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Effect of Counseling on Maternal and Neonatal Complications and Quality of Life (WHOQoL BREF) in Pregnant Women Diagnosed with Gestational Diabetes Mellitus

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Pharmaceutical care has been defined as the responsible provision of drug therapy for the purpose of achieving definite outcomes. This study sought to determine effect of counseling on maternal/neonatal complications along with QoL on through improvement in compliance. The study was randomized controlled, longitudinal, and prospective; patients diagnosed to have GDM were recruited and randomized. A total 255 patients (128 control and 127 intervention group) interventional group received a structured pharmaceutical care services while control group received traditional services. Maternal complications and neonatal complications improved significantly in intervention group as detemined by mode of delivery (4.72% vs. 17.97%: p<0.001), urinary tract infection (3.94% vs. 16.41%: p<0.001), severe hyperglycemia 3.94% vs. 16.41%: p<0.001) and neonatal outcomes macrosomia (7.09% vs. 24.22%: p<0.001) hyperbilirubinemia (4.72% vs. 10.94% p=<0.001) neonatal hypoglycemia (4.72% vs. 19.53% p=<0.001) birth weight 5.51% vs. 25.00% p=<0.001) Quality of life as measured by (WHOQoL BREF) optional module 5 in women who were counseled had significantly higher QoL scores with respect to Physical Health (86.46±8.77 vs. 68. 13±17.30: p<0.001) Psychological (84.01±7.68 vs. 64.91±17.23: p<<0.001) Social relationship (80.42 + 11.76 + 70.09 + 16.89: p<0.001 Environment (87.87+10.12 vs. 53.27+16.47 p<0.001) Counseling has beneficial effect on pregnant women with GDM thereby reducing maternal/neonatal complications and improved QoL.

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Certified Diabetes Educator-Ambassador (CDE-A) Involvement Improves Diabetic Control and Cardiovascular Risk Factors at Primary Care Level

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We have previously shown that the involvement of a CDE, empowered by guidance from a diabetologist, termed CDE-Ambassador (CDE-A), in the management of the diabetes at the primary care level, results in marked benefits. Retrospective analysis of data obtained from 100 such patients showed improvements in glycemic control (HbA1c from 8.4% to 6.8%; p<0.0001), body weight (from 102 to 99Kg; p<0.0001), systolic blood pressure (from 134 to 128 mm; p<0.002), diastolic blood pressure (from 80 to 77 mm; p<0.003) and serum triglycerides (from 189 to 162 mg/dl; p<0.003) and LDLc concentrations (from 108 to 96 mg/dl; p<0.0004) following 2 to 3 consultations over a period of 6 months. [Micro-albuminuria did not alter significantly.] There was no significant change in any of these indices in 50 control patients who did not consult with the CDE-A. We have now investigated the durability of this effect by getting follow up data at 12 months without further intervention after 6 months. The beneficial effect on HbA1c diminished from a reduction of 1.6% from the baseline at 6 months to 1.1% over the following 6 months without further visits to the CDE-A. However, the benefits in BMI, blood pressure, triglycerides and LDLc were largely maintained, without significant attenuation. These indices did not change in the control group. We conclude that the involvement of the empowered CDE-A can contribute to improvements in diabetic control and indices of cardiovascular risk. While the maintenance of HbA1c probably requires repeated visits to CDE-A, the other indices related cardiovascular risk are effectively controlled for at least one year. A network of CDE-As, empowered by diabetologists at the primary care level could help prevent diabetic microvascular and macrovascular complications.

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Continued Parental Involvement in the Self-Management of Young Adults with Diabetes Is Commonplace and Underappreciated

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The challenges that young people with diabetes face when transitioning to adulthood are widely recognized, yet few interventions have been found to be effective at easing this process. Recognizing a pattern of continued parental involvement in the diabetes management of 18-24 year olds attending the Young Adult Diabetes Clinic at St. Michael's Hospital (Toronto), we compared the attendance rates and levels of glycemic control amongst individuals who attended or did not attend their clinic appointments accompanied by a parent. From 110 attendees (mean age 19.8±0.2 years), 68 individuals had never attended with a parent (62%), 25 had attended on one occasion (almost always the first visit) (23%) and 17 attended with a parent on more than one occasion (15%). From these 110 individuals, 23 patients stopped attending the clinic, 18 of whom had never attended with a parent (78%), 4 of whom had attended with a parent on one occasion (18%) and only one of whom had attended with a parent on more than one occasion (4%). Amongst regular attenders, those who came to the clinic accompanied by a parent on more than one occasion were also those who had the highest A1c levels (A1c [%]: always attends alone 8.1±0.2, attended once with a parent 8.5±0.3, attended more than once with a parent 9.4±0.5 [p<0.01 vs. attends alone]]. Although it is typically overlooked by the healthcare system, the continued involvement of parents in the management of diabetes in young adults improves attendance rates. It also appears to be especially important for individuals with higher A1c levels which, far from implying a causal link, suggests that the parents of individuals who find self-management most challenging continue to play an active role in their child's diabetes care well into adulthood. Strategies directed at smoothing the transition process may be better directed at supporting the family unit than at healthcare setting specific interventions that have been shown to have a moderate impact at best.

