Introduction

Population aging is considered as the most serious problem in developed countries and is going to be a threat for developing countries also. Aging is associated with various physiological changes and multiple diseases like diabetes, hypertension, arthritis etc. which alter the pharmacological response to a drug. Moreover, elderly people are more sensitive to frequently used drugs like NSAIDs, benzodiazepines, opioids etc. All these factors alter the drug response resulting in adverse drug reactions (ADRs) and hospitalization, consuming 40% of health service expenditure in developed countries. Concurrent use of multiple medications, greater than five by a single patient is a Polypharmacy and it is a common occurrence in elderly patients due to a variety of reasons like increasing number of chronic health conditions, patients being treated by multiple prescribing physicians, availability of nonprescription drugs, high cost of prescription medications, hoarding of old medications, inadequate patient knowledge of medications and medical conditions, patients using different sources of medication, often with little or no coordination between these sources, taking at least one medication for every diagnosis and tendency toward self-treatment/self-medication.

Multiple medications in single prescription is common in medical care of individuals over age 60, it is a population that consumes more than 30 percent of all prescribed drugs.[1] Of these patients, approximately 50 percent take five or more medications regularly, and 12 percent take at least 10 medications regularly.[2] The common prescriptions of therapeutic drug use in community-dwelling elderly has major implications for patient safety. A cohort study of Medicare enrollees in the ambulatory clinic setting demonstrated an adverse drug event (ADE) rate of 50.1 per 1,000 person-years, with 38 percent of the events categorized as severe, life threatening, or fatal.[3] A cohort study of Medicare enrollees in the ambulatory clinic setting demonstrated an adverse drug event (ADE) rate of 50.1 per 1,000 person-years, with 38 percent of the events categorized as severe, life threatening, or fatal.[3] Furthermore, each ADE in ambulatory patients older than 65 is estimated to cost an average of Rs.20,000 in additional health care expenditures. Key factors predisposing elderly patients to ADEs include age-related changes in physiology and drug metabolism; use of five to seven medications regularly doubles the risk for an ADE; use of eight or more medications regularly triples this risk; number of comorbidities; and visits to multiple physicians.
In Indian Geriatric population scenario could be worst as compared to the developed countries. As per Census 2001, the geriatric population accounted for 7.4% (76622) of the total population which increased to 8.2% (98470) by 2011 and is likely to be 10.7% (143244) by the year 2021 it will be 140 million[1, 2]. As drugs play a crucial role in geriatric health care as they treat chronic diseases, alleviate pain and improve quality of life [3]. About one third of the elderly patients in India are hospitalized due to the adverse reactions of the drugs [4, 5], which have also reported to be among the leading causes of morbidity and mortality [6-8]. 80% Adverse Drug Reactions (ADRs) of type A contribute to it [9, 10]. Majority of studies have shown that prevalence of ADRs is higher in the elderly as compared to adult . An association between old age and increased rate of adverse drug reactions is established arising out of confounding association between age and polypharmacy (Multiple medications) contributed by age-related physiological changes, pharmacodynamics and pharmacokinetics changes which influence drug handling, drug response and sensitivity in these patients . Moreover, preventable ADRs were found to be more common in geriatric patients

In various studies, the most common classes of drugs causing ADRs in geriatric population are found to be antidiabetics, nonsteroidal anti-inflammatory drugs (NSAIDs), anticancer drugs, cardiovascular drugs, oral anticoagulants and antiplatelets drugs [15-17] and the most common ADRs being edema, nausea or gastrointestinal disturbances, drowsiness or fatigue, headache, and nightmares .

In India addressing risk factors for ADEs in an outpatient population is challenging. Ambulatory care is largely decentralized in multiple independent practices, and as such, treatment of quality and safety initiatives implemented in hospitals or long-term care facilities often do not translate well to community health care settings. One approach to managing medicinal treatment in the ambulatory elderly has focused on inappropriate prescribing based on the Beers list, which indicates medications thought to pose an undesirably high risk of adverse effects in geriatric populations.8. In isolation, identifying specific drugs to avoid is not sufficient for improving safety.9 Failure to prescribe potentially useful medications in the elderly may be equally or even more harmful. For example, a recent study indicated that patients with diabetes who were older and had more comorbidities were less likely to receive intensification of pharmacologic therapy than were younger patients, despite similarly poor glycemic control.10 Likewise, beta-blockers
and lipid-lowering drugs are apparently underused in elderly patients with cardiovascular disease.11, 12 Further areas of concern in pharmacotherapy for community-dwelling elderly include erroneous prescription writing, deficiencies in drug education given to patients, inadequacies of ADE detection systems, and suboptimal monitoring for medication toxicity.

The core components of Risk Management Plan entail patient education, improved adherence to medication, determining patterns of prescription drug use, and detection of ADEs. One randomized controlled trial found that comprehensive chart review by a consultant physician with subsequent modification of a patient’s medication regimen led to 1.5 fewer medications.[21] Pharmacist-physician collaboration facilitated resolution of drug-related problems (DRPs) in a Medicaid population receiving four or more medications. Plan will develop an electronic prescription database and an alert system for high-risk medications, followed by medical field outreach, prompted physicians to adjust drug therapies to more appropriate agents.

We do not have information in Indian Geriatric Population whether critical outcomes of patient safety, morbidity, and mortality can be influenced by RMP program participation. The RMP program will be designed in such a way that the visit frequency, mechanisms of patient-to-other stake holders and other stake holders -to- physician communication, and optimizing ADE prevention—will be the core research area of the study. To investigate above mentioned research questions, it is essential to undertake a research study with well-defined patient safety outcomes.

This prospective study will be focusing on polypharmacy resulting in adverse drug reactions in elderly which is lacking area in Indian Population. Therefore, the present study is designed to study the polypharmacy leading to adverse drug reactions in elderly patients of AacharyaVinobaBhave Rural Hospital, Sawangi, Wardha.

This study also aims to identify the ADRs in geriatric patients to be reported, assessed and reviewed for safety outcomes to ensure the safe use of medicines in geriatric population at high risk.

Study outcomes will help to avoid irrational prescribing, minimize ADRs and maximize benefits of drugs in elderly patients. Above all educating the old patients and their care providers regarding the importance and proper use of drugs to their well-being is necessary to improve
adherence. Hence setting Risk Management Plan for treating elderly patients will enhance their quality of life.