

The Methods of Scientific Research for Arabian Scientists in the Medical & Pharmaceutical Sciences

Huda Salman Sabar*, Suaad H. Moslem**

* Department of Information & Libraries, College of Arts, University of Al-Mustansiriya

**Library of Pharmacy, College of Pharmacy, University of Baghdad

الخلاصة:

الهدف من هذه الدراسة هو للتعريف بالطرائق والاساليب التي استخدمها العلماء العرب في مجال العلوم الطبية والصيدلانية، وكذلك السعي لتحقيق بعض الاهداف من ضمنها:

- 1- ايجاد اصل علم العقاقير ودور العلماء العرب في انبثاق ونشوء هذا العلم.
- 2- ايجاد ابرز العلماء العرب في هذا المجال وكتابتهم المشهورة ومميزات هذه الكتابات.
- 3- ايجاد الطرائق العلمية المستخدمة في جمع وتحليل المعلومات.
- 4- ايجاد العلاقة بين العلماء العرب والمسلمين مع علماء الامم الاخرى ومدى تأثرهم ببعضهم.

في هذا البحث تم إتباع الطرائق المستخدمة في جمع وتحليل المعلومات عن طريق مجموعة من الكتب المختصة في هذا المجال.

Abstract:

The objective of this study is to identify the methods and scientific approach used by Arabian scientists in the in the field of the Medical & Pharmaceutical sciences, as research seeks to achieve a set of goals, including:

- 1 - To find the origin of the pharmacology and the role of Arabian scientists in emerging and making this science.
- 2 - To find the most prominent of Arab scientists in this field of science and their famous writings with the characteristics of these writings.
- 3 - To find the scientific methods used in collecting and analyzing information.
- 4 - To find the relationship of Scientists of Arabs and Muslims with the scientists from other nations and the extent of affecting them by each other.

This research is followed the survey methods to collect and analyze information through the collection of books of this field.

Introduction:

The pharmacy profession is a scientific profession that is specialized in preparation of medicine from the various origins (plant, animal, mineral, chemical), this profession has become a science that requires a deep knowledge in various

fields of this science and which represents in the present day the scientific departments that include colleges of pharmacy in the various parts of the ground. Scientists became, according to their responsibility which related with human life and keeping health and longevity, activity and creativity, Strive in the search for the all-new of drugs and medications that help man to overcome the diseases and the troubles that accompanied him during the era of the industrial revolution and the disadvantages of the impact of industrial pollutants which has a bad affected on a human health. They following the rules and scientific methods to illuminate and show them the way which we call (Scientific Research Methodology), which came as a result of in-depth research and considerable efforts of the scientist of this field. This research reveal for pointing out the curriculum and scientific methods used by the scientists in the field of medicine and pharmaceutical sciences.

Material & Methods:

Arab and Muslim scientists was efficient in the various branches of human knowledge, whether in the natural sciences or social sciences, Both Arab and global libraries were proud of their writings .So they had preceded to know a lot of laws and scientific theories adopted by Western scholars to start the research and deep studies ,its results help mankind in the various parts of the earth to get rid of its pains and problems, and pharmacology that is a human science in every meaning of the word, and interested in the ancient civilizations (to ensure safety), the Arabs has a distinguished role in laying the foundation stone to it and the rules that go out from that came the answer of the research questions as the following:

- 1 - What is the role of Arab and Muslim scientists in pharmacology.
- 2 - What is the role of Arab and Muslim scientists in the development of scientific approaches of research in that field.
- 3 - What are the main approaches adopted by the Arab and Muslim scientists in that field.
- 4 - What is the most famous works of the Arab and Muslim scholars and the curricula that followed in it.

The importance of Search:

Lies the importance of research by seeking to identify the role of Arab scientists in pharmacology and lay the foundation stone of it through the development of methods and scientific approaches in studying and searching it.

