

DRUGS INTERACTION ANALYSIS OF PRESCRIPTIONS OF A TEACHING HOSPITAL: FREQUENCY AND GRAVITY



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Introduction

Medical iatrogenesis represents a large proportion of avoidable health direct and indirect costs

Objectives

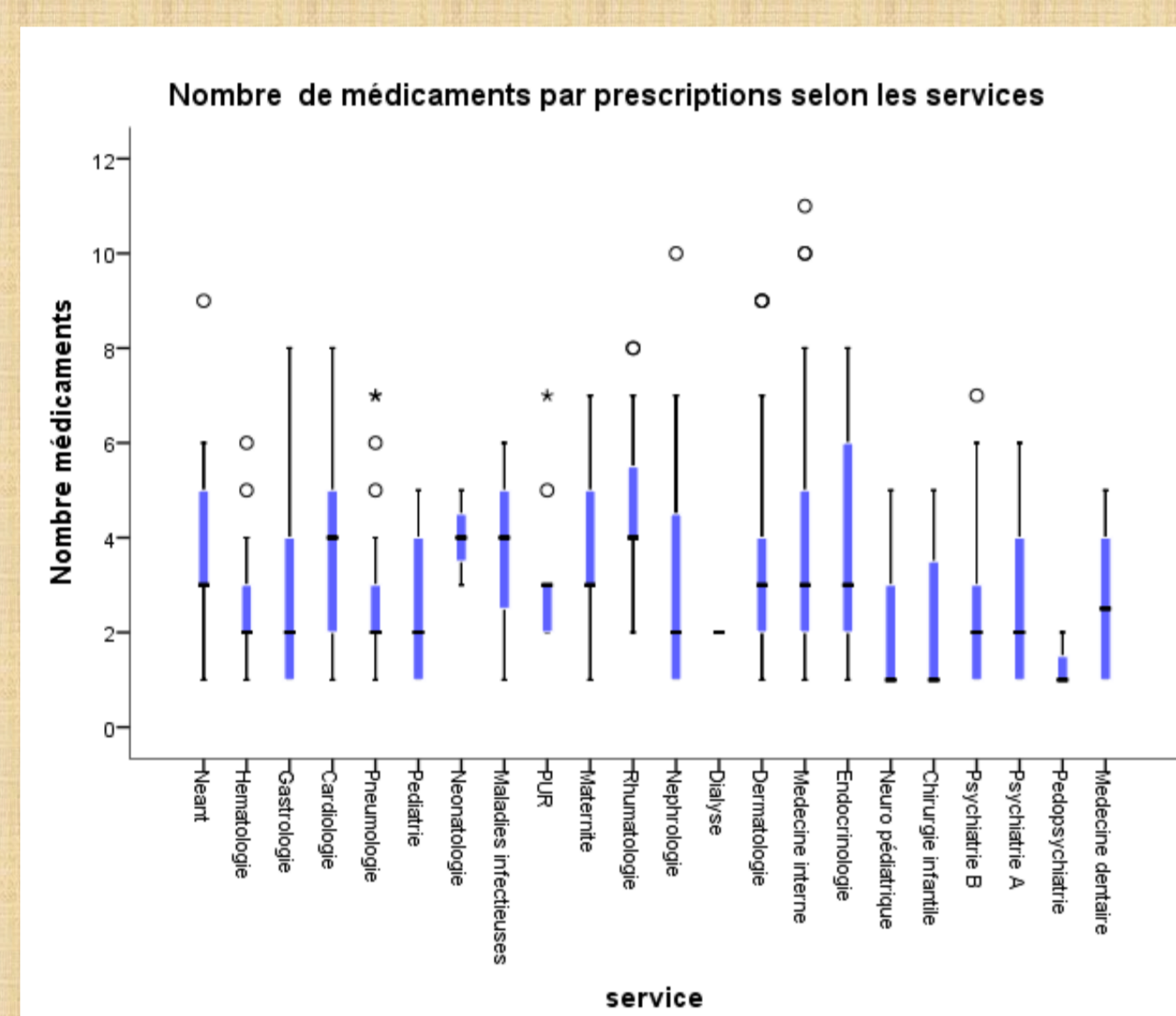
Evaluate quantitatively and qualitatively the potential drug interactions by pharmaceutical assessment of hospitalized patients and outpatients' prescriptions.

