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Prescription Pattern of Quinolones in a Tertiary Care Setting in Karachi

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Abstract: In this study we found that mostly quinolones used in medical unit in tertiary care hospital. mostly quinolones are ciprofloxacin, levofloxacin and moxifloxacin used while other quinolones. Ciprofloxacin used in gastrointestinal tract infection and upper respiratory infection as compare to other indication.
It is suggested that there is also a need of guideline and policies related to a quinolones drug that promote a right drug for right indication and improve a quality of patient life.

Keywords: Quinolones, Utilization, Ciprofloxacin, Tertiary care hospital, Pakistan.

1. INTRODUCTION

Antimicrobial drugs are the top most therapeutic class of drug in some country like Pakistan in primary and tertiary care setups and different clinics (Shamsuddin *et al*., 2016) because they react against gram positive and gram-negative bacteria acting as broad spectrum (Versporten *et al.*, 2018) antimicrobial classified different classes but in we focused only quinolones class. Quinolones have bicyclic core structure; they target a bacterial topoisomerase 4 and gyrase enzyme they block or stop these enzymes which automatically stop a growth of bacteria. (Rubinstein and Lagacé-Wiens, 2017). It is highly prescribed agent in Pakistan to treat several bacterial infections (Camara *et al*.,2018.) Fluoroquinolones is mostly used in urinary tract infection and hospital acquired infection related to urinary catheters. It is first -line therapy in bone tissue infection (Singh, 2019) Two important quinolones namely ciprofloxacin and ofloxacin are used for the treatment of UTI and they are frequently allowed even before the Culture Sensitivity Test results are available (Ali *et al.*, 2010, Bryce *et al.*, 2016).) hence the appropriate use of antimicrobial drugs is major issues for health care. (Ghaffary *et al.*, 2017)The inappropriate and high consumption has increased the risk of bacterial drug resistance. (Inghammar *et al.*, 2016) despite the fact many of reports and literature, patient resist by many drugs and resistance created by improper utilization of medicine (Suzuki *et al.*, 2016), especially antibiotics and antimicrobials drugs (Rahman *et al.*, 2016). Improper utilization of medicine as self-medication, poly pharmacy, over prescription, inappropriate use of drugs, over use of injectable medications, incorrect indication of drug, improper dosing, false route of administration, adverse events and also involve a drug supply system, legal regulation, information and misinformation about drug. (Elliott *et al*., 2015)..The Irrational use of quinolones has created a quinolones resistance, many patients suffer quinolone resistance due to improper assessment and treatment guide line for infection and (Rafique *et al*., 2016, Uddin *et al*., 2018). Most of prescribers are suggesting ciprofloxacin as a first choice of drug for treatment of typhoid fever, nevertheless typhoid is not treated with ciprofloxacin as it is not first choice of drug while they create resistance in patient. In this study we focused on proper consumption of antimicrobial drugs in tertiary care hospital and evaluate an appropriate prescribing of quinolones in different indication. The main aim of this study was to evaluate a consumption of quinolones in a tertiary care hospital Karachi, Pakistan.

2. MATERIAL AND METHODS

A prospective observational study was conducted to assess quinolones utilization in two tertiary care hospitals of Karachi, Pakistan. World health organization (WHO) guidelines and criteria was followed to evaluate theappropriate prescribing practice of quinolones for different indications.**Data collection**the data collection period was carried out between October 2019 to January 2020. Data was extracted from the patient file records from different wards i.e. Surgical ward, Medical ward and ER Units.Data was collected from the patient files with quinolones and other drugs and related information was extracted with reference to indication, period of time, frequency and doses. All patient files with deficient record were excluded. **Analysis of data**: All the patients

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related information was collected after reviewing the patient record files and medication charts. Approximately 1000 patient record files were selected in this study. Data was analyzed by SPSS 22 version.

3. RESULTS

In this study we reviewed 1000 patient medical record files tertiary care hospital with quinolones drugs during study period. It includes (n=563) male and (n=437) female patient record. Shown in **(Table,1, Fig. 1).**

Table No.1:

Indication	Number of patients	Percent
Upper respiratory infection	167	16.7%
Lower respiratory infection	79	7.9%
Urinary tract infection	78	7.8%
Surgery	37	3.7%
Fever	121	12.1%
Gastrointestinal disease	270	27.0%
Diarrhea	110	11.0%
Acute cirrhosis	12	1.2%
Injury	13	1.3%
Foot wound	21	2.1%
Hypertensive	10	1.0 %
Spinoplasty	5	0.5%
Abdominal pain	15	1.5%
Food poisoning	8	0.8%
Chest Tightness	5	0.5%
Muscular Spasm	5	0.5%
Colitis	3	0.3%
Other	41	4.1%
Total	1000	100%

