

## The research contributions of Egyptian physicians

### Indexed in PubMed from 1847 -2022: bibliometric study

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### Abstract:

This study aims to monitor the research contributions of Egyptian physicians which have been indexed in PubMed database for three centuries in the medical and related fields, since 1847, the date of the first scientific research indexed in PubMed Database until September 2022, the duration of this study was divided into seven sub-periods of time Span.

We have used the bibliometric approach to this research, which uses statistical methods to analyze data on all types of intellectual production of books, periodicals and other sources of information in order to determine the characteristics of intellectual production, The scope of this bibliometric study is to analyze the patterns of these publications, based on: topics, periodicals titles, authors, affiliation, publishing countries, etc.

The study concludes with a set of results, most notably that the last sub period of study from 2003 to September 2022 was the most productive period of study for medical scientific research with 103,000 scientific research (93.4%) of total research across study periods, The first period came with the lowest number of researches with only one scientific researcher representing %.0009 of the number of researches. The majority of intellectual production over the course of the study was in English, English was a top publishing language with (110,225) papers representing (99.9%) of the total study research while Spanish was only (10) research papers, while German, Dutch, Chinese, French and Portuguese came with one research each over study periods. During the first three periods of the study, the publication of scientific research was limited to Britch bodies by 100% during the first three study periods, also England was at the forefront of the fourth period of the study. from 1925 to 1950, (63%) of the researches published that period. The United States of America came at the forefront of the publishing countries in the fifth, sixth and seventh periods of the study. The first Egyptian search indexed in the PubMed database was published in Edinburgh medical and surgical journal (October 1847). Many academic bodies and institutions contributed to the intellectual production of Egyptian physicians, The European Organization for Nuclear Research” CERN”, Geneva, Switzerland was the leading international body contributing to the research of Egyptian doctors during the study periods with 8,335 scientific research from the seventh period of the study from 2003 to September 2022, The topic of humans came in the forefront of the research topics of Egyptian physicians indexed in PubMed during the fifth, sixth and seventh periods of the study.

### Keywords:

Egyptian physicians, PubMed publications, Research contribution, Bibliometric analysis.

## **1/ 1 Introduction:**

The contributions of scientific research are a real measure of development in various fields of science, and scientific research is one of the most important functions of universities and research institutions and is one of the main reasons for their excellence and continuity.

The main objective of the world's academic and research institutions was to raise the level of scientific research and researchers, as this is useful in obtaining advanced positions in global classifications and the consequent increased support for these institutions and the increased demand for admission to academic institutions, reflecting their role in scientific and research progress.

The medical field is one of the most important areas of interest in scientific research because of its great importance in the service of humanity, and a course in improving science and confronting diseases and disasters, which is clearly manifested in the face of medical crises such as COVID-19 and other crises, epidemics and various difficult diseases over the ages.

The history of Egyptian medicine is a combination of medical developments and scientific civilizations over the course of seven thousand years and has started medicine in Ancient Egypt as science, art and conservation in its administration and temples. The Islamic conquest of Egypt was an opening of science and arts and a great interest in medical and other sciences. Ottoman rule came to witness the closure of schools, the deterioration of the science of medicine and the collapse of its features. The Mamluk period saw the spread of deadly epidemics, especially the plague disease, which killed hundreds of thousands of Egyptians. Until the reign of Muhammad Ali Pasha, who witnessed his time of great rise in the field of medicine and other fields, ordered the establishment of an Egyptian Medical Authority to care for the soldiers of the Egyptian Army, at which time there was military hospital in EL-Azbakiyah.

At the beginning of the nineteenth century. A number of medical schools have been established in Egypt, including:

-In 1826 Dr. Clot, with an authority given by Mohamed Ali, started the establishment of the central and general hospital in Egypt; and also, the medical school affiliated to this hospital.

First decision decided about the language of medical education was approving the Arabic language as the teaching and learning language. Translators from French into Arabic, who would translate the medical textbooks and translate from and into French/Arabic to professors and students were joining the medical school by an idea came by the efforts of Dr. Clot participation and management.

-In 1827 the medical school at " Abu Za`bal area in Egypt, started its first course and began the medical teaching process.

-In 1837 The school was moved to the Qasr Ibn al-`Ayni known as Qasr al-`Ayni" (AL-Manway, 1999).<sup>2</sup>

Egyptian physicians research contributions have evolved over the years and centuries. The scientific institutions to which the researchers belong have expanded and also the medical field in Egypt significantly. Several government and private medical colleges have been established over the past years, contributing to the expansion of Egypt's medical intellectual production, as evidenced by this study, The latest statistics of the Egyptian Cabinet, Information and Decision Support Centre indicate that the total public expenditure on the health sector by the 2021/2022 budget was about 108.8 billion pounds, with an increase of 15.3 billion Egyptian pounds. (approximately 16%) for the allocation of the health sector in the fiscal year 2020/2021 which amounted to about 93.5 billion pounds (Zahran, 2021)

Many indicators indicate the development of medical research in Egypt, where the National Authority for Quality Assurance and Accreditation in Egypt has obtained World Federation of Medical Education (WFME) as the first accreditation authority to receive this recognition in the Middle East, Africa and Arab States, which means the recognition of all faculties approved by NAQAAE in Egypt (The *National Authority for Quality Assurance and Accreditation*, 2019)

Egyptian physicians research contributions indexed in PubMed database are of great importance; The fields and limits of Egyptian doctors' research interests have been evident for three centuries, the temporal development and the substantive, numerical and qualitative diversity of these research contributions, the countries contributing to publishing and the world's most important periodicals in this field, may benefit current researchers to learn about the history of Egyptian medical production and to develop research in this field, and may also be useful in maintaining sober scientific publishing in the world's most important medical database.

## **1/2 Study problem and questions:**

Despite the importance of the topic of international intellectual production of Egyptian doctors indexed in one of the most important medical databases PubMed But this production did not receive the attention of the Arab studies analyzing this intellectual production, The researchers did not address this subject despite the enormous intellectual production of Egyptian doctors at the base of PubMed and the importance of this production and its various distributions s rights ", including the most important authors and institutions responsible for its dissemination and quality.

The study attempts to answer the following questions:

The study attempts to answer the following questions:

- 1- What is the total number of medical research and intellectual production of Egyptian physicians /researchers in the PubMed database between 1847 and September 2022?
- 2- Which countries contribute most to the dissemination of Egyptian physician's research contributions over the course of study?
- 3- Which languages are most used by Egyptian physicians to spread the intellectual production available in the PubMed database over study periods?
- 4- Which institutions belong to researchers who contribute to the intellectual production of Egyptian physicians in the PubMed database over the course of the study periods?
- 5- What are the most important scientific periodicals by which Egyptian

physicians/researchers published their scientific research during the study periods?

6- What are the main topics of Egyptian physicians' intellectual production indexed in the PubMed database over the course of study periods?

7- Who are the most authored researchers in Egyptian medical intellectual production indexed in the PubMed database over the course of the study periods?

### **1/3 Materials and Methodology**

The study relies on the bibliometric research method, the content analysis research method to recognize the intellectual production of Egyptian physicians indexed in the PubMed database to determine the numerical and qualitative indications about this scientific production of Egyptian doctors/researchers since 1874, "the date of the first indexed work in the "PubMed" for intellectual production by Egyptian physicians "until September 2022, Data of the study were obtained through PubMed database website.

### **1/4 data collection**

The researchers relies on direct research In the PubMed database to identify the diverse study requirements and the Excel program was used to make tables and statistics for the study, Researchers also relied on websites such as the Research Gate, Egyptian and Arab universities websites, search engines and personal blogs to access basic information about prominent authors over the course of this study.

### **1/5 Study terminology:**

PubMed: a free resource supporting the search and retrieval of biomedical and life sciences literature with the aim of improving health—both globally and personally, The PubMed database contains more than 37 million citations and abstracts of biomedical literature. It does also include full text journal articles; PubMed was developed and is maintained by the U.S. National Library of Medicine (NLM).

### **1/6 Literature review**

Research was conducted to access studies relevant to the current study using the keywords "research contributions", "Egyptian physicians", "PubMed database" In the following data observatories:

- Ovid; Wiley online library; Oxford journals; Evidence Based Medicine Reviews, Medline DATE 1946
- In addition to the Dar al- Al-Mandumah,2024 database and the unified catalogue
- Egyptian University's online libraries, 2024).

The researchers found no study on the subject of searching for:

Research contributions of Egyptian physicians, indexed in "PubMed" from the point of view of library science and information, However, there are four studies on the topic of the study, such as:

1- (al-Masri ,1982) The study analyzed with all 26 thousand medical articles published by Arab and Egyptian physicians, from 1873-1982.

2- This is a bibliometric analysis study, and also citation analysis study as for the second study made by (El-Berry, 2015) the study aimed to quantitatively analyze and compare the research publications, PubMed-indexed journals. According to their contributions to the total productivity, the 15 Egyptian faculties were ranked as follow; Cairo on the top followed by Assiut, Mansura, Zagazig, Cairo, Assiut and Mansura produced more than 52% of total publications, presented a progressive increase during the periods 2000-2004, 2005-2009 and 2010-2014. Most faculties have their publications with first author affiliated to them.

3- The third study made by (Shehata, Mahmoud, 2017) the study examines Egyptian publications and research collaboration in health sciences, using Thomson Reuters Incites over the period of 1980-2014. Egypt, in clinical, pre-clinical and health, the results of the study were 31 382, of which 27 693 articles were multi-authored, indicating a co-authorship ratio of 88, the Egypt's main partners were USA, Saudi Arabia, Germany, England and Japan. In addition, their colleagues in 166 countries during the period under study. These countries were grouped.

4- The fourth study made by (Uddin, Alharbi, 2023) The main objective of this study was to synthesize the progress, challenges and prospects of biomedical research in Saudi Arabia the search was performed by combining verified Medical Subject Heading (Mesh) terms: “biomedical research”, “bibliometrics”, “Saudi Arabia” The data collection was done from January to June 2022 by both author the Results of the study was: Out of 202 articles yielded from initial search, 13 articles met all of the inclusion criteria and were examined in details The outcome of analysis showed that with the augmentation of Research and Development (R&D) globalization in Saudi Arabia.

