6. Discussion

6.1 Drug usage pattern in T2DM Subjects

Data were collected from 340, 1180 and 1340 T2DM subjects who were visited during the years 2011, 2012 and 2013 respectively in the selected two community pharmacies. Among them majority of the patients were males, that is 60.57%, 61.14% and 60.76% in 2011, 2012 and 2013 respectively in the control group, whereas in the intervention group 63.03%, 62.48% and 61.83% in 2011, 2012 and 2013 respectively. Study conducted by Chiang et al in Taiwan showed the proportions receiving OAD prescriptions were slightly higher for women that is 54.5%, 54.2%, 53.6%, 52.7%, 52.2%, 52.9% and 52.7% in the year 1997 to 2003 respectively. [Chiang, CW et al, 2006] Prevalence of type 2 DM is more common in women than in men in the United States. [Triplitt, LC et al, 2011]

Few other studies in Colombia and Korea also have shown female predominance in diabetic patients [Alba, JE, 2007; Seong, JM et al, 2011], whereas studies in India showed male predominance in diabetic patient. [Poonam, T et al, 2010; Thiyagu, R et al, 2008] It may be due to geographical difference and selection of patients from single center compared to other countries where they used data base for the study. Prevalence of diabetes Mellitus in southern India conducted over a period of 10 years (1994 to 2004) showed that the prevalence in males increased from 20% to 26%and prevalence in women increased from 19% to 31% over the 10 year period. [Sridhar, GR et al, 2010]
As per the International Diabetic Atlas 2011, the highest number of people with diabetes is between 40 to 59 years of age. [International Diabetes Federation, 2011] In a study conducted in Gorakhpur, India by Poonam et al shows 61% of diabetic patients were between 40-60 years of age [Poonam, T et al, 2010]. Study conducted by Chiang et al in Taiwan showed average age of the diabetic patients for all the year from 1997 to 2003 was 62 years. Mean age of the DM patients in Bahrain was 56.5 years. [Al Khaja, KAJ et al, 2005] Mean age of DM patients in United Kingdom was 64 years [Filion, KB et al, 2009]. Colombian study showed mean age of DM patients was 60.7 years. Present study showed that the majority of the T2DM patients were in the age group of 40 – 49 years i.e. 70.86%, 68.87 and 69.05% in 2011, 2012 and 2013 respectively in the control group (Mean age of study population was 59.15 years) whereas in the intervention group 50.91%, 54.00% and 51.96% in 2011, 2012 and 2013 respectively were in the same age group i.e. 40 – 49 years. In a national level study, onset of diabetes occurred before the age of 50 years in 54.1% of cases, implying that these subjects developed diabetes in the most productive years of their life and had a greater chance of developing the chronic complications of diabetes. [Ramachandran, A et al, 2011]

The burden of diabetes is mainly due to consequence of long term complications like macrovascular (coronary artery disease, peripheral vascular disease and atherosclerosis) and microvascular (retinopathy, neuropathy and nephropathy) complications of the disease. To study the prevalence of these complications in diabetic patients in India, many studies were conducted, particularly at Chennai, New Delhi, Vellore, and
Hyderabad. Summary of these studies showed prevalence of retinopathy ranged from 7.3% to 34.1%. Prevalence of nephropathy ranged from 6.9% to 36.3%. Prevalence of coronary artery disease ranged from 11.4% to 21.4%. Gupta V reported in his review related to type 2 diabetes mellitus in India, there was 6.3% Prevalence of peripheral vascular disease is observed in Chennai by Premalatha et al, in 2000 and Prevalence of peripheral neuropathy varies from 19.1% to 27.5% in DM patients in population based study in Chennai by three different authors. [Mohan, V et al, 2010]

