



Analysis on the clinical study of drug related problems in pulmonology department at tertiary care hospitals

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ABSTRACT

The main aim of the study is to assess and evaluate the drug related problems in the pulmonology department. It was a Prospective Interventional study in PULMONOLOGY DEPARTMENT conducted at Manipal Super Speciality Hospitals, Vijayawada, Andhra Pradesh for a period of twelve (12) Months from February 2018 to February 2019. We have collected 115 cases from Pulmonology Department. During the study period, we have collected a total number of 115 cases under the pulmonology department. We found that Males are more effected than Females with percentage of 68% (n=78) and 32% (n=37). In the present study 27 DRP's were found in which 10 Adverse Drug Reactions, 4 Untreated conditions, 4 Inappropriate drug according to guidelines, 4 inappropriate timing of administration, 2 Drug dose too high, 2 No Drug treatment inspite of existing indication, 1 prescribed drug not available. The result of the present Interventional study shows that Clinical pharmacy services helps in identify and resolve drug related harms in discussion with health care professional. In our study we found 27 DRP's based on PCNE V8.02 classification in which 22 DRP's were informed to the physician, and 5 DRP's were identified by the physician. The study shows that there is a need for Clinical Pharmacist services in healthcare to reduce DRP's by monitoring patient's drug therapy by which Pharm. D (Doctor of Pharmacy) can be suggested as Clinical Pharmacist since they are well versed in the subject areas like Clinical pharmacy, Clinical Pharmacology, Clinical Toxicology and Pharmacotherapeutics.

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INTRODUCTION

Clinical Pharmacy Practice is concerned with the promotion of effective, safe and economical drug therapy. Pharmacy practice is broad term which includes Clinical Pharmacy and other patient care related activities performed by pharmacists in the hospital and community settings. These include dispensing and drug distribution, drug information, health promotions, patient counselling, Pharmacovigilance, medication reviews, academic detailing and sterile and nonsterile manufacturing. Drug

use is a complex process, and there are many drug related problems at various levels, involving prescribers, patients, pharmacists, the pharmaceutical industry and the government (Jamal *et al.*, 2015) According to WHO Chronic respiratory diseases are diseases of the airways and other structures of the lungs. Some of the most common diseases are asthma, bronchitis, chronic obstructive pulmonary disease, pneumonia occupational lung diseases and pulmonary hypertension. Chronic respiratory diseases are not curable. Not only tobacco smoke, there are some other risk factors that cause chronic respiratory diseases which Incorporate air pollution, streamlined chemicals furthermore dust, and incessant bring down respiratory infections Throughout youth. There would a few types of medication that can help should widen real aviation route passages and enhances wail can help to decrease manifestations What's more build nature from claiming existence for kin with ailments.

An Interventional ponder outlines additionally called Likewise test investigation designs (Mangasuli and Rao, 2006). A intercession will be characterized Likewise it the methodology the place An possibility or existing medication related issue may be recognized What's more tended to by those clinical drug specialist bringing about An transform to patient's restorative oversaw economy Also prevention (Eichenberger *et al.*, 2010). Clinical pharmacy interventions are a part of the clinical pharmacist activity. Even though, medications play a major role in the cure, palliation and inhibition of disease, they also expose patients to drug-related problems (DRP's) (Akinbami *et al.*, 2005). A medication related issue will be characterized Likewise an occasion alternately situation directing, including different medication help that alternately possibly meddles with well being outcomes (Chen and Chen, 2011).

Order about DRP's could serve as a cynosure to Creating a deliberate procedure to pharmacists on set for appreciably on certain tolerant outcomes (Kumar *et al.*, 2013). Numerous approaches about characterizations are accessible should code DRP's in any case every last bit the individual's characterizations have not been tried to legitimacy What's more reproducible. DRP's can be classified as per different classification systems. These include the American Society of Hospital Pharmacists System, Cipolle *et al.*, Granada consensus, Helper/Strand, Pharmaceutical Care Network Europe (PCNE) classification, problem- intervention documentation (PI-OC), and Westerlund classification. Among all classifications, the most commonly tested were PCNE and Charles and

Linda (Muthusamy *et al.*, 2005). Those PCNE fundamental order presently need 3 elementary domains for problems, 8 grade domains for 5 grade domains for intercessions. To V7 another section, called 'Acceptance of the mediation Proposals' might have been added, including 3 domains. However, once a all the more point by point level there would 7 aggregated sub-domains to problems, 35 gathered sub-domains to reasons and 16 gathered sub-domains for interventions, Furthermore 10 sub-domains for intercession acknowledgement. Naranjo Adverse Drug Reaction Probability Scale (Banerjee *et al.*, 2016) "It is a method for estimating the probability of ADR". The Centres for Disease Control and Prevention (CDC) says tobacco use is the leading cause of preventable illness and death and produces 480,000 deaths a year (including deaths from second-hand smoke). Avoiding sick people and places with a lot of dust or harsh chemicals. "Finally, be kind to yourself and be kind to others. Having that type of outlook will help you avoid illness (Koh *et al.*, 2005).

