



Potential drug-drug interactions found in therapeutic treatment during COVID-19

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Coronavirus disease 2019 (COVID-19) caused by severe Acute Respiratory Syndrome Coronavirus (SARS-COV 2) was first identified as an outbreak of respiratory illness in Wuhan City, China in 2019. Since then, SARS-COV2 has deeply impacted every aspect of health and wellbeing. Patients hospitalized with SARS-COV2 are mostly elders with co-morbidities (such as hypertension, diabetes mellitus, cardiovascular, lung and kidney diseases) and getting polypharmacy increases risk factors for developing drug-drug interactions (DDIs).

AIM OF THIS STUDY

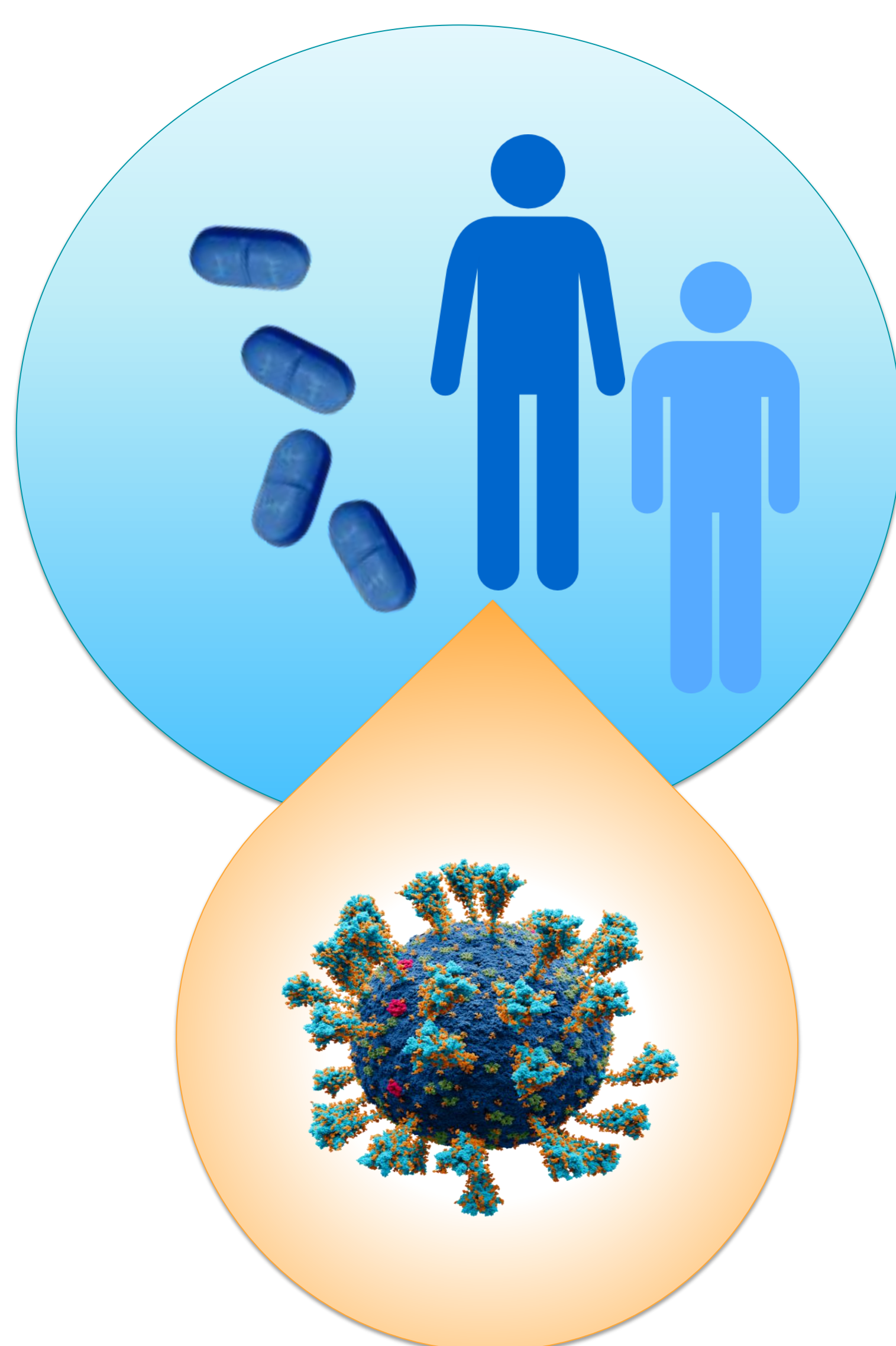
The aim of this study was to assess the risk of potential DDIs (drug-drug interactions) in prescribed therapy in COVID-19 patients at hospital discharge.