Methods

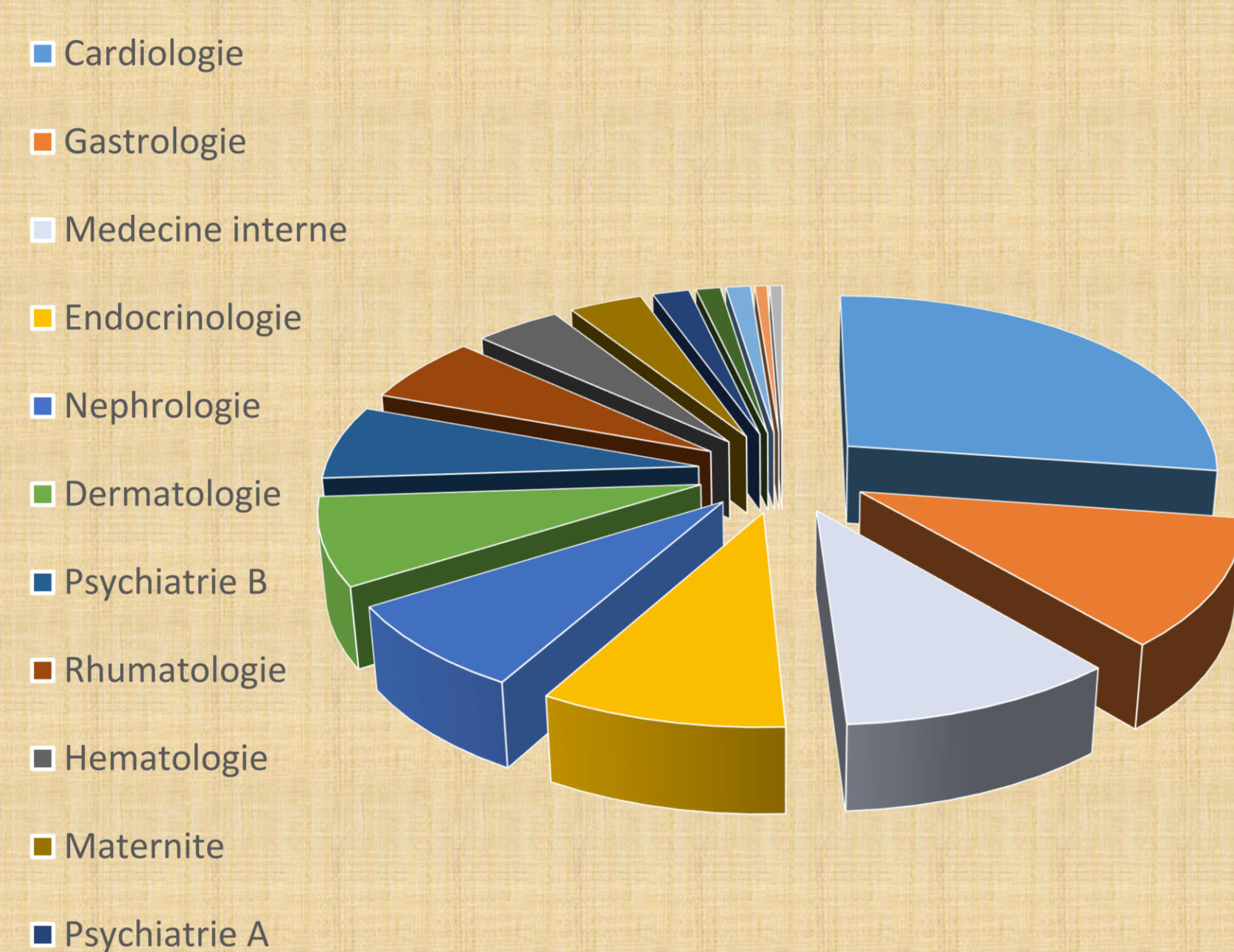
A prospective observational monocentric one day's study including 590 prescriptions for (in/out)patients in Tunisian Teaching hospital. The analysis of prescription has been conducted with the help of Vidal 2016 database and Theriaque.org (updated October 2017), the correlation of polypharmacy with drugs interactions by SPSS software v23 and Excel 2016.

Results and discussion

Among the 590 prescriptions analyzed corresponding to 1901 lines of prescription, an average of 3.23 ± 1.918 [1, 11] of drugs per prescription and a median of 3.

