CORONAVIRUS FIRST WAVE EFFECT ON ANTIBIOTIC CONSUMPTION AND ANTIMICROBIAL RESISTANCE

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BACKGROUND

In the absence of evidence about bacterial co-infection incidence, antibiotic treatment was widely prescribed to prevent this potential complication. Increasing antibiotic consumption could have exerted an ecological pressure on microorganisms with potential clinical implications that need to be examined

PURPOSE

The aim of this study is to analyse antibiotic consumption and antimicrobial-resistant microorganisms isolates during the peak incidence of COVID-19 first wave at our hospital.
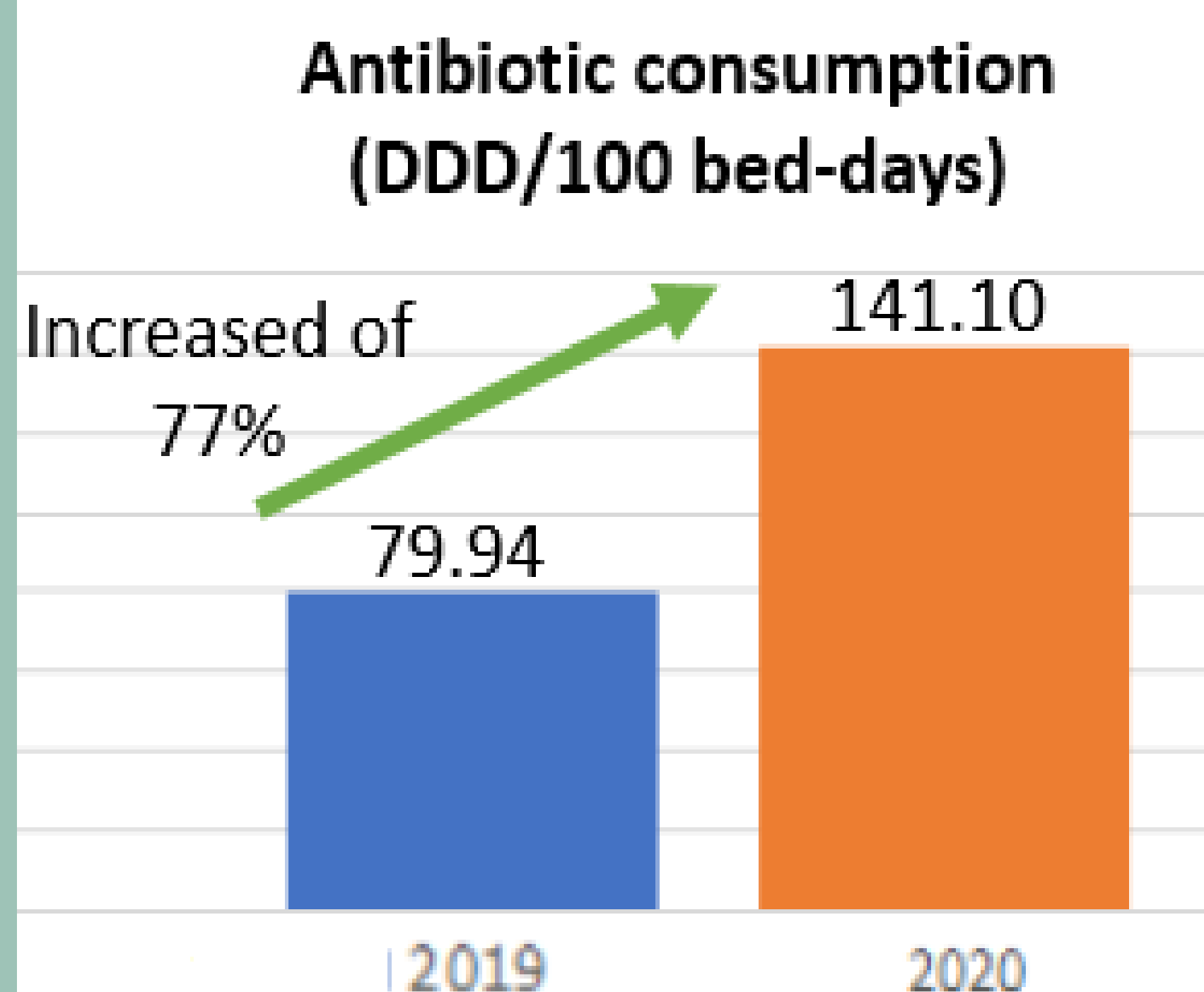
MATERIAL AND METHODS

