

# Interventions for type 2 diabetes literature review



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1. Ganachari M S et al (2010) conducted “ Assessment of Drug Therapy Interventions by Clinical Pharmacist in a Tertiary Care Hospital” which was conducted at KLES’s Dr. Prabhakar Kore Hospital and Medical Research Centre, Belgaum. This was a prospective, observational and interventional study aimed to assess the drug therapy interventions and the feedbacks from the clinicians on interventions. A total of 37 DRPs were identified from 31 patient’s case records. Majority of the DRP resulted from the inappropriate drug selection pattern 35. 13%. Majority of the clinical pharmacist recommendations were on drug choice 48. 64%. Study concluded that the Clinical pharmacist interventions in drug therapy helped clinicians in identifying and preventing drug related problems <sup>52</sup> .
2. S S et Biradar al (Oct 2010-July 2011) conducted a study on “ Assessment of pharmacist mediated patient counseling on hypertension incompliance with quality of life in south Indian city” in Gulbarga of Karnataka. It is a prospective interventional study in which suitably designed and validated quality of life (QOL) questionnaires of hypertension was used to measure the quality of life of hypertensive patients. Patients were then counseled at their two follow ups during their 2 month intervention period after completion of intervention, score of patients were measured using the same quality of life questionnaire. A total of 123 patients were enrolled and randomized in to test and control groups, the effectiveness of counseling on test group and control group patients was evaluated by comparing the QOL values before and after counseling by applying paired sample T-test. This study concluded that Pharmacist provided counseling is effective

in improving QOL of patients towards the hypertension management <sup>53</sup>

3. Azita Hajhossein Talasaz, Pharm D, (2012) conducted a study on “The Potential Role of Clinical Pharmacy Services in Patients with Cardiovascular Diseases”. The summary of this study is the presence of clinical pharmacists in medical rounds could assist physicians in optimizing patients’ pharmacotherapy. Moreover, clinical pharmacists may reduce adverse effects and medication errors insofar as they contribute significantly to the detection and management of drug related problems, not least in patients with cardiovascular diseases, who have the highest rank in the frequency of medication errors. Clinical pharmacists can also collaborate with physicians in the management of cardiovascular risk factors as well as anticoagulation therapy based on patients’ specific situations. It concluded that the practice of clinical pharmacy is considered a crucial part of a health care team to improve the level of patients’ care by increasing the quality of therapy with the least expense for a health care system <sup>54</sup>.
4. Jeanette L. Altavela, Pharm. D et al (2001-2002) conducted “A Prospective Trial of a Clinical Pharmacy Intervention in a Primary Care Practice in a Capitated Payment System” which was conducted in 2 primary care practices located in the suburbs of Rochester, New York. This was a prospective, controlled study aimed to determine whether a clinical pharmacist’s recommendations to physicians regarding optimizing medication therapy are related to medical costs in capitated patients in an internal medicine practice, and to compare what primary

care physicians (PCPs) in a comparison group actually did proactively to optimize medication therapy versus what a clinical pharmacist would have recommended to them. Study concluded that when compared with patients of PCPs who received no input from a clinical pharmacist, patients of PCPs who received clinical pharmacist recommendations were more likely to have several medication-related issues addressed, including medication non adherence, untreated indications, suboptimal medication choices, and cost-ineffective drug therapies. However, total medical (excluding pharmacy) costs for the intervention and comparison groups were not significantly different. Hence a clinical pharmacist can promote optimal medication therapy by working with primary care physicians within their office practices <sup>55</sup>