MATERIALS AND METHODS

Study site, study design and duration of the study

The study was conducted in the medical wards of Manipal Super Speciality Hospital, with 500 bed capacity. It was a Prospective Interventional study in Pulmonology Department conducted for a period of twelve (12) Months from February 2018 to February 2019.

Inclusion Criteria

Patients of both genders are considered. Smokers, alcoholics are also included in this study. Patients with comorbidities are also included in this study.

Exclusion Criteria

Those are not willing to participate in our study. Pregnancy women have and terminally ill are excluded. Unconscious and coma patients were excluded from the study.

Study procedure

Data collection

Regular pre ward rounds were carried out in all the wards during the study period and all the necessary information from the case sheets of patients was collected using a data collection form. The data collection form includes the columns for Patient details like Name, Age, Gender, Inpatient/ Hospital number, Date of admission, Medical condition, Social History, Vitals, Laboratory investigations, Final Diagnosis, Medications prescribed, Types of DRP identified, Intervention, Classification of intervention, Level of significance of DRP.

Table 1: Distribution of patients according to demographic details, and past history

Age	No. of patients	Percentage
<18	1	0.86%
18-28	10	8.69%
29-38	8	6.95%
39-48	21	18.26%
49-58	23	20%
59-68	25	21.73%
69-78	22	19.13%
79-88	4	3.47%
Gender	No. of patients	Percentage (%)
Male	78	67.82%
Female	37	32.17%
Total	115	100%
Comorbidities	No. of patients	Percentage (%)
Hypertension	13	11.30%
Diabetes mellitus	11	9.56%
Both DM and HTN	13	11.30%
Pulmonary tuberculosis	9	7.82%
Anemia	2	1.73%
Hyperthyroidism	1	0.86%
Hypothyroidism	6	5.21%
Asthma	4	3.47%
Hernia	3	2.60%
Copd	2	1.73%
Rvd positive	3	2.60%
Without comorbidities	48	41.73%

Table 2: Different types of diseases identified in respiratory system

Types of diseases identified	Total number (n=115)	Percentage %
COPD (Chronic Obstructive Pulmonary Disease)	33	28.69%
LRTI (Lower respiratory tract infection)	19	16.52%
Pneumonia	14	12.17%
ARDS	10	8.69%
Plueral effusion	9	7.82%
PTB(Pulmonary tuberculosis)	9	7.82%
Bronchial asthma	9	7.82%
Bronchitis	4	3.73%
DNS	2	1.73%
URTI (Upper respiratory tract infection)	1	0.86%
Type 2 respiratory failure	1	0.86%
Pneumothorax	1	0.86%
Lung abscess	1	0.86%
Bilateral consolidation	1	0.86%

Table 3: Naranjo adverse drug reaction probability

Drug	ADR	Severity	Score
Fluconazole	Increased bilirubin level	Probable	07
Budesonide	Decreased potassium level	Probable	05
Hydrocortisone	Decreased potassium level	Probable	05
Amoxicillin / Clavulanic Acid	Hematuria	Possible	03
Budesonide	Decreased potassium level	Probable	05
Tolvaptan	Abdominal distension	Possible	02
Doxycycline	Itching	Possible	04
Doxycycline	Itching	Possible	04
Clarithromycin	Vomiting	Possible	03
Aspirin/ Rosuvastatin/ Clopidogrel	Blood in sputum	Probable	05

Table 4: Total no.of drug related problems identified

DRP	No of DRPS
Untreated condition	4
ADR's	10
Inappropriate drug according to guidelines	4
No drug treatment in spite of existing indication	2
Drug dose too high	2
Prescribed drug not available	1
Inappropriate timing of administration	4

Table 5: Percentage of the planned Interventions

Primary Domain	Code	Intervention	No. of DRP's	%
No intervention	I0.1	No Intervention	-	-
1. At prescriber level	I1.1	Prescriber informed only	05	18.51%
	I1.2	Prescriber asked for information	-	-
	I1.3	Intervention proposed to prescriber	17	62.96%
	I1.4	Intervention discussed with prescriber	05	18.51%
2. At patient level	-	-	-	-
3. At drug level	-	-	-	-
4. Other intervention or activity	-	-	-	-

Data analysis

The collected data from the prescriptions was thoroughly analysed and screened for possible drug related problems using the Lexicomp (Up to date software) and ADR's from Naranjo scale. And all the DRP's were intervened under the PCNE Guidelines.

