



POLYPHARMACY IN HOSPITALIZED GERIATRIC PATIENTS IN A TERTIARY CARE HOSPITAL – A PROSPECTIVE STUDY

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Abstract

Background: The current focus of research is on polypharmacy and the presence of unnecessary medications in the treatment and also the cost of the unnecessary medications.

Objectives: To find out the prevalence of polypharmacy in geriatric patients, reasons for unnecessary drug therapy, the cost of unnecessary drug therapy and to check the quality of life of the patients.

Methodology: A total of 200 patients were included and the study was conducted in the department of General Medicine. The participants enrolled in the study involved inpatients only after taking verbal consent from the subject. The data is collected in a pre-designed data collection form.

Results: The study showed that of the 200 cases collected, 54% were female patients most of them falling under the age group of 60-65yrs. Of the 200 patients 43.5% received more than 5 drugs per prescription. The reason found for unnecessary drug therapy is therapeutic duplication with mostly prescribed class of drug as Antibiotics. Total expense of unnecessary drug therapy is equal to INR.21.641.

Conclusion: Prevention of unnecessary drug therapy problem can be conducted through reduction of drug use. It is recommended to eliminate all medications without therapeutic benefit, goal or indication. Prevention of unnecessary drug therapy will also contribute in cost saving among elderly patients.

Keywords: Polypharmacy, Unnecessary medications, Geriatric population, Cost saving.

1. INTRODUCTION:

Polypharmacy is defined as the use of multiple drugs or more than are medically indicated, which is a growing concern for older adults. The word “poly” is derived from the Greek word meaning more than one and that “Pharmacy” referring to the Greek word for drug. International research shows that polypharmacy is common in older adults with highest number of drugs being taken by those residing in nursing homes. Nearly 50% of older adults take one or more medications that are not medically necessary. Research has clearly established a strong relationship between polypharmacy and negative clinical consequences^{1,2}.

The major reason for polypharmacy is that a patient has many co-existing medical conditions receiving treatment. In the case of diseases such as heart failure and high blood pressure, combinations of two to three different medications are common and

recommended. If the medications for symptomatic relief are added, it is easy to see why patients end up with a large number of medications. Elderly use many non-prescription drugs with prescription drugs. Sometimes, a new medication is prescribed to treat the adverse effects of another drug, often when stopping or changing the dose of the offending drug would solve the problem. A contributing factor is that patients see different physicians for their medical problems. The major consequences of polypharmacy to patient are a much higher risk of adverse drug effects. Polypharmacy leads to unnecessary drug cost thus imposing financial burden on the patient. Senility is a special part of the life course, which differs from person to person because of several reasons like genetic factors and lifestyle. In this period, decreased cognitive and physical abilities make this people more sensitive and vulnerable. Besides, various diseases and other health related

problems affect elderly's living conditions and life quality.

Some of the reasons of these are as follows:

1. Some changes take place in gastrointestinal tract.
2. The liver function differentiates.
3. The amount of body secretions vary.
4. The amount of body water decreases.
5. Because of all this, changes in absorption and effects of drugs occur.
6. Reduction in sensory perception is seen frequently.
7. Emotional changes can be intensely seen^{3,4,5}.

2. MATERIALS AND METHODS:

This study will begin with the information about the prevalence and types of unnecessary medications taken by older adults with polypharmacy. This study will also highlight the cost of unnecessary drug therapy being used by the geriatric adults. The research type was a Descriptive Prospective Observational Study. The study was carried out for a period of 6 months at MNR General Hospital, Sangareddy, Telangana State, India only after careful considerations of inclusion and exclusion criteria.

Method:

Obtaining clearance certificate from Institutional Ethical Committee:

For obtaining the ethical clearance certificate and application along with study protocol which include the proposed title, study site, inclusion and exclusion criteria, objective and methodology about work to be carried out was submitted to the chairman of the Institutional Ethical Committee of MNR Hospital, Sangareddy, TS, India.

Data entry format

A separate data entry for incorporating inpatient details was designed. It includes demographic details, family history, medical history, diagnosis, categories of drug prescribed, adverse drug reactions.

Collection of data

The study was planned to investigate 200 patient records to increase the precision of the parameters. Patient records from inpatient wards of general medicine department of the hospital were obtained.