PATIENTS AND METHODS

A retrospective, observational study, which includes 20 patients with a proven diagnosis of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection who were hospitalized between March and April 2021 in Internal Department in Ferizaj's Regional Hospital.

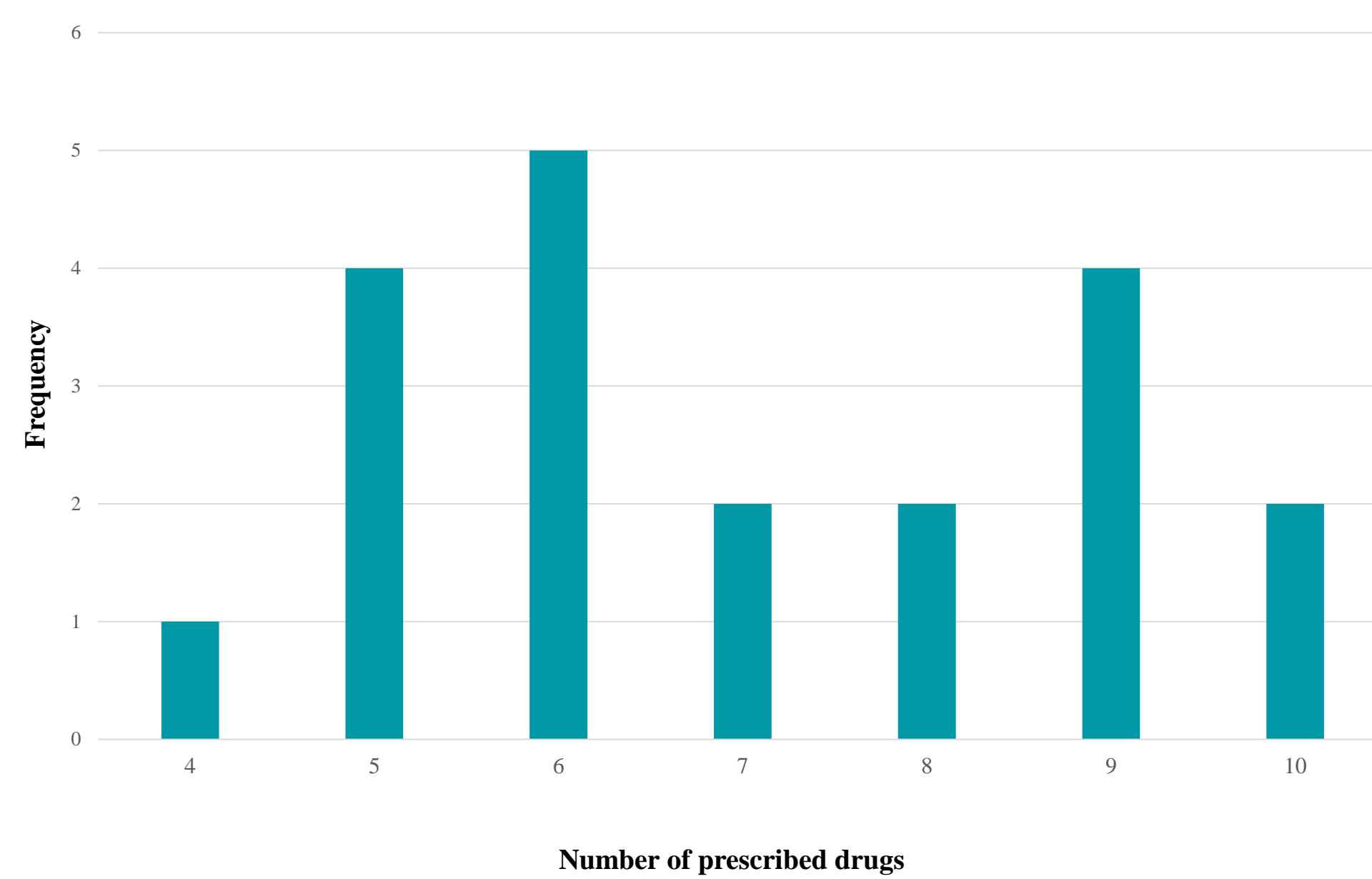
Drugs were analyzed for interactions by utilizing Medscape drug checker, a Computerized Prescription Support System that classifies potential DDIs according to their clinical relevance.