✓ Antibiotic consumption data for March and April 2020 and 2019 were analysed

✓ Defined daily dose (DDD) per 100 bed-days was used as the consumption indicator and changes were expressed in absolute and percentage terms
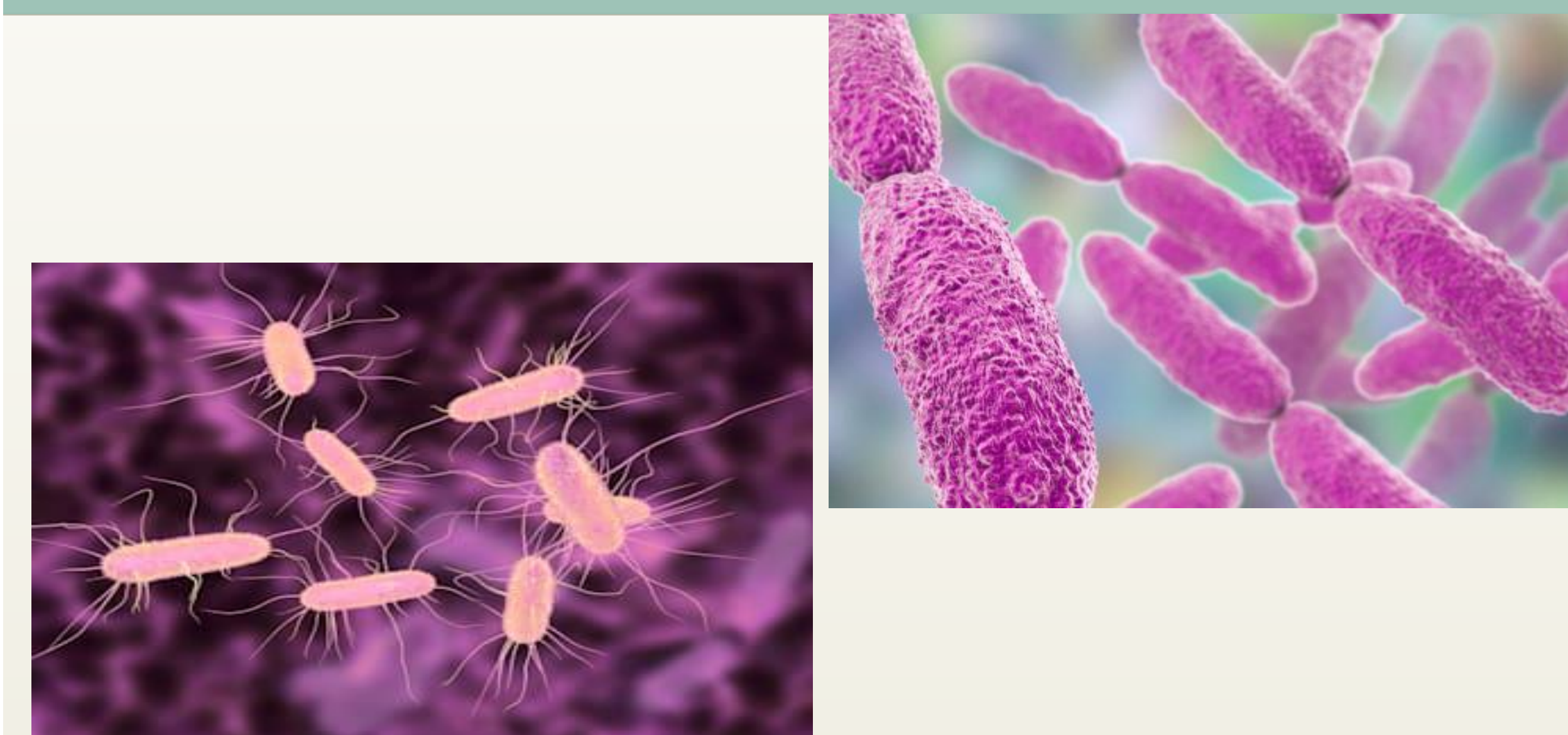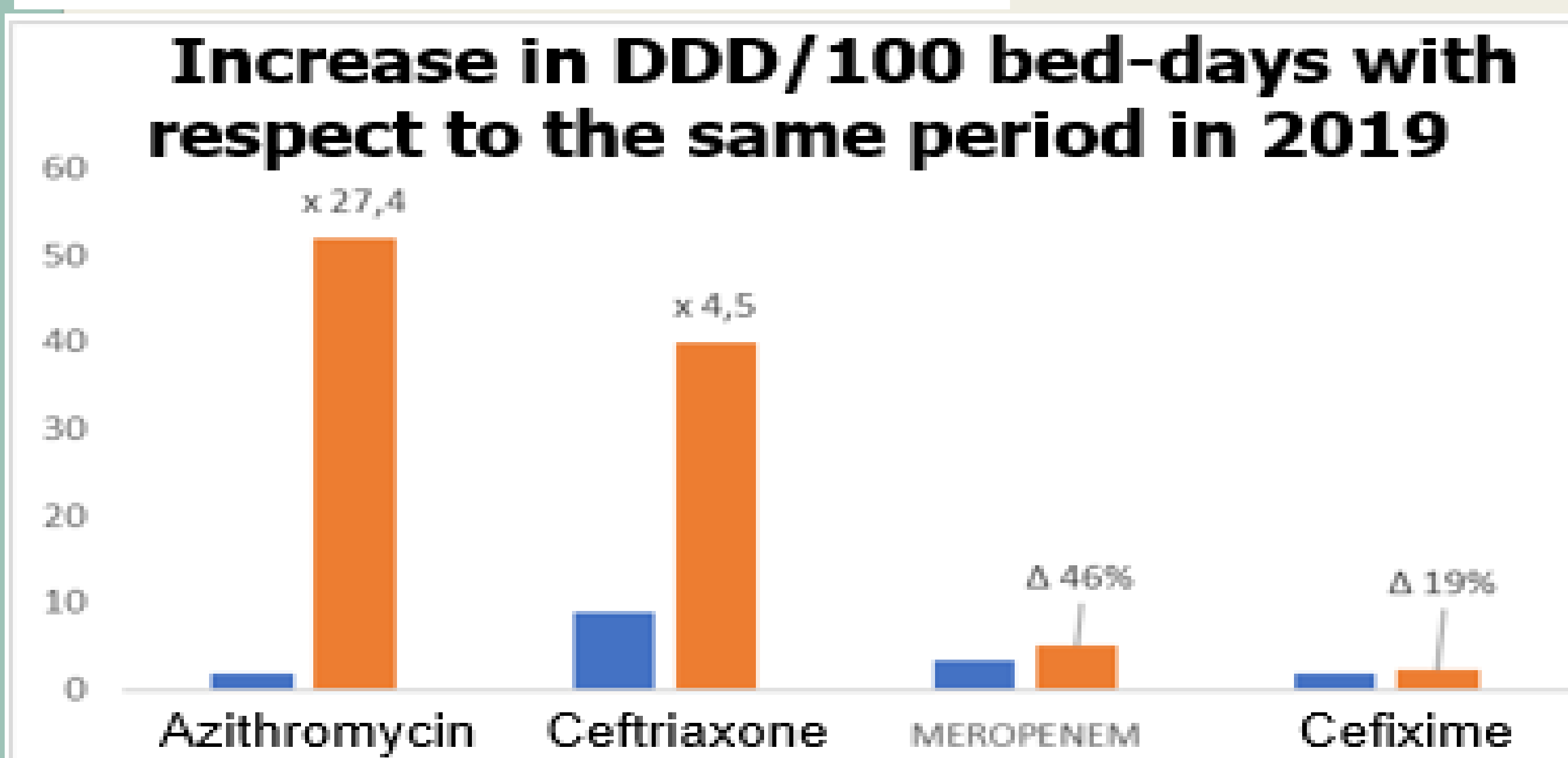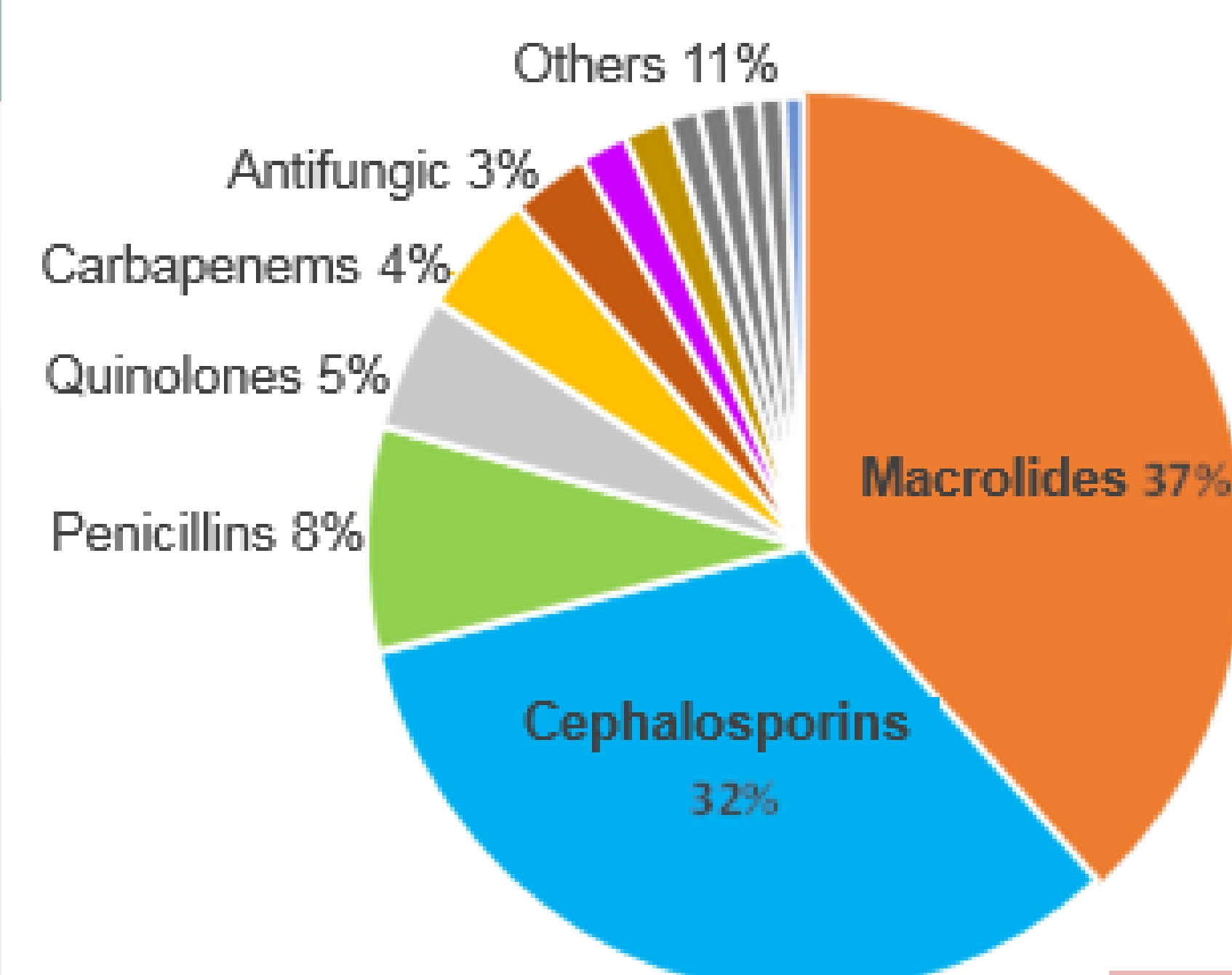
Observational, descriptive, cross-sectional study was carried out

