

# Bibliographic Analysis of Pain Research Published in Indexed Journals in Pakistan; 10-Years Survey

Ausaf Ahmed Khan<sup>1</sup>, Gauhar Afshan<sup>2</sup>

## Abstract

**Objective:** The aim of this study was to identify bibliographic characteristics of pain-related articles published from 2011 to 2020 in indexed journals of Pakistan.

**Methods:** This retrospective study was conducted after approval from the departmental research committee at the Department of Anaesthesiology from July 2022 to August 2022. A literature search was carried out to identify pain-related articles published between January 2011 and December 2020 in Pakistani journals indexed in the National Library of Medicine (NLM) Catalog. For information on authors and articles, both authors reviewed each journal's website and its archives. Articles on molecular and animal research were excluded. Data collected by the two authors were compared to check for accuracy, missing data, or other discrepancies. Data was recorded on predesigned Excel worksheets, and SPSS version 19 was used for data analysis and reporting.

**Results:** Our study revealed a steadily rising number of research articles published. The number of publications increased from 7 articles in 2011 to 28 in 2020. The extracted articles represented publications originating from 9 different countries, and out of 138 publications, 109 (78.99%) were identified as original articles. The significant contribution to "pain" research is from the discipline of Anaesthesia, 24.64%. However, research output on "Chronic Pain" was only 12.73% from the discipline of Anaesthesia.

**Conclusion:** This study demonstrated a multispecialty contribution to the area of pain research, with anaesthesiology providing a considerable contribution, although the contribution from anaesthesia in chronic pain is fairly modest.

**Keywords:** Bibliography, Research Trends, Pain, Pakistan.

**IRB:** Approved by Department of Anaesthesiology, Aga Khan University. Dated: 14<sup>th</sup> November 2022.

**Citation:** Khan AA, Afshan G. Bibliographic Analysis of Pain Research Published in Indexed Journals in Pakistan; 10-Years Survey [Online]. *Annals ASH KMDC* 2022;27:

(ASH & KMDC 27(4):163;2022)

## Introduction

Pain is one of the most common reasons for seeking medical care and is a component of many chronic illnesses. Emerging as a particular health problem, chronic pain has severe implications for individuals, families, and society<sup>1</sup>. Governments and other policymakers may utilise the burden of i-

llness estimates as one of the metrics for determining health priorities, allocating resources, and weighing the benefits and costs of future public health initiatives. Prior to the introduction of such research, mental diseases and other primarily non-fatal health issues would not have received attention in mortality-based ranking lists, making them now global health concerns. The Global Burden of Disease Study reiterated that pain and pain-related diseases are the main contributors to disability and disease burden globally<sup>2</sup>. According to projections, approximately two-thirds of the world's population 65 and older is predicted to live in Asia by the year 2050. The speed at which less-developed nations are age

<sup>1-2</sup> Department of Anaesthesiology,  
Aga Khan University

**Corresponding author:** Ausaf Ahmed Khan  
Department of Anaesthesiology,  
Aga Khan University,  
Email: ausaf.khan@aku.edu  
Date of Submission: 14<sup>th</sup> November 2022  
Date of Acceptance: 29<sup>th</sup> Nov 2022

ing in comparison to more developed countries is one of the most apparent and significant elements of global ageing<sup>3</sup>. Pain research has developed into a distinct field within biomedicine<sup>4</sup>, the study of the distribution and determinants of pain helps us to understand and treat the problem at the individual and population levels, and pain-related research has expanded significantly over the past two decades. However, data from the Centers for Disease Control and Prevention (CDC) found that chronic pain does not impact everyone the same way, and prevalence rates vary with different factors like gender, race, ethnicity, and socioeconomic background. For example, low-income countries (LIC) have a higher prevalence of chronic pain and associated disability than high-income countries (HIC)<sup>5</sup>. The status of scientific research in the field of pain medicine published in the indexed journals of low-middle-income countries (LMIC) has not been investigated well.

This study aims to address this gap by evaluating and analysing pain research and methodically offering an overall scientific analysis of pain-related articles published in the Indexed Journals of Pakistan (a LMIC) from 2011 to 2020.