When the drugs were entered in the tool, it displayed the potential DDIs and classified them based on severity as contra-indicated, serious, significant-monitor and minor.



RESULTS

From the total number of hospitalized patients (N=20), female 55% with mean age 66, while 45% were male with mean age 62 years old.



Graph 1. Total number of drugs prescribed in therapy

Drug-drug interactions DDI	Number of patients	Percentage
0	6	30%
1	5	25%
2	3	15%
3	2	10%
4	1	5%
5	2	10%
10	1	5%
Total	20	100

Table 1. Number of DDIs in patients

Group of drugs	Patients	
	Frequency	%
Antibiotics	19	15.8
Corticosteroids	15	12.5
Proton pump inhibitors	19	15.8
Anticoagulant	18	15.0
ACE inhibitor	4	3.3
β-blockers	3	2.5
Vitamin D	18	15.0
Diuretics	2	1.7
Insulin	9	7.5
Statins	2	1.7
Hypoglycemic agents	3	2.5
Respiratory drugs	3	2.5
Analgesics	3	2.5
Thyroid hormone	1	0.84
Selective estrogen receptor modulator (SERMs)	1	0.84
Total	120	100

Table 2. Most frequent prescribed pharmacological class

	Number of interactions	%
Serious Interactions	0	0
Monitor Interactions	13	54.17
Minor Interactions	11	45.83
Total number of interactions	24	100.0%

Table 3. Proportion of drug - drug interactions in patients

Drug 1	Drug 2	Nr.	Interaction	
Methylprednisolone	Atorvastatin	1	Monitor	Pharmacokinetic antagonism
Tamoxifen	Rivaroxaban	1	Monitor	Pharmacokinetic antagonism
Pantoprazole	Theophylline	1	Monitor	Pharmacokinetic antagonism
Aspirin	Methylprednisolone	1	Monitor	Pharmacodynamic synergism
Methylprednisolone	Levofloxacin	2	Monitor	Pharmacodynamic synergism
Sitagliptin	Insulin aspart	2	Monitor	Pharmacodynamic synergism
Sitagliptin	Insulin detemir	2	Monitor	Pharmacodynamic synergism
Ciprofloxacin	Insulin aspart	1	Monitor	Pharmacodynamic synergism
Methylprednisolone	Ciprofloxacin	1	Monitor	Pharmacodynamic synergism
Hydrochlorothiazide	Vitamin D	2	Monitor	Pharmacodynamic synergism
Levofloxacin	Sitagliptin	1	Monitor	Pharmacodynamic synergism
Levofloxacin	Insulin detemir	1	Monitor	Pharmacodynamic synergism
Levofloxacin	Insulin aspart	1	Monitor	Pharmacodynamic synergism

Table 4. Monitor drug-drug interactions

Drug 1	Drug 2	Nr.	Interaction	
Methylprednisolone	Aspirin	1	Minor	Pharmacokinetic antagonism
Methylprednisolone	Insulin aspart	5	Minor	Pharmacodynamic antagonism
Methylprednisolone	Insulin detemir	4	Minor	Pharmacodynamic antagonism
Methylprednisolone	Sitagliptin	4	Minor	Pharmacodynamic antagonism
Methylprednisolone	Furosemide	1	Minor	Pharmacodynamic synergism
Cefixime	Furosemide	1	Minor	Pharmacodynamic synergism
Methylprednisolone	Hydrochlorothiazide	1	Minor	Pharmacodynamic synergism
Ciprofloxacin	Carvedilol	1	Minor	Pharmacokinetic antagonism
Hydrochlorothiazide	Insulin detemir	1	Minor	Pharmacodynamic antagonism
Hydrochlorothiazide	Insulin aspart	1	Minor	Pharmacodynamic antagonism
Pantoprazole	Levothyroxine	1	Minor	Pharmacokinetics synergism

Table 5. Monitor drug-drug interactions

CONCLUSION

The study shows that drug interactions are frequent but monitored, and among the influencing factors are age, co-morbidities, polytherapy and long hospital stay. Given the patient's therapeutic priorities and the pharmacological changes that drugs encounter in an organism, the consumption of a single drug may possibly not be more effective, but during co-medication of multiple medications the risk of drug interaction will be increased.

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