

Study on clinical pharmacist's activities, attitudes and perceived barriers in providing Diabetes Care in Kerala

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Abstract: **OBJECTIVE:** The objective of the study was to evaluate Diabetes care in rural areas of Kerala State and to conduct a survey of clinical pharmacist's activities, attitudes, and perceived barriers.

METHODS: The survey was based on previous researches. The survey was first initially developed in English and then translated in Malayalam. The survey gathered demographics details and data's were collected on pharmacist's activities, attitudes and perceived barriers.

RESULT: Survey has 632 participants and clinical pharmacists provide education to the participants about diabetes mellitus, its care and complications. Among responders 366 (58%) were males. Clinical pharmacist's Activity involves discussion with the patients about the importance of self-testing of blood glucose level(80%), Providing Education about the side effects of oral anti-diabetic drugs(78%), Education on the importance of regular screening for nephropathy and retinopathy(50%), Counselling about signs, symptoms, causes and treatment of hypoglycemia(66%), recommendation to took anti-platelet therapy when physician indicated(28%), Drug therapy recommendations to physician to help the patient to reach blood pressure targets(32%). Clinical Pharmacist faces barriers like Lack of time (48%), Shortage of personnel (38%), Lack of private counseling area (26%), Low patient expectation regarding pharmacist's role in diabetes care (62%), Lack of access to patients medical profiles (18%).

CONCLUSION: The management of Diabetes is a complex, lifelong process requiring a great deal of effort on the part of the patient. Diabetes patients in this region is having poor awareness about diabetes risk factors. Lack of awareness about the risk factors leads to other complications such as microvascular and macrovascular comorbidities among the diabetes patients. Once diabetes has been diagnosed, life-style adaptation is indispensable, and treatment with hypoglycaemic agents is often unavoidable. Therefore proper Awareness is necessary among patients. Clinical pharmacist is having positive attitudes in providing diabetes care. Patient education activities by clinical pharmacists showed improving dosage adherence and awareness of side effects among diabetic patients. Interventions should be implemented to overcome their perceived barriers and to improve their Diabetes services.

Key Words: Clinical Pharmacist , Diabetes Care, Patient Counselling , Perceived Barriers.

1. INTRODUCTION:

Diabetes mellitus is one of the most common chronic diseases. The number of people with type 2 diabetes mellitus is continuously increasing worldwide. There are currently more than 194 million people with diabetes worldwide, and half of them have not yet been diagnosed¹. Strict glycaemia, good lipid management and blood pressure control seem to be of the utmost importance in order to prevent vascular complications, macro- and micro-vascular disease being the most important diabetes related causes of morbidity and mortality.²⁻⁷ The risk of vascular complications increases with the plasma glucose concentration and the duration of diabetes, depending on age, gender, genes and life-style.⁸ Once diabetes has been diagnosed, life-style adaptation is indispensable, and treatment with hypoglycaemic agents is often unavoidable, as more than 50% are known to not adhere fully to recommendations on diet and exercise.⁹

The management of diabetes is a complex, lifelong process requiring a great deal of effort on the part of the patient. Poor management can result in a number of serious complications. For this reason, non adherence with therapeutic regimens among diabetes patients has been a continuing problem for both patients and health care providers.^{9,10} A recent systematic review of adherence to medication for diabetes found that many patients were poor compliers with oral hypoglycaemic treatment (adherence ranged from 67% to 85% of OHA doses); however, the Medication Event Monitoring System (MEMS), in which the opening of pill containers is automatically recorded, was useful in improving adherence and diabetes management for individual patients.¹¹

In the US and the UK, pharmacists are now adopting a crucial role in the management of chronic illness in primary care, providing diabetes care and advice. In the US, this takes place within integrated health care systems.¹² In the UK, pharmacists are increasingly incorporated into an extended diabetes team^{13,14}. A pilot study conducted in Scotland found that structured input from a community pharmacist as part of a multidisciplinary diabetes care team

reduced glycated haemoglobin and was well accepted by GPs and patients .¹⁵ In the Netherlands, a panel of 14 pharmacists and technicians with considerable experience in giving advices to people with type 2 diabetes concluded that patient education activities by pharmacists should be directed at improving dosage adherence and awareness of side effects .¹⁶

