Factors Affecting the Production of Drugs in Our Pharmaceutical Companies; A Case Study of Ilorin Metropolis

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Abstract- The scope of this research concerns itself with the problem facing production of drugs in our pharmaceutical companies. The instrument used for the study is a twenty-five (25) item questionnaire, which demanded information such as staff factor, quality assurance factor and material factor provided for research work. A total number of one hundred and sixty (160) staff from four selected pharmaceutical companies in Ilorin metropolis completed the questionnaire. The data obtained was analysed using frequency counts, percentages and rank-ordering. The result obtained showed that there is problem on drug production in pharmaceutical companies regardless of the company status. It is on this basis that recommendations such as employing qualified staff, providing physical infrastructures such as environmental control and providing quality testing laboratories for batch samples were made.

Keywords- Pharmaceuticals, Questionnaire, Frequency

I.   INTRODUCTION

Pharmaceuticals are chemicals that are prepared and sold with the aim of treating disease. You might be happy to call such chemicals drugs. However, we tend to think of a drug as a substance that is not used to treat illness but like heroin, is taken illegally by people simply for the short-term pleasurable effects it can give (Phillips, 1992).

The pharmaceutical industry is one of the most important parts of the chemical industry. The market for drugs has increased until it is worth billions of pound each year. Millions of people benefit from the treatment they receive for illnesses that even ten years ago would have been impossible to treat. Infact the advances made in the design of drugs have been so successful that we tend to think that almost every complaint will be able to be treated (Am,1997).

Arthur (1979) provide a representative sampling of drug studies to enable one not familiar with drug research to get a feel for not only the finding but for the state of the art- that is, to see how far the research has developed as to what it can and as yet cannot tell us. The weight of the problem facing pharmaceutical industry can best be appreciated when it is recognized that statistical information is required for making decision. It also provides foundation for the planning, production of drugs and execution of activities which may lead to the realization of goals.

Drug problems are sometimes attributed to a number of factors such as the quality testing of batch samples of drugs, non-compliance with best practices for drug storage and management, inadequate provision for staff welfare and non-implementation of Standard Operating Procedures (SOPs) (Michael, 1979).

On the other hand, the staff in the company may not be the ones capable for the execution of jobs. Some staff complains of inadequate equipment, facilities to test the batch samples of drugs produced and materials needed for production sometimes may not be made available. This particularly is the case in some pharmaceutical industry where staff cannot give in their best in their working places. Financial situation of the company also determine how staff are motivated towards achieving a common goal for the pharmaceutical companies, this also contributes to the factor affecting production of drugs (WHO, 2004).

Many of the problems are factors inevitable, therefore, continuous effort directed by common sense and experience can be applied to reduce those difficulties. It is part of the researcher desire to seek appropriate solutions to the factors affecting production of drugs using pharmaceutical companies in Ilorin, Kwara State, Nigeria as a case study.

II.   PURPOSE OF THE STUDY

The purpose of this study is that, it is the researcher observation that a study in the area of factor affecting drug production which focuses on the pharmaceutical companies of Ilorin metropolis has not been carried out in my department. Secondly, to find out why staff factor affects production of drugs and whether modern instruments are used for analysis of drugs produced. Thirdly, the researcher wants to contribute her own quota to the improvement of drug production. This could be achieved through implementation of suggestions and recommendations offered on the basis of research findings such as: investigating whether adequate laboratory tests is always carried out on batch samples of drugs produced; evaluating the type of instruments and equipment used for drug production and examining the method of staff approach to drug production.

III. RESEARCH DESIGN

A. Sample

The target population is the staff who is exposed to drug production in Ilorin metropolis. Random sampling technique was used for the selection of four pharmaceutical industries out of five pharmaceutical industries in Ilorin metropolis of Kwara State. In selecting the industries the researcher folded out five pieces of paper containing the names of the pharmaceutical industries. The researcher then put the folded pieces of papers into a large can of tin and picked without replacement. A total of forty staff from each pharmaceutical industry was used.

B. Instrumentation

For the purpose of this study, the non-postal questionnaire instrument was administered directly by the researcher and with the assistance of reliable officials.

The non-postal questionnaire method was used because it is cheaper, less time consuming and easier to administer than the interview method. The questionnaire used for the study is made up of two sections: A and B. Information mainly the demographic characteristics of the respondents are contained in section A while section B contains twenty five items which are grouped under four-point rating scale.

C. Procedure

The questionnaire was administered directly on the staff by the researcher in sampled pharmaceutical companies. The full co-operation of Heads of Department, Production Managers, and Managing Directors was sought for during this period. Both descriptive and inferential statistical techniques were used to analyze the data collected for the study. Specifically, frequency counts and percentages are the main analytical methods used. With regard to descriptive statistics, the demographic information was employed to group the respondents. In the main part of questionnaire, a four-type rating scale was adopted for the analysis of the items. For instance, the responses in the questionnaire was designed for scores as follows: Strongly Agree (SA) = 4, Agree (A) = 3, Disagree (D) =2, Strongly Disagree (SD) = 1. The total score for each item was computed before the mean of item calculated. Thereafter, the group means for the questionnaire was obtained. The results obtained are displayed in tables in the next section.

