

Quality of Gastroenterology Research Published in Saudi Arabian Scientific Journals

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ABSTRACT

Background/Aims: Evidence-based medicine has established itself in the field of gastroenterology. In this study we aim to assess the types of study designs of gastroenterology-related articles published in Saudi scientific journals. **Patients and Methods:** An online review using PubMed was carried out to review gastroenterology-related articles published in six Saudi medical journals in the time interval from 2003 to 2012. To classify the level of evidence in these articles we employed the Oxford's levels of evidence. One-way analysis of variance was used to compare the levels of evidence between published articles. **Results:** A total of 721 gastroenterology-related articles were reviewed, of which 591 articles met our inclusion criteria; 80.7% were level IV. The three most common types of studies we encountered were cross-sectional (33.9%), case reports (27.9%), and case series (18.8%). Forty-three percent of the published research was in the field of hepatobiliary and spleen. The total number of articles increased from 260 articles in the 1st 5-year period (2003–2007) to 330 in the 2nd period (2008–2012). However, no statistically significant difference in the level of evidence was noted. In *Annals of Saudi Medicine Journal*, articles with level II increased from 0 to 10% with a *P* value 0.02. **Conclusion:** In our review of gastroenterology-related published articles in Saudi scientific journals, we observed an increase in the quantity of articles with the quality and level of evidence remaining unchanged. Further research is recommended to explore different reasons affecting the volume and quality of gastroenterology-related research in Saudi scientific journals.

Key Words: Gastroenterology, level of evidence, quality of publications, Saudi Arabia

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The publication of “Evidence-Based Medicine; a New approach to Teaching the Practice of Medicine” in *JAMA* in 1992, marked the introduction of Evidence-Based Medicine (EBM) to the clinical practice.^[1] This concept was both embraced and criticized by many. Physicians opposing it often cited that it is impractical, whereas those embracing it believed this concept would guide the practice of medicine. This visual gap between both sides was mended by some of the founders in a paper published in 1996 in the *British Medical Journal* (BMJ) under the title “Evidence-Based-Medicine; what it is and what it isn't.”^[2] It quickly became known

that EBM is “about integrating individual clinical expertise with the best external evidence” and it was defined as “the conscientious, explicit, and judicious use of the current best evidence in making decisions about the care of individual patients.”^[2] A definition that combines evidence with clinical expertise to apply on the individual patient, this definition has become a widely cited response to those criticizing EBM as naïve empiricism.

More recently, EBM has established itself in the field of gastroenterology; noted by increasing emphasis on EBM in gastroenterology training curriculums, and adding it as a requirement in North American gastroenterology fellowships.^[3] The increased acceptance of EBM has paved the way for publication of evidence-based guidelines by the major gastroenterology societies. Although EBM is introduced in guidelines making, and training curriculums, other variables should be considered when choosing the type of study, as for example issues related to resources and hospital capacity, and not only the level of evidence.^[4]

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In this study, we aimed to assess the types of study designs of gastroenterology-related articles published in Saudi scientific journals. Here we employ the widely accepted level-of-evidence scale introduced by the Oxford Center for EBM [Table 1].^[5] We also look at changes in classification of study designs throughout the period of the study. In addition, we compare our data with other local studies that evaluated the literature in other specialties. We acknowledge the importance of establishing our footing in research both in gastroenterology and throughout other medical specialties. Such data will provide researchers, editors, and publishers with insight into quality of research published in Saudi scientific journals. It can be used as a guide to put in efforts and resources allocation for research in Saudi Arabia.

PATIENTS AND METHODS

An online review in the PubMed was carried out to review gastroenterology-related research in six Saudi scientific journals: *The Saudi Medical Journal (SMJ)*, *Annals of Saudi Medicine (AIM)*, *Saudi Journal of Gastroenterology (SJG)*, *Saudi Journal of Kidney Diseases and Transplantations (SJKDT)*, *Saudi Journal of Infectious Diseases and Public Health (SJID)*, and the *Saudi Journal of Hematology (SJH)*. Those six journals were chosen for being PubMed indexed; insuring coverage of journals with universal access. The other Saudi journals were not indexed and were very hard to obtain, and thus they are not available in our study. The review included these journals in the time period 2003–2012, where abstracts are sure to be available online and PubMed indexed. This 10-year review should highlight the types of study design used in this period.