Analysis of data

The data of the selected patients were collected from general medicine, paying due attention to inclusion and exclusion criteria and were evaluated prospectively for the presence and fulfillment of the following variables:

- Name
- Age
- Gender
- Chief complaints
- Diagnosis
- Drug chart/treatment plan

Ethical Considerations

The study was conducted after obtaining ethical clearance from the Institutional Ethical committee. Privacy and confidentiality were ensured during the Clinical care services.

Statistical analysis:

Data obtained were entered and analyzed using Statistical package for Social Science (SPSS) version 22 to obtain p-value. A p-value of <0.005 was obtained and was considered statistically significant.

3. RESULTS AND DISCUSSION:

With the increasing age an individual develops an increasing vulnerability to develop diseases. In the elderly, the tendency to acquire multiple and chronic diseases is high. This population therefore are prescribed more number of drugs than younger populations. In addition, multiple complaints, atypical disease presentation and physician prescribing habits and practices have resulted in the use of multiple drugs in these people⁶. Elderly people receive a higher number of prescriptions in hospital and community than younger patients⁷.

Out of the 200 patients enrolled in the study, 108 (54%) were women and 92 (46%) were men. Majority of the women population acquiring polypharmacy shows that women are more vulnerable to diseases and disorders when compared with men. The results were depicted in Figure 1. Of the 200 patients, 88 patients fall under the age group of 60-65, 57 patients fall under the age group of 66-70 and 44 patients fall under the age group of >70. Polypharmacy is mostly observed in the age group of 60-65. The results were depicted in Figure 2. The total study showed that a total of 911 drugs were

prescribed for geriatric patients during hospitalization. There were 25 patients taking 1-3 drugs per day, 72 patients taking 3-5 drugs per prescription and 103 patients were taking >5 drugs per prescription. The results were depicted in Figure 3. The study showed that unnecessary drug therapy occurred in 146 cases. Out of these 27 cases showed no medical indication as the reason for unnecessary drug therapy, 25 cases showed no recommended drug therapy as the reason for unnecessary drug therapy, 94 cases showed therapeutic duplication as the reason for unnecessary drug therapy and 54 cases showed no unnecessary drug therapy and the therapy was rationale.

The results were depicted in Figure 4. The agent most commonly associated with unnecessary drug therapy was drug of class Antibiotics (ceftriaxone, metronidazole, cefotaxime). Antibiotics were mostly prescribed in 38 cases of 200 cases collected. The next classes of drugs which have been mostly prescribed are Non-steroidal Anti- Inflammatory Drugs (diclofenac, paracetamol) followed by Anti-Hypertensives (telmisartan, losartan).

The results were depicted in Figure 5 and Tabulated in Table 1. The total average drug cost of unnecessary drug therapy is equal to INR 21.641. The major cost of Polypharmacy incurred due to use of Antibiotics. The cost of multiple drug therapy should be considered, because the patient must receive rational drug therapy. The total average drug cost of unnecessary drug therapy is equal to INR 21.641. The major cost of Polypharmacy incurred due to use of Antibiotics. The cost of multiple drug therapy should be considered, because the patient must receive rational drug therapy. The results are tabulated in Table 2. A total of 146 incidences were reported with unnecessary drug therapy. Of these 146, majority of unnecessary drug therapy occurred because of antibiotics. Because of the overuse of antibiotics the patient develops resistance towards the drug and thereby affecting the patient's quality of life. The results were depicted in Figure 6 and Tabulated in Table 3. Occurrence of unnecessary drug therapy for five drugs or less/day was less than with more than five drugs/day. The chi square test value is 28.67. The result is found to be significant at p value less than 0.005. The results were tabulated in Table 4.

