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ORIGINAL RESEARCH ARTICLE

The prevalence of adverse drug reactions (ADR) in- patients at a tertiary care hospital in Nepal – a pilot study

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ABSTRACT

Background: Due to the awareness and frequent monitoring of adverse drug reactions in developed countries there has been decline in the ADR cases and also the major burdon on health care has decreased. In the developing countries like Nepal there is very little awareness among nursing staff, literarte and beurocrats about the reporting and prevention of ADRs, which has led to increase in number of hospitalization of patients in the developing countries. The aim of this study is to increase awareness and decrease the incidence and prevention of ADRs.

Materials and methodology: Data were collected retrospectively using a customized data collection sheet (ADR sample enclosed) by trained data collectors from the case sheets of in-patient from medical record section.

Result: Most commonly adverse drug reaction occurred with Antimicrobial drugs 15 (28.84%) and Non-steroidal anti-inflammatory drugs 11 (21.15%) respectively.

Conclusion: Mutual understanding and dedication of physician, nursing staff towards reporting system of adverse drug reactions would help in detecting the occurrence of ADR and prevention of economical burden due to ADR in patients.

Key words: Adverse drug reactions, ADR, Antimicrobial drugs, Non-steroidal anti-inflammatory drugs.

INTRODUCTION

Adverse drug reactions (ADR) are common problem and, mortality and morbidity due to drugs is common in hospitalized patients in developed countries [1,2] although the rate is controversial and varies between 0.7% and 35% [1,2]. Meta-analysis studies reported frequency of serious ADRs was 6.7% and fatal ADRs were 0.32% of hospitalized patients [3]. Approximately 2-6% of all hospital admissions per year were caused by ADRs [4]. ADRs could prolong hospital stays and substantially increase the health care expenditure [5]. Adverse drug reactions were a major burden on health care and 5-10% of hospital costs are related to ADRs [6].

It is universally accepted that no drug is absolutely free from adverse effect. Developed country like United States where adverse events in hospitalized patients are at least the eight leading cause of death [7]. The Harvard Medical practice study found that adverse events were more common among elderly [1] and also Leavy reported higher incidence of ADR in children [8]. There have been few publications of ADR among pediatrics patients [9] as well as few among medical [10] and surgical in patients [11].

In developing countries, the magnitude of ADR is felt less and the importance of their monitoring is less understood. Nepal is a developing country having different regions hilly to terai, different socio-cultural, genetic variation and the poor socioeconomic status.

There have been no clinical trials done on the Nepalese population prior to approval of drug use in Nepal. All these factors may predispose to the occurrence of ADRs and there may be high incidence of ADRs in Nepal but there is no proper reporting system. There is also no reporting system at B P Koirala Institute of Health Sciences.

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Hence, our aim of the present study was to find out ADRs in patients retrospectively in medical record at B.P.Koirala Institute of Health Sciences', that data would help in improvement of the healthcare system and also control morbidity to patients, and data would also help for the facilitation of ADR Monitoring centre at BPKIHS in collaboration with various clinical departments.

AIMS AND OBJECTIVES

To generate base line data of incidence of ADR in patient at BPKIHS.

MATERIALS AND METHODOLOGY

Data were collected retrospectively using a customized data collection sheet (ADR sample enclosed) by trained data collectors from the case sheets of in-patient from medical record section after briefing about principles of ADR as well as methods of data collection and detail about the protocol, questionnaire and how to collect data, to data collectors by Principle investigator. The Chief investigator had received the filled data collection sheets on the same day. The principle investigators had checked the completeness of the data sheet, validity and guide the data collectors appropriately if there was any incompleteness. At each specified period i.e. base line data were recorded. Statistical analysis was done by using computer software SPSS 10.

No. ……

B.P. Koirala Institute of Health Sciences, Dharan, Nepal
ADVERSE DRUG REACTION MONITORING FORM
DEPARTMENT OF PHARMACOLOGY

Date:…… Time: ……

Ward:……. Bed no. ……..

Hospital Number: OP……. IP……..

Name of Patient: ……..

Sex: M / F Age:…….

Weight (kg):…….

Address: …….

Date of Admission:…….. Date of Discharge:……..

Diagnosis / Indication: ……..

Suspected drug (brand name and batch number if known) :……..

……..

Route: ……. Daily dose: …….