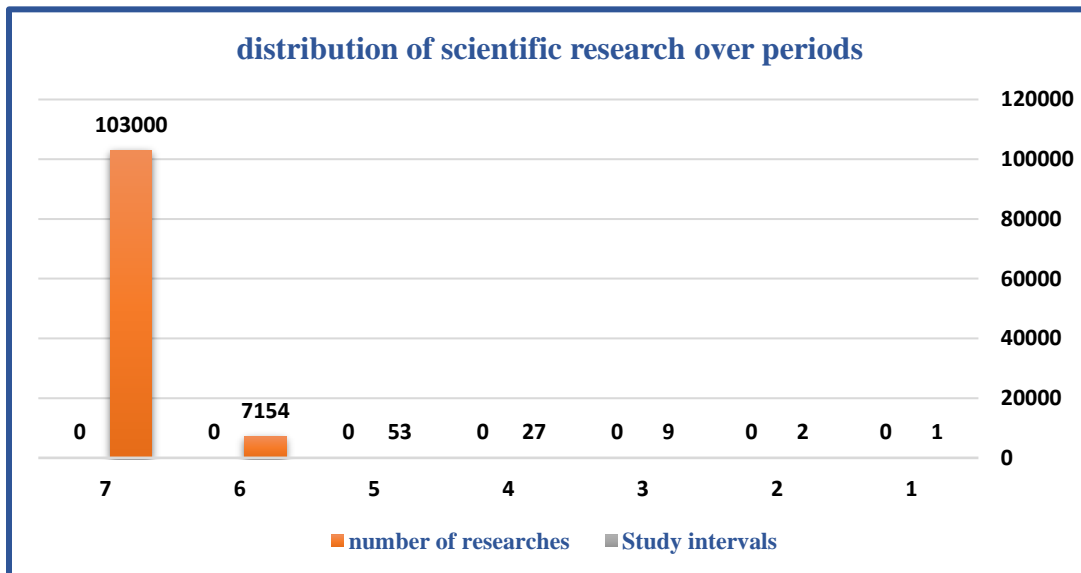
5- The fifth study made by (Tolbah, El-Masry 2022) This is the study conducted by the two researchers to identify the intellectual production of Egyptian physicians indexed in the PubMed database from October 2022 to May 2023.

## **2 / 1 The study:**

The study period was divided into 7 sub periods, each of which includes a number of research published in that period. The first period was from 1847 to 1872 with a number of **1** research indexed in PubMed to include the lowest number of researches published during the study period. From 2003 to September 2022, the number of research published was around 103 thousand, as shown in the following tabl

Table no.1(Study intervals from 1847 to 2022)

No	Study intervals	number of researches	%
1	1847–1872	1	.0009
2	1873-1898	2	.001
3	1899-1924	9	.008
4	1925-1950	27	.024
5	1976–1951	51	.046
6	2002–1977	7152	6.487
7	2003-September 2022	103.000	93.4
	<b>Total</b>	<b>110.242</b>	<b>100%</b>



From the previous table we can see:

- Study periods were divided into seven chronological periods: each extending to about 25 year
- The first five periods of the study together represent about 0.079% of the percentage of Egyptian physicians’ researches indexed in PubMed during the study period with 90 scientific research.
- The limitations of scientific dissemination may make sense in the early periods of the study, but the following period (1977-2002) indicates that researchers are not keen on the scientific publication of their scientific research in this period. This may be because researchers' scientific promotions do not relate to the number of scientific research they publish. In addition, Egypt's medical schools in that period were limited to only 6 universities, Cairo University. Al-Azhar University, Alexandria University, Ain Shams University, Assiut University, Mansoura University.

- The sixth period of study (1977-2002) represents 6.487% of the percentage of research indexed in PubMed during the study period with 7152 scientific research.

- The seventh period of the study is the largest in terms of the number of scientific research, with 103,000 research at 93.4% of total research during all study periods.

### **1-Scientific research in the first period of study “1847 – 1872 “as following:**

There is one study for Egyptian affiliation physician covered by the PubMed database from 1847 to 1872 with 0.0009% of indexed studies. The data of First research indexed in PubMed for Egyptian affiliation institution, was the following:

**a- Laidlaw, James. Report upon the Contagion of the Plague, &c., with an Appendix. - Edinburgh medical and surgical journal. – (1 October 1847). – pages 342-384.**

- This study discussed one of the important topics on the spread of epidemics in Egypt in the 19th century. It is an article in English by Dr. James Laidlaw, he was working as a surgeon at the General Hospital for Europeans at Alexandria, Egypt in that period.
- The plague epidemic, known as black death, has spread in Egypt over many times. Death of nearly half a million Egyptians in that period, Cairo and Alexandria lost 25% to 30% of their population (Watts, 2010) which underscores the importance of the subject, and which came as a research Indexed in PubMed by Egyptian physicians.
- Another reason for lack of researches indexed in PubMed for that period, is because physicians/researchers used to publish their works in Egyptian journals, and sometimes in Arabic. These Journals that were published in Egypt, disappeared from PubMed (for that period), most probably after the transition from “MEDLINE”

### **2- Scientific research in the second period of the study” 1873-1898 as following:**

- There are two studies of Egyptian affiliated physicians covered by the PubMed database from 1873 to 1898 with 0.001 % of indexed studies. The data of this researches indexed in PubMed for Egyptian affiliation institution, was the following:

**a)- Gabril, Joseph. Dysentery in Hot Countries and Its Relation to Abscess of the Liver. - The Indian medical gazette. – vol 28, no 11(November 1893). – p364.**

**b) - Gabril, Joseph. Ancylostomiasis. - The Indian medical gazette. – vol 29, no 9 (September 1894). – p359.**

-The studies discussed the effects of epidemics and intestinal worms such as Dysentery and Ancylostomiasis in hot areas on the liver and on human health in view of the prevalence of many of these diseases in hot areas, including Egypt, as a result of drinking contaminated water and eating contaminated foods in the nineteenth century (Clot, A, B , 2011)

### **3- Scientific research in the Third period of the study” 1899 -1924” as following:**

- The number of researches from 1899 to 1924, amounting to 9 scientific researches,

accounted for 0.008% of the total of nearly 110 thousand research studies studied.

*Table no. 2 (All Scientific researches in the Third period of the study” 1899 -1924)*

<i>Author</i>	<i>Title</i>	<i>Topic</i>	<i>Journal title</i>	<i>Date</i>	<i>Affiliation</i>	<i>Lang.</i>
<b>Ruffer, Marc Armand</b>	Measures Taken at Tor and Suez against Ships Coming from the Red Sea and the Far	Medical Quarantine	Transactions. Epidemiological Society of London	1900 Jan	President of the Sanitary, Maritime, and Quarantine Board of Egypt.	Eng
<b>Milton, Herbert</b>	The Treatment of Stone in the Bladder.	Bladder Stones	The Indian medical gazette	1900 Dec	Kasr El Ain Hospital, Cairo, Egypt.	Eng
<b>Derry DE</b>	Pelvic Muscles and Fasciae.	Pelvic Muscles	Journal of anatomy and physiology	1907 Oct	Government School of Medicine, Cairo, Egypt.	Eng
<b>Derry DE</b>	On the Real Nature of the so-called "Pelvic Fascia	Pelvic Fascia	Journal of anatomy and physiology	1907 Oct	Government School of Medicine, Cairo, Egypt	Eng
<b>Freeman GF</b>	The Heredity of Quantitative Characters in Wheat.	Quantitative Characters in Wheat	Genetics	1919 Jan	Société Sultanienne d'Agriculture, Cairo, Egypt.	Eng
<b>Maccallan AF</b>	Causes of non-trachomatous ophthalmia in Egypt	non-trachomatous ophthalmia	The British journal of ophthalmology	1919 Nov	Director of Ophthalmic Hospitals, Cairo, Egypt.	Eng



<i>Author</i>	<i>Title</i>	<i>Topic</i>	<i>Journal title</i>	<i>Date</i>	<i>Affiliation</i>	<i>Lang.</i>
<b>Fox, H M</b>	An investigation into the cause of the spontaneous aggregation of flagellates and into the reactions of flagellates to dissolved oxygen: part i.	Spontaneous aggregation of flagellates	The Journal of general physiology	1921 Mar	Laboratory of the Marine Biological Association, Plymouth, England, and the Biological Laboratory of the School of Medicine, Cairo, Egypt.	Eng
<b>Fox, H M</b>	An investigation into the cause of the spontaneous aggregation of flagellates and into the reactions of flagellates to dissolved oxygen: part ii.	Spontaneous aggregation of flagellates	The Journal of general physiology	1921 Mar	Laboratory of the Marine Biological Association, Plymouth, England, and the Biological Laboratory of the School of Medicine, Cairo, Egypt.	Eng
<b>Fox, H M</b>	Methods of studying the respiratory exchange in small aquatic organisms, with particular reference to the use of flagellates as an indicator for oxygen consumption.	Respiratory exchange in small aquatic organisms,	The Journal of general physiology	1921 May	Laboratory of the Marine Biological Association, Plymouth, England, and the Biological Laboratory of the School of Medicine, Cairo, Egypt.	Eng

*From the previous table we can see:*

- The number of scientific research from 1889 to 1924 was only nine, For six Authors.

- All the scientific researches published in this period were in English.
- The first research was published in that period in 1900 with the title Measures Taken at Tor and Suez against Ships Coming from the Red Sea and the Far by Ruffer, Marc Armand, he was President of the Sanitary, Maritime, and Quarantine Board of Egypt, this period was characterized by the spread of epidemics and infectious diseases. One of the most important topics in that period was the quarantine of ships, in order to try to control the extent of these diseases and limit their spread by sea transport of different goods.
- All the researches published in that period and indexed in PubMed belong to foreign researchers working in Egyptian medical bodies such as “Kasr El Ainy Hospital, Government School of Medicine, Ophthalmic Hospitals, Cairo, Egypt
- The researches at this period were characterized by addressing topics that are concerned with quarantine and community health.
- The researches are few, that the reason for that could be: Egyptian researchers published in Egyptian journals at that time.

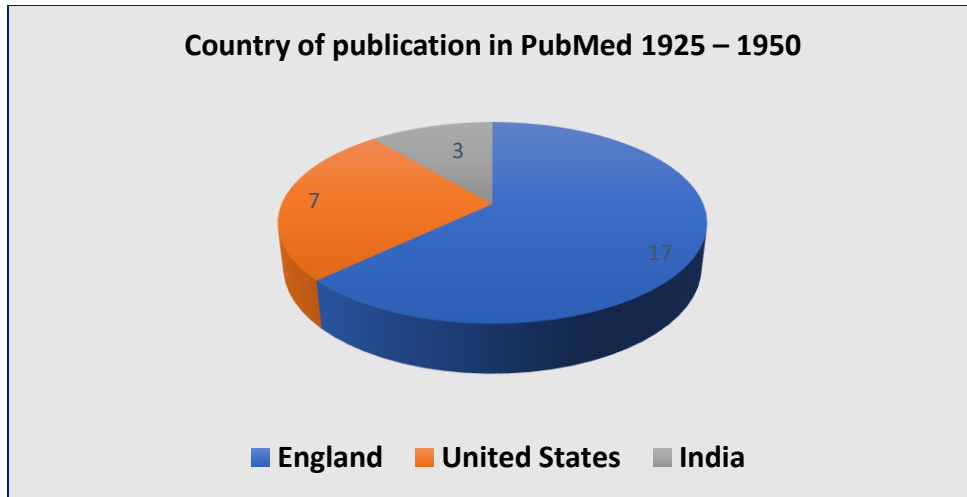
**4- Scientific research in the Fourth period of the study” 1925-1950”as following:**

- From 1925 to 1950, the number of research was 27, representing 024% of the total of 110 thousand research studies.
- English language was the only language used, to publish all contributions in this period.