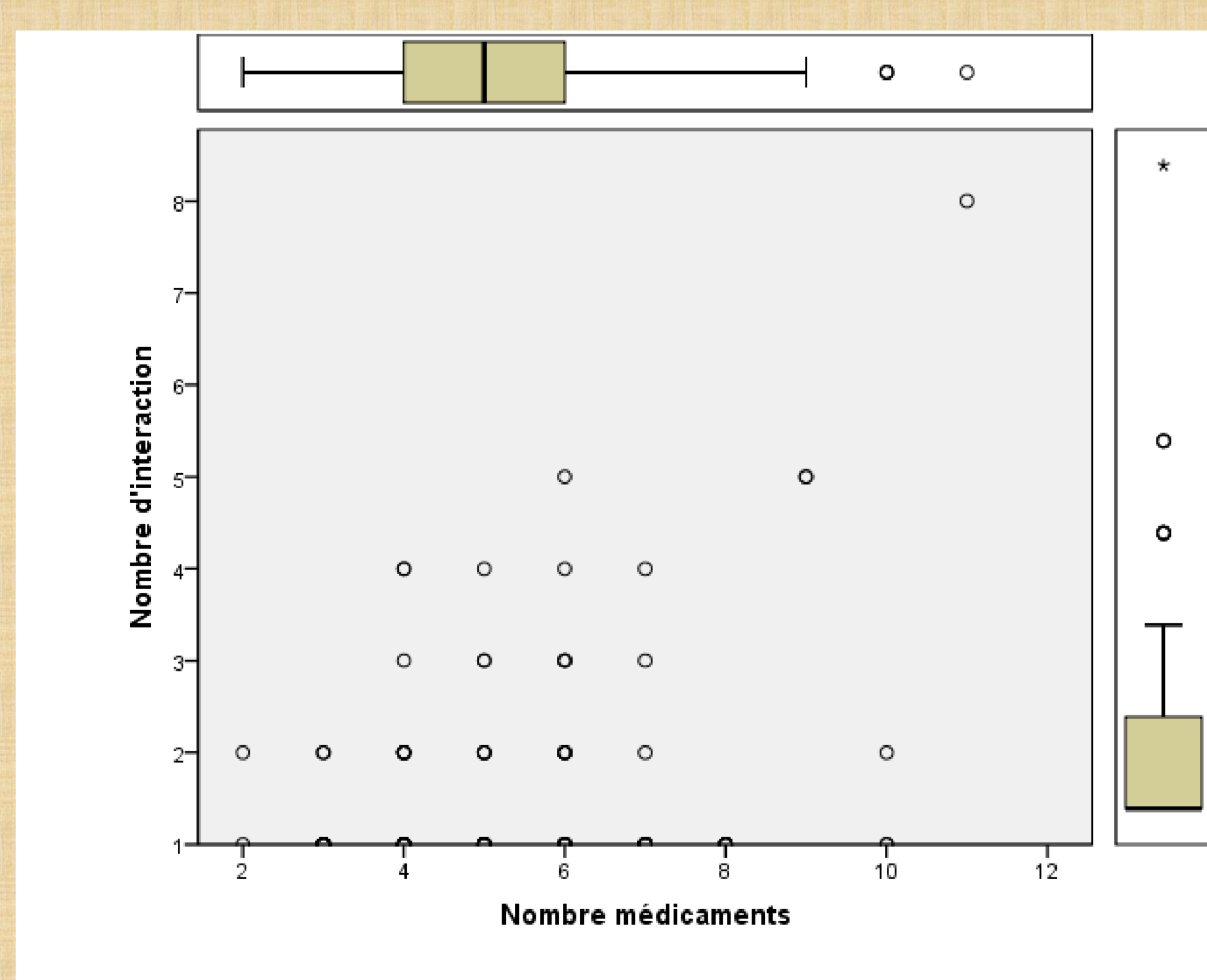


Interaction per clinical wards

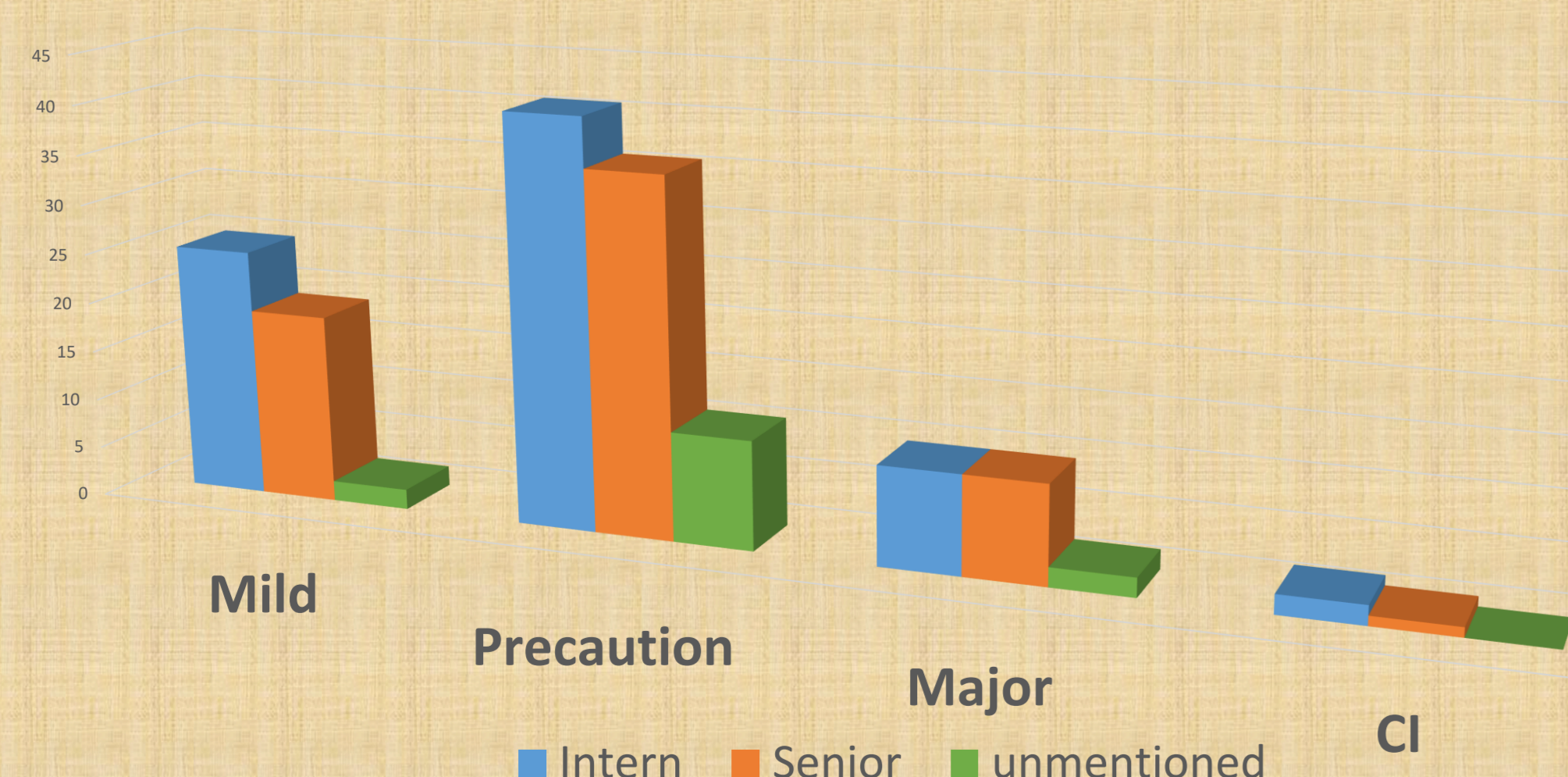


453 prescriptions (76.8%) contained at least 2 drugs. We identified 128 prescriptions with at least one interaction (prevalence of 27.7%). A total of 165 interactions were counted with an average of 0.43 and a median of 0 interactions per prescription with at least 2 medications [0.8]. These results are consistent with a similar French study[1].