Date started: ……. Date Stopped: ……..

Suspected Reactions: ……

Date of onset: …….

Describe ADR: ……..

Treatment given:

Drugs	Dose	Drug Administration	
		Began	Terminated

Outcome of ADR Management: …….

- Recovered without sequelae
- Recovered with sequelae
- Not yet recovered
- Died due to adverse reaction
- Unknown

RESULTS

A Total 58256 in-patient cases were hospitalized between July 2006 to July 2008 in which Fifty-two (0.089%) in-patients have had adverse drug reaction. Highest number 35 (67.30%) of patient were admitted in dermatology department (**Table 1**). Forty-two subjects (88.77%) with ADR were below 60 years of age when compared with elderly 10 (19.23%) patients shown in (**Table 2**) and 3. There was no association found between sex and incidence of adverse drug reaction. ADR were found equal in number in male 26 (50%) and female (50%) patients.

Table 1: Incidence of ADR in different discipline

Discipline	No. of patient
Medicine	12 (23.07%)
Surgery	3 (5.76%)
Dermatology	35 (67.30%)
Ophthalmology	1 (1.92%)
Paediatrics	1 (1.92%)

Table 2: Demographic data of ADR in patients

Age	Male	Female
≤ 20 years **13 (25.00%)**	**11 (21.15%)**	**2 (3.84%)**
20 – 40 years **23 (44.23%)**	**13 (25.00%)**	**10 (19.23%)**
41- 60 years **6 (11.53%)**	**1 (1.92%)**	**5 (9.61%)**
61-80 years **7(13.46%)**	**1 (1.92%)**	**6 (11.53%)**
≥ 80 years **3(5.76%)**	----	**3 (5.76%)**

Table-3: Drug with adverse reaction by age group

Drugs which caused adverse drug reactions	Young	Elderly
Clonazepam	2 (3.84%)	-
Ciprofloxacin	1 (1.92%)	-
Triphala	-	1 (1.92%)
Vigoran	1 (1.92%)	-
Kitoprofen	1 (1.92%)	-
Phenytoin	3 (5.76%)	-
Ampicillin	1 (1.92%)	-
Diclofenac	4 (7.69%)	1 (1.92%)
Chlorpromazine	1 (1.92%)	-
Metochlorpamide	-	1 (1.92%)
Sulphamethoxazole + Trimethoprim	4 (7.69%)	-
Pantoprazole	2 (3.84%)	-
Promethazine	1 (1.92%)	-
Dapsone	3 (5.76%)	-
Chloramphenicol	1 (1.92%)	-
Sulphadoxine + Pyrimethamine	2 (3.84%)	-
Fluconazole	3 (5.76%)	-
Steroid	5 (9.61%)	2 (3.84%)
Paracetamol	2 (3.84%)	3 (5.76%)
Amlodipine	-	1 (1.92%)
Nimesulide	1 (1.92%)	-
Allopurinol	-	1 (1.92%)
Morphine	1 (1.92%)	-
Amoxicillin	5 (9.61%)	-
Total	**42 (80.77%)**	**10 (19.23%)**

Most commonly adverse drug reaction occurred with Antimicrobial drugs 15 (28.84%) and Non-steroidal anti-inflammatory drugs 11 (21.15%) respectively followed by Endocrinal drugs 6 (11.53%) shown in (**Table 4**).

Table 4: Systemwise distribution of drugs causing adverse drug reaction

S. No	System of drug (agents)	No. of patient
1	Antimicrobial	15 (28.84%)
2	NSAIDs	11 (21.15%)
3	Benzodiazepine	2 (3.84%)
4	Herbal	2 (3.84%)
5	Antiepileptic	4 (7.69%)
6	Antiemetic	1 (1.92%)
7	Anti-peptic	2 (3.84%)
8	Antihistamine	1 (1.92%)
9	Endocrine	6 (11.53%)
10	Antileprotic	3 (5.76%)
11	Antimalarial	2 (3.84%)
12	Antihypertensive	1 (1.92%)
13	Anti-gout	1 (1.92%)
14	Opioid	1 (1.92%)
Total		**52**