5. Rathan Shyam M, Jyothi D (2013) conducted a study on “ Role of clinical pharmacist in impact of patient counseling in asthmatic patients” in General Medicine Department units (IP) of RIMS, Kadapa. Summary of the study is ‘ A clinical pharmacist role played interventional study was conducted on asthmatic patients through counseling to improve their quality of life. Since asthma effects are sometimes reversible and irreversible, patient education plays a key role in improving quality of life of asthma patients. So 122 asthma affected patients were selected and counseled from day of admission to day of discharge through oral counseling patient information leaflet, pictorial aid and a KAP questionnaire based on their disease condition. 87 patients showed improvement in quality of life since they followed all the instructions given to them by clinical pharmacist. 35 patients did not show much

change in their quality of life due to their socio economic status, severity of disease, loss of memory and social habits. Patients who showed improvement in quality of life expressed that if counseling would be provided regularly to patients it will be very much helpful to maintain normal daily activity by improving their quality of life<sup>56</sup>. Sourav ghosh et al in (2010) conducted a study on “ Assessment the influence of patient counseling on Quality of Life in type-II Diabetes Mellitus patients” in 2010. It is a randomized controlled study was carried out over a period of forty five days in medicine department of S. D medical Hospital, Uttar Pradesh, India. This study was carried out to assess the influence of patient counseling on patient’s perception about the disease management and quality of life in type II diabetes mellitus patients. The result of the study suggest that community-based patient counseling regarding Disease, medication and Life style modification for type 2 diabetic patients, can be effectively implemented in developing nations and that important health indicators significantly improve <sup>56</sup> .

6. Subish palaian et al, (2006)conducted a review on“ Patient counseling by pharmacist -a focus on chronic illness”. This study summarizes that ‘ The management of chronic illness needs lifestyle modifications and drug therapy for a long period. Patient understanding regarding the illness plays a very important role in management of chronic illness. Effective patient counseling makes the patient understand his/her illness, necessary lifestyle modifications and pharmacotherapy in a better way and thus enhance patient compliance. The pharmacist has immense responsibility in counseling the patients with chronic illness.

The counseling pharmacist should possess adequate knowledge and should be an effective communicator, making use of the verbal and non-verbal communication skills' <sup>57</sup> .

7. Sourav ghosh et al (2010) conducted a study on “ Assessment the influence of patient counseling on Quality of Life in type-II Diabetes Mellitus patients” in 2010. It is a randomized controlled study was carried out over a period of forty five days in medicine department of S. D medical Hospital, Uttar Pradesh, India. This study was carried out to assess the influence of patient counseling on patient’s perception about the disease management and quality of life in type II diabetes mellitus patients. The result of the study suggest that community-based patient counseling regarding Disease, medication and Life style modification for type 2 diabetic patients, can be effectively implemented in developing nations and that important health indicators significantly improve <sup>58</sup> .

8. Talita Muniz Maloni Miranda et al (2010) conducted a study on “ Interventions performed by the clinical pharmacist in the emergency department” at Hospital Isrelita Albert Einstein - HIAE, Sao Paulo, Brazil. This was a retrospective study aimed to demonstrate the role and importance of the clinical pharmacist in the emergency department by means of identification, classification, and assessment of the number of interventions performed by this professional. The interventions were performed by the clinical pharmacists by means of his/her role along with the interdisciplinary team and active search in clinical charts, with daily analysis of medical prescriptions. Conclusion

was the study allowed the demonstration of the importance of the clinical pharmacist active in the Emergency Department. By the classification and by the number of interventions carried out, it was possible to observe that the Clinical Pharmacy Service had a great impact on the increased safety for the patient and prevention of adverse events <sup>59</sup> .

9. V. G. Kuchake et al (2008) conducted “ Assessment of impact of Patient Counseling, Nutrition and Exercise in patients with Type II Diabetes Mellitus” at Indira Gandhi memorial hospital, Shirpur, Dhule (MH) located in the North Maharashtra. This was a randomized controlled pilot study aimed to determine whether a patient counseling for Diabetes patients regarding Disease, Medication, Diet/ Nutrition and Exercise can improve Glycemic control & Lipid profile and associated complications. Study concluded that the glycemic control of type-II diabetic patients can be improved through patient counseling regarding disease, medication, personal hygiene, diet and exercise. This study provided an economically feasible model for programs that aim to improve the health status of people with type-II diabetes <sup>60</sup> .
10. Barry L. Carter, PharmD et al. (2010) conducted a review on “ The Hypertension Team: The Role of the Pharmacist, Nurse and Teamwork in Hypertension Therapy”. Summary of this study reveals that Team-base care provides new opportunities for hypertension care to be more patient-centered by providing care that is more personalized, timely, collaborative, and patient- empowering and allows physicians more time to manage more complex and urgent issues as they arise. There

is also a growing focus on the PCMH and use of technology to improve access to care. One of the most effective strategies to improve BP control is team-based care, especially with pharmacists and nurses. Results from ongoing studies will provide important information on the refinements to this model, lead to increased feasibility of large scale implementation, and confirm whether expected long-term effectiveness and cost- effectiveness benefits are realized <sup>61</sup> .