***4/1 Country of publication in this period”1925 – 1950” in PubMed, as following:***

**Table no. 3 (Country of publication in PubMed 1925 – 1950)**

<b>Country</b>	<b>Number of essays, notes, reviews, etc. published</b>	<b>%</b>
England	17	63%
United States	7	26%
India	3	11%
Total	27	100%



*From the previous table we can see:*

\* 3 countries published contributions of Egyptian physicians, in PubMed from 1925 to 1950.

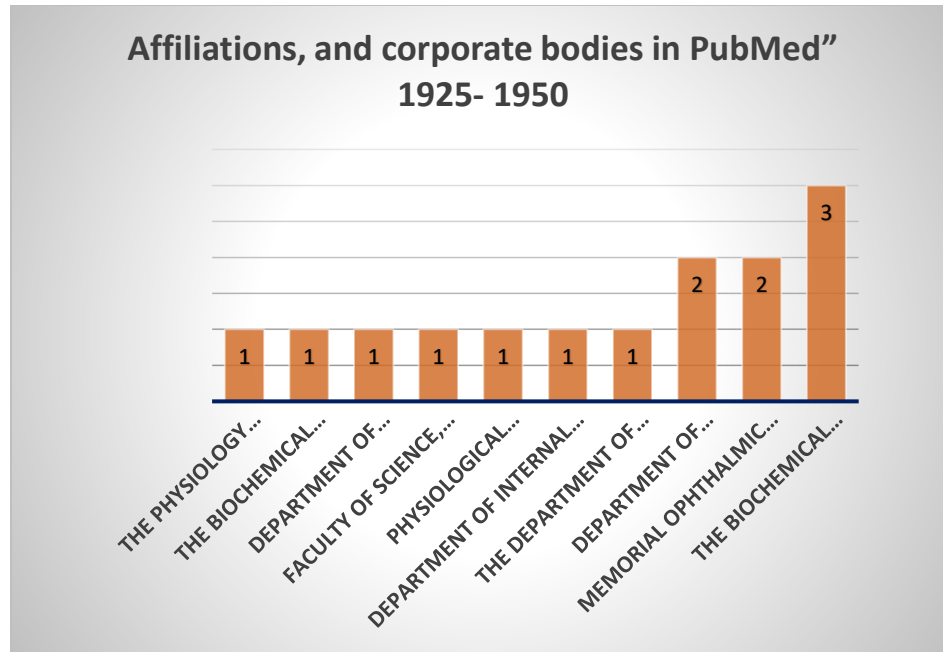
- England is the most widely published country for scientific research of Egyptian physicians in that period with 63% of the total research of that period, followed by the United States with 26%, while India came third and last with 3 scientific researches.

-This may be due to England's distinction of having many prominent medical educational institutions, which are the world's first in the medical field.

*4/2 Affiliations, and corporate bodies in this period in PubMed, as following:*

**Table no. 4 (Affiliations, and corporate bodies in PubMed” 1925- 1950”)**

Corporate body name	Redundancy
The Biochemical Laboratory, Physiology Department, Faculty of Medicine, Cairo,	3
Memorial Ophthalmic Laboratory, Cairo, Egypt.	2
Department of Medicine, The Jewish Hospital, Alexandria, Egypt.	2
The Department of Physiology and Biochemistry, Faculty of Medicine, Cairo, Egypt.	1
Department of Internal Medicine, The Jewish Hospital, Alexandria, Egypt.	1
Physiological Laboratory and the University Hospital, Cairo, Egypt.	1
Faculty of Science, Botany Department, Fouad I University, Cairo, Egypt.	1
Department of Bacteriology, Faculty of Medicine, Cairo, Egypt.	1
The Biochemical Department, Faculty of Medicine, Cairo, Egypt.	1
The Physiology Department, Faculty of Medicine, Cairo, Egypt.	1
<b>10</b>	



*From the previous table we can see:*

-During the study period from 1925 to 1950, 10 affiliated scientific bodies, the researchers belonged to.

- All bodies in this period are Egyptian bodies.

-The Faculty of Medicine in Cairo was the first institution to which researchers belonged to, during that period

*4/3 Titles of journals and other information materials in this period in PubMed, as following:*

**Table no. 5 (Titles of journals, and other information materials in PubMed 1924- 1950)**

Journal title	Number of researches	%
The British journal of ophthalmology	9	33.3%
The Biochemical journal	6	22.2%
British heart journal	4	14.8%
The Indian medical gazette	3	11.2%
Journal of bacteriology	2	7.4%
Plant physiology	2	7.4%
The Journal of experimental medicine	1	3.7%
<b>Total</b>	<b>27</b>	<b>100%</b>

- 7 periodicals contributed to the publication of scientific research for Egyptian physicians in that period.

- The British journal of ophthalmology ranked first as the most periodical for Egyptian physician research with 9 scientific research papers at 33.3% of the number of research from 1925 to 1950, The Biochemical journal, came in second place for the periodicals in which Egyptian physician published their scientific research with 9 scientific researches representing 22.2% of the total researches indexed in PubMed database in that period.

*4/4 most productive authors in this period in PubMed, as following:*

**Table no. 6 (Productivity table of the most productive authors in PubMed”1925-1950”)**

No.	Name of author	Number of researches	%
1	- Daoud KM	5	12.8%
2	- Mainzer F	3	7.7%
3	- Bland JO	2	5.1%
4	- Forsyth WL	2	5.1%
5	- Rizk K	2	5.1%
6	- Saïd H	2	5.1%
7	- Wilson RP	2	5.1%
8	- El Ayyadi MA	2	5.1%
9	- Kr se M	2	5.1%
10	-EL Shishiny ED	2	5.1%
11	- Gohar MA	1	2.6%
12	- Snyder JC	1	2.6%
13	- Doorenbos D	1	2.6%
14	- Kamel S	1	2.6%
15	- Tadros W	1	2.6%
16	- Kenawy MR	1	2.6%
17	- Hassan A	1	2.6%
18	- Barsoum GS	1	2.6%
19	- Bishay A	1	2.6%
20	- Stewart AD	1	2.6%
21	- Meyerhof M	1	2.6%
22	- Wheeler CM	1	2.6%
23	- Misrahy G	1	2.6%
24	- Zanaty AFI	1	2.6%
25	- Morcos Z	1	2.6%
<b>Total</b>		<b>39</b>	<b>100%</b>

*From the previous table we can see:*

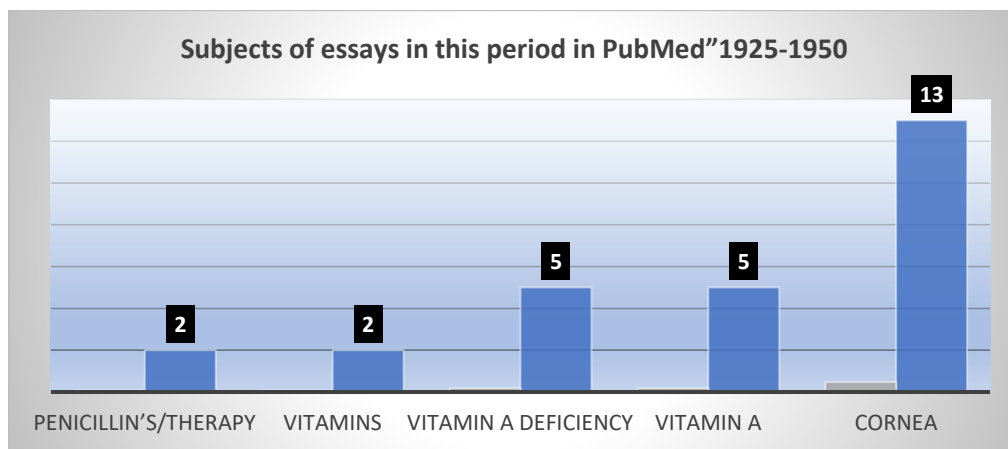
-25 authors contributed to the scientific research of Egyptian physicians indexed in PubMed database from 1925-1950.

- Daoud KM was the most published author in that period with 5 scientific papers representing 12.8% published that period.
- 15 authors published one research each during that period of the study representing 38.5% of the total research published that period.
- Not all researchers were Egyptians, but they were affiliated to Egyptian corporate bodies.

*4/5 Subjects of essays in this period in PubMed, as following:*

**Table no. 7 (Subjects of essays in this period in PubMed”1925-1950”)**

Subjects	Number of essays, research papers, etc.	%
Cornea	13	48.1%
Vitamin A	5	18.5%
Vitamin A Deficiency	5	18.5%
Vitamins	2	7.4%
Penicillin’s/therapy	2	7.4%
Total	27	100%



*From the previous table we can see:*

- The topic "Cornea" came in the forefront of the topics researched within that period. The subject was repeated in 13 research papers of that period at 48.1% of research subjects, this

indicates a great interest in ophthalmology and increased health awareness in the period when treatment was prevalent through primitive medicine methods in the early 20th century.

- The topic "Penicillin" came in the last order of the subjects of that period, which is natural. Penicillin was discovered by Alexander Fleming, Professor of Microbiology at St Mary's Hospital in London in 1928 (Glynn. A. A, 2005) This period was the beginning of Egyptian physicians, research on this topic in keeping with the world situation and the discovery of this treatment.

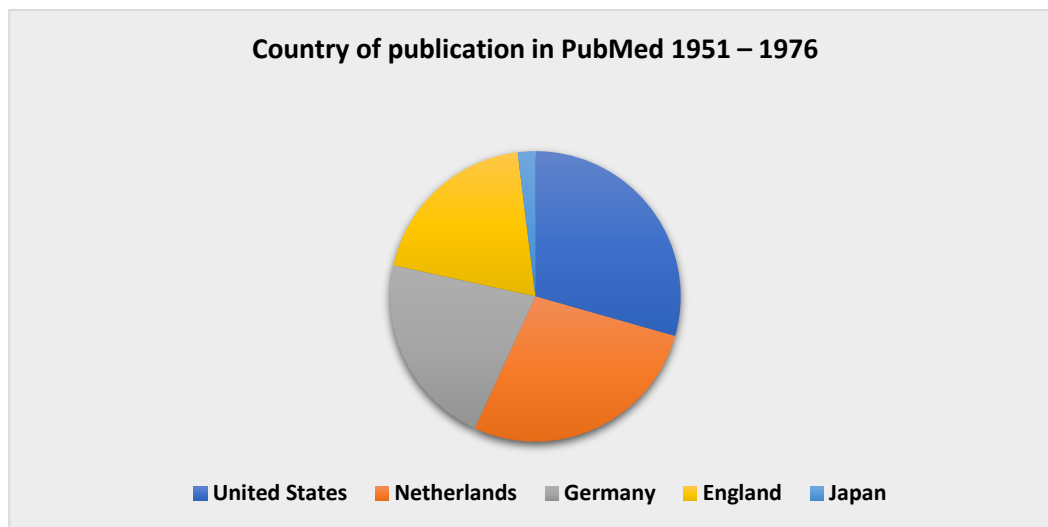
### 5- Scientific research in the Fifth period of the study” 1951-1976” as following:

- The number of research from 1951 to 1976 was 51, representing 0.046% of the total research in this study.