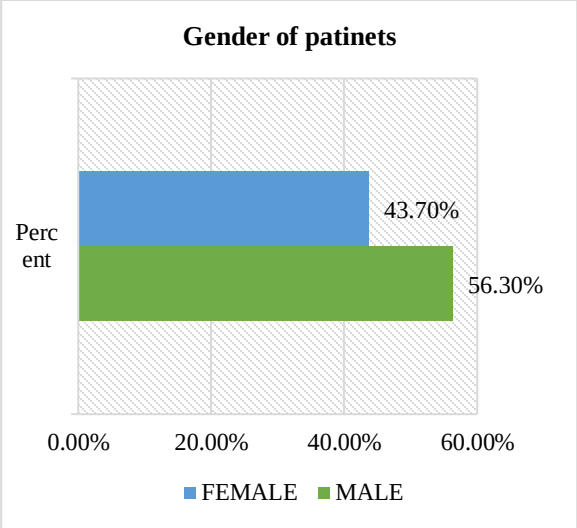


Fig. 1. Gender of patients

The majority of the patients (n=608) were in the age group of 18-44 year and above 75 age group patients is decrease(n=22) as compare to other age groups. The age wise distribution of patient is presented in **(Table-2).**

Table.2: Age wise distribution of enrolled patients

Age group of patients	No. of patients(n)	Percent %
18-44	608	60.8%
45-59	277	27.7%
60-74	93	9.3%
Age >75	22	2.2%
TOTAL	1000	100%

In this study we evaluated a maximum quinolone prescribed in gastrointestinal disease (n=270)and upper respiratory infection (n=167) as compare to other indications. This summary shown in **(Table 3).**

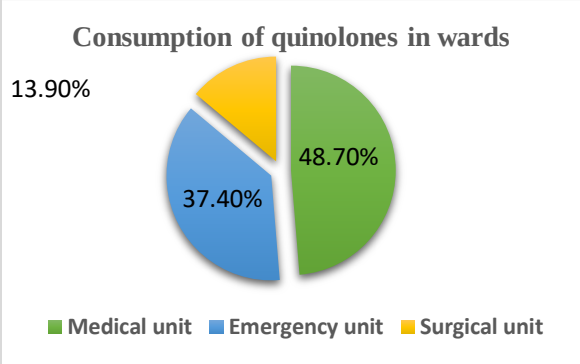
Table- 3: Indications of Quinolones consumption in Private and Public hospital

Gender	No. of patients (n)	Percent(%)
MALE	563	56.3%
FEMALE	437	43.7%
Total	1000	100%

Summarize a drug utilization of quinolones in different wards (medical ward, emergency ward and surgical ward. Majority of patient in medical unit(n=487) as compare to emergency and surgical ward. summaries in **(Table 4, Fig. 2)**

Table . 4: Ward-wise distribution of Quinolones consumption in Private and Public hospital

WARD	**Number of patients**	**Percent**
Medical unit	487	48.7%
Emergency unit	374	37.4%
Surgical unit	139	13.9%
Total	1000	100%



In this study, enrolled patient's medical record files (n=1000) from tertiary care hospitals were evaluated. It was found that mostly prescribed quinolones drug is ciprofloxacin (n=923) as compare to levofloxacin and moxifloxacin.

Table .5: Mostly prescribed quinolones drug

Quinolones	No. of prescription n)	Percent (%)
Ciprofloxacin	923	92%
Levofloxacin	50	5%
Moxifloxacin	27	2.7%
Total	1000	100%

In this study we found ciprofloxacin mostly prescribed in gastrointestinal problem (n=268) and upper respiratory tract infections (n=151), levofloxacin mostly prescribed in upper and lower respiratory infection (n=13, n=14) and moxifloxacin is mostly used in upper and lower respiratory infections. As shown in **(Table 6. Fig. 3).**

