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Prevalence of Generic Drug Prescribing in Two Tertiary Health Care Facilities in South East Nigeria

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ABSTRACT

Background: The use of generic medicines in healthcare institutions is beneficial to the patients and to the economy because of one of its major advantages which is a reduction in the cost of health care. The World Health Organization (WHO) standard of prescription is using the generic names of drugs to avoid potential confusion for the patients taking them. WHO recommended total and/or complete generic prescription as a standard for healthcare facilities. **Objective: T**his study described the prevalence of generic medicine prescribing in two tertiary institutions based on WHO specification. **Method:** The study was a cross-sectional retrospective study which lasted from March through October 2019. It was based on strengthening the Reporting of Observational Studies in Epidemiology (STROBE) Statement-checklist. We analyzed prescriptions on patient's folders that covered the period from January 2016 to December 2018. The sample size was determined using a sample size determination table. Cluster and systematic random sampling were used to select 200 prescriptions each from a pool of 400 prescriptions that met the defined inclusion criteria at the central pharmacy unit of the hospitals. Data were sorted and analyzed using descriptive and inferential statistics. **Results:** The study showed that out of 400 prescriptions in NAUTH, majority 439 (80.5%) were generic while the remaining 161 (21.9%) was in branded form, while in COOUTH, generic drugs prescribed was 410 (68.3%) and 190 (31.7%) branded prescriptions. Patient demographic data was not seen as a factor that affected the pattern prescribing. Majority of generic drugs prescribed in both hospitals came from the General Outpatient Department. Antibiotics were predominantly prescribed in their generic form at NAUTH with 37% while analgesics and anti-inflammatory drugs led other classes of drugs in COOUTH with 31.2%. Most of the drugs prescribed in generic form in the two hospitals were tablets 81.5% and were within the range of 10-100mg. Majority of the generic drugs in both hospitals were prescribed once daily. The WHO standard for generic prescribing is 100%. **Conclusion:** The study recorded poor generic medicine prescribing practices in both hospitals. Their generic prescribing status was below the WHO standard specifications.

INTRODUCTION

Background

Majority of Nigerians fulfills its healthcare needs from Government healthcare delivery system such as the Federal Government health scheme. For every situation, there may be variety of medicines available. Some of the drugs could be newly introduced into the market and maybe more expensive and therefore be mistakenly perceived to be more effective or have better activity than the already known or conventional ones for the same disease or illness [1]. The pattern of physician's prescription determines the type and class of drugs that are used in treating patients in the healthcare facilities and will, in turn, have an outstanding effect on the cost of patient's treatment.

The use of generic drugs in health institutions as prescription drugs have been successful but nevertheless, problems are also encountered in health centres and hospitals as a result of the use of generic drugs in prescription despite the cost-effectiveness. One of these problems encountered is the issue of different doses of a drug used in drug formulation from different companies. Good generic medicines are affordable alternatives to more costly, patented brand products, by providing exactly similar benefit at a lower price. Therefore, prescription of generic drugs in the tertiary healthcare institutions and most hospital helps to reduce the cost of pharmaceutical care. The use of the generic drug helps to reduce the dangers encountered with cross prescription of drugs e.g. Losec and Lasix, Pradax and Plavix or Lamictal and Lamisil have been and can be cross prescribed thereby leading to the negative therapeutic outcome or even adverse effects. Even though costlier, the older medicine which is the innovator or the branded form of the medicine that is of the same drug class with the newer ones may not have any pronounced advantage over the newer ones in terms of drug effectiveness and therapeutic outcomes [2]. Due to an increasing number of patients seen in public healthcare facilities, there is a continual shortage of funds for the procurement of medicines and other medical devices for the ever-increasing number patients [3].

Increasing the use of generic prescription drugs may help curb the rising pharmaceutical cost without sacrificing the quality of health care [4]. Generic prescription drugs are less expensive and are bioequivalent to branded drugs as they have the active ingredients but may differ in color, shape, size, non-active ingredients or formulation [5]. Generic drugs are used to treat so many chronic diseases and illnesses and this has led to increased use of generic

drugs because they provide the same effect as branded drugs but branded drugs are more expensive. Generic drugs are cheaper and affordable which is one of the reasons why their use is noticeable [6]. Branded drugs are usually very expensive because of the fact that they have to undergo an expensive large clinical trial before approval [7].