#### 5/1 Country of publication in this period”1951 – 1976” in PubMed, as following:

Table no. 8 (Country of publication in PubMed 1951 – 1976)

Country	Number of essays, notes, reviews, etc. published	%
United States	15	29.4%
Netherlands	14	27.5%
Germany	11	21.6%
England	10	19.6%
Japan	1	1.9%
Total	51	100%



*From the previous table we can see:*

- Contributions of Egyptian physicians were published in five countries, at this period (1951-1976),

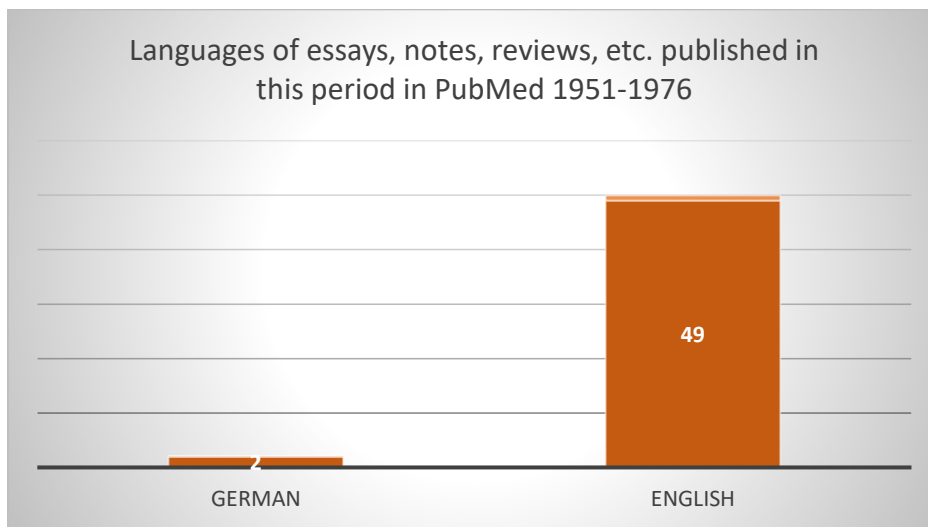
based on PubMed.

- United States is the most widely published country for scientific research of Egyptian physicians in that period with 29.4% of the total research of that period, followed by the Netherlands with 27.5%, while Japan came last with only 1 scientific research with 1.9%.

5/2 Languages of essays, notes, reviews, etc. published in this period in PubMed, as following:

Table no.9 (Languages of essays, notes, reviews, etc. published in this period in PubMed 1951-1976)

Language	scientific research	%
English	49	96.1%
German	2	3.9%
Total	51	100%



From the previous table we can see:

-The majority of scientific research (49) in that period was in English, representing 96.1% of research in that period, while only two researches were published in German

5/3 Affiliations, and corporate bodies in this period in PubMed, as following:

Table no.10 (Affiliations, and corporate bodies in PubMed” 1951- 1976)

Name of corporate body	Redundancy	Percentage
- Department of Ophthalmology, Faculty of Medicine, Cairo University, Egypt.	9	14.8%



- Botany Department, Faculty of Science, University of Cairo, Egypt.	9	14.8%
- Department of Genetics, Faculty of Agriculture, Alexandria University,	5	8.3%
- Department of Botany, Faculty of Science, Assiut University, Egypt.	3	5%
- Department of Zoology, Faculty of Science, Cairo University, Egypt.	3	5%
- Faculty of Agriculture, University of Alexandria, Alexandria, Egypt.	3	5%
- Microanalytical Research Laboratory, National Research Centre, Dokki, Cairo,	3	5%
- Research Microanalytical Laboratory, Department of Chemistry, Faculty of Science	3	5%
- Botany department, faculty of science, Alexandria university, Egypt.	2	3.3%
- Chemistry Department, Assiut University, Assiut, Egypt.	2	3.3%
- University of Assiut, Egypt.	2	3.3%
- Agronomy Department, Faculty of Agriculture, University of Alexandria, Egypt.	1	1.6%
- Al-Azhar University, Cairo, Egypt.	1	1.6%
- Analytical Chemistry Department, Faculty of Pharmacy, Cairo University, Cairo,	1	1.6%
- Analytical Chemistry Division, Atomic Energy Establishment, Cairo, U.A.R. Egypt.	1	1.6%
- Botany Laboratory, National Research Centre, Dokki, Cairo, Egypt.	1	1.6%
- College of agriculture, Farouk I university, Alexandria, Egypt.	1	1.6%
- Department of Botany, Faculty of Science, A'in Shams University, Abbassia, Cairo,	1	1.6%
- Department of Urology, Faculty of Medicine, Alexandria University, Egypt, USA.	1	1.6%
- Institute of Animal Genetics, University of Edinburgh, UK.	1	1.6%
- Laboratory of Plant Protection, National Research Centre, Cairo, Egypt.	1	1.6%
- Memorial Ophthalmic Laboratory, Giza, Cairo, Egypt.	1	1.6%
- Microanalytical Unit Faculty of Science Cairo University, Giza, Egypt.	1	1.6%
- National Research Centre, Dokki, Cairo, Egypt.	1	1.6%
- Nuclear Chemistry Department, U.A.R. Atomic Energy Establishment, Cairo, Egypt,	1	1.6%
- Ophthalmological Department, Family Hospital, Cairo, Egypt.	1	1.6%
- The American University, Cairo Drug Research and Control Center Giza, Egypt.	1	1.6%
- Zoology Department, Faculty of Science, Alexandria University, Alexandria, Egypt.	1	1.6%
<b>28</b>	<b>61</b>	<b>100%</b>

*From the previous table we can see:*

- 28 bodies participated in indexed research in the PubMed database presented by Egyptian

physicians since 1951 to 1976.

- The Department of Ophthalmology at the Faculty of Medicine at Cairo University and Botany Department, Faculty of Science, Cairo University, are the two most contributors to scientific research in that period with 9 scientific research each, approximately 30% of the total research published in that period.

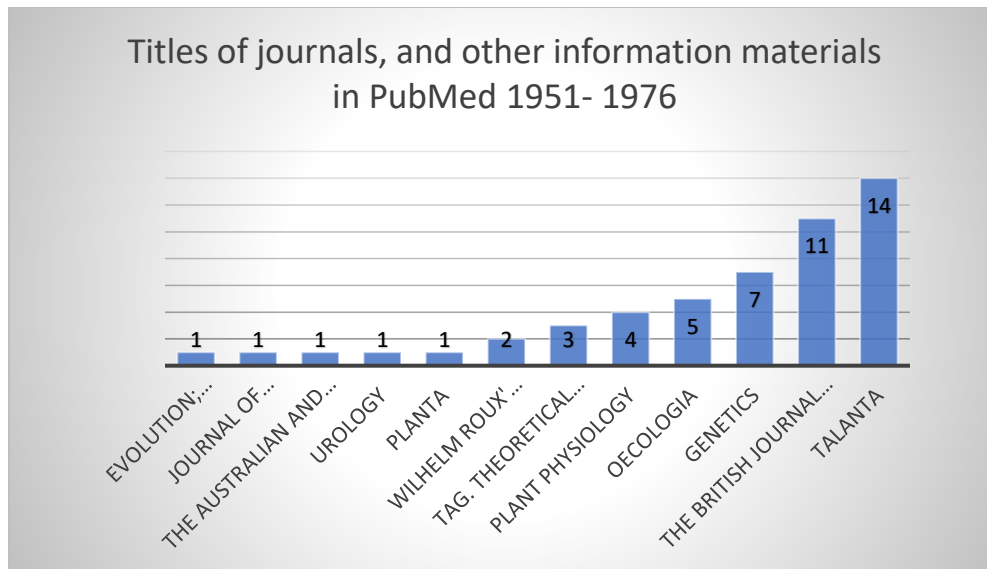
- 27 of the contributing bodies in that period are Egyptian academic and research bodies, representing 96.4% of the total participating bodies in that period.

- Institute of Animal Genetics, University of Edinburgh, United Kingdom. It is the only foreign institution to which Egyptian researchers belong, during that period since 1951-1976.

*5/4 Titles of journals and other information materials in this period in PubMed, as following:*

**Table no. 11 (Titles of journals, and other information materials in PubMed 1951- 1976)**

Journal title	Number of researches	%
Talanta	14	27.5%
The British journal of ophthalmology	11	21.5%
Genetics	7	13.7%
Oecologia	5	9.8%
Plant physiology	4	7.8%
TAG. Theoretical and applied genetics. Theoretische und angewandte Genetik	3	5.9%
Wilhelm Roux' Archiv fur Entwicklungsmechanik der Organismen	2	3.9%
Planta	1	2%
Urology	1	2%
The Australian and New Zealand journal of surgery	1	2%
Journal of morphology	1	2%
Evolution; international journal of organic evolution	1	2%
<b>Total</b>	<b>51</b>	<b>100%</b>



*From the previous table we can see:*

- 12 periodicals contributed to the publication of scientific research for Egyptian physicians in that period

- **Talanta**, The International Journal of Pure and Applied Analytical Chemistry, ranked first as the most periodical for Egyptian physician research with 14 scientific research papers at 27.5% of the number of research from 1951 to 1976.

- **British Journal of Ophthalmology** came in second place for the periodicals in which Egyptian physician published their scientific research during the study period from 1951 to 1976 with 11 scientific research representing 21.5% of the total researches indexed in PubMed database in that period, **Genetics** came in third place for the periodicals in which Egyptian physician published their scientific research during the study period with 7 scientific research representing 13.7% of the total researches indexed in PubMed database in that period.

