.5 institutes for each out of 253 articles.

Conflicts of interest

The authors declare that they have no conflicts of interest.

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