The cost of pharmaceutical products especially drugs products is increasing rapidly in many countries and it is associated with the switch from old to new drugs [8]. The prices of drugs influence prescribers because cost consideration helps in ensuring that adherence to medication is achieved and therapy is affordable since affordability is a key factor in access to medications. Medical representatives from different pharmaceutical companies visiting prescribers is another factor that affects the prescribing practices of prescribers [9]. This study described the prevalence of generic medicine prescription in two tertiary healthcare institutions.

METHODS

Study setting

The study was conducted at the Hospitals Central Pharmacy Departments of Nnamdi Azikiwe University Teaching Hospital (NAUTH) at Nnewi and Chukwu-Emeka Odumegwu Ojukwu University Teaching Hospital, at Awka in Anambra State. The two towns are located east of River Niger and within the tropical rain forest belt of Nigeria. Nnewi is a commercial town known for trade and commerce while Awka is the administrative headquarter of the state with predominantly civil servants, artisans, and businessmen. Both hospitals are tertiary healthcare facilities providing health care services to the teaming population of Anambra and neighboring states. The study lasted from March to October 2018.

Ethical consideration

Ethical approval for the study was obtained from the Institutional Research and Ethics Review Board of the two hospitals before the commencement of the study. Patients and prescribers means of identification were concealed to avoid any form of identification in line with best practices.

Inclusion criteria

- All prescriptions in the generic and branded form.

- All prescriptions from January 2016 to December 2018.
- All eligible and complete prescriptions

Exclusion criteria

- Non-eligible prescriptions.
- Incomplete prescriptions within the period under review

Study design

The work was a retrospective cross-sectional survey which utilized prescriptions written in the hospitals from January 2016 to December 2018. The procedure was based on STROBE Statement-checklist for observational studies.

Sources and method of selection of prescriptions

The sample size was determined using a sample size determination table. The Central Pharmacy was the center of documentation of all prescriptions issued in the hospitals was used as the center for data collection as the cluster point in the two hospitals. The prescriptions which met the inclusion criteria formed the sampling frame. A random start between 1 and 2 to choose the first prescription after all the prescriptions were reshuffled. Systematic random sampling was then used to select 200 prescriptions each from a pool of 400 prescriptions in one stratification that met the defined inclusion criteria.

Data collection method

A structured data collection sheet was used to extract data from the systematically selected prescriptions.

Variables

The outcome measure was patient's demographics, generic prescriptions, branded prescriptions, drug classes, dosage frequency, dosage forms, dosages, durations, and hospital units.

Data sources/measurement

The data for the two hospitals were sourced from the central pharmacy registry which served

as collection and collation point for all prescriptions from different units of the hospitals. Variables used for data collection in the two hospitals were identical.

Bias

Every source of prescriber or patients identification were ignored to maintain anonymity.

Study size

In comparing between individual facilities, WHO recommended that, "*the size of samples drawn within each facility must be higher than 30 in order to get more reliable within-facility estimates of prescribing pattern, at least 100 cases per health facility was recommended*", [10], unlike in surveys describing current treatment practices where at least 600 encounters are expected to be included in a cross-sectional survey with greater number if possible [10]. Since this study made a comparison between individual facilities, we systematically selected 200 prescriptions from the eligible prescriptions i.e. twice the recommended number to increases reliability.

Quantitative variables/data analysis

Data collected from both hospitals were collated using Microsoft Excel, 2010. Descriptive statistics of mean, frequencies, percentages were used to summarize the data. Chi square was used to test the differences between frequencies. Statistical significance was established at $p < 0.05$.