*5/ 5 Subjects of essays in this period in PubMed, as following:*

**Table no. 12(Subjects of essays, research papers, etc. in PubMed 1951- 1976)**

Subject	Number of researches	%
- Humans	9	10.5%
- Male	7	8.1%
- Female	4	4.7%
- Adult	4	4.7%
- Young Adult	4	4.7%
- Middle Aged	3	3.5%

Subject	Number of researches	%
- Child	3	3.5%
- Adolescent	3	3.5%
- Radiography	3	3.5%
-Orbit	2	2.3%
- Phonocardiography	1	1.2%
-Nasopharynx	1	1.2%
- Iritis/*diagnosis/*microbiology/*therapy	1	1.2%
- Child, Preschool	1	1.2%
- Optic Chiasm/*diagnostic imaging/*pathology/*radiation effects/*surgery	1	1.2%
- Combined Modality Therapy	1	1.2%
- Vision Disorders/*diagnosis	1	1.2%
- Conjunctiva/*pathology	1	1.2%
- Lymphangioma, Cystic/*pathology/*surgery	1	1.2%
- Cornea/*pathology	1	1.2%
- Night Blindness/*complications/diagnosis/genetics	1	1.2%
- Electrocardiography	1	1.2%
- Orbital Neoplasms/*pathology/*surgery	1	1.2%
- Epithelial Cells/pathology	1	1.2%
- Blepharitis/*diagnosis	1	1.2%
- Exophthalmos/*diagnosis	1	1.2%
-Schistosomiasis/diagnosis	1	1.2%
- Exophthalmos/diagnosis/etiology	1	1.2%
- Lacrimal Apparatus Diseases/diagnostic imaging/*pathology	1	1.2%
<b>54</b>	<b>86</b>	<b>100%</b>

**From the previous table we can see:**

- The number of topics for researches indexed in PubMed database of Egyptian physicians were 54 topics from 1951 to 1976. The majority of these subjects relate to human diseases such as pediatrics, youth, adolescents, the elderly, gynecology and masculinity.
- Humans came First as the most topic in Egyptian physicians' research indexed in PubMed database from 1951 to 1976 with 9 researches research representing 10.5% of the total researches indexed in PubMed database in that period.

- The subject of the Male came second with 7 researches representing 8.1% of the total researches indexed in PubMed database in that period, Interest in precise disciplines such as masculinity and women's diseases began in that period.
- What was written about the topic of hyperplasia is only one scientific research in that period, suggesting that attention was not focused on the seriousness of this disease in that period from Egyptian physicians
- *5/6 most productive authors in this period in PubMed, as following:*

*Table no. 13 (Productivity table of the most productive authors in PubMed”1951-1976)*

Name of Author	Number of researches	%
- Morta, A	9	10.5%
- Batanouny, K H	5	5.8%
- Gawargious, Y A	4	4.7%
- Tantawy, A O	4	4.7%
- Besa, A	3	3.5%
- Khr, F H	3	3.5%
- Hassan, S S	3	3.5%
- Nosseir, M A	2	2.3%
- El Shatoury, H H	2	2.3%
- Mohamed, A H	2	2.3%
- El-Shishiny, E D	2	2.3%
- Ziegler, H	2	2.3%
- Issa, I M	2	2.3%
- Ghoneim, M M	2	2.3%
- Zaki, M T	2	2.3%
- El-Ibrashy, M T	1	1.2%
- Mohamed, I A	1	1.2%
- Latimer, R M	1	1.2%
- El-Wakil, H M	1	1.2%
- Sa, S M	1	1.2%
- Ezzat, N H	1	1.2%
- Kareem, S Y	1	1.2%
- Faltaoos, B N	1	1.2%
- Migahid, A M	1	1.2%
- Farid, N A	1	1.2%
- El-Falaky, M H	1	1.2%
- Amer, M M	1	1.2%

Name of Author	Number of researches	%
- San, W	1	1.2%
- Aziz, M	1	1.2%
- Tros, M A	1	1.2%
- Habashy, G M	1	1.2%
- Dawood, M M	1	1.2%
- Habeeb, A A	1	1.2%
- Lenzian, K	1	1.2%
- Wahab, A M Abdel	1	1.2%
- el Ni, F	1	1.2%
- Aboul-Ela, M M	1	1.2%
- Alian, A	1	1.2%
- Hanna, A S	1	1.2%
- Reda, F	1	1.2%
- Abu-Taleb, S A	1	1.2%
- Sakla, A B	1	1.2%
- Ibrahim, M A	1	1.2%
- Shukry, M W	1	1.2%
- Idriss, K A	1	1.2%
- Tewfik, S	1	1.2%
- Boulos, L S	1	1.2%
- Aly, H F	1	1.2%
- Kamal, A M	1	1.2%
- Hafez, M G	1	1.2%
- Abdel-Rassoul, A A	1	1.2%
- Hanafy, H M	1	1.2%
<b>52</b>	<b>86</b>	<b>100%</b>

*From the previous table we can see:*

- 52 researchers contributed to the intellectual production of Egyptian physicians whose scientific research is indexed in the PubMed database from 1951 to 1976.
- Co-authors is one of the phenomena related to the scientific research in medical sciences.
- Morta, A came at the top of the rank of Egyptian physicians whose research was indexed in the PubMed database from 1951 to 1976 with 9 scientific research representing 10.5% of the total research in that period.

- Dr. Kamaluddin Hassan Batanouny came in the second ranking of the most published Egyptian researchers for that period with 5 scientific researches representing 5.8% of the total research in that period.

#### 6- Scientific research in the sixth period of the study” 1977-2002” as following:

- The number of research from 1977 to 2002, amounting to 7152 scientific research, accounted for 6.487% of the total of nearly 110 thousand research studies.
- Please note: We decided not to publish the large tables in the body of research because of their magnitude, and merely provide the important results, with the QR code for the full tables at the end of the study for those who want to see these tables.

#### 6/1 Country of publication in this period”1977 -2002” in PubMed, as following:

Table no.14 (Country of publication in PubMed 1977 – 2002)

Country of publication	Number of researches	%
- United States	1793	25.07%
- England	1637	22.89%
- Egypt	1107	15.48%
- Germany	897	12.54%
- Netherlands	654	9.14%
- Switzerland	226	3.16%
- Italy	171	2.39%
- France	94	1.314%
- Ireland	83	1.161%
- Greece	61	0.853%
- Japan	53	0.741%
- Hungary	45	0.629%
- Poland	35	0.489%
- Czech Republic	32	0.447%
- Saudi Arabia	32	0.447%
- Denmark	32	0.447%
- Korea (South)	28	0.391%
- Belgium	27	0.378%
- Australia	16	0.224%
- Lebanon	14	0.196%
- India	14	0.196%
- Canada	12	0.168%

Country of publication	Number of researches	%
- China	11	0.154%
- Scotland	9	0.1258%
- Singapore	9	0.1258%
- Spain	8	0.1119%
- Bangladesh	7	0.0979%
- Sweden	7	0.0979%
- Kenya	6	0.0839%
- Austria	5	0.0699%
- Brazil	5	0.0699%
- Norway	4	0.0559%
- Slovakia	4	0.0559%
- Pakistan	3	0.0419%
- Thailand	3	0.0419%
- United Arab Emirates	2	0.0280%
- New Zealand	1	0.0140%
- Seattle (WA)	1	0.0140%
- Serbia	1	0.0140%
- Israel	1	0.0140%
- South Africa	1	0.0140%
- South Dartmouth (MA)	1	0.0140%

**From the previous table we can see:**

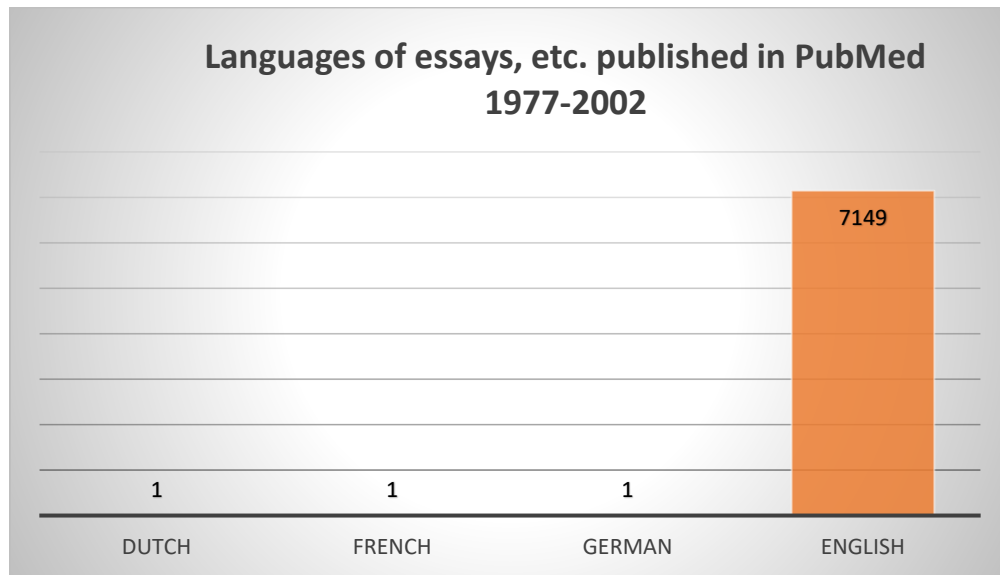
- Contributions of Egyptian physicians were published in 42 countries, at this period (1977-2002) based on PubMed.
- The United States ranked first with 1,793 scientific research, at 25.1%, followed by England with 1,637 scientific research at 22.9% of total indexed researches from 1977 to 2002.
- Egypt ranked third in the most published countries for the researches of Egyptian physicians indexed in PubMed database with 1107 scientific researches of 15.5% of the total scientific researches from 1977 to 2002, which may be due to the conversion of many researchers to publish in the Egyptian medical periodicals that began spreading in that period such as Journal of the Egyptian Society of Parasitology, The Journal of the Egyptian Public Health Association, etc., This is reflected in table “16” on the distribution of the most published research periodicals in that period.

