Pattern Of Adverse Drug Reaction Observed By Resident Doctors In Tertiary Health Centers In Nigeria

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ABSTRACT: This cross sectional survey was designed to ascertain the pattern of adverse drug reaction observed by resident doctors in the course of their training in different specialty of Medicine and Surgery. The survey was carried out via structured questionnaires administered to 350 respondents between June and November 2007 in 4 tertiary health centers in Nigeria (Lagos University Teaching Hospital, Lagos State University Teaching Hospital, University of Benin Teaching Hospital and Irrua Specialist Teaching Hospital respectively). Result showed that 305 (92.4%) of the respondent observed adverse drug reaction in the course of their training. 164 (49.7%) and 82 (24.8%) of the cases were severe and mild adverse reactions respectively. The pattern of systemic involvement in adverse drug reaction revealed that dermatological involvement were more pronounced (27.8%) while the least involved system was the musculoskeletal system (5.9%). Conclusively, there is need to pay greater attention to adverse drug reaction monitoring as this will enhance better case management of patients.
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INTRODUCTION

In an attempt to reduce drug-related morbidity and mortality, researchers have begun to study clinicians' ability to detect and treat ADRs (adverse drug reactions). Large-scale studies have shown that clinicians taking care of in-patients detect only 5%–15% of drug-related events in hospitals without systematic surveillance systems (Classen et al., 1991; Bates et al., 1995). In contrast, reports from intensive care settings indicate that the presence of a pharmacist on rounds decreases the rate of preventable ADRs by helping to intercept errors as well as unrecognized events (Leape, 1991). These studies have served as the basis for justifying the cost of a pharmacist present on intensive care unit and medical ward rounds in many institutions. The few published studies that have documented the significance of ADRs in the emergency department setting (Raschetti et al., 1999; Tafreshi et al., 1999; Hohl et al., 2001; Malhotra et al., 2001) have not assessed the performance of emergency physicians as well as resident doctors in recognizing such events. This is important because most health institutions in the developing world are not equipped with systematic ADRs surveillance systems and do not have the funding available for a pharmacist to be on call 24 hours a day in 7 days a week for the purpose of screening high-risk patients. Given the frequency of ADRs in the Hospital setting, it is critical to understand performance of resident doctors in detecting ADRs in tertiary health institutions particularly in the developing world in order to improve the quality of care and procure screening tools to help resident doctors in this difficult task.

MATERIALS AND METHODS

Study Area: The study involved four tertiary health institutions in urban centers of Edo and Lagos States of Nigeria (two from each State) involved in the residency training programme. Edo State with an estimated population of 5.4 million (NPC, 2007) is located in the south-south geopolitical zone of Nigeria. It has four tertiary health institution involved in residency training. Lagos State with an estimated population of 9.1 million according to the 2007 census figure released by the National Population Commission (NPC), has four tertiary health centers involved in residency training.

Study Population: The study population consists of medical doctors undergoing residency training in different fields of medicine and surgery.

Study Design: This is a cross-sectional study evaluating the pattern of adverse drug reactions observed by resident doctors in course of their training and practice.

Sample Size Estimation: The prevalence of adverse drug reactions in developing countries is between 10-30%. Adverse drug reaction report from the south-south, south-west and north-central geopolitical zone is 39%, 22% and 22% respectively (Isah, 2007). Hence sample size was determined using the formulae $N = Z^2Pq/d^2$ where Z = confidence interval 95% = 1.96, P = prevalence = 30% = 0.3, q =

1-p = 1-0.3, d = absolute sampling error of 5% = 0.05. Statistically calculated minimum sample size is approximately 350.

Sampling Technique: From four tertiary health centers involved in residency training in each state, two centers were selected by random sampling technique using balloting by non-replacement method. The centers are; University of Benin Teaching Hospital (UBTH) and Irrua Specialist Teaching Hospital (ISTH) in Edo State; Lagos University Teaching Hospital (LUTH) and Lagos State University Teaching Hospital (LASUTH) in Lagos State respectively.