Research Objectives:

The research aims to achieve the following objectives:

- 1 - To find the role of Arab and Muslim scientists in pharmacology.
- 2 - To find the role of Arab and Muslim scientists in the development of scientific methods of research in that field.
- 3 - The famous approaches adopted by the Arab and Muslim scientists in that field.

4 - Most famous works of the Arab and Muslim scientist and curricula that followed in it.

Research Methodology:

The research depends in collecting and analyzing the information on the historical method survey.

Approach: (It's identifying):

Before turning to the words and methods of scientific research and give a comprehensive definition, it should give a definition or definitions for each word in that phrase is as follows:

The Approach and the curricular and the curriculum is (the obvious way), and approaches the way , mean to find and became the approach and clearly explained, the Almighty said in His Book ((each among you, has a canonical and an approach)) and has followed the way: build and explained it, and pursue mean to follow the way of a person: follow his behavior ^[1], as some suggest that the word curriculum is derived from the word of any approach to follow a certain way, and thus the word (approach) which its plural approaches, means road or way^[2].

The question here: What is the importance of research methods for scientific research and the degree of equanimity and its scientific value? Is it possible to do research and scientific or social studies, without the adoption of a specific approach? On answer of this question, Hadi Nahir^[3] confirmed that the importance of the curriculum and is considered somewhat dominant on the mind of the researcher and which governs all measures of thinking by the research, during which he also asserts that the absence of the curriculum in any research means the absence of approach seriousness, the nature of originality in it, the research without approach is not a search but is just a talk in the subject, or the issue or specific phenomenon and not a search.

The slave ^[4] shows the importance of the curriculum for scientific research, saying: (the approach is an organized steps followed by the researcher).

Types of Research Methodology:

The scientific research Approach is Varied generally with the multiple of the scientific fields. Every science of the sciences has a special theme and approach that distinguishes it from other sciences, based on that appeared a various types of methods of scientific research, on which the scientists of scientific research approaches worked hard in developed it, they divided the approach into five main sections^[5]:

- 1 - Deductive approach (deductive): It connects the mind between the introductions and conclusions, and between things and their causes on the basis of logic and mental meditation, it starts with colleges to reach them to the molecules.
- 2 - Inductive approach (experimental): it's the opposite of the deductive approach (deductive), as it begins with particles to reach to the general laws, depends on

the organized verification which is subject to the testing and control of different variables.

- 3 - Curriculum-back (historic): in which seeks a researcher to recover the past due to the legacy of the effects of whatever kind, which he used in the historical science, as it is this approach to retrieve the events and phenomena to be discussed and studied, in order to know what happened in its context, circumstances and conditions and historical circumstances which produced and drafted it, or image what we got from it.
- 4 - Descriptive approach: this approach aim to describe the natural and social phenomena, which is complementary to the historic-back approach, and in this approach the researcher seeks to describe phenomena in a selective and optional manner according to the purposes of study.
- 5 - Dialectical approach: A complementary approach for the previous approaches, it is characterized by selecting a method of symmetry and the dialogue between the scientific communities or in the scientific discussions.

Amer Ibrahim ^[6] mentions a group of scientific methods, and considers it the most widely used by scientists in the field of scientific research, as follows:

- 1 - Historical methods (documentary): Facts and practices to be researched and studied based on this approach by relying on effects and evidence and records which left by those facts.
- 2 - Descriptive Method (survey): The researcher through the adoption of this approach in scientific research can collect the detailed information about a particular phenomenon, may be the administrative or social or scientific unit.
- 3 - Descriptive approach (case study): This approach is based on the selection of a specific units as the administrative, social unit or an individual or group of individuals or any word, and collect the detailed information on all its aspects of the activities and characteristics, it is a means of collecting data and information in the descriptive study with the use of standard and objective tools to collect, analysis and interpretation these data.
- 4 - Experimental method: Empirical research is to change the deliberate and controlled conditions specific to the incident or a particular phenomenon and to observe the resulting changes in this incident itself and its interpretation of ^[5].
The experimental method is considered the ideal method of experimental research. In other words, the experimental method is based on the following basis:
 - A - The use of the experience: in fact, the events of any specific change, called the variable experimental.
 - B - Observing the results and effects of that change, the results and reactions.
- 5 - Statistical Method: Is the use of means of calculation and math in the compilation of data and various information and then organize and sectioning

such data and information through the numbers, accounts and transactions associated with it, and then analyze and interpret the figures and described it in a way that submit the results to reach to the objectives of the study and research.

