

Impact of Nephrology publications from Saudi Arabia in the last decade

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ABSTRACT

Objective: To study the present situation with regards to the research output in Nephrology from the Kingdom of Saudi Arabia (KSA) in terms of numbers, type, institution and fields covered.

Methods: An extensive Medline search of Nephrologists working in KSA, as well research output from KSA was undertaken; in addition, all Nephrologists were contacted. All papers appearing in the Saudi Medical Journal, Annals of Saudi Medicine and The Saudi Journal for Kidney Diseases and Transplantation were screened for the years 1992-2001.

Results: An average of 45 papers per year appeared over the last 10 years with no major changes over the years. Half were in the indexed Journals. Whereas, 61% were

original articles, the majority of the papers (78.2%) were retrospective in nature and 89.9% were clinical. The majority were concerned with transplantation (34.1%) and hemodialysis (24.4%). It is of interest to note that KSA leads other Arab countries in the number of publications in Nephrology and it has a highest total percentage of medical publications compared to other Arab, and Asian countries as well as the United Kingdom, Canada and United States of America.

Conclusion: Although KSA is leading the Arab countries in renal research, much improvement is still required especially in basic research.

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The volume and quality of publications in medical literature are the objective measures of research outputs. This in turn is a reflection of the standard of medical care by an institution, a country or a specialty; as research follows, and does not precede, the availability of good medical care. In general, the research output and its quality results from 3 broad inciters: 1) The general affluence and improved economic condition^{1,2} (and therefore budget available for research). 2) The standing (and incentives) given in an institution (or society) to academic endeavors and 3) The existence of academic milieu³ (physically, intellectually and by mentorship). Notwithstanding these inciters, often the drive to publish may be more personal, just for interest, as a source for living (or promotion) or merely to see one's name in print. There is a debate

going on as to the necessity and importance of research in the development of physicians and its value in producing better doctors.³ Whatever the view one holds, it cannot be denied that a relationship exists between advances in medical care delivery in any given country or institution and their research output. Nephrology as an established specialty in the Kingdom of Saudi Arabia (KSA) can be dated to the early 1980's. Saudis who were trained in the Europe and North America run the major nephrological services in KSA. There are now 5 Medical Schools with renal services. What is peculiar in KSA is that the delivery of medical health is given in an almost equal standard by a number of sectors, besides the University sector, including the Ministry of Health (MOH), Ministry of Defense (MOD), Ministry of Interior as well as the National

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Guard Hospital (NGH) and King Faisal Specialist Hospital and Research Center (KFSH&RC). It would be interesting and useful to analyze the number and type of publications by the nephrologists from the Kingdom over the last 10 years.

Methods. An attempt was made to trace all publications (between January 1992 and December 2001) published by all members of the Arab Society of Nephrology and Renal Transplantation from KSA. The membership list was obtained from the "Members Directory" published by the Society in 2000 and the updated list in the Society's Website. In order to trace the publications as completely as possible, the following sources of data were used: a) All the papers that appeared in Saudi Medical Journal. b) All the papers that appeared in Annals of Saudi Medicine. c) All the papers that appeared in Saudi Journal for Kidney Diseases and Transplantation. d) Name of each members was entered in Medline to check for any indexed publications. e) An Index Medicus search was made to trace any publication from KSA on renal or transplant topics. f) All members were sent a letter to send their list of publications. g) For comparison, the number of publications from other relevant countries was obtained. It should be noted that only publications on renal topics were included in the study. The findings were analyzed according to the following criteria: (1) The name of the institution from which the publication was originated (this was determined in the affiliation of the first author) (2) The field of study. (3) The type of work (prospective or retrospective; original article, review article or case report; clinical or laboratory based). (4) The type of journal (indexed or non-indexed). (5) The volume of publications over the time period.

Results. **Figure 1** shows that the total number of publications over the last 10 years was 462 (average of 46.2% per year). There has no major changes in the number of publications over the years. More than 50% of the publications (238) were in the indexed (international) journals. **Figure 2** shows the type of publications. Sixty-one percent of the publications were original articles, 12.7% were review articles and 16.3% were case reports. Disappointingly, however, the majority of publications were of a retrospective nature (78.2%). Interestingly, whereas only over 50% of the retrospective papers were in the international journals, two-thirds of the prospective papers were published internationally. Only 10.2% of the papers were laboratory based, 89.9% were clinical in nature. In fact, I could trace only 6 papers in total, which were animal based experiments. The majority of the papers were concerned with transplantation (34.1%) and hemodialysis (24.4%). Chronic ambulatory peritoneal dialysis (3.1%) and