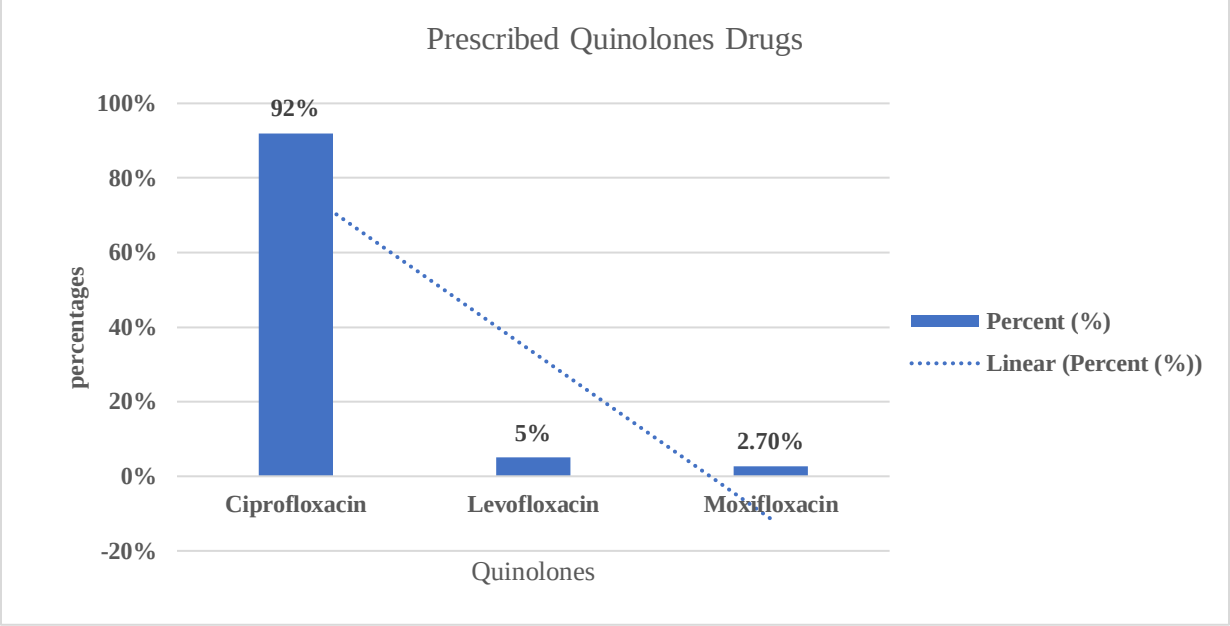


Table . 6. Different quinolones used in different indications.

Indication	Ciprofloxacin	Levofloxacin	Moxifloxacin	Total
Upper respiratory infection	151	13	3	167
Lower respiratory infection	65	11	3	79
Urinary tract infection	68	9	1	78
Surgery	30	4	3	37
Fever	111	5	5	121
Gastrointestinal disease	268	0	2	270
Diarrhea	104	3	3	110
Acute cirrhosis	34	3	4	41
Injury	11	0	1	12
Foot wound	13	0	0	13
Hypertensive	21	0	0	21
Spinoplasty	10	0	0	10
Abdominal pain	3	2	0	5
Food poisoning	15	0	0	15
Chest Tightness	8	0	0	8
Muscular Spasm	5	0	0	5
Colitis	3	0	2	5
Other	3	0	0	3
Total	923	50	27	1000

4. DISCUSSION

In this study the number of male patients were more compare to female patients in tertiary care hospital and similar to conducted by (Huma *et al.,* 2018) In present study the majority of patients were with age group of 18-44 year which is different from the study conducted by (Desai, *et al.,* 2019, that study the maximum patient were in age group of 71 -75 year. The highest frequency of prescription of quinolones was found in gastrointestinal disease(n=270) and respiratory tract infection (n=167) in tertiary care setting but this differ from (Ibrahim, 2018) study, that study a quinolone is mostly used in urinary tract infection as compare to respiratory infection and gastrointestinal infection.In this study we focused on consumption of quinolones drugs and found that mostly quinolones drug used in medical ward(n=487) as compare to surgical ward and emergency ward according to (Thai, 2019). Ciprofloxacin. mostly quinolones used in urinary tract infection and pneumonia symptoms .and those patients was usually admitted in medical ward as compare to surgical ward. In this study also defined ciprofloxacin (n=923) is mostly used in tertiary care hospital as compare to levofloxacin and moxifloxacin. (Malik. and Figueras 2019) also mentioned that ciprofloxacin is significantly used in hospital as compare other antimicrobial drugs.

Ciprofloxacin is mostly used in gastrointestinal disease (n=268) and upper respiratory infection (n=151). this result is similar to (Abdsalam *et al.,* 2020) explained ciprofloxacin used in different severe infection. According to our study. Levofloxacin also used in upper respiratory infection as well as lower respiratory infection but in few patients. According to (Werida *et al.,* 2020) also explained levofloxacin is mostly prescribed in pneumonia.

5. CONCLUSION

The most common quinolones prescribed were found to be ciprofloxacin tertiary care hospital. We have evaluated the consumptions of quinolones was higher in indication of gastrointestinal infection, upper respiratory infection, lower respiratory infection and fever and while other indication. Mostly prescribed quinolones are ciprofloxacin as compared other quinolones. Ciprofloxacin is mostly used in gastrointestinal infection and upper respiratory infections which not according to guideline used. We suggest that there is also a need of guideline and policies related to a quinolones drug that promote a right drug for right indication and improve a quality of patient life.

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