1. INTRODUCTION

Prescribing is the process whereby a doctor, nurse or other registered professional authorizes use of medications or treatments for a patient and provides instructions about how and when those treatments should be used (1,2). Although the term commonly refers to orders for medicines, the concept can also encompass laboratory tests, medical imaging, psychological treatments, eye glasses, eating and exercise regimes or other instructions to help optimize health and wellbeing (1, 2).

Prescriptions are handwritten or computerized documents containing the patient’s name and address, the date, the specific treatments prescribed and an authorizing signature. It is a way for prescribers to communicate with pharmacists or others who in turn fill the prescription (3).

Prescription writing is a science and an art, as it conveys the message from the prescriber to the patient (4). Inappropriate drug prescribing is a global problem (5). Currently, accurate prescribing decisions, appropriate treatment, and rational use of drugs (RUD) are major concerns among healthcare services in India (6). Medically inappropriate and economically inefficient use of medicines is observed throughout the world (6). Rational prescribing means using the right medication, at the right dose, using the right route and frequency of administration for the patient, and stopping the drug appropriately (7).

Many studies have raised serious questions about the prescribing appropriateness and prescription quality (8). Indeed prescription quality has become an important issue in drug therapy. Irrational prescription of drugs is a common occurrence in clinical practice (5). Prescription appears to be irrational when there is a discrepancy between scientific knowledge and physician practice. Appropriateness in health care has been defined as ‘the outcome of a process of decision-making that maximizes net individual health gains within society’s available resources’ (9). This definition also implies that the patient’s attitude is as important in deciding appropriateness as the reasoning that underpins it (10). Rational prescribing forms a corner stone for successful implementation of rational use of drugs (11). The study of prescribing
pattern seeks to monitor and evaluate, if necessary, suggest modifications in prescribing patterns so as to make medical care rational and cost effective (12).

Prescriptions can help people stay healthy or manage long-term conditions or emergency situations. However, as with other components of healthcare, prescriptions are also subject to error and can lead to unintended harm. Medication errors are one of the most common patient safety issues and prescribing errors are one of the most common types of medication errors (13-18). Prescribing errors are common, with systematic reviews suggesting that as many as 50% of hospital admissions and 7% of medication orders are affected (19). In recent studies, prescribing errors have been found to affect approximately 9–15% of medication orders for hospital inpatients in the UK (16, 20). Over one-third of 651 patients were found to have a prescribing error occurring during hospital admission in the USA (21). Prescribing errors can take many forms, but commonly involve incorrect doses, illegible details or ordering inappropriate medications or drugs that may react with other medications already being taken. Prescribing errors may have various unfavorable consequences. Hence, the components of a prescription should be clearly written, free of drug related omission (incomplete prescription), commission (incorrect information) and integration errors, without nonofficial abbreviations, and fulfill the legal requirements of a prescription. Prescribing errors in primary care are a preventable source of harm, with a systematic review showing that they account for around 3.7% of hospital admissions (22). In one study, prescriptions were screened by community pharmacists for prescribing errors; prescribing errors were identified in 7.5% of prescribed items (23). A study in care homes showed that 39% of 256 residents had one or more prescribing errors, with 8.3% of prescription items (or intended prescription items) affected (24).

Quality of prescription may differ at primary and secondary health care level as compared to tertiary health level. Prevalence of prescribing error is likely to be high in chronic illnesses. Chances of irrational prescribing may also be higher in geriatric population (25).
Study rationale

As it is evident, prescribing practice is far away from ideal prescription. Poor quality of prescribing is a matter of concern at all healthcare levels. This indicates a need for pharmacy and medical educators to further emphasize the importance of writing clear and complete prescriptions. It also calls for the implementation of educational program and monitoring specific program to bring more awareness to all concerned so as to minimize the occurrence of prescribing errors and improve quality of prescribing. For monitoring, the prescription audit is a commonly used method. Prescription audit is systematic evaluation of each drug prescribed in prescription. Prescription audit parameters includes format of prescription, overprescribing, underperscribing, polypharmacy, indication, diagnosis, cost, safety and appropriate drug regimen (20).

Different types of drug use studies evaluating the quality of prescribing are reported from all over the world. However, one of the great limitations in measuring the quality of prescription is lack of a method that is sufficiently valid and reliable to allow systematic use in clinical setting (8). Various measures which have been developed to evaluate prescribing quality, include explicit indicators such as Beers criteria (26, 27), and other such as the Medication Appropriateness Index (MAI) developed by Hanlon et al. (8,28) at Duke University Medical Centre (Durham, NC, USA) to evaluate the appropriateness of medication use in individual patients (8), WHO prescribing indicators (29) and multidimensional indicators such as comprehensive medication review with regard to indications for drug use and active medical conditions (30). The Swedish National Board of Health and Welfare explicit indicators for evaluation of drug therapy among elderly patients (31), the improved prescribing in the elderly tool (IPET) (25) and the PRISCUS List by Holt S et al. (32) are some other indicators. However, there is no universal definition of medication appropriateness, because quality may be assessed in different ways, depending on data available (prescription database vs. individual assessments), setting, and comprehensiveness. Beers' criteria include explicit (criterion-based) or implicit (judgment-based) prescribing indicators for evaluating prescribing practice for elderly
patients. More recently, the STOPP (Screening Tool of Older Persons’ potentially inappropriate Prescriptions) criteria were validated in a European setting (33) and the START (Screening Tool to Alert doctors to the Right Treatment) criteria, which highlight under prescription or omission of clinically indicated, evidence based medications (25), for evaluating quality of prescribing to elderly were introduced but they are not specifically designed to address the multiple problems associated with prescription quality (8). Most of measures are based on expert judgment of practitioners or consensus (34-36) without information on the psychometric properties of the instruments (8). None of these tools covers all the dimensions of appropriate prescribing. The tool which would evaluate all aspects of prescription right from the selection of the drug to complete prescribing instructions would be most appropriate.

In 2010, development of a new tool called Prescription Quality Index (PQI) was described which has been standardized and validated (8). The present study focuses on evaluation of quality of prescription using Prescription Quality Index (PQI) tool which has 22 criteria. Hassan et al stated that “The PQI was developed with a strong structural foundation and claims to capture clinical, clerical and legal requirements of a prescription” (8). Author also stated that “The PQI is claimed to capture the multidimensional criteria of prescription quality” and “PQI incorporates the concept of rational drug therapy, evidence based approach and other criteria required for prescription quality” (8). Furthermore, PQI was also able to discriminate between the proportion of good prescriptions and prescriptions with problem (8). The developers of this tool believe that the use of this tool will enable the quality of prescription to be measured, analyzed and monitored. Therefore, the benefits of interventions can be examined for further improvement in patient care (8).

To my knowledge this new tool for assessment of quality of prescribing has not been used by any investigators. Hence, the present study was planned to evaluate the quality of prescribing at primary, secondary and tertiary care health care setting with the help of Prescription Quality Index tool in chronic illnesses. As it is obvious, prescribing problems are likely to be more in chronic illnesses. In the same way, higher incidence of inappropriate prescribing is expected in geriatric patients due to multiple morbidities and polypharmacy. The study focuses on two chronic illnesses
namely hypertension and bronchial asthma. The prescribing quality in elderly patients was also evaluated. A prospective cross-sectional study was planned at all the three levels of health care facilities namely primary health care centre, secondary health care facility like community health care centre and tertiary care hospital for collection of relevant data.