11. Toni L. Ripley et al.(2012)conducted a study on“ Impact of a clinical pharmacist on a cardiovascular surrogate endpoint: a pilot study”. It is a retrospective; matched-control study conducted in patients established in a cardiovascular clinic. Perspective of this study is utilizing a multidisciplinary approach to management of patients with certain chronic cardiovascular diseases (CVD) has been shown to improve treatment outcomes. The role of clinical pharmacists in comprehensive outpatient CVD management has not been evaluated. The intervention was referral to a pharmacist clinic; control was usual care from the cardiologist. The surrogate marker evaluated was the change in BP. This study concluded that the multidisciplinary model of care that included a clinical pharmacist reduced BP more than usual care by a cardiologist alone. This benefit was demonstrated in complex patients with CVD who were already receiving specialized care. The impact of this model on clinical outcomes requires <sup>62</sup> .

12. Autumn Bagwell, Pharm D et. al, (2013)conducted a study on“ The Role of Clinical Pharmacists in Modifying Cardiovascular Disease Risk Factors” in The Jefferson County Public Health Department



(JCHD) . This study aimed to assess the effect of intensive clinical and educational interventions aimed at reducing risk factors for Cardiovascular Disease (CVD), implemented by clinical pharmacists, on modifying risk factors in targeted patients at high risk for CVD. In this study they assessed total number of CVD risk factors, smoking behavior, blood pressure, LDL, A1C, weight, and level of physical activity (major modifiable risk factors by the American Heart Association). Over a 6 month follow-up of 47 patients, statistically significant reductions occurred in total number of CVD risk factors, systolic and diastolic blood pressures, and A1C. Reductions also occurred in LDL level, weight, and changes in smoking behavior and physical activity were identified. Results concluded that increased patient counseling on adherence and lifestyle changes along with increased disease state monitoring and medication adjustment led by a clinical pharmacist can decrease risk factors in patients with multiple risk factors for cardiovascular disease <sup>63</sup> .

13. Beverly Mielke Kocarnik et al (2012) conducted a study on “ Does the presence of a pharmacist in primary care clinics improve diabetes medication adherence?” This retrospective cohort study analyzed 280,603 diabetes patients in 196 primary care clinics within the Veterans Affairs healthcare system. Pharmacists presence, number of pharmacist full-time equivalents (FTEs), and the degree to which pharmacy services are perceived as a bottleneck in each clinic were obtained from the 2007 VA Clinical Practice Organizational Survey— Primary Care Director Module. Patient-level adherence to oral hypoglycemic agents (OHAs) using medication possession ratios

(MPRs) were constructed using refill data from administrative pharmacy databases after adjusting for patient characteristics. Results showed no significant association between pharmacist presence and clinic-level OHA adherence. However, adherence was lower in clinics where pharmacy services were perceived as a bottleneck. This study concluded that Pharmacist presence, regardless of the amount of FTE, was not associated with OHA medication adherence in primary care clinics. The exact role of pharmacists in clinics needs closer examination in order to determine how to most effectively use these resources to improve patient-centered outcomes including medication adherence <sup>64</sup>.