A Study conducted by Cohen et al using Market Scan Research Database over the period of 1997-2000 showed, prevalence of retinopathy varied from 8.5% to 11.4%, neuropathy varied from 7.0% to 8.4%, peripheral vascular disease ranged from 8.7% to 11.4%, nephropathy in 5.9% to 7.5% and more than one complication in 23.9% to 29.1% diabetic patients. [Cohen, FJ et al, 2003] In the present study, the prevalence of microvascular complications ranged from 4.08% to 34.69%, 8.00% to 28.05% and 7.02% to 26.03% in 2011, 2012 and 2013 respectively in the control group whereas in the intervention group it was observed from 5.12% to 29.00%, 2.79% to 31.84% and 4.69% in 2011, 2012 and 2013 respectively. While the macrovascular complications from 1.00% to 52.80% and 1.00% to 74.17% in control and intervention groups for the year 2011, 2012 and 2013 respectively. Incidences of infections varies from 23.81% to 76.19 and 41.67% to 100% in control and intervention groups for the year 2011, 2012 and 2013 respectively. While the acute complications were observed from 2.28% to 50.20% and 1.81% to 45.07% in control and intervention groups for the year 2011, 2012 and 2013 respectively.
Study conducted by Al Khaja et al in Bahrain showed various laboratory parameters of study population as follows. Mean glycated haemoglobin was 9.2±2.1, mean fasting blood glucose level was 10.8±3.7 mmol/L, total cholesterol level was 5.7±1.1 mmol/L, mean HDL cholesterol level was 1.2±0.3 mmol/L, LDL cholesterol level was 4.0±0.9 mmol/L, mean triglycerides level was 2.1±1.1 mmol/L, mean urea level was 5.5±2.3 mmol/L and mean creatinine level was 72.6±22.7 μmol/L. [Al Khaja, KAJ et al, 2005]

In present study, majority of patients have FBS more than 126 mg/dl in 64.92% (2012) and 62.05% (2013) among control and intervention groups respectively, PPBS more than 200mg/dl in 63.19% (2011) and 60.78% (2011) among control and intervention groups respectively and glycosylated haemoglobin was more than 7% in 84.20% (2012) and 82.89% (2013) subjects among control and intervention groups respectively. Similarly cholesterol level was more than 220mg/dl in 19.00% (2013) and 19.80% (2011) among control and intervention groups respectively, triglyceride level was more than 160 mg/dl in 41.00% (2013) and 41.36% (2012) among control and intervention groups respectively, HDL level was less than 30 mg/dl in 39.05% (2013) and 37.13% (2012) among control and intervention groups respectively, LDL level was more than 175 mg/dl in 9.00% (2013) and 3.90% (2012) among control and intervention groups respectively and TC/HDL ratio was more than 5.8 in 34.90% (2012) and 28.99% (2012) among control and intervention groups respectively.
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Therapeutic management for T2DM has changed drastically in the recent past years in addition of several new drug classes and recommendations to achieve more stringent glycemic control. Symptomatic patients may initially require treatment with insulin or combination oral therapy to reduce glucose toxicity. Patients with HbA1c equal to 7% or less are usually treated with therapeutic lifestyle measures and an agent which will not cause hypoglycemia. Those with HbA1c > 7% but < 8.5% could be initially treated with single oral agents, or low dose combinations. Patients with higher initial HbA1c may benefit from initial therapy with two oral agents or even insulin. The best oral therapy for obese patients with T2DM without contraindications is to start metformin. Lean patients can be treated with insulin secretagogues. If the therapeutic goal is not attained with initial therapy, additional oral agents can be added. T2DM should be treated by matching therapy to the suspected underlying problem. Triple therapy is often with metformin, a sulfonylurea, and a TZD or DPP-4 inhibitor, but a good alternative is to use metformin, a TZD, and a GLP-1 agonist, which can lower glucose levels and increase satiety, reducing the weight gain potential of a TZD, and still has a low risk of hypoglycemia. If the HbA1c is > 8.5% to 9% on multiple therapies, insulin therapy should be considered. Use of exenatide or pramlintide for prandial coverage can be considered. [Triplitt LC and Reasner CA, 2011]

In our study during the period 2011 – 2013, majority of the T2DM patients were on monotherapy with either OHAs or Insulin (I) and followed by two-drug combinations either insulin with OHAs or two OHAs or OHAs and Insulin(I). Three drug combinations, insulin with two OHAs or three OHAs
were also prescribed. Among four drug combinations along with insulin, three OADs were prescribed rare cases; four different classes of OHAs were also prescribed. Among five drug combinations all the patients received insulin with four different classes of OADs.

