

Survey of Saudi Publications in the Highest Impact Medical Journals

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Abstract

Objectives: The four “Highest Impact Medical Journals” (HIMJs) and their 2015 impact factors (IF)s are: New England Journal of Medicine (55.8), Lancet (45.2), Journal of the American Medical association (35.3) and British Medical Journal (17.5). The purpose of this study is to evaluate publications in HIMJs that originated from the Kingdom of Saudi Arabia (KSA) and to assess the influence of time on their characteristics. **Methods:** Using the key word “Saudi Arabia” an advanced online search was carried out in the web sites of the four HIMJs in August 2015. The inclusion criteria were publications in HIMJs during 1985-2015 in which at least one KSA researcher was included in the authorship. The influence of time on the publications’ characteristics was assessed by comparing articles published in the recent 4 years with those published in the other 27 years based on a number of parameters and using a chi-squared test. **Results:** 30 KSA articles that were published in the HIMJs during 1985-2015. The median IF was 45.2. The annual rates for KSA publication in HIMJs had increased eight folds in the recent 4 years compared to the other 27 years (4/year versus 0.5/year). Furthermore, publications in recent years had significantly more “major” KSA contribution and more were Middle Eastern Respiratory Syndrome (MERS) -related. However, the journal IF, authors number, first author affiliation, international collaboration, research type and citation numbers were not found to be influenced by the timing of publication. **Conclusions:** There has been an encouraging recent upsurge of KSA publications in HIMJs. The increasing ability of KSA researchers to publish articles in HIMJs reflects scientific evolution. However, most of the research of late had been MERS-related. The paucity of pioneering research in other topics and in the undertaking of trials is indicative of shortage of innovative ideas. KSA needs to develop its own elite research minds.

Key words: Highest Impact Medical Journals, Saudi Publications, Middle Eastern Respiratory Syndrome.

Introduction

Journal impact factor (IF) is considered a popular measurement that is indicative of the scientific creditability of publication. The “Highest Impact Medical Journals” (HIMJs) are four well established clinical journals with IFs that are consistently higher than other medical journals [1]. These journals and their 2015 IF are as follows: New England Journal of Medicine (NEJM IF=55.8), Lancet (IF=45.2), Journal of the American Medical association (JAMA IF=35.3) and the British Medical Journal (BMJ IF=17.5) [2]. Over the last 30 years researchers from the Kingdom of

Saudi Arabia (KSA) had contributed significantly to the literature [3, 4]. Up-to-date there has been no reports that examined the characteristics of Saudi publications in HIMJs. The purpose of this study is to evaluate KSA articles published in HIMJs and to assess the influence of time on the features of these publications.

Methods

An advanced online search was carried out in the web sites of the four HIMJs using the key word “Saudi Arabia” in August 2015. The inclusion criteria were articles published in HIMJs during 1985-2015 in which at least one KSA researcher was included in the authorship. Studies with participation by KSA

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investigators but without their inclusion in the authorship were excluded. The KSA contribution was considered “major” when the first author or 50% or more of authors were from KSA. It was judged “minor” when they were represented by less than 50% of authorship. Citation numbers were obtained from “Google Scholar”. The influence of time on the publications’ characteristics was assessed by comparing articles that were published in the “recent” 4 years (2012-2015) with those published over the “other” 27 years

(1985-2011). Using the median as a cut-off point, publications during the two periods were compared using the following parameters: journal IF, first author from KSA, number of authors, international collaboration, extent of KSA contribution, research topic, research type and citation numbers. For statistical analysis a chi-squared test was calculated using Social Sciences Statistics [5] and significance was determined when P was less than 0.05.

Results

Our search identified 30 KSA articles that were published in the four HIMJs during the period 1985-2015 (Appendix 1). The annual publication rate over the “recent” years was 4/year compared to a rate of 0.5/year over the “other” years. The publishing journals and number of articles were: NEJM 13(43.3%), Lancet 4(13.3%), Lancet Infectious Diseases (IF=22.4) 3(10%), Lancet Respiratory Medicine (IF=9.6) 1(3.3%), Lancet Oncology (IF=24.7) 1(3.3%), JAMA 4(13.3%) and BMJ 4 (13.3%). The journals IF ranged from 55.8 to 9.6 (median 45.2). KSA researchers’ contribution to authorship was considered “major” in 15(50%) articles and “minor” in the remaining 15(50%) articles. In 2 (6.7%) of the BMJ articles, KSA was represented by one author who had an adjunct faculty status with a Saudi university. The overall number of authors per article ranged from 2 to 40 (median 12) and the number of KSA authors per article ranged from 1 to 12 (median 2). A Saudi researcher was the first author in 11(36.7%) articles while the percentage of KSA representation in the overall authorship of the 30 articles ranged from 4% to 100% (median 18%). International collaboration was documented in 23(76.7%) articles. The research topic was related to Middle Eastern Respiratory Syndrome (MERS) in 11(36.7%) articles. The research type was a randomized controlled trial (RCT) in 8(26.7%) articles with the Saudi contribution being “major” in only 2(6.7%) of them. The citation numbers ranged from 773 to 2 (median 100). The correlation between the timing of publication in relation to a number of parameters is summarized in Table 1.