### Materials and Methods

The retrospective study was conducted after approval from the departmental research committee at the Department of Anaesthesiology. A literature search was conducted to identify pain-related articles published in Pakistani-indexed journals between January 2011 and December 2020. The computerised literature search was carried out after retrieving a complete list of medical journals published in Pakistan from the National Library of Medicine (NLM) Catalog, which is the free online database of life sciences journal articles provided by the National Institutes of Health, United States. Five national journals that are currently indexed in PubMed (MedLine) are Pakistan Journal of Biological Sciences (PJBS), Pakistan Journal of Pharmaceutical Sciences (PJPS), Journal of Pakistan Medical Association (JPMA), Journal of Ayub Medical College (JAMC) and Journal of College of Physicians and Surgeons of Pakistan (JCPSP). For information on authors and articles, both authors reviewed each

journal's website and its archives. Articles on molecular and animal research were excluded.

The journal's name, the title of the article, year of publication, country of publication, publication type, and author speciality were all noted. Publications were classified as original articles, including randomised controlled trials (RCTs) and observational studies, editorials, review articles, audits, case reports or series, letters to the editor and short communications. Data was recorded on pre-designed Excel worksheets. Data collected by the two authors were compared to check for accuracy, missing data, or other discrepancies. The authors stored all the retrieved data in password protected Microsoft Excel sheet on the departmental computer. Calculating the sample size was not required owing to the study's methodology, and the departmental research committee identified no ethical concerns in the study.

SPSS version 19 was used for data analysis. Because this data was descriptive and categorical, only frequency and percentage were calculated and presented for the following categories: type of publication, country of origin of publication, year-by-year distribution of published papers, journal of publication and subspecialty distribution.

### Results

A total of 199 articles were retrieved, 61 molecular and animal research articles were excluded, and 138 articles were included for final analysis (Fig 1). The distribution of yearly publications over the ten-year study period revealed a consistent but unstable growing tendency overall. The number of publications increased from 7 articles in 2011 to 28 in 2020. Figure 2 provides details of the year distribution and time trends of the number of publications. It is evident that the period from 2011 to 2017 may be considered the first phase. During this time, the development trend was constant and hardly expanding, but beginning in 2017 there was an exponential increase in research output with an average annual growth rate of nearly 30%.

The extracted articles represented publications originating from 9 different countries; amongst these, 106 (76.81%) were contributed from Pakistan and 12 (8.7%) from China. Our study showed that among all 138 publications, 109 (78.99%) were identified as original articles, while case reports, letters to the editor and short communication constituted 21.01% of the research output (Table 1). Of the 138 published articles, 59 (42.75%) were published in JPMA, while JCPSP, JAMC, PJBS and PJPS had 44 (31.88%), 19 (13.77%), 6 (4.35%) and 10 (7.25%) papers respectively. The publication trend shows a constant increase in the number of publications in JPMA over the years (Figure 3); JPMA has an impact factor of 1.002 (2021–provided by Thomson Reuters/ISI Web of Science) and an H Index of 46 (2021) which is the highest in all the medical journals of Pakistan (provided by SCImago Journal and Country Rank, SJR).

The significant contribution to “pain” research is from the discipline of Anaesthesia 24.64% followed by surgery, physiotherapy/physical medicine, and rehabilitation 21.01% (Figure 4). However, research output on “Chronic Pain” was only 12.73% from the discipline of Anaesthesia (Table 2).

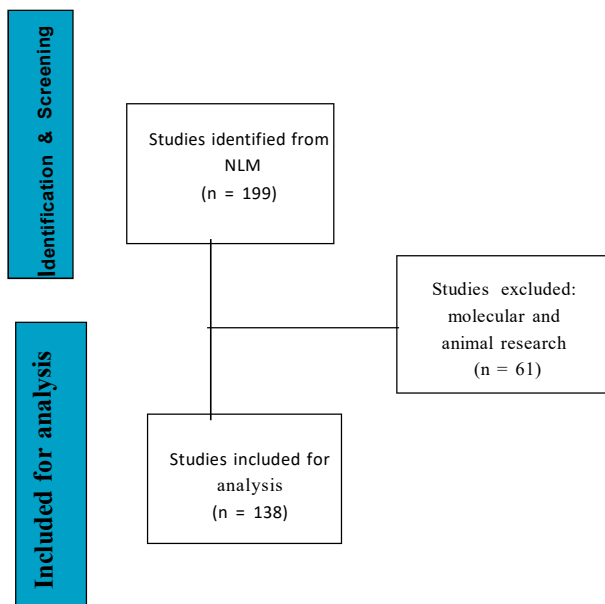


Fig 1. Flowchart showing the progress of article selection.

