

Original Research Article

## Evaluate the Appropriateness of Drug Therapy in Geriatrics at Palakkad District

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### ABSTRACT

**Background Information:** Inappropriate prescribing in the elderly population is now considered as major public health issue, given its direct linkage to substantial morbidity, mortality and wastage of health resources that result from adverse drug reactions. Improving prescribing quality for elderly patient means reducing irrational and inappropriate prescribing, thereby resulting in better healthcare of elderly.

**Aim & Objectives:** Evaluate the appropriateness of drug therapy on geriatrics and to obtain the information on demographic characteristics of the patients.

**Materials & Methods:** This prospective observational study was carried out using a predesigned data collection form, questionnaire and medication appropriateness index (MAI). A total of 482 cases were collected during the 6 months study period. 65 and above aged elderly patients were included in this study. The study was conducted at various hospitals in Palakkad District.

**Results:** Out of 482 patients, 40.87% patients were in the age group 65-69 year. The health problems were more prevalent among male patients (56.22%) than females (43.77%). Most common health problems found in geriatrics were, COPD (25.31%), HT (16.39%), DM (18.25%), CAD (10.99%). 41.28% had incidence of ADR. A total of 575 drug interactions were identified, among which 42.60% were moderate, 22.78% were minor and 34.60% had no drug interactions. 81.95% prescriptions were marginally appropriate and 18.04% were appropriate.

**Keywords:** Geriatrics, Appropriateness, Medication Appropriate Index (MAI), Health Problems, Marginally appropriate, Inappropriate.

### INTRODUCTION

Inappropriate prescribing can be defined as a situation in which the pharmacotherapy does not meet accepted medical standards. It may include things such as under-prescribing, overprescribing, and misprescribing. <sup>[1]</sup> It is highly prevalent and is associated with an increased risk of adverse drug events, morbidity, mortality and healthcare utilization. <sup>[2]</sup>

Appropriateness in healthcare has been defined as “the outcomes of process of

decision making that maximizes net health gains within society’s available resources”. Appropriate prescribing also associated with reduction of over-use, under-use and misuse of treatment. Inappropriate prescribing is now considered as major public health issue, given its direct linkage to substantial morbidity, mortality and wastage of health resources that result from adverse drug reactions. <sup>[3]</sup> Improving prescribing quality for elderly patient means reducing irrational and inappropriate prescribing, thereby

resulting in better healthcare of elderly patients. The assessment of the appropriateness of prescription in elderly is an essentially complex task and the health researchers have identified various cases of inappropriate drug use in the elderly in several countries. The Medication Appropriateness Index (MAI) is an implicit tool which measures prescribing appropriateness according to ten criteria. [4] These ten criteria address the indication, effectiveness, dosage, and accuracy, practicality of directions for administration, drug interactions, relative expenses and duration of treatment. Each Criterion is weighted 1-3. For indication and effectiveness a weight of three was assigned. A weight of two was assigned to dosage, practical directions, correct directions and drug-drug interaction. A weight of one was given to drug-disease interactions, expense, duplication and duration. This resulted in a score of 0-18 (where 0 stands for maximum appropriateness per medication and 18 stand for maximum inappropriateness). [3] The main aim of the study is to evaluate appropriateness of drug therapy in geriatrics to modify the existing geriatric care practice.

## MATERIALS AND METHODS

**Study site:** Various hospitals in Palakkad District, Kerala.

**Study design:** The study was designed as a prospective study.

**Study duration:** The duration for data collection was 6 months.

**Study population:** A total of 482 geriatric patients were included in the study.

**Study criteria:**

**Inclusion criteria:** Both inpatients and outpatients aged 65 years and above of General Medicine Department were included.

**Exclusion criteria:** Patients unwilling to participate in the study were excluded.

**Data collection Method:** A predesigned data entry form, questionnaire and was used to obtain patients details and medication

appropriateness index (MAI) was used to evaluate appropriateness of drug therapy.