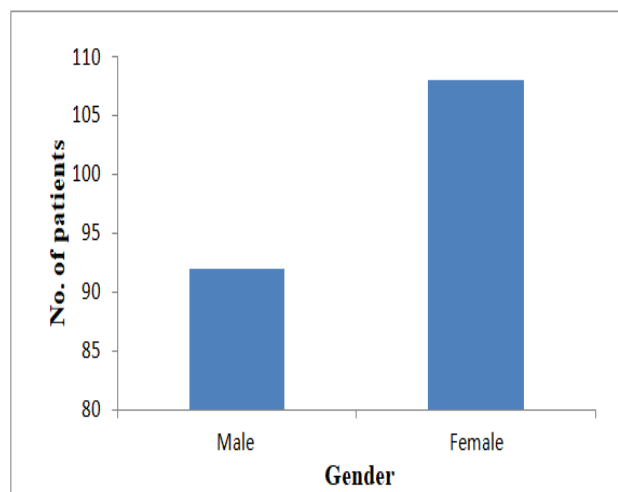


Figure 1: Gender distribution of geriatric patients

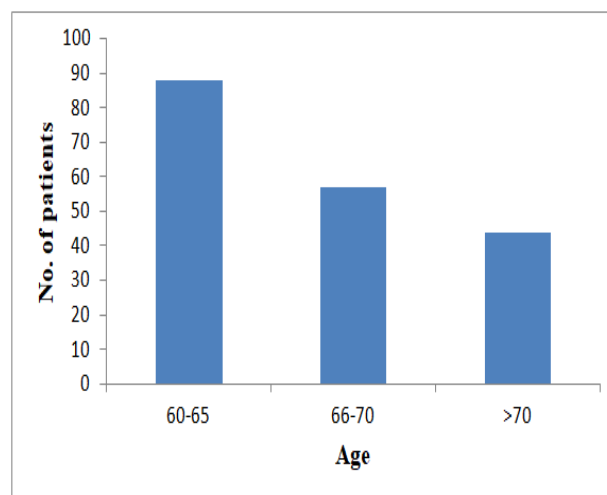


Figure 2: Age distribution of geriatric patient

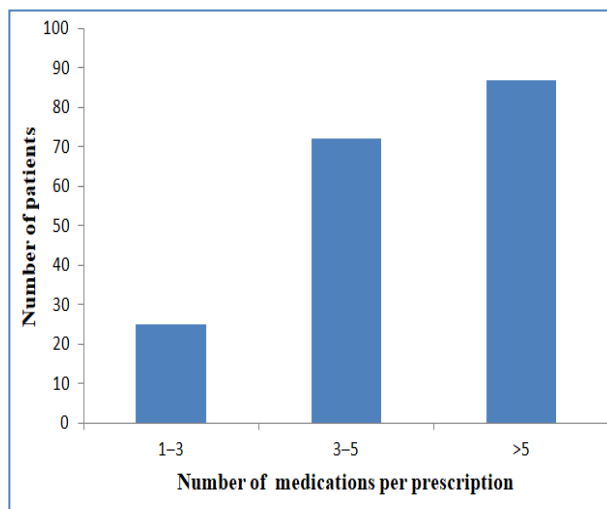


Figure 3: Number of drugs prescribed per prescription

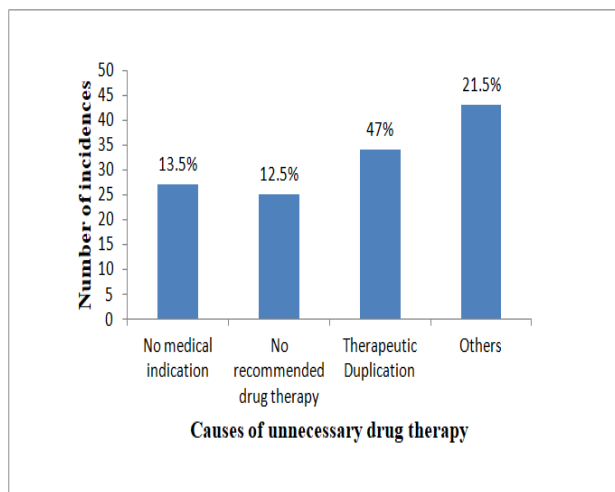


Figure 4: Types of unnecessary drug therapy on geriatric hospitalized patients

Table 1: Distribution of medication associated with unnecessary drug therapy

Class of unnecessary medication	Number of incidences
Antibiotics	38
Anti-Hypertensive	24
NSAIDs	30
Anti-Platelet agents	12
Vitamins and minerals	18
Benzodiazepines	3
Bronchodilators	7
Anti Hyperlipidaemics	4
Anti-emetic	4
Anticonvulsant	4
Anti-diarrhea	1
Antiplatelet	12
Antacid	2
Antiparkinson	2