RESULTS AND DISCUSSION

During the study period, we have collected a total number of 115 cases under pulmonology department in Table 1. Out of which 27 DRP's were

found. We found that most of the people were under the age group of 59-68 years with 21.73% (n=25) and lowest percentage below 18 years with 0.86% (n=1) this observation is same with the adult age group of the study conducted by Koh et. al., and also we found that Males were more effected than Females with percentage of 68% (n=78) and 32% (n=37) this observation is contrasted with the demographic reports of the study conducted by Koh et al in Table 2. (Barnes, 2016) with the highest comorbidity disease Hypertension with a number of 26(22.60%), followed by diabetes with a number

of 24(20.86%) and the lowest disease is hyperthyroidism with a number of 1(0.86%), this observation is same with the *Yuki Imaizumi et al* shows that has increasingly been recognized that the incidence of cardiovascular events is high in patients with chronic lung disease and the results were tabulated in Table 3. We also found that most of the people were effected with the disease COPD with highest number of 34(29.56%) followed by LRTI, Pneumonia, ARDS, Pleural Effusion, PTB, Asthma, Bronchitis etc and the results were tabulated in Table 4. Considering the etiological factors smoking is the highest possible cause with percentage of 42%, followed by alcoholics 20%, occupational 9%, and inherited 2% this observation is same with the *Yuki Imaizumi et al* which tells that Smoking is an established risk factor for cardiovascular diseases and the results presented in Figure 1.

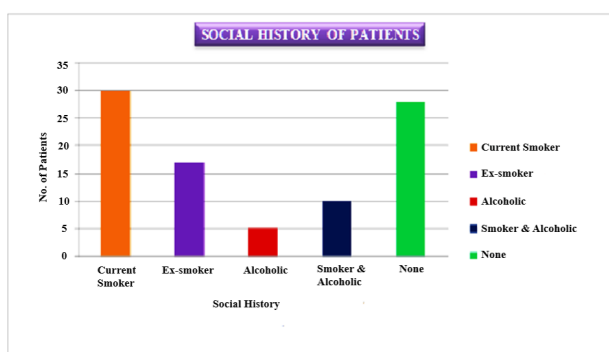


Figure 1: Distribution of patients according to social history

In our study we found a total number of 27 Drug Related Problems in which 10 Adverse Drug Reactions, 4 Untreated conditions, 4 Inappropriate drug according to guidelines, 4 inappropriate timing of administration, 2 Drug dose too high, 2 No Drug treatment inspite of existing indication in, 1 prescribed drug not available and all these results were tabulated in Table 5.

CONCLUSIONS

The result of the present Interventional study shows that Clinical Pharmacy services helps in identifying and resolving drug related problems in consultation with health care professionals. In our study, we found 27 DRP's based on PCNE V8.02 classification in which 22 DRP's were informed to the physician, and 5 DRP's were identified by the physician. The study shows that there is a need for Clinical Pharmacist services in healthcare to reduce DRP's by monitoring patient's drug therapy by which Pharm. D (Doctor of Pharmacy) can be suggested as Clinical Pharmacist since they are well versed in the subject

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Conflict of interest

The authors declare that they have no conflict of interest for this study.

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REFERENCES

- Akinbami, L. J., Moorman, J. E., Liu, X. 2005. Asthma prevalence, health care use, and mortality; United States. *Natl Health Stat Report*, (32):1-14.
- Banerjee, A., Lee, J., Mitragotri, S. 2016. Intestinal mucoadhesive devices for oral delivery of insulin. *Bioengineering & Translational Medicine*, 1(3):338-346.
- Barnes, P. J. 2016. Sex Differences in Chronic Obstructive Pulmonary Disease Mechanisms. *American Journal of Respiratory and Critical Care Medicine*, 193(8):813-814.
- Chen, C. C., Chen, S. H. 2011. Better continuity of care reduces costs for diabetic patients. *The American Journal of Managed Care*, 17(6):420-427.
- Eichenberger, P. M., Lampert, M. L., et al. 2010. Classification of drug-related problems with new prescriptions using a modified PCNE classification system. *International Journal of Clinical Pharmacy*, 32(3):362-72.
- Jamal, I., Amin, F., Jamal, A., Saeed, A. 2015. Pharmacist's interventions in reducing the incidences of drug related problems in any practice setting. *International Current Pharmaceutical Journal*, 4(2):347-352.
- Koh, Y., Kutty, F. B. M., Li, S. C. 2005. Drug-related problems in hospitalized patients on polypharmacy: the influence of age and gender. *Therapeutics and Clinical Risk Management*, 1(1):39-48.
- Kumar, S., Dahal, P., Venkataraman, R., Fuloria, P. C. 2013. Assessment of clinical pharmacist intervention in tertiary care teaching hospital of Southern India. *Asian J Pharm Clin Res*, (6):258-61.
- Mangasuli, S., Rao, P. 2006. Clinical interventions: A preliminary survey in a South Indian teaching hospital. *Indian Journal of Pharmacology*, 38(5):361-361.
- Muthusamy, K., Govindarazan, G., et al. 2005. Preparation and evaluation of lansoprazole floating micropellets. *Indian journal of pharmaceutical sciences*, 67(1):75-79.