LITERATURE REVIEW

1. Cecilia Bernsten, et al (2001). They performed a research aimed to measure the outcomes of a harmonized, structured pharmaceutical care programme provided to elderly patients by community pharmacists in a multicenter international study performed in 7 European countries. The study concluded a general decline in health related quality of life over time was observed in the pooled data; however, significant improvements were achieved in patients involved in the pharmaceutical care programme in some countries.

2. I Wong, et.al (2004). They conducted a randomised multiple interpreted time series study. As UK is facing unprecedented growth in the number of elderly people the department of health has prepared the national service framework for the elderly. The primary outcome measure was the Medication appropriate index and secondary measures include adverse events, quality of life and patient knowledge and compliance.

3. Elaine lau, etal (2005) carried out an observational study on Drug-related problems in elderly general practice patients receiving pharmaceutical care. The most common DRP identified was not taking or receiving a prescribed drug appropriately. Pharmacists drug-therapy recommendations were well accepted; however, further study is needed to determine the impact of these recommendations on health-related outcomes.

4. Thijs H. A, etal (2006). This pharmacy-based study was performed to identify potential DRPs from prescription records of the elderly and the role of the pharmacist in this process. Medication assessment of elderly patients aged 65 and over using six or more drugs concomitantly took place on the date of inclusion. Ten types of potential DRPs, grouped into three categories, were determined. The three groups were patient-related, prescriber-related or drug-related potential DRPs. The study concludes that Community pharmacists can play an important role in the identification, assessment and prevention of potential DRPs in the elderly.

5. Divaldo Pereira de Lyra Junior, et al (2007) conducted a prospective study at a primary health care unit (PHCU) to evaluate the impact of a Pharmaceutical Care service in the identification and resolution of drug-related problems (DRPs) and in quality of life (QoL) of a group of elderly outpatients with chronic health conditions. Through Pharmaceutical Care, the pharmacist worked with the patient and other care providers to improve outcomes of drug therapy through focused education, care
planning, and monitoring. Intervention outcomes were the number of DRPs prevented or resolved, and the impact on QoL.

6. **Divaldo Pereira de Lyra Júnior, etal. (2008)**. The purpose of their study was to evaluate the effect of pharmacist intervention on the prevention and solution of drug therapy problems (DTP), Body Mass Index (BMI), and blood pressure control in elderly outpatients with hypertension. The instruments were applied to 30 elderly outpatients assisted at the pharmacy of a primary health care unit. They observed that Pharmaceutical Care intervention optimized the medication use; reduced symptoms caused by drug therapy and improved the elderly patients’ health conditions. The pharmaceutical care intervention influenced the care given to elderly people as well as achieved positive health outcome.

7. **Danelia Flalova, etal (2009)**. They carried out the European project increasing participation of the elderly in clinical trials. They concluded that reducing the rate of medication error is a challenging task in geriatric patients, owing to the high prevalence of risk factors, the lack of sufficient evidence on medication safety and efficacy.

8. **Martin Schulz, etal (2010)**. The authors evaluated the effectiveness of community pharmacy-based interventions on lung function, health-related quality of life, and self management in asthma patients in a 12-month controlled intervention study in 26 intervention and 22 control pharmacies. Pharmaceutical care led to significantly improved inhalation technique. Asthma-specific quality of life and the mental health summary score of the SF-36 were improved significantly in the intervention group.

9. **Tumkur A, etal (2010)**. A review on Pharmaceutical care conducted by the authors signifies a shift of practice in pharmacy from being drug product-oriented to the one that is patient-oriented to achieve definite outcomes that improves patients’ quality of life. They suggested that the Community pharmacists have to upgrade their expertise in drug product orientation to that of clinical orientation to provide patient oriented care.

10. **Sujata Sapkota,etal (2011)**. A retrospective study of elderly inpatient record was conducted to analyze drug use pattern and study elderly inpatient file for prevalence and frequency of occurrence of some predetermined prescribing errors. Frequency of occurrence of prescription errors found during the study was rated high. The prescription pattern and the prescription errors had indicated the need to establish proper system of
recording and analyzing therapy before writing a prescription in order to promote rational drug therapy in elderly.

11. **Gopal Kannan, etal (2011).** They conducted a study to identify drug-therapy related problems and resolve them by providing pharmaceutical care. 60 pharmaceutical care issues/drug related problems were identified as per ASHP guidelines, of which lack of understanding of the therapy was the major pharmaceutical care issue, followed by drug-drug interactions, failure to adhere to the therapy on economic grounds, therapeutic duplication and potential adverse drug reaction. This study has demonstrated that a pharmacist can identify Pharmaceutical Care Issues and resolve it by intervention, thereby playing a pivotal role in promoting patient care.

12. **Hossein Khalili, etal (2012).** The aim of their study was to determine the frequency and type of medication errors, the type of clinical pharmacy interventions, acceptance of pharmacist interventions by health-care provider team, nursing staff satisfaction with clinical pharmacy services. Their data demonstrated that incorrect dose was the most frequent medication error in the infectious diseases ward. Clinical pharmacist interventions non-significantly decreased the direct medication cost of patients.