Feature		Recent	Other Articles	P Value
Journals IF	< 45.2 ≥ 45.2	6(20%) 10(33.3%)	7(23.3%) 7(23.3%)	P=0.491(NS)
First Author from KSA:	Yes No	7(23.3%) 9(30%)	4(13.3%) 10(33.3)	P=0.391(NS)
Number of Authors	<12 ≥12	5(16.7%) 11(36.7%)	8(26.7%) 6(20%)	P= 0.153(NS)
International	Yes, No	12(40%) 4(13.3%)	11(36.7%) 3(10%)	P= 0.818(NS)
KSA Contribution	Major, Minor	11(36.7%) 5(16.7%)	4(13.3%) 10(33.3)	P=0.028(Sig)
Research Topic	MERS Other	11(36.7%) 5(16.7%)	0(0%) 14(46.7%)	P<0.001(Sig)
Research Type	RCTs Other types	3(10%) 13(43.3%)	5(16.7%) 9(30%)	P=0.295(NS)
Citation Numbers	<100 ≥100	10(33.3%) 6(20%)	5(16.7%) 9(30%)	P=0.143(NS)

Abbreviations KSA: Kingdom of Saudi Arabia, HIMJs: Highest Impact Medical Journals, NS: not significant, Sig:

Discussion

It is recognized that publishing in HIMJs is difficult and extremely competitive. HIMJs publications are more likely to have higher level of evidence (LOE) [1], produce a bigger impact on medical practice and give a boost to the researchers’ career prospect. Highly cited researchers are recognized by being listed in the “Institute for Science Information”. The latter has been an important ingredient for university ranking, a matter which attracted controversy in recent years [6]. KSA

research activity had increased during 2008-2012 but the trend had been to publish in local journals with low IF [4]. In a review of 1562 KSA papers that were published over a 5 year period Latif [4] reported that only 0.26% were published in journals with IF ≥ 7. Thirty KSA publications in HIMJs over three decades is a relatively small number for a country that is ranked 16th among the nations of the world in biomedical research with reference to population size [3]. Our findings showed that the annual rates for KSA publications in HIMJs had increased eight folds in the

last 4 year period. Such trend is encouraging and reflects progress in the quality of research in KSA. Our results also revealed that some of the characteristics of KSA publications in HIMJs had been influenced by time. We observed that articles published over the last 4 years compared to those published during the other 26 years had significantly more “major” KSA contribution ($P=0.028$) and more of them were MERS-related ($P<0.001$). The dominance of MERS-related research in recent years is not surprising as KSA is where MERS was originally described. Furthermore, the disease is new, serious and posed concern of a potential epidemic. Our study also demonstrated a number of characteristics of KSA publications in HIMJs which were not significantly influenced by the timing of publication. These include: journal $IF \geq 45.2$, number of authors per article <12 , first author being from KSA, presence of international collaboration, research type being an RCT and citation numbers ≥ 100 .

The study may have limitations. It was dependent on the accuracy of the journal’s web site search engines hence it is possible that a few articles may have been missed. A small number of articles may have been accepted for publications but not published yet. We included articles that were published in the Lancet Specialty Journals as they are subjected to a similar editorial scrutiny as the main journal even though they have a lower IF. The exact role of KSA researchers in articles that had international collaboration was not investigated.

Conclusions

In conclusion, 30 Saudi publications in HIMJs over the last three decades is a relatively small number. There has been an increase in KSA publications in HIMJs in recent years. Most of the research of late had been MERS-related. The paucity of pioneering research in other topics and in the undertaking of trials is indicative of shortage of innovative ideas. KSA needs to develop its own elite research minds. This may be achieved by promoting “research culture” and establishment of academic departments staffed by Saudi PhD-holders and the development of PhD programs that are linked to strong international universities.

