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Views from the Humanities

INFORMATION SOURCES AND UTILIZATION PATTERNS OF PHARMACEUTICAL SCIENTISTS IN NIGERIA

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The study investigated the adequacy of pharmaceutical scientists' information environment in feeding their occupational activities. Data was collected through observation and through questionnaire administration to all the twenty-seven scientists in two large pharmaceutical companies in Lagos, Nigeria. Findings revealed that pharmaceutical scientists carried out their work activities under less than optimal information conditions and with out-dated information. Although scientists were found to rely a lot on oral sources (colleagues and so on) for information, documented sources were identified as being more reliable. A recommendation was made to the pharmaceutical companies to improve the information resources available for the use of their scientists through the provision of functional and effective information centres and through the provision of basic skills in information handling.

Key Words. Information, Scientists, Pharmacists' information; Information sources and use

INTRODUCTION

There is no clearly defined homogenous group of "Pharmaceutical Scientists". The pharmaceutical industry is concerned with the art and science of preparing from natural and synthetic sources) suitable and convenient materials for distribution and use in the treatment and prevention of disease. It embraces knowledge of the identification, selection, pharmacological action, preservation, combination, analysis and standardization of drugs and medicines, (Deno, 1996). Pharmaceutical scientists are thus involved in the research, development and manufacture of remedial preparations such as antibiotics, vaccines and other types of drugs.

The sequence of events leading towards the evolution of a new drug, from synthesis to approval (for marketing) by the government is a long one. Enroute, the following scientists will be found - Chemists, Biochemists, a variety of Biologists, Pharmacists, and towards the end of the journey, Physicians. The pharmaceutical industry provides an outstanding example of a diversity of scientific skills united and directed towards the achievement of therapeutic goals (Cooper 1970).

It has been suggested that for scientists and technologists, information needs arise at three levels. First, at the level of research and development, second at the level of planning and third, at the level of execution (Atinmo, 1998). Key areas of information need in the production of drugs include chemical and physiochemical information, biological and biomedical information as well as toxicology and drug metabolism information (Pickering, 1990). The information needed by the science and technology community has been categorized into formal and informal sources (Singh, 1981). Formal sources refer to "something that is written down" and informal sources as oral. While three types of formal sources are recognized - primary, secondary and tertiary (Singh, 1981), it is agreed that scientists and technologists would seek information through informal channels first before checking on formal sources (Odeinde, 1975; Gorman, 1995; Gravois, 1995). This had earlier been noted by Hanson (1971), who observed the existence of networks among scientists/technologists which are made up of colleagues, ex-colleagues, fellow students from the past, acquaintances

made at professional meetings, fellow members of committees, and confirmed by Ehikhamenor (1990) who observed that among information channels rated highly by scientists were conferences and seminars, as well as correspondence and exchange of off prints or reprints. The most important source of informal information defined by Graiewska-Vickery (1976) was personal communication which is an oral or written social interaction between people. Scientists use information not only to solve problems, but to clear uncertainties (Losee, 1994). It is important for anyone providing this service to ensure its appropriateness to users' needs and to be ready to adapt promptly as those needs change (Webb 1995).

In this study, we investigated information requirements and utilization patterns of pharmaceutical scientists in two large pharmaceutical companies based in Lagos Nigeria. Its purpose was to find out the adequacy of scientsts' information environment - for their occupational activities.

METHODOLOGY

The two multinational companies investigated were SmithKline-Beecham and Vitabiotics. SmithKline-Beecham was incorporated in Nigeria in 1971, and produced Over The Counter (OTC) medicines such as pain killers, Andrews Liversalts, anti-malarias, and diuretics. Vitabiotics Ltd was established in Nigeria in 1975 as an affiliate of Meyer Pharmaceuticals, India. Twenty-two different pharmaceutical products (including antimalarias, analgesics, Multivitamins anti-asthmatics, sedatives) were manufactured by Vitabiotics while there was also an ongoing research on the production of ointments. Between them both companies had a total of twenty seven scientists; eleven in SmithKline Beecham and sixteen in Vitabiotics

Twenty seven pharmaceutical scientists in the two companies mentioned were included in this study while the instrument of data gathering was the questionnaire. The questionnaire consisted of twenty five questions. The first section of the questionnaire sought answers to respondents' background, their qualification, age, gender, position in the company, area of specialization and years of experience. The second section concentrated on respondents' work, activities and the information needs arising from them. The use of library and information centre services constituted the third section with explorations of degree of importance in which certain formal and informal information sources were held. The fourth section explored the participation of the respondents in professional meetings and the fifth section looked at their information utilization patterns, while the last section addressed problems faced by respondents in sourcing for information

Statistical analysis: Univariate and bi-variate analytical methods were used to present and interpret the data collected.