13. **Satish Kumar BP, etal (2013).** They have conducted a prospective, observational and interventional study to assess clinical pharmacist intervention on the drug related problems in medicine ward of tertiary care hospital. A total of 240 patients were followed out of which 49 patients were intervened for having one or more drug related problems. Most of the DRP observed in the study resulted from the inappropriate drug dosing problems followed by drug selection. The study concluded that the clinical pharmacist have a significant role in patients care at hospital.

14. **Grech Louise, etal (2013).** This was a study to evaluate the impact of a newly developed pharmaceutical care services directed to rheumatoid arthritis patients attending an out-patient setting. A total of 88 patients participated in the study and were randomly divided into two equal groups, Group A and Group B. The study was carried out over three phases. They conclude that newly developed individualised pharmaceutical care service provided by the pharmacist led to an improved quality of life as measured by the health related quality of life questionnaires.

15. **Nneoma .N. Okpalanma, etal (2013).** This study was conducted to develop and validate a questionnaire for the assessment of community pharmacists’efforts in the provision of pharmaceutical care. A questionnaire based survey of community Pharmacists was conducted. The questionnaire was constructed in line with behavioural pharmaceutical
care. The questionnaire developed was a reliable and valid questionnaire for assessing pharmaceutical care rendered by community pharmacists in Nigeria.

16. Martínez Sánchez, et al (2013). The study aims to alter the roles and responsibilities of pharmacists in Cuba to enhance existing practice settings, first with revamping educational programs. The main change was the introduction of pharmaceutical care as the professional practice mode. Pharmacy curriculum had provided students with the new knowledge, skills, and abilities required for pharmaceutical care. The Cuban health successes in raising the overall health status of the population have led it to become a model for other developing nations.

17. Monica Gupta, et al (2013). Researchers conducted a review on understanding medical errors in elderly to understand the concept, cause and measurement of medication errors in geriatrics. They concluded that there is an overwhelming need for optimizing the prescribing in elderly through an integrated approach involving physician, pharmacologist, pharmacist and the patient himself.

18. David E. DeMik, et al (2013). A study on Using theory to predict implementation of a physician– pharmacist collaborative intervention within a practice-based research network to determine whether a correlation exists between existing clinical pharmacy services within a practice-based research network (PBRN) showed that there was no significant correlation between clinical pharmacy service scores and attitudes toward implementing a future physician/pharmacist collaborative intervention using the TPB.

19. Rani Reema Abraham, (2013). A prospective cross sectional study was carried out to examine the number and nature of drug related problems in patients with cardiovascular diseases and to demonstrate the role of pharmacist in ensuring safe and efficient use of medicines in daily practice in the inpatient settings. The nature, prevalence and incidence of DRPs were studied and documented using the PCNE (Pharmaceutical Care Network Europe Foundation) classification system. A total of 1051 drugs were prescribed during the study period. The current study demonstrated the importance of routine medication review and the need of a pharmacist in a multidisciplinary team in treating cardiovascular diseases.

20. Hussain Abdullah Mubarak Al Rahbi, et al (2014). The primary objective of this study was to determine the number and types of medication errors intervened by the dispensing
pharmacists at OPD pharmacy. They recommend more number of such research based studies to bring awareness among health care professionals as it can also improve the documentation system, emphasize the importance of it, reduce prescribing errors, and update the knowledge of pharmacists and other health care professionals.

21. **Rana Mohammed Ghazal, et al (2014).** The researchers aimed to explore the extent of obstacles to the professional services provided through community pharmacies in the UAE and to provide baseline data critical to inform the development of strategies to success implementation of pharmaceutical care. Descriptive Qualitative Survey was conducted, which involved exploring data from randomly selected pharmacists working in different UAE community pharmacies. Pharmacists expressed a willingness to implement pharmaceutical care practice but have recognized a number of barriers to successful implementation.

22. **Martha Losada-Camacho, et al (2014).** They conducted a pragmatic randomised controlled trial involving women with epilepsy (WWE) over 18 years of age to establish the impact of the application of a pharmaceutical care programme on the HRQOL of women with pilepsy. The impact was assessed by changes in seizure frequency, in the self-administered. The study demonstrated that the application of a pharmaceutical care programme significantly improves HRQOL in WWE.

23. **Merita Dauti, et al (2014).** This research paper aimed at reviewing the existing legislation, the reforms carried out in time, the existing status of the pharmaceutical community in Macedonia, while comparing it with some of the countries of the EU. In this respect, lots of research in international literature, including scientific articles, presentations, technical reports, and other studies were carried out in order to present the experiences from the EU member states.

