

Original Article

DRUG UTILISATION REVIEW IN POSTOPERATIVE PATIENTS IN OBSTETRICS-GYNAECOLOGY AND SURGICAL GASTROENTEROLOGY DEPARTMENTS-A RETROSPECTIVE STUDY

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ABSTRACT

Objective: The main objectives of our study include classification, analysis and assessment of all the post-operative drugs present of our study.

Methods: The current project being a retrospective drug utilization review 50 prescriptions from the post-surgical wards of obstetrics-gynaecology and surgical gastroenterology departments were collected and analysed.

Results: All the data collected was classified, analysed and assessed based on the various factors and the results were people between the age group of 41-50 have undergone more number of surgeries 22%. Only 32% of all the prescriptions were found to have poly pharmacy, classification of all the prescribed drugs shows that the anti biotics were prescribed in the maximum number i.e. 152doses. Parenteral type of formulation was given in high number of doses up to 506 doses. Defined daily doses of all the W. H. O essential drug list medications were done. W. H. O prescribing indicators for all the drugs in our study was also calculated.

Conclusion: Our study concludes that the antibiotic drug therapy was used as prophylaxis to prevent the bacterial infection.

Keywords: Retrospective study, Drug utilisation review, Poly pharmacy, Defined daily doses, Prescribing indicators, Prophylaxis

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INTRODUCTION

Drug utilization review (DUR) is an authorized, organized, ongoing study of prescribing, dispensing and use of different types of medication. DUR study involves a complete study of the prescriptions and the related drug data. Usually, DUR study goes as three different methods as prospective, concurrent and retrospective; the prospective method-This method involves the evaluation of a prescription and the medications before the drugs are dispensed. Concurrent-This is an ongoing study, in this the prescriptions are analyzed and monitored during the course of the treatment. Retrospective-In this method, the prescriptions are analysed after the drugs are dispensed [1].

DUR study helps in managing health care systems to assess, explain, understand and improve the prescribing, administration and use of various drugs. Various sectors of healthcare management like health care providers consider the DUR program extremely valuable as the results are used to boost the more efficient use of drugs [2]. Clinical pharmacists contribute to a major role in DUR studies because of their proficiency in the field of drug therapy. DUR studies can enhance the quality of care not only for patients but also for the entire population by optimizing the drug therapy by preventing the use of inappropriate drugs, taking measures to minimize or avoid adverse drug reactions thus by improving the drug effectiveness [3, 4].

Various synonyms considered for DUR include Medication use management, medication use evaluation (MUE) and drug use evaluation (DUE) [5]. Since the enforcement of the OBRA 90 (Omnibus Budget Reconciliation Act of 1990), various states have enacted their own regulations which require pharmacists to collect medication reviews from all the outpatients. Another similar official order was introduced in the Medicare prescription drug improvement and modernization act of 2003 as medication

therapy management (MTM). MTM provides appropriate drug plan to sponsors by offering a review and appropriate interventions on the drugs prescribed [6, 7].

Our present study primarily focuses on the DUR in the postoperative patients in the departments of the surgical gastroenterology and the gynaecology departments respectively. Our team has come forward with the aim to conduct a drug utilization review in postoperative patients in the departments of surgical gastroenterology, obstetrics, and gynaecology. We have chosen all the postoperative drugs in the two departments.

The main objectives of our study include classifying all the postoperative drugs into their respective categories based on their classification, route of administration and type of formulation. In addition our study includes analysing the pattern of drug use among the patients based on the age and gender of the patients, polypharmacy assessment, calculation of the Defined daily doses of the various drugs as per the World Health Organisation (W. H. O) guidelines, calculation of the W. H. O prescribing indicators of the respected prescribed drugs as the objectives.

MATERIALS AND METHODS

Methods

The study was conducted at a territory care hospital in the departments of the surgical gastroenterology, Obstetrics and gynaecology, after the informed consent from the volunteer respondents and a valid ethical clearance form from Human ethical committee with the reference number IHEC/SIMS/2017/011.

The retrospective drug utilization review includes volunteer post-operative in-patients of both the genders from the surgical gastroenterology, obstetrics and gynaecology departments from 2016-2018. Pregnant women were excluded from our study.