Instruments/Method of Data Collection: 350 open and fixed alternative structured questionnaires were used in this study. The questionnaires were serially numbered and distributed to the study population between June and November, 2007.

Data Analysis: Data generated were manually reviewed for accuracy and then fed into a central data base. Data was analyzed using statistical soft ware package SPSS 16. Proportions, tables and bar charts were used to present analyzed data.

RESULTS

The mean age of the respondents who participated in the study was 32.59±3.86 years. 202 (61.2%) and 128 (38.8%) of the respondents were males and females respectively Results shows that 305 (92.4%) of the respondent observed adverse drug reaction in the course of their training and practice. 164 (49.7%) of the observed cases were severe, 72 (21.8%) of the cases were moderate while 82 (24.8%) were mild adverse reactions (Table 1). Antimalarials (27.4%) and antibiotics (23.1%) were more commonly implicated in the observed adverse drug reaction by resident doctors. Penicillins 30 (6.2%), sulfadoxine-pyrimethamine combination (Fansidar) 64 (13.3%) and septrim 77 (16%) appear to be the most commonly implicated drug in adverse drug reaction observed by the resident doctors. Dermatological manifestation (27.8%) of adverse drug reaction appears to be the most frequently observed ADRs. This is closely followed by gastrointestinal manifestations (14.5%) and cardiovascular manifestations respectively (14.2%) as shown in (Figure 1).

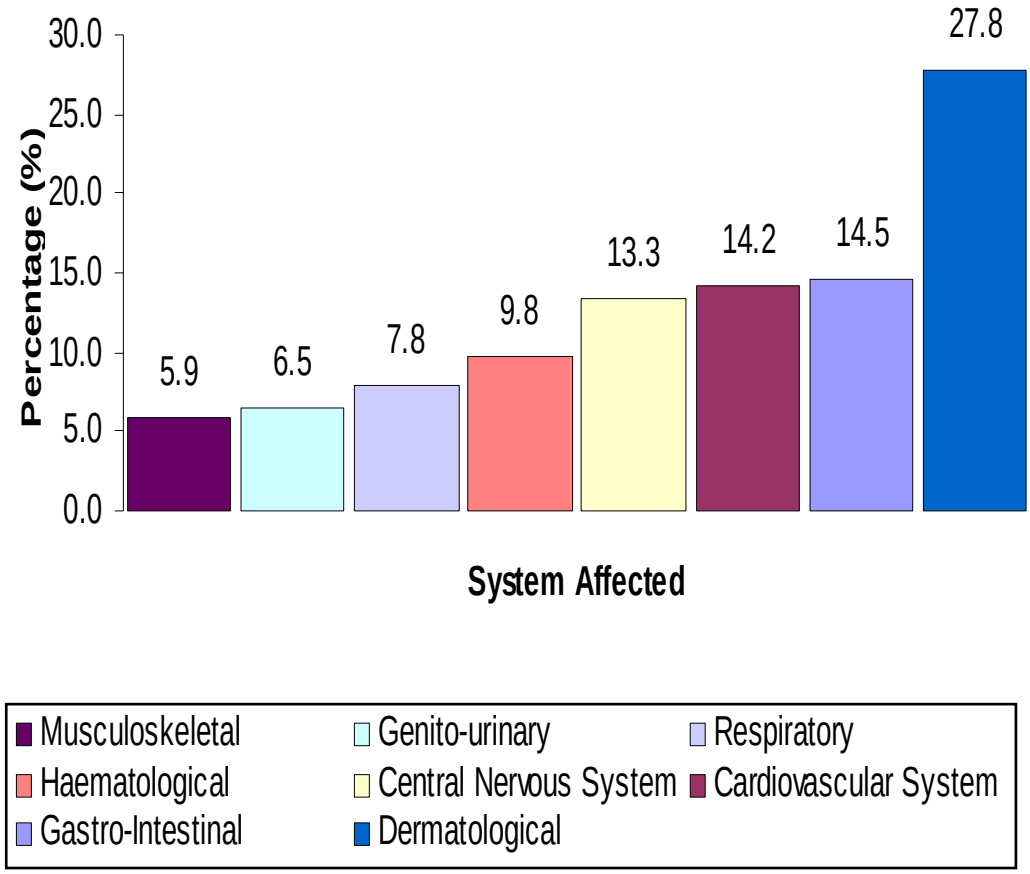

Figure 1: Frequency of systemic involvement in observed adverse drug reactions

Table 1: Severity of Adverse Drug Reactions Observed by Respondents'