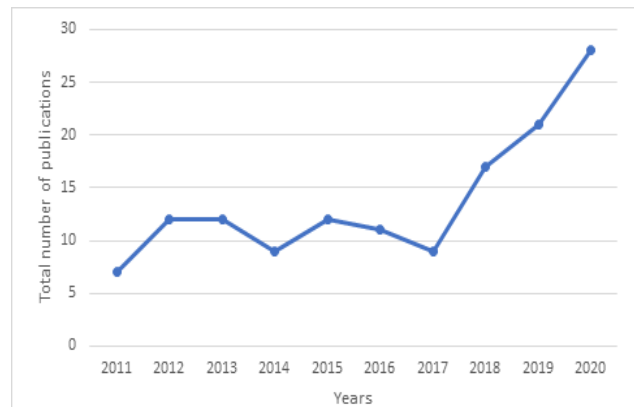


Fig 2. Total number of publications 2011 - 2020

Table:1 Country wise and publication distribution

Country	Frequency (n=138)
Pakistan	106 (76.81)
China	12 (8.70)
Iran	9 (6.52)
Turkey	5 (3.62)
Malaysia	2 (1.45)
Ireland	1(0.72)
Saudi Arabia	1(0.72)
Taiwan	1(0.72)
United Kingdom	1(0.72)
Publication Type	
Original article	109 (78.99)
Case report and series	19 (13.77)
Letter to Editor	7 (5.07)
Short communication	3 (2.17)

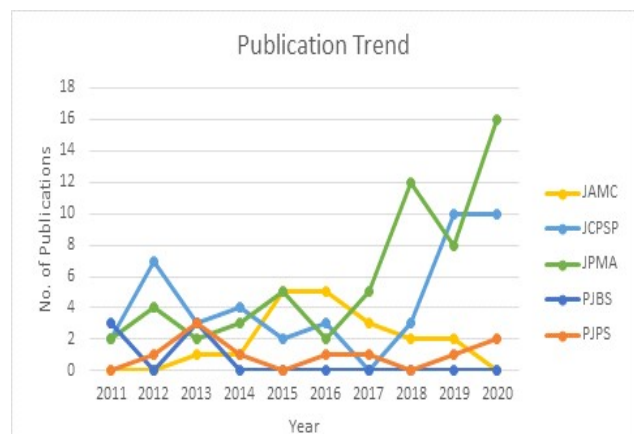
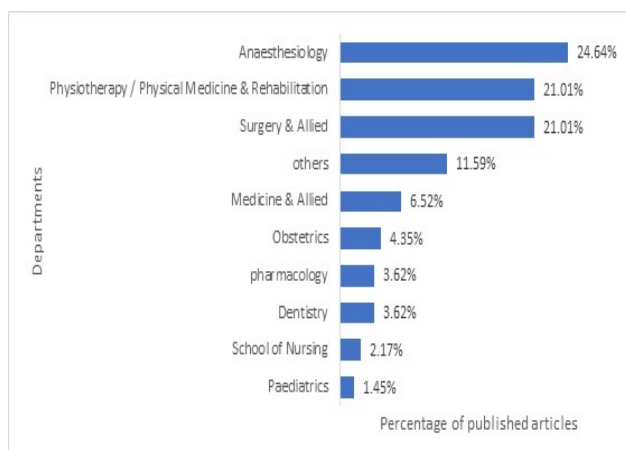


Fig 3. Publication Trend



**Fig 4.** Percentage of articles published by each department

**Table: 2** Research output from different disciplines

Discipline	Total	Acute pain	Chronic pain(n=55)
Anaesthesiology	34 (24.64%)	27 (32.53%)	7 (12.73%)
Physiotherapy/Physical Medicine & Rehabilitation	29 (21.01%)	6 (7.23%)	23 (41.82%)
Surgery & Allied	29 (21.01%)	19 (22.89%)	10 (18.18%)
Others	16 (11.59%)	10 (12.05%)	6 (10.91%)
Medicine & Allied	9 (6.52%)	5 (6.02%)	4 (7.27%)
Obstetrics	6 (4.35%)	5 (6.02%)	1 (1.82%)
Dentistry	5 (3.62%)	5 (6.02%)	0
Pharmacology	5 (3.62%)	2 (2.41%)	3 (5.45%)
School of Nursing	3 (2.17%)	2 (2.41%)	1 (1.82%)
Paediatrics	2 (1.45%)	2 (2.41%)	0