When we observed the trends in prescribing in T2DM subjects in the period 2011 – 2013, in mono-therapy, there is a significant decreasing in trend throughout the study period (P = 0.001). Among mono-therapy, SU was the commonly prescribed drug, followed by Insulin (I) during 2011 and 2013. Only in few cases alpha-glucosidase inhibitors (A), Biguanides (B), Repaglinide (R), Thiazolidiones (T) and DPP4 inhibitors were prescribed in monotherapy for T2DM subjects. More number of two combinations of OHAs containing prescriptions was observed in 2011 and again dropped in 2012 and subsequently 2013 also. The difference in rate of prescription is not statistically significant (P = 0.621). Among two drug combinations, SU with metformin was the most commonly prescribed followed by insulin with SU and Insulin with SU in 2012 and 2013. A few subjects received two drug combination of metformin with thiazolidinones in 2011. The three drug combination, prescription rate was in increasing trend during the study period. There was no statistical difference (P = 0.595) in rate of prescription in 2011, 2012 and 2013. Among three drug combinations, variety of prescription was observed in mixed trend. Few subjects received DPP4 inhibitors in three drug combinations in 2011, 2012 and 2013. There is an increasing trend in prescribing of four drug combinations throughout the study period, but the difference is not statistically significant (P = 0.289). Among four drug combinations, variety of prescription was observed in
mixed trend. There is an increasing trend in prescribing of five drug combinations throughout the study period, but the difference is not statistically significant ($P = 0.399$). Most commonly prescribed five drug combination was Insulin + Metformin + SU + AGI + DPP4 and Insulin + SU + Metformin + T + DPP4.

Individual class of drugs used in the treatment of T2DM subjects were also studied, sulfonylureas was prescribed maximum followed by biguanides and Insulin. Usage pattern on individual classes of OHAs shown that the insulin increased 2012 when compared during 2011 but it was reduced in 2013, which was statistically significant ($P = 0.001$). Out of various insulin preparations mixture of short and intermediate acting insulin (30/70) was used in many T2DM subjects. Prescribers select mixture of short and intermediating acting insulin (30/70) for the treatment of T2DM subjects. 60% and 40% of daily required dose was prescribed in the morning and night respectively. This will help to prevent hypoglycemia during night time and control over post prandial blood sugar level.

Sulfonylureas are the commonly prescribed OHA in most of the T2DM subjects. Statistically there is no difference in prescription rate of SU over a period of three years ($P = 0.714$). The second generation SUs was only prescribed because they are more potent and probably safer [Inzucchi SE., 2002]. Out of them glybenclamide and glimepiride were the most frequently prescribed drugs.

In the Biguanide (B) class of OHAs, metformin only was prescribed. Though the prescription for B class is lesser than SU class of drugs, the prescription
rate for metformin is highest in the individual drug level. Metformin is as effective as SU. [Authors not listed, 1995]

As well as it will not cause of weight gain hence it can be prescribed in obese patients and, common side effect of OHAs was hypoglycemic, occurrence of hypoglycemic is less compared to SUs [Triplitt LC and Reasner CA, 2011.]. UKPDS reports revealed that metformin may reduce the incidence of diabetes-related complication and all-cause mortality more than diet, SUs or insulin in overweight patients with newly diagnosed diabetes. [UKPDS 39, 1998] Recent report by Roumie et al shows that use of sulfonylureas compared with metformin for initial treatment of diabetes were associated with an increased hazard of CVD events or death. [Roumie, CL et al, 2012]

In the present study, alphaglucosidase inhibitors (AGIs), thioglitzones and repaglinide was prescribed less frequently. These drug classes were not commonly used as monotherapy. In general these classes of OHAs were prescribed in combination either with other OHAs or Insulin. SUs and biguanides have more advantages when compared with these classes of drugs.

The literature review shows that there were various pattern of prescription, it depends on the availability, accessibility, subjects characteristics, comorbidity, economic status etc. The study conducted by Fillion et al from 2000 to 2006 using the General Practice Database in United Kingdom, which represents UK population. They found sharp increase in the overall prescription of anti-diabetic medications between 2000 and 2006. The
greatest increase was observed in metformin and TZDs. TZDs entered the market early in the study period and were characterized by rapid uptake. There was also an increase in the prescription of insulin during this period, particularly among incident type2 diabetes [Filion, KB et al, 2009]