To appraise the change in the level of evidence across the 10 years, we divided it up into two 5-year periods; 2003–2007 and 2008–2012. We looked into changes of quality of publications between the two periods.

Similar to other studies, we used the Oxford's level of evidence as our tool to assess the quality of published research.^[5] We

Table 1: Oxford's level of evidence scale^[5]

Level	Description
I (Highest)	Randomized controlled clinical trials and meta-analysis of RCTs
II	Systematic review of cohort studies, individual cohort studies, outcomes research, ecological studies
III	Systematic review of case-control studies, individual case-control studies
IV	Case series, case-control studies and reviews, poor-quality cohort, and case-control studies
V (Lowest)	Expert opinion(s) without explicit critical appraisal, experimental research, animal studies

RCTs: Randomized controlled clinical trials

appraised which subspecialty of gastroenterology is the subject of most research interest in gastroenterology in Saudi scientific journals. To identify pediatrics and adults' gastroenterology research, we included the age group as a variable. As for including the country as a variable, we saw that it is appropriate to assess how many of the gastroenterology research is actually conducted in Saudi Arabia as opposed to international research done outside Saudi Arabia. Also, we wanted to appraise the recognition of authors abroad of publishing their gastroenterology studies in Saudi scientific journals.

We included all English written gastroenterology related publications, published from January 2003 until December 2012 in the six aforementioned PubMed indexed Saudi journals, under one of the following categories: Upper gastrointestinal (GI) tract, lower GI tract, inflammatory bowel disease (IBD), hepatobiliary and spleen, oncology, and nutrition and obesity. We excluded animal studies, basic science research, and cadaveric studies. We also excluded brief communications, letters to editors, reviews, and editorials. The previously mentioned published entities do not reflect clinical gastroenterology research, which is the aim of our study. Only publications in Saudi scientific journals were included; we did not include studies conducted in Saudi Arabia and published in international medical journals.

The Oxford's levels of evidence [Table 1] were employed in our study, excluding level V, which comprises entities already excluded by our criteria, for example, experimental research.

Statistical analysis

Data entry and analysis was performed using the Statistical Package of Social Sciences version 20.0.0 (SPSS Inc., Chicago, IL, USA). Descriptive statistics were used to calculate the frequency of articles and study design in each journal along with the level of evidence. These frequencies and percentages were calculated for each journal in each year. Comparisons between journals and between the two time-intervals were carried out using one-way analysis of variance and unpaired *t*-test, respectively. Chi-square test was used where applicable to compare categorical variables. A *P* value of less than 0.05 was considered statistically significant.

RESULTS

A total of 721 gastroenterology-related articles were retrieved and reviewed, 591 of them met our inclusion criteria [Figure 1]. More than 75% of these articles were from *SMJ* and *SJG* [Table 2]. The three most common types of studies we encountered were cross-sectional, case reports, and case series with frequencies of 33.9%, 27.9%, and 18.8%, respectively [Table 3]. Consequently, the most abundant

level of evidence is IV (80.7%) [Figure 2]. Level I studies comprised 6.6%, level II 4%, and level III 8.8% [Table 2].

The articles were under one of six categories as shown in Table 2 with the most frequent being hepatobiliary and spleen (42.6%). More than three quarters of the articles were studying adults. Hepatobiliary and spleen subcategory was also the most studied in adults (45.2%) and combined adults and children (60%), whereas the most frequent category researched in children was lower GI tract (34.6%) followed by upper GI (27.9%), then hepatobiliary and spleen (26%).