## Discussion

Publication is a significant indicator of progress in scientific research. It is the most important source of insightful knowledge that helps to create unique diagnostic techniques, make individualised clinical judgments, and implement novel treatment procedures. The amount and quality of publications published within a country or institution are the key factors that represent the quality of healthcare education and practices. In this study, we present a comprehensive scientific analysis of articles related to pain published in the Indexed Journals of Pakistan over a decade. A total of 138 articles were included, with original research articles accounting for the largest proportion, i.e., 76.2%; this finding is

comparable to results by Zhao et al<sup>6</sup>. Where they analysed research on pain in the elderly published from 2000 to 2019. Our analysis showed that there had been an unstable upward trend in the number of publications over the years. The fastest growth rate in the number of citations appeared from 2017 to 2020. This growth pattern is similar to previous growth trends seen in the fields of general pain<sup>7,8</sup> and overall biomedical publications<sup>9</sup>. Despite the growing trend in pain research, Pakistani scholars make up just 0.04% of the world's research publications<sup>10</sup>. Nevertheless, there is light at the end of the tunnel, as Saad & Sifeng<sup>11</sup> showed that less developed nations often have a greater proportional growth rate in publications, and each country should make an effort to improve its research output distinctively while working with its more or less constrained resources.

Modern pain medicine reportedly began after World War II with the establishment of the first pain clinics in the United States, Canada, Australia, Denmark, and Japan<sup>12,13</sup>. Over the past two decades, significant improvements in the treatment of acute pain following surgery and trauma have been made, and anesthesiologists have significantly influenced this development<sup>14</sup>. Our study results also revealed that the major contribution to acute pain research is from the discipline of Anesthesia 32.53%; however, when we look at chronic pain research, the output from the anaesthesia fraternity is mere 12.73%. In Pakistan, the pain management field is still developing, and there is a critical shortage of skilled healthcare professionals who are trained in pain management. There are currently only a few specialised pain clinics in Pakistan, despite the fact that pain medicine was first introduced as a speciality in the middle of the 1980s. Aga Khan University established the first multidisciplinary pain clinic in 1998 and started pain fellowship in 2005 due to the country's growing burden of pain disease and lack of trained personnel. A private medical university in Islamabad also offers a master's program in pain management for anesthesiologists. Health professionals have expressed concern about the lack of support services for acute, c-

chronic, cancer and childbirth pain in most public and private hospitals in Pakistan<sup>15</sup>. In 2014, the College of Physicians and Surgeons Pakistan, which oversee postgraduate medical education and professional development, approved specialisation in pain management as a subspecialty of anaesthesia. This was an important milestone in developing this field of Pain Medicine in Pakistan<sup>16</sup>; however, till 2018, there was only one institute recognised for training by CPSP and only two approved supervisors for pain medicine. The modest number of articles published in indexed journals in Pakistan indicates a tendency for poor research productivity. There may be several causes for this, including a lack of national priorities for pain research, a lack of mentors due to existing faculty members' lack of expertise in research methodology, the apparent lack of healthcare facilities, and poor infrastructure for fostering a culture of research<sup>17</sup>. The World Federation of Societies of Anesthesiologists Global Anesthesia Workforce Survey reveals that the number of Physician Anesthesia Providers (P-AP) is critically low in many countries around the world, including Pakistan and reported only 1.64 PAP per 100,000 population<sup>18</sup> which means Anesthesiologists are too much burdened with the clinical workload. Many researchers have stated that a heavy workload is a significant impediment to research activities, and increased clinical work negatively impacts the academic productivity of faculty at academic medical centres;<sup>19-21</sup> can be overcome by allocating dedicated research time to faculty. The majority of the country's medical schools do not teach research techniques in their curricula. It should be taught and trained in medical school and during residency training programs. Conducting workshops on research topics and disseminating concepts for using hospital data for research purposes could be another strategy for encouraging research.

This study also had certain limitations that might influence how the findings are interpreted. We retrieved articles from the National Library of Medicine (NLM) Catalog only and excluded other databases like Google Scholar and Web of Science (WoS); using a single database may result in selection bi-

as. In addition, we did not include conference abstracts that may have covered innovative information in the discipline and articles, not in English were not included. These omissions may have resulted in inadequate data acquisition.

### Conclusion

We found that the significant contribution to acute pain research is from the discipline of anaesthesia 32.53%; however, the output for chronic pain research from the anaesthesia fraternity is mere 12.73%.

### Conflict of Interest

The authors declare that there is no conflict of interest.

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