RESULTS

Table 1: Age and gender distribution

Age	Male	Female	Total	Percentage
10-20	3	3	6	12%
21-30	2	7	9	18%
31-40	3	7	10	20%
41-50	2	9	11	22%
51-60	2	4	6	12%
>60	4	4	8	16%

Table 2: Polypharmacy assessment

No. of drugs prescribed	Male	Female	Total	Percentage
<5	11	23	34	68%
>5	6	10	16	32%

Table 3: Distribution of medication in patients

S. No.	Distribution of drugs	No. of doses	Percentages
1.	Antibiotics	152	18.26%
2.	Anti hypertensives	30	3.60%
3.	Antacids	139	16.70%
4.	Anti hyperlipidemics	1	0.12%
5.	Anti protozoals	127	15.26%
6.	Analgesics	105	12.62%
7.	Anti-emetics	92	11.05%
8.	Vitamin supplements	1	0.12%
9.	Anti-fibrinolytics	3	0.36%
10.	Anti-anxiety	2	0.24%
11.	Thyroid drugs	6	0.72%
12.	Laxatives	15	1.80%
13.	Iron supplements	14	1.68%
14.	Sympathomimetics	3	0.36%
15.	Corticosteroids	32	3.84%
16.	Local Anesthetics	6	0.72%
17.	Anti-coagulants	12	1.44%
18.	Anti-histamines	6	0.72%
19.	Muscle relaxants	4	0.48%
20.	Acetyl cholinesterase inhibitors	3	0.36%
21.	Hormones	6	0.72%
22.	Broncho dilators	3	0.36%
23.	Anti-psychotics	4	0.48%
24.	Anti-pyretics	31	3.72%
25.	Enzymes	5	0.60%
26.	Anti-epileptics	4	0.48%
27.	Beta 2 receptor agonist	26	3.125%

Table 4: Distribution of formulation

Type of formulation	No. of doses	Percentage
Parenteral	506	63.01%
Oral	234	29.14%
Nebulizer	58	7.22%
Suppository	2	0.24%
Topical	3	0.37%

Table 5: Defined daily doses of various drugs

S. No.	ATC code	Drug name	DDD	Route of administration
1.	C01CA07	Dobutamine	0.5g	Parenteral
2.	A02BC02	Pantoprazole	40 mg	Oral
3.	A02BC04	Rabeprazole	20 mg	Parenteral
4.	A02BC01	Omeprazole	20 mg	Oral
5.	J01XD01	Metronidazole	1.5g	Parenteral
6.	J01DD04	Ceftriaxone	2g	Parenteral
7.	N02AX02	Tramadol	0.3g	Oral
				Parenteral
				Rectal

8.	A04AA01	Ondansetron	16 mg	Oral Rectal Parenteral
9.	B01AB01	Heparin	10 TU	Parenteral
10.	B01AB04	Dalteparin	2.5 TU	Parenteral
11.	J01MA01	Ofloxacin	0.4g	Oral Parenteral
12.	J01MA02	Ceprofloxacin	1g 0.5g	Oral Parenteral
13.	J01MA06	Norfloxacin	0.8g	Oral
14.	J01MA12	Levofloxacin	0.5g	Oral Parenteral
15.	C09CA07	Telmisartan	40 mg	Oral
16.	C08CA01	Amlodipine	5 mg	Oral
17.	J01DD13	Cefpodoxime	0.4g	Oral
18.	N02BB01	Paracetamol	3g	Oral
19.	N06AB05	Paroxetine	20 mg	Oral
20.	N03AE01	Clonazepam	8 mg	Oral Parenteral
21.	M01AB16	Aceclofenac	0.2g	Oral
22.	M01AB05	Diclofenac	0.1g	Oral Parenteral
23.	N02AB03	Fentanyl	0.6 mg	Rectal Nasal Sub lingual Trans dermal
24.	C01BB01	Lidocaine	3g	Parenteral
25.	B02AA02	Tranexamic acid	2g	Oral Parenteral
26.	G03AC01	Norethisterone	2.5g	Parenteral
27.	A03FA01	Metoclopramide	30 mg	Oral Parenteral Rectal
28.	B03AA07	Ferrous Sulphate	0.2g	Oral
29.	B03BB01	Folic acid	0.4 mg	Oral
30.	G03DA04	Progesterone	0.3g 5 mg 0.2g 90 mg 10 mg	Oral Parenteral Rectal Vaginal Parenteral
31.	G03DA03	Hydroxy progesterone	10 mg	Parenteral
32.	A03FA03	Domperidone	0.12g 30 mg 30 mg	Rectal Parenteral Oral
33.	J01XX08	Linezolid	1.2g	Oral Parenteral
34.	C07AB02	Metoprolol	0.15g	Oral Parenteral
35.	C03CA01	Furosemide	40 mg	Parenteral Oral
36.	C07AG01	Labetalol	0.6g	Oral Parenteral
37.	J01DD13	Cefpodoxime	0.4g	Oral
38.	H02AB09	Hydrocortisone	30 mg	Oral Parenteral
39.	N05AL07	Levosulpiride	0.4g	Oral
40.	C08CA14	Clinidipine	10 mg	Oral
41.	H03AA01	Levothyroxine sodium	0.15 mg	Oral Parenteral
42.	R01AD05	Budesonide	0.2 mg	Nasal
43.	R03AC02	Salbutamol	0.8 mg	Inhalation Aerosol Inhalation Powder Inhalation Solution
44.	N02AJ13	Tramadol+Paracetamol	4 UD (4Tabs)	Oral