RESULTS

Table 1: Demographic features at patients that received various treatments in the two hospitals

Hospital	Category		n (%)	*p*-values
NAUTH **n = 200**	**Age (Years)**		2.0 (1.0)	$\chi2 = 18.727$ p = 0.603
		6 - 18 years	3.0 (1.5)	
		19 - 35 years	21.0 (10.5)	
		36 -50 years	27.0 (13.5)	
		51 - 65 years	26.0 (13.0)	
		Above 65 years	27.0 (13.5)	
		Nil	1.0 (0.5)	
		Adult	Nil	
	Gender	Male	84.0 (42.0)	$\chi2 = 7.697$ p = 0.053
		Female	116.0 (58.0)	
COOUTH **n = 200**	**Age**	0 – 5 years	30.0 (15.0)	$\chi2 = 38.757$ p = 0.003
		6 - 18 years	13.0 (6.5)	
		19 - 35 years	16.0 (8.0)	
		36 -50 years	6.0 (3.0)	
		51 - 65 years	17.0 (8.5)	
		Above 65 years	9.0 (4.5)	
		Adult	109.0 (54.5)	
	Gender	Male	85.0 (42.5)	$\chi2 = 6.098$ p = 0.107
		Female	115.0 (57.5)	

Table 2: Distribution of generic drugs among various Clinics at COOUTH and NAUTH.

		Generic drugs prescribed			Total generic drug prescribed (n, %)
Hospital	**Clinic**	Drug 1	Drug 2	Drug 3	
NAUTH **n = 200**	GOPD	35	36	40	111.0 (25.3)
	Rheumatology	2	2	1	5.0 (1.1)
	M.O.P	33	31	37	101.0 (23.0)
	S.O.P	18	17	20	55.0 (12.5)
	Gynaecology	6	3	5	14.0 (3.2)
	ANC	8	7	9	24.0 (5.5)
	Cardio	6	4	5	15.0 (3.4)
	ENT	3	7	6	16.0 (3.6)
	MHC	9	9	7	25.0 (5.7)
	Virology	0	1	1	2.0 (0.5)
	Dermatology	7	5	5	17.0 (3.87)
	FMW	3	4	4	11.0 (2.5)
	Dental	1	9	8	18.0 (4.1)

	Renal	1	1	1	3.0 (0.7)
	HOPC	1	2	1	4.0 (0.9)
	Neurology	1	0	1	2.0 (0.5)
	Endocrinology	2	1	0	3.0 (0.7)
	Nephrology	0	1	0	1.0 (0.2)
	Haematology	1	1	1	3.0 (0.7)
	Peadiatrics	3	3	3	9.0 (2.1)
Total		**140**	**144**	**155**	**439 (100.0)**
COOUTH **n = 200**	GOPD	123.0	136.0	143.0	402.0 (98.0)
	Rheumatology	0.0	0.0	0	0.0 (0.0)
	M.O.P	0.0	0.0	0	0.0 (0.0)
	S.O.P	1.0	1.0	1.0	3.0 (0.7)
	Gynaecology	1.0	1.0	1.0	3.0 (0.7)
	ANC	0.0	0.0	0	0.0 (0.0)
	Cardio	0.0	0.0	0	0.0 (0.0)
	ENT	0.0	0.0	0	0.0 (0.0)
	MHC	0.0	0.0	0	0.0 (0.0)
	Virology	0.0	0.0	0	0.0 (0.0)
	Dermatology	0.0	0.0	0	0.0 (0.0)
	FMW	0.0	0.0	0	0.0 (0.0)
	Dental	0.0	0.0	0	0.0 (0.0)
	Renal	0.0	0.0	0	0.0 (0.0)
	HOPC	0.0	0.0	0	0.0 (0.0)
	Neurology	0.0	0.0	0	0.0 (0.0)
	Endocrinology	0.0	1.0	0	1.0 (0.2)
	Nephrology	0.0	0.0	0	0.0 (0.0)
	Haematology	0.0	0.0	0	0.0 (0.0)
	Peadiatrics	1.0	0.0	1.0	2.0 (0.5)
Total		**126.0**	**138.0**	**146.0**	**410.0 (100.0)**

Table 3: Prevalence of generic drugs among various classes of drugs prescribed at NAUTH.