hypertension (2.8%), on the other hand, were the areas of study. **Figure 3** reveals the number of publications in relation to the institutional affiliation of the first author. The university hospitals were responsible for 27.5% of the publications of which 83.7% were from King Khalid University Hospital (KKUH), Riyadh, KSA. The MOH Nephrologists contributed 26.9% of the publications and within this group, the Saudi Center for Organ Transplantation (SCOT) was responsible for 63.6%. The next major contributor was the MOD (military hospitals) with 19.3% of all the publications. Within this medical sector, the Armed Forces Hospital (RKH) was the major contributor (61.6%) and the contributions of KFSH&RC was 13.9%, NGH was 10.2% and the Security Forces Hospital was 1.7%. **Figure 4** shows the percentage of publications in the International Journals for each medical sector. It also shows how many of those publications were original articles. The NGH had the highest percentage of publications in the International Journals (85.1%) wherein 31.6% were original articles. On the other hand, KFSH had 79.9% of their articles in the International Journals wherein 50% were original articles. This was followed by RKH with 67.2% in the International Journals wherein 44.7% were original articles. Overall, 51.6% of the articles were published over the last 10 years in the International Journals, wherein 33.3% of the published articles were original articles. **Table 1** shows the annual number of publications on nephrological topics and the total average number of publications for 1999 and 2000 in selected Arab, developing and Western countries. It shows that, even though KSA output is low compared to Western countries, it ranks highly among Arab Countries.

Discussion. In the early 1980's, there was hardly a paper published on a nephrological topic from Saudi Arabia. Now the average number of papers is 46 per year. Moreover, Saudi Arabian Nephrologists are among the most productive in terms of publications compared to other Arab Nephrologists. **Table 1** shows that KSA (42.5%) produced more indexed papers than Egypt (41%) or Jordan (4.5%) in 1999 and 2000. The number, however, is very small compared to Canada (711), United Kingdom (1057) and United States of America (8526).⁴ In an effort to relate this output to the total output of these countries we found out that KSA has a ratio of 9.5% when compare to numbers of papers in renal medicine to the total number of papers in medical science produced from KSA. The Western countries had a ratio ranging from 4.4-5.8% qualification. These findings would indicate that Saudi Nephrologists are more active compared to other physicians in the Kingdom in terms of research production, since they were responsible for almost a

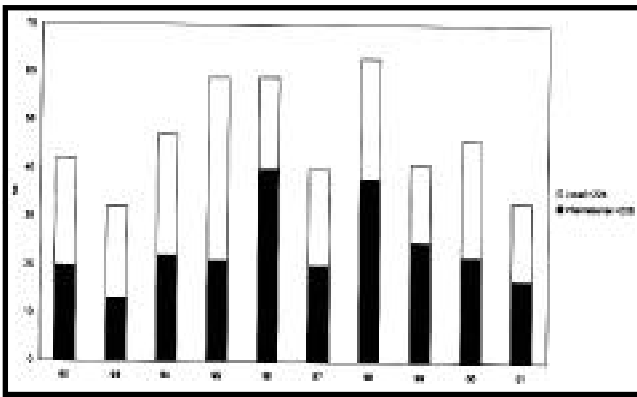


Figure 1 - The changes in volume of Nephrology publications over 10 years (1992-2001).

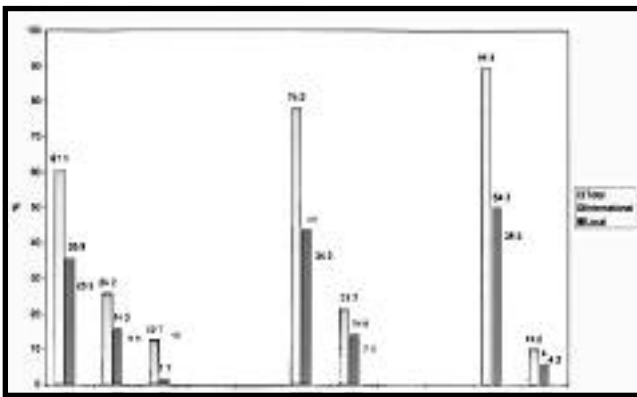


Figure 2 - Breakdown of publications on the basis of originality; whether they are retrospective, prospective, clinical or laboratory-based.

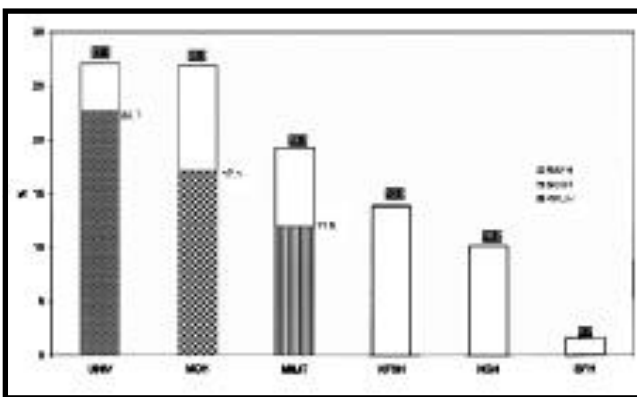


Figure 3 - The volume of publications by different medical sectors in the Kingdom of Saudi Arabia.

