Evaluation of drug utilization and prevalence of cirrhotic patients by using WHO prescribing indicators at tertiary care hospital.

Farrah Bilal[1], Mudassar Iqbal Arain[2], Ubed-Ur-Rehman[3], Abdullah Dayo[4], Muhammad Ali Ghoto[5]

ABSTRACT

Objective: To assess the trends of Drug utilization in chronic liver patients and prevalence of cirrhosis in tertiary care hospital.
Study Design: A descriptive quantitative study
Place and Duration: From 1st May to 30th October 2018 at the Department of General Medicine of Liaquat University of Medical and Health Science, Hospital Hyderabad, Pakistan.
Methodology: For 300 Prescriptions, a special designed Chronic liver disease performa was used descriptive statistics and WHO recommended prescribing indicators guidelines were used for analyzing the results of study.
Results: Among the 300 patients, 68.3% were males and most prevalent disease was liver cirrhosis (33.7%), we observed severity of cirrhosis by Child-Pugh–Turcotte classification that shows mostly patients reported in class C 55.5%.
Over all 1858 medicines were prescribed. Thus, the average number of drugs per prescription was 6.2. Mostly antibiotics (16.2%) were prescribed and ceftriaxone(85.6%) was most frequently used. Results of WHO prescribing indicators show that the total number of drugs prescribed by generic name was 19.8%. However, all the prescribed drugs were included in the national essential drug list of Pakistan.
Conclusion: Irrational prescribing was observed in the health care center, particularly irrational drug use practice is polypharmacy, over use of antibiotic, injections and prescribing of brand name drugs were found to be most commonly drugs utilization trends in the present study.
Keywords: Chronic liver Cirrhosis, Drug utilization, Prescription, Antibiotics, Polypharmacy

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INTRODUCTION

Drug utilization plays a key role in the provision of most favorable care and it has a prime impact on health. During the last decade of this century, new medicines and therapeutical agents have strikingly decreased illness, mortality, and improve quality of life of people. On the other hand, the insufficiency of resources in our developing countries requires that drugs are used rationally and it is important to identify the negative impact of drug therapy and prevailing problems of irrational drug utilization[1-2]

The leading cause of disability of health care society in developing countries is irrational prescribing and inappropriate drug utilization. Poly pharmacy is a common irrational drug use practice, over use of antibiotics and injectables which could escort to deprived treatment outcomes, drugs interactions, and financial burden and to the most terrible case loss and disability of the patient's life[3-4]. Misuse of medication, to one side from high economic impact which show in huge effect upon the patient's health care and often leads to adverse effects of drug. Poly pharmacy is major reason of adverse drug reaction which is more dangerous in liver diseases due to the impairment of metabolism of drugs. Furthermore, antimicrobial resistance is growing up due to over use of antimicrobial agents. Rational drug utilization requires that patients use medications according to clinical needs, for proper duration of time, and at reasonable cost to community[5,6]. WHO generated some indicators to assess the performance of prescribing practice in different dimensions associated to drug utilization[7,8]. Prescriber face a big challenge to select and

1. M Phil Scholar of Pharmaceutics
2. Assistant Professor of Pharmacy Practice
3. Professor of Pharmaceutics
4. Meritorious Professor of Pharmaceutics
5. Professor of Pharmacy Practice

University of Sindh, Jamshoro

Correspondence:
Farrah Bilal
M.Phil Scholar of Pharmaceutics, University of Sindh, Jamshoro
Email: pharmapk62@gmail.com

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prescribed right drugs for the end stage liver patients[9]. Hence, analyzing the drug utilization behavior and usage patterns in the liver disease has the potential of evaluating the rationality of drug therapy[10].

Cirrhosis is an end stage chronic liver disease, and results from progressive and advanced fibrosis. It was commonly considered being irreparable but new studies, have revealed that treatments expected in earlier stages of this disease and can be getting better or even reverse stage of fibrosis[11,12]. These patients are at high risk of several complications and have decreased survival anticipation. The main complications of cirrhosis include ascites, spontaneous bacterial peritonitis varices, Hepatic Encephalopathy (HE), hypertension, hepatocellular carcinoma, hepatopulmonary hypertension, and coagulation disorders. The early stage of Cirrhosis is known as compensated which can be treated and manage, if treatment are not proper than it can develop of decompensate stage after events like ascites, jaundice, encephalopathy and variceal hemorrhage[13]. Patient with cirrhosis should be monitored and treated carefully to manage these complications and possible steps should be taken to prevent their occurrence. Proper monitoring, treatment and management should be taken to avoid its complications and progress toward decompensate stage. The presence of these complications has a twofold impact – first, it increases the economical burden of treatment and secondly, it poses a challenge for the prescribing of cirrhosis patients[14]. These patients need complex therapeutic consideration requiring frequent review of drug utilization. Cirrhotic Patients take multiple medicines, which makes it is very essential to study the drug utilization trend on a regular basis[15,16]. The objective of this study is to assess the trends of Drug utilization in chronic liver patients and prevalence of cirrhosis in tertiary care hospital.