14. Alicia Pol, PharmD et al, (2012) conducted study on “The Effect of Pharmacist Intervention on Diabetes Screening Promotion and Education in a Geriatric Population” in US. The purpose of this study is to measure the effectiveness of a pharmacist-led educational intervention in three ways by: 1) assessing if elderly participants know they should participate in diabetes screening activities and the availability of a free screening benefit offered through Medicare; 2) determining the level of understanding on the part of an elderly population regarding diabetes, risk factors, signs and symptoms, and long term complications of the disease; and 3) measuring the willingness of this population to adopt lifestyle modifications based on perceived risk of the future development of diabetes. A total of 82 seniors participated in the surveys and pharmacist-led educational intervention. This study shows that there are many seniors in the community that are not aware of their risk for developing diabetes, and

are not taking advantage of their Medicare benefit for free screening. Pharmacists are in the ideal position to reach this population and provide an intervention. Pharmacist-led educational interventions and discussions can provide simple, significant contributions to the knowledge of diabetes risk and awareness of free screening benefits to the elderly living in the community <sup>65</sup> .

15. Valerie Santschi, PharmD et al, (2012) conducted a study on “Pharmacist Interventions to Improve Cardiovascular Disease Risk Factors in Diabetes”. It is a systematic review and meta-analysis of randomized controlled trials. It assesses the effect of pharmacist care on cardiovascular disease (CVD) risk factors among outpatients with diabetes. MEDLINE, EMBASE, CINAHL, and the Cochrane Central Register of Controlled Trials were searched. The meta-analysis included 15 RCTs (9, 111 outpatients) in which interventions were conducted exclusively by pharmacists in 8 studies and in collaboration with physicians, nurses, dietitians, or physical therapists in 7 studies. Pharmacist interventions included medication management, educational interventions, feedback to physicians, measurement of CVD risk factors, or patient-reminder systems. This study concluded that this meta-analysis supports pharmacist interventions alone or in collaboration with other health care professionals to improve major CVD risk factors among outpatients with diabetes <sup>66</sup> .
16. Taha O. Mahwi et al (2010 - 2011), conducted a study on “ Role of the Pharmaceutical Care in The Management of Patients with Type 2 Diabetes Mellitus” at Diabetic Center in Sulaimany/Iraq. It is a

prospective and randomized control trial study was conducted with 130 type 2 diabetes patients with glycosylated haemoglobin of higher than 7.0%. The study was designed to evaluate the efficiency of pharmaceutical care on the control of clinical parameters, such as fasting glycaemia and glycosylated haemoglobin also to assess drug therapy problems in patients with type 2 diabetes mellitus. Study concluded that the follow-up of the intervention group by a pharmacist contributed to the resolution of 108 drug therapy problems identified. Pharmaceutical care process provided by pharmacist to patients with type 2 diabetes mellitus could yield measurable improvements in the glycemic control, resolution of drug therapy problems and improvements in the compliance toward anti-diabetic medication <sup>67</sup>.

17. H. A. M. Al Rahbi et al. (2013) conducted a study on “Interventions by pharmacists in out-patient pharmaceutical care”. The primary objective of this study was to determine the number and types of medication errors intervened by the dispensing pharmacists at OPD pharmacy in the Khoula Hospital during 2009 retrospectively. The interventions filed by the pharmacists and assistant pharmacists in OPD pharmacy were collected. Then they were categorized and analyzed after a detailed review. Based on the results they concluded that the role of pharmacist in improving the health care system is vital and they recommended more number of such research based studies to bring awareness among health care professionals, provide solution to the prescription and dispensing problems, 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 <sup>68</sup> .

18. Alemayehu B. MEKONNEN et al. (2013) conducted a study on “Implementing ward based clinical pharmacy services in an Ethiopian University Hospital” in Jimma University Specialized Hospital of Ethiopia. This study aimed to assess ward based clinical pharmacy services in an internal medicine ward for a 2 month period of time. Interventions like optimization of rational drug use and physician acceptance of these recommendations were documented. Clinical significance of interventions was evaluated by an independent team (1 internist, 1 clinical pharmacologist) using a standardized method for categorizing drug related problems (DRPs). A total of 149 drug related interventions conducted for 48 patients were documented. This study concluded that involving trained clinical pharmacists in the healthcare team leads to clinically relevant and well accepted optimization of medicine use in a resource limited settings. This approach can likely be generalized to other health care settings in the country to improve medication outcomes <sup>69</sup> .