Table 6: W. H. O. prescribing indicators

S. No.	Prescribing indicators	Number
1.	Total no. of prescriptions analysed	50
2.	Total no. of drugs prescribed	212
3.	Average no. of drugs per prescription	4
4.	Drug prescription by generic names	185
5.	Drugs prescribed from Essential Drug List (EDL)	48
6.	Total no. of prescriptions with Antibiotics	49
7.	Drugs prescribed by brand names	27
8.	Total no. of doses prescribed	803

DISCUSSION

A comprehensive study of all the 50 prescriptions was done for the drug classification according to their categories, route of administration, age, and sex distribution. Polypharmacy assessment and defined daily doses calculation was also conducted for all the postoperative drugs in our study, finally the W. H. O prescribing parameters were also done. The results showed that the highest count of postoperative patients between the ages of 41-50 y was 11. Followed by the second highest postoperative 10 patients between the ages of 31-40. 9 postoperative patients were within the age group of 21-30. Elderly postoperative patients of the age group above 60 y were 8. And the postoperative patients of the two categories between the age group of 10-20 and 51-60 were in the same count of 6 respectively. The gender and age distribution results show that the total number of females to undergo surgery were more when compared to males. More than 5 drugs per prescription on a single day was considered as polypharmacy. Out of the 50 prescriptions analysed there were 16 prescriptions reported as polypharmacy. All the drugs in the prescriptions were classified based on their class. In our study a total of 27 classes of drugs were analysed and they were classified according to the number of doses of each drug for duration of 3 d. The highest count of doses being the anti biotics with 152 doses, making a percentage of 18.26%, antacids were dispensed in 139 doses making 61.70%, anti hypertensives being 30 doses and 3.60%, anti hyperlipidemics were given a single dose making a 0.12%, anti protozoals were given in 127 doses making a percentage of 15.26%, analgesics were given in 105 doses and a percentage of 12.62%, anti-emetics were given in 92 doses making a percentage of 11.05%, vitamin supplements were given at one dose making 0.12%, anti-fibrinolytics, acetyl cholinesterase inhibitors and broncho dilators were given in 3 doses making a percentage of 0.36%, anti-anxiety medications were given in 2 doses making a total of 0.24%, thyroid medications were given in 6 doses making a percentage of 0.72%, laxatives were prescribed in 15 doses which make 1.80%, iron supplements were given in 14 doses making a percentage of 1.68%, corticosteroid medications were given in 32 doses making a percentage of 3.84%, there were 6 local anaesthetics given making a percentage of 0.72%, 12 anti-coagulants doses make a percentage of 1.44%, 6 anti-histamine doses make a percentage of 0.72%, muscle relaxants were given as 4 doses making 0.48%, 0.72% of hormones were prescribed under 6 doses, 4 anti-psychotic drugs were prescribed under 0.48% of all the drugs, 31 doses of anti pyretics drugs were prescribed making 3.72%, 5 doses of enzymes were prescribed making a percentage of 0.60%, 4 doses of anti-epileptic drugs were prescribed in 0.48%, 26 doses of beta 2 receptor agonists fall under 3.125% of all doses prescribed[8,9]. All the drugs in the 50 prescriptions were analysed and distributed in to different types of the formulations parenterals were given in 506 doses making 63.01%, oral formulations were given in 234 doses making 29.14%, nebulizers were given in 58 doses making 7.22%, suppositories were given in 2 doses making 0.24% of all the formulations given, topical drugs were given in 3 doses making a percentage of 0.37%. Defined daily doses (D. D. D) of the individual drug per day was calculated according to the W. H. O guidelines, the anatomical therapeutic chemical (ATC) classification system and the route of administration of the respective drugs were mentioned for individual drug. The DDD of the drugs were dobutamine 0.5g, pantoprazole 40 mg, rabeprazole 20 mg, omeprazole 20 mg, metronidazole 1.5 mg, ceftriaxone 2g, tramadol 0.3g, ondansetron 16 mg, heparin 10TU, dalteparin 2.5TU, ofloxacin 0.4g, ciprofloxacin 1g oral, 0.5g parenteral, norfloxacin 0.8g, levofloxacin 0.5g, telmisartan 40 mg, amlodipine 5 mg, cefpodoxime 0.4g, paracetamol 3g, paroxetine 20 mg, clonazepam 8 mg, aceclofenac 0.2g, diclofenac 0.1g, fentanyl 0.6 mg, lidocaine 3g, tranexamic acid 2g, norethisterone 2.5g, metoclopramide 30 mg, ferrous sulphate 0.2g, folic acid 0.4 mg, progesterone 0.3g oral, 5 mg parenteral 0.2g rectal, 90 mg vaginal, hydroxyl progesterone 10 mg, domperidone 0.12 g rectal, 30 mg parenteral and oral, linezolid 1.2g, metoprolol 0.15g, furosemide 40 mg, labetalol 0.6g, cefpodoxime 0.4g, hydrocortisone 30 mg, levosulpiride 0.4g, cilnidipine 10 mg, levothyroxine sodium 0.15 mg, budesonide 0.2 mg, salbutamol 0.8 mg, a combination of tramadol and paracetamol 4UD[10] i. e-4 tablets per day. W. H. O prescribing indicators were calculated for all