A significant correlation has been demonstrated between drugs prescribed and interactions (r pearson = 0.61 with $p < 0.05$)



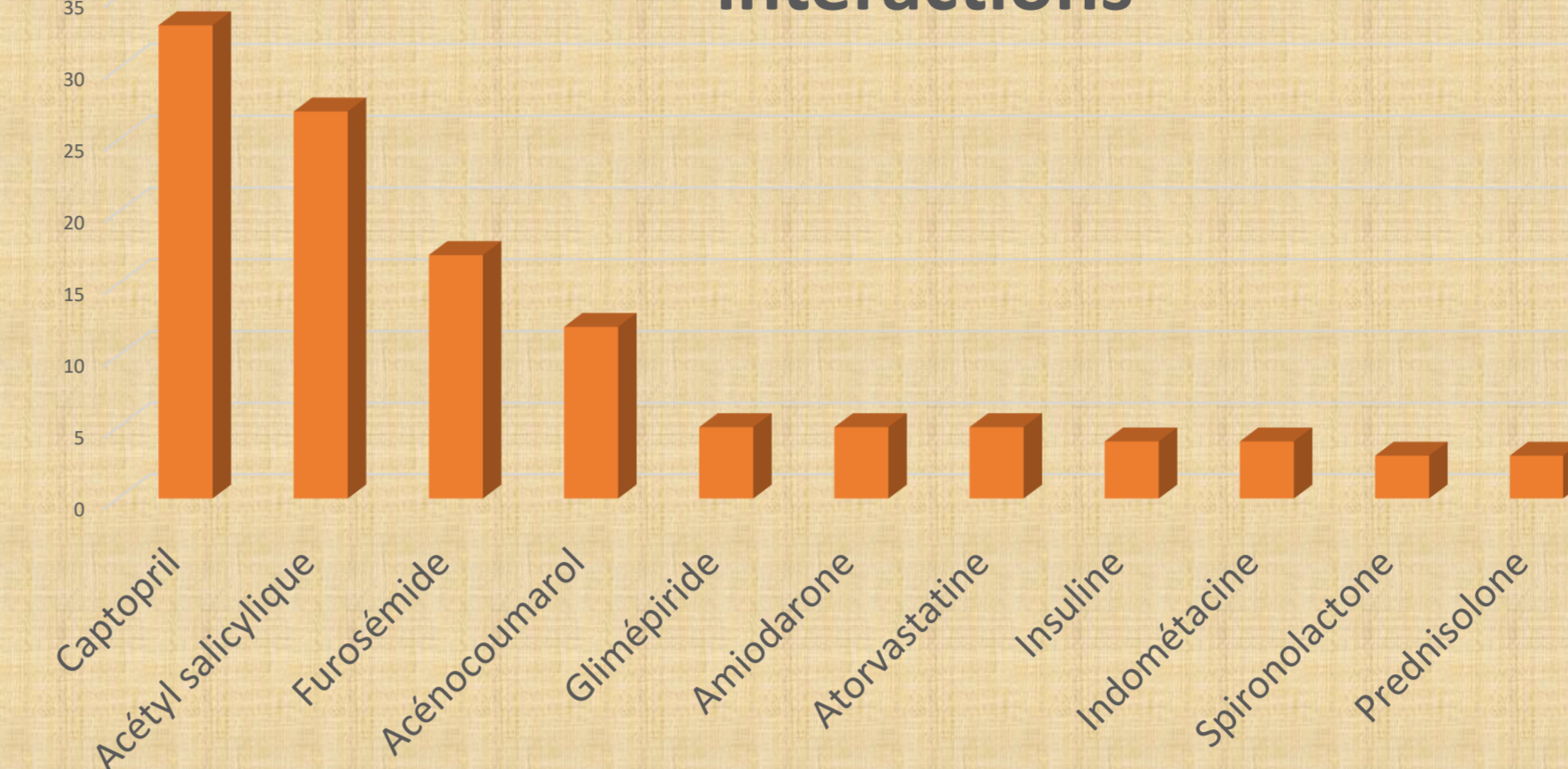
Interaction per prescriber



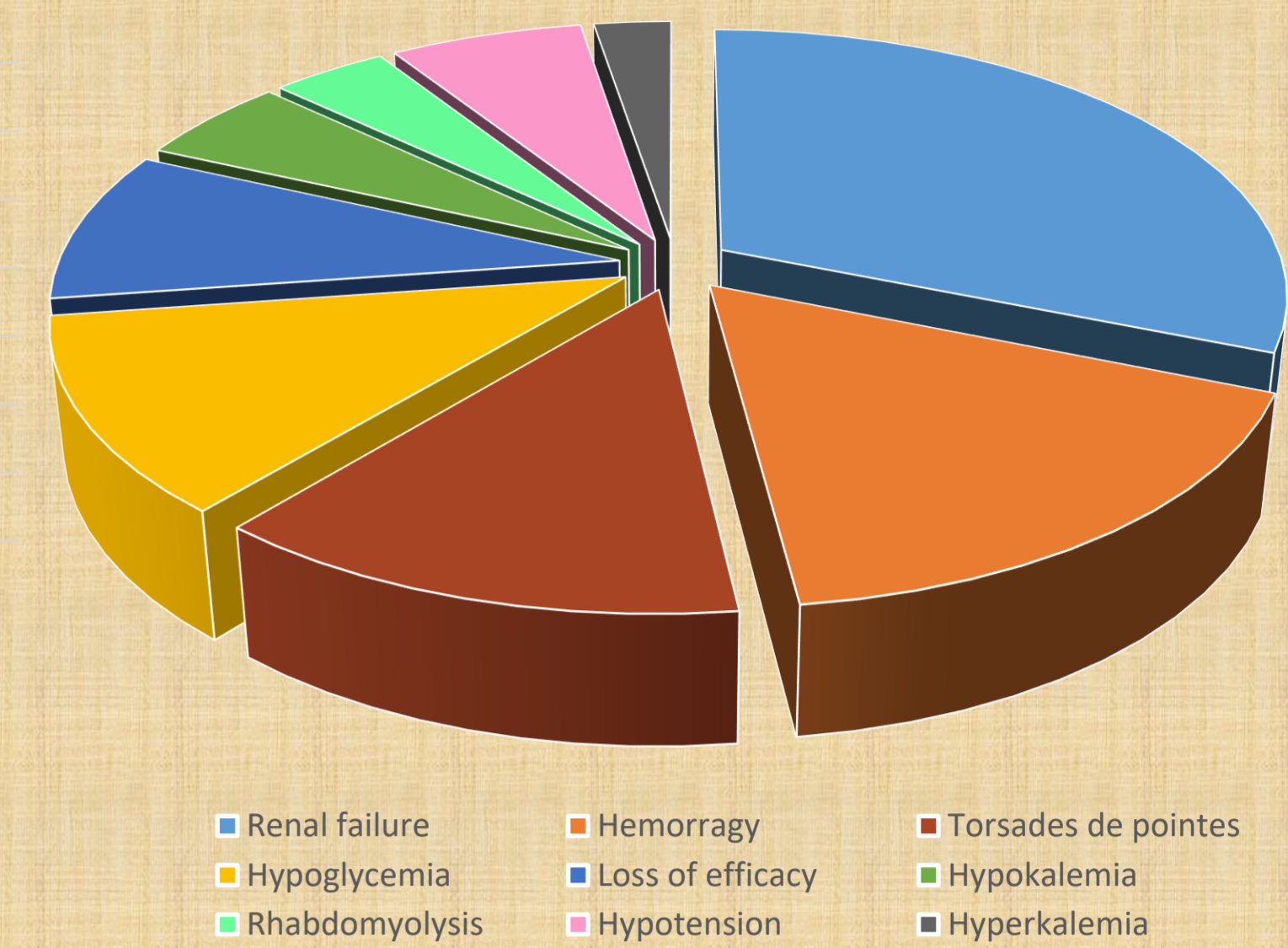
There were 3 contraindications, 22 major drug interaction (13.3%), 90 requiring precautions for use (54.5%), 50 minor drug interaction (30.3%). Different drug classes are incriminated in the occurrence of interactions, top of the list cardiovascular drugs (45.5%) followed by drugs of the central nervous system (12.9%)

The most specifically implicated drugs are captopril (10.8%), furosemide (6.3%), acenocoumarol (4.8%). The most common AEs in this class are renal failure (27.3%), increased risk of bleeding (14.8%) and torsade de pointes (11.4%).