Chiang et al conducted a study during 1997 to 2003 in Taiwan using National Health Insurance Research Database. During the study period 1997-2003, the numbers of OAD prescriptions rose by 1.23-fold. The SU class was the most commonly used OAD (particularly 2nd generation SUs), but the prescribing rates for this class declined over time. The biguanide (BG) class was the second most frequently prescribed OAD class and its prescribing rate initially increased, peaked in 2000, and subsequently reduced. The largest increase in its prescription was for acarbose use. The prescribing rates of two new classes of OAD, meglitinide (MG) and thiazolidinedione (TZD), also significantly increased within a short period of time. Combination therapy accounted for more than 50% of total prescriptions in each study year. Dual therapy with SU and BG was commonly used regimen. There was a rapid increase in triple oral therapy, of around nine fold. Moreover use of any four OAD grew five-fold. [Chiang, CW et al, 2006]

A study was conducted by Cohen et al in U.S during a period of 1997 – 2000 using Market Scan Research Database. In USA until 1990, only two drugs, SUs and insulin were available for the treatment of diabetes. Metformin and Acarbose were introduced in 1995, troglitazone in 1997. Based on this, they evaluated trends in prescribing anti-hyperglycemic agent over a period
of four years. Study showed overall use of any insulin therapy decreased from 1997 to 2000. Mono-therapy with SU's decreased and mono-therapy with TZDS and metformin increased (newer drugs at that period). Combinations of SU's and metformin; SU's and TZDs; metformin and TZDs; and SU's, metformin and TZD each increased over the study period. The anti – hyperglycemic prescription pattern in the U.S. has changed during 1997-2000, due to introduction of newer drugs in the market. Also, they used combination therapy for better control of blood sugar. [Cohen, FJ et al, 2003]

6.2 Health-related Behaviours, Beliefs and Diabetes-related Knowledge

Results relating to knowledge and beliefs variables showed minimum difference in both the control and intervention groups among baseline and post-baseline.

6.2.1 Medication Related Beliefs, Satisfaction in Pharmaceutical Care and Patient Empowerment

Subjects expressed that they believed that the necessity of medication adherence for T2DM is more important than the concerns nearby the perceived adverse of medicines. Adiseshiah, M, 2005, study revealed that subjects beliefs concerning the role of medication in chronic disease management, where almost 85% of patients said that they believed that medication use was a necessary element of their care. [Adiseshiah, M, 2005] The ‘necessity’ and ‘concerns’ beliefs about medication are closely associated with adherence to therapy and the reported positive necessity-
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Concerns of differential support the high levels of adherence measured by patient self-report and prescription refill frequency data. Neither control nor intervention patients appeared overly concerned about the possible harm that medicines in general may do, or about the possibility that medical practitioners may overuse medication. [Horne, R and Weinman, J, 1999]

In post baseline group of the study, both the control and intervention subjects (> 85%) were satisfied with care provided by the pharmacists, almost < 60% of subjects were similarly satisfied with their long term care. A section of subjects, (20%) considered 12-month care specifically provided by their healthcare providers to be ‘poor’ either at baseline or post-baseline, a further 20% rated such care as ‘fair’. These findings generally indicate a less than satisfactory state of affairs, as patient satisfaction is both a surrogate measure of the value patients place on services they receive [Brooks, RJ and Roxburgh, S et al, 1999] and is an important factor within the adherence active. [Horne, R, 2001]

Subjects expressed a high level of dissatisfaction with regard to care may have been influenced by the intrinsic nature of T2DM, [Gerstein, HC and Haynes, RB, 2001] it is a progressive chronic disease in which the prevalence of complications and associated co-morbidities are almost certain to increase over time and subjects may experience disappointment and a sense of hopelessness which may have increased their dissatisfaction with care. [Weiner, M et al, 2003] The dissatisfaction may be associated with diabetes suffering. [Laine, C and Davidoff, F 1996].
There was 20% and 17% drop in care given to control and intervention subjects of post-baseline group by pharmacists respectively. The drop in satisfaction may be a reflection of unmet expectations arising from the research process, i.e. subjects may have had unrealistic expectations relating to the purpose and processes involved in the research. This satisfaction differential may be attributed to the increased interaction between pharmacists and subjects in the intervention group. Subjects were particularly dissatisfied with the perceived level of communication between pharmacists and prescriber(s). A poor level of communication between prescriber has been identified as an important barrier for optimise the medication utilisation process. [Law, AV, et al, 2003]

The remaining percentage of subjects of approximately 80% and 85% of post-baseline control and intervention groups were believed that pharmacists know about diabetes care. The results of the present study correlate with similar study in a recent systematic review of pharmacist interventions in diabetes, which endorses value-added roles for pharmacists in diabetes care, [Wubben, DP and Vivian, EM, 2008] and this indicates that pharmacists can deliver diabetes services as it indicates that intervention pharmacists were able to positively influence subject perception with this regard.