**6/2 Languages of essays, etc. published in this period (1977- 2002) in PubMed, as following:**



**Table no.15 (Languages of essays, etc. published in this period in PubMed 1977-2002)**

Language	scientific research	%
English	7149	99.9%
German	1	0.033
French	1	0.033
Dutch	1	0.033
Total	7152	100%



**From the previous table we can see:**

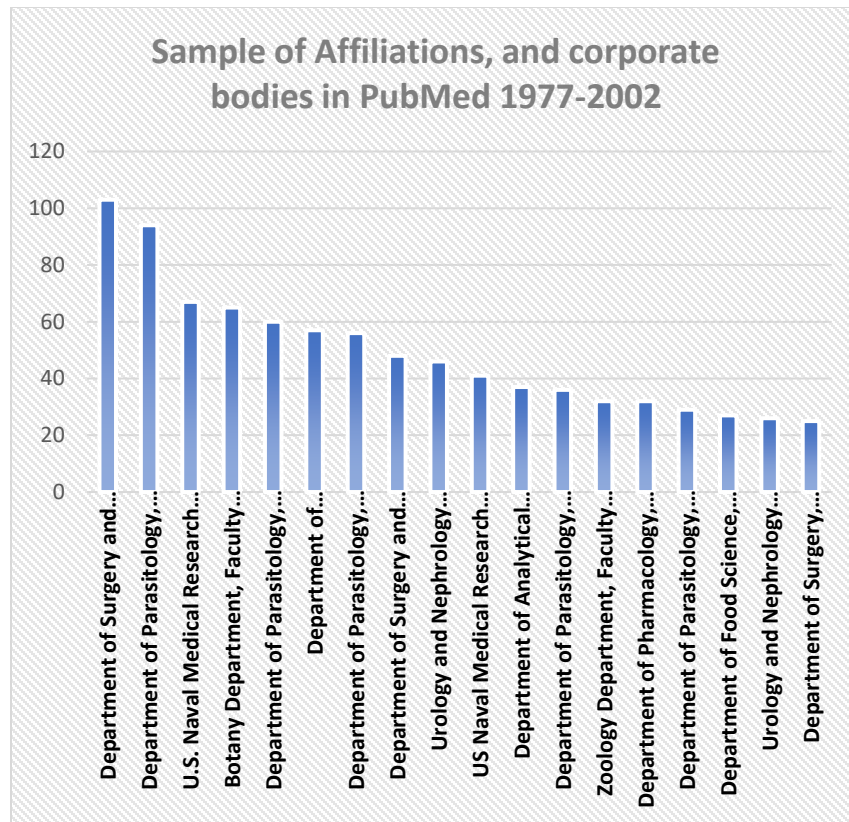
- the majority of researches were English for that period of time with 7149 scientific researches.
- Only three papers were published in languages other than English, one in German, one in French and the other in Dutch.

**6/3 Affiliations, and corporate bodies in this period in PubMed, as following:**

**Table no. 16 (Sample of Affiliations, and corporate bodies in PubMed 1977-2002)**

Name of corporate body	Redundancy
Department of Surgery and Experimental Research, Faculty of Medicine, Cairo	103
Department of Parasitology, Faculty of Medicine, Ain Shams University, Cairo,	94
U.S. Naval Medical Research Unit No. 3, Cairo, Egypt.	67
Botany Department, Faculty of Science, Assiut University, Egypt.	65

Department of Parasitology, Faculty of Medicine, Mansoura University, Egypt.	60
Department of Pharmaceutical Chemistry, Faculty of Pharmacy, University of Mansoura,	57
Department of Parasitology, Faculty of Medicine, Alexandria University, Egypt.	56
Department of Surgery and Research, Faculty of Medicine, Cairo University, Egypt.	48
Urology and Nephrology Center, Mansoura University, Egypt.	46
US Naval Medical Research Unit No. 3, Cairo, Egypt.	41
Department of Analytical Chemistry, Faculty of Pharmacy, University of Mansoura,	37
Department of Parasitology, Faculty of Medicine, Zagazig University, Egypt.	36
Zoology Department, Faculty of Science, Cairo University, Egypt.	32
Department of Pharmacology, Faculty of Veterinary Medicine, Cairo University,	32
Department of Parasitology, Faculty of Medicine, Ain Shams University,	29
Department of Food Science, University of Assiut, Assiut, Egypt.	27
Urology and Nephrology Center, Mansoura University, Mansoura, Egypt.	26
Department of Surgery, Faculty of Medicine, Cairo University, Egypt.	25
<b>3900</b>	<b>881</b>



**From the previous table we can see:**

- Number of affiliated corporate bodies is around 3900 corporate body.

We gave here the most bodies affiliated.

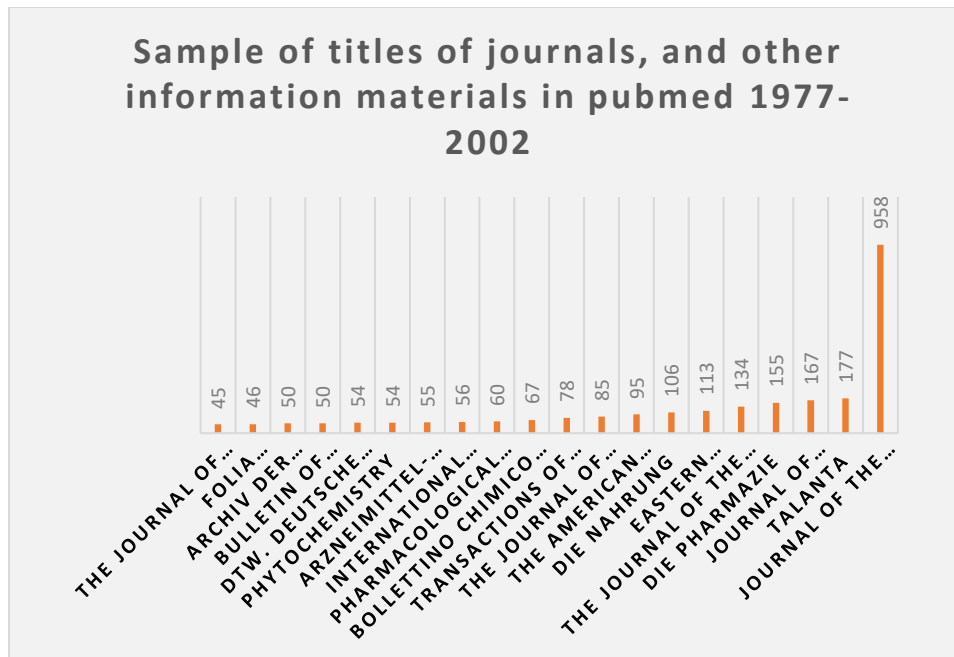
- The Department of Surgery and Experimental Research at the Faculty of Medicine, Cairo is the largest contributor to scientific research in that period with 103 scientific research, followed by the Department of Parasitology Medical Faculty at Ain Shams University, Egypt with 94 scientific research.

- The first 18 centers of Egyptian physicians' bodies are Egyptian academic and research bodies affiliated to large Egyptian universities such as Cairo University, Ain Shams University, Mansoura University and Assiut University, which may indicate an increase in the number of members of these bodies in that period, as well as their interest in scientific research and publishing resulting from research trends in universities and research centers at that period.

**6/4 Titles of journals and other information materials in this period in PubMed, as following:**

**Table no. 17 (Sample of Titles of journals, and other information materials in PubMed 1977- 2002)**

Journal title	Number of researches
Journal of the Egyptian Society of Parasitology	958
Talanta	177
Journal of pharmaceutical and biomedical analysis	167
Die Pharmazie	155
The Journal of the Egyptian Public Health Association	134
Eastern Mediterranean health journal = La revue de sante de la Mediterranee	113
Die Nahrung	106
The American journal of tropical medicine and hygiene	95
The Journal of urology	85
Transactions of the Royal Society of Tropical Medicine and Hygiene	78
Bollettino chimico farmaceutico	67
Pharmacological research	60
International journal of gynaecology and obstetrics: the official organ of the	56
Arzneimittel-Forschung	55
Phytochemistry	54
DTW. Deutsche tierarztliche Wochenschrift	54
Bulletin of environmental contamination and toxicology	50
Archiv der Pharmazie	50
Folia microbiologica	46
The Journal of laryngology and otology	45
<b>1106</b>	



**From the previous table we can see:**

- Total number of journal titles: 1106 for this period of time, we gave here the first 20 titles.
- For the first time during the study periods, an Egyptian periodical was ranked the first to publish scientific research for Egyptian doctors indexed in the PubMed database.
- **The Journal of the Egyptian Society of Parasitology**, was the foremost periodical published from 1977 to 2002, according to the magazine's website the periodical has been indexed in the PubMed database since 1976.
- The Journal of the Egyptian Society of Parasitology which was at the forefront of the periodicals from 1977 to 2002 with 958 scientific research.
- according to the periodicals website the journal is published in both print and online versions and all articles published in the journal are fully open access and freely available online, immediately upon publication. Publication Fee is free of charge, perhaps that's why so many Egyptian physicians published their research in this journal.
- Talanta, The International Journal of Pure and Applied Analytical Chemistry, ranked second with 177 scientific research papers, The Journal of Pharmaceutical and Biomedical Analysis is an international journal that addresses the needs of academic, clinical, governmental and industrial analysis by publishing original research reports and critical reviews on pharmaceutical and biomedical analysis. Covers interdisciplinary aspects of analysis in pharmaceutical, biomedical and clinical sciences, ranked third with 167 scientific research papers.

6/ 5 Subjects of essays in this period in PubMed, as following:

Table no. 18 (Sample Subjects of essays, research papers, etc. in PubMed 1977- 2002)

	Subject	Number of researches	%
1	- Humans	3555	12.1%
2	- Male	2779	9.4%
3	- Female	2628	8.9%
4	- Animals	2490	8.4%
5	- Adult	1831	6.2%
6	- Middle Aged	1199	4.05%
7	- Adolescent	885	3.0%
8	- Egypt	806	2.7%
9	- Child	783	2.6%
10	- Mice	481	1.6%
11	- Child, Preschool	449	1.51%
12	- Egypt/epidemiology	438	1.5%
13	- Aged	436	1.5%
14	- Time Factors	296	1.0%
15	- Infant	265	0.9%
16	- Rats	262	0.88%
17	- Pregnancy	262	0.88%
18	- Follow-Up Studies	259	0.87%
19	- Treatment Outcome	247	0.83%
20	- Magnetic Resonance Spectroscopy	238	0.80%
	<b>29600</b>	<b>20589</b>	<b>%</b>

From the previous table we can see:

- From the search in PubMed, we can see that each research paper has more than one subject.
- Total number of subjects are 29600, for this period of time.
- For the second time in succession, the topic of human beings continues at the forefront of the research topics of Egyptian physicians indexed in the PubMed database from 1977 to 2002 with 3555 scientific research papers Represents 12.1% of the total subjects in that period.
- Male studies were the second most important topics dealt with by the Egyptian physician's research from 1977 to 2002 with 2,779 scientific research representing 9.4% of the total subjects in that period, while gynecology ranked third with 2,628 research representing 8.4% of the total subjects according to the research indexed in the PubMed database.