10 first drugs requiring precaution interactions



AEs precaution interactions

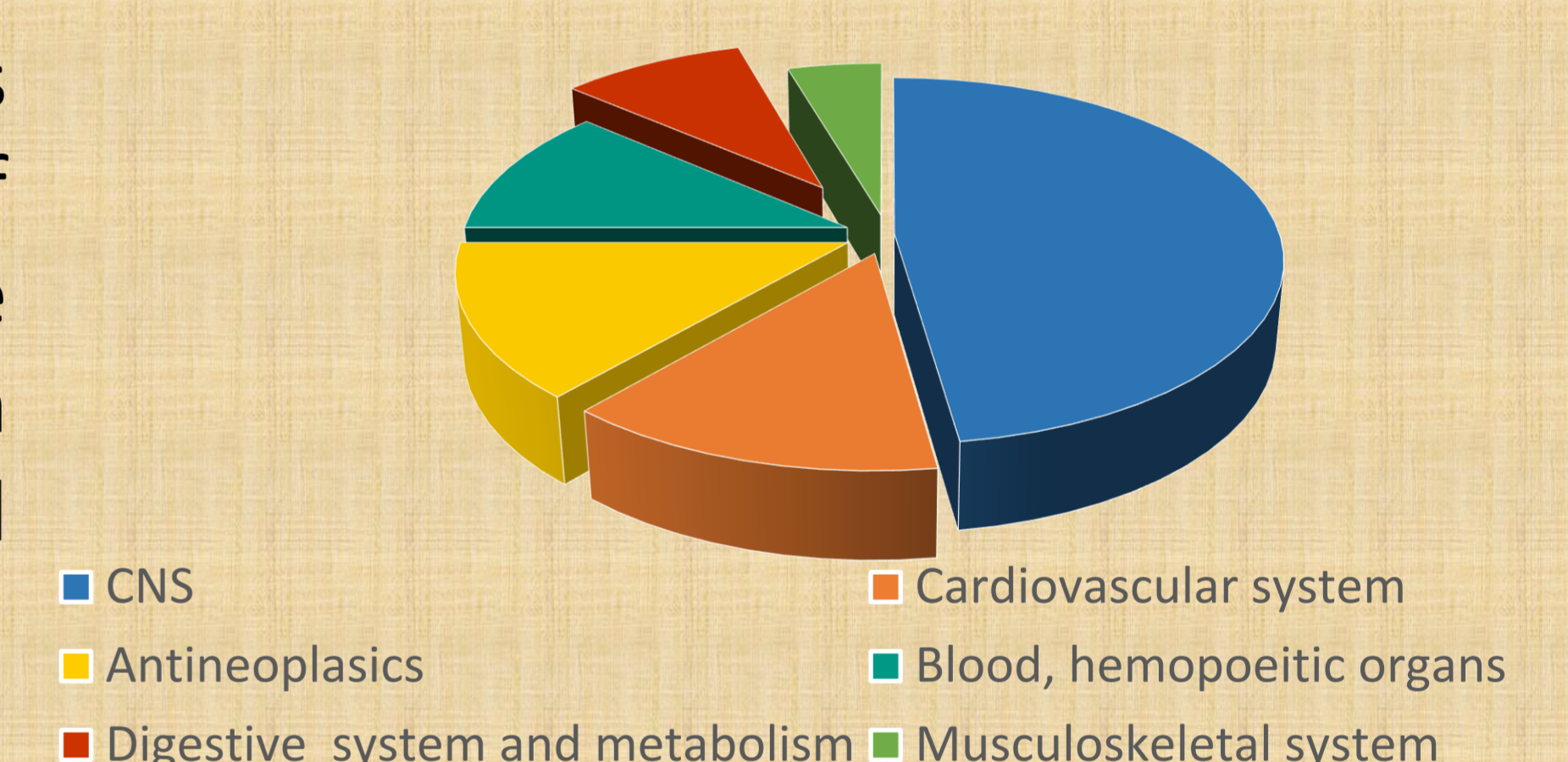


CNS medications are most likely to cause major interactions. Antipsychotics first generation are most involved drugs in these interactions (11 cases) causing torsade de pointe [2](major), potentiate the sedative and atropine effect of drugs and let the epileptogenic threshold drop in patients (minor)[3]. PPI/MTX association is identified in prescriptions, omeprazole inhibit methotrexate elimination ($D > 20\text{mg/w}$) [4]. The contraindications detected are due to the combination of acetylsalicylic acid with AVK, hydroxyzine with hydroxychloroquine and spironolactone with potassium.