## RESULTS

**Table 1: Socio demographic characteristics of elderly patients**

Variables	Number of Patients (n)=482	Percentage (%)
<b>Age</b>		
65-69	197	40.87
70-74	98	20.33
75-79	89	18.46
80-84	62	12.86
85-89	32	6.63
>89	4	0.82
<b>Gender</b>		
Male	271	56.22
Female	211	43.77
<b>Education status</b>		
Illiterate	134	27.80
Primary	132	27.38
High school	173	35.89
College	43	8.92
<b>Marital status</b>		
Married	369	76.55
Widowed	113	23.44
<b>Social habits</b>		
Alcoholics	63	13.07
Previous alcoholic	114	23.65
Non-alcoholic	305	63.27
Smoker	98	20.33
Previous smoker	117	24.27
Non- smoker	267	55.39

Out of 482 elderly patients, 40.87% were in the age group 65-69 and least number of patients belongs to >89 years. Gender wise distribution shows that, 56.22% were males and 43.77% were females and the health problems were more prevalent in males than in females. According to the study 72.19% were literate and 27.80% were illiterate. The marital status shows that 76.55% were married. The social history reveals only 13.07% were alcoholics and 20.33% were smokers.

**Table 2: Health problems wise distribution of patients**

Health problems	Number of patients (n=482)	Percentage (%)
HT	79	16.39
DM	88	18.25
COPD	122	25.31
CAD	53	10.99
Stroke	27	5.60
RA	2	0.41
OA	13	2.69
Anaemia	4	0.82
Hypothyroidism	6	1.24
TB	6	1.24
Pneumonia	2	0.41
CCF	18	3.73
Asthma	34	7.05
Peptic ulcer	8	1.65
Parkinson's	6	1.24
UTI	5	1.03
Epilepsy	9	1.86

The above table show that the most common health problem found in geriatric patients was Chronic Obstructive Pulmonary Disease (25.31%), followed by Diabetes Mellitus (18.25%) and Hypertension (16.39%).

**Table 3: Distribution of geriatrics according to ADR & Drug interactions**

Variables	Number of patients (n=482)	Percentage (%)
With ADR	199	41.28
Without ADR	283	58.71
No drug interaction	199	34.60
Moderate drug interaction	245	42.60
Minor drug interaction	131	22.78

Table 3 indicates 41.28% were identified with ADR and 58.71% had no incidence of ADR. A total of 575 drug interactions were identified, among which 42.60% were moderate, 22.78% were minor and 34.60% had no drug interactions.

**Table 4: Appropriateness of prescriptions as per MAI**

Type of prescriptions	Number of prescriptions (n=482)	Percentage (%)
Appropriate	87	18.04
Marginally appropriate	395	81.95
Inappropriate	0	0

According to this study 81.95% prescriptions were marginally appropriate and 18.04% were appropriate. Inappropriate prescriptions were not prescribed.

## DISCUSSION

Table 1 shows that out of 482 cases, 197 patients (40.87%) belongs to the age group of 65-69 years and minimum number of patients belongs to > 89years i.e. 4 (0.82%) which was found to be in accordance with the study conducted by Mandavi et al. [3] According to the gender distribution 56.22% were males and 43.77% were females. Which was found to be in contrast with the study conducted by Lina M. Hellstrom et al. [5] Education status of elderly patients indicate that, 35.89% had high school education and about 27.38 % patients had education below high school and 8.92% have degree and 27.80% patients were uneducate. Dilip. C et al. [7] conducted the same study and found that out of 65 patients 41.53% had high school education

and about 47.6% of patients had education below high school. 10.76% of patients were uneducated. The study shows that, 76.55% were married and 23.44% were widowed. Shraddha K et al. [9] shown a similar result i.e. more number of patients were married. Social habits shows that 55.39% were non smokers and 63.27% were non alcoholics. A study conducted by Ramanath KV et al. [6] shows a similar result.

Table 2 shows that the commonly observed health problems among geriatric patients were COPD, HT, DM, and CAD. G K Medhi et al. [11] conducted a same study on geriatrics and found that HT was the most prevalent disease, followed by musculoskeletal disease and COPD.

The patients with ADR was 41.28% and without ADR was 58.71%, but no ADR were observed in the study conducted by Ramanath KV et al. [6] This study reveals that total number of drug interactions were 575, among that 245(42.60%) were moderate, 131(22.78%) were minor and 199 (34.60%) had no drug interactions, which was in accordance with the study conducted by Maheshkumar V. P et al. [10] (Table 3).

From table 4, 81.95% prescriptions were marginally appropriate and 18.04% were appropriate which shows that no prescriptions were inappropriately prescribed. The result contrast with the study conducted by Lorna Marie et al. [8]

## CONCLUSION

The study was conducted to evaluate the appropriateness of drug therapy in geriatrics. The result shows that, health problems were more common in age group 65-69. COPD, DM, HT, CAD were the most prevalent health problems. Out of 482 prescriptions, 81.95% were marginally appropriate.

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