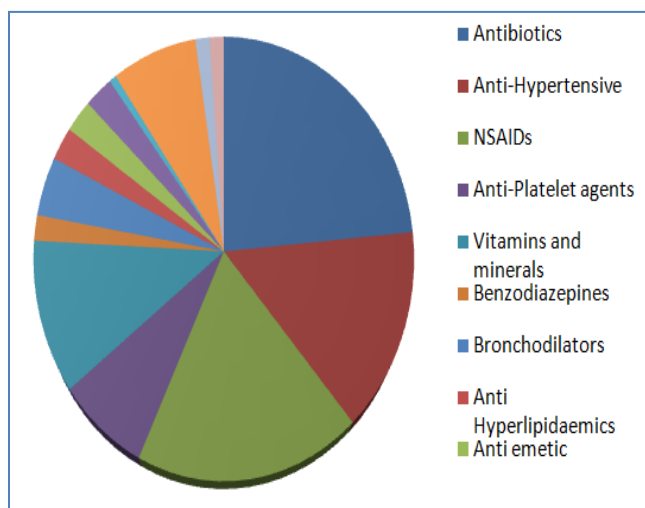


Figure 5: Distribution of medication associated with unnecessary drug therapy

Table 2: Distribution of cost of medication related with Polypharmacy

Class of unnecessary medication	Average Cost of the drug
Antibiotics	112.18
Anti-Hypertensive	6.22
NSAIDs	7.48
Anti-Platelet agents	11.3
Vitamins and minerals	24.87
Benzodiazepines	12.2
Bronchodilators	12.85
Anti Hyperlipidaemics	7.3
Anti emetic	7.72
Antidiarrhoea	8.2
Antiplatelet	11.3
Antiparkinson	42.54
Antacid	1.6
Anticonvulsants	37.76

Table 3: Distribution of medications in relation to the organ systems

Class of medication	No.	%
Cardiovascular and Hematopoietic system	12	8.21
Gastrointestinal and Hepatobiliarysystem	8	5.47
Antibiotics	38	26.02
vitamins and minerals	18	12.32
Neuromuscular	9	6.14
Metabolic system	24	16.43
Respiratory system	7	4.79
Corticosteroid Hormones	30	20.54
TOTAL	146	100

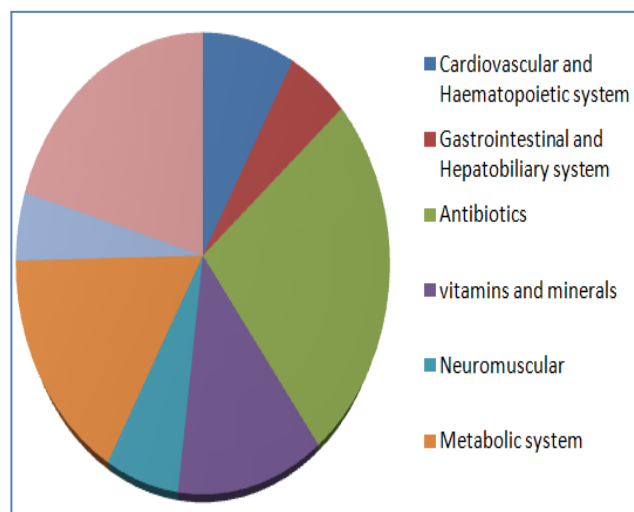


Figure 6: Distribution of medications in relation to the organ systems

Table 4: Statistical Analysis of unnecessary drug therapy

No. of drugs	No. of unnecessary drugs present	No. of unnecessary drugs absent
>5	88[70.04%]	15[32.96%]
5 and <5	48[65.96%]	49[10.39%]

CONCLUSION:

“An over – indulgence of anything, even something as pure as water, can intoxicate.” Added to this, if there is multiple drug use it may lead to adverse consequences on an individual’s health. Therefore, it is recommended that, all medicines without therapeutic benefit, goal or indication should be eliminated from the treatment regimen. Prevention of polypharmacy and unnecessary drug therapy can be reduced through effective patient counselling and constant monitoring of medication. The study concluded that minimization of polypharmacy also results in cost-effective treatment and reduction in iatrogenic diseases in geriatric population.

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