After identifying the types of curriculum and noted that each subject or branch of the science has a method of its own sets it apart from other branches of science, and these approaches differ in terms of hypothesis testing, descriptive approach (case study) could be serve in the study of the phenomenon or problem, and it is not useful in the approach history, here the role of the researcher is illustrated in choosing the approach that best suits his research or study, and this choice is subject to many things as the nature and the field of the problem to be studied, the potential ability researcher and the targets set by the researcher of the study, which means that it is subject to external circumstances rather than involuntary ^[7], but sometimes it can follow more than one approach in the study itself, according to the requirements of the search.

What is their role in pharmacology and what research methods they have applied at the time? Word of Pharmacy is a word expressing a native Indian derived from the sandal word or Syndan a known fragrance wood and brings from India, which is known to Arab scientists in most of their books as: (the knowledge of drug word with all its species and types, and mixing of component from drugs) and the making of their drugs depends mainly on words of plant, animal or mineral origin^[1] They were follow various scientific methods to recognize these vocabulary and deal with it. These steps is consider the base of establishing the research methods in their books and writings in their various levels, and here we can say that the Arabs at the beginning taking their writing from the Greece but they have contributed widely in human civilization and produced a genuine production of it. Their writings were the first sources of European civilization, especially in the early Renaissance, both in the field of pharmaceutical sciences, medical or other sciences:

- 1 - Historical method: As it is used in most, or in all their writings besides the other approaches, So we find Ibn Al-Bitar in (his compilation book of the items of medicines and food) and he has pointed out in his introduction that he has been depended in taking his information on the heritage books of medicine at Greece as it has absorbed all that came in the book of Galen and adds to them all what has been came in the books of the Arabs and the Persians.
- 2 - Descriptive approach (survey): The Arab Scientists use this approach in most of their books as they were collecting information and in details about every word of the vocabulary which is used in manufacturing the drug even if it was asked to travel to countries and other areas near or distant from them.

- 3 - Experimental method: which represents the best method through testing procedures to make sure of sayings of other? We find that the scientists just not mention of others saying of vocabulary words but mentioning the information by doing the experiment on them. We find that Ibn Al-Bitar, in his collector book mentioning all the others saying of the vocabulary and assigns all those words to their owners and confirms the correctness of carrying them depending on experience and vision if it is found the opposite to say, he criticizes the owner and explain to him that he came with a mistake, he shows and it is trying to alert all drugs that came with mistake. Al- Zahrawi stated this approach in his book (the behavior for unable of writings) classes in medicine and food Patients using the experimental method.
- 4 - Statistical method: In this approach the focus is on computational and mathematical methods, this approach used by the most Arab scientists, through reference to the quantitative amounts of vocabulary during the process of blending together^[8].

Results:

The most prominent results that the Search is reached:

- 1 - The need to adopt a specific approach or approaches in the various scientific research.
- 2 - Diversity or multiple methods of scientific research according to the topics covered.
- 3 - There is a relationship or a link and a strong link between excellence and success in scientific research and choosing the appropriate approach in doing the search.
- 4 - The possibility of adopting more than one approach in scientific research, according to the requirements of scientific research.
- 5 - The distinct role of Arabs scientists and Muslims to know the various approaches of scientific research and defined them.
- 6 - Scientific integrity in transfer of information and refer it to their owners, and away from sectarianism, as they relied on books by scientists who are predecessors of different nationalities and religions, and pointed to them.

Discussion:

Research recommends the need to identify the top scientists and define the distinct of the Arab scientist books, whether in the field of pharmacy or other fields, and take it as school curriculum, and dealt with it in studying and analysis.

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