METHODOLOGY

This descriptive quantitative study was conducted in the Department of General Medicine of Liaquat University of Medical and Health Science Hospital Hyderabad, Pakistan. Purposive sampling was used to collect the 300 Prescriptions from general medicine wards during six months from 1st May- to 30th October 2018). All the age of patients which diagnosed liver disease was included. All pregnant women were excluded. In this study Dependent variable: Comparison of WHO core drug use Indicators and Independent variables are Age, gender, residence, occupational status, Prescribing Indicators: Average number of drugs per encounter; Percentage of drugs prescribed by generic name; Percentage of encounters with an antibiotic, injection and essential drug list prescribed. Data of patients according to the inclusion criteria were recorded. Three hundred patients' prescriptions were collected. A special designed data form was designed for data collection which includes patient demographic information, disease diagnosis, prescribing of medications for each patient and information of prescribing indicators were recorded in the prescribing indicator data form.

Data Analysis: Descriptive statistics was used for analyzing the result of the study. WHO guidelines were also applied to find out the prescribing pattern in the hospital and compare it with standard values of indicators.

RESULTS

Among the 300 patients, 68.3% (n=205) of them were males and the remaining 31.6% (n=95) were female patients. However, majority i.e. 23.7% (n=71) patients were between the ages of 50-59 years following by 22.3% (n=67) between 40-49 years age groups.

Only 17% (n=51) prescription of patients show positive family history of liver disease and smoking habit were in 32.7% (n=95) patient as shown in Figure-1

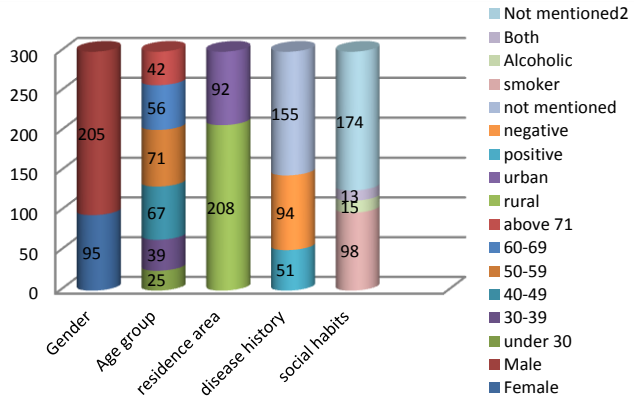

Figure-1: Demographic data

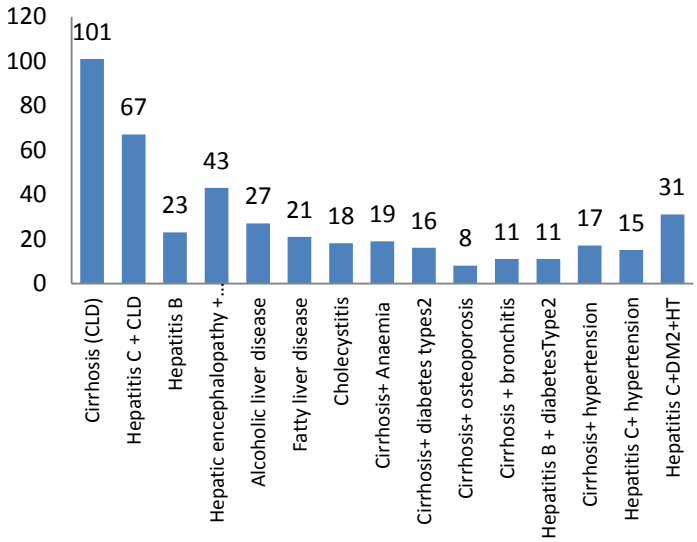

Figure-2: Frequency of different diseases in Chronic liver disease patients (N=300)

According to diagnosis mentioned in prescriptions, most prevalent disease was cirrhosis (33.7%) followed by hepatitis C+ CLD (22.3%) in liver patients. Hepatitis C positive diabetes with hypertension co-morbidities pattern was mostly reported in patients (10.3%) and next come anemia and cirrhosis (6.3%) as shown in Fig-2.