24. **Nirmeen Ahmed Sabry, et al (2014).** They conducted a study on Role of clinical pharmacists as perceived by Egyptian physicians to investigate the perceptions and experience of physicians regarding the role of the pharmacists, the pharmacists’ ability to perform clinical services, their acceptance of new pharmacist roles and the extent of collaboration that can occur between the two disciplines. Greater effort needs to be directed towards increasing physicians’ awareness and knowledge of the importance of clinical pharmacist and promote the benefit of the clinical pharmacy service.
25. Biobarakuma A. Joseph, etal (2015). A descriptive study was carried out with a questionnaire for pharmacist in Rivers and Bayelsa States of Nigeria. A descriptive study was carried out with a questionnaire. 205 out of estimated 400 pharmacists practicing in Rivers and Bayelsa States of Nigeria. Data collected was subjected to descriptive analysis using SPSS version 15. The study revealed that Pharmacists do perform pharmaceutical care functions in half the opportunities presented. Pharmacists always establish a therapeutic relationship to begin the practice, evaluate patient related health information, draw up a pharmacotherapeutic plan, and document pharmaceutical care goals respectively.

26. Irsa Jamal, etal (2015). They conducted a study to observe the Pharmacist clinical knowledge about DRPs and the extent to which they participate in reducing the incidences of DRPs. They conclude that majority of the Pharmacists had knowledge about DRPs, other related terms and also about reporting but most of them did not actively participate to reduce incidences of DRPs because of lack of their acceptance by society and other health care professionals, lack of proper reporting system, lack of incentives and lack of time due to managerial job structure specially in case of retail pharmacy setup.

27. Paulo Roque Obreli-Neto, etal (2015). They conducted a study to evaluate the economic cost and the incremental costeffectiveness ratio (ICER) per quality-adjusted life-year (QALY) of pharmaceutical care in the management of diabetes and hypertension in elderly patients in a primary public health care system in a developing country. The study concludes that pharmaceutical care did not significantly increase total direct health care costs, significantly improved health outcomes.

28. Jeannie K Lee, etsal (2015). The authors conducted a study on optimizing pharmacotherapy in elderly patients and the role of pharmacist in the same. They concluded that across various practice setting and disease managed, pharmacists are actively engaged in improving pharmacotherapy for older patients.

29. Madhaw dwivedi, etal (2015). They conducted a review on medication errors. This review suggest that system oriented interventions increases awareness of risk among healthcare personnel, interventions aimed at improving knowledge, training and reducing complexity and the introduction of strict feedback control and monitoring systems can minimize the chances of medication errors.
30. Ogbonna Brian O, et al (2015). This study described the extent of pharmaceutical care activities in community pharmacies in Nigeria to generate information for improved practice. Many non-professionals are involved in community pharmacy practice. Pharmaceutical care is still at teething stage and largely untapped in Nigeria. Community pharmacies have great potentials in rendering public health services through ethical practices, policy reengineering, and enforcement of practice standards. The study concludes that enormous potentials of pharmaceutical care and community pharmacy practice can boost public health services and improve health outcomes at the grassroots.

31. Rijo Mary George, et al (2015). A prospective observational study was conducted to identify various drug related problems in patients admitted to the general ward of a tertiary care hospital and to make suitable drug therapy recommendations. During the study period, a total of 598 drug related problems were identified of which 55.51% were due to prescribing of interacting drugs followed by drug choice problems (12.71%). Three hundred and thirty two drug interactions were observed in 224 patients. Thirty nine adverse drug reactions were observed in the study patients and cardiac drugs were the main class of drugs involved. Eighty seven drug interventions were done in 224 patients. It took an average of 25-35 minutes per intervention. This study shows the positive impact of clinical pharmacists in identification and resolution of drug related problems in a tertiary care hospital.

32. Magdalena Waszyk-Nowaczyk, et al (2016). The aim of their study was to develop the proper documentation to conduct PC in community pharmacy and verification of its correctness in the group of elderly patients. The designed PC documentation were helpful for proper analysis of the patients pharmacotherapy to avoid drug problems and to improve elderly patients quality of life. This contributed to PC implementation in Polish community pharmacy.

33. Jordan D. Haag, et al (2016). They conducted a prospective, randomized, controlled study to evaluate the impact of pharmacist-provided telephonic medication therapy management (MTM) on care quality in a care transitions program (CTP) for high-risk older adults. They observed that the frequent utilization of inappropriate medications as well as medication underuse, and many drug therapy problems remained unresolved.

34. Maheshkumar VP, et al (2016). This study was performed to assess outcomes of clinical pharmacist’s interventions in solving drug related problems in geriatric patients. The drug
selection was the most frequently identified cause for DRPs. Patient medication counseling was the most intervention in the study. Most of the interventions are of high clinical importance. It was an expanding proof that support and intercession of clinical pharmacists in geriatric health care have a positive influence on clinical outcomes.

35. Katta Venkatesh Ramanath, et al (2016). A prospective, observational and interventional study was conducted in geriatrics to assess the impact of pharmacist-provided pharmaceutical care service in geriatric patients. Medication Adherence Rating Scale (MARS) method were used to check adherence status of the patient. Their study clearly suggests that the need for continuous pharmaceutical care services in geriatrics were essential and geriatric pharmacist experts are essential/need for the rural society