Assessment of potential drug-drug interactions among the inpatients of a tertiary care centre

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Outline of the presentation

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Background

- Drug-drug interactions (DDIs) are the unwanted effects of the drug which occurs when the pharmacological action of one administered drug are modified by another drug.[1]

- DDIs can reduce the efficacy of drugs leading to treatment failure.

- They are also associated with various adverse drug reactions.

- This increases the economic burden in the healthcare system and increases the risk of mortality.

Background

- It has been estimated that every year in the USA, there are almost 74000 emergency room visits and 19500 hospitalizations due to DDIs.[2,3]
- Research conducted in Jordan showed 96% of potential DDIs.[4]
- Another study conducted in India reported a prevalence of 83.25%.[1]
- Similarly, a study conducted in a tertiary care centre of Kathmandu Valley showed 89.11% of potential DDIs.[5]

Objective

- The aim of this study is to explore the potential DDIs of the prescribed drugs in the inpatients of a tertiary care centre.

Methodology

Ethical approval

- IRC- Patan Academy of Health Sciences.

- As this study was a minimal risk study, informed consent was waived.

Study design and study area

- Cross-sectional study using a point prevalence survey

- Patan Academy of Health Sciences.

Methodology

Data Collection

- Data were collected from inpatient medical records across different wards using proforma

- For each assigned ward, data collection was carried out on the same day, beginning at 2:00 PM and completed within that ward.

- Medical records of all the patients admitted on the day of data collection and that contain more than one drug were included in the study.

Methodology

Data Collection

- Drug interactions related to food, alcohol and smoking were not considered.

- Free online DDI checkers (available at https://www.drugs.com/drug_interactions.html and https://reference.medscape.com/) were used to identify potential DDI.

- After identification of potential drug-drug interactions, they were categorized into minor, moderate, and major categories.

Methodology

- Minor refers to minimally clinically significant. Risk assessment should be done and alternative drugs may be considered.

- Moderate refers to moderately clinically significant. Combinations of drugs should be avoided and they are used only under special circumstances.

- Major drug interactions are highly clinically significant and may lead to life threatening conditions.

Methodology

Statistical analysis

- SPSS version 25 software
- Descriptive Statistics

Results

Table 1: Demographic characteristics(n=265)

Gender	Frequency	Percentage
Male	101	38.11%
Female	164	61.88%

Table 2: Age Group (n=265)

Age	Frequency	Percentage
<10	28	10.56%
11 to 20	28	10.56%
21 to 30	37	13.96%
31 to 40	**57**	**21.50%**
41 to 50	32	12.07%
51 to 60	30	11.32%
61 to 70	29	10.94%
71 to 80	17	6.41%
81 to 90	6	2.26%
91 to 100	1	0.37%

Table 3: Drug-drug Interaction frequency and severity data

Parameter	Count%
Number of prescriptions with interactions identified	152/265
Category I Minor interactions	37(13.96%)
Category II **Moderate interactions**	**93(35.09%)**
Category III Major interactions	22(8.30%)

Table 4: List of Major drug reactions and severity based on free online drug interactions checker

S. No.	Drugs	Frequency	Severity
1.	Ondansetron and Tramadol	6(16.21%)	Serotonin syndrome
2.	Ceftriaxone and Calcium gluconate	2(5.40%)	Crystals in bloodstream
3.	Olanzapine and Lorazepam	2(5.40%)	Hypotension, bradycardia, death

Table 5: List of Moderate drug reactions and severity based on free online drug interactions checker

S.No.	Drugs	Frequency	Severity
1.	Aspirin and Clopidogrel	7(4.6%)	Increase risk of bleeding
2.	Atorvastatin and Clopidogrel	5(3.28%)	Headache, Dizziness and Muscle Pain
3.	Prednisolone and Calcium	4(2.63%)	Calcium decreases prednisolone absorption

Results

- Pantoprazole 71(26.8%) was the most commonly prescribed drug, followed by paracetamol 21(7.9%), amlodipine 19(7.16%) and ranitidine 18(6.79%).

- The most commonly used antibiotic was piperacillin/tazobactam 16(6.03%) followed by azithromycin 11(4.15%).

Conclusion

- The current study shows that drug-drug interactions are commonly encountered in day to day practice.

- This study can be regarded as a baseline study which provides valuable information to the prescribers.

- Use of drug-drug interactions checker will help to play an important role to minimize drug interactions.

Team Members

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Acknowledgement

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A brief bio

- Clinical pharmacologist with extensive experience in teaching pharmacology to medical and allied health students. Currently working as an Assistant Professor at Patan Academy of Health Sciences. Work includes multiple research grants and publications, with a focus on antimicrobial use, pharmacovigilance and public health education.

Thank You