RESULTS AND DISCUSSION

The subjects comprised of 13 pharmacists, 7 chemists, 2 microbiologists, 2 biochemists and I food technologist. Surprisingly, only 6 had higher degrees. A third of the total population were women. Pharmacists' key areas of work were research and the development of new drugs. The chemists were involved in research, in the development of new drugs and in upgrading existing drugs, while the two microbiologists and the only food technologist were responsible for product quality control. Also involved in quality control were two of the pharmacists.

For these work activities, respondents consulted mainly primary (journals, tables/figures) and secondary sources (books, abstracts. Nevertheless, they noted that their first port of call for information were colleagues. Unfortunately, this source was often unsatisfactory, although respondents said that this would not stop them from still consulting their colleagues first on most issues. Meetings, symposia and

conferences also constituted important sources of information for pharmaceutical scientists. Over 90% of scientists took part in meetings/symposia regularly and they saw these sources as providing opportunity for interaction with professional colleagues:

Table 1:
Value placed on Information Sources by respondents [a]

Information sources	Very Essential	Essential	Not Essential
Colleagues	5 (20.8)	17 (70.8)	2 (8.3)
Books	22 (88.0)	3 (12.0)	0
Journals	18 (72.0))	7 (28.0)	0
Abstracts	13 (59.1)	8 (36.4)	1 (45.0))
Indexes	8 (40.0))	9 (45.0)	3 (15.0)
Electronic databases	12 (60.0))	7 (35.0)	3 (15.0)
Reports	13 (56.5)	8 (34.8)	2 (8.7)
Conference proceedings	13 (68.4)	2 (10.5)	4 (21.1)
Standards	22 (95.7)	1 (43.0)	0
Theses	8 (40.0))	9 (45.0)	3 (15.0)
Patents	7 (36.8)	9 (47.4)	3 (15.8)
Trade literature	10 (45.5)	10 (45.5)	2 (9.0)

[a] *Percentages of values are presented in parenthesis*

In spite of scientists' apparent remarkable reliance on oral sources of information such as communication with colleagues, documented sources still appeared to be the most desirable. In other words, these scientists placed more value on information coming from documented sources, be they primary or secondary than on oral sources. As Table 1 shows, while 95.7% and 88% of respondents described Standards and Books as "very essential" sources of information for them, only 20.8% refered to oral sources/colleagues as "very essential", while, 70.8% of respondents saw these sources as merely essential.

Overall information was used to improve product quality. This was the assertion of 60% of respondents, followed by 48% of the respondents who said that they used information to update professional and scientific knowledge (Table 2). A mere 16% indicated that they required information for the development of new drugs even though respondents had earlier ticked this work activity as a key aspect of their work.

A reason for this discrepancy could be that although the development of new drugs' was one of the job descriptions of the respondents, they seldom performed this activity.

Rather, they concentrate their research activities more on improving the quality of existing drugs leaving (perhaps) the development of new drugs to their parent bodies (outside the country).

Information centres were poorly developed in both companies. Preliminary investigations revealed that the companies had very small informal collections of information resources such as books, journals and other primary information resources. Trained staff such as a librarian manages none of the information centres.

Table 2: Patterns of Information Use by respondents

Information use	Chemists	Microbiologist	Biochemists	Pharmacists	Food technologist	Total	% of Total
To develop new drugs	1	-	-	3	-	4	16
To update existing drugs	1	-	-	5	-	6	24
Improve product quality	4	1	2	8	-	15	60
Update professional and scientific knowledge	4	1`	-	7	-	12	48
Write journal articles	1	-	-	-	-	1	4
Present conference papers	5	-	-	-	-	5	20
For current awareness	1	1	-	6	1	9	36

The respondents indicated a high level of dissatisfaction with information resources available in company collections. Most of them did not participate actively in the selection of information resources for their company while current awareness services and Selective Dissemination of Information (SDI) policies were not well established. Scientists apparently had to rely on their private collections and those of other colleagues within and outside the company.

Though most of the scientists had access to computers, few had personal computers. They were not linked with any other pharmaceutical company to facilitate information resource sharing. The major problems encountered by scientists in sourcing for information were problems of accessibility and time availability. Most of the respondents said that updated sources of information were not easy to come by and that they seldom had enough time to do a thorough information search due to tight work schedules. This was not helped by the lack of trained staff to assist scientists in their search for information.

The need for and the use of information in the development, production and maintenance of pharmaceutical products demand priority attention. The pharmaceutical scientists in this study needed information to improve product quality, update professional and scientific knowledge and for current awareness. They appeared to have been left on their own to source for information needed for company activities. The companies lacked functional information centres as well as the services of trained information professionals. This made them to work with less than optimal and with outdated information. Pharmaceutical companies need to recognize the crucial role of information in their activities and output. They need to provide their scientists and others who work with them with relevant, timely and accurate information. They need to develop information centres which would support the serious work they perform. They also need to provide scientists with basic skills in information gathering, management, use and communication in order to improve their resourcefulness and information gathering and dissemination activities.

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