Severity of ADR	Frequency	Percentage (%)
Mild	82	24.8
Moderate	72	21.8
Severe	164	49.7
No Response	12	3.6
Total	330	100

Table 2: Summary of Drugs Implicated in Observed Adverse Reaction

Drugs	Frequency	Percentages (%)
Antibiotics	111	23.1
Analgesics	5	1.1
Anticancers	17	3.5
Anticonvulsants	8	1.7
Antihypertensives	4	0.8
Antimalarials	132	27.4
Others	204	42.4
Total	481	100

DISCUSSION

Medical science has progressed a lot in recent years, but this development has led to a new group of diseases called the iatrogenic diseases. While most patients derive far more benefit than harm, a proportion of them experience adverse drug reactions (ADRs) from the use of the medicines at recommended doses and frequencies. In this study, 92.4% of resident doctors in Nigeria have observed adverse drug reactions in patients during the course of their training and practice. Adverse reaction observed ranged from mild to severe reaction which accounted for 49.7% of observed cases. The prevalence of adverse drug reaction in Nigeria ranges from 22-39% in the different geopolitical zones of the country (Isah, 2007). However, data on the pattern of presentation is quite scanty. In our study the most common pattern of presentation observed by resident doctors is dermatological manifestation accounting for 27.8% of observed cases. This is in consonance with the findings of Mbuagbaw et al., (2008) in a retrospective Cameroon study which revealed that mucocutaneous eruptions accounted for 60.7% of adverse drug reactions. The drugs most commonly implicated in this study was the sulphonamide groups of drugs which also agrees with the findings of our study which showed that sulfadoxine-pyrimethamine combination and septrim (sulfamethoxazole-trimethoprim) accounted for 13.3% and 16% of adverse drug reactions. The incidence of mucocutaneous drug reactions varies form 6-15 % (De Swarte, 1984) and has been reported to be as high as 30 % (Jick, 1984). Because the skin has limited number of morphological reactions to drugs, it may be sometimes difficult to determine the offending drug. Our findings on dermatological manifestation of ADRs observed by resident doctors are similar to those of Nnoruka et al., (2006) in Nigeria who reported cutaneous drug eruptions as the most common ADRs. Cardiovascular diseases (CVDs) remain a leading cause of morbidity and mortality world wide. Over 30% of all the deaths every year are attributed to CVDs (Bonow et al., 2002). Cardiovascular medications have been cited as one of the most common classes of drugs associated with medication errors and adverse drug reactions, which need to be monitored from time to time (LaPointe and Jollis, 2003). The adverse drug event (ADE) prevention study group reported that odds ratio (OR) of severe ADEs with cardiovascular medication was 2.4 times that of other medications (Lesar et al., 1997). In our study, cardiovascular manifestation (14.2%) was the 3rd most common presentation of ADRs as observed by resident doctors in Nigeria. This may have resulted from the use of cardiovascular drugs or cytotoxic drugs. According to our findings antimalarials (27.4%) and antibiotics (23.1%) were commonly implicated in ADRs as reported by resident doctors who have observed and managed cases of ADRs in the course of their training and practice in Nigeria.

CONCLUSION

Conclusively, adverse drug reaction is a common occurrence in medical practice in Nigeria. Dermatological manifestations in form of skin eruptions are the most frequently observed presentation by resident doctors. Hence, there is need for constant training and retraining of medical practitioners in other to enhance efficient drug surveillance and proper management of ADRs.

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