	NAUTH				COOUTH			
Category	**D 1**	**D 2**	**D 3**	**Total (n, %)**	**D 1**	**D 2**	**D 3**	**Total (n, %)**
Anti-ulcer	4	3	11	18.0 (4.1)	12.0	10.0	10.0	32.0 (7.8)
Antibiotics	29	24	21	74.0 (16.9)	34.0	35.0	29.0	98.0 (23.9)
Anti-diabetics	8	4	1	13.0 (3.0)	2.0	1.0	0.0	3.0 (0.7)
Anti-hypertensive	28	19	19	66.0 (15.0)	14.0	22.0	8.0	44.0 (10.7)
Vitamins/supplements	9	18	25	52.0 (11.8)	0.0	10.0	17.0	27.0 (6.6)
Anti-inflammatory/analgesics	10	16	33	59.0 (13.4)	35.0	39.0	54.0	128.0 (31.2)
CNS drugs	15	18	4	37.0 (8.4)	2.0	2.0	5.0	9.0 (2.2)
Anti-asthmatics	4	0	1	5.0 (1.1)	2.0	4.0	5.0	11.0 (2.7)
Anti-malaria	0	2	1	3.0 (0.7)	5.0	1.0	2.0	8.0 (2.0)
Anti-emetics	3	5	1	9.0 (2.1)	0.0	0.0	0.0	0.0 (0.0)
Anti-lipidemics	0	1	5	6.0 (1.4)	1.0	2.0	2.0	5.0 (1.2)
Anti-coagulants	1	1	0	2.0 (0.5)	1.0	1.0	0.0	2.0 (0.5)
CVS drugs	3	8	14	25 (5.7)	0.0	1.0	0.0	1.0 (0.2)
Anti-haemorrhagics	1	0	0	1.0 (0.2)	0.0	0.0	0.0	0.0 (0.0)
Anti-sapasmodics	0	0	0	0.0 (0.0)	0.0	2.0	3.0	5.0 (1.2)
Anti-tusives	1	4	4	9.0 (2.1)	11.0	3.0	2.0	16.0 (3.9)
Anthelminthic	0	0	1	1.0 (0.1)	0.0	0.0	0.0	0.0 (0.0)
Diuretics	11	16	7	34.0 (7.7)	2.0	4.0	8.0	14.0 (3.4)
Opioids	1	0	2	3.0 (0.7)	0.0	0.0	0.0	0.0 (0.0)
Chemotherapeutics	2	0	0	2.0 (0.5)	0.0	0.0	0.0	0.0 (0.0)
Anti-histamine	2	0	1	3.0 (0.7)	5.0	0.0	0.0	5.0 (1.2)
Anti-viral	1	0	1	2.0 (0.5)	0.0	0.0	0.0	0.0 (0.0)
Vaccine	0	0	1	1.0 (0.2)	0.0	0.0	0.0	0.0(0.0)
Others	**7**	**5**	**2**	14.0 (3.2)	**0.0**	**1.0**	**1.0**	2.0 (0.5)
	140	**144**	**155**	439.0 (100.0)	**126.0**	**138.0**	**146.0**	410.0 (100.0)

D: Drug

Table 4: Dosage frequency of generic drugs prescribed at NAUTH and COOUTH

Hospital		Drug 1	Drug 2	Drug 3	Total
NAUTH n = 200	**Once**	59	68	76	203.0 (46.2)
	Twice	64	53	46	163.0 (37.1)
	Thrice	16	23	33	72.0 (16.4)
	Quad	0	0	0	0.0 (0.0)
	Nil	1	0	0	1.0 (0.2)
Total		**140**	**144**	**155**	**439 (100.0)**
COOUTH n =200	**Once**	58.0	49.0	50.0	157.0 (38.3)
	Twice	42.0	48.0	48.0	138.0 (33.7)
	Thrice	26.0	41.0	48.0	115.0 (28.0)
	Quad	0	0.0	0.0	0.0 (0.0)
	Nil	0	0	0	0.0 (0.0)
Total		**126.0**	**138.0**	**146.0**	**410.0 (100.0)**

