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A Study on Polypharmacy and Geriatric Patients Prescribing Pattern of Tertiary Care Hospital

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ABSTRACT

Background: Geriatrics is the promptly growing age group suffering with more than two chronic diseases major to polypharmacy. Polypharmacy can enhance the risk of adverse reactions, and drug interaction. The study aim assessment the prevalence, different factors and outcomes associated with polypharmacy and geriatrics. Methods: A Prospective observational study was carried out for duration of three months in Raja Muthiah Medical College and Hospital, Annamalai nagar patient above 60years were included in the study. The collected data was investigated for polypharmacy and assessed factors outcomes associated with polypharmacy and geriatrics. Results: A total 63 patients included in the study. The overall sex distribution of the study population revealed that they are high in 58.0% of male compared with female, the average number of drugs prescribed oral hypoglycaemic drugs, since the study shows that a patient having more common in diabetes mellitus and other diseases, the drug related problems in the study population was found (31.7%) Atorvastatin with Diazepam.

INTRODUCTION

Poly pharmacy means "many drugs" and refers to a problem that can occur when a patient is taking more medications than are actually needed. It is a particular concern for older adults, who make up 13% of the population, but account for almost 30% of all prescribed drugs. It can be associated with the prescription and use of too many or unnecessary medicines at dosage or frequencies higher than therapeutically essential. However, multiple medications are often necessary and can be constitute best care of patients. Poly pharmacy is the unwanted duplication of drugs, and often when patients go to multiple physicians of pharmacies' typically each other. However, it may also include[1.2, 3, 4]

- Dosages that are too high or too low
- Medications in correctly prescribed or filled
- Herbal medications interacting with physician-prescribed medications

Polypharmacy is especially common in elderly patients. Although elderly patients comprise <13% of the U.S. population, they almost 33% of prescription medications annually.[5] Because individuals are living longer with chronic diseases, elderly patients also tend to have more complicated chronic conditions, may respond differently to medication therapy or experience more severe adverse reactions due to differences in pharmacokinetics and pharmacodynamic characteristics, compared with younger patients. They may also visit multiple prescribers and use multiple pharmacies that will lead to increased risk of medication-related problems thoroughly poorly coordinated or duplicated care [6,7] The potential for medication nonadherence rises with increased numbers of prescribed medications[678] Nonadherence to prescribed medication is estimated at 79%, 69%, 65%, and 51%, for once, twice, three, and four times daily administration, respectively.[6,7,8]It can be associated with subsequent reduced effectiveness.[6,7]Medication nonadherence could be linked to 125,000 deaths in America annually and results in approximately 177 billion dollars increases cost of health care. [7]

MATERIALS AND METHODS

This prospective observational study was conducted from January to March 2016 in General medicine at Raja muthiah medical college and hospital, 1425 bedded tertiary care multispecialty teaching hospital attached to Annamalai University.

Inclusion criteria

- Patients older than 60 years
- Tacking five or more regular medications
- History of non-compliance
- At-least one chronic diseases
- Use of drugs that require therapeutic drug monitoring

Exclusion criteria

- Outpatients
- Critically ill patients
- Patients not willing to participate

Designing a patient data collection form:

A patient data collection form was used each patient's medication profile was reviewed. Patients who met the inclusion criteria were briefed on the project. The data from medical chart were recorded in customized data entry form. The collected data were analyzed for factors and consequences associated with polypharmacy. DRPs were calculated by the sum of ADR, drug interaction and drug allergy.

Adopting nine key questions for assessing polypharmacy

The assessment of polypharmacy will be carried out with nine key questions and the efficacy of polypharmacy will be assessed.

- The presence of polypharmacy

- Potential drug interaction

RESULTS

Table-1: Gender distribution among the patients

Gender	Number of Patients	Percentage (%)
Male	37	58.0
Female	26	41.2

Table-2: Age wise distributed among the patients

Age Groups	Male	Female	Total Number of patients	Percentage (%)
60-70	11	9	20	31.7
71-80	15	12	27	42.8
81-25	10	06	16	25.3

Table-3: Employment status among the patients

Employment	Number of Patients	Percentage (%)
Labor	23	36.6
Farmer	32	50.7
Housewife	08	12.6

Table-4: Reason for admission among the patients

Reason for admission	Number of Patients	Percentage (%)
Breathlessness	24	38
Cough With expectorant	31	48.4
Giddiness	05	7.8
Weakness of Limbs	03	4.6