IV. RESULTS AND DISCUSSION

The data obtained were analyzed in such a way that they provided the needed information formulated to guide the investigation.

Table 1 provided information whether staff factor is a problem to drug production in Ilorin metropolis?

The responses as indicated below by item 1 show that 26.9 percent agree with the statement that adequate qualified staff are employed while 73.1 percent disagree to the statement it can therefore be said that the assumption is rejected that the

staff employed are qualified. Though they are qualified staff but they are limited, that is they are not enough staff to handle the job. The other items 2-5 show that production of drugs depends on salary given to staff, motivation of staff, and condition of service and management interaction. The result above reveals that by this problem of inadequate qualified staff which agree with (WHO, 2004) that says lack of qualified staff in the area of drug production has been a problem. It can also be seen from the table above that the rate at which drugs would be produced depends on the salary of staff, motivation of staff, condition of service and management interaction. This reveals what Biemba (2005) says that demotivated staff, poor management, leadership and training plans not implemented has a higher influence on staff.

TABLE I. STAFF FACTOR

Items	SA	%	A	%	D	%	SD	%	Means
1	34	21.3	9	5.6	66	41.3	51	31.9	21.63
2	55	34.4	87	54.4	10	6.3	8	5.0	3.181
3	59	36.9	81	50.6	8	5.0	12	7.5	3.169
4	34	21.3	72	45.0	33	20.6	21	13.1	2.744
5	49	30.6	82	51.3	29	18.1	-	-	3.125

Table two shows the responses of staff to instrument factor. Item 6 and 10 reveals that machinery is a problem to drug production. It can be seen from table two that 76.3 percent disagree that machines for drug production are made locally and item 10 show that 72.6 percent disagree to the statement that modern laboratories for drug production are available, it can therefore be said that the assumption is rejected that the machines for drug production are made locally and also modern laboratories for drug production are available. This reveals that by this problem of inadequate machine and un provided modern laboratories which agree with (WHO, 2004) that says pharmaceutical companies do not use quality testing facilities for drug production like Minilab® screening kit and government quality control laboratory has been a problem.

TABLE II. INSTRUMENT FACTOR

Items	SA	%	A	%	D	%	SD	%	Means
6	15	9.4	23	14.4	60	37.5	62	38.8	1.944
10	28	17.5	-	-	74	46.3	58	36.3	1.988

Table three reveals the availability of material problem on drug production in Ilorin metropolis, which shows the responses to items 11 and 12 that relates to material factor. It observes that availability of materials is a problem to drug production. From the table it can be seen that 81.3 percent disagree that material is readily available for drug production while 18.8 percent agree that material is readily available and 85.3 percent disagree that materials for drug production are not costly. It can therefore be said that the assumption is rejected that the materials available for drug production is readily available. This material factor result reveals that by this problem there is inadequate supply of material by the pharmaceutical companies to the staff and also material for

drug production are costly which agree with Bollinger (2004) that says lack of financial means and no bank loans affect supply of materials for drug production.

TABLE III.   MATERIAL FACTOR

Items	SA	%	A	%	D	%	SD	%	Means
11	19	11.9	11	6.9	59	36.9	71	44.4	1.863
12	4	2.5	18	11.3	71	44.4	67	41.9	1.744

Table four shows the information on the effect of environment on drug production in Ilorin metropolis: The responses as indicated below by item 17 show that 26.3 percent agree with the statement that waste disposal is recyclable while 73.7 percent disagree to the statement. Item 20, shows that 45.7 percent agree with the statement that atmospheric factor does not affect our drug production while 54.5 percent disagree to the statement. It can therefore be said that the assumption is rejected that environment has effect on drug production in Ilorin metropolis. The result of the environmental factor shows that the respondents disagree with the statement that waste disposal is recyclable and also atmospheric factor does not affect drug production. This reveals that by this problem waste disposal is not recyclable and that atmospheric factor does affect drug productions which agree with Akinyemi (2005) that says inadequate environmental control affects production of drugs.

TABLE IV.   ENVIRONMENTAL FACTOR

Items	SA	%	A	%	D	%	SD	%	Means
17	14	8.8	28	17.5	65	40.6	53	33.1	2.016
20	22	13.8	51	31.9	47	29.4	40	25.0	2.344

Table five reveals quality assurance a related problem to drug production in Ilorin metropolis: the responses to items 23 and 25 that relates to quality assurance factor. This shows that quality assurance is a related problem to drug production. From the table below, it can be observe that 96.2 percent disagree with adequate laboratory tests are carried out on drugs, 56.9 percent disagree that production of drugs does not have adverse effect on consumers. It can therefore be said that the assumption is rejected that production of drugs does not have adverse effect on consumer. It could be noticed that the respondents disagree on adequate laboratory tests are carried out on drugs and also that production of drugs does not have advert effect on consumers. This problem reveal agree with (WHO, 2004) that quality testing of batch samples obtain for tender evaluations are not common.

TABLE V.   QUALITY ASSURANCE FACTOR

Items	SA	%	A	%	D	%	SD	%	Means
23	6	3.8	-	-	101	63.1	53	23.1	1.744
25	24	15.0	45	28.1	56	35.0	35	21.9	2.363

Factors affecting production of drug contain five (5) items: 1. Staff factor 2. Instrument factor 3. Material factor 4. Environmental factor 5. Quality Assurance factor. The researcher wish to rank these five items according to their significance. Larger means promote higher ranking. Table six reveals that "staff factor" was rated the most important with the means of 14.381. Instrument factor was rated fourth with mean of 14.013 followed by Quality Assurance factor with 13.100 mean. The next factor was Environment with the means of 11.400; the least of the factor is materials. The ranking of the problem is computed has shown below. WHO (2004) observed that staff factor; instrument factor and quality assurance factor affects production of drugs, while Bollinger (2004) state that material factor affects drug production. Akinyemi (2005) affirmed that environmental factor affects production of drugs.

TABLE VI.   RANKING OF PROBLEMS ACCORDING TO THEIR MEANS

Factors	Means	Rank Order
Material Factor	9.863	1
Environmental Factor	11.400	2
Quality Assurance Factor	13.100	3
Instrument Factor	14.013	4
Staff Factor	14.381	5

V.   SUMMARY AND IMPLICATIONS

This study was designed and conducted to identify the problems that are affecting the production of drugs in our pharmaceutical companies, Ilorin metropolis was used as the case study. One hundred and sixty staff were selected randomly from four pharmaceutical companies namely: Rajrab pharmaceutical, Kwara Chemicals, Sam Pharmaceutical and Tuyil Pharmaceuticals. The staff from these companies responded to the questionnaire. Related literature was review in connection with the topic. The significance of the study is that it reveals those areas where the individual owners of the drug companies need to improve on in production of drugs. Some of the areas investigated include: staff factor, material factor, instrument factor, quality assurance factor, environmental factor. All the assumptions earlier postulated before the administration of the questionnaire were all the problems listed in the research questions are replica of the factors affecting production of drugs in our pharmaceutical companies. In the light of the findings and on the basis of data obtained, the researcher determines those basic factors that are affecting production of drugs in pharmaceutical companies. Having identified the problems affecting drug production in our pharmaceutical companies, it is recommended that good working environment and instituting good system of benefits are provided for qualified staff; It is also important to send staff for training to acquire more knowledge skills and the need for pharmaceutical companies to set standards for quality control laboratories and finally the need for Government to assist our pharmaceutical companies to provide quality laboratory to test batch samples.

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APPENDIX

SECTION A

INTRODUCTION: Please indicate your response by ticking (√) against each of the following items that is applicable to you.

1. Age (a) 20-29 [ ] (b) 30-39 [ ] (c) 40 and above [ ]
2. Gender: Male [ ] Female [ ]
3. Name of Company ....
4. Department ....
5. Marital Status: Single [ ] Married [ ]
6. Qualification: Primary School Certificate [ ] SSCE/WASC [ ] NCE/HSC/OND [ ] HND/B.Sc [ ] Postgraduate [ ]
7. Units: Production [ ] Quality Control [ ] Logistic [ ] Parking [ ]

SECTION B

INSTRUCTION: You are required to indicate your degree of agreement or disagreement to the items in the column provided for the different scales of response or opinions in this section. Scale: Interpret the scale as follows:

S.A –Strongly Agree; A - Agreed; D – Disagreed; S.D – Strongly Disagreed

ITEMS	FACTORS AFFECTING DRUG PRODUCTION ARE AS FOLLOWS:	SA	A	D	SD
	STAFF FACTOR				
1	Adequate qualified staff are employed				
2	Production of drugs depends on salary				
3	Motivation of staff increases the production of drugs				
4	Condition of service determines the production of drugs.				
5	Management interaction encourages staff				
	INSTRUMENT FACTOR				
6	Machines for drug production are made locally				
7	Machines for drug production are imported				
8	Adequate instruments are available for drug production				
9	Modern equipments are available for drug production				
10	Modern laboratories for drug production are available				
	MATERIAL FACTOR				
11	Material is readily available for drug production				
12	Materials for drug production are not costly				
13	Locally available materials are used for drug production				
14	Easy transportation of materials to the site or production				
15	Enough funds are available for purchasing raw material				
	ENVIRONMENTAL FACTOR				
16	Our source of water supply is adequate				
17	Waste disposal is recyclable				
18	Electricity supply is frequent				
19	By-products does not affect health				
20	Atmospheric factor does not affect our drug production				
	QUALITY ASSURANCE FACTOR				
21	NAFDAC visitation is regular				
22	Regular checking of drugs produced before sales				
23	Adequate laboratory tests are carried out on drugs				
24	Adequate laboratory supervision is maintained				
25	Production of drugs does not have advert effect on consumers				