- topics such as **time factors, Follow-Up Studies** are at an advanced position in the ranking of the most discussed topics in the research of Egyptian physician's indexed in the PubMed database, indicating a clear view of the importance of these factors in scientific research in the field of medicine and the initiation of interest in quality factors in Egyptian physicians' research projects in that period.
- *6/6 most productive authors in this period in PubMed, as following:*

**Table no. 19 (Sample of productivity of the most productive authors in PubMed”1977-2002)**

Author name	Number of researches
- Shafik, A	219
- Shokeir, A A	66
- Sobh, M A	39
- Belal, F	36
- Serour, G I	30
- Strickland, G T	29
- Ahmed, A A	28
- Soliman, A T	28
- Woody, J N	27
- Aboulghar, M A	26
- Azab, M E	25
- El Ridi, R	24
- Eissa, S	24
- Bakr, M A	24
- Zaki, A	24
<b>5970</b>	<b>7152</b>

*From the previous table we can see:*

- Total number of authors: 5970 for this period of time, we gave here in this table, the most contributive authors.
- **Dr. Ahmed Shafik** Professor and Head of the Department of Surgery of the Faculty of Medicine "Al-Qasr Al-Aini" came in the first position of Egyptian physicians with 219 papers. He was nominated for the Nobel Prize in 1981 but did not win it and was selected as the best researcher by the United Kingdom's International Medical Authority, and was awarded the State Medal for Science and Arts in 1977, **Dr. Ahmed Abdel Rahman Shokeir** was second in the ranking of the most published Egyptian physicians for the scientific research indexed in the PubMed database from 1977 to 2002 with 66 scientific research, he is a professor and former head of urology at Mansoura University and winner of the Nile Encouragement Prize in 2021 and the first place of the prize "Arab Doctor" from

the League of Arab States 2023. He has more than 300 published research in his field of specialization.

- Egyptian physicians' interest in publishing increased from 1977 to 2002, as we note the significant increase in the number of researchers and scientific research compared to previous periods, which indicates the researchers' awareness of the importance of scientific research and global publication in foreign languages promotion, global presence and international publishing.

**7- Scientific research in the seventh period of the study”2003-September 2022”as following:**

- The number of research from 2003 to September 2022 amounting to 103.000 scientific research's, accounted for 93.4 % of the total of nearly 110 thousand research studies.
- Considering the size of the huge tables for that period "2003 - 2022" we decided to show only the first 20 results, and to prepare a barcode at the end of the study for the full tables.

**7/1 Country of publication in this period”2003 -September 2022” in PubMed, as following:**

**Table no. 20 (Sample of Country of publication in PubMed 2003 - September 2022)**

<b>Country of publication</b>	<b>Number of researches</b>
- United States	2016
- England	1912
- Switzerland	1028
- Netherlands	856
- Germany	621
- India	196
- New Zealand	171
- Saudi Arabia	116
- Egypt	89
- France	87
- Ireland	86
- Korea (South)	58
- Italy	53
- Australia	51
- Japan	45
- Poland	44
- Iran	36
- Thailand	34
- Canada	30



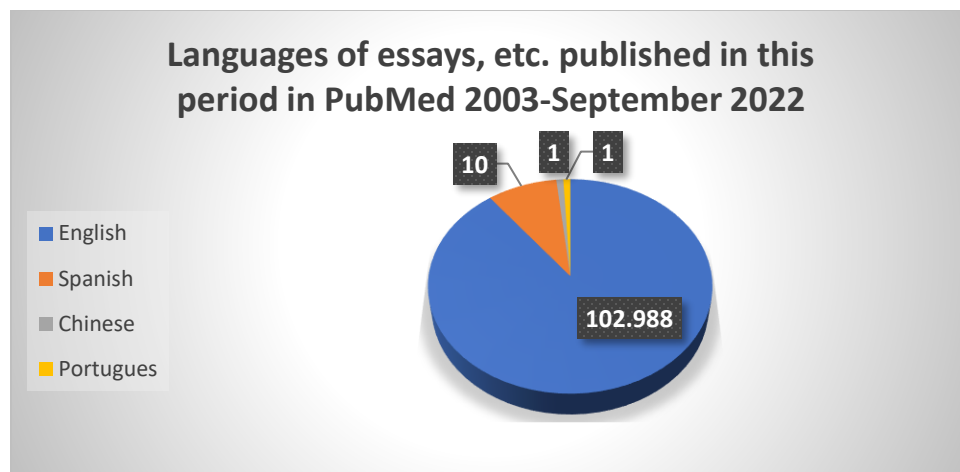
**From the previous table we can see:**

- Contributions of Egyptian physicians were published in 58 countries, at this period (2003-2023) based on PubMed.
- The United States ranked first with 2,016 scientific research, followed by England with 1,912 scientific research of total indexed research from 2003 to September 2022.
- The Kingdom of Saudi Arabia came in the forefront of the Arab publishing countries for the research of Egyptian physicians indexed in the PubMed database in this period with 116 scientific research followed by Egypt with 89 scientific research in that period.

**7/2 Languages of essays, etc. published in this period (2003- September 2022) in PubMed, as following:**

**Table no.21 (Languages of essays, etc. published in this period in PubMed 2003-September 2022)**

Language	scientific research	%
English	102.988	99.9%
Spanish	10	0.009%
Chinese	1	0.0009%
Portugues	1	0.0009%
<b>Total</b>	<b>103.000</b>	<b>100%</b>



**From the previous table we can see:**

- The majority of researches were English for that period of time with 102.988 scientific researches.
- only “10” research in Spanish, “1” research in Chinese and “1” research in Portuguese, together representing less than 0.1 % of all researches from 2003 to September 2022, indicating English's

control over international publishing as the world's premier publishing language in medical sciences.

*7/3 Affiliations, and corporate bodies in this period in PubMed, as following:*

**Table no. 22 (Sample of Affiliations, and corporate bodies in PubMed 2003-September 2022)**

Corporate body name	Redundancy
- CERN, European Organization for Nuclear Research, Geneva, Switzerland.	8335
- Deutsches Elektronen-Synchrotron, Hamburg, Germany.	5931
- Fermi National Accelerator Laboratory, Batavia, Illinois, USA.	4746
- Institut für Experimentelle Kernphysik, Karlsruhe, Germany.	1857
- Institute for Particle Physics, ETH Zurich, Zurich, Switzerland.	1828
- University of Hamburg, Hamburg, Germany.	1708
- Imperial College, London, United Kingdom.	1246
- Massachusetts Institute of Technology, Cambridge, USA.	1211
- University of Florida, Gainesville, USA.	1209
- Laboratoire Leprince-Ringuet, Ecole Polytechnique, IN2P3-CNRS, Palaiseau, France.	1136
- Institut für Hochenergiephysik der OeAW, Wien, Austria.	1111
- University of Wisconsin, Mison, USA.	1050
- Cukurova University, ana, Turkey.	1019
- Purdue University, West Lafayette, USA.	983
<b>186755</b>	

**From the previous table, we can see:**

- There are about 186755 Egyptian and non-Egyptian corporate bodies, that researchers are affiliated with. For this period. Many of these corporate bodies also cooperated together to publish one research at a time.

- Unlike in the previous period, foreign entities obtained the primary positions in the ranking of the bodies to which the Egyptian doctors belong, Indicating that a number of them work in foreign entities Perhaps because of their research excellence and precise scientific specializations, it may also indicate the nature of research in the medical field, which is often a research involving many researchers from different bodies to raise the efficiency and effectiveness of such research and in line with the global directions of scientific research.

- **CERN, European Organization for Nuclear Research**, Geneva, Switzerland came First in the ranking of the bodies to which Egyptian physician belong with 8335 researches, The World organization is one of the most important centers in Europe and the world for nuclear physics

research, The organization was established after the Second World War, It is natural that the European Organization for Nuclear Research " CERN" occupies this advanced position in view of the growing interest in the fields of nuclear physics research globally and the interest in space science, particles and material components.

- **Deutsches Elektronen-Synchrotron, Hamburg, Germany (DESY)** came second with 5931 researches, DESY is one of the world's leading accelerator centers. Using DESY's large-scale devices, researchers explore the microcosm in all its diversity from the interaction of the smallest elementary particles to the behavior of new types of nanomaterials to the vital processes that take place between biomolecules.

- **Fermi National Accelerator Laboratory, Batavia, USA** came third with 4746 researches, Fermi lab is America's particle physics and accelerator laboratory Experiments on the secrets of matter, energy, space and time, Fermi lab collaborates with more than 50 countries on physics experiments.

*7/4 Titles of journals and other information materials in this period in PubMed, as following:*

**Table no. 23 (Sample of Titles of journals, and other information materials in PubMed  
2003- September 2022)**

Journal title	Number of researches
- Environmental science and pollution research international	183
- Scientific reports	144
- International journal of biological macromolecules	124
- Molecules (Basel, Switzerland)	110
- Bioorganic chemistry	93
- RSC advances	80
- PloS one	72
- Dermatologic therapy	68
- Life sciences	67
- Saudi journal of biological sciences	65
- Plants (Basel, Switzerland)	59
- Spectrochimica acta. Part A, Molecular and biomolecular spectroscopy	52
- ACS omega	52
- Animals : an open access journal from MDPI	51
- International journal of molecular sciences	47
- Heliyon	44
- International journal of nanomedicine	37
- Clinical ophthalmology (Auckland, N.Z.)	37
- Veterinary world	36

- Materials (Basel, Switzerland)	34
<b>2119</b>	<b>1455</b>

**From the previous table, we can see:**

- There are 2119 journal titles, that include the researches for this period.
- 1455 researches for Egyptian physicians from 2003 to September 2022 published by 20 top-ranked periodicals as shown in the previous table
- No Egyptian periodical has obtained advanced status in the ranking of the first 20 periodicals by which Egyptian doctors published their scientific research in that period
- Environmental science and pollution research international (ESPR) The International Journal specializes in environmental science and related topics with a focus on chemical compounds It also includes the effects of legislation, regulation and economics on pollution control, ranked first as the most periodical for Egyptian physician research with 183 scientific research papers,
- Scientific Reports came in second place for the periodicals in which Egyptian physician published their scientific research during the study period from 2003-September 2022 with 144 scientific research, Scientific Reports is an open access journal publishing original research from across all areas of the natural sciences, psychology, medicine and engineering.
- International Journal of Biological Macromolecules is an established international journal of research into chemical and biological aspects of all natural macromolecules. It presents the latest findings of studies on the molecular structure and properties of proteins, macromolecular carbohydrates, glycoproteins, proteoglycans, lignin's, biological poly-acids, and nucleic acids.
- International Journal of Biological Macromolecules came third for the periodicals in which Egyptian physician published their scientific research during the study period from 2003-September 2022 with 124 scientific research.