Table 2: Articles characteristics-1

	Frequency (n)	Percentage
Journal		
Saudi Medical Journal	228	38.6
Annals of Saudi Medicine	64	10.8
Saudi Journal of Gastroenterology	229	38.7
Saudi Journal of Kidney Diseases and Transplantations	41	6.9
Saudi Journal of Infectious Diseases and Public Health	14	2.4
Saudi Journal of Hematology	15	2.5
Level of evidence		
I	38	6.6
II	23	4
III	51	8.8
IV	468	80.7
Age group		
Adult	456	77.4
Pediatrics	105	17.8
Both	28	4.8
Subspecialty		
Upper gastrointestinal tract	137	23.3
Lower gastrointestinal tract	111	18.8
IBD	26	4.4
Hepatobiliary and spleen	251	42.6
Oncology	55	9.3
Nutrition and obesity	9	1.5

IBD: Inflammatory bowel disease

Table 3: Articles characteristics-2

	Frequency (n)	Percentage
Study design		
Randomized controlled trial	19	3.3
Meta-analysis	2	0.3
Prospective cohort	23	4
Cross-sectional	197	33.9
Case-control	51	8.8
Case series	109	18.8
Case report	162	27.9
Systemic review	17	2.9

Articles were published from 39 different countries in these journals. Those from Saudi Arabia made up 41.8% of the total. The next top three foreign countries were Iran (11%), India (9.8%), and then Turkey (7%).

The total number of articles increased from 260 articles in the 1st 5-year-period (2003–2007) to 330 in the 2nd period (2008–2012), noting that *SJH* and *SJID* both started publishing after 2008.

In *SMJ*, the number of articles decreased from 140 in 1st period to 85 in the 2nd one (39.3% decrease) with no statistically significant difference between the levels of evidence between the two periods. On the other hand, articles increased from 57 to 171 in *SJG* (200% increase) but also with comparable levels of evidence between the two intervals. This was also applicable to *SJKDAT* that had an increase in the number of articles from 10 to 30 (200% increase). Regarding *AIM*, there was a drop in gastroenterology-related articles from 51 in the period 2003–2007 to 10 articles in 2008–2012 (80.4% decrease). Articles with level II increased from 0 to 10% with a *P* value of 0.02, whereas there was no change to the other levels of evidence between the two intervals.

When comparing the different levels of evidence between the two time periods in all journals [Figure 3], we found that level I was 7% in the first period and 6.2% in the second one (*P* = 0.7). Regarding level II it was 2.3% in (2003–2007 period) and 5.3% in (2008–2012 period) (*P* = 0.07). There was also no statistically significant difference in levels III and IV between the two periods [Figure 2].

When comparing the two journals with the most number of articles, *SMJ*, and *SJG*, level I was 8.9% in *SMJ* and 5.7% in *SJG* with *P* value of 0.19. Level IV was 80.4% in *SMJ* compared with 75.9% in *SJG* (*P* = 0.25). There was also

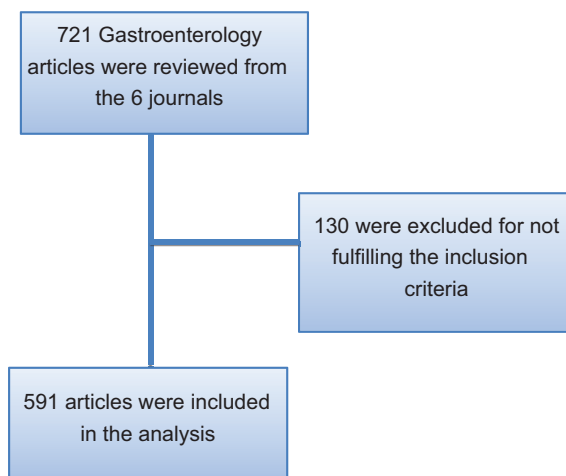


Figure 1: Description: Schematic of our review process

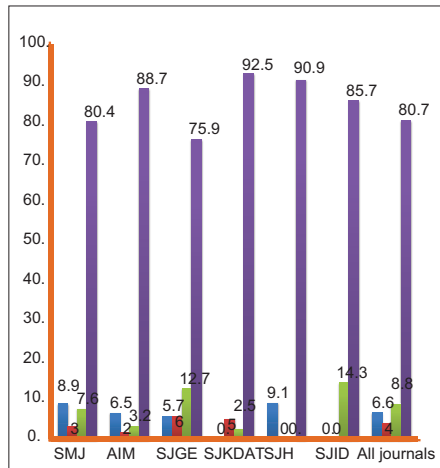


Figure 2: Percentages of the levels of evidence in the six the journals, I, II, III, IV

no statistically significant difference in the other levels of evidence between the two journals [Figure 3].