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Diabetes INSIDE: A National Quality Improvement (QI) Initiative Guiding Large Health Systems to Improve Diabetes Care

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Diabetes INSIDE is a 24-month curriculum that guides healthcare systems through a series of process-improvement activities and data-driven educational programs for providers and patients. Designed and implemented by the American Diabetes Association (ADA) and Intelligent Medical Decisions, Inc. (iMD), Diabetes INSIDE has enrolled 4 large, diverse health systems across the United States. We assist each system in establishing and training a local QI Team of multi-disciplinary stakeholders in diabetes care to spearhead system changes. We then establish a local diabetes registry using patient data measured against the ADA's Standards of Medical Care in Diabetes. Using this data as a guide, QI Teams identify barriers, gaps and solutions to improve diabetes care processes, such as guideline-based insulin initiation. We work with each system to continuously measure the impact of their clinical process changes on population health. QI efforts are augmented with local CME/CE programs and ADA patient education materials. Each participating system has shown improvements in diabetes care processes. A large urban safety net health system identified that over 50% of their patients with A1c > 9% were not on insulin. As a result, they initiated and refined a shared medical appointment process to standardize insulin management for these patients. After 6 months, this resulted in a > 10% reduction in the percentage of patients who had an A1c of > 9% at multiple clinical sites. Despite new policies, therapeutic options, increased application of technology, and a better evidence base, poor clinical outcomes too often remain the status quo. To improve population health, healthcare delivery systems must make changes to their clinical processes at the local level. Diabetes INSIDE is an effective program that uses proven QI methodologies to help health systems improve diabetes care.

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Can Patient and Provider Education Increase Insulin Initiation?

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This prospective real-world study assessed the impact of education about the 2012 ADA/EASD guidelines on insulin initiation in patients with type 2 diabetes (T2D) in the U.S.

In the PIVOTS study (Personalized care and the role of Insulin as a Vehicle to Optimizing TreatmentS), T2D patients (n=4,693) in a national health plan with elevated A1c and/or receiving multiple antihyperglycemic medications as of April 2014, and their physicians (n=3,812), were randomized to receive educational materials. Cohorts were cross-sectional (received materials once), longitudinal (received materials twice over 3 months), enhanced (videoconferences with physicians; mail to patients) and control (no outreach), and patients were followed up for 12 months from outreach date.

This interim analysis reports patient baseline demographics and clinical/cost outcomes at 6 months (Table). Insulin initiation rates were 5-10% with no differences across cohorts. These data suggest that education may not result in improvements in insulin initiation rates or A1c vs. control. Results

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from a physician survey suggested that patients may decline insulin initiation due to feelings of failure, while physicians delayed insulin initiation due to inadequate time for patient education/training.

Table. Future Initiatives to Increase Insulin Initiation Should Consider Ways to Target These Specific Barriers.

	Cohort			
	Cross-sectional	Longitudinal	Enhanced	Control
	(n = 842)	(n = 742)	(n = 776)	(n = 738)
Demographics				
Female, n (%)	286 (34)	285 (38)	286 (37)	271 (37)
Age at outreach initiation, mean (SD) years	55.6 (9.77)	56.3 (10.62)	56.0 (9.85)	56.1 (10.04)
Outcomes				
Insulin initiation rate, % (95% CI)				
All patients	5 (4-7)	5 (4-7)	6 (4-7)	5 (3-7)
Patients with A1c ≥ 9.0% at baseline	10 (6-14)	9 (5-12)	11 (7-16)	8 (5-12)
A1c, mean (SD) %: all patients				
Baseline	9.1 (1.90)	9.1 (1.86)	8.9 (1.93)	9.1 (1.90)
6 months	8.9 (1.83)	8.9 (1.79)	8.8 (1.75)	8.9 (1.84)
Overall reduction	-0.2 (1.69)	-0.2 (1.64)	-0.2 (1.70)	-0.2 (1.69)
A1c, mean (SD) % reduction at 6 months among patients with A1c ≥9.0% at baseline	-0.8 (1.92)	-0.9 (1.73)	-1.0 (1.77)	-0.9 (1.82)
A1c, mean (SD) % reduction at 6 months among patients who initiated any type of insulin	-0.9 (2.32) (n = 14)[a]	-0.3 (1.87) (n = 14)[a]	-1.7 (2.35) (n = 15)[a]	-0.9 (1.24) (n = 6)[a]
Changes in all-cause total costs (follow-up minus baseline), USD (SD)				
Inpatient	303 (10,515)	-270 (35,186)	-57 (9,083)	440 (10,524)
ER	-21 (1,023)	69 (1,444)	-56 (1,106)	-57 (1,388)
Office visits	-2 (302)	-5 (304)	-8 (302)	3 (309)
Other outpatient visits	76 (4,235)	339 (5,118)	145 (5,203)	401 (6,867)
Total Medical and Pharmacy	560 (12,758)	309 (34,817)	185 (12,408)	649 (15,287)

[a]number of patients who initiated insulin and had non-missing A1c lab results at both baseline and 6 months. SD, standard deviation; ER, Emergency Room.

