

The Social Value of Scientific Research

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ABSTRACT

Background: The universities, medical institutes and scientific research centers perform studies which highlight and reflect the problems and constraints faced in various aspects of life such as health, veterinary and other areas, such as psychological and social research.

Aim: To throw light on the social value of scientific research within the subspecialties of Medicine, Biomedical Sciences and other medically related disciplines in Sudan.

Methods: An extensive literature search was conducted accessing the two libraries of the Faculty of Medicine, Khartoum University, Sudan and the Faculty of Applied Medical Sciences, Jouf University, Saudi Arabia. Literature was also accessed from WHO resources including the Index Medicus for Eastern Mediterranean Region. Published studies in Sudan that contained information on diseases endemic in the country, such as malaria, schistosomiasis, tuberculosis and kala azar were searched and cited. The database on genetic diseases, particularly sickle cell anaemia (SCA), prevalent in Sudanese populations, was also searched.

Results: The result of such research is that it maps and outlines the distribution of diseases in Sudan. This is the beacon and starting point for every healthcare researcher in Sudan.

Conclusions: In conclusion, there is much to be said about the social value of health research in Sudan. It began in limited fashion, through necessity, but was original. It reveals a map of endemic diseases and was to the benefit of citizens. This review will reflect what is known regarding the rates of progress in scientific medical research in different regions in Sudan.

Keywords: Medical Research, Endemic diseases, Sudanese population, Sudan

INTRODUCTION

Research activity in Sudan began early in the 20th century, especially after the establishment of the Kitchener Medical School in 1924 and its usefulness was not confined to the Sudan. The early personnel of this School conducted a survey on the epidemiology of endemic diseases in Sudan, spreading throughout the country's East, West, North and South regions.

It is axiomatic for each medical student in Sudan to know that the kala azar home territory is the Gadaref area^{1,2}, schistosomiasis is native to Gezira^{3,4,5}, the tuberculosis native land is Eastern Sudan^{6,7} and SCA is most prevalent in Western Sudan, Kordofan and Darfur^{8,9}, being well reported in certain western tribes, for instance the Albagara, an Afro-Arab constellation of tribes with a predominantly African descent^{9,10,11,12}. This was the result of research carried out by pioneers from the Kitchener Faculty of Medicine and other medical institutes.

At the same time there was research in other disciplines, Surgery and Obstetrics, Gynecology and Pediatrics. The most prominent research was in urinary fistula, resulting in an in-patient unit at Khartoum Teaching Hospital which receives cases from all over the Country¹³.

That era is considered a foundation period of original research, from which much of the subsequent research derives and forming the infrastructure of health services in Sudan. The local citizens benefited much which opened the door widely to voluntary organizations such as the Welcome Foundation¹⁴ to help in the elimination of some

endemic diseases¹⁵. Later on another organization, the Blue Nile Project¹⁴ - with Japanese funding has been successful in reducing the infectivity of Schistosomiasis in Gezira^{3,5,16,17,18}. Other research bodies continue funding research on Leishmaniasis in Gadaref^{1,2,19}.

METHODS

An extensive literature search was conducted accessing the two libraries, firstly of the Faculty of Medicine, Khartoum University, Sudan and secondly of the Faculty of Applied Medical Sciences, Jouf University, Saudi Arabia. Permission was sought from the institutional Ethical Committee to start the research. The WHO resources including the Index Medicus for Eastern Mediterranean Region was also searched. Keywords used for the search included "Medical Scientific Research in Sudan" combined with each of the following search terms: Kitchener Medical School, and the recent institutes and centers of research, for instance the Sudan Medical Specialization Board, the Institute of Endemic Diseases and the new medical colleges that were opened through a revolution in higher education. Manuscripts and studies published in Sudan that contained information on the endemic diseases and their native lands such as malaria, schistosomiasis, tuberculosis and kala azar were also searched and cited. Additionally, the database on genetic diseases, particularly SCA with its prevalence in Sudanese populations was searched in detail as there is a general dearth of studies on SCA in Sudan. There were no exclusion criteria for citing published data and studies concerning published medical studies in Sudan. There was a lack of research between 1950 up to 1990, and subsequently only a few publications.

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DISCUSSION

The natural evolution of research momentum is a creation of several leading health institutions that contributed effectively in the health services in Sudan. The National Health Laboratory was founded in the era of President Abboud (1958-64) from which a lot of studies were launched topped by international research in the respiratory fungus, mycetoma^{20,21}. These studies had changed many of the old concepts about the disease, newer ones helping to alleviate the disease and transforming it to something that can be treated with medicines in addition to surgery, which was previously the only treatment.

