



## MEDICATIONS IN ELDERLY; RELATED PROBLEMS AND APPROACHES TO OVERCOME

### Pharmacology

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### ABSTRACT

The demographic shift and increase in the population is so fast that, by 2050, the low and middle income countries are expected to have 80% of the elderly individuals. These individuals are considered as specialised group in relation to the medications. The use of medications in the elderly individual looks complicated and slightly difficult, making it more challenging with good outcome. Therefore, many things need to be considered while treating an elderly individual such as their physiological state, psychological conditions, existing comorbid states and the treatment received by them. Generally, as several medical conditions coexist, care has to be administered not to use more or not to use less number of medications; thus making it essential to optimise the therapy. Further, considering the expected medication related problems like; adverse drug reactions, drug interactions, drug resistance etc., particularly in long term therapy, it becomes ideal to follow the standard treatment guidelines, rational drug therapy and several guiding indices such as BEERS criteria, The Screening Tool of Older Person Prescription (STOPP) criteria, Fit FOR The Aged (FORTA), Drug Burden Index, etc. In this review article, authors have made an attempt to discuss few simple measures to overcome the likely problems associated in the treatment of the elderly individuals, most of which are preventable.

### KEYWORDS

Adverse Drug Reactions, Beers Criteria, Drug Interactions, Elderly.

### INTRODUCTION

Across the world demographic shift and increase in the population of the aged is so fast that by 2050, the low and middle income countries are expected to have 80% of older people. Further, it is estimated that by 2030, every 1 in 6 people would be of the age above 60 and by 2050, Two third of the world population in low and middle economic countries would have the individuals with age 60 and above. Thus increase in the life span of an individual has today led to an increase in the population of the elderly [1].

When it comes to the use of medication, special attention and care is administered for the use of drugs in specialised populations. Elderly individuals form the specialised group of population who tend to suffer with multiple health issues, which lead them to either visit a doctor to seek prescription or visit the pharmacists and yield to self-medication or they would depend on somebodies' old prescription (friend / family members), suffering with same ailment to treat themselves. Such a way of health management makes them suffer with added problems in the form of drug interactions, adverse drug reactions, development of drug resistance etc., that ultimately adds to the expenses on health care management.

Medication in the elderly thus needs to be optimised based on the patient's age, physical condition, comorbid state and physiological status while choosing and monitoring the treatment of an elderly. This specialised group needs to be carefully attended while treating because of several factors which include their aging process, physiological changes, economic and psychological state.

Generally, the elderly individuals depend on the prescribed medications by a qualified doctor, over the counter (OTC) preparations, self-medications and herbal preparations etc. to manage their health related problems. It has been observed that the percentage of depending on the prescribed medications and the self-medication is almost equal in this group of individuals [2]. Similarly, the use of herbal medicines, dietary supplements has also been very commonly (63%) practised by the elderly individuals [3]. Hence, they often face problems like the drug – drug interactions or the adverse drug reactions, tolerance etc., which are preventable [4].

### Principles In The Management Of The Elderly

As the age advances several pharmacodynamics changes like decrease in the gastric motility, altered hepatic and renal functions, decrease in the plasma volume, decreased vasomotor regulation and impaired glucose tolerance occur, which could contribute to the adverse events and adverse drug reactions. Similarly, the kinetics are also altered in the elderly individuals affecting the absorption, distribution, metabolism and elimination of the administered drugs [5,6].

Therefore, while managing an elderly with any health problem it is essential to;

1. Establish a definite diagnosis and to the condition while considering the risk benefit ratio.
2. Frequent review of the drug regimen.
3. The number of drugs used to treat the condition to be minimal.
4. Avoid confusion to the patient in taking the medicines.
5. Improve the patient compliance.

### Importance For The Rational Drug Therapy In The Elderly

Practice of polypharmacy in management of the health problems of the elderly individual leads poor patient compliance, drug – drug interaction and adverse drug reactions. Polypharmacy by definitions means “use of 4/5 drugs [7,8]. The practice of polypharmacy varies among countries and is found to be more with elderly which is almost 35-45% for the individuals above 75years. This practice of polypharmacy invariably increases the risk of adverse drug reaction and other drug related complications, in the elderly due to the pharmacodynamics and pharmacokinetic changes that naturally occur and the risk is compounded with the increase in the number of medications, further increasing the risk of hospitalisation [9].

One of the common cause of polypharmacy could be multiple ailments with which the elderly individuals suffer, which compels them for the use of multiple drugs. Secondly, the elderly individuals at times are not contented by the treating physician and they have the habit of consulting multiple doctors for their health related problems and fail to mention the medications that they are already taking, this will complicate for consuming the repeat medications, there would be an increase in the number of medicines the individual would consume and succumb to the drug related problems like the drug- drug interactions, adverse drug reactions etc. [10]. At times, the elderly individuals experience new symptoms which could either be due to the disease process or the aging process of the individual, which are often managed by adding some more medicines which is called as the prescription cascade [7,11].