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References

1. Jamjoom BA, Jamjoom AA, Jamjoom AB: Levels of evidence of clinical spinal research in the highest impact medical journal. *Spine J.* 2014 Jul 1; 14(7):1368-9. doi: 10.1016/j.spinee.2014.03.034.
2. www.impactfactor.weebly.com [accessed 10th August 2015].
3. Al-Bishri J: Revaluation of biomedical research in Saudi Arabia. *Saudi Med J.* 2013 Sep; 34(9):954-9.
4. Lat if R: Medical and biomedical research productivity in the Kingdom of Saudi Arabia (2008-2012). *J Family Community Med.* 2015 Jan-Apr; 22(1):25-30. doi: 10.4103/2230-8229.149583.
5. Social Sciences Statistics online web site: www.socscistatistics.com [accessed 10th August 2015].
6. Bhattacharjee Y: Citation impact Saudi universities offer cash in exchange for academic prestige. *Science.* 2011 Dec 9; 334(6061):1344-5. doi: 10.1126/science.334.6061.1344.

Appendix 1: Saudi Articles in the Highest Impact Medical Journals Listed by Year of Publication.

1. Arabi YM, Aldawood AS, Haddad SH, Al- Dorzi HM, Tamim HM, Jones G et al: Permissive Underfeeding or Standard Enteral Feeding in Critically Ill Adults. *N Engl J Med* 2015; 372:2398-408.
2. Oboho IK, Tomczyk SM, Al-Asmari AM, Banjar AA, Al-Mugti H, Aloraini MS et al: 2014 MERS-CoV outbreak in Jeddah—a link to health care facilities. *N Engl J Med* 2015; 372:846-54.
3. Müller MA, Meyer B, Corman VM, Al-Masri M, Turkestani A, Ritz D et al: Presence of Middle East respiratory syndrome corona virus antibodies in Saudi Arabia: a nationwide, cross-sectional, serological study. *Lancet Infect Dis* 2015; 15: 559–564.
4. Drosten C, Meyer B, Müller MA, Corman VM, Al-Masri M, Hossain R et al: Transmission of MERS-corona virus in household contacts. *N Engl J Med* 2014; 371:828-35.