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Community Capacity Building as First Building Block towards Health System Strengthening for Combating Diabetes and Hypertension

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There is abundant research in the community describing the importance of building community capacity in prevention and control of Non Communicable Disorders (NCDs). The study team evaluated the effect of capacity building training on the knowledge level of health workers (HWs), particularly in diabetes and hypertension.

Study participants included HWs (n=80) from Haryana, North India and Andhra Pradesh, South India. We conducted a 15 day structured training using Visualization in Participatory Programs approach. HWs were trained to address patient perceptions around diabetes and high blood pressure management; teach patients about self-testing/monitoring; encourage lifestyle changes and establish peer groups and patient networks to improve self-care and adherence.

92.5% of the study participants (n=74) showed an overall increase in knowledge (95% CI: –8.4 to –7.4, p<0.0001) on the post-test. 99% of participants improved their post-training score to excellent. 97% of the male participants vs. 100% of the female participants scored excellent in post evaluation. 100% of rural trainees scored excellent on their post training evaluation vs. 97% of their urban counterparts. Participants from south India (100% excellent score) scored higher than participants from north India (97% excellent score).

Capacity building programs on managing diabetes and hypertension have proven to be a substantially effective means of managing the diabetes and hypertension burden in communities. The study team aspires to develop and nurture patient networks as a consistent community support system based on positive deviance approach, utilizing the strengthened pool of HWs as community mobilizers.

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The Mechanisms of Behavior Change in a Diabetes Empowerment Self-Management Intervention: A Qualitative Study

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Diabetes has become one of the most challenging public health problems worldwide, characterized by rising prevalence and high percentage of patients with poor glycemic control. Well-documented evidence showed that Diabetes Empowerment-based Self-Management Interventions (DESMIs) could yield beneficial effects on behavior changes in patients with diabetes. However, few studies have investigated the enablers and barriers to behavior change within such programs. The objective of this study was to explore the mechanisms through which a DESMI could facilitate positive changes in self-management behaviors. This qualitative study involved interviews with 30 patients with type 2 diabetes who participated in a culturally-tailored DESMI in Xi'an, China. Interviews followed a semi-structured interview guideline and were digitally-recorded. Transcripts were analyzed using applied thematic analysis approach. Strategies to enhance trustworthiness included data triangulation and peer debriefing. A flexible, collaborative educational approach was essential for patients to initiate behavior changes. Four themes contributed to the maintenance of behavior changes: 1.) shared decision-making; 2.) positive appraisal towards diabetes and self-management regimen; 3.) proactive action-planning and action-reflection; and 4.) psychosocial support from families, health care professionals, and peers with diabetes. Action-reflection, which facilitated the establishment of self-efficacy and recognition of personal strengths and environmental opportunities, were highly valued by patients with diabetes. Collective culture, diabetes-related distress, and competing demands in social life were identified barriers for positive behavior changes. These findings give insight into the therapeutic value of a DESMI in patients with diabetes. Such findings could enhance the transferability of empowerment from philosophy to routine diabetes practice.

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Online Patient Education in T2D: Impact on Patient/Caregiver Knowledge

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More than 40% of patients with T2D are not achieving glycemic goals. To address this gap, a patient/caregiver-focused educational initiative related to T2D and glucagon-like peptide-1 (GLP-1) receptor agonists (RAs) was developed to determine if online education modules could improve knowledge of T2D management.

The initiative consisted of 3 educational activities available on WebMD Education, a website dedicated to patient/caregiver learning. Each included demographic questions and a pre-/post-activity question to measure impact on knowledge. Effect size was calculated using Cramer's V. The activities launched online in January, 2015 and data was collected through October, 2015.

After 9 months, a total of 22,229 persons participated in the education. Of which, 79% had T2D, 45% were female, 61% over 54 years of age, and 56% white/non-Hispanic.

Significant improvements in knowledge resulted:

Activity 1: HELP! My Sugars Are High, What Can I Do? (Intensifying therapy); 12% increase in understanding that T2D does not have a cure, and the goal of treatment is to manage blood glucose to prevent complications (48% pre-activity; 60% post-activity; Cramer's V = 0.12, $p < 0.001$).

Activity 2: My Doctor Prescribed Me What? Understanding GLP-1 RAs (Benefits and mechanism of GLP-1 RAs); 18% increase in recognizing how GLP-1 RAs decrease blood glucose and help manage T2D (46% pre-activity; 63% post-activity activity, Cramer's V = 0.16, $p < 0.001$).

Activity 3: Online Diabetes Workshop for Injecting GLP-1 RAs—Give It Your Best Shot (Easy and safe self-injection); 32% increase in understanding that there are different GLP-1 RAs available that have various administration requirements (41% pre-activity; 73% post-activity activity, Cramer's V = 0.31, $p < 0.001$).

Among the three activities, a 12%-32% (all $p < 0.001$) improvement in knowledge was observed. This study demonstrates that well-designed online patient/caregiver-focused education was successful in improving knowledge of key components of successful T2D management.