Pharmacists are uniquely positioned to educate patients on the importance of medication adherence.^{17,18} They can draw on their drug expertise and knowledge of the medication regimen followed and prescription refills requested by the individual patient. Ideally, a personal relationship of trust between patient and pharmacist can be harnessed to improve diabetes care and outcomes. The integration of pharmacists into a primary health care team has also been efficient for antihypertensive medication.¹⁹ Pharmacist led interventions to improve diabetes care have included case management by a pharmacist²⁰ , physician-supervised, pharmacist-managed primary care clinics ²¹, medication algorithms²² and the creation of a database tracking patient outcomes²² These studies report on a range of successful methods of pharmacist involvement with diabetes care.. A recent study included self-reported adherence in a pharmacist-led intervention²³, but found no significant difference for this outcome. The objective of the study was to evaluate Diabetes care in Kerala State and to conduct a survey of clinical pharmacist's activities, attitudes, and perceived barriers.

2. STUDY OBJECTIVE

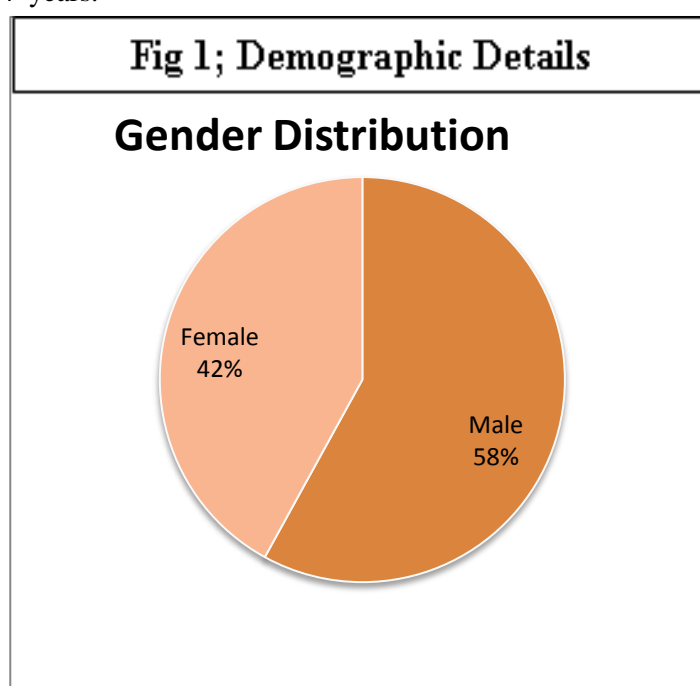
- To identify the diabetes care activities that clinical pharmacists routinely provide to diabetic patients.
- To describe their attitudes towards diabetes and towards their role in diabetes management.
- To assess their perceived barriers for the provision of diabetes care in the pharmacy setting in Thiruvalla, Pathanamthitta District of Kerala.

3. METHODS:

A cross sectional survey was developed based on previous researches the survey was initially developed in English and then translated to Malayalam. The survey gathered demographic information and collected Clinical pharmacist activities, Attitudes and perceived barriers in providing Diabetes care in Kerala State. The survey contains Questionnaire to assess Diabetes care services, Diabetes Knowledge test(DKT),Clinical Pharmacist attitudes toward diabetes were measured using the third version of the Diabetes Attitude Scale(DAS-3).²⁵ Participants were Practising Clinical pharmacist in varies hospital in rural areas of Kerala. An initial phone call was made to selected Clinical pharmacist and then Emails were sent to the participants who accepted to complete the survey. After 6 month of Data collection from August 2017 to December 2017, All the information for the study was gathered and Data analysis was done by using Online Survey Softwares.

4. RESULTS AND DISCUSSIONS:

Over a period of 6 months, Clinical pharmacist collected 636 surveys. Out of which 366 respondents (62%) were males and mean age was 34 years.