Table-5: Past medication history of patients enrolled in the study

Past medication	Number of Patients	Percentage (%)
Systemic hypertension	26	41.2
Type II diabetes	35	53.8
Seizures	02	3.0

Table-6: Category of drugs prescribed

Drugs class	Number of Patients	Percentage (%)
Anti hypertensive+vitamins	24	38
Oral hypoglycemic +vitamins	35	53.8
Anticonvulsants+vitamins	04	6.3

Table-7: Duration of Hospital stay

Number of Days	Number of Patients	Percentage (%)
0-3	13	20
4-6	24	38
7-9	18	28
10-12	05	7.8
>12	02	3.2

Table-8: Number of drugs used in the study population

Number of Drugs	Number of Patients	Percentage (%)
2-4	24	38.9
5-11	39	62.9

Table-9: Drug related problems

Drug interaction	Number of Patients	Percentage (%)
Phenytoin + Ranitidine	07	11.1
Atorvastatin+ Diazepam	20	31.7
Glimepiride+Enalapril	03	4.7
Glipizide+Enalapril	05	7.9

DISCUSSION

A total 63 patients who met the inclusion criteria were selected for the study during the period of 3 months from January to march 2016. The overall sex distribution of the study population revealed that they're 58.0% of male and 41.2% of female patients (Table-1). The ages of patient's ranges as follows the majority of the patients found 71-80 (42.8%) among that 15 patients were male and 12 patients were female. (Table-2) Majority of patients in the study were farmer (50.7%) followed by labour (36.5%) and housewife (12.6%), in this study shows that no patients having educational background status, so need to educate the knowledge of drugs, importance of polypharmacy and lifestyle modifications of this study population (Table-3) It was found that the majority of the patients were admitted to the hospital due to cough with expectoration (48.4) breathlessness (38.0%) followed by giddiness (7.8%) and weakness of limbs (4.6%) in this study shows common problems of geriatric patients having a majority of respiratory related compliance (Table-4) In this present study most common co-morbid condition diabetes (53.8%), hypertension(41.2%) and seizures(3.0%), India have maximum number of diabetes patients than any other country(Galeet al.2010;Kaveeshwar and ornwall,2014). A statistical significant association was observed between comorbidities and polypharmacy. Majority of the study population had a minimum of 2 comorbidities which is similar to the report published by Papapetrou (2012), where the 31% of the study population had a minimum of 2 disorders. This shows that as the age progresses, the chances of multiple comorbidities common (Wolff, 2002) which in turn reflects the prevalence of polypharmacy among geriatrics (Lacro and Jeste, 1994, Parket al., 2012) (Table-5) The patients after their diagnosis, prescribed with the drugs for their respective, oral hypoglycemic drugs are mostly prescribed (53.8%) and followed by antihypertensive drugs this study shows that majority of the patients having chronic diseases such as diabetes and hypertension. (Table-6) The mean duration of hospital stay was 6.9±2.11

days the minimum number of hospital stay for the overall population was 2 days and maximum 15 days The average length of hospital stay was found to be 10.22±8.7 days which is alike to a study conducted by Nagaraju, Padmavathy (2012) that shows the majority of the population were discharged within a week. (Table-7) Based on the number of drugs prescribed to the patients during their hospital stay, all the prescriptions were categorized as (<5) are major polypharmacy (5 or more drugs) the analysis of the prescription revealed that 62% of the overall study population prescription were classified polypharmacy A similar result observed in a study conducted by John and Kumar (2013) also reported polypharmacy prevalence to be very high among their study population. Geriatric population is more susceptible to polypharmacy (Damian et al., 2013, John and Kumar, 2013, Lacro and Jeste,1994, Maher et al., 2014, Parket 12) (Table-8) Drug related problems among the study population the maximum observed number of DRP 20 patients when Atorvastatin given with Diazepam was observed in (31.7%), phenytoin with ranitidine shows that (11.1%) sulfonylurea derivative of oral hypoglycaemic drugs interaction with Enalapril (4.7,&7.9%) respectively. The present study discloses all the patients were teetotallers who are contradictory to a similar studied conducted by Dorman (2013) (Table-9).