Table 5: Dosage forms of generic drugs prescribed at NAUTH and COOUTH

		Number of drugs prescribed			n (%)
Hospital		**Drug 1**	**Drug 2**	**Drug 3**	**Total**
NAUTH n = 200	**Tablet**	135	139	147	421.0 (95.9)
	Capsule	2	3	4	9.0 (2.1)
	Injection	1	1	3	5.0 (1.1)
	Syrup	1	1	1	3.0 (0.7)
	Topical	1	0	0	1.0 (0.2)
	Suspension	0	0	0	0.0 (0.0)
Total		**140**	**144**	**155**	**439 (100.0)**
COOUTH n =200	**Tablet**	107.0	113.0	117.0	337.0 (82.2)
	Capsule	6.0	7.0	14.0	27.0 (6.6)
	Injection	2.0	5.0	5.0	12.0 (2.9)
	Syrup	11.0	13.0	9.0	33.0 (8.0)
	Topical	0.0	0.0	1.0	1.0 (0.2)
	Suspension	0.0	0.0	0.0	0.0 (0.0)
Total		126.0	138.0	146.0	**410.0 (100.0)**

Table 6: Dosage of generic drugs prescribed at NAUTH and COOUTH

Hospital	Category	Drug 1	Drug 2	Drug 3	Total
NAUTH n = 200	0 – 10 mg	41	39	36	116.0 (26.4)
	11 -100 mg	36	69	58	163 (37.1)
	101 – 500 mg	48	31	35	114 (26.0)
	501 – 1000 mg	12	3	17	32 (7.3)
	Above 1000 mg	1	0	1	2 (0.5)
	0 – 10 ml	1	0	2	3 (0.7)
	11 -100 ml	0	0	0	0 (0.0
	101 – 500 ml	0	0	0	0 (0.0)
	501 – 1000 ml	0	0	0	0.0 (0.0
	Above 1000 ml	0	0	0	0.0 (0.0
	Nil	1	2	6	9 (2.1)
Total		**140**	**144**	**155**	**439 (100.0)**
COOUTH n =200	0 – 10 mg	36.0	31.0	16.0	83.0 (20.2)
	11 -100 mg	44.0	52.0	75.0	171.0 (41.7)
	101 – 500 mg	26.0	32.0	26.0	84.0 (20.5)
	501 – 1000 mg	9.0	10.0	19.0	1.0 (0.2)
	Above 1000 mg	0	0.0	1.0	1.0 (0.2)
	0 – 10 ml	9.0	10.0	7.0	26.0 (6.3)
	11 -100 ml	2.0	3.0	1.0	6.0 (1.5)
	101 – 500 ml	0	0	0	0.0 (0.0)
	501 – 1000 ml	0	0	0	0.0 (0.0)
	Above 1000 ml	0	0	0	0.0 (0.0)
	Nil	0	0	0	0.0 (0.0)
Total		**126.0**	**138.0**	**146.0**	**410.0 (100.0)**

Table 7: Duration of generic drugs prescribed at NAUTH and COOUTH

Hospital	Category	Drug 1	Drug 2	Drug 3	Total (n, %)
NAUTH n = 200	Once	3	2	3	8.0 (1.8)
	3 days	3	5	12	20.0 (4.6)
	4 days	1	2	7	10.0 (2.3)
	5 days	11	14	18	43.0 (9.8)
	6 days	1	2		3.0 (0.7)
	7 days	35	33	30	98.0 (22.3)
	10 days	3	5	4	12.0 (2.7)
	14 days	39	41	42	122.0 (27.8)
	21 days	8	3	6	17.0 (3.9)
	30 days above	36	36	31	103.0 (23.5)
	Nil	0	0	2	2.0 (0.5)
Total		**140**	**144**	**155**	**439 (100.0)**
COOUTH n =200	Once	3.0	1.0	3.0	7.0 (1.7)
	3 days	19.0	14.0	14.0	47.0 (11.5)
	4 days	5.0	4.0	7.0	16.0 (3.9)
	5 days	13.0	25.0	27.0	65.0 (15.9)
	6 days	3.0	1.0	1.0	5.0 (1.2)
	7 days	51.0	64.0	68.0	183.0 (44.7)
	10 days	8.0	4.0	5.0	17.0 (4.1)
	14 days	21.0	23.0	17.0	61.0 (14.9)
	21 days	1.0	0.0	2.0	3.0 (0.7)
	30 days and above	2.0	2.0	2.0	6.0 (1.5)
	Nil	0.0	0.0	0.0	0.0 (0.0)
Total		**126.0**	**138.0**	**146.0**	**410.0 (100.0)**