Table-I: Frequency of different stages of cirrhosis (N=300)

Stages of cirrhosis	No. of patients(n=211)	Percentage
Compensated cirrhosis	51	24.2%
Decompensated cirrhosis	71	33.6%
Not mentioned	89	42.2%
Frequency of cirrhosis as Child-Pugh–Turcotte classification		
Class A	17	8.0%
Class B	77	36.5%
Class C	117	55.5%
Frequency of complications associated with cirrhosis		
Ascitis	115	54.5%
Bacterial infections	97	46%
Ascitis + infections	91	43.1%
Gastrophageal varices	89	42.2%
Hepatic encephalopathy	65	30.8%
Hepatorenal syndrome	11	5.2%
Coagulopathy	11	5.2%

Table-II: Number of drug prescribed per prescription (N=300)

Variables		No. of prescriptions (n = 300)
No. of drugs prescribed	2	11 (3.7%)
	3	15 (5%)
	4	37 (12.3%)
	5	21 (7%)
	6	57 (19%)
	7	81 (27%)
	>8	78 (26%)
Frequency of rout of administration	Oral	298 (99.3%)
	Parental	291 (97%)
	Topical	21 (7%)
Prescribing pattern in liver patients	**Classification of drug**	**No. of drug (n=1858)**
	Antibiotics agents	298 (16.1%)
	Vitamins & nutritional supplements	273 (14.7%)
	Laxatives	252 (13.6%)
	Antiprotozoal	251 (13.5%)
	Diuretics	215 (11.6%)
	Antacid	201 (10.8%)
	Cholagogues	114 (6.1%)
	Pancreatic enzymes	102 (5.5%)
	Analgesics	78 (4.2%)
	Ant diabetics	23 (1.2%)
	Others	51 (2.7%)
Frequency of drugs prescribed by generic name	Brand name	1491 (80.2%)
	Generic name	367 (19.8%)
Prescribing frequency of antibiotics	**Name of Drug**	**No. of prescription (n=298)**
	Ceftriaxone	255 (85.6%)
	Rifamixin	35 (11.7%)
	Piperacillin + Tazobacta	8 (2.7%)

Frequency of different stages of cirrhosis are mentioned in Table-I, these result show that out of 300, 211 patients was diagnosed cirrhosis or CLD. mostly prescriptions of cirrhotic patients not have any records about stages of cirrhosis (42.2%) remaining 33.6% patients were come with decompensate cirrhosis. Frequencies of Child-Pugh–Turcotte classification shows mostly patients reported in class C 55.5%.

Mostly observed complication was ascites 54.5% followed by bacterial infections 46%.

Table-II show that most frequently 7 drug were prescribed in 27% (n=8) prescriptions followed by >8 (26% n=78). Mostly oral rout was used 99.3% (n=298) followed by parental 97% (n=291). Over all1858 medicines were prescribed. In which, Most frequently antibiotics (16.1% n=298) were prescribed followed by vitamins and nutritional supplement 14.7% (n=273). Frequencies of drug prescribing show that 19.8% (n=367) drugs prescribed with generic name to patients. Among antibiotics 85.6% (n=255) ceftriaxone was prescribed to patient's.

Table-III: WHO core prescribing indicators Analysis (N=300)

WHO prescribing indicators	Results	Optimal values
Overall drugs prescribed	1858	
Average number of drugs/prescription	6.2	1.6-1.8
%of generic prescribing	19.8%	100%
% of injections prescribed	97%	13.4-24.1%
% of antibiotics prescribed	99.3%	20-26.8%
% of drugs prescribed from NLEM	100%	100%

Table-III shows that Overall1858 medicines were prescribed. Thus, the average number of drugs per prescription was 6.2. The total number of drugs prescribed by generic name was 19.8%.Antibiotics was prescribed in 99.3% and injections (97%) patient per encounters. However, all the prescribed drugs were included in the National List of Essential Medicines of Pakistan (NLEM).

DISCUSSION

This study mainly discuss about the drug use evaluation of cirrhotic patients in a tertiary care hospital Hyderabad, Pakistan. Literature review proves that mostly patients with chronic liver disease admitted in our tertiary care hospitals[17]. As Ahmad et al wrote that Pakistan is a cirrhotic state calling hepatitis[18]. That's way, we have been evaluated of drug utilization in chronic liver diseases and their complication.