CONCLUSION

Polypharmacy is the major problems in worldwide the patients get unwanted side effects of medicines, particularly geriatric patients. This study shows that 37 patients receive more than 5 to 7 drugs respectively (62.9%).

Drug interaction developed by the patients Atorvastatin with Diazepam shows that (31.7%) both the drugs having to take night-time, between the time intervals of 2 hours one after one to prevent the drugs related interactions. Like a sedative drug has to be taken before half an hour to sleep.

Geriatric patients are at greater risk of adverse drug reaction (ADR) because of metabolic changes and reduce the drug clearance associated with ageing, in order to increase the drugs related problem.

The study suggests that Educate patients with help of health care teams like physician, nurses and clinical pharmacist to improve compliance with medications, reduce polypharmacy, and decrease adverse events. Consider using the Beers criteria for avoiding inappropriate drugs in elderly patients.

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REFERENCES

1. Bertam G.Katzung,Basic and Clinical pharmacology (fourth Edition),989-998.
2. EricT.Herfindal,DickR.Gourley,LindaLloydHart."Clinicalpharmacyandtherapeutics (fourth edition) 1998 pp 1096.
3. G. Parthasarthi, Karin Nyfort-Hansen, Milap C Nahata, *A* Textbook of clinical pharmacy practice published by o rient long man private ltd,2003 190-202
4. HayesBD,Klein-SchwartzW, Barrueto jr. poly pharmacy and the geriatric patient, clinics in geriatric med, 2007: Vol 23No 2,2007 pp 371- 390
5. Fillit HM, Futterman R, Orland BI, Chim T, Susnow L, Picariello GP, et al. Polypharmacy management in Medicare managed care: Changes in prescribing by primary care physicians resulting from a program promoting medication reviews. Am J Manag Care. 1999;5:587–94[PubMed].
6. Linjakumpu T, Hartikainen S, Klaukka T, Veijola J, Kivelä SL, Isoaho R. Use of medication and polypharmacy are increasing among the elderly. J Clin Epidemiol. 2002;55:809–81. [PubMed
7. Strom BL, Kimmel SE. In: Textbook of Pharmacoepidemiology. Fourth edition Ch. 4. West Sussex, England: Wiley; 2007. Basic principles of clinical pharmacology related to pharmacoepidemiology studies. Pp 35–55.
8. Veehof L, Stewart R, Haaijer-Ruskamp F, Jong BM. The development of polypharmacy. A longitudinal study. Fam Pract. 2000;17:261–7. [PubMed]
9. Callahan CM, Weiner M, Counsell SR. Defining the domain of geriatric medicine in an urban public health system affiliated with an academic medical center. J Am Geriatr Soc. 2008;56:1802–6. [PMC free article] [PubMed]
10. Gale j.India'sdiabetes epidemic cuts down millions who escape poverty; BloomberBusiness; 2010(Available from;http;//www.bloomberg.com/newsarticle/2010-1107/india-s-deadly-diabetes-scourage – cuts-down-millions-rising-to-middle-class.
11. Kaveeshwar SA,Cornwall J.The current state of diabetes mellitus in India.Australia Med.J2014;7:45-8.
12. Wolff JL.,Starfield B, Anderson G.Prevalace,expenditures,and complications of multiple chronic condition in the eldery,Arch Intern Med.,2002;162:2269-76.
13. Lacro JP,Jeste DV.Physical comorbidity and polypharmacy in psychartic patients.Biol.Psychiatry.1994:;36:146-52.
14. Park YW,Kim Y,Lee JH.Antipsychotic-induced sexual dysfunction and its management.World J.Mens Health,2012;30;153-9.
15. Nagaraju B, Padmavathy G,Dattathreya G.Prevalance and assessment of polypharmacy in sri devrajurs medical college&hospital kolar, Int.J.Pharm.Sci., 2012;4:5.
16. Dmian J.Pastor-Barriuso R, Valderrama-Gamma E,de pedro cuestaJ. Factors associated with falls among older adults living in institution.BMC Geriatur., 2013;13;6
17. Dormann H, Sonst A, Muller F, Vogler R, Patapovas A,Pfistermeister B, Plank-Kiegele B,Kirchner M, Hartman N, Burkle T,Maas r, Adverse drug events in older patients admitted as an emergency: The role of potentially inappropriate medication in elderly people (priscus).Dtsh. Arztebl. Intl., march 2013; 110(13):213-9.