**7/ 5 Subjects of essays in this period in PubMed, as following:**

**Table no. 24 (Sample Subjects of essays, research papers, etc. in PubMed 2003- September 2022)**

Subject	Number of researches
- Humans	3325
- Male	1827
- Animals	1786
- Female	1679
- Adult	813

Subject	Number of researches
- Middle Aged	676
- Rats	507
- Treatment Outcome	385
- Child	370
- Egypt	357
- Aged	349
- Adolescent	329
- Young Adult	326
- Mice	324
- Prospective Studies	310
- Retrospective Studies	287
- Rats, Wistar	255
- Cross-Sectional Studies	231
- Molecular Structure	210
- Child, Preschool	208

From the previous table, we can see:

- We can see that each research paper has more than one subject.
- Total number of subjects about 23000 for this period of time based on PubMed.
- For the third time in succession, the topic of “human” beings continues at the forefront of the research topics of Egyptian physicians indexed in the PubMed database from 2003 to September 2022 with 3325 scientific research papers.
- The topic of animals came third as the most important topics handled by Egyptian physicians from 2003 to September 2022.
- Various subjects dealing with the impact of treatment and Prospective Studies retrospectively came in advanced centers on the list of topics handled by Egyptian physicians in their scientific research indexed in the PubMed database from 2003 to September 2022.
- *7/6 most productive authors in this period in PubMed, as following:*

**Table no. 25 (Sample productivity table of the most productive authors in PubMed (2003-September 2022))**

Author name	Number of researches
- Shafik, Ahmed	112
- Mohamed, Shaaban K	112
- Akkurt, Mehmet	111
- Albayati, Mustafa R	100
- Shafik, Ali A	97

Author name	Number of researches
- Ghoneim, Mohamed A	97
- Shokeir, Ahmed A	96
- Sharma, V	96
- Malik, S	96
- Fabbri, F	96
- Belyaev, A	96
- Banerjee, S	96
- Bhattacharya, S	95
- Weber, M	93
- Mao, Y	91
- Sharma, A	87
- Kumar, A	87
- Li, W	83
- Liu, H	81
- Bhattacharya, S	79
<b>315018</b>	<b>1901</b>

**From the previous table, we can see:**

- There are about 315018 Egyptian and non-Egyptian authors, who produced researches, etc. at this period of time.

- Egyptian surgeon Dr. Ahmed Shafiq came in the first position for the second time in succession in ranking the most productive doctors for scientific research and indexed their scientific research with a PubMed database of 112 scientific research, Dr. Shaaban Kamel Mohamed came in second place as the most Egyptian physician published scientific research in the study period from 2003 to September 2022 with 112 scientific research and he works as Visiting Professor of Organic Chemistry, Manchester Metropolitan University, Manchester in the last period of the study from 2003 to September 2022, Dr. Akkurt, Mehmet came third as the most contributing physician in Egyptian production indexed to the PubMed database from 2003 to September 2022 with 111 scientific research and he works as a professor in the Department of Physics of the Faculty of Science - Erciyes University -Türkiye

### **Conclusions:**

- **The first period** of the study (1847-1872) shows the appearance of the first Egyptian medical research paper in PubMed, representing 0.0009% of the total Egyptian medical intellectual production during the periods of this study, the subject of which was "Quarantine measures on ships" in view of the spread of epidemics transmitted by sea transport such as plague and others in

the 19th century.

- **The second period** of the study (1873-1898) shows two researches belonging to the Egyptian medical intellectual production representing 0.001% of the total Egyptian medical intellectual production during the periods of this study, the subject of which was "intestinal worms and their effect on the liver" in light of the prevalence of acute intestinal diseases transmitted by contaminated food and water in Egypt during that period.

- All periodicals in the second period (1873-1898) were British.

- **The third period** of the study (1899-1924) shows a slight growth to the number of indexed research belonging to Egyptian medical intellectual production, which were 9 research papers representing 0.008% of total Egyptian medical intellectual production during the periods of this study, the first of which was published in January 1900, while the last was published in May 1921.

- Unlike the first and second period of this study, research in this period (1899-1924) was characterized by a variety of scientific research topics such as quarantine, ophthalmia, community health, chemistry, etc., and also show publication in a variety of periodicals and diversity of publishing countries such as England, the United States and India.
- All the researches in the first three periods of the study were individual researches.
- All researchers in the first three periods of study are non-Egyptian who work in Egyptian corporate bodies, which is why they were contributed to Egyptian intellectual production indexed in PubMed.

- **The fourth period** of the study (1925-1950) shows a stable growth in the number of indexed research belonging to Egyptian medical intellectual production, which were 27 papers representing 0.24% of total Egyptian medical intellectual production during the periods of this study.

- Research was published in the fourth period in England, United States and India, England was at the forefront of publishing countries with 17 papers representing 63% of the total researches in this period.
- 25 Egyptian and non-Egyptian authors who contributed to Egyptian medical intellectual production during the fourth period of the study (1925-1950) belong to 10 Egyptian corporate bodies.
- All researches in the first four periods of study were in English.

- **The fifth period** of the study (1951-1976) shows a steady growth in the number of indexed research belonging to Egyptian medical intellectual production, which were 51 papers representing 0.46% of total Egyptian medical intellectual production during the periods of this study.

- Egyptian physicians' research was first published in Dutch, German and Japanese periodicals unlike previous periods in which publication was limited to British, American and Indian periodicals.

- 52 Egyptian and non-Egyptian authors contributed to Egyptian medical intellectual production during the fifth period of the study (1951-1967) belonging to 27 Egyptian corporate bodies, while one Egyptian researcher belonging to Institute of Animal Genetics, University of Edinburgh, United Kingdom.
  - Human subjects came first for the fifth period of study with 9 researches representing 10.5% of subjects during that period
- **The sixth period** of the study (1977-2002) shows a huge growth in the number of indexed research on Egyptian medical intellectual production, with 7,152 research representing 6.487% of total Egyptian medical intellectual production during the periods of this study.
- Egyptian physicians published their scientific research in the sixth period of the study in 42 countries. The United States ranked first of those countries with 1,793 papers representing 25.1% of total research in that period.
  - The number of periodicals which Egyptian physicians published in during that period was 1106.
  - For the first time during the study periods an Egyptian journal ranked as the most periodical that publish contributions of Egyptian physicians, it was the Journal of the Egyptian Society of Parasitology, which published 958 research papers, at that period.
  - The number of researchers in the sixth period of the study (1976- 2002) was 5,970, with Dr. Ahmed Shafiq at the forefront of the authors in that period with 219 scientific research, Followed by Dr. Ahmed Shokeir with 66 papers.
  - Unlike the first three periods of the study, Egyptian physicians won first place in the number of research published in both the fourth, fifth and sixth periods of the study.
- **The seventh period** of the study (2003-September 2022) shows a great growth in the number of indexed research on Egyptian medical intellectual production, with 103,000 research 93.4% of total Egyptian medical intellectual production during the periods of this study.
- Egyptian physicians published their scientific research in the seventh period of the study in 58 countries. The United States ranked first of those countries with 2016, followed by England with 1912 and Switzerland with 1912.
  - on same pattern as previous periods researches was in English with 102988 scientific research at 99.9%, followed by Spain with 10 researches at 0.009%.
  - The number of researchers in the seventh period of the study (2003-September 2022) was 315,018, and for the second time successively Dr. Ahmed Shafik was at the forefront of the authors in that period with 112 scientific research, followed by Dr. Sha 'aban Kamel Mohammed with the same number of researches followed by Dr. Mehmet Akkurt with 111 scientific research.
  - The topic of humans came first in the seventh period of the study with 3325 researches followed by the topic of Male disease with 1827 papers and then the third topic was animals with 1786 papers during that period.
  - The topic of humans came in the forefront of the research topics of Egyptian physicians indexed in PubMed during the fifth, sixth and seventh periods of the study.



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The most important results of the study were presented only through the tables presented in the study, and QR was prepared at the end of the study with the full tables, where the study here cannot present the very long full tables.

**\*\*For the whole tables**



## المساهمات البحثية للأطباء المصريين المُكشفة في قاعدة بيانات PubMed منذ 1847 – 2022: دراسة بيبليومترية

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### المستخلص:

يتناول البحث المساهمات البحثية للأطباء/ الباحثين المصريين المُكشفة في قاعدة بيانات PubMed في المجالات الطبية والمجالات ذات الصلة، منذ عام 1847، "تاريخ أول بحث علمي مُكشف في القاعدة الطبية العالمية حتى سبتمبر 2022"، وقد تم تقسيم فترات الدراسة إلي سبع فترات فرعية نظراً للفترة الكبيرة التي تغطيها الدراسة عبر ثلاثة قرون.

تم استخدام المنهج الببليومتري في تحليل نتائج الدراسة، وهو المنهج الذي يستخدم الأساليب الإحصائية لتحليل البيانات حول جميع أنواع الإنتاج الفكري، وتسعي هذه الدراسة الببليومترية إلى تحليل أنماط المساهمات البحثية من حيث الموضوعات، وعناوين الدوريات، والمؤلفين، وبلدان النشر، وما إلى ذلك. وقد توصلت الدراسة إلي مجموعة من النتائج من أبرزها أن الفترة السابعة من الدراسة ( 2003 - سبتمبر 2022 ) كانت أكثر فترات الدراسة إنتاجية للبحث العلمي الطبي بعدد ( 103000 ) بحث علمي تُمثل 93,4% من إجمالي الأبحاث عبر فترات الدراسة، بينما جاءت الفترة الأولى (1847-1872) بأقل عدد من الأبحاث ببحث علمي واحد فقط يمثل 0.0009% من عدد الأبحاث، اقتصر نشر البحث العلمي على هيئات بريطانية بنسبة 100% خلال فترات الدراسة الثلاث الأولى، وكانت إنجلترا أيضًا في طليعة الفترة الرابعة من الدراسة ( 1925 - 1950 )، بعدد 17 ورقة بحثية تُمثل (63%) من الأبحاث التي نشرت في تلك الفترة. وجاءت الولايات المتحدة الأمريكية في طليعة بلدان النشر في الفترات الخامسة والسادسة والسابعة من الدراسة، تم نشر أول بحث مصري (أكتوبر 1847) مُكشف في PubMed في مجلة إندبرة الطبية، كان الإنتاج الفكري على مدار الدراسة باللغة الإنجليزية بعدد (110.225) بحثًا تمثل (99.9%) من إجمالي أبحاث الدراسة بينما جاءت اللغة الإسبانية في الترتيب الثاني بعدد (10) أبحاث فقط تُمثل 0.0009% من أبحاث الدراسة، في حين جاءت الألمانية والهولندية والصينية والفرنسية والبرتغالية ببحث واحد لكل منها على مدار فترات الدراسة، ساهمت العديد من الهيئات والمؤسسات الأكاديمية في الإنتاج الفكري للأطباء المصريين، كانت المنظمة الأوروبية للبحوث النووية «CERN»، جنيف، سويسرا الهيئة الدولية الرائدة في مجال الفيزياء والأبحاث النووية في مقدمة الهيئات التي ينتمي إليها الباحثين المصريين خلال فترات الدراسة حيث ساهمت بـ 8,335 بحثًا علميًا خلال الفترة السابعة من الدراسة ( 2003 - سبتمبر 2022 )، جاء موضوع humans في طليعة الموضوعات البحثية للأطباء/ الباحثين المصريين المُكشفة في PubMed خلال الفترات الخامسة والسادسة والسابعة من الدراسة.