5. Azhar EI, El-Kafrawy SA, Farraj SA, Hassan AM, Al-Saeed MS, Hashem AM et al: Evidence for camel-to-human transmission of MERS corona virus. *N Engl J Med* 2014; 370:2499-505.
6. Omrani AS, Saad MM, Baig K, Bahloul A, Abdul-Matin M, Alaidaroos AY et al: Ribavirin and interferon alfa-2a for severe Middle East respiratory syndrome corona virus infection: a retrospective cohort study. *Lancet Infect Dis* 2014; 14:1090–1095.
7. Mokdad AH, Jaber S, Abdel Aziz MI, AlBuhairan F, AlGhaithi A, AlHamad NM et al: The state of health in the Arab world, 1990–2010: an analysis of the burden of diseases, injuries, and risk factors. *Lancet* 2014; 383: 309–320.
8. Chan RW, Hemida MG, Kayali G, Chu DK, Poon LL, Alnaeem A et al: Tropism and replication of Middle East respiratory syndrome corona virus from dromedary camels in the human respiratory tract: an in-vitro and ex-vivo study. *Lancet Respir Med* 2014; 2: 813–822.
9. Fowler RA, Mittmann N, Geerts W, Heels-Ansdell D, Gould MK, Guyatt G et al: Cost-effectiveness of dalteparin vs unfractionated heparin for the prevention of venous thromboembolism in critically ill patients. *JAMA* 2014; 312:2135-45.
10. Fralick M, Macdonald EM, Gomes T, Antoniou T, Hollands S, Mamdani MM et al: Co-trimoxazole and sudden death in patients receiving inhibitors of renin-angiotensin system: population based study. *BMJ* 2014; 349: g6196.
11. Assiri A, McGeer A, Perl TM, Price CS, Al Rabeeah AA, Cummings DA et al: Hospital outbreak of Middle East respiratory syndrome corona virus. *N Engl J Med* 2013; 369:407-16.
12. Memish ZA, Zumla AI, Al-Hakeem RF, Al-Rabeeah AA, Stephens GM: Family cluster of Middle East respiratory syndrome coronavirus infections. *N Engl J Med* 2013; 368:2487-94.
13. Ferguson ND, Cook DJ, Guyatt GH, Mehta S, Hand L, Austin P et al: High-frequency oscillation in early acute respiratory distress syndrome. *N Engl J Med* 2013; 368:795-805.
14. Cotten M, Watson SJ, Kellam P, Al-Rabeeah AA, Makhdoom HQ, Assiri A et al: Transmission and evolution of the Middle East respiratory syndrome corona virus in Saudi Arabia: a descriptive genomic study. *Lancet* 2013; 382:1993-2002.
15. Assiri A, Al-Tawfiq JA, Al-Rabeeah AA, Al-Rabiah FA, Al-Hajjar S, Al-Barrak A et al: Epidemiological, demographic, and clinical characteristics of 47 cases of Middle East respiratory syndrome corona virus disease from Saudi Arabia: a descriptive study. *Lancet Infect Dis* 2013; 13:752-61.
16. Zaki AM, van Boheemen S, Bestebroer TM, Osterhaus AD, Fouchier RA: Isolation of a novel corona virus from a man with pneumonia in Saudi Arabia. *N Engl J Med* 2012; 367:1814-20.
17. Cooper DJ, Rosenfeld JV, Murray L, Arabi YM, Davies AR, D'Urso P et al: Decompressive craniectomy in diffuse traumatic brain injury. *N Engl J Med* 2011; 364:1493-502.
18. PROTECT Investigators for the Canadian Critical Care Trials Group and the Australian and New Zealand Intensive Care Society Clinical Trials Group, Cook D, Meade M, Guyatt G, Walter S, Heels-Ansdell D, Warkentin TE et al: Dalteparin versus unfractionated heparin in critically ill patients. *N Engl J med* 2011; 364:1305-14.
19. Antoniou T, Gomes T, Mamdani MM, Yao Z, Hellings C, Garg AX et al: Trimethoprim-sulfamethoxazole induced hyperkalaemia in elderly patients receiving spironolactone: nested case-control study. *BMJ* 2011; 343: d5228.
20. Phua J, Koh Y, Du B, Tang YQ, Divatia JV, Tan CC et al: Management of severe sepsis in patients admitted to Asian intensive care units: prospective cohort study. *BMJ* 2011; 342: d3245.
21. Sankaranarayanan R, Swaminathan R, Brenner H, Chen K, Chia KS, Chen JG et al: Cancer survival in Africa, Asia, and Central America: a population-based study. *Lancet Oncol* 2010; 11:165-73.
22. Jefferson T, Del Mar C, Dooley L, Ferroni E, Al-Ansary LA, Bawazeer GA et al: Physical interventions to interrupt or reduce the spread of respiratory viruses: systematic review. *BMJ* 2009; 339: b3675.
23. Meade MO, Cook DJ, Guyatt GH, Slutsky AS, Arabi YM, Cooper DJ et al: Ventilation strategy using

low tidal volumes, recruitment manoeuvres, and high positive end-expiratory pressure for acute lung injury and acute respiratory distress syndrome: a randomized controlled trial. *JAMA* 2008; 299:637-45.

24. Alrajhi AA, Ibrahim EA, De Vol EB, Khairat M, Faris RM, Maguire JH: Fluconazole for the treatment of cutaneous leishmaniasis caused by *Leishmania major*. *N Engl J Med* 2002; 346:891-5.

25. Villar J, Ba'aqueel H, Piaggio G, Lumbiganon P, Miguel Belizán J, Farnot U et al: WHO antenatal care randomised trial for the evaluation of a new model of routine antenatal care. *Lancet* 2001; 357:1551-64.

26. Abulrahi HA, Bohlega EA, Fontaine RE, al-Seghayer SM, al-Ruwais AA. *Plasmodium falciparum* malaria transmitted in hospital through heparin locks. *Lancet* 1997; 349:23-25.

27. Miller BA, Olivieri N, Salameh M, Ahmed M, Antognetti G, Huisman TH et al: Molecular analysis of the high-hemoglobin-F phenotype in Saudi Arabian sickle cell anemia. *N Engl J Med* 1987; 316:244-50.

28. Tabbara KF, Ross-Dungan D: Blindness in Saudi Arabia. *JAMA* 1986; 255:3378-84.

29. Harfi HA, Fakery BM: Acquired immunodeficiency syndrome in Saudi Arabia. The American-Saudi connection. *JAMA* 1986; 255:383-4.

30. Sly WS, Whyte MP, Sundaram V, Tashian RE, Hewett-Emmett D, Guibaud P et al: Carbonic anhydrase II deficiency in 12 families with the autosomal recessive syndrome of osteopetrosis with renal tubular acidosis and cerebral calcification. *N Engl J Med* 1985; 313:139-45.

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