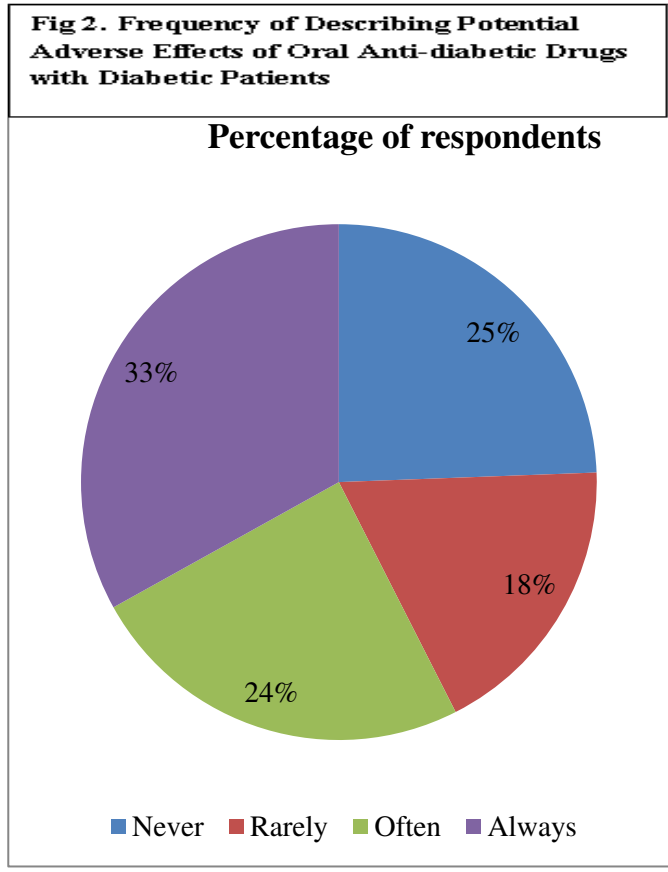
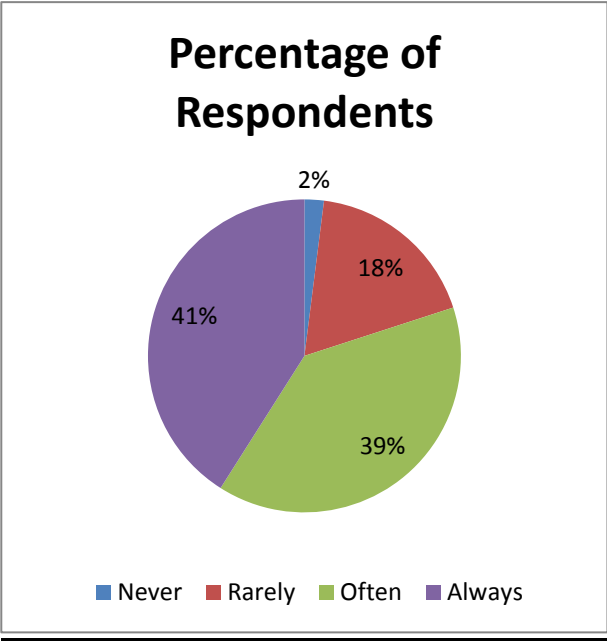


Figure 3. Frequency of Discussing with Diabetic Patients the Importance of Self Testing of Blood Glucose



Participants Characteristics

Among Participants 65% is have type 2 DM for more than 5 years and 61% of participants were indicated that they or their immediate family members have diabetes. Among them 58% of the participants are on regular insulin medications and others are in antidiabetic drugs. On Discussion with Participants who are having Type 2 Diabetes Mellitus, 28% of the respondents are suffering from diabetic complications like diabetic foot ulcer and peripheral neuropathy and 77% stated that they did not receive any diabetes Awareness or Diabetes Care Plans but 92% of participants expressed their interest in receiving Diabetes Awareness/care Training.

Perceived Barriers for Providing Diabetes Mellitus Care Services

- The majority of respondents perceived the following as barriers for providing diabetes mellitus care services:
- Lack of time (62%).
- Shortage of personnel (55%).
- Lack of private counseling area (42%).
- Low patient expectation regarding pharmacist’s role in diabetes care (62%).
- Lack of access to patients medical profiles (18%).

Table 1: Pharmacist’ Attitudes Toward Diabetes Mellitus

Factor	No. of Items	Mean	Range
Need for special training	5	4.45	4.04 - 4.47
Seriousness of NIDDM	7	3.32	2.32 – 4.11
Value of tight control	7	3.21	2.24 – 4.51
Psychosocial Impact of DM	6	3.76	3.13 – 4.26
Patient autonomy	8	3.96	3.01 - 4.44
Total	33	3.74	2.24 – 4.51

Using the Diabetes Attitude Scale-3, most respondents had positive attitudes toward need for special training, psychosocial impact of diabetes, and patient autonomy