the 50 prescriptions in our study, the total number of drugs prescribed were average number of drugs per prescription were 4, drugs prescribed by generic names were 27, drugs prescribed by essential drug list (EDL) were 48 [11], total number of prescriptions with antibiotics were 49, drugs prescribed by brand names were 27, the total number of doses prescribed were 803.

As per the results, it is quite evident that the postoperative female patients were more than the postoperative male patients. And in the polypharmacy assessment, the prescriptions under the non polypharmacy were considerably high. The defined daily doses of antibiotics were given in the highest doses among all the category of the drugs, almost all the prescriptions contained antibiotic drugs. Postoperative microbial infection is the major cause of the mortality and morbidity. The sole motive of antibacterial drug usage in postoperative patients is to avoid infections and provide prophylaxis. As the sterile surgical procedures could only decrease the risk of contamination but not completely eliminate bacterial infections. Judicious usage of antimicrobial drugs is supremely important as injudicious use can lead to severe adverse effects like the antimicrobial drug resistance. The practice of using antibacterial drugs for prophylaxis has shown to eradicate post-operative infections. By the judicious use of antimicrobial drugs, a notable reduction in the mortality and morbidity rate could be attained. Therefore, the need for antibacterial drug use as prophylaxis is highly accepted.

CONCLUSION

Our DUR study provides a valuable perception about the comprehensive pattern of drug use in the postoperative patients in the respective departments of surgical gastroenterology, obstetrics, and gynaecology. The study is useful in the analysis of all the drugs used in the postoperative patients. The study of polypharmacy, defined daily doses, W. H. O prescribing indicators aids in the optimisation of the drug therapy, it also provides valuable insight to the medical practitioners and the other health care providers regarding the optimisation of the drug therapy. The study regarding the DDD and the antibiotic prophylaxis treatment aids in decreasing the mortality and morbidity rate among the postoperative cases. Ultimately decreases the health care burden in the society. Thus our study concludes that a wide range of antibiotics is utilised to improve the rational use of drugs. Regular and more DUR studies and drug monitoring are recommended to minimize the harmful drug effects and improve drug optimisation. Drug utilization study knowledge will enable healthcare providers to render their services more efficiently.

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AUTHORS CONTRIBUTIONS

Dr. Madhuri Devi Thadiboina has made contributions to design, the collection of data and conceptualize the work. Dr. Kanna Vadivel has made a substantial contribution in drafting, analysis and reviewing the article content critically.

CONFLICT OF INTERESTS

Declared none

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