There was no significant difference between the control and intervention patients in terms of feeling empowered, with over 70% of patients stating that they ‘agreed’ or ‘strongly agreed’ that they were empowered to manage psychosocial aspects of their diabetes. The only areas where
patients expressed uncertainty were in being able to identify specific aspects of care that caused most dissatisfaction, and in remaining positive about coping with diabetes and the stress that having the disease may cause. A Swedish diabetes education RCT found no significant difference between the groups in terms of patient empowerment, [Adolfsson, ET et al, 2007] although the Asheville Project post-study focus group noted that patient diabetes empowerment perception improved as a result of the pharmaceutical care intervention. [Garrett DG and Martin LA, 2003]

6.2.2 Diabetes self-management adherence and depression screening

Subject was adherent to both their therapeutic management and self-management recommendations and have less significant differences were identified between the control and intervention groups to show intervention is having minimum effect. Despite being associated with a possible overestimation of adherence, [Schechter, CB and Walker, EA, 2002] the subject adherence self-report is nevertheless a useful tool for identifying barriers to self-management, which is the cornerstone of effective diabetes care. [Piette, JD and Glasgow, RE, 2001; Austin, MM, 2006] The present study revealed that approximately 30% of subjects informed that they were always managed to control their body mass and between 40 – 50% of subjects said that they adhere at baseline to self-management recommendations ranging from glycaemic and emotional control, having diabetic diet, exercising, monitoring clinical parameters and medication adherence. The present study has identified two reasons, (i) possible reason that the intervention group was not able to effect significant improvements in self-management adherence, when compared
with the control group, may be the lack of sufficient importance within the DPCP framework on the adherence. (ii) may include pharmacist uncertainty about what options to explore in developing adherence promoting interventions, and that an insufficient number of pharmacists with their subjects developed and implemented interventions.

Interventions in the present study was aimed to improve medication adherence in patients with chronic diseases have not all demonstrated positive outcomes. [Vermeire, E, 2001; Odegard, PS and Capoccia, K, 2007] An RCT involving community pharmacies that compared patient adherence to therapies in two groups, one of which received comprehensive pharmaceutical care and the other traditional pharmacy services, found that although the intervention group was more satisfied with the level of care, adherence was not significantly different from that demonstrated by the control patients. [Volume, Cl et al, 2001]

For successful interventions interaction must be improved and common between healthcare workers and subjects, [Haynes, RB et al, 2005] which supports the relationship of the chronic care model, [Wagner, EH, 1998]. A pharmacist facilitated patient self-management programme described by Garrett and Blumi [Garrett, DG and BlumI, BM 2005] was proved that medication adherence and ECHO through a collaboration during review, coaching and reinforcement. Odegard et al, 2005, conducted multicenter study that shows there is no significant improvement among poorly controlled diabetic subjects in adherence and HbA$_{1c}$. [Odegard, PS et al, 2005]
The present study indicates there is a less significant difference observed among post-baseline group of control and intervention subjects with respect to medication adherence and refilling of prescription. Assessing medication adherence in day to day remains difficult. [Pladevall, M et al, 2004] Literature review indicates that patient self-assessment of adherence is most valid when non-adherence is defined as anything other than total or optimal adherence. Refilling of prescription serves as a replacement measure of medication possession, is associated with clinical outcomes and has been used as a proxy measure of medication adherence, although refilling of prescription does not ensure that the subjects were used. [Kilbourne, AM et al, 2005]

Medication Adherence Report Scale was used to assess the subjects self-management of diabetes apart from the refilling of prescription. [Horne, R, 2001] Average of 21 out 25 was scored by subjects for their self-reported medication adherence, the result shows that the refilling of prescription was as high as the level of adherence, our findings is in line some previous studies. [Kilbourne, AM et al, 2005] Adherence levels were ranged between 49.5% and 88% with both the control and intervention subjects, forgetfulness is the main factor for non-adherence, which correlates with findings of other studies. [Odegard, PS and Capoccia, K, 2007] Overall adherence results agree with other studies, where adherence to oral anti-diabetic therapy was found to range from 36% to 93%. [Cramer, JA et al 2004]