Inappropriate use of the medications is also common prevalent problem observed in the elderly. The drug is said to be inappropriate when it has unacceptable side effects, it requires close monitoring, has significant interactions with the concurrent preparations and has no current indications. The practice of polypharmacy may not always be inappropriate as, at times, there may be need of prescribing four drugs or more [12]. Hence, it is always important to focus on the principles of pharmacotherapy along with the count of medicines.

In order to avoid or reduce the use of inappropriate drugs in elderly, several criteria have been developed by the expert panels to evaluate

the prescription patterns and the use of medicines in the elderly which include; BEERS criteria, Drug Burden Index, The Screening Tool of Older Person Prescription (STOPP) criteria, Fit FOR The Aged (FORTA) etc. [13,14,15,16,17,18,19].

There has always been an emphasis on the practice of polypharmacy or over prescribing of the medications for the elderly, while it is important to know that under prescribing of the appropriate medication for the elderly is also a matter of concern, which needs to be addressed based on the individual disease entity, as very often the elderly individuals suffer with multiple health problems [20].

The BEER criteria is commonly used to assess the use of inappropriate drug prescription, as, the BEER's list identifies the inappropriate drug therapy that are available as Over The Counter (OTC) preparations. This makes it important for every practitioner to emphasise and consider the use of OTC preparations while reviewing the patient's medications [21].

However, due to the comorbid conditions existing in the elderly individuals, according to the START criteria, adults need to take more than 6 essential medicines, while considering it as polypharmacy the clinicians take decision to limit the count of medications so as to improve the patient compliance, reduce the chances of drug interactions, and benefit them with active management of the serious condition they present.

Many times, it is difficult for the clinicians to recognise the medications benefit that an individual obtains with their use in elderly (preventive) as, this group of individuals are not included for interpretation of the study results while testing the drugs [22].

#### Adverse Drug Events

The physiological changes in the elderly, their cognitive status, the comorbid conditions, number of drugs prescribed, the dose prescribed, long term use of the medications to treat the chronic clinical conditions, all contribute to the occurrence of the adverse drug events. Occurrence of such adverse drug reactions in the elderly, increase the number of hospital admissions in them, which can be prevented with cautious use of the medications [23,24]. As a vicious cycle following the adverse drug reactions, if this gets misdiagnosed as an appearance of a new symptom then it gets treated unnecessarily with another drug which results in the prescribing cascade [7, 25]. For example; treating an elderly with the symptoms of parkinsonism, developed due to the antipsychotic preparations or metoclopramide [26,27]. Also, they succumb to the drug- drug interactions, as they very often suffer with the co morbid conditions that are treated with multiple drug therapies which further add to the increase in the frequency of hospitalisation of such individuals [28].

All the problems associated with the use of medicines in the elderly can be prevented by adapting certain healthy practices which include;

- i. Periodical review of the drug treatment or regimen choose safe preparation, in appropriate dose, for appropriate duration considering the individual's psychological status, comorbid conditions, possible drug interactions and side effects etc. [29].
- ii. Discontinue the unnecessary preparation by considering the expected risk of the adverse drug reactions. However, it essential to withdraw the drug gradually by tapering the dose, to minimise the withdrawal reactions which prove to be problematic. For example; withdrawal of beta blockers, antidepressants etc. [30]
- iii. Reduction of dose & Dose scheduling. Considering the ageing process, the Pharmacodynamics and Pharmacokinetic changes in the individual along with possible side effects, it is always apt to practice the use of minimal dose in the treatment of the elderly to obtain good outcome with minimal associated adverse reactions. Further, by simplifying the dose schedule one can minimise the possible confusion in medication and thus improve the Patient Compliance [31].
- iv. Use of essential medicines and regularly, following the standard treatment guidelines to treat the elderly, helps reduce the medication related complications in the elderly.
- v. Evidence based practice and use of P Drugs can improve the selection of the medicine based on the criteria of safety & efficacy, suitability and the cost of medications (Pharmacovigilance & Pharmaco-economics) would help in preventing the possibility of the drug resistance or the occurrence of adverse drug reactions [32,33].
- vi. It would always be prudent to use the available tools and criteria

for the use of appropriate medicines while treating the elderly.

#### CONCLUSION

Considering the elderly population as a special group it is very essential for the use of rational medication therapy. Meticulous practice of rational drug use, considering all the possible factors that complicate treating the elderly, the likely complications, morbidity and mortality can be overcome along with the reduction in the expenses.

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