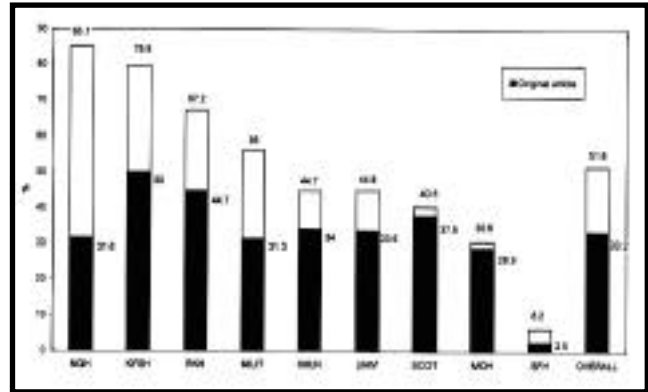


Figure 4 - Percentage of publications appearing in peer reviewed, indexed journals.

Table 1 - The number of publications annually (1999-2000).

Country	n of Nephrology publications (1)	Total n of publications (2)	Ratio of 1 & 2
KSA	42.5	450	9.4
Egypt	41	636.5	6.4
Jordan	4.5	511	0.9
Turkey	243	3048	7.9
India	183.5	5340	3.4
Iran	18.5	257.5	7.2
UK	1057	23263	4.5
Canada	711	15063	4.7
USA	8526	146170	5.8

n - number, KSA - Kingdom of Saudi Arabia, UK - United Kingdom, USA - United States of America

tenth of the indexed papers; while they produced less than 1% of the hospital based doctors.⁵ Besides the small number, one should also note that this did not significantly increase over the last decade and that the majority of papers were clinically and not laboratory orientated. This reflects lack of basic research inclination or infrastructure in KSA. This is a situation which requires improvement as a major advances in medicine follows breakthrough in basic research. In addition, the vast majority of papers (78.2%) are of a retrospective nature depending largely on the analysis of patient records and, therefore, are of inferior scientific value than the prospective studies.⁶ Interestingly, the authors are more likely to publish their prospective studies (two-thirds) in the international journals than in the local journals. This is not surprising since the international journals are indexed. Recently The Saudi Medical Journal has been indexed and The Saudi Journal for Kidney Diseases and Transplantation is trying to achieve this recognition. These moves will be indicative of better quality papers being sent to the local journals.

Of all the publications traced in this study, 61.1% were original articles, 16.3% were case reports and 12.7% were review articles. The University institutions contributed 27.5% of the publications followed by MOH (26.9%) and Military Hospitals (19.3%). It is interesting to note that in each of these medical sectors, one particular single hospital is the major contributor (KKUH for University sector, SCOT for MOH sector and RKH for the Military Hospitals sector). One, if not the only, reason for research output by the Universities is the need to show proof of publications for the purposes of promotion. It is to the credit of the other medical sectors that they publish although they do not have to, for the purposes of promotion or tenure.⁵ Within the institutional affiliations, **Figure 4** shows what percentage of publications are original articles published in the international journals. In this context, KFSH scores well (50%) followed by RKH (44.7%). Overall, 33% of the published papers were original and published in the international journals.⁵ The field of work was mainly transplantation and hemodialysis; due to active clinical status in these 2 disciplines in KSA and they lend themselves well to clinical retrospective studies. The volume of publications in pediatrics reflects the smaller number

of Pediatric Nephrologists compared to adult Nephrologist. Similarly, the small number of CAPD papers reflects the small percentage of patients on the type of dialysis compared to those on hemodialysis (5.7%). Research in hypertension is very low (2.8% of all papers) and this reflects the low interest, in general, that Saudi Nephrologists have in hypertension. Most papers on hypertension in KSA have been written by Cardiologists or Epidemiologists. The budget allotted to research and development in all Arab countries is minuscule compared to those in the West. As such the budgeting, which is important for research, is lacking in KSA. Besides budgeting there is little encouragement for research and the research culture is not well developed in Saudi medical institutions. There is no linkage between promotion and research output except in the university. However, recently, the Saudi Council for Health Specialities has introduced doctors' registration renewal system, which takes into account, among other things, the research completed by the candidate. According to our system, it is not mandatory to perform research as part of Fellowship training in Nephrology. Moreover, there is no Research Fellowship arrangement or thesis-based qualifications similar to what has been established in the UK. Many of the Hospital Administrators have no track record in research and in fact look with suspicion to those doing research. Since, often, a young physician starts research endeavors through "mentorship" by a senior "research-orientated" supervisor and since this mentorship is largely missing, this vital link in the propagation of research spirit is sadly lacking.³

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