Table 2: Frequency of Offering Diabetes Care Services

Statements	Never	Rarely	Often	Always
Counsel on the use of blood glucose meters including how to obtain a blood sample and how to interpret results(N=366)	29 (8%)	87(24%)	146 (40%)	102 (28%)
Evaluate blood glucose log for values outside target range (N=366)	36 (10%)	81 (22%)	139 (38%)	110 (30%)
Counsel about signs, symptoms, causes and treatment of hypoglycemia (N=366)	18 (5%)	58 (16%)	175(48%)	113 (31%)
Counsel on what to do in case of illness or severe stress (N=366)	36 (10%)	117 (32%)	139 (38%)	73 (20%)
Counsel about the cautions of over- the-counter drugs or herbal products as they relate to diabetes management (N=366)	14(4%)	84(28%)	161(44%)	87(24%)
Counsel on the appropriate handling and storage of insulin (N=212)	4(2%)	21(10%)	84(40%)	101(48%)
Counsel on the appropriate use of insulin pens, syringes, lancets and needles (e.g., sharp disposal) (N=212)	4 (2%)	31(15%)	80(38%)	95(45%)
Counsel on appropriate insulin administration (mixing insulin, injection technique, injection time...) (N=212)	10 (5%)	33(16%)	89(42%)	78(37%)
Describe the appropriate time to administer each oral anti-diabetic drug (N=366)	3 (1%)	29(8%)	153(42%)	179(49%)
Provide education on the importance of regular screening for nephropathy (N=237)	14 (6%)	42(18%)	92(39%)	90(38%)

Provide education on the importance of regular screening for retinopathy (N=237)	21 (9%)	61 (26%)	113 (48%)	40(17%)
Provide education on the importance of regular screening for neuropathic pain (N=237)	14(6%)	85(36%)	99(42%)	37 (16%)
Counsel on good foot care techniques(N=102)	4 (4%)	22(22%)	45 (45%)	29(29%)
Provide education about the importance of immunization for influenza and pneumococcal pneumonia (N=306)	85(28%)	110(36%)	67(22%)	42(14%)
Stress the importance of weight control in diabetes management where applicable (N=280)	8(3%)	42(15%)	137 (49%)	92(33%)
Stress the importance of diet and regular exercise in diabetes management (N=366)	0 (0%)	65(18%)	113 (31%)	186 (51%)
Promote smoking cessation where applicable (N=210)	0 (0%)	16(8%)	88(42%)	105(50%)
Provide drug therapy recommendations to the physician to help the patient reach blood glucose targets (N=301)	15(5%)	30(10%)	105(35%)	150(50%)
Counsel about the importance of wearing a medical alert bracelet (N=160)	76(48%)	46 (29%)	36(23%)	12(8%)
Review the patient's drug refill history to identify poor adherence (N=366)	47(13%)	117(32%)	135 (37%)	65(18%)

Diabetes Mellitus Care Activities

During the Survey, Clinical pharmacists discussed with 80% of the participants about the importance of self-testing of blood glucose level. Clinical pharmacist counselled participants about the side effects of oral anti-diabetic drugs(78%),importance of regular screening for nephropathy and retinopathy(50%),about signs, symptoms, causes and treatment of hypoglycemia (66%), recommended anti-platelet therapy the patient's physician when indicated.(28%),drug therapy recommendations to physician to help the patient reach blood pressure targets(32%).

5. CONCLUSIONS:

This present survey shows Clinical pharmacists have positive attitudes toward diabetes mellitus. But diabetes patients have lack of awareness about diabetes risk factors. Lack of awareness about risk factors leads to the complications such as microvascular and macrovascular comorbidities among the diabetes patients. The diabetes patients in India are having low quality of physical, mental, and social life. So interventions should be implemented to overcome their perceived barriers and to improve their diabetes services. The awareness about diabetes prevention and management should be increased through disease management programs, trained peers and community health workers, and community-based programs.