In this study, 300 prescriptions were selected by purposely sampling. Demographic data of our study shows that most number of patients (23.7%) attending medicine department for the treatment of liver disease were aged between 50-59 years but Alam et al., showed that majority of patients admitted in hospital with chorionic liver disease were in between of 3rd and 4th decade of life[19]. Mostly patients (69.3%) were from rural area. identification of residence area of patients help in find out the factors which are related to the life style thatleads to cirrhosis. Higher rates of liver disease in rural resident because their low socio-economic people status, lack of awareness, illiteracy, and have limited health care facilities. This finding of our study is in line with the other studies which were conducted by Singh et al[20] Teiusanu et al[21]and Ullah et

al[22].

Disease Family history (A detailed medical history of the patient was taken regarding past illnesses and disease family history), social habits such as smoking, alcoholism and cigarette usage were recorded and their percentages were calculated. Only 21% prescription of patients show family history of liver disease and smoking habit were in 32.3% patients.

The majority of patients were reported with cirrhosis (33.7%) followed by Hepatitis C and Cirrhosis (22.3%). Nadeem, et al has studied that most frequent admitted liver patients in hospitals come with cirrhosis and most common cause was HCV in liver diseases[17]. Chronic Liver disease Pattern was reported with co morbidities that's shows that patient was simultaneously suffered from more than one disease. Pattern reported diseases with co morbidities of our study show that mostly patients have been admitted with hepatitis along with diabetes and hypertension (10.3%) and next come anaemia and cirrhosis (6.3%). Anaemia with cirrhosis may be occurring in these patients due to Haematological abnormalities and diminish platelet count in chronic liver patients. These patients have decompensate stage (33.6%), consequently developing of complications of cirrhosis and change in decompensate stage may be attributed to non-treatment because liver disease don't show their symptoms at early stage. The reason is behind that mostly liver patients having non-specific sign and symptoms, and thus increasing complications of liver[23]. The outcomes of our study about high decompensate cirrhosis rate are in similar to study conducted by Memon[24] et al which shows that Pakistan comes in those countries which has high burden of decompensate disease and end stage liver disease mortality rate. The common complications of cirrhosis are accumulation of fluid as ascites, varices, edema or pleural bacterial infections, and portal hypertension. According to our results ascites was major complication in cirrhotic patients (54.5%) because Liver damage cause of decrease protein count in body which leads to fluid retention in abdomen and results in abdominal size increase leads to ascites in liver patients. Patients were classified according to Class Pugh classification into A, B and C. class Pugh score was estimated from results of serum bilirubin, serum creatinine, INR (International normalized ratio), hepatic encephalopathy and Ascites tests of the patients. It is used for point out stage and prognosis of liver cirrhosis[25]. In this study, we evaluated the cirrhosis stages on the basis of Child-Pugh's classification, which is mentioned in prescription and observed that 55.5% child Pugh class C found in patients.

The prescribing pattern needs to be evaluated as part of the study and therefore we used WHO indicators in our study. Majority of them prescribed multiple drug therapy. Mostly of the prescriptions had either 7 (27%), which looks like a poly-pharmacy. Antibiotics(16.1%), Vitamins and nutritional supplements(14.7%), Laxatives(13.6%), Antiprotozoal(13.5%), diuretics(11.6%), acid-suppressive agent(10.8%), medications for the treatment of chronic pain relief and other co morbid medical conditions are frequently used by patients with cirrhosis to manage the various complications of disease. Among antibiotics, mostly ceftriaxone (85.6%) was prescribed in prescriptions.

The analysis of this study according to WHO prescribing indicators show that the average number of drugs per prescription was 6.2. The total number of drugs prescribed by generic name was 19.8% which is too low compared with standard derived to serve as an ideal (optimal value is 100%).Antibiotics was prescribed in 99.3% and injections (97%) patient per encounters. which is out the range of standard(20-26.8%) and (13.4-24.1%) respectively as shown in WHO prescribing indicator analysis table. However, all the prescribed drugs were included in the National List of Essential Medicines of Pakistan (NLEM). It may increases the undesirable effects, cost of therapy, and possess unnecessary burden on patients. We concluded that our population needs to improvement in rational drug utilization trends in light of the WHO standard and prescribing guidelines.

CONCLUSION

Irrational prescribing was observed in the health care center, particularly irrational drug use practice is polypharmacy, over use of antibiotic, injections and prescribing of brand name drugs were found to be most commonly drugs utilization trends in the present study.

CONTRIBUTION OF AUTHORS

Bilal F: Design of Study, Data collection, Manuscript writing
Arain MI: Conceived idea, Data analysis
Rehman U: Data Analysis
Dayo A: Manuscript writing
Ali Ghoto MA: Final critical review

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