Table 8: Total number of generic and brand drugs prescribed at NAUTH and COOUTH

Hospital	Category	Drug 1 n (%)	Drug 2 n (%)	Drug 3 n (%)	Total, n (%)
NAUTH	**Generic**	140 (70.0)	144 (72.0)	155 (77.5)	439 (73.2)
	Brand	60 (30.0)	56 (28.0)	45 (22.5)	161 (26.8)
Total		200 (100.0)	200 (100.0)	200 (100.0)	600 (100.0)
COOUTH N =200	**Generic**	126.0 (63.0)	138.0 (69.0)	146.0 (73.0)	410.0 (68.3)
	Brand	74.0 (37.0)	62.0 (31.0)	54.0 (27.0)	190.0 (31.7)
Total		200 (100.0)	200 (100.0)	200 (100.0)	**600.0 (100.0)**

There was no statistically significant association ($\chi 2 = 0.601$, $p = 0.438$) between the distribution of brand and generic drugs at NAUTH and COOUTH.

DISCUSSION

Relationship between generic medicine prescription and patient demographic;

From the results obtained from the patient demographic data of NAUTH, the level of significance is equal to 0.053 which was an indication of no significant difference in the drug prescription to the ‘ female‘ when compared to the pattern of drug prescription which was distributed among the male. This is to say that patient demographic does not affect the rate or the pattern of prescription among the male or the female patient. However, a study in Sweden indicated that women tend to use more prescription drugs than males [11,12]. Other studies suggested that women were prescribed more over the counter drugs than men [13]. Age and gender have been shown by other studies to affect prescription practices [14-18]. The level of significance obtained from the patient’s age was 0.603 which means that there was no variation in the number of generic drugs prescribed to different age groups. This means that age doesn’t affect the pattern of prescription among the patients and that all patients irrespective of age can be given generic medicine in the same rate or frequency. Results obtained from COOUTH shows that the level of significance for the age distribution of the demographic data was 0.003 which showed that there was variation in the pattern of drug prescription among the different age groups. The bigger percentage of generic prescription was seen amongst the category of ‘adult’. This group belongs to the category of people who do not disclose their age to the health care professionals or in the hospital. This shows that a greater percentage of people who visited the hospital do not disclose their age.

Prevalence of generic medicine prescription in hospitals

From the results obtained in table 8; the total number of generic drugs which were prescribed in Nnamdi Azikiwe University hospital is 439 while the total number of branded drugs prescribed is 161. This is in contrast with the W.H.O standard and guidelines for the prescription of drugs which states that all drugs must be prescribed using generic drug prescription. The World Health Organization collaborates with the International non-proprietary name (INN) experts and national nomenclature committees to select a single name of worldwide acceptability for each active pharmaceutical substance or ingredients that is to be marketed. To avoid confusion which could risk the safety of the patient, trade-marks should neither be derived from INNs nor contain common stems used in INNs [19].

Generic medicine substitution practice in tertiary institutions

The act and rate of generic medicine substitution can be seen in Table 2 which analyzed the distribution of generic medicine among varies clinics in the hospital. At NAUTH, the highest number of generic prescription is seen at the General out-patient department GOPD, which has a total number of 111.0 generic drugs prescribed and 55.3% this can be said to be so as a result of the increased population at the GOPD department. A study conducted shows that the hospitals due to economic reasons are seeking to expand out-patient services and decrease their patient's length of stay in the hospital [20]. In another study conducted, overcrowding in General out-patient clinic as the primary point of contact with patient has some negative effect both on the patient's health and on the overcrowding in the other hospital wards [21]. The statistical analysis of the result obtained from NAUTH, it shows that out of 600 drugs prescribed, 439 of the drugs were in generic while the rest were in branded form, results from COOUTH also shows that a total of 410 drugs were prescribed in the generic form while the rest were in branded form. This shows that generic medicine substitution exists in tertiary institutions but at a minimal level. This can be tailored to some factors like the prescription of combination drugs, activities of sales or medical representatives [22]. The same scenario played out in COOUTH where more generic drugs were prescribed at their GOPD unit. Medicine promotion promotes drug prescribing and the rational use of drugs [23,24]. Incentives are used to maintain loyalty in brand promotion [25, 26]. Other studies in Pakistan and Peru, indicated regular visits for a reminder by Medical Representatives as other contributing factors [27, 28] Overall, generic prescribing saves cost in healthcare delivery [29-33]. The pattern of generic medicine in the two hospitals was greater in terms of generic prescribing as shown in the results above. The total number of drugs prescribed in NAUTH was 73%, an indie brand prescription. Results from COOUTH showed a greater percentage of drugs prescribed in their generic form more than branded drugs prescribed 68%. Reasons for the increased use of generic is cost-effectiveness of generic drugs, reduction in potential confusion and medication errors.