REFERENCES:

1. International Diabetes Foundation. Diabetes e-atlas, 2004. <http://www.eatlas.idf.org>. Accessed 20/06/06.
2. Kinmonth AL, Griffin S, Wareham NJ (1999) Implications of the United Kingdom Prospective Diabetes 2006. The authors. Journal compilation 2006 Blackwell Publishing Ltd, Journal of Clinical Pharmacy and Therapeutics, 31, 409–419.
3. UKPDS (1998) UK Prospective Diabetes Study 33: Intensive blood glucose control with sulphonyl ureas or insulin compared with conventional treatment and risk of complications in patients with type 2 diabetes. Lancet, 352, 837–853.
4. UKPDS (1998) UK Prospective Diabetes Study 34: Effect of intensive blood-glucose control with metformin on complications in overweight patients with type 2 diabetes. Lancet, 352, 854–865.
5. UKPDS. (1998) UK Prospective Diabetes Study 38: Tight blood pressure control and risk of macrovascular and microvascular complications in type 2 diabetes. BMJ, 317, 703–713.
6. Vermeire E, Van Royen P, Coenen S et al. (1999) Insulin and type 2 diabetes. Australian Family Physician, 28, 990.
7. Wens J, Vermeire E, Driel MV (1999) The United Kingdom Prospective Diabetes Study Group: onderzoeksoepzet. Minerva, 2, 122–124.
8. Goyder E, Irwig L (1998) Screening for diabetes: what are we really doing? BMJ, 317, 1644–1646.
9. Vermeire E, Hearnshaw H, Royen PV et al. (2001) Patient adherence to treatment: three decades of research. A comprehensive review. Journal of Clinical Pharmacy and Therapeutics, 26, 331–342.

10. Nagasawa N, Smith M, Barnes J et al. (1990) Meta analysis of correlates of diabetes patients' compliance with prescribed medications. *The Diabetes Educator*, 16, 192–200.
11. Cramer JA (2004) A systematic review of adherence with medications for diabetes. *Diabetes Care*, 27, 1218–1224.
12. ASHP (1999) American Society of Health System Pharmacists statement on the pharmacist's role in primary care. *American Journal of Health-System Pharmacy*, 56, 1665–1667.
13. Department of Health. (2003) National service framework for diabetes: delivery strategy. London: Department of Health.
14. RPSGB (2001) Practice Guidance for Community Pharmacists on the Care of People with Diabetes. London: The Royal Pharmaceutical Society of Great Britain.
15. Wermeille J, Bennie M, Brown I et al. (2004) Pharmaceutical care model for patients with type 2 diabetes: integration of the community pharmacist into the diabetes team-a pilot study. *Pharmacy World and Science*, 26, 18–25.
16. Timmer JW, De Smet PAGM, Schuling J et al. (1999) Patient education to users of oral hypoglycemic agents: the perspective of Dutch community pharmacists. *Pharmacy World and Science*, 21, 200–204.
17. Nichols-English GJ, Provost M, Koopalum D et al. (2002) Strategies for pharmacists in the implementation of diabetes mellitus management programs – new roles in primary and collaborative care. *Disease Management and Health Outcomes*, 10, 783–803.
18. Rybacki JJ (2002) Improving cardiovascular health in postmenopausal women by addressing medication adherence issues. *Journal of the American Pharmaceutical Association*, 42, 63–71.
19. Bunting B (2005) An opportunity for our profession: what pharmacists should know about disease management. *Journal of the Pharmacy Society of Wisconsin*, 2005, 8–10.
20. Carter BL, Zillich AJ, Elliott WJ (2003) How pharmacists can assist physicians with controlling blood pressure. *Journal of Clinical Hypertension*, 5, 31–37.
21. Choe HM, Mitrovich S, Dubay D et al. (2005) Proactive case management of high-risk patients with type 2 diabetes mellitus by a clinical pharmacist: a randomized controlled trial. *The American Journal of Managed Care*, 11, 253–260.
22. Irons BK, Lenz RJ, Anderson SL et al. (2002) A retrospective cohort analysis of the clinical effectiveness of a physician-pharmacist collaborative drug therapy management diabetes clinic. *Pharmacotherapy*, 22, 1294–1300.
23. Rothman R, Malone R, Bryant B et al. (2003) Pharmacist-led, primary care-based disease management improves hemoglobin A1c in high-risk patients with diabetes. *American Journal of Medical Quality*, 18, 51–58.
24. Odegard PS, Goo A, Hummel J et al. (2005) Caring for poorly controlled diabetes mellitus: a randomized pharmacist intervention. *Annals of Pharmacotherapy*, 39, 433–440.
25. Anderson RM, Fitzgerald JT, Funnell MM, Grupen LD (1998): The Third Version of the Diabetes Attitude Scale (DAS-3). *Diabetes Care* 21(9):1403-1407,.