Counterindications

Clinical wards	Drug 1	Drug 2	AE
Cardiology	Potassium	spironolactone	Hyperkalemia
Cardiology	acetylsalicylic acid	Acenocoumarol	Hemorrhagy
Internal medicine	hydroxychloroquine	Hydroxyzine	Torsade de pointe

Major drugs interaction



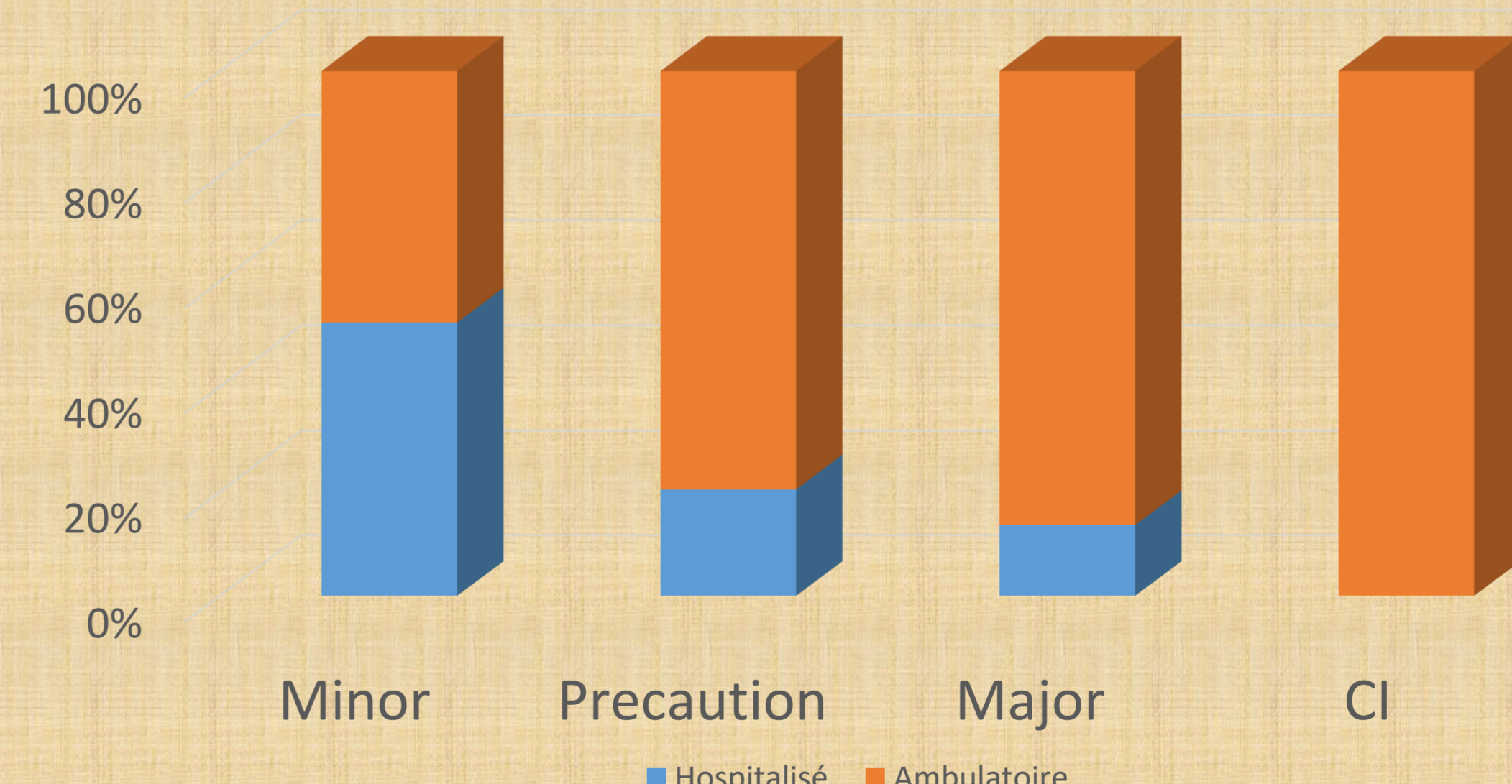
However, drug interactions show disparity by type of patient. They are more frequent and dangerous in outpatients than in hospitalized patients.

Features studied through prescription origin

Patient	N° of prescription	Lign of prescription	Mean	Drug ≥ 2 mdt	Prevalence
Outpatient	393	1385	3.52 ± 2.07	74.10%	30.10%
Inpatient	197	523	2.65 ± 1.48	79.40%	21.90%

Most common AEs seen in outpatients are CV disorders (40%) and RF (20%), whereas potassium-mediated disorders are the most frequent in hospitalization prescriptions (30%)

Proportion of interaction for (in/out) patient's prescriptions



All these findings will be taken into consideration in order to improve the therapeutic management of patients

Conclusion

The pharmaceutical validation step is a primordial drugs' dispensing. It requires a rich database of drug interactions that should be systematically consulted.

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