Table 5: Types of adverse drug reactions

S. No	Name of drug	Types of reaction
1	Clonazepam	Disorientation, ataxia, Dizziness
2	Ciprofloxacin	Nausea
3	Amlodipine	Itching
4	Triphala	Vomiting
5	Vigoran	Tingling sensation
6	Ketoprofen	GI bleeding
7	Phenytoin	Erythematous macules
8	Ampicillin	Maculopapular rash
9	Diclofenac	Erythematous, rash, itching
10	Chlorpromazine	Erythematous rash
11	Metochlopramide	Dystonia
12	Sulphamethoxazole + Trimethoprim	Vomiting, rash, Steven Johnson Syndrome
13	Pantoprazole	Vomiting
14	Promethazine	Disorientation
15	Prednisolone	Cataract
16	Dapsone	Fever, malaria, Fixed drug reaction (reddish raised lesion)
17	Chloramphenicol	Steven Johnson syndrome
18	Sulphadoxine + Pyrimethamine	Steven Johnson syndrome
19	Fluconazole	Bullous fixed drug eruption
20	Steroid	Bullous pemphigoid
21	Paracetamol	Macular papular reddish
22	Nimesulide	Erythema multiforme
23	Allopurinol	Erythema multiforme
24	Morphine	Thickning of skin

Table 6: Profiles of the proportion of suspected adverse drug reaction

Adverse Drug Reaction	Total (%)
Disorientation	3 (5.76%)
Nausea	1 (1.92%)
Vomiting	5 (9.61%)
Tingling sensation	1 (1.92%)
GI bleeding	1 (1.92%)
Erythematous macules	8 (15.38%)
Maculopapular rash	10 (19.23%)
Dystonia	1 (1.92%)
Cataract	1 (1.92%)
Fever malaria fixed drug (Steven Johnson syndrome) reaction	8 (15.38%)
Multiple blackish skin lesion	2 (3.84%)
Bullous fixed drug eruption	9 (17.31%)
Itching	1 (1.92%)
Thickning of skin	1 (1.92%)

Ciprofloxacin, Ampicillin, Co-trimoxazole (Sulphamethoxazole + Trimethoprim) , Dapsone, Chloramphenicol, Amoxicillin, and Sulphadoxine + Pyrimethamine were among the antimicrobial groups to show adverse drug reaction more commonly where as Ketotifen, Diclofenac, Paracetamol and Nimesulide were from non-

steroidal anti-inflammatory groups and details of others drugs which produced adverse reaction are shown in Table-3.

Nausea, Vomiting, Maculopapular rash, Steven johnson syndrome, Bullous fixed drug eruption types of adverse reaction had occurred in antimicrobial group where as Erythematous rash, itching, Erythema multiforme, Maculopapular reddish rash were commonly seen with NSAIDs and other groups of drug shown in (**Table 5 & 6**).

DISCUSSION

The occurrence of adverse drugs may vary from place to place and climatic conditions as well as among different races of people. Majority of drugs used in Nepal are manufactured in foreign countries. The genetic makeup of Nepalese population may vary and all these factors may predispose to adverse drug reactions. I n our study the rate of Adverse Drug Reaction incidence (0.089%) at BPKIHS was very low because of under reporting and there is no regulatory authorities compared with developed country approximately 2-6% of all hospital admissions per year are caused by ADRs because of proper monitoring and reporting programme.

The types of adverse drug reaction which are probably under reported and ignored are confusional state, drowsiness, orthostatic hypotension, dehydration, electrolyte disturbances, dry mouth, constipation, upper gastrointestinal tract upsets, and urinary problems. Our findings suggested that prescriber who take care of patients have to be concerned and must be aware of the risk of adverse drug reactions. Doctors should be educated in order to reduce the risk of serious adverse drug reactions and the avoidable consequences.

This retrospective study in which the data about adverse drug reactions was obtained from medical records was not recorded properly. We hope the prospective study attempts to improve awareness and reporting of adverse drug effects may be more effective to get useful information.

CONCLUSION

Prevalence of ADR is very low because of no/improper reporting system. The magnitude of ADR is felt less and the importance of their monitoring is also less understood. Clinical Departmental collaboration with Regional ADR (Pharmacovigilance) Monitoring Centre (department of clinical pharmacology and therapeutics) should be mutual understanding and dedication of physician, nursing staff towards reporting system of adverse drug reactions would help in detecting the occurrence of ADR and prevention of economical burden due to ADR in patients.

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