✓ Isolates of Enterobacteriaceae (Escherichia Coli and Klebsiella pneumoniae) were examined for March and April 2020 and compared with the average over 2019

✓ Extended-spectrum beta-lactamase(ESBL)-producing Enterobacteriaceae were expressed in relative terms over their total isolates.

RESULTS

Antibiotic consumption (DDD/100 bed-days)

Increased of 77%

- 2019: 79.94
- 2020: 141.10

Consumption (DDD/100 bed-days) in 2020

- Others 11%
- Antifungic 3%
- Carbapenems 4%
- Quinolones 5%
- Penicillins 8%
- Macrolides 37%
- Cephalosporins 32%

Increase in DDD/100 bed-days with respect to the same period in 2019

- Azithromycin x 27,4
- Ceftriaxone x 4,5
- MEROPENEM Δ 46%
- Cefixime Δ 19%

2020	ESBL-producing Escherichia Coli	ESBL-producing Klebsiella pneumoniae
March	12% (13/111 isolates)	23% (8/35 isolates)
April	23% (20/87 isolates)	57% (25/44 isolates)
average in 2019	11% (273/2494 isolates)	24% (153/642 isolates)

CONCLUSION

During the analysed period, antibiotic consumption experienced a marked increase. The increasing use of third-generation cephalosporins, which have no effect over ESBL-producing Enterobacteriaceae, may have contributed to the observed changes in the bacterial ecology in our hospital.

RELEVANCE

As bacterial co-infection incidence upon admission was reported to be lower than 5% and the increase of antibiotic consumption translated into selection of antibiotic-resistant bacteria, it is important to properly assess antibiotic treatment for each particular case in future outbreaks of sars-cov-2 infections