Preferably subjects for post-baseline intervention group must be selected those have low level of adherence, when sampling. Practically it is difficult
since the subjects may be at higher risk of getting affected by other
morbiditys. In spite of the progressive nature of T2DM, literature review
including UKPDS, DCCT and Steno-2 studies proved the control over
hyperglycaemia, hypertension and dyslipidaemia using interventions
depends on medication. The relationship between refilling of prescription
and self-reported medication adherence was indicated high levels of
medication adherence and 36% of subjects were at goal for the TNSTG
guideline for HbA1c. Given that HbA1c, blood pressure and blood lipids are
especially receptive to medicines, [[Authors not listed], 1998] this
irregularity raises the doubts as to why more subjects were not at goal in
the post-baseline control group subjects. It is possible that the medication
was not ideal with ‘clinical inertia’ being a contributing factor. Clinical
inertia, has been identified as a critical barrier to the effective control of
metabolic risk factors. [Grant, RW et al, 2004; Cabana, MD et al, 1999]

An analysis of the prescription data of all subjects in both the groups,
control and intervention, shows that 50% of these subjects had changes
made to their OHAs regimens during the study period under review.
Unfortunately, the information were incomplete with respect to changes
made, which prevented any evaluation of the impact of these changes on
glycaemic control. But, further investigation of the prevalence of clinical
indifference in T2DM for all metabolic risk factors is warranted as the
implications for subjects’ health outcomes may be significant. [Cabana, MD,
et al, 1999]

The utility of pharmacist depression screening in patients with diabetes in a
primary care setting has been demonstrated, [Knight, DE et al, 2008]
although this should be limited to identifying subjects who may be candidates for escalated psychological care. [Campbell, RK, 2002] In the present study, there is not much difference observed with respect to self-reported depression among post-baseline subjects. Depression is an important co-morbidity in T2DM because it is associated with an increase in diabetic complications, reduced adherence to therapy and inadequate levels of self-management.

6.2.3 Diabetes-related knowledge, understanding diabetes care and SMBG

In the post-baseline group, approximately 75% of control and 84% of intervention subjects stated that their understanding of important points about diabetes was ‘good’ to ‘excellent’, with both control and intervention subjects indicating equally that they had good levels of diabetes-related knowledge. Areas of diabetes care in which understanding could be improved included the concurrent use of OHAs with other medication, complications commonly associated with diabetes, eye care, foot care, body mass control and the use of alcohol in T2DM. These more problematic areas of understanding diabetes care in some instances correlate with the relatively low prevalence of the corresponding IDF guideline tests and examinations. For an instance, 64% of all patients said that had an annual eye examination and 41% an annual foot examination, implying that enhancing diabetes perception of the significance of eye and foot care, which was resulted in increased numbers of subjects was examined for potential microvascular complications associated with these parameters.
Knowledge on diabetes is directly proportional to glycaemic control, [Peyrot, M and Rubin, R, 2007] the present finding is also explained the same. [Dunn, SM et al, 1990] Likewise, improved understanding of the important points of diabetes has been associated with improved metabolic control. [Hartz, A et al, 2006]

Knowledge and understanding about the basic characteristics of diabetes will lead subject empowerment and of diabetes self-management education and have been associated with the resolution of barriers to care and thus are effective aspects of successful problem solving. [Hill-Briggs, F, 2003] A study that examined the association between patient knowledge of HbA1c and diabetes care attitudes and behaviours found that only a quarter of participants knew their HbA1c values. However, although those who knew their HbA1c values were better able to assess their level of glycaemic control and had a better all-round understanding of diabetes care, this knowledge did not translate into improved self-management efficacy. [Heisler, M et al, 2005]

Around 83% of all subjects in this study monitored their blood glucose levels with difference in frequency between the intervention and control groups, and the results indicated that there was no significant difference in HbA1c between those patients who monitored regularly and those who did not. A disconcerting finding was that less than 28% of patients reported that their pharmacists referred to their SMBG readings and made suggestions regarding adjustments to therapy or self-management activities based on these data, with no evidence that the intervention pharmacists
were more likely to engage with their patients than were the control group.
The Asheville Project demonstrated that patients who engaged with
pharmacists about their SMBG not only improved glycaemic control, but
patient satisfaction with CPS was also enhanced. [Cranor, CW and
Christensen, DB, 2003]

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