DISCUSSION

The most common LOE encountered in our review was level IV. Similar assessments for gastroenterology-related articles elsewhere, regional and otherwise, are lacking and none in an Internal Medicine specialty we encountered in our literature review. Yet, these numbers are comparable to a similar local study assessing LOE in orthopedic surgery; Makhdom *et al.* concluded that 86% of orthopedic related articles in their review were level IV.^[5] Samargandi *et al.* concluded that 91% of plastic surgery related articles published in Saudi Arabia were level IV.^[6] The low numbers of high-level-of-evidence studies in these journals could be attributed to the low impact factor in comparison to other international scientific journals, making them less attractive targets for authors. The relative recent introduction of these journals to PubMed could be another contributory factor. The background of the editorial board in journals could affect the articles accepted for publication.

In our review, we were also attentive to the change in the level of evidence across the two periods (2003–2007) and (2008–2012). The reason we went 10 years back and not more is the relative new introduction of some of these journals to the electronic system. We chose the two periods of five years because of the increasing number of GI specialists in the last decade with increasing influx of researchers. This coincided with increasing national interest in research and improved budgeting and financial resources. No statistically significant change in the LOE across the two periods was noted. No statistically significant change in LOE was noted when examining each journal individually. This goes in tandem with the aforementioned papers that assessed the

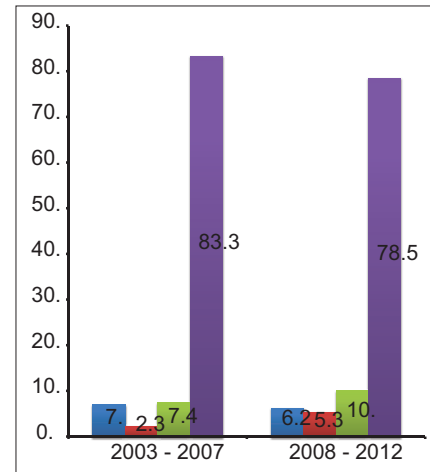


Figure 3: Change in LOE of all journals reviewed across the two intervals (2003–2007) and (2008–2012), I, II, III, IV

LOE in orthopedics and plastic surgery.^[5,6] Similar studies done in gastroenterology worldwide were lacking, but a study was published in 2013 that compared abstract publication rate in the British Society of Gastroenterology meetings of 1995 and 2005; no change in publication rate was noted. However, an increase in the trend was noted in publications with a high quality methodology (basic science research), whereas the rate of publications that employed lower quality methods was decreasing.^[7] A systematic review for the level of evidence in endoscopic ultrasonography research was carried out in 2012, and concluded that the research in this specific area has matured and proven its impact on patient management.^[8]

In our review, the vast majority of studies were conducted on adults. This goes along with a common notion in pediatrics that the low quality and quantity of research in pediatrics leaves pediatricians to infer from adult medicine.^[9]

Hepatobiliary studies made the majority of those studies concerning adults and both adults and pediatrics. An explanation might be that hepatology is a subspecialty that runs the whole gamut of pathologies that are notoriously chronic. Chronic liver disease remains a big burden on the national and international health care system and is expected to become a bigger burden in the years to come, with more cases surfacing with advanced age. All along, more challenges and more effort is needed for research.^[10]

Factors that could increase the number of submissions of high-level-of-evidence articles to Saudi scientific journals may include decreasing the turnaround time and increasing the number of editions per year. Another important point in our opinion is that some Saudi scientific journals require Arabic translation of the abstract, which may hold non-Arabic speaking authors from submitting their articles to these journals.

CONCLUSION AND RECOMMENDATIONS

In our review of gastroenterology-related published articles in Saudi scientific journals, we remark an increase in the quantity of articles with the quality and level of evidence remaining unchanged. Further research is recommended to explore different reasons affecting the volume and quality of gastroenterology-related research in Saudi scientific journals.

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