Research continues on malaria^{22,23,24,25}, meningitis^{27,28,29,30}, leishmania^{1,2,31,32,33,34,35}, tuberculosis^{6,7} and inherited disease such as SCA^{10,11,12,36} and haemophilia^{37,38}. Whatever its limitations, the research at that period was original and has served healthcare well. Both investigators and subjects benefitted very much. The overall result was an ability to reduce the impact of diseases and to reduce the harm they cause.

There were more than twenty faculties of medicine and biomedical sciences opened in Sudan in the nineteen nineties, during the so called a revolution in higher education. This in addition to the old ones, three faculties of Medicine and one institute of biomedical sciences that covered all Sudanese Territories. In consequence, a new generation of physicians and biomedical scientists has been graduated during the last two decades. This was coupled with graduates from faculties of dentistry and pharmacy that grant bachelor and diploma in these specialties.

Research activities in these new institutes are being strained to offer specialization certificates and to compete with higher salaries available in jobs abroad, particularly in Gulf countries. Thus another era began for research objectives in Sudan.

For those who would like to specialize, they may join Sudan Medical Specialization Board, which is the only recognized institute in the Country. The Sudan Medical Specialization Board opened in 1995 and offers degrees of specialization and has more than thirty disciplines in medicine, dentistry and pharmacy. In medicine the candidate would have clinical training for four years and simultaneously perform complementary research in order to sit for the final exam. Hence, candidates conduct researches in different specialties - internal medicine, gynecology, pediatrics, surgery and their sub-specialties. Graduate students in dentistry, pharmacy also have training rotation plus complementary research. The Sudan Medical Specialization Board might start also to offer degrees of specialization in biomedical sciences by the next year.

Some specialists, particularly the outstanding, join universities and university regulations for promotion require that staff members publish research to deserve promotion. This is a way to encourage them to perform research and thence become promoted to assistant professor, associate professor and a full professorship.

As a result many of the local periodicals as well as international ones are the vehicles for this research. One aim is to serve the researcher him/herself until he/she finds

his an opportunity for promotion and the promotion increases migration chances. However, by all means not all the research is for personal benefits of the investigator; much of it was for the interest of the public.

Graduates of Medical Laboratory Sciences (Clinical laboratory Sciences) also participate effectively to enrich the scientific research and thousands of them have obtained Masters and PhD degrees. They have participated in different types of scientific research, which include genetic studies in haematology, histopathology, clinical chemistry and microbiology. An example of such research concerns SCA, its distribution among Sudanese tribes, the haplotypes present in Sudan and ways to alleviate disease through development of novel treatments^{12,36,39,40}. Other graduates of MLT have created centers for diseases such as the one for haemoglobinopathies which was opened in El Obied, State of North Kordofan⁴¹. It functions to manage patients with SCA and other inherited diseases, also to conduct relevant research.

On the other hand there is the Institute of Endemic Diseases, founded at the end of the nineties and located in the Faculty of Medicine, University of Khartoum. Original research is carried out in this institute concerning endemic diseases especially leishmaniasis^{31,32,33,34}, malaria and schistosomiasis⁴². Another function is the training of medical, science and MLT graduates, imparting laboratory skills in molecular biology. Accordingly, this institute grants Masters and PhD degrees. Its contribution to the study of chronic tropical diseases is considerable and they are trying to invent vaccines against kala azar, malaria and even Bilharzia. The institute is led by some eminent researchers in fields of medicine, veterinary science and pure science⁴³.

A considerable number of graduates of this institute joined Sudanese universities and they specialized in biochemistry, hence this Institute has contributed to raising their social standards by helping them to join the university staff.

There Deaneries for graduates in various Sudanese universities such as that of the Faculty of Medicine, University of Khartoum lead scientific research.

Some educational centers founded in faculties of medicine aimed to promote Medical Education and to add to the development of the educational process as well as to upgrade curricula and to service quality control of medical education. Large numbers of doctors have attained Masters degrees which should be effective in future promoting quality of Medical Education⁴⁴.

CONCLUSION

To conclude there is much to be said about the social role of health research in Sudan. It began as a limited, necessity. It revealed the map of endemic diseases and was for the benefit of citizens. This was followed by periods of abundant research but mostly for the purpose of promotion on the career structure, followed by migration to seek ways of better life abroad. Despite this drain of resources, research has contributed to the upgrading of the standard of living for many ordinary families and contributes to a lot of men and women leading new lives in

the Gulf States and elsewhere. The population in general thus benefits from their hard work and perseverance.

RECOMMENDATIONS

Nowadays research is plentiful but lacking in several things. Firstly, it does not have a data base for the whole country and therefore research tends to be repeated unnecessarily. Secondly, there is no link between the researchers and the authorities, which should be implementing the recommendations. Thirdly, excessive production of studies may result in poor outcomes if there is not a minimum standard which should be followed by researchers and observed by all universities and research groups through some central control. Finally, the role of the National Research Council has diminished recently. It used to control the quality of research all over Sudan; we hope it may return to its original and best role.

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