CONCLUSION

The prevalence of generic medicine prescription in hospitals was determined by analysing the various classes of drugs used in the hospitals, the patient's demographic data, various clinics, dosage frequency, drugs forms, duration of drug therapy and the total number of drugs prescribed in the hospital. The results obtained afterward showed the prevalence of generic

medicine prescription because of the greater number and percentage of drugs that were prescribed in their generic form or their international non-proprietary names at the hospitals However the act of prescribing drugs in their branded form still exists among physicians in the hospitals because from the result 73.2% of generic drugs from NAUTH and 68.3% of generic drugs against 100% were gotten and this does comply with the W.H.O standard of prescription of drugs. Overall, generic substitution was prevalent in the two hospitals.

Limitations; There may be undisclosed reasons which affected the data at the level of prescription writing. The occurrences were not observed.

Interpretation: Generic prescription still fell below acceptable standards in the hospitals surveyed and was most prevalent with antibiotics and analgesics. Tablets were the most commonly affected dosage form in both hospitals.

Generalisability: Generalization may not be reliable. However, they can be helpful in making varying levels of deductions and planning for interventions. There may be need for supplementation with other methods.

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REFERENCES

1. Zetterqvist AV, Merlo J, Mulinari S. Complaints, complainants, and regarding drug promotion in the United Kingdom and Sweden 2004–2012: A quantitative and qualitative study of pharmaceutical industry self-regulation. PLoS Med. 2015; 12(2):e1001785
2. Reghu R, Vijayan M, Roshni PR. Procurement and distribution of medicines in Government hospitals of Tamil Nadu - An overview. International Journal of Research in Pharm. Sci. 2013 ;(4):96-100.
3. Shrank WH, Choudhry NK, Fischer MA et al. The epidemiology of prescriptions abandoned at the pharmacy. Ann Intern Med.2010; 153(10):633-640[PubMed].
4. Gellad WF, Choudhry NK, Friedberg MW, Brook-hart MA, Haas JS, Shrank WH. Variation in drug prices at pharmacies: are prices higher in poorer areas? Health Serv Res.2009:44(2pt1):606-617.
5. Piette JD, Heisler M, Horne R, Caleb Alexander GA. Conceptually based approach to understanding chronically ill patient's responses to medication cost pressures. Soc Sci Med 2006; 62(4):846-857.
6. Iosifescu A, Halm E A, McGinn T, Scu Al, Ferderman AD. Beliefs about generic drugs among elderly adults in hospitals based primary care practices, Patient Educ couns.2008;73(2):377-383.
7. Felland LE, Taylor EF, Gerland AM. The community safety net and prescription drug acess for low-income uninsured people. Issue Brief cent stud Health. Syt change; 2006; 105; 1-4.
8. Revelt D, Train K. Mixed logit with repeated choices, household's choice of appliances efficiency level, review of Economics and statistics. (1997); 80(4):
9. Lambert BL *et al* Similiarity as a risk factor in drug name confusion errors'' medical care 1999 37(12) ; 1214-1225
10. WHO, Sample size- How to investigate drug use in health facilities; EDM No. 007, 1993; 92. Accessed on

12 June 2019. Available online at: http//www.apps.who.int>4.4.html.
11. Thorell K, Skoog J, Zielinski A et al. Licit prescription drug use in a Swedish population according to age, gender and socioeconomic status after adjusting for level of multi-morbidity. BMC Public Health 2012; 12:575 10.1186/1471-2458-12-575.
12. Skoog J, Midlöv P, Borgquist L et al. Can gender difference in prescription drug use be explained by gender-related morbidity?: a study on a Swedish population during 2006. BMC Public Health 2014; 14:329 10.1186/1471-2458-14-329.
13. Johnson RE, Pope CR. Health status and social factors in non-prescribed drug use. Med Care 1983; 21:225–33. 10.1097/00005650-198302000-00009.
14. Green MA, Little E, Cooper R, Relton C, Strong M. Investigation of social, demographic and health variations in the usage of prescribed and over-the-counter medicines within a large cohort. BMJ Open. 2016 Sep 28; 6(9): e012038 (South Yorkshire, UK)[BMJ Open. 2016]
15. Chen YF, Dewey ME, Avery AJ. Self-reported medication use for older people in England and Wales. J Clin Pharm Ther 2001; 26:129–40. 10.1046/j.1365-2710.2001.00333.x.
16. Daban F, Pasarín MI, Rodríguez-Sanz M et al. Social determinants of prescribed and non-prescribed medicine use. Int J Equity Health 2010; 9:12 10.1186/1475-9276-9-12.
17. Pappa E, Kontodimopoulos N, Papadopoulos AA et al. Prescribed-drug utilization and polypharmacy in a general population in Greece: association with sociodemographic, health needs, health-services utilization, and lifestyle factors. Eur J Clin Pharmacol 2011; 67:185–92. 1007/s00228-010-0940-0.
18. Mayer S, Österle A. Socioeconomic determinants of prescribed and non-prescribed medicine consumption in Austria. Eur J Public Health 2015; 25:597–603. 10.1093/eurpub/cku179
19. W.H.O (1988) Ethical criteria for medicinal drug promotion, Geneva W,H,O
20. Cayirli T, Veral L, Outpatient scheduling in healthcare; A review of literature, prod, per manag 2003; 12; 519-49.
21. Milbrett.P Halm M characteristics and predictors of frequent utilization of emergency services .J. Emerg. Nurs. 2009; 35;191-8
22. Birhanu DW, Mehari GG, Tigist AB, Meles TG, Yared BB, Desalegn MT, Terefe TK. Influence of Medical Representatives on Prescribing Practices in Mekelle, Northern Ethiopia PLoS One. 2016; 11(6): e0156795.
23. WHO (1988). Ethical criteria for medicinal drug promotion. Geneva: WHO.
24. Al-Areefi AM, Hassali AM, Mohamed Izham M, Mohamed Ibrahim M. Physicians' perceptions of medical representative visits in Yemen: a qualitative study. BMC Health Services. 2013; 13 (1):331.
25. Berman FA, Ahari S. Following the Script: How Drug Reps Make Friends and Influence Doctors. PLoS Med. 2007; 4(4): e150.
26. Sondergaard J, Vach K, Kragstrup J, Andersen M. Impact of pharmaceutical representative visits on GPs' drug preferences. Fam Pract. 2009; 26: 204–209. 10.1093/fampra/cmp010
27. Siddiqi A, Hussain S, Parveen G, Malik F, Yasin F, Sultan T, et al. (2011) Relevant influence of promotional tools by pharmaceutical industry on prescribing behaviors of doctors: A cross-sectional survey in Pakistan. African Journal of Pharmacy and Pharmacology 5: 1623–1632.
28. De Ferrari A, Gentille C, Davalos L, Huayanay L, Malaga G (2014) Attitudes and Relationship between Physicians and the Pharmaceutical Industry in a Public General Hospital in Lima, Peru. PLoS ONE 9(6): e100114 10.1371/journal.pone.0100114.
29. Karim SS, Pillai G, Ziqubu-Page TT, Cassimjee MH, Morar MS. Potential savings from generic prescribing and generic substitution in South Africa. Health Policy Plan. 1996 Jun; 11(2):198-205.
30. Boyce DG, Bartlett G. Generic substitution and cost savings in the Orange Free State in 1985. South African Pharmaceutical Journal 1989; 56: 142-6.
31. Zellmer WA. Therapeutic interchange (editorial). American Journal of Hospital Pharmacy 1988; 45(3): 535.
32. Horvitz RA, Morgan JP, Fleckenstein L. Savings from generic prescriptions. Annals of Internal Medicine 1975; 82(5): 601-7.
33. Scott DR, Reekie WD. Savings from generic drug substitution in the RSA - is